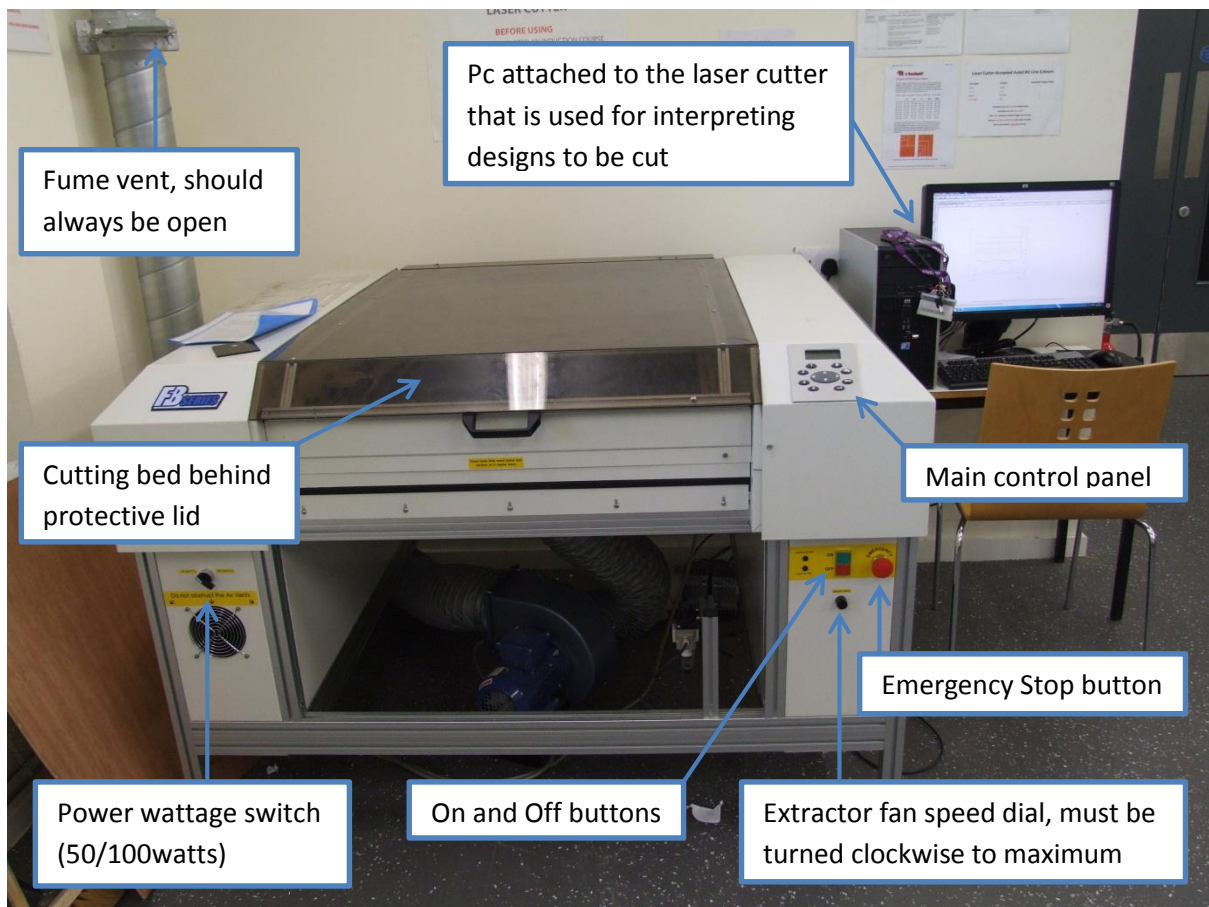# Laser Cutter User Guide

Health & Safety Information

- **Do not** look at the laser whilst it is cutting
- **Do not** tamper or adjust internal components unless specifically asked to do so by a Technician
- **Ensure** there is a **3mm gap** between the material surface (at highest point) and laser head
- **Use** the Emergency stop button if you need to shut down the laser cutter immediately
- **Always** stand by the laser cutter when cutting so if necessary it can be stopped immediately
