Cutting Composer User Manual

Table of Contents

Cutting Composer Introduction 8

Setting up the Cutter 9

- Installing Cutter Drivers 9
- Port Set-up 11
- Setting a Default Cutter 12

Understanding the Material Manager 14

- Material Manager 14
- Device and Material 15
- Nesting 16
- Spacing 18

Working with Vector Files 20

- Importing Vector Files 20
- Selecting a Vector Outline 21
- Moving a Vector Outline 23
- Rotating a Vector Outline 23
- Deleting a Vector Outline 24
- Cut, Copy, Paste 25
- Re-Order 26
- Rescale 28
- Join Close Vectors 29
- Simple Vector Filter 30

Working with Templates **32**

Templates Overview **32**

Create a New Template **33**

User Management **34**

Backing Up User Profiles **36**

Backing Up Designs **38**

Using the Design Browser **39**

Browser Overview **39**

Adding Designs to the Browser **39**

General Tab **40**

Advanced Tab **42**

Deleting Designs from the Browser **43**

Adding a New Category **43**

Adding a New Customer **44**

Adding a New Design State **46**

Searching for Designs **46**

Searching Overview 46

Search by Customer 47

Search by Category 47

Search by Industry 48

Search by Keywords 49

Search by Design State 49

Finding Designs 50

Database Management **51**

Archiving Designs **54**

Saving Designs **57**

Saving Designs **57**

Save as New Design in Database **57**

Save as New Design NOT in Database **58**
Save as Template **58**
Adding New Customers as a Design is being Saved **59**
Design Layout **61**
Align **61**
Centre on Last Selection **63**
Centre **65**
Evenly Space **66**
Join **67**
Flip **68**
Change Size **69**
Cutting **72**
Cutting a Design **72**
Material Manager Tab 73
Output Tab 74
Selection Tab 76
Re-Order Cut Path **78**
Cutting Estimate Tool **78**
Auto Sheet Nesting **82**
Overview **82**
Main Features **82**
Using the Auto Sheet Nesting Option **83**
Fitting Multiple Shapes **86**
Dealing with Shapes with Holes Using Glue Function **87**
Optimising the Fitting Speed Using Rotation Control **89**
Circular Shapes 89
Square Shapes 90
Rectangular Shapes 90

Rectangular-Like Shapes 91
Multi-Sided Regular Shapes. 92
Irregular Shapes 92
Examples 92
Output 100
Hardware Considerations 100
Controlling the Cutter with Material Effects 101
Material Effects Overview 101
Material Effects when using Vinyl Cutters 101
Material Effects when using FB Laser Cutters 102
Creating Material Effects 102
Effects 103
Creating New Materials 104
Creating New Effects 105
Assigning Effects 106
Assigning an Effect to a Design 107
Printing Designs 109
Print Preview 109
Printing a Design 109
Working with Images 110
Scanning an Image 110
Inserting an Image 111
Vectorising Images – Edge Detect 113
Apply Grey Scale 115
Moving an Image 116
Re-scaling an Image 116
Rotating an Image 118
Deskewing an Image 119

Deleting an Image 121
Freeze/Unfreeze an Image 121
Hide/Show an Image 121
Cropping an Image 122
Using the Drawing Tools 123
Drawing Tools Overview 123
Draw Line 123
Draw Bezier 126
Draw Rectangle 127
Draw Circle 127
Draw Ellipse 128
Draw Triangle 128
Draw Polygon 129
Draw Star 129
Manipulating Drawing Outlines 131
Moving a Drawing Outline 131
Rotating a Drawing Outline 131
Deleting a Drawing Outline 133
Cut, Copy and Paste 133
Perforate 134
Re-Order Drawing Outlines 136
Parallel 136
Fatten/Thicken 137
Obi Fill 139
Outline Selected 140
Merge Outline Selected 141
Merge 141

Overlap 142
Hatching 142
Vector Slice 147
Generate Scan Lines 148
Engraving Properties 149
Engraving Vectors 153
Vector Fills Using Glued Objects 154
Filling Vectors Using Background Images 155
Dashed Lines on Laser Output 157
Add Laser Tails 160
Manipulating Drawing Outline Points 162
Selecting Outline Points 162
Moving Outline Points 163
Deleting Outline Points 163
Inserting Outline Points 163
Adding Outline Points 164
Toggling Outline Points 165
Splitting Outline Points 166
Round Corners 166
Reverse Points 166
Move Start 167
Text 168
Creating Text 168
Line Text 171
Arc Text 172
Spline Text 173
Text Copy and Paste 174

Text Deforms **174**
Condense Width **181**
Add Shadow **181**
Cut Name Drops **184**
Index **186**

Cutting Composer Introduction

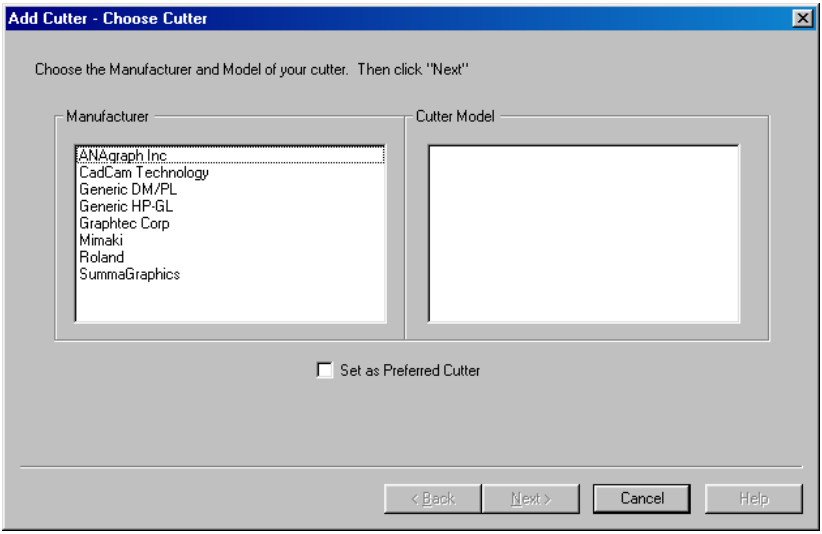
The Cutting Composer is advanced cutting software. It contains many tools for creating and manipulating original designs. True Type text can also be used and modified.

Setting up the Cutter

Installing Cutter Drivers

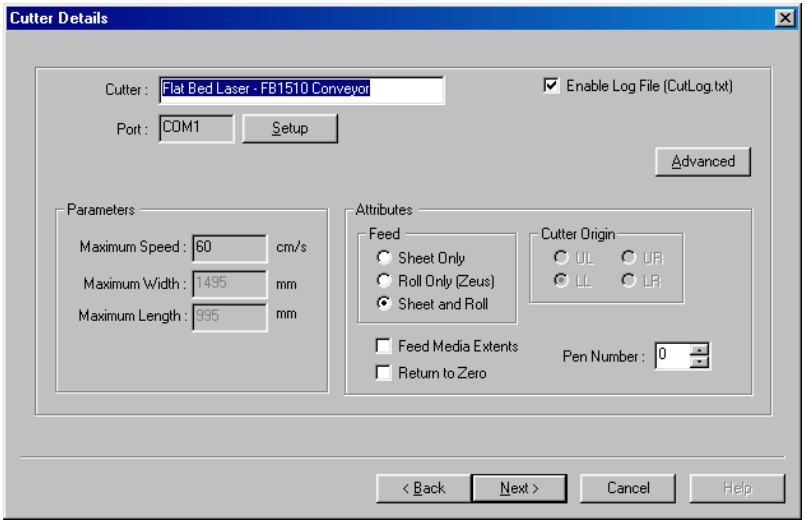
When a new cutter is connected the relevant cutter driver needs to be installed. From the **Design** menu choose **Cutters - Install Cutter**.

The following dialog will display:



The left hand side is a list of cutter manufacturers which are supported by ApS-Ethos Cutting software.
If the manufacturer of your cutter is not contained in the list, then one of the generic cutter drivers (available under CadCam Technology) may be suitable.
When a manufacturer is selected the right hand list displays the cutters drivers available for that manufacturer.
Select the cutter driver you wish to install. If this is to be the cutter you will use most often, select the **Set as Preferred Cutter** prompt.

Select **Next** and the following dialog will appear showing the default settings for that cutter.



With the exception of the port, these are the standard settings for the selected cutter. They should only be changed if you wish your cutter to be set up differently to the standard settings.

PARAMETERS

Maximum speed – The maximum speed of the cutter.

Maximum width - The maximum width according to the cutter's capabilities.

Maximum length - The maximum cutting length according to the cutter's capabilities.

ATTRIBUTES

Sheet only - Flatbed cutters with no roll feed.

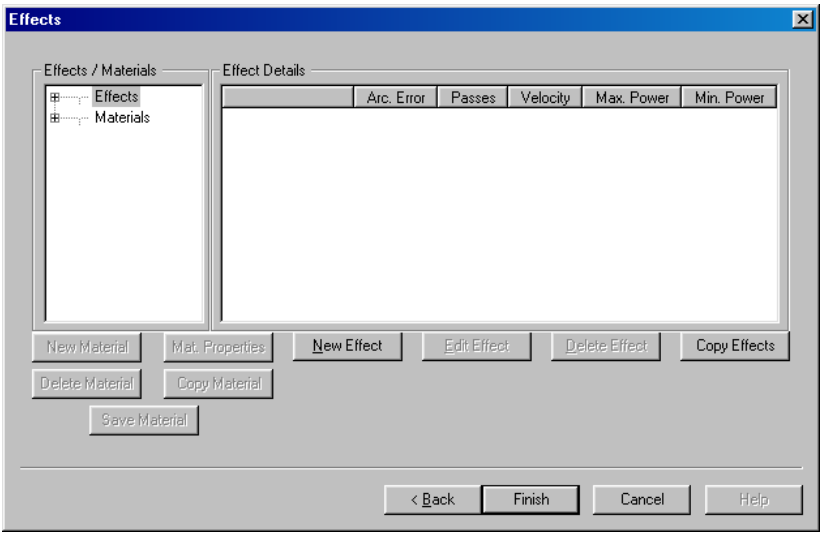
Roll only - Roll fed only cutters.

Sheet and Roll - Flatbed cutters with roll feed.

Return to Zero

Returns the cutting head to its origin after each design has been sent. It would normally be preferable to leave this checkbox off, as this will leave the cutting head at the end of the area cut rather than rolling the material back to the origin. Any unused areas of material will still be utilised where possible regardless of the position of the cutting head.

Once the settings are correct select **Next** and the **Material Effects** dialog will display:

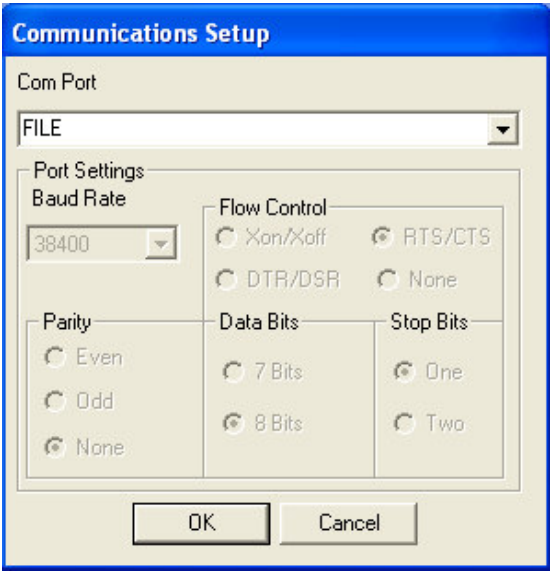


See ***Creating Material Effects – Page 102*** for more information on setting up material effects for your cutter.
Select **Finish** to complete the installation of your cutter driver.

Port Set-up

The Port Settings can be specified by selecting the **Design** menu **– Cutters - Cutter Setup –** Select the **Setup** box on the Choose Cutter to Setup form.

On the following Cutter Setup form select the **Setup** box.
The Communications Setup form will appear.



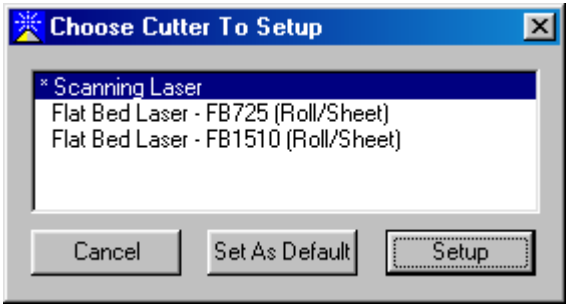
The protocols for the port are set on this form.
Select the correct com port connected to the cutter if using a serial connector or if connecting via a USB device select USB.

Once the correct settings have been entered, you should not need to change this dialog unless you change the cutter or output port used by that cutter.
If the port is set to FILE, then any data output will not be sent to a cutter. It will be written to a file whose default filename is OUTPUT.DAT. This is useful during system testing and training when no cutter is attached.

Setting a Default Cutter

If more than one cutter driver has been installed, this option sets the 'most used' cutter as the preferred cutter. This will then be automatically selected when a new material manager

is set up.
To set a default cutter select the **Design** menu **– Cutters - Cutter Setup**.
The Choose Cutter to Seup form will appear and the box will display a list of the cutter drivers which have been installed.



Select the cutter you wish to set as the default and then select the **Set as Default** button. An asterisk will appear at the side of the selected cutter. This will then become the selected cutter when a Material Manager is created.
This does not however stop you from sending data to other cutters, it merely becomes the 'preferred' cutter.
To change the cutter parameters select **Set-up** and the **Cutter Details** dialog will appear.

Understanding the Material Manager

Material Manager

The Material Manager organises the layout of a design and records the material settings that are unique to that material. A new Material Manager needs to be set up each time a new roll or sheet is loaded onto the cutter.

As long as a Material Manager is set up it will keep in its memory the area of the sheet or roll which has been cut into. It therefore assumes that you will not change the sheet or roll on the cutter until you set up a new Material Manager. Only one material manager can be set up for each cutter at any one time.

A new Material Manager is set up from the Material Manager Properties dialog, this is displayed:

- The first time a design is sent to the cutter.
- After the **New Page** Button has been selected on the cutter output dialog.
- If **Material Manager Set-up** is selected from the **Output** Menu.

The **Material Manager Properties** form has three tabs.

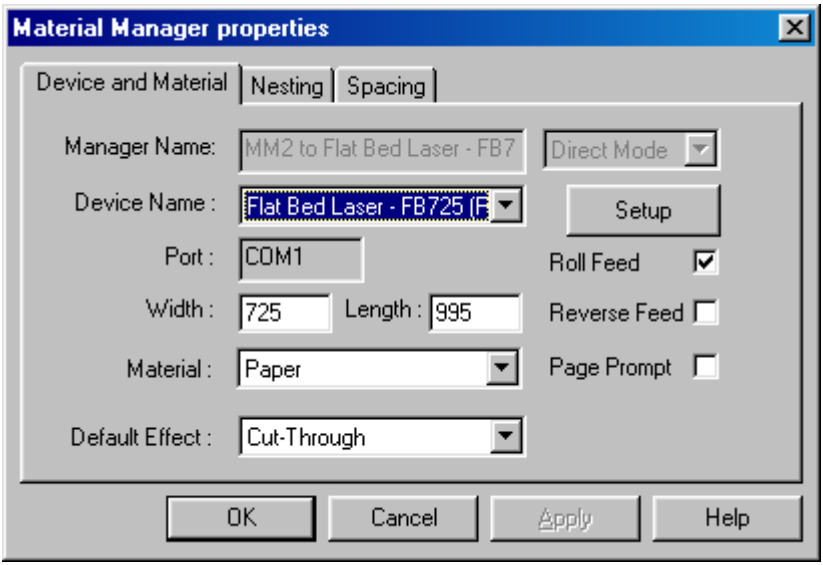
Device and Material - see ***Page 15***
Nesting - see ***Page 16***
Spacing see ***Page 18***

Device and Material

The Device and Material tab is used to set up the current Material Manager. It determines the cutting area and material effects to be used.

The dialog is displayed:

- The first time a design is sent to the cutter.
- After the **New Page** Button has been selected on the cutter output dialog.
- If **Material Manager Setup** is selected from the **Output** menu.



This tab is used to set the cutting area and material effect.

Manager Name - The purpose of this title is to enable material manager files to be saved.
Device Name - This is where you select the output device to be used.

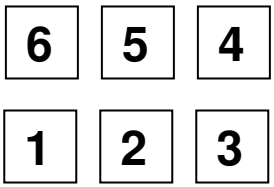
Port - This is a reminder of the port to be used. This can only be changed from within the 'Cutter Setup' option.
Width/Length - Where the cutter is capable of 'talkback' these values will automatically be read back when the material is loaded onto the cutter. Otherwise the values can be entered manually.
Material - This selects the Material (related to the effect selected) to be used in the Material Effect. Select from the Material Effects list.
If the effect you want to use is not available in the list, then a new one can be created by selecting the **Setup** button.
Default Effect - The options available in this list are determined by the effects available according to the material selected.
The material and effect displayed as a default can be set in this form. Once set this should not need to be altered until the type of material, or effect on that material is changed.
Roll Feed - This is determined when the cutter is originally set up. It indicates whether the cutter has roll feed capabilities.
Reverse Feed - This is used only on FB Laser Cutters with a roll feed attachment. It allows the material to be pushed backwards, rather than pulled forwards the cutting bed.

Nesting

This tab determines the position of designs when cut on a sheet/roll. It also determines the position and cutting order of subsequent designs cut on the same sheet/roll.

The first setting determines the direction of cut on the first and subsequent odd numbered rows.
The second setting determines the direction of cut on the second and subsequent even numbered rows.
The third setting determines whether the first design is cut starting from the bottom of the sheet (nearest the cutting head See *Figure 1*), with subsequent rows cutting above that or from the top, with subsequent rows cutting below it (starting at the top of the sheet or specified roll area, and working its way back down to the bottom of the roll/sheet see *Figure 2*).

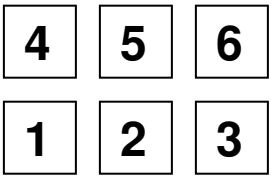
Figure 1



Settings Used:

Left to Right
Right to Left
Above

Figure 2

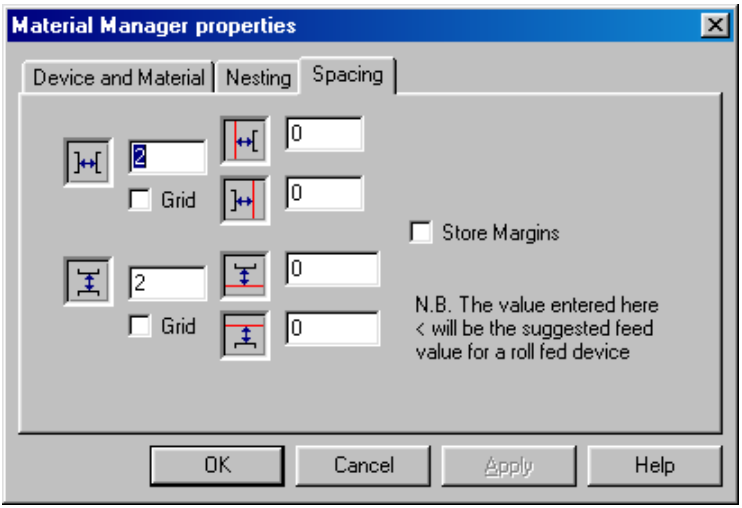


Settings Used:

Left to Right
Left to Right
Above

Spacing

The space between each design cut and the offset from the edge of the sheet is determined from this tab.



The two icons on the left of the form determine the gap in millimetres between each design sent.

- The first is the gap left between each design cut in the x axis
- The second is the gap left between each design cut in the y axis

The other four icons determine the margin to be allowed on all four edges of the material. This margin will be deducted from the width and length settings on the **Device and Material** tab.

Working with Vector Files

Importing Vector Files

Vector files can be imported by selecting the **Design** menu – **Import – Import Vector Files** and then selecting the type of file you wish to import.

Alternatively, select the **Design** menu – **New** and then Double click on the Default box and select either icon from the top toolbar:

- **Import Vector Files**

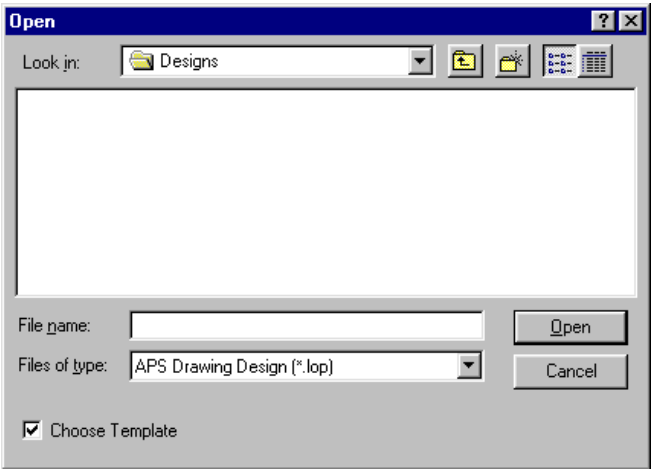
or

- **Import APS Files**

Vector files can be imported in any of the following formats:

AI	Adobe Illustrator File Format
DWG	AutoCAD Drawing File Format
DXF	AutoCAD Drawing Interchange File Format
EPS	Encapsulated Postscript File
HGL	Hewlett Packard Graphics Language
LOP	APS Drawing File Format

The following dialog will be displayed enabling you to select the source, directory/folder and file.



Once the file has been selected and the open box clicked, the file will be imported. This may take a short time while the conversion takes place.

If the Choose Template box is ticked them the New Design Wizard form will appear allowing you to select the Design Template that you would like to load.

If the Choose Template box is not ticked then the Default template will be used.

Selecting a Vector Outline

There are various ways of selecting an outline depending whether single or multiple outlines are to be chosen.

1. In order to select a **single** outline, choose the **Select** icon and point and press at the outline you wish to select. This will cause a dashed line box to appear around the outline. At this point the selected outline may be manipulated as required.

2. In order to select **multiple** outlines choose the **Select**

icon and hold down the **Shift** key while pointing and pressing the left mouse button on each outline to be selected. This will cause a dashed line box to appear around the multiple outlines selected. At this point the selected outlines may be manipulated as required.

or

3. Choose the **Select** icon and point and press the Middle mouse button (if available) on each outline to be selected.

or

4. Choose the **Select** icon and hold down the left mouse button and drag a box around all the outlines that are to be selected.

5. In order to select **all** the outlines in a design choose the **Edit** menu - **Select All**. All the outlines in the design will then be instantly selected.

When the required outline/outlines have been selected the following keys are active:

Spacebar - This will cause the currently selected outlines to flash on screen.
Shift + Double Click - This will de-select a chosen outline.
Right Click – This will cause a menu to appear which lists the various tools available. Either pick a tool from the menu or move the mouse off the menu and:

Right click - This will remove the menu and **keep** all your outlines selected.

Or

Left click - This will remove the menu and also **deselect** all the outlines.

Moving a Vector Outline

In order to move a drawing outline choose the **Select** icon and point and press at the required outline to be moved. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting a Vector Outline – Page 21.***

Corner Boxes - Selecting any corner box will allow the selected outline/outlines to be enlarged or reduced in proportion.
Vertical Edge Box - Selecting a vertical edge box will allow the selected outline/outlines to be enlarged or reduced in width but the height will not alter.
Horizontal Edge Box - Selecting a horizontal edge box will allow the selected outline/outlines to be enlarged or reduced in height but the width will not alter.
Middle Box - Selecting the middle box will allow the selected outline/outlines to be moved.

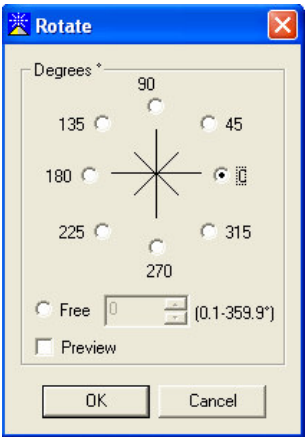
Note - If any outlines are moved incorrectly selecting the **Undo** icon would undo the edit.

Rotating a Vector Outline

In order to rotate an outline, choose the **Select** icon and point and press at the required outline to be rotated. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting a Vector Outline – Page 21***.

Select the **Rotate** icon or select the **Tools** menu - **Rotate**. This will then cause all the solid black boxes to change to white hollow boxes. Various options are available at this point, depending which white box is selected.

Corner Boxes - Selecting any corner box will allow the selected outlines to be rotated clockwise or anti-clockwise. (Pressing and holding **CTRL** when doing this will cause the outlines to be rotated in intervals of 5˚s rather than 1˚s).
The outline will be rotated around the pivot point (middle box) depending where this has been located.
Horizontal Edge Box - Selecting a horizontal edge box will allow the selected outlines to be sheared along the x axis.
Vertical Edge Box - Selecting a vertical edge box will allow the selected outlines to be sheared along the y axis.
Middle Box - Selecting the middle box will allow the pivot point to be moved around which the outline/outlines will be rotated.
'N' Key – This will cause a form to appear allowing you to specify the rotation that you require.



Note - If any outlines were rotated incorrectly, selecting the **Undo** icon would undo the edit.

Deleting a Vector Outline

In order to delete a drawing outline from a design choose the

select icon and point and press at the outline to be deleted. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting a Vector Outline – Page 21*.**

To delete the selected outlines press the **Delete** key or select the **Edit** menu - **Delete**.

Note - If any outlines were deleted accidentally selecting the **Undo** icon would restore them.

Cut, Copy, Paste

In order to cut, copy and paste an outline/outlines, choose the select icon and point and press at the required areas of the design that you wish to cut, copy or paste. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting a Vector Outline – Page 21*.**
Choose either of the following icons:

Cut icon - This will remove the selected outlines from the current design and temporarily store them ready for pasting.

Copy icon - This will leave the selected outlines in the current design and make a copy of them ready for pasting.
When an outline has been cut or copied, load the design that you want to merge with onto the screen. Then select the Paste icon.

Paste icon.

The merged outlines will then appear in the top left corner of

the screen view and will be automatically selected. Select the middle box and move the outlines to the required location on screen.
Alternatively there are other Paste options available that can be selected from the **Edit** menu. These allow the pasted outlines to be inserted into the design instead of being placed at the end of the design.

Paste to End or Insert - When this option is selected the outlines being pasted will be occur at the end of the design.
Paste after Last Selection - Before this option is selected an outline should be chosen. When Paste After Last Selection is then selected the pasted outlines will occur after the selected outline.
Paste Before Last Selection - Before this option is selected an outline should be chosen. When Paste Before Last Selection is then selected the pasted outlines will occur before the selected outline.

Re-Order

The Re-Order tool will allow you to change the order of any vector outlines in a design.

Using the Re-Order Tool

To use the Re-Order tool select the **Edit** menu - **Re-Order**. There are 4 different options available.

Re-order to Start - Select the required outlines in the order you wish them to appear and select Re-Order to Start. This will cause all the chosen outlines to appear at the start of the design in the order that you selected them.
Re-order after First Selection - Select the required outlines in the order you wish them to appear and select Re-Order after First Selection. This will cause all the chosen outlines to

appear after the first selected outline in the order that you selected them.
Re-order before Last Selection - Select the required outlines in the order you wish them to appear and select Re-Order Before Last Selection. This will cause all the chosen outlines to appear before the last selected outline in the order that you selected them.
Re-order to End - Select the required outlines in the order you wish them to appear and select Re-Order to End. This will cause all the chosen outlines to appear at the end of the design in the order that you selected them.

Using the Snap Shot Tool
To use the Snap Shot tool to re-order select the **Views** menu – **Snap Shot.** The following 2 icons will appear below the design.

Show Objects - Selecting this icon will display all the individual outlines in a design in sequence.

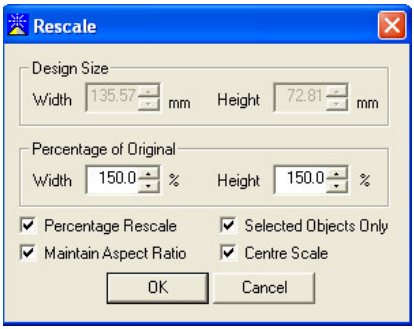
Show Colours – Selecting this icon will display all the colours in the design in sequence.

Right clicking over a frame will cause a menu to appear which enables various options (including re-order).
Alternatively it is possible to adjust the sequence of the outlines by pressing the left mouse button over the frame that is to be moved and drag and drop it to the desired position.

Note – To update the Snap Shot view when a design has been adjusted select the **Show Objects** icon , and the frames will alter accordingly.

Rescale

The Rescale option is enabled by selecting the **Edit** menu - **Rescale**.
It will allow the scale of a design or selected outline to be manipulated. If this option is selected then the Rescale form will appear.



Percentage Rescale - If this is selected then the width (%) and height (%) box is activated allowing the design size to be altered by percentage increase or decrease.
If this is not selected then the width (mm) and height (mm) box is activated allowing the design size to be altered by mm increase or decrease.
Maintain Aspect Ratio - If this is selected the design will be rescaled in proportion. If this is not selected the design will be rescaled out of proportion.
Selected Objects Only - This box will be activated if areas of the design are selected before the Rescale option is chosen. The rescale operation will then only be performed on these selected areas.
Centre Scale - This allows objects to be rescaled from their individual centre points. It is only available when the **Percentage Rescale** box is ticked. If multiple objects are to be centre scaled they should be grouped first. Select the sections to be grouped and select the **Tools** menu **– Group Selection.**

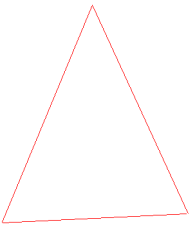
Join Close Vectors

It is now possible to join vectors which have ends close together. This is sometimes useful when dealing with imported designs (for example .AI files), or when editing hand drawn vectors.

Note – For this tool to work the vectors you wish to join must be less than 0.25mm apart and will only join vectors of the same colour. Vectors of different colours will not be analysed.

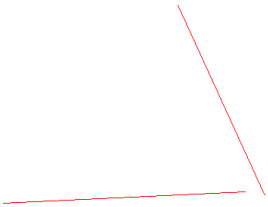
Figure 1 shows a triangle that is made up of 2 vectors.

Figure 1



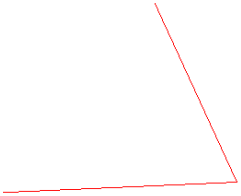
The end points of each object are very close together but not actually closed, as shown in *Figure 2.*

Figure 2



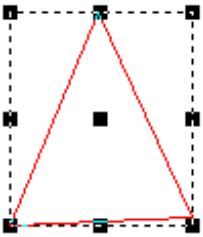
To join the vectors select them and then select the **Tools** menu **- Join Close Vectors**. The software will then analyse the shapes and join them as necessary *Figure 3*.

Figure 3



In this example the shape has now become a single triangle shape see *Figure 4*.

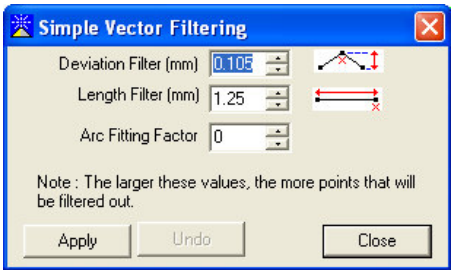
Figure 4



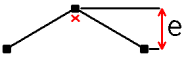
If more than 1 vector is selected then this tool will analyse all the shapes and join them together as best as possible.

Simple Vector Filter

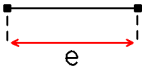
This tool allows the points in a vector outline to be filtered. To use this feature select the outlines to be filtered followed by the **Tools** menu **– Simple Vector Filter**. The following Simple Vector Filtering form will appear.



Deviation Filter (mm) – This filter looks for the error ‘e’ and if it is smaller than the measurement set then the points will be deleted.



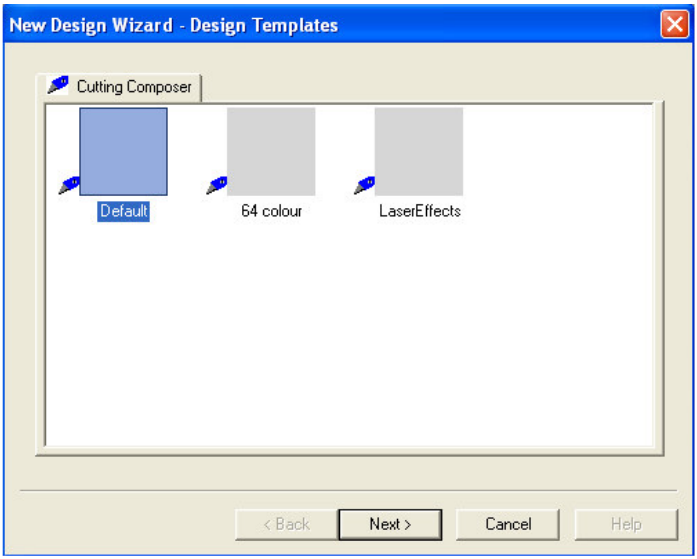
Length Filter (mm) – This filter looks for the error ‘e’ and if it is less than the measurement set then the points will be deleted.



Working with Templates

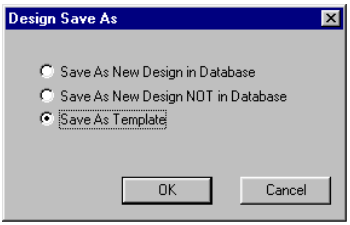
Templates Overview

Templates are design platforms which can be very useful when a standard layout or background is used. They can contain standard data, for instance a background layout which will provide guidance with the planning and scaling of a design. The data contained in a template can, if you wish, be ignored when the design is cut.
Templates can also contain material effects which will simplify assigning effects. Also, if you set up a template containing your regularly used effects, you will soon get to know which colour relates to each effect and use them as a standard.