- **Materials** and their finishes can burn excessively, catch fire or generate toxic fumes, seek advice first from a technician before cutting
- **Check** that the extractor fan is working and the fume vent is open
- **Operate** laser cutter between **Mon – Fri & 08:45 – 17:15**
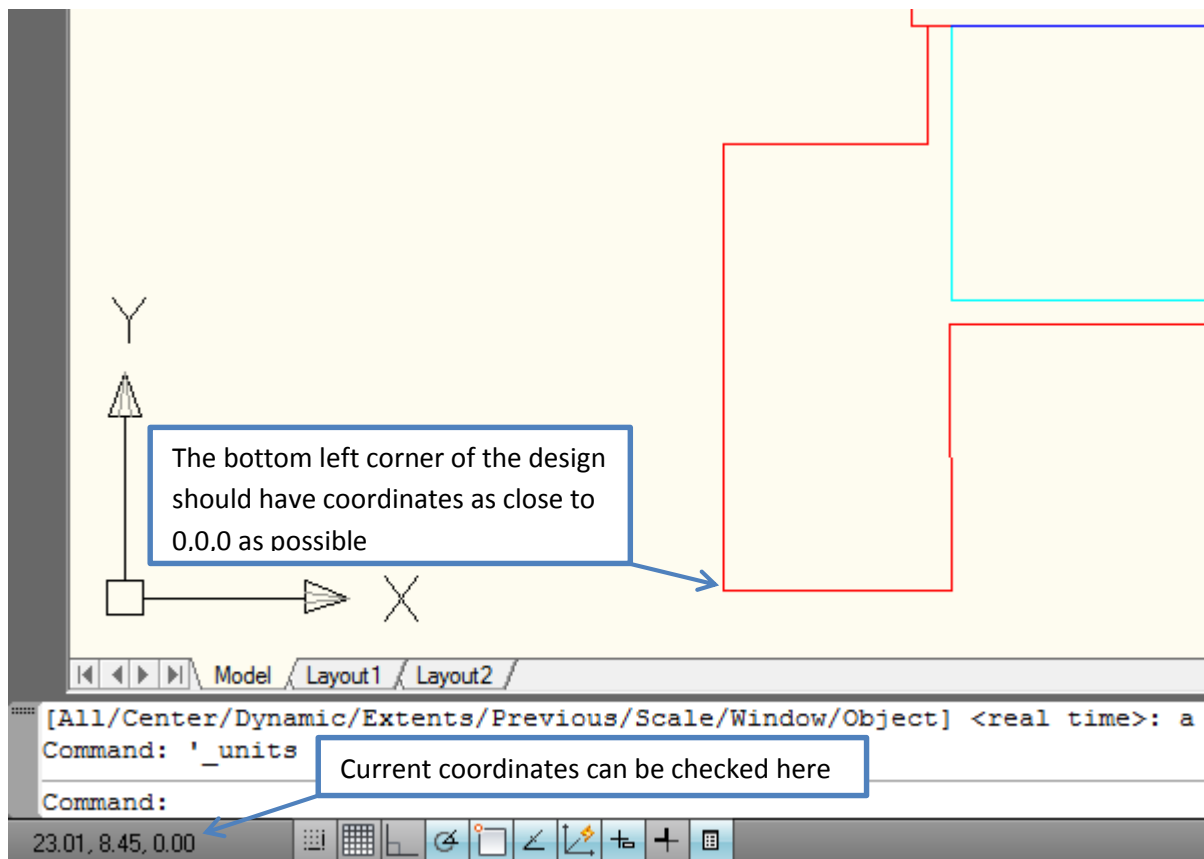- **Unsure** then speak to a Technician before proceeding

Overview of the Laser Cutter Buttons and Controls

Fume vent, should always be open

Pc attached to the laser cutter that is used for interpreting designs to be cut

Cutting bed behind protective lid

Main control panel

Emergency Stop button

Power wattage switch (50/100watts)