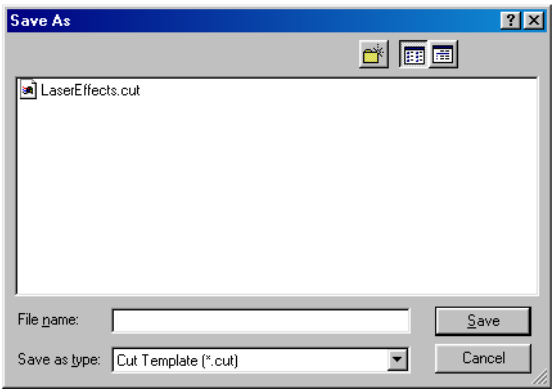


Create a New Template

To create a new template, import a file and set it up with the size, data and material effects which you wish to retain in the template. Select the **Design** menu **Save As,** then select the option **Save As Template**.



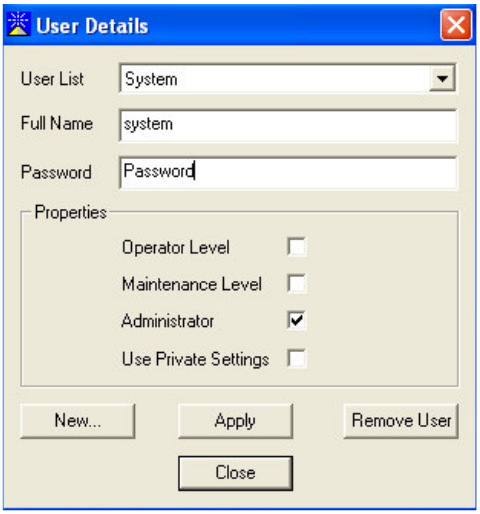
The **Save As** dialog will display giving you the opportunity to name your template.



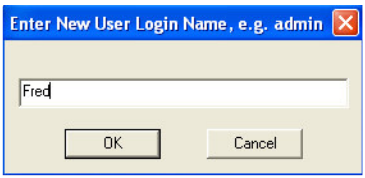
When you select OK the template will be saved ready for future use.

User Management

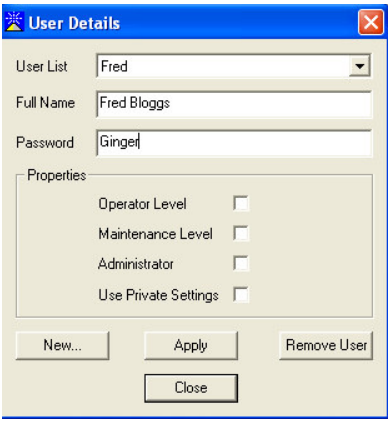
This option appears in the **Tools** menu when all designs are closed down. When selected, this option will show the user management form.



The Ethos program is initially configured with one administrator user **System** with a default password of **Password**. To change the password, enter the new password required and then press **Apply.** Using this form other users can also be configured, for example, by selecting the **New** box a new user can be created.

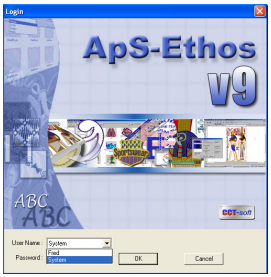


Press OK, and enter the other details.



Administrator – This level is required to access the user management function.
Operator Level and Maintenance Level – These levels are not used by the standard Ethos program (specialist applications only).
Use Private Settings – When creating or modifying a user the option to maintain private settings for the user is available. If this is configured for a user then all the settings used by that user will be accessed from a separate folder e.g. ethos\Profiles\Users\Fred (not shared with other users). These settings will include cutter settings, cutter materials, screen background colour, font sizes, last accessed files etc.

Select **Apply** to finalise the user details. The next time Ethos is run, the new user will appear in the login form.



Backing Up User Profiles

All Ethos settings are stored in a profile directory structure in **.INI** files which are easily accessible and straightforward to backup and copy.

Structure
The .INI profiles are all stored under the main Ethos program directory in a sub folder called "*Profiles*".

Ethos/ Profiles (directory)
BOOT.INI
Shared Settings (directory)
Users (directory)

The main Profiles folder contains a file called **BOOT.INI**. This file is accessed when Ethos runs up, it contains basic information to get the program running.

Two subfolders exist below the profiles directory:

1. Shared Settings Directory
This contains:

SETTINGS.INI (contains all the general program settings)
Cutters (directory, contains all the laser cutter driver information, see example below)

Example cutter profile directory
Cutters
SETTINGS.INI (settings which apply to all cutters)
Flat Bed Laser - FB1500 (directory of installed cutter)
SETTINGS.INI (driver information for cutter)
Materials (directory)
Twill.INI (settings for cutting twill)
Leather.INI (settings for cutting leather)

Note - The materials directory for a cutter can contain any number of named material .INI files.

2. Users Directory
This directory contains the user profiles from which the Ethos login process gets it's information, for example:

Users

1. System (directory, main admin user)
   PROFILE.INI (contains user login information)

2. Fred (directory, normal user)
   PROFILE.INI (contains user login information)

3. Susan (directory, normal user)
   PROFILE.INI (contains user login information)

Note - Any number of users can be created by using the **User Management** function. See the section - **User Management**.

If a user has been specified to have **private settings OFF** (default) then after the user logs in, the software will access the 'shared settings' directory for all their program settings.

If a user has been specified to have **private settings ON** then a copy of the shared settings directory is made within the users sub folder, from which their settings are accessed privately (including cutter drivers and materials).

It is recommended that **all User Profiles** are **backed up** on a regular basis.

Backing Up Designs

It is important to back up your designs and database. If they are not backed up and your computer has an unrecoverable error then you could lose designs and database information. Back-ups should also be made before installing any updates of the software.

There are many devices available for backing up, such as Zip Drive, CD Writer, Tape and Memory Sticks. Please contact your local computer supplier for more information.

The two items that need to be backed up are:

Designs Folder – This folder contains your Ethos designs.
Browser.mdb file – This file contains all the information held within the database i.e. Categories and Customers.

These two files are located in:
C:\Program Files\Ethos

Any other customised files should also be backed-up.

Note - CCT Ltd cannot accept responsibility for any files or designs lost as a result of not following the above procedure.

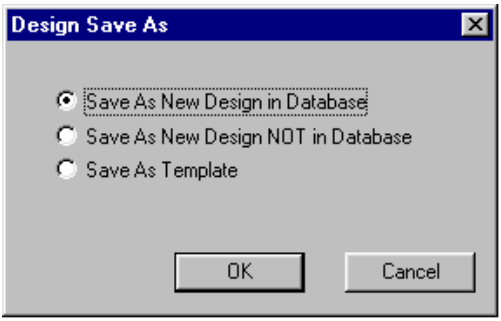
Using the Design Browser

Browser Overview

The Design Browser is a sophisticated database that can be used to store useful information about the designs you save. It can also allow designs to be referenced by a variety of headings to make searching and retrieving of designs easy. For instance, you can list all of the designs for a particular customer or job type, together with keeping track of jobs in progress.

Adding Designs to the Browser

To save a design to the browser, select the **Save** icon or choose the **Design** menu - **Save**. If a design has been previously saved, the design is simply saved to disk with the current settings and choices under the same filename.
If a design has not previously been saved, the **'Design Save As'** dialog will display. In order to add the design to the Browser the **Save As New Design in Database** option should be selected.

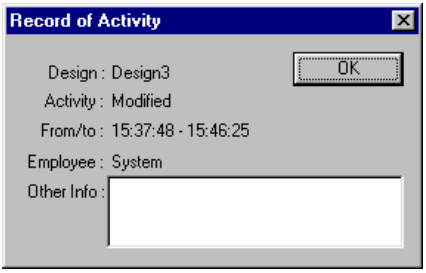


When you select OK the **Design Properties** dialog will appear. This is the database record for the design which you are saving. It is here where you will enter all of the relevant

information about the design.

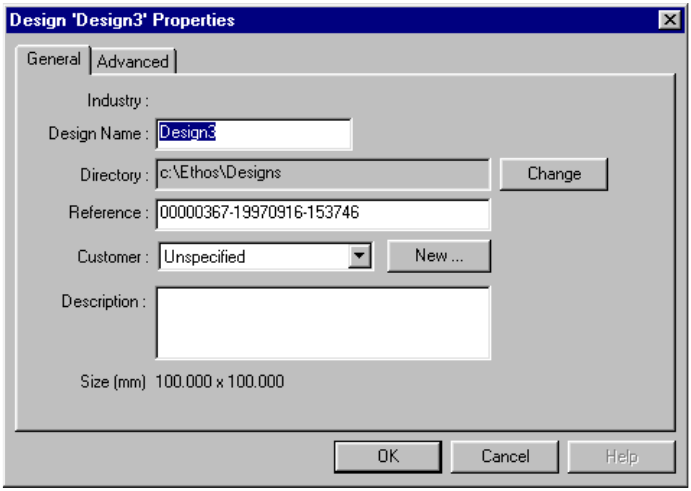
There are two tabs at the top of the **Design Properties** dialog as follows:
General
Advanced

Once all the relevant information has been entered, select **OK** the **Record of Activity** form will appear.



The **Record of Activity** dialog is an opportunity to enter information about the progress or work carried out on the design. This can build up a history of all activities related to that design.

General Tab



This is where general information about the design can be entered as follows:

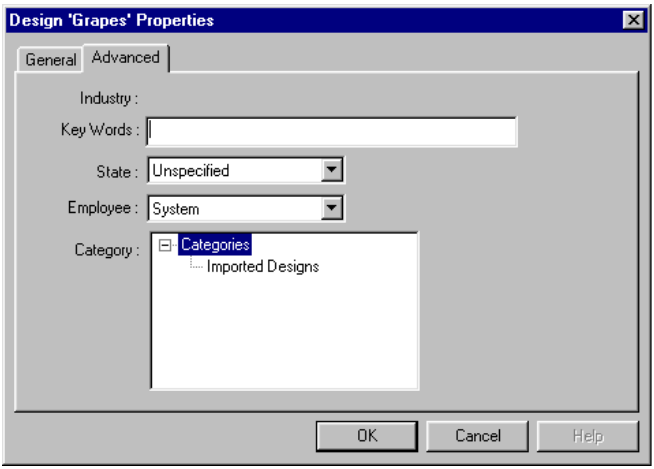
Design Name - This is the name of the design. The first time that the design is saved it is possible to enter a filename of your choice. Certain characters may not be used for example / *.~ etc.
Directory - This is the directory/folder where the design will be saved. As standard, designs are saved to the **\ethos\designs** folder. It is not necessary for you to store designs in different directories as the browser allows you to search for designs in a variety of ways even though they are all in the same directory. However, if you do wish to store designs in different directories, then the browser can be set up to automatically search a range of directories. If you wish to change the directory structure where the design will be saved select the **Change** button.
Reference - This field may be used for adding any reference information about the design. For instance a job number or customer order number could be entered here.
Customer - This displays the customer information associated with that design. As standard the customer field will read ***Unspecified -*** If the down arrow next to 'Unspecified' is selected a list of previously entered customers will appear from which you may choose. If the design is for a new customer then the **New** button should be selected.
Description - This allows further descriptions/information to be added and saved with the design. For example how many copies have been cut or how much material has been used.

Selecting **OK** will save the design and the browser details. A **Record of Activity** dialog will appear.

Selecting **Cancel** will abort saving and the design will **not** be added to the Browser.

Advanced Tab

The **Advanced** tab allows you to add more information about the design.



Key Words – This allows any key words to be assigned with the design. To use key words to locate a design the **Browser** icon should be selected, followed by the **Design(s)** menu – **Find.**

State - This field can display the current state or progress of the design. For more information on Design States see ***Adding a New Design State – Page 46.***

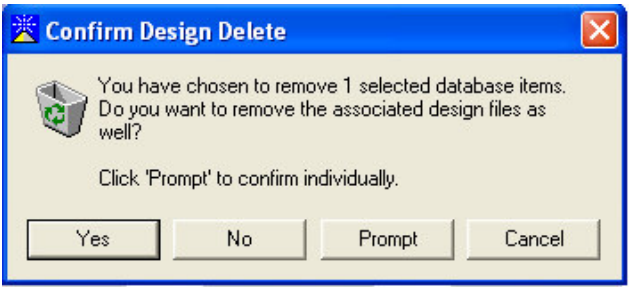
Employee - The name of the employee who saved the design can be named here. As a default the name of the employee who logged onto the system will be entered.

Category - The list of categories is built up by you. As a guide, this can be used to identify the type of job or materials used. Select the category that you wish the design to be saved in. New categories can be entered see ***Adding a New Category – Page 43.***

Deleting Designs from the Browser

To delete a design from the Browser select the **Browser** icon , highlight the designs/designs you wish to delete and then select the **Delete Designs** icon .

The following form will appear:

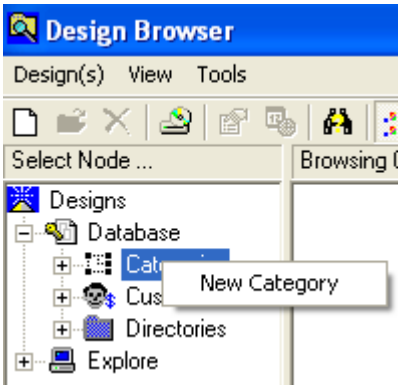


Select **Yes** and the record of the design and the design itself will be removed from the browser/database.
Only select **Yes** on this form if you wish to permanently delete the design.

Adding a New Category

In order to add a new category to the **Browser**, select the **Browser** icon or select the **Design** menu - **Browser**.

Once in the Browser point at the **Categories** heading and single click the Right mouse button, then select **New Category** from the menu that appears.



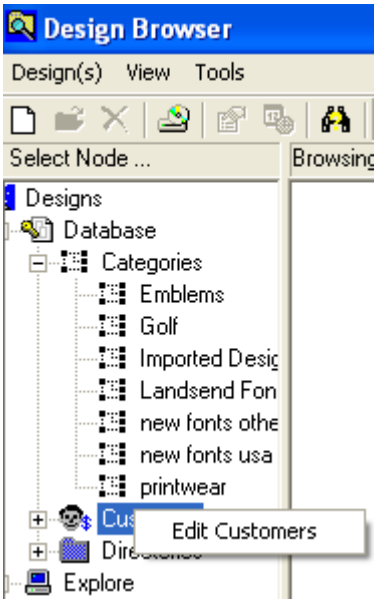
or
select the **Tools** menu – **New Category.**

Using either option will create a new Un-named category. Type in the name of the new category and press the right mouse button to confirm. This will then place the new category in alphabetical order on the list, ready for use.

Adding a New Customer

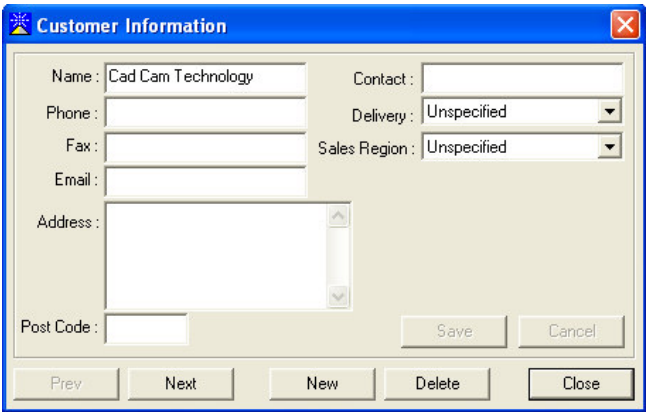
In order to add a new category to the **Browser**, select the **Browser** icon or select the **Design** menu - **Browser**.

Once in the Browser point at the **Customers** heading and single click the Right mouse button, then select **Edit Customers** from the menu that appears.



Or select the **Tools** menu - **Edit Customers**.

The Customer Information form will appear.



Select the **New** box, then enter the relevant details of the new customer and select the **Save** box.

Adding a New Design State

Enter the **Browser** by either selecting the **Browser** icon or select the **Design** menu **– Browser.**

Once in the Browser select the **Tools** menu – **New - Design State.**

This will create a new, un-named Design State. Type in the name of the new design state for example ‘Quotation’ or ‘Sampling’ or ‘Production’ and press the right mouse button to confirm. This will then place the new Design State in alphabetical order on the list, ready for use.

Searching for Designs

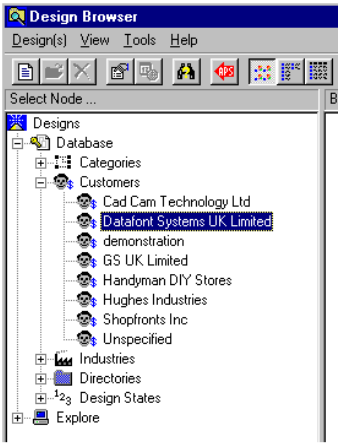
Searching Overview

Designs saved into the Browser can be searched for and loaded into the software by any of the following methods:

- Customer
- Category
- Industry
- Design State
- Keywords
- Find

Search by Customer

From within the Browser, double click on '**Customers'** and an alphabetical list of all the customers you have entered will appear. Select the customer you wish to view and all of the designs assigned to that customer will be listed.

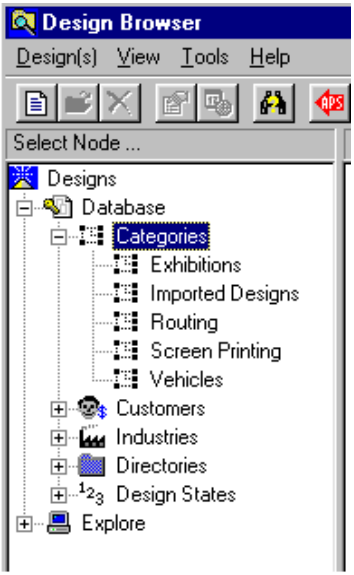


Note - Any designs which have not been allocated to a customer will be listed in the 'Unspecified' option in the Customers list.

To load a design, double click on the icon/design name.

Search by Category

From within the Browser, double click on '**Categories'** and an alphabetical list of all the categories you have entered will appear. Select the category you wish to view and all of the designs assigned to that category will be listed.



Note - Any designs which have not been allocated to a customer will be listed in the 'Imported Designs' category.

To load a design, double click on the icon/design name.

Search by Industry

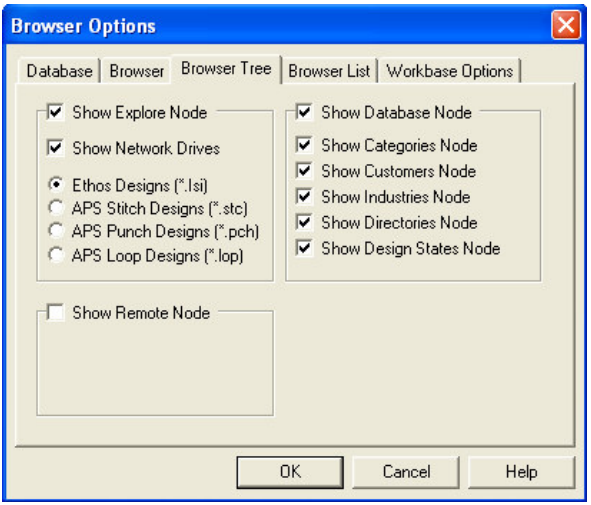
The ApS-Ethos suite of software is used in a variety of industries, mainly cutting and embroidery. If you use ApS-Ethos for more than one industry then you can select the designs saved in one of those industries.

From within the Browser, double click on **'Industries'** and an alphabetical list of all the industries you have entered will appear. Select the industry you wish to view and all of the designs assigned to that industry will be listed.

To load a design, double click on the icon/design name.

Note - If the **Industries** node does not appear in the list then

within the Browser select the **Tools** menu- **Options.** On the following Browser Options form, select the Browser Tree 'tab' and make sure the **Show Industries Node** is selected.



Search by Keywords

Keywords are searched for when using the **Find Designs** tool. See ***Finding Designs – Page 49.***

Search by Design State

This is either the type of file imported (vector or APS) or the stage of production the design has reached. Each time a new design is imported the state is allocated according to the type of file.

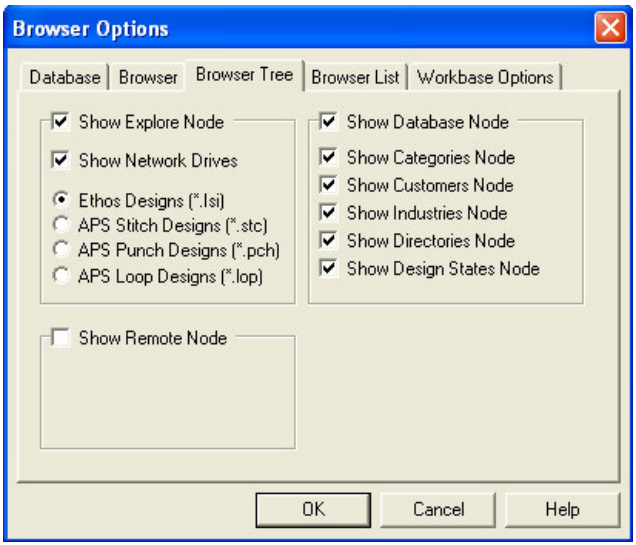
When a design is saved, the **Advanced** tab on the **Design Properties** form allows you to select a different state from the **Design State** list. After a design has been saved, the **Design State** can be updated by selecting **Design** menu - **Properties.**

This will display the **Design Properties** form for that design. The Browser information for that design can now be changed.

To search for a design using it's Design State, from within the Browser, double click on **'Design State'** and an alphabetical list of all the Design States you have entered will appear. Select the State that you wish to view and all of the designs assigned to that Design State will be listed.

To load a design, double click on the icon/design name.

Note - If the **Design States** node does not appear in the list then within the Browser select the **Tools** menu- **Options.** On the following Browser Options form, select the Browser Tree 'tab' and make sure the **Show Designs States Node** is selected.



Finding Designs

You can find a design by either the full design name or just part of it.

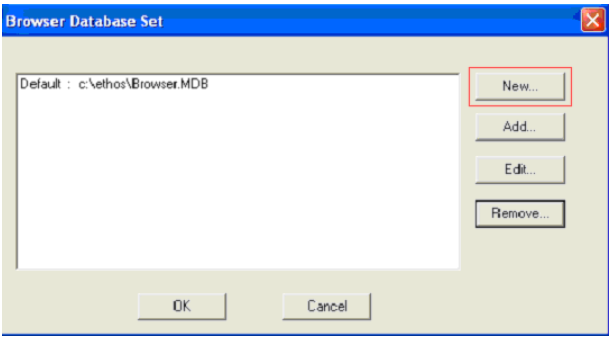
From within the Browser select the **Find** icon . The Find Designs form will appear.

You can find designs by selecting any of the titles on the list and entering the relevant reference. When Find is selected all of the designs which fall into that category will be listed.

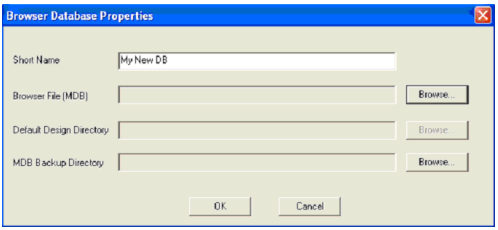
Database Management

It is possible to switch between browser databases. This is achieved by firstly **closing down** any designs and then selecting the **Browser** icon and then accessing a list of active browsers from a drop down list.

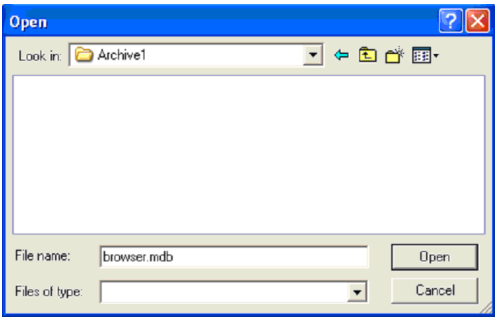
Initially the drop down list is not available as it only contains one database (your default). To enable, more databases must be added to the list. To do this select the **Management** icon next to the list and the following management form will be displayed.



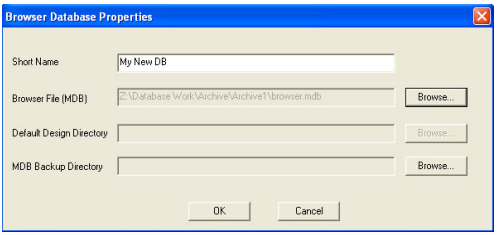
New - This icon will allow a new empty database to be created. When selected the database properties form will be displayed.



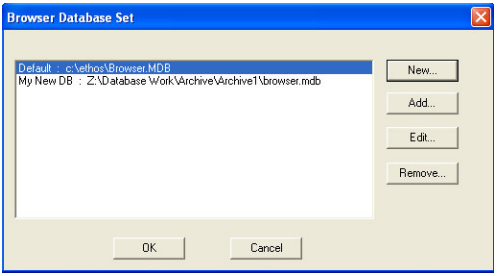
Enter a short name for the database then click on the **Browse** box.



Next specify the directory and MDB name (to be created) in the form shown above and then select **Open**.

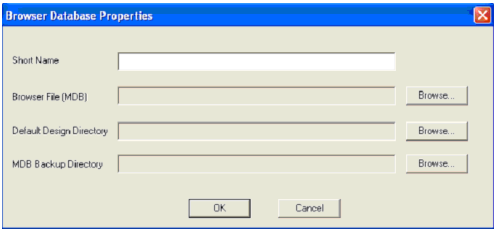


Next select the lower **Browse** box to specify the database backup directory (for use with the existing backup facility). Now press OK. This will create an empty browser and also a 'designs' sub-directory for the storage of the ISI files.



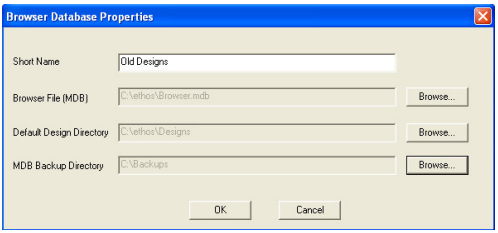
Select OK to finish. The new browser is now accessible from the drop down list. When you choose a database from this list the current database will automatically be closed, and the chosen one opened.

Add - This will allow an <u>existing database</u> to be added to the list.



You must specify a *short name* for the database. Use the **Browse** box to navigate to the existing MDB file and default Designs directory (where new ISI files will be stored), and

optionally, the backup directory for the database can also be specified.



Note - This feature is very useful when used with the Ethos archive facilities found in the **Browser** menu **– Tools - Database Maintenance -Archive Designs** option. Older designs can be archived to another browser, then the archived browser added to the database set list.
Edit - This allows the details of the selected database to be changed.
Remove - This will remove the selected database from the list.

For more information on Archiving Designs see ***Archiving Designs – Page 54.***

Important Note - When switching between databases using the drop down list any designs created will be assigned to the current selected database. Once you have created a new design it is not possible to assign it to another database (unless it is re-imported). Therefore care must be taken when creating new designs to make sure the correct database is active.

Archiving Designs

In order for the Ethos Browser to function effectively we recommend keeping the number of designs in the browser below 5000. This will aid the smooth retrieval of commonly used designs, with older designs archived to CD or a backup

type of your choice.
To make use of the archiving facilities, select the **Browser** icon followed by the **Tools** menu - **Database Maintenance - Archive Designs**. This will cause the Ethos Browser Archive Wizard form to appear. Follow the on screen instructions to create an archived database.

Important Note – This is an Archiving device not a back-up device, Designs should be backed up before using this feature.

Archive Type
You must decide what criteria you will use when you archive and whether you want to create a new browser file.

Create new Browser – This causes a new browser to be created on the archive drive. This is a useful option to use if you wish to compile a CD of designs from your current browser.
Move the files without creating a new Browser - This option will cause the designs to be moved without creating a new browser.

What Criteria would you like to use?
Select the type of criteria you would like to use to archive your designs.

Date - This is used to specify a range of dates of designs to archive.
Design Name – This allows you to specify a range of names.
Category and Customer – This allows you to archive designs of one or more Category or Customer respectively.
Folder - This allows you to select all designs in one or more folders.
Archive Everything - is used to archive the whole database to a new location. This is a useful option to use if you have designs stored in many folders and would like to organise them into one physical location.

Check to keep Designs in the Current Browser - This option should be activated if you do not want to delete the designs from the current database. Activate this option if you are backing up current designs or if you are compiling a CD but still want to access the files from your hard drive. Once you have selected the Options you require click Next to proceed. The form that next appears will depend on which archive criteria was chosen.

Select Date/Design Name

If you selected Date or Design Name as the criteria to use for archiving you will see the Select Date or Select Name Range to Archive form.

These two pages are very similar except that one allows the user to select a date range and one allows a selection of name ranges. The first choice on each page is to archive a selection of designs by date/name. This option is useful if you wish to archive the oldest (or most recent) designs in your database. The final three options allow you to select a range of dates/names to archive. If you select Archive designs between two inclusive dates/names then you must select a start and end date/name. If you select Archive designs before or after a specific date/name then you need only to select one date/name using Start Date/Name.

Select Customers/Categories/Folders to Archive

If you selected customers, categories or folders then this page allows you to select the particular customers, categories or folders you wish to archive. To select a single item click on it using the mouse.

When you have made your selection click Next. The wizard will then archive all the designs that belong to the selected customers, categories or folders and the Do Archive Form will appear.

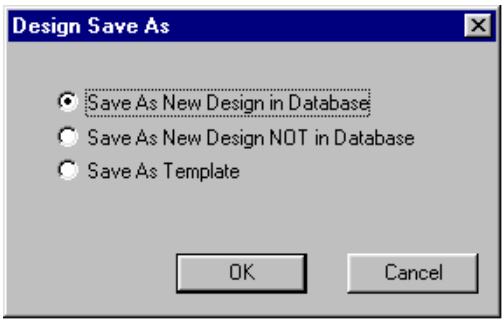
Saving Designs

Saving Designs

Designs can be saved by selecting either:

Design menu **- Save** - Used when a design is being saved for the first time or if you wish to overwrite an existing design of the same name.
or
Design menu **- Save As** – Used when you wish to save the design with a new name **AS** a new design.

If a design is saved for the first time, regardless of which save option is chosen, the Design Save As form will appear:

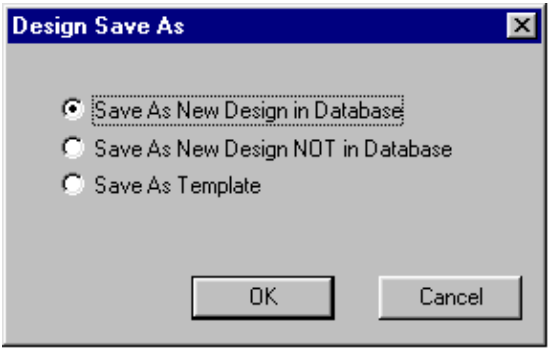


Once a design has been saved, this dialog will not re-appear if the **Save** option is chosen.

Save as New Design in Database

This option allows a design to be saved using the **Design Browser**. If the file is being saved for the first time, select

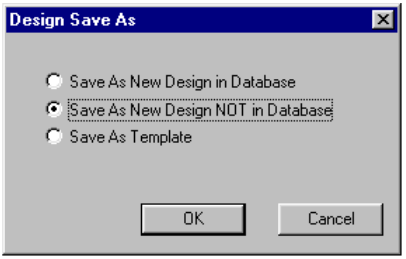
Save from the **Design** menu. On the Design Save As form select the **'Save as New Design in Database'** option.



This allows the design to be saved to the **Browser.**

Save as New Design NOT in Database

This option allows the design to be saved directly to a folder, directory or disk without using the **Browser**.

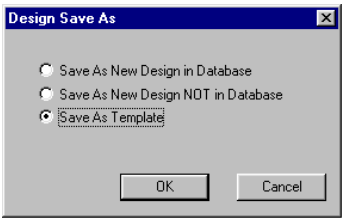


Select the '**Save as New Design NOT in Database'** option and the design will simply be saved as a file.

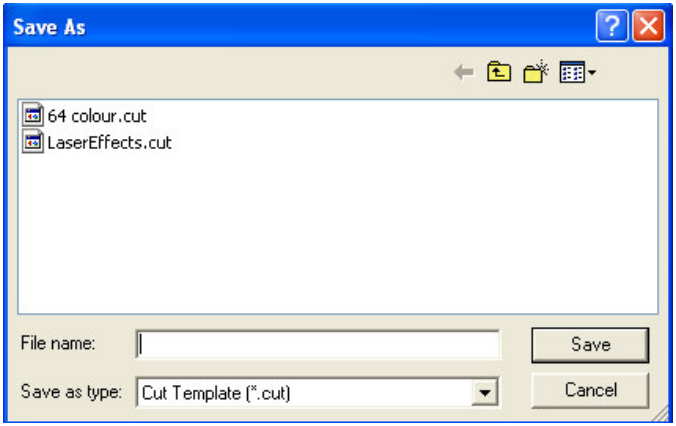
Save as Template

Allows a design to be saved as a template which can then be

used as a basis for importing future designs.