On and Off buttons

Extractor fan speed dial, must be turned clockwise to maximum

Preparing Your AutoCAD file For Laser Cutting

Before you start to laser cut a design you have to prepare the AutoCAD file that the laser cutter software reads. When you do this you need to adhere to the following key points otherwise the laser cutting software will interpret your design incorrectly;

- **Do not** prepare your AutoCAD file on the laser cutter PC, use another PC.
- **Draw** in model space
- **Draw** in portrait as the laser cutter bed is in portrait
- **Draw** as close to the origin (0,0,0) as possible and **never in negative coordinates**

The bottom left corner of the design should have coordinates as close to 0,0,0 as possible

Current coordinates can be checked here

- **Scale** in model space i.e if you are going to cut a 100mm line then make sure the line is 100mm not 10000mm
- **Use** the following AutoCAD line colours;

Cut Type	Colour	AutoCAD Colour Index
No Cut	Green	3
Kiss Cut	Cyan	4
Engrave	Dark Blue	5
Cut Through	Red	1

- **Save** your design as **.dxf 2004** format

When selecting Save As option you then change the file format here to be **.dxf 2004**
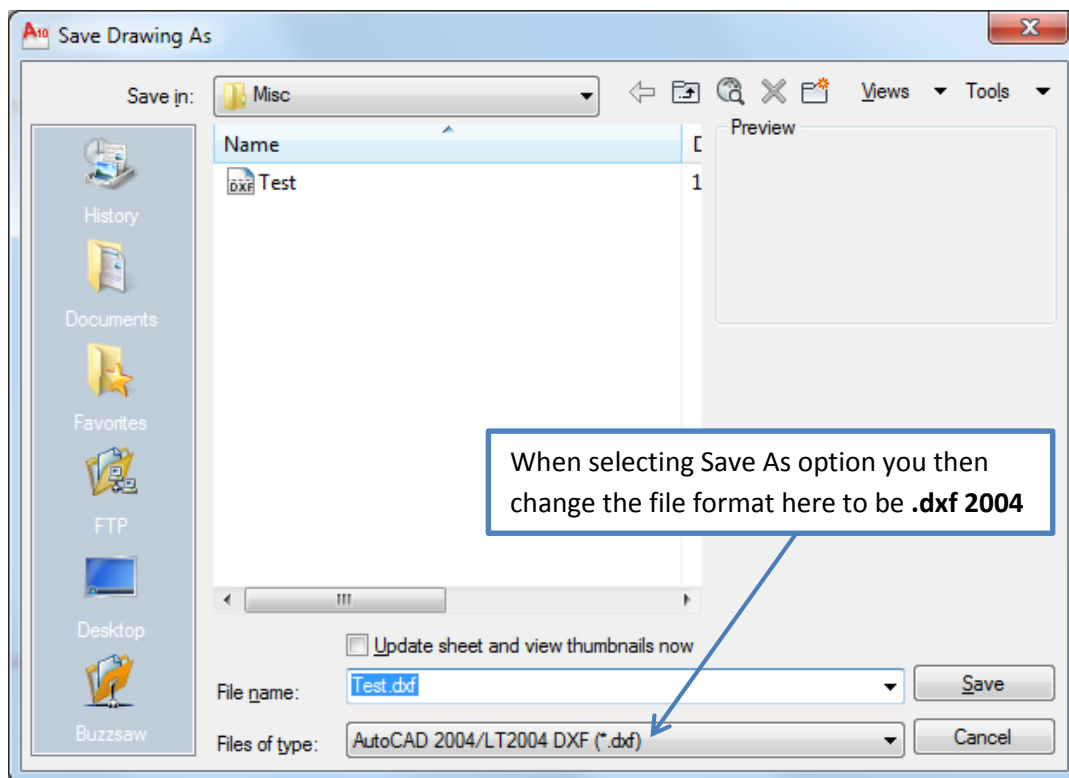
Using the Laser Cutter

Once you have prepared your design in AutoCAD for laser cutting you then have to load it into the laser cutting software and then send it to the laser cutter to cut. The procedure to do this is as follows;

1. Open the laser cutter software called ApS-Ethos Series by double clicking on the desktop.
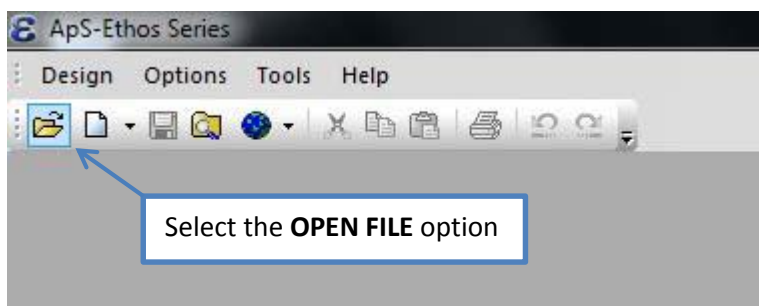

Laser cutter software desktop icon

2. Login to the software. The User Name is **System** (default) and the password is **password.**

Login: **System**
Password: **password**

3. Select the open folder option.

Select the **OPEN FILE** option

4. Now navigate to and open the .dxf file with your design in to be cut. If you are unable to see your file, change the **File of Type** option to be **All Files** or .dxf format.


If you are unable see your .dxf file then change the **File of Type** option here
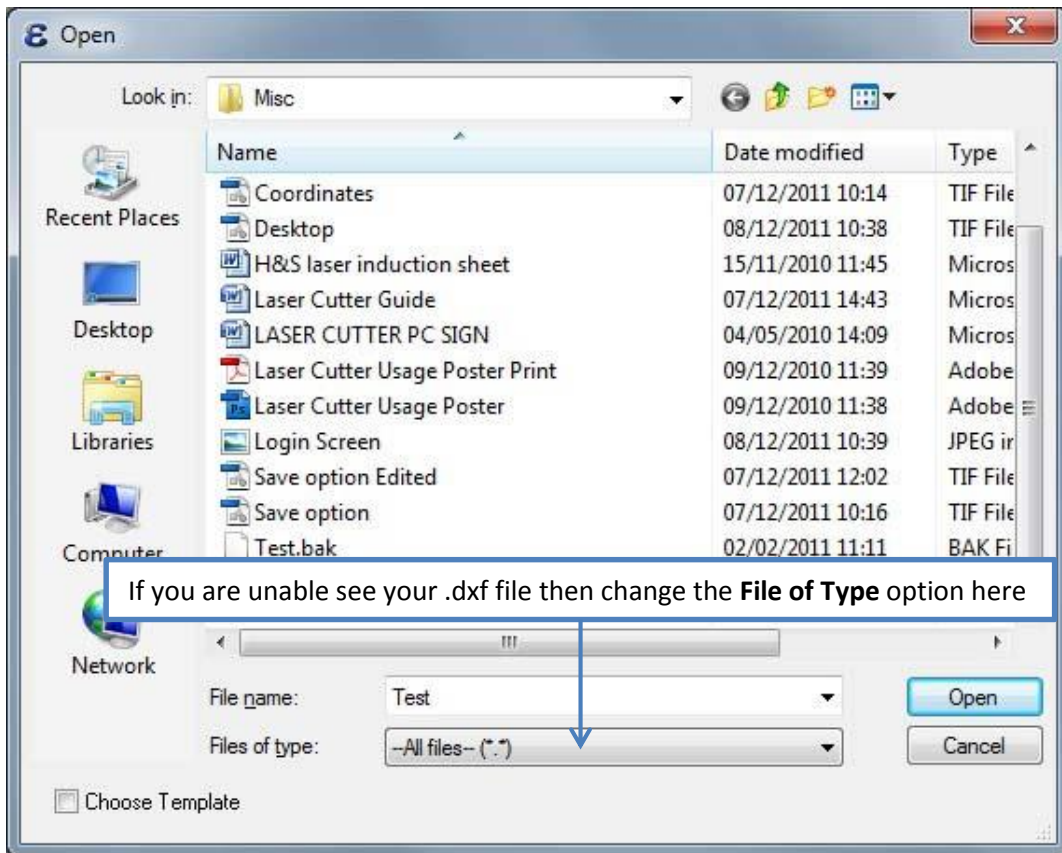
5. When prompted, select **No** to converting your design to inches.