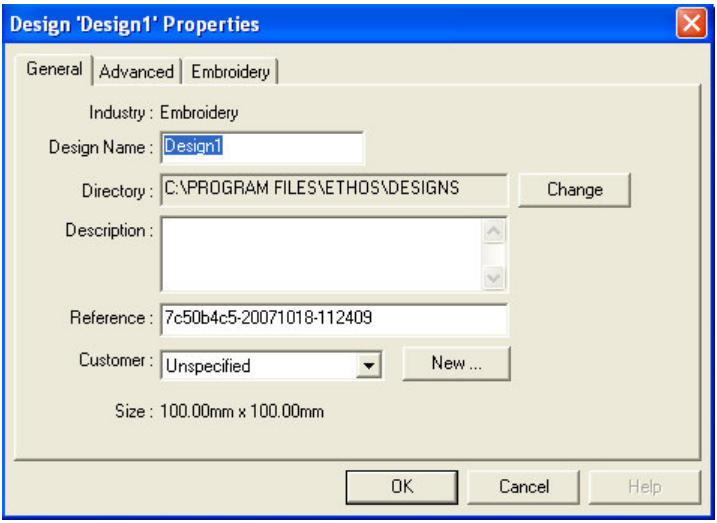
Select the **Save as Template** button and the following dialog will appear:



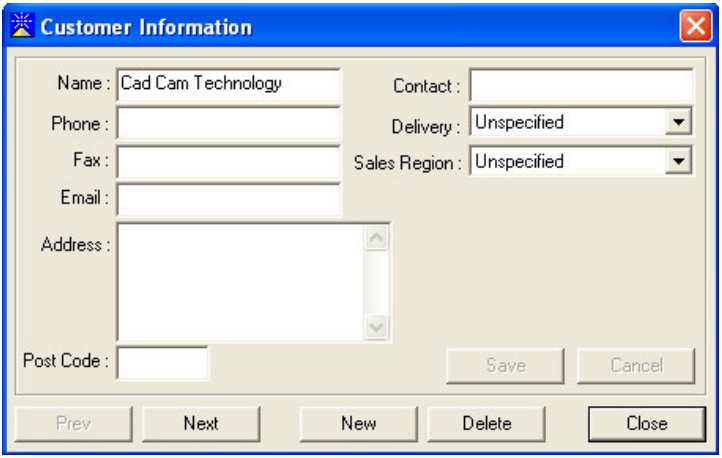
The design can then be saved as a template.

Adding New Customers as a Design is being Saved

When designs are saved to the Browser the **Design Properties** form is displayed. Select the **New** box to add a new customer.



The Customer Information form will appear.

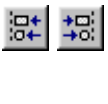


Complete the form with your relevant customer information and select **Save** to add the new customer to the customer list.

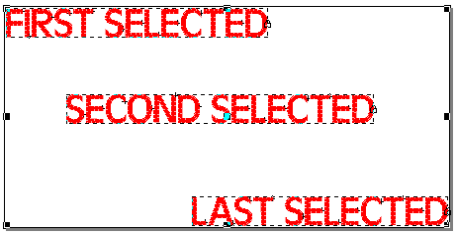
Select **Close** to return to the **Design Properties** dialog.

Design Layout

Align

In order to use the Align tools select the objects that are to be manipulated and then select the appropriate **Align** icon 
or select the **Edit** menu – **Placement - Align**. The following variations are available:

Original design with all blocks selected in the order listed e.g. The 'First selected' was chosen first, the 'Last selected' was chosen last.



Original design after **Align Left** icon has been selected. All selected items have been aligned to the left hand edge of the item that was selected last.

Original design after **Align Right** icon has been selected. All selected items have been aligned to the right hand edge of

the item that was selected last.

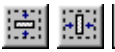
Original design with all blocks selected in the order listed e.g. The 'First selected' was chosen first, the 'Last selected' was chosen last.

Original design after **Align Top** icon has been selected. All selected items have been aligned to the top edge of the item that was selected last.

Original design after **Align Bottom** icon has been selected. All selected items have been aligned to the bottom edge of the item that was selected last.

Note - Many of the placement tools are only active when more than one object has been selected.
To select more than one object hold down the **Shift** key when selecting.

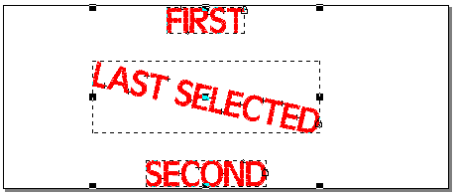
Centre on Last Selection

In order to use the Centre on Last Selection tools select the objects that are to be manipulated and then select the appropriate **Centre on Last Selection** icon  . The following variations are available:

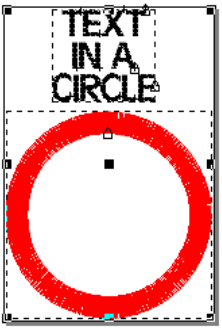
Original design with all blocks selected in the order listed e.g. 'First' was chosen first, the 'Last selected' was chosen last.

Original design after **Centre Selection Horizontally** icon has been selected. All selected items have been centred vertically to the item that was selected last.

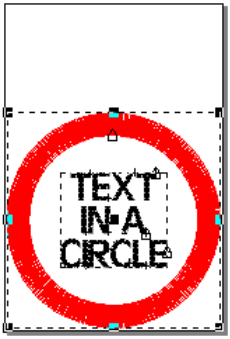
Original design after **Centre Selection Vertically** icon has been selected. All selected items have been centred horizontally to the item that was selected last.



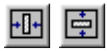
Original design with all blocks selected in the order listed e.g. The 'Text in a circle' was chosen first, the 'Circle' was chosen last.



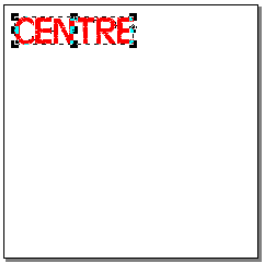
Original design after **Centre on Last Selection** icon has been selected. All selected items have been centred to the item that was selected last.



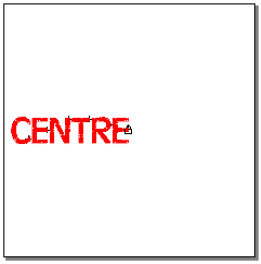
Centre

In order to use the Centre tools select the objects that are to be manipulated and then select the appropriate **Centre** icon 
or select the **Edit** menu – **Placement - Centre**. The following variations are available:

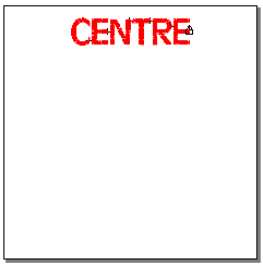
Original design with a block selected.



Original design after **Centre Vertically** icon has been selected.



Original design after **Centre Horizontally** icon has been selected.



Original design after **Centre Vertically** icon and **Centre Horizontally** icon have been selected.

Evenly Space

In order to use the Evenly Space tools select the objects that are to be manipulated and then select the appropriate **Evenly**

Space icon or select the **Edit** menu - **Placement - Space**. The following variations are available:

Original design with all blocks to be evenly spaced selected.

Original design after **Evenly Space Vertically** icon has been selected.

Original design with all blocks to be evenly spaced selected.

Original design after **Evenly Space Horizontally** icon has been selected.

Join

In order to use the Join tools select the objects that are to be

manipulated and then select the appropriate **Join** icon or select the **Edit** menu - **Placement** - **Join**.

Original design with all blocks to be vertically joined selected.

Original design after **Join Vertically** icon has been selected.

Original design with all blocks to be horizontally joined selected.

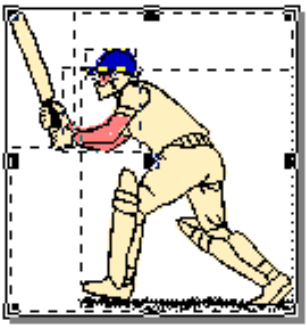
Original design after **Join Horizontally** icon has been selected.

Flip

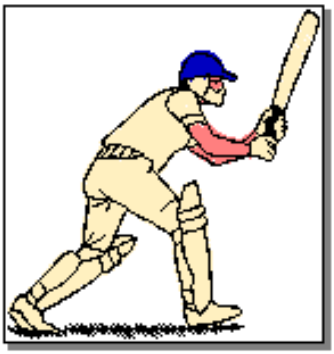
In order to use the Flip (mirror image) tools select the objects that are to be manipulated and then select the appropriate Flip

icon or select the **Edit** menu - **Placement** and choose the appropriate **Flip** option. The following variations are available:

Original design with all blocks selected.



Original design after **Flip Horizontally** icon has been selected.



Change Size

Change Width

Original design with objects selected. They will be manipulated in relation to the last item that was selected.

Original design after **Make Same Width** icon has been selected. All selected items have been made the same width as the item that was selected last.

Change Height

Original design with objects selected. They will be manipulated in relation to the last item that was selected.

Original design after **Make Same Height** icon has been selected. All selected items have been made the same height as the item that was selected last.

MinMax to Same Size

Original design with objects selected. They will be manipulated in relation to the last item that was selected.

Original design after **Make Same Size** icon has been selected. All selected items have been made the same size as the item that was selected last.

Cutting

Cutting a Design

To send a design to your cutter, select the **Output** menu **- Cut Design**, alternatively select the **Output Design** icon .

Note - If no Material Manager has been set up then the **Material Manager Properties** dialog is displayed which allows you to set up a new Material Manager.
Provided a Material Manager has already been set up for that cutter, the **Output Setup Details** dialog will be displayed.

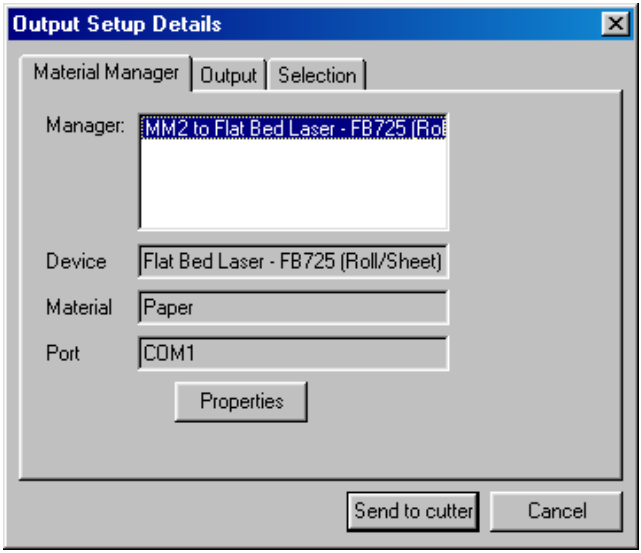
This is the final stage before your designs are committed to the cutter.

There are three tabs on this form:

Material Manager
Output
Selection

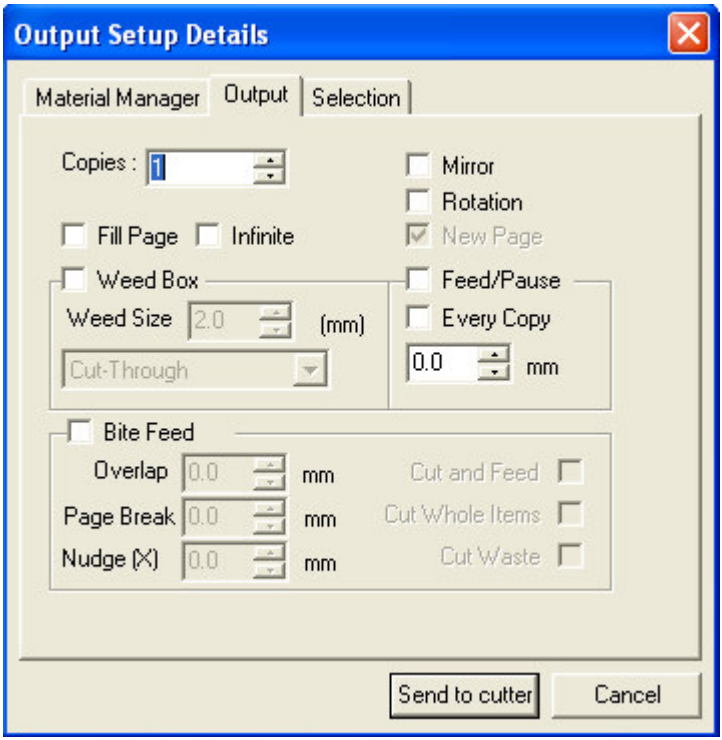
Material Manager Tab

The following explains the features of the Material Manger form.



Manager - A reminder of the title of the **Material Manager** sheet.
Device – The Cutter to be used.
Material – The material to be cut.
Port – The port connected to te cutter.
Properties - This will display the **Material Manager Properties** form for information only. You cannot edit this dialog from here.
Send to Cutter - Sends the data directly to the cutter.

Output Tab



Copies - The number of copies to be cut. If the cutting area on the material is not large enough to fit all of the copies, then once the area is full, the cutter will automatically be thrown off-line and a screen prompt will appear requesting you to insert new media. This will continue until all of the copies have been cut.

Fill Page - Fills the entire area with as many copies as possible. The number of copies cut will be counted and displayed on the screen once the cutter has finished.

Weed Box - Cuts a box around each design or object(s) cut, dependant upon the options chosen in the **Selection** tab.

Weed Size - The margin allowed between the extents of the nesting area and the weed box.

Mirror - Flips the design over to cut in reverse.
Rotation - This is a three state button.

Off (no tick) - Leaves the orientation of the design as it is on screen.
On (tick) - Rotates the design by 90 degrees.
Grey (tick) - Leaves ApS-Ethos to determine the most economical way to cut.

New Page - This determines whether a new Material Manager is used.

Off (no tick) - Continues to use the existing Material Manager. Each time a design is sent to the cutter, it will be positioned in the next available area on the sheet/roll.
On (tick) - Creates a completely new Material Manager and resets the cutter origin to zero. If a roll feed mechanism is attached, the material will automatically feed on to the end of the extents already cut. If no roll feed mechanism is attached, then the cutter will automatically be taken offline, and wait for a new sheet to be loaded.
The following dialog will display :

Grey (tick) - Behaves as 'on' above but does not feed the roll or take the cutter off line.

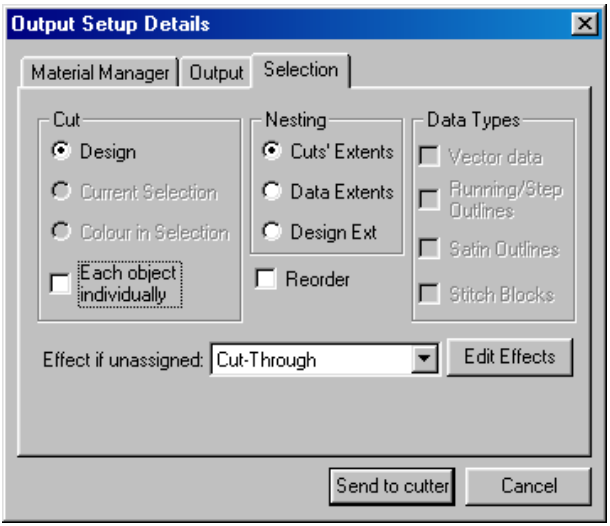
Feed/Pause - This is determined after the data is sent to the cutter.

On (tick) - Automatically feeds the material to the end of the area after cutting. Or if no roll feed mechanism is attached, then the origin will be reset to the end of the area already cut.
The value put in this box (in millimetres) adds that distance to the amount of material to be fed after the cutting is finished.

Send to Cutter - Sends the data to the cutter.

Selection Tab

If any objects are selected when the **Output Design** option is selected from the **Output** menu the Selection tab will automatically be displayed.



This enables you to select which areas of the design are to be cut and how they are spaced in relation to the entire design size on the material.

Cut Section

Design - Cuts the entire design (excluding any objects assigned with the 'Don't cut' effect)

Current Selection - Cuts only the objects in the design which have been selected. If no objects are selected, then this option will not appear in the list.

Colour in Selection - Will cut every object the same colour as that selected. This option will only appear if the object(s) selected are of a single colour.

Each Object Individually - This button will separate each object and cut them individually, thus losing the spacing and relationship of the objects to each other, but possibly saving material.

Nesting Section

Cuts Extents - The area to the extents of the objects to be cut.

Data Extents - The area covered by all of the objects in the design regardless of whether they are to be cut.

Design Ext - The area covered by the entire design, allowing for margins and areas of the design where no data appears.

Effect if unassigned - The effect to be used on all data to be cut which does not have any effects assigned to it. The effect displayed is the default effect selected in the **Material Manager**. This can be changed at this stage to suit data you are about to cut.

Edit Effects - This button will take you to the Material Effects setup dialog enabling material effects to be created or edited.

Data Types Section

Vector Data – Not applicable to Vector Drawing.

Running/Step Outlines – Not applicable to Vector Drawing.

Satin Outlines – Not applicable to Vector Drawing.

Stitch Blocks – Not applicable to Vector Drawing.