Select **No**
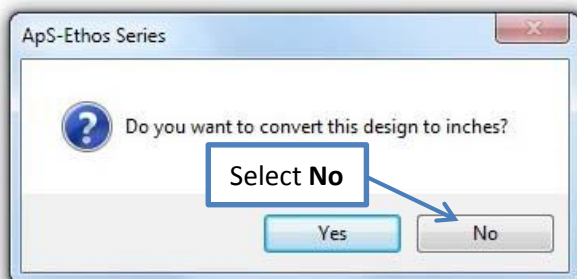
6. Your design to be cut is now displayed. Click on **Edit Cutting Effect**.

Select **Edit Cutting Effect**
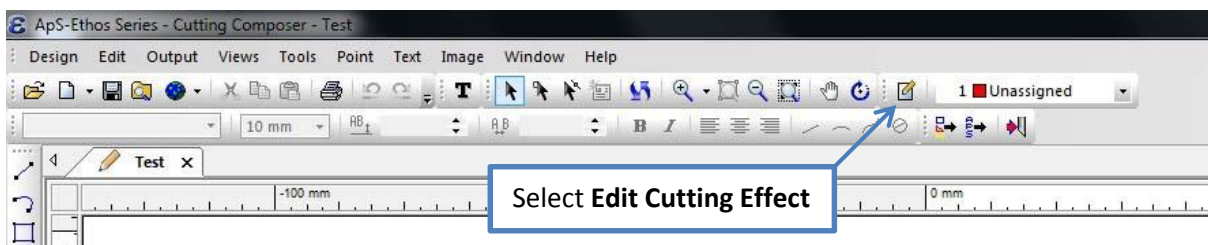
7. **If necessary**, within the Cut Effect Palette Editor assign the cut types with the appropriate colours using the **Set** button. Once completed click on the **OK** button.
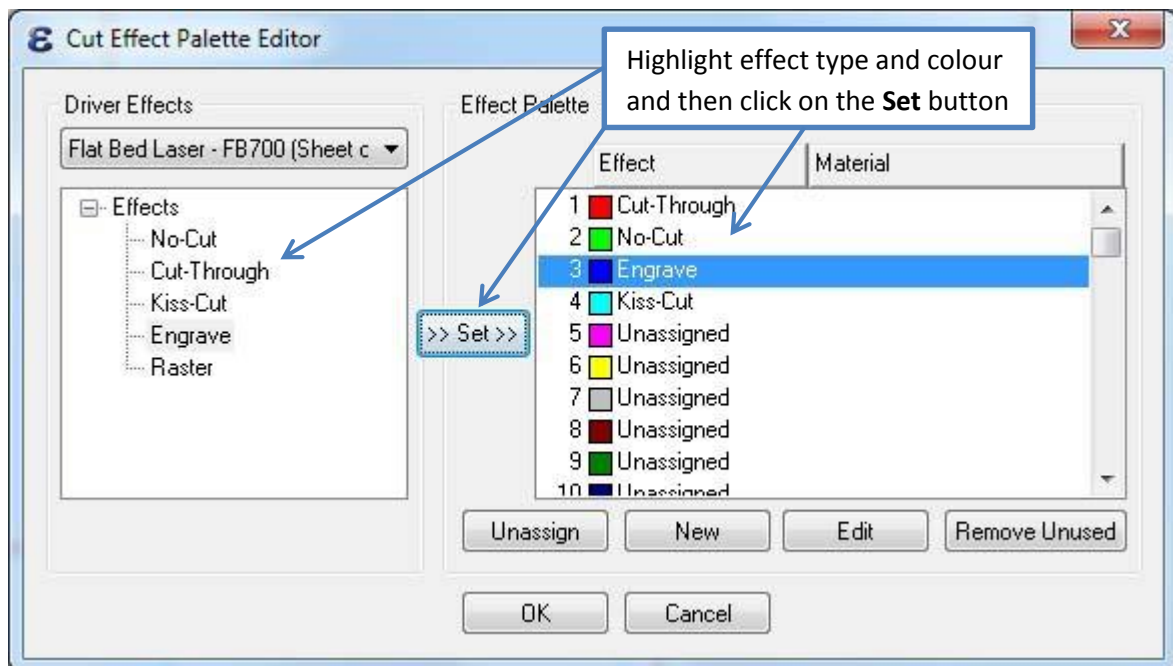