Re-Order Cut Path

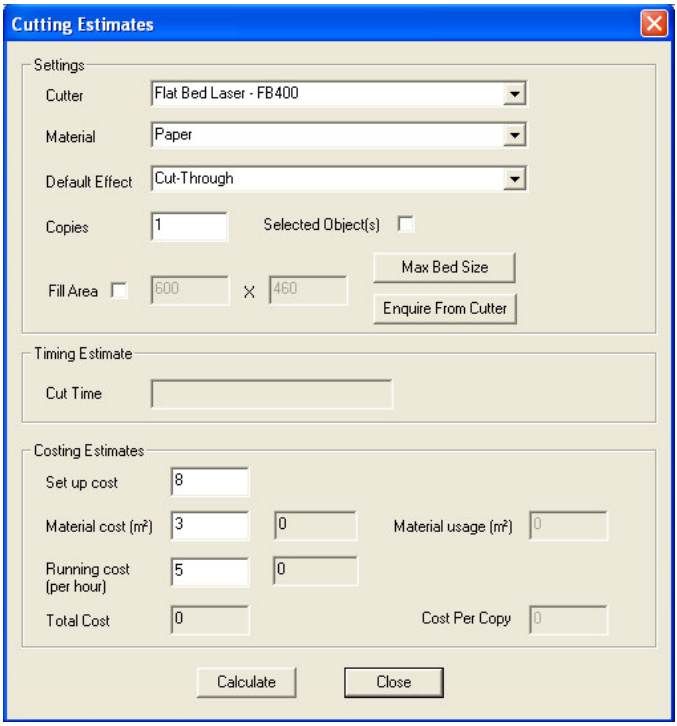
This tool allows you to re-order the cutting path or order that occurs on a design. This is particularly useful as it minimises the cut time, because the movement with no cut jumps is reduced.
To use this feature select the outlines to be re-ordered followed by the **Edit** menu **– Re-Order – Re-Order Cut Path.** The following form will appear.

If Yes is selected then all the areas selected will be re-ordered.

Cutting Estimate Tool

The Cutting Estimate tool will provide an **estimate** of the time taken and cost of cutting a vector design. Once a cutting design has been loaded select the **Output** menu - **Cutting Estimate**.

A Cutting Estimates form will appear allowing basic values to be entered.



Settings
This shows the basic settings from which the timing calculation is made. The **Cutter, Material** and **Default Effect** should be set to match the output when the cut is made (they appear on the **Device and Material** tab of the **Material Manager Properties** form at output time).

If you are cutting a known number of copies then you should enter this value into the **Copies** box.

If you are only cutting a selection of items then you need to have selected these items before using this feature and then tick the **Selected Objects** box.

If you are filling a media area with an unknown number of copies then you need to tick the **Fill Area** box. The 2 values next to this are the width and height, in mm, of the area to be

filled. The default is the maximum bed size of the laser. To enquire the current media area of the cutter you will need to press the **Enquire from Cutter** button. The width and height values will then show you the new area. Pressing the **Max Bed Size** button will reset these values to the default area.
Note - If you have reset your media area then you will need to delete the previous media manager before pressing the **Enquire from Cutter** button.

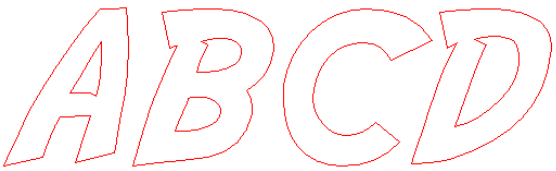
Costing Estimates
This part of the form allows you to set the costing parameters. Here you can enter the following:

Set up cost - This is the one off cost of setting up the design.

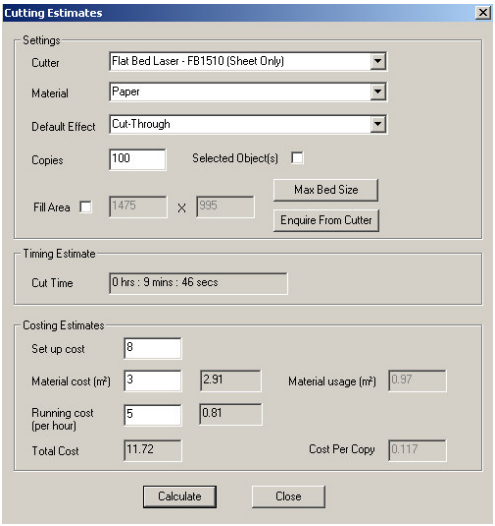
Material cost - This is in square metres. If you only have a square yard cost then multiply it by 1.2.

Running cost per hour - This value should include such costs as operator costs, general maintenance of the equipment and so on.

When the required values have been entered select the **Calculate** box. Here is an example of some 50mm text.



Calculation for 100 copies



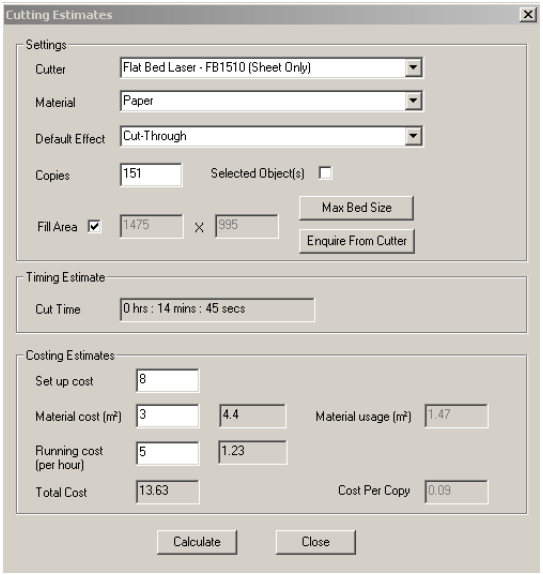
Cut Time - 9 mins and 46secs

Material cost - 2.91
Material usage 0.97 (square metres)

Running cost - 0.81

Total Cost - 11.72
Cost per copy - 0.117

Calculation for a full bed area.



Copies - estimated as 151

Cut time - 14 mins and 45 secs

Material cost - 4.4
Material usage 1.47 (square metres)

Running cost - 1.23

Total Cost - 13.63
Cost per copy - 0.09

Auto Sheet Nesting

Overview

The Auto Nesting Option is **not** a standard feature of the ApS-Ethos Software it an option that may be added to certain levels of the Software.

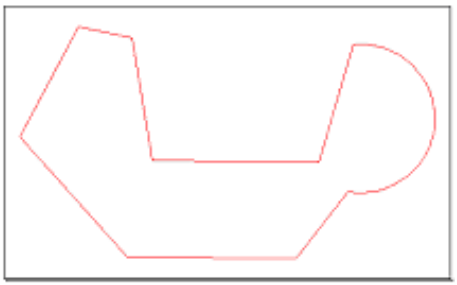
The **Auto Sheet Nesting** option allows one or more shapes to be fitted, with minimum wastage, to one or more rectangular sheets. The results of the nesting program can then be used for output to a CCT laser cutter or exported to other file formats such as DXF.

Main Features

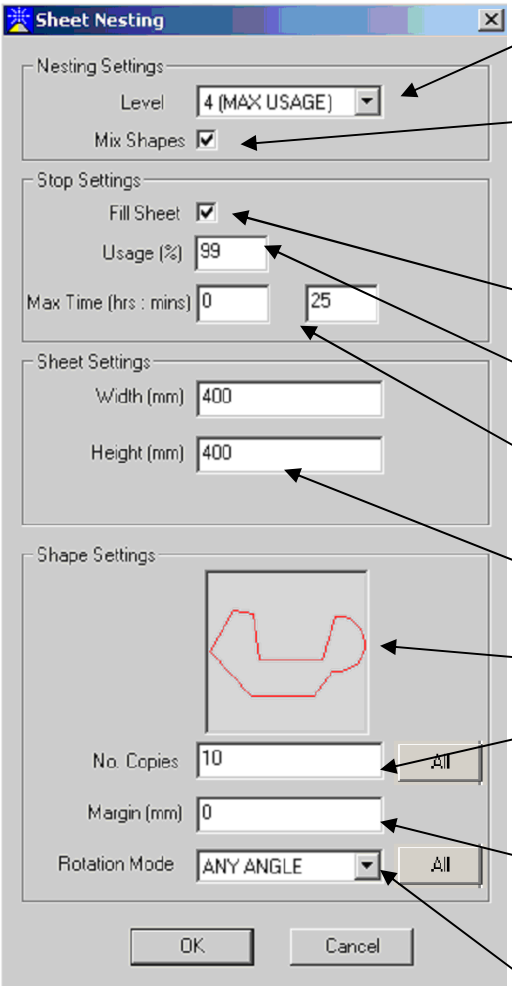
- Uses several passes for quick fit testing through to exhaustive fitting. The level of analysis can be controlled by choosing one of 4 levels, where level 4 is the most comprehensive.
- Allows sheet size to be specified.
- Fit-to-sheet option available where the analysis will fill a sheet with one shape.
- Allow the margin between shapes to be specified.
- Allows parameters for each shape to be set including number of copies and rotation limitations.
- Time out facility which will stop the analysis after a specified time, the system will present then best fit so far.
- Good usage threshold above which the analysis will stop (for example usage above 95% may be good enough so further processing would not be required).

Using the Auto Sheet Nesting Option

The first step is to load a design shape to be fitted. The option can then be found in the **Output** menu **– Nesting** – **Auto Sheet Nesting.**



When selected a settings form will appear.



Level of fitting 1 to 4.

Mix shapes (only relevant when more than one shape is being fitted.)

Fill sheet option

Stop if this usage attained.

Maximum processing time.

Sheet size.

Shape graphic.

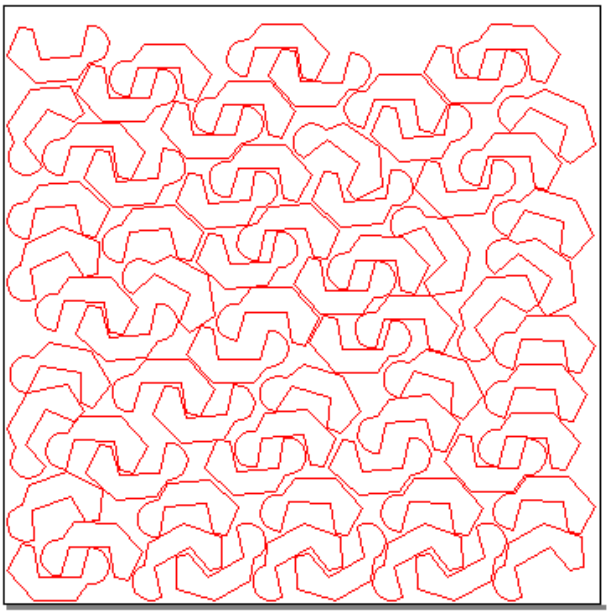
Number of copies, not used if fill sheet option on.

Minimum distance between shapes.

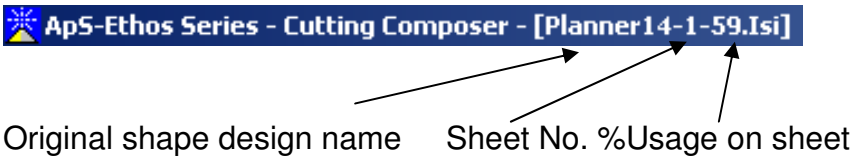
Rotation allowed. (Use ALL buttons to set values for all the shapes).

Pressing OK will then start the processing. A progress form will be displayed showing the analysis being performed. Once the process has finished a form is shown with the time taken.

Pressing OK will clear this to show the resulting sheet/sheets.

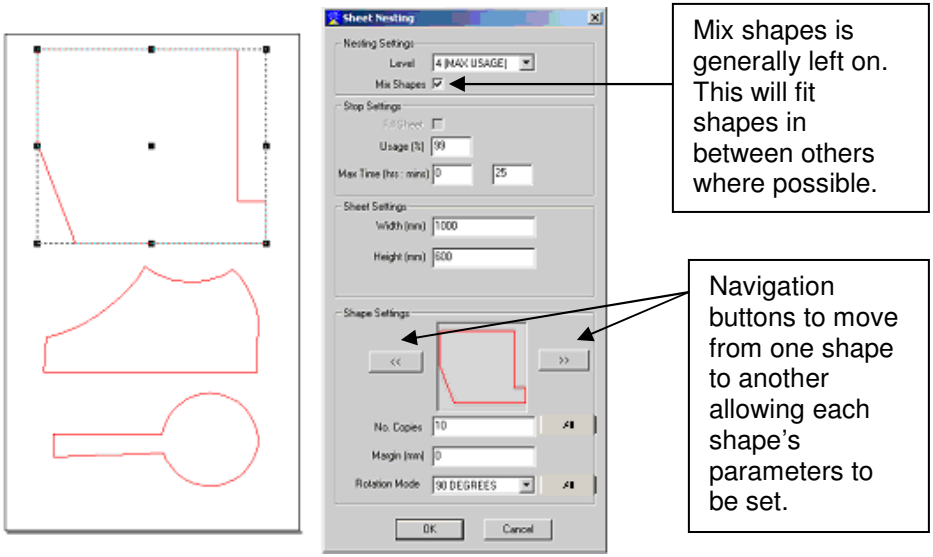


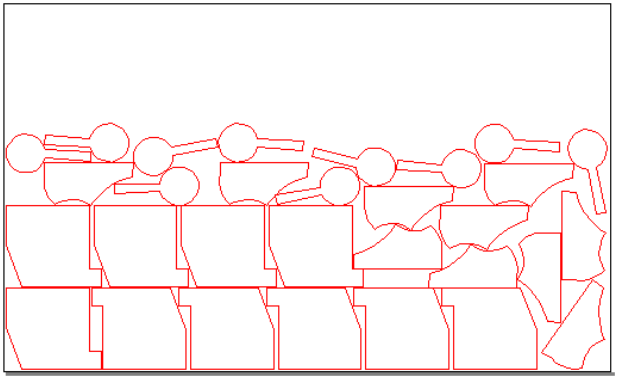
The sheets created by the process are normal Ethos designs and can be edited and saved as normal. Each one is named after the original shape design. In this example the original shape was called Planner14.



Fitting Multiple Shapes

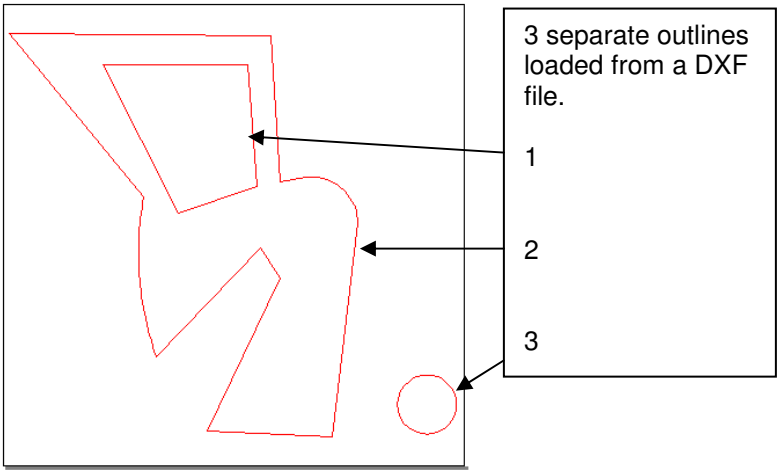
The process for fitting multiple shapes is almost the same except that the number of shapes required must be specified (there is no fill sheet option).



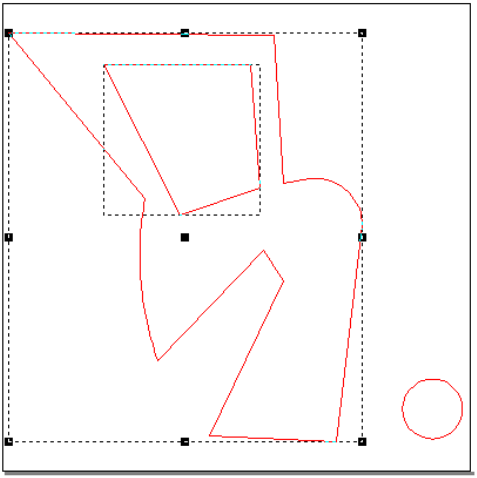


Dealing with Shapes with Holes Using Glue Function

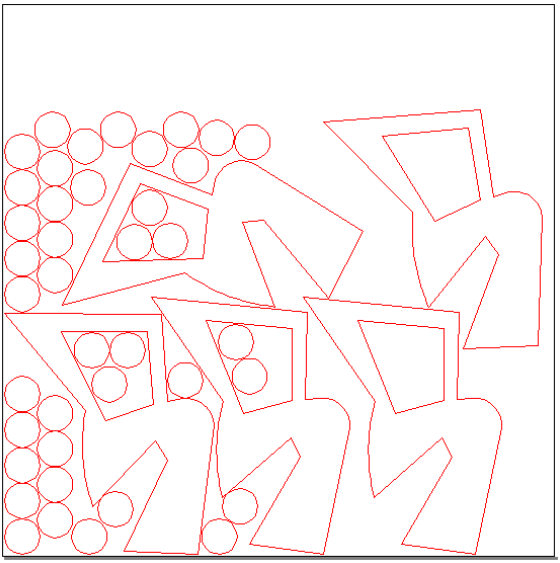
When a design is loaded (for example from a DXF file) the system will treat each outline individually – which is not desirable for shapes with holes. To associate a set of outlines, to be treated as one shape, the **Glue** function needs to be used this can be found in **Output** menu **– Nesting – Glue** before the nesting program is used. This will 'glue' all the selected outlines together forcing the nesting program to treat them as one shape.



Select the main shape and it's hole (drag a selector box around them).



Next select the **Output** menu **– Nesting - Glue.** The 2 outlines will then be treated as one object, the smaller outline being the hole in the larger one. When the fitting process occurs the small circle can be fitted into the larger shape's hole.