8. Open the protective lid and place your material to be cut on the cutting bed. Then close the protective lid. Refer to the Overview of the Laser Cutter Buttons and Controls diagram for further information.

9. Switch the laser cutter on and make sure the Extraction Speed is set so that the fan works at maximum (turn dial clockwise). Note the location of the **Emergency Stop** button. Refer to the Overview of the Laser Cutter Buttons and Controls diagram for further information.

10. Familiarise yourselves with the following buttons on the laser cutter main control panel which you will be using shortly to set the parameters of the laser cutter;
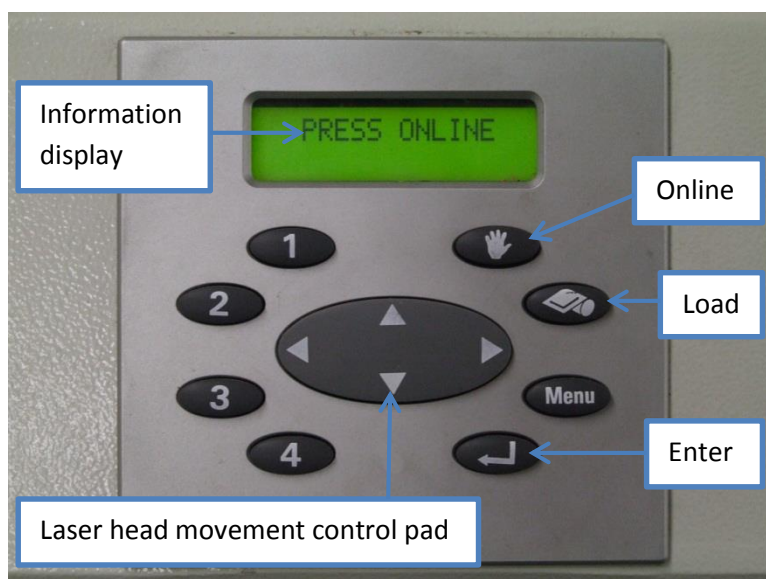

11. Press the **Online** button. Use the control pad to move the laser head over the material to be cut.

12. Lift the protective lid.

13. Loosen the screw that holds the laser head fixed in position and adjust the height so that it is **3mm** above the material, use the spacer provided as a guide. If the material is raised then move
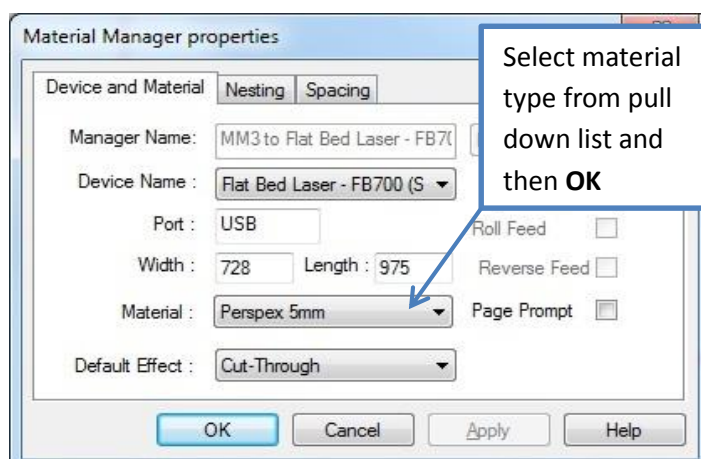
the laser head to the highest point of the material and adjust the setting taking into account that the spacer can push materials down.