Optimising the Fitting Speed Using Rotation Control.

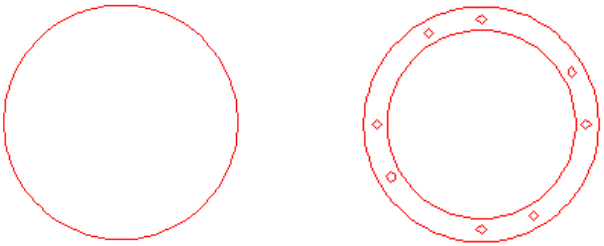
The fitting analysis performed by the process can be very time consuming even on high specification PC's. However steps can be taken when setting the fit parameters so that unnecessary work is not performed. This can be achieved by setting the appropriate rotation limitations on the shapes. Each shape can be assigned a rotation parameter which controls the way in which it can be rotated to be placed on the sheet. The settings are as follows.

Any Angle - The shape can be placed at any angle onto the sheet.
180˚ degrees - The shape can only be placed with no rotation or upside down on the sheet (this is useful when considering the weave of material when fitting for textile purposes).
90˚ degrees - The shape can be placed with no rotation or with a rotation of 90, 180, and 270 degrees onto the sheet.
None - The shape cannot be rotated at all.

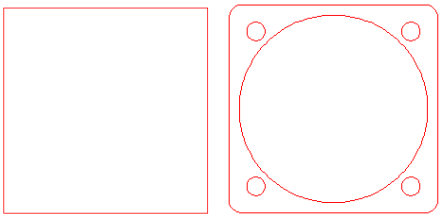
Below is a **guide** to the kind of rotation settings which should be used when assigning parameters to the shapes.

Circular Shapes

Circular shapes will not benefit from any kind of rotation when fitting. So it is recommended that the rotation setting is set to **None**.

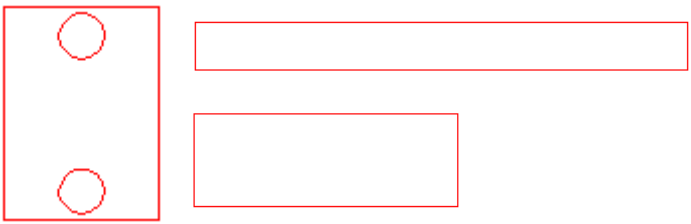


Square Shapes



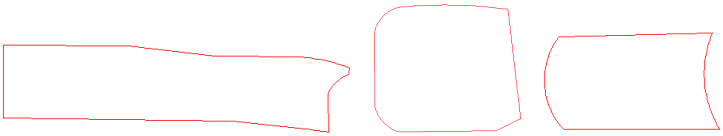
These shapes will not benefit from rotation at 90˚ or 180˚ degrees. Generally when fitting to a rectangular sheet they should be fitted with **None** or **Any Angle** (the latter taking much more time).

Rectangular Shapes



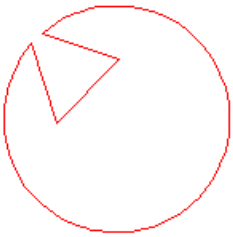
These shapes will not benefit from just 180˚ degrees fitting. Generally when fitting to rectangular sheets a **90˚degree** rotation will produce good results. If processing time is not a problem then **Any Angle** can be used.

Rectangular-Like Shapes

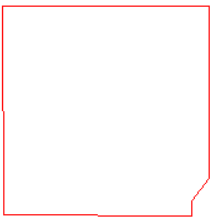


These types of shapes are not regular geometric shapes but are close to being rectangular. In these cases the fitting process can be speeded up by selecting the **90˚ degrees** mode. If time is not a factor the **Any Angle** can be selected. They should be classed in the same way as the **Rectangular Shapes** above.

This principle can also be extended to other shapes as shown below:



Circular-Like



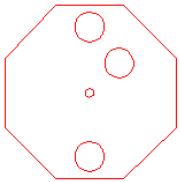
Square-Like

To increase the fitting speed even more, and still produce good results, some shapes which look highly irregular can still be classified so allowing for a rotation mode to be set.

Rectangular-Like

Multi-Sided Regular Shapes.

The rotation mode will usually depend on the number of sides and how rectangular-like the shape is

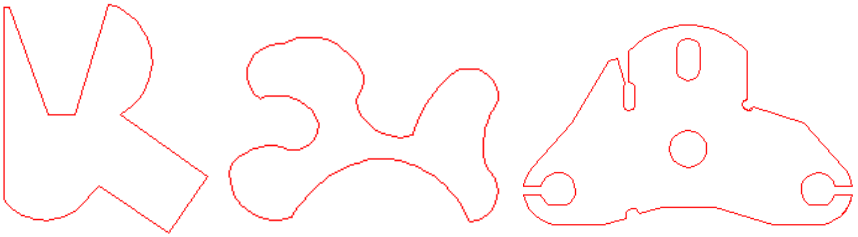


None or **Any Angle**

90˚degrees or **Any Angle**

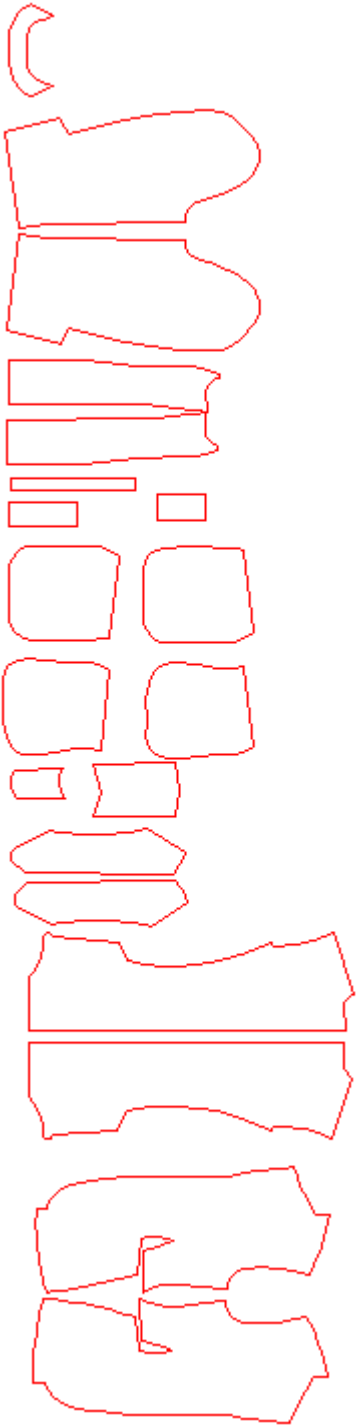
Irregular Shapes

The best rotation mode for these types of shape will be **Any Angle**.



Examples

Example 1 – Textile Shapes



4 copies, ANY ANGLE (*irregular shapes*)

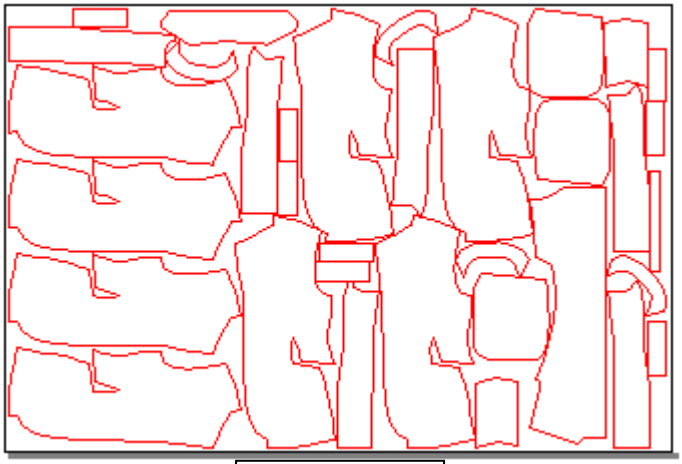
4 copies each, 90˚ DEGREES (*rectangular-like*)

16 copies each, 90˚ DEGREES, (*rectangular*)

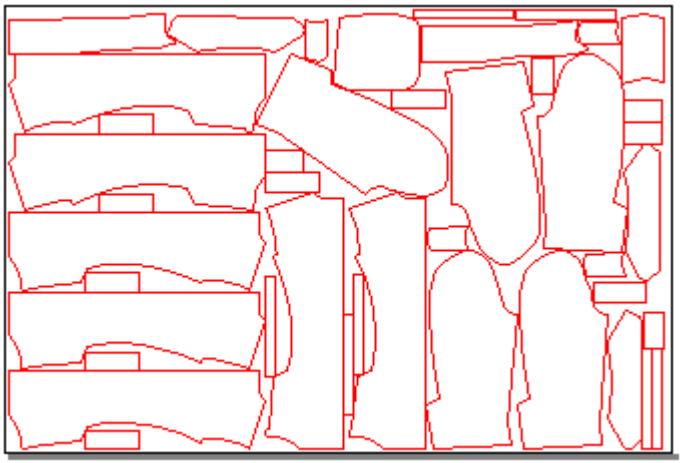
4 copies each, 90˚ DEGREES (*rectangular-like, for speed.*)

Sheet Size - 1500mm (wide) x 1000mm (height)

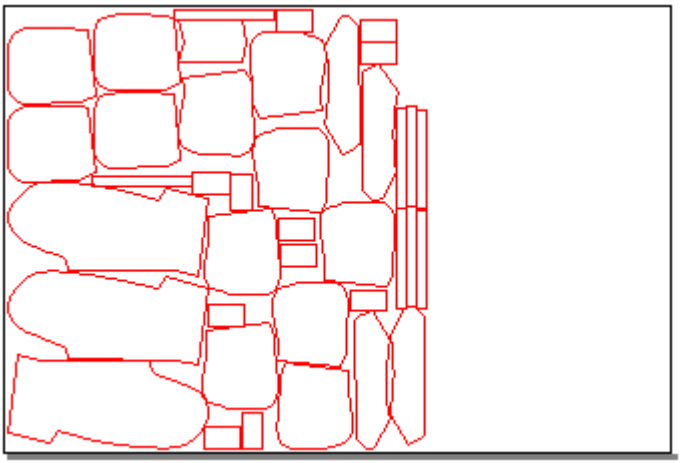
Fitting Time – 13mins 15sec.



Usage - 79%

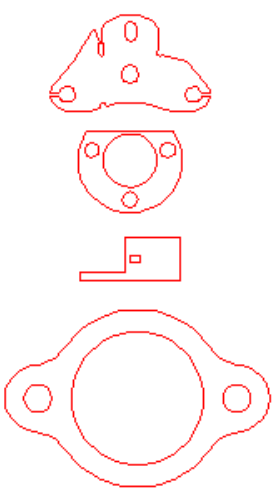


Usage - 81%



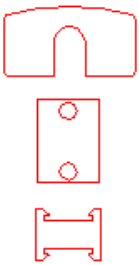
Usage - 50%

Example 2 - Mechanical Parts Example (A)
The shapes for this example were loaded from a DXF file, the **Glue** tool was then used to associate the outer shapes with their holes.

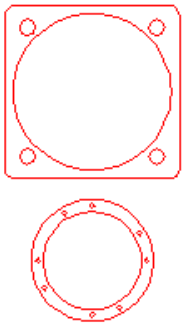


10 copies each, irregular shapes, ANY ANGLE

10 copies, multi-sided regular shape, NONE (no rotation for speed).



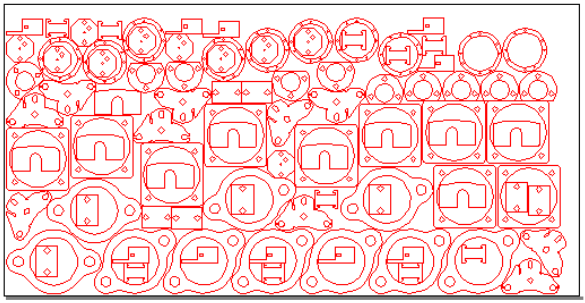
10 copies each, rectangular like, 90˚DEGREES



10 copies each, squares and circles, NONE (no rotation).

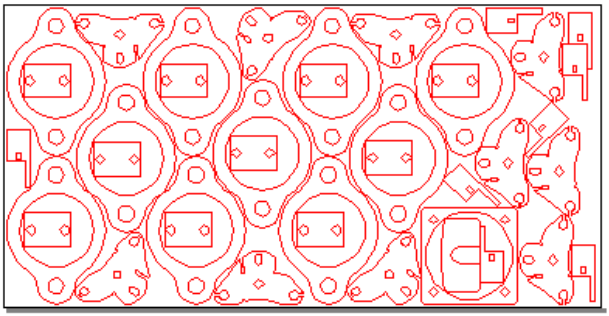
Sheet Size - 1500mm (wide) x 750mm (height)

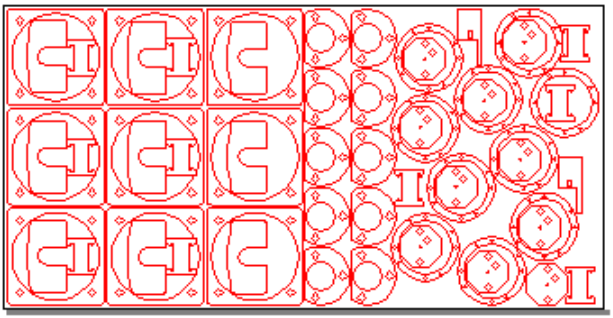
Fitting Time – 11mins 30sec.



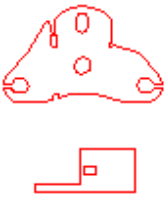
Sheet Size - 1000mm (wide) x 500mm (height)

Fitting Time – 12mins 10sec.

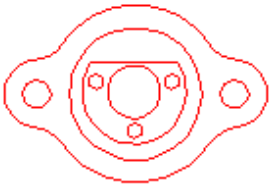




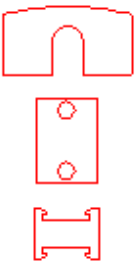
Example 3 - Mechanical Parts Example (B)
This example uses the same shapes as *Example 2* above except the **Glue** tool has been used to bind shapes together which obviously fit inside each other. This will speed up fitting and produce a better result.



10 copies each, irregular shapes, ANY ANGLE



10 copies, irregular shape, ANY ANGLE. This is 2 shapes, one shape placed inside the other, then both were selected and the *Glue* function used to bind them together.

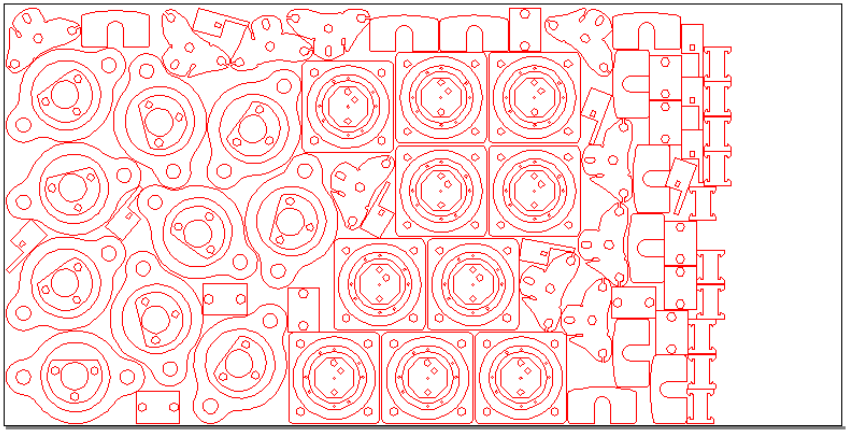


10 copies each, rectangular-like, 90˚ DEGREES

10 copies, square shape, NONE (no rotation). There are 3 shapes here, placed inside each other, then all were selected and the *Glue* function used to bind them together.

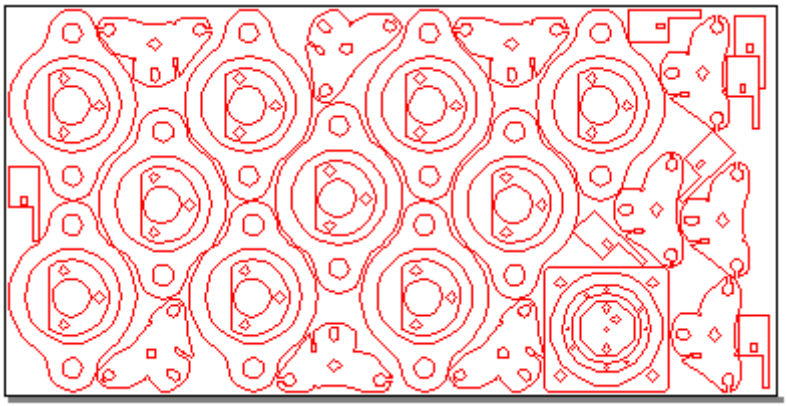
Sheet Size - 1500mm (wide) x 750mm (height)

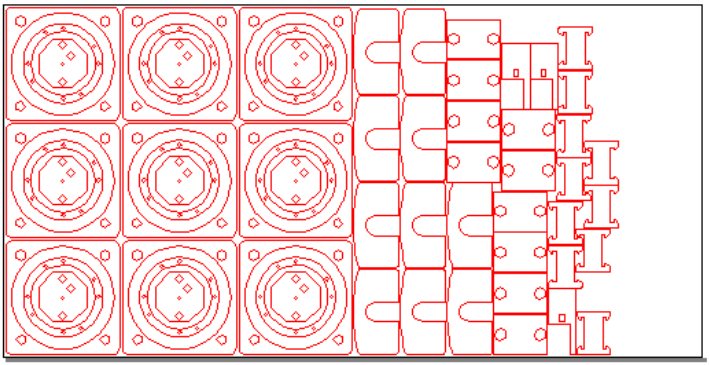
Fitting Time – 8mins 46sec



Sheet Size - 1000mm (wide) x 500mm (height)

Fitting Time – 5mins 55sec





Output

The **Ethos Cutting** modules have in-built features which will allow the sheets to be directly output to the **CadCam Technology** laser cutters. Each sheet is set up to have the default cutting effects available, such as *cut-through* and *engrave*. All that is required is that the appropriate effect be assigned for output – this is simply a case of selecting everything and then assigning the right effect.