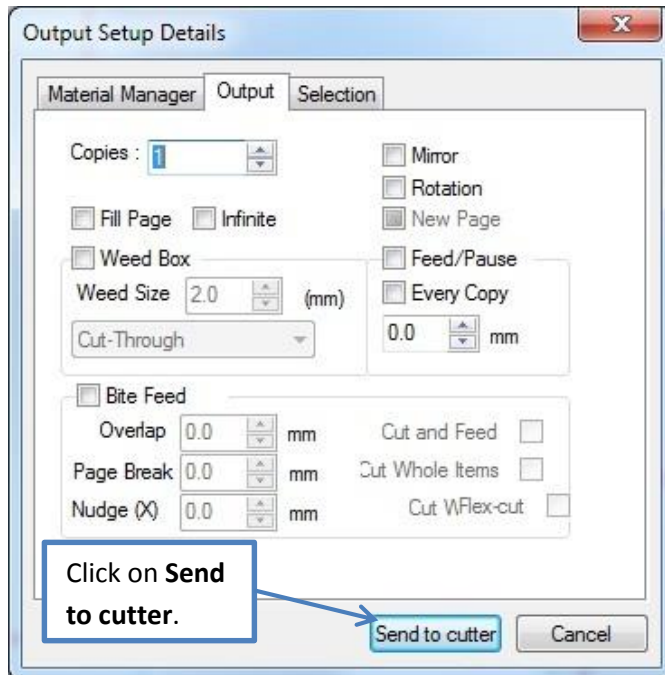Loosen screw, adjust height and tighten
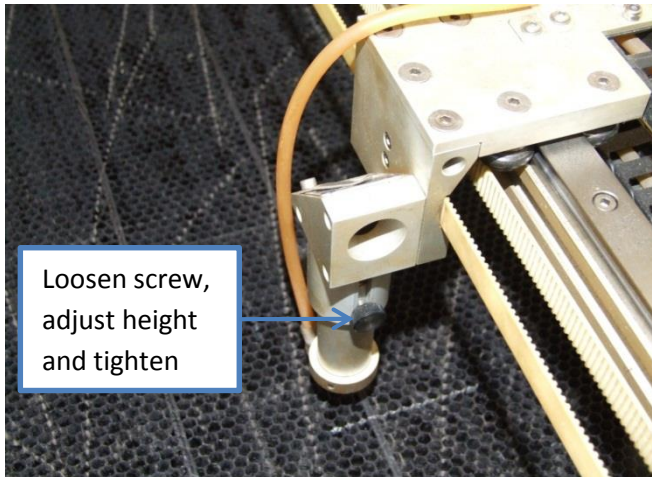
14. Close protective lid.
15. Press the **Online** button.
16. Press the **Load** button.
17. The information display will show **Load Media**. Press the **Enter** button.
18. The information display will show **Set Origin**. Use the control pad to move the laser head to the **bottom left** side of the material approximately 5mm in from the edge.
19. Press the **Enter** button.
20. The information display will show **Set Media**. Use the control pad to move the laser head to the **top right** side of the material approximately 5mm in from the edge.
21. Press the **Enter** button and the laser head moves back to the recently set material origin.
22. Using the **Power Wattage Switch** select the correct laser wattage output for your material. Refer to the Overview of the Laser Cutter Buttons and Controls diagram for further information.
23. Using the laser cutter software press the **Output Design** icon.