Alternatively the sheets can be saved as DXF files for use on other systems, this option can be found in the **Design** menu **– Export.**

Hardware Considerations

All the examples shown in this user guide have been performed on an Intel *Pentium 4 1.8 GHz with 512mb of RAM*. This is the baseline recommendation for the nesting feature. Slower processors or less RAM will produce much slower results. For example an *Intel Celeron 800MHz* processor is considerably slower, taking 2 to 3 times as long to produce the same results.

Controlling the Cutter with Material Effects

Material Effects Overview

Material effects are used to control the cutter. They can control the speed, power and number of passes, and if required, can be related to specific materials. Material effects are automatically applied to designs as they are cut, unless a Material Effect has been **assigned**.
'Assigned Material Effects' overrides the **default Material Effect** selected in the **Material Manager**.

Material Effects when using Vinyl Cutters

When using a vinyl cutter, only the speed and number of passes are important. These controls can be used to:

- Slow down the cutting speed (only possible if the speed of your cutter can be controlled by software).
- Specify areas of the design which are not to be cut, for instance vehicle outlines, annotations or dimensions. This is achieved by assigning a 'no cut' effect to those objects within the design. No cut is simply a material effect with no passes.

Material effects can be applied:

At the time of cutting - any objects or designs with no **Material Effect** assigned will automatically use the effect selected on the Selection Tab of the **Cutting Output** form.

- Directly assigned to the design. This is used when different effects are to be assigned to a single design. The assigned effects can then be saved with the design avoiding the need to re-assign the effects next time the

design is cut.

Material Effects when using FB Laser Cutters

Material effects are extremely important when cutting materials on the FB Laser Cutting System. They control both the quality and depth of cut by setting the cutting speed, number of passes and power output of the laser. Material effects can be assigned to and saved with each design.

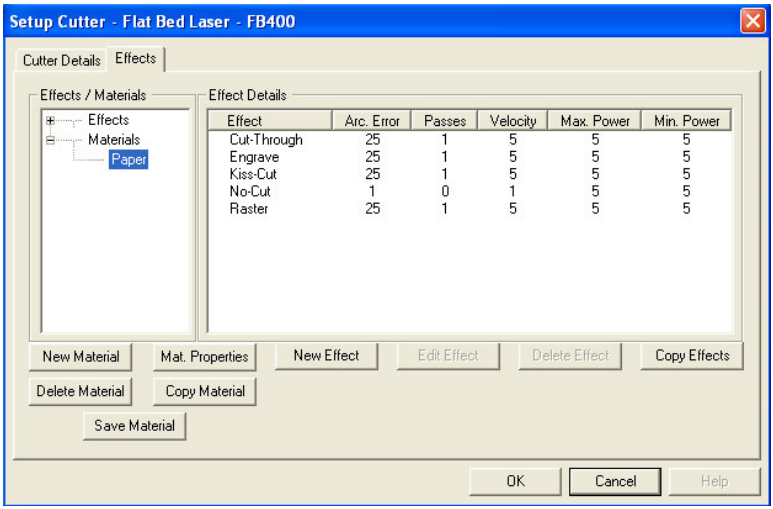
Note - If the entire design is to be cut using the same effect, it is not necessary to 'assign' effects to that design. All objects in each new design are automatically marked with an 'unassigned' effect. All unassigned data will be cut using the effect selected on the Selection Tab of the **Cutter Output** form.

Note - Material effects are specific to each laser cutter. For instance, the settings necessary to cut a material on a 25 watt system would be quite different to those on a 10 watt.

Creating Material Effects

Material effects can be created and edited at any time. They are created by selecting the **Cutter Setup** option from the **Design** menu. Material effects are created for each cutter, therefore you must select the cutter from the combo list and then select the **Effects** tab on the **Cutter Setup** dialog.
Important Note - If an existing material effect is changed, then the new settings will be used on all designs which have previously been assigned and saved with that effect.

Effects
This form allows materials and related effects to be created and edited.



ApS-Ethos will already contain some standard material effects for both vinyl and laser cutters.

Effects can be created by either 'Effect' or 'Material'. For instance, you can create or select an effect and then assign it to a particular material.
Alternatively, you can create or select a material and assign an 'Effect' to it.

The above dialog shows the material 'Paper' to have the following effects:

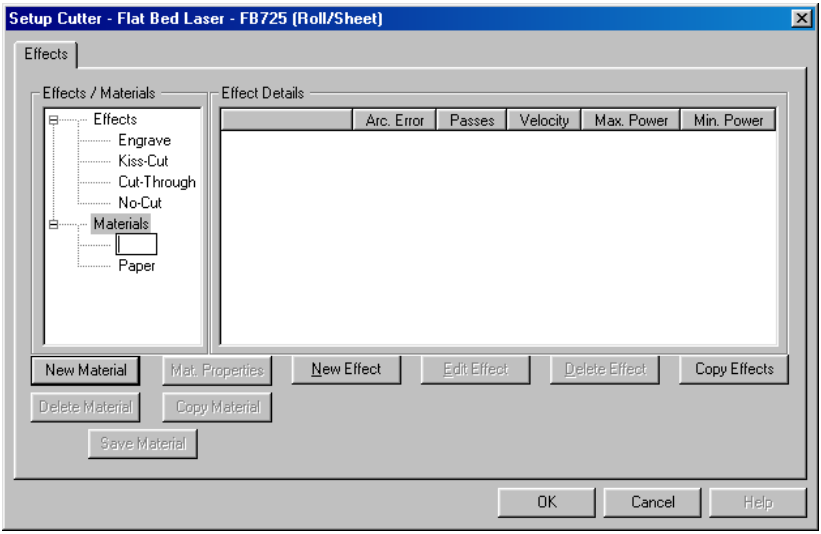
Cut Through
Engrave
Kiss Cut
No Cut
Raster

When an effect or material is selected from the tree control, all

of the corresponding effects are listed in the **Effect Details** table.

Creating New Materials

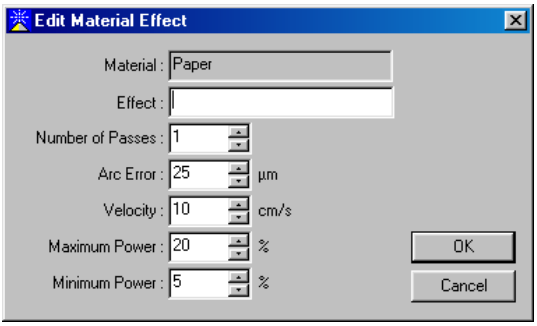
To create a new Material highlight the **Materials** title in the **Effects/Materials** tree control and select the **New Material** button.



A new blank entry will appear under Materials with the flashing cursor. Enter a title for your material and when you press 'enter' the new material will be created.
Once a new material is created, all of the existing effects will automatically be related to that material, using the current settings for 'Paper'. It is now possible to edit the effects to the correct settings for that material.

Creating New Effects

To create a new effect, select the material upon which to apply the new effect then select the **New Effect** button. The Edit Material Effect form will appear.



A new entry will appear in that section with a flashing cursor for you to enter the title.

The material to which that effect is to be associated can either be selected from the material combo list or a new material can be created simply by entering the new material title at the top of the list.

Number of Passes - When cutting thick or difficult to cut materials on the laser cutter it is sometimes necessary for the laser to make more than one 'pass'.

Note - The output from the FB laser systems can vary from one cutter to another and therefore there are no firm rules for the setting of material effects. The information here is given as a guide only.

Arc Error - All curves are made up of very short straight lines. The Arc Error determines the length of those lines. This would not normally need to be changed as the default of 25 usually gives smooth curves on most material. However, it may be beneficial to increase the arc error when cutting thick material

in order to achieve a constant velocity between straight lines and curves. A constant velocity is desirable if an even depth of cut is required.
Velocity - This is the maximum linear speed at which the laser will cut. By reducing the velocity, the depth of cut will be increased. The velocity can be increased/decreased in steps of 1mm per second. The maximum linear speed of the FB laser is 600 mm per second.
Maximum Power - The maximum power output of the laser during cutting. If the cut is too deep, even at maximum speed, then reduce the power. Also, if the cut depth is correct but the cut edge quality could be improved then try reducing both the power and the speed.
Minimum Power - During cutting, the power of the laser is controlled so that the quality of cut remains as constant as possible even when the laser is accelerating and decelerating. When the laser reaches a very slow speed, for instance on very tiny curves, the minimum power setting prevents the power from reducing to below zero. This is the minimum power output the laser will reach.

Once these dialogs have been accepted, then the **Material Effects** will be saved into that cutter driver.

Assigning Effects

Effects should be assigned whenever more than one effect is to be used on a design. For instance you can:

Assign an effect, such as 'no cut' to part of a design. This allows that area of the design to use the assigned effect. The effect selected on the **Selection tab** of the **Cutter Output** dialog will be applied to the remainder of the design.
or
Assign effects to the entire design, using as many different effects as you wish.

Any effects assigned to a design will always take priority over the effect selected in the **Material Manager**.

If designs are saved after effects have been assigned, then the information regarding assigned effects is also saved.

Assigning an Effect to a Design

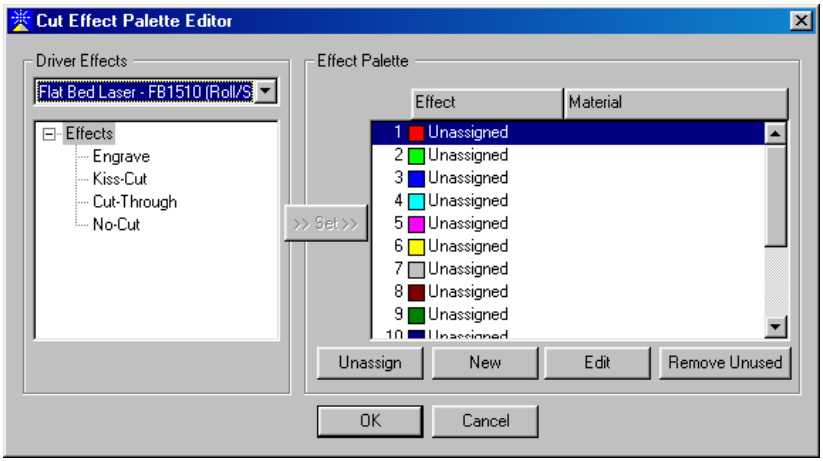
Material Effects are assigned by colour number. Therefore when a material effect is assigned all objects in the design with that colour number will automatically be assigned with that effect.

This option can be selected via the **Edit Cut Effects** icon or by selecting the **Tools** menu – **Edit Cut Effect**:

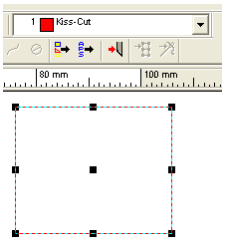
This will display the **Cut Effect Palette Editor** form.

By selecting the **Driver Effect** combo a list of installed cutters will appear. Select the cutter to be used and the Effects tree control will appear in the dialog.

Select effects and then select the effect to be applied. On the effect palette section select the colour the effect is to be assigned to, then select Set.



That colour will then be assigned with the selected effect. Once an effect has been assigned to a colour, then all objects of that colour will use that effect when cut. When objects are selected, the colour and their effect are displayed on the top toolbar.



Any objects selected which have not been assigned an effect will be displayed as 'unassigned'.

Note - All objects with assigned effects will override the default effect in the **Material Manager**.

When designs are saved, the assigned effects are saved with them. Effects are saved as ‘ini’ files in the Materials folder under each cutter. See ***Backing Up User Profiles – Page 36.***

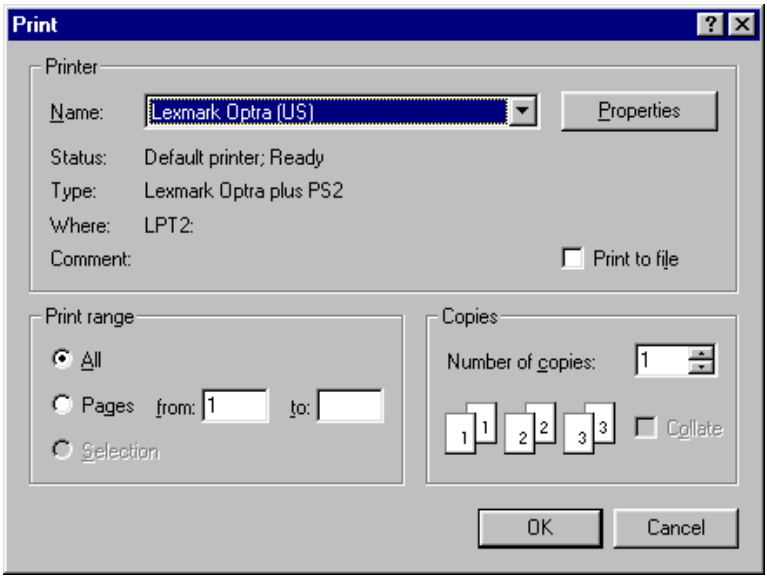
Printing Designs

Print Preview

Choose the **Print Preview** option from the **Design** menu. This gives an on screen likeness of how the printout will appear.

Printing a Design

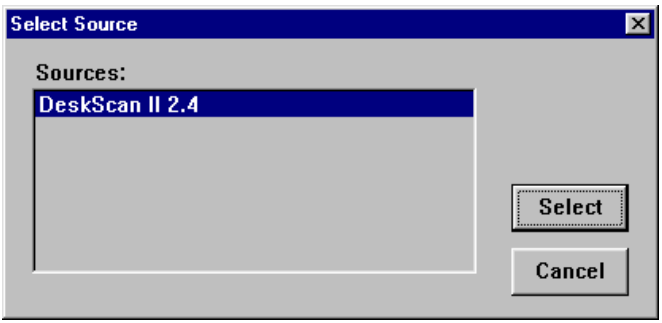
To print a design worksheet, either select the icon or choose the **Design** menu - **Print**. This will cause the following **Print** form to appear.



Working with Images

Scanning an Image

The actual process of scanning will vary according to the scanner being used since it will have its own scanning software. Consequently it is not possible to advise how each scanner may work only how to access the scanning software via the Ethos software.
To scan an image into the design you have created select the **Image** menu - **Scan Image**. This will display the following form.



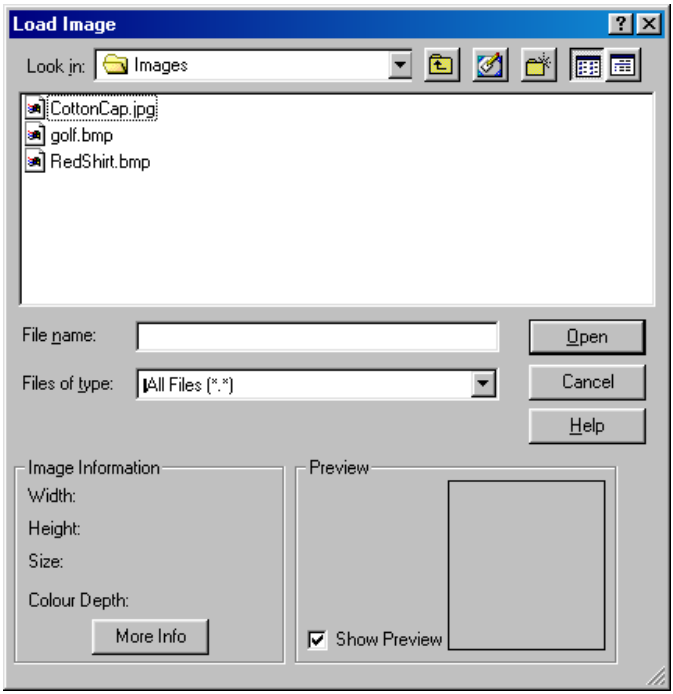
To access the scanning software click on the select button or double click on the scanner named in the list. In general most scanning software will allow you to preview the image you have placed under the scanner and then isolate it, crop it and adjust it further before producing a final scan. When the final scan is completed