Select **Output Design**
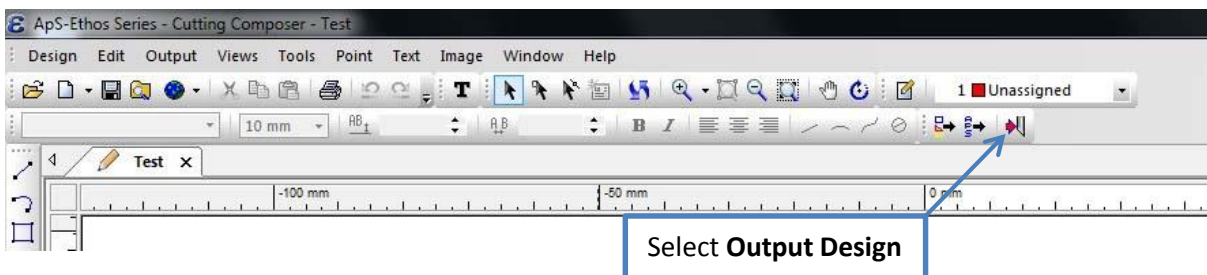
24. From the Material Manager Properties window select the **Material** type from the pull down list and then click **OK**.

Select material type from pull down list and then **OK**

25. Click on to **Send To Cutter**.

Output Setup Details

Material Manager | Output | Selection

Copies : 1

☐ Mirror
☐ Rotation
☐ New Page

☐ Fill Page   ☐ Infinite

☐ Weed Box
Weed Size 2.0 (mm)
Cut-Through

☐ Feed/Pause
☐ Every Copy
0.0 mm

☐ Bite Feed
Overlap 0.0 mm
Page Break 0.0 mm
Nudge (X) 0.0 mm

Cut and Feed ☐
Cut Whole Items ☐
Cut WFlex-cut ☐

Click on **Send to cutter**.

[Send to cutter] [Cancel]

26. The laser cutter will now cut your design.

Trouble Shooting

Problem	Possible Cause	Rectification
Laser cutting software auto scales your design and reduces its size significantly.	The .dxf file has other details on it other than your design.	In AutoCAD do a zoom all command which should make your design fill the screen. If it doesn't then find and delete any additional lines, dots and drawings causing interference.
No drawing displayed when opening your .dxf file in the laser cutting software.	Design is not close to the AutoCAD origin or is in negative coordinates.	Edit the location of the design in AutoCAD's model space.
	File is open in AutoCAD and laser cutting software at the same time.	Make sure .dxf file is not open at the same time in AutoCAD and the laser cutting software.
Laser cutter head catching the material when cutting.	Material is not lying flat and you have not allowed the 3mm gap the between material and laser head.	**Stop the laser cutter immediately** and adjust the laser head height. Beware the 3mm spacer can push the material flat when adjusting the head.
Excessive material scorch marks or melting after design is cut.	Design cut at an incorrect wattage (100watts).	Select correct wattage.
	Incorrect material type selected in laser cutter software.	Select correct material type.
Axis Error Overflow is shown on the laser cutter information display.	Laser head has been moved when protective lid was open.	Switch the laser cutter off and then on again.
When outputting the design from the laser cutter software an error message is displayed informing the user that the design size is bigger than the material size.	Design is bigger than the material size set by the user on the laser cutter.	Delete any **No Cut** lines around the edge of the design or reset the allocated material size on the laser cutter. Alternatively use a larger piece of material.
Laser cutter will not power on.	Emergency stop has been pressed	Twist the emergency stop button clockwise to release
	Outside laser cutting operating hours (Mon – Fri 8:30 – 17:30).	Use the laser cutter during operating hours.
Hatching, text and spline not being displayed correctly by the laser cutting software.	Laser cutting software is unable to interpret spline.	Do not draw with spline.
	Further editing is required for hatching and text.	Use the AutoCAD **Explode** command on hatching and text.
When clicking on output design, the error message **No USB Device Is Detected** is displayed.	Laser cutter is switched off.	Switch laser cutter on and set the material size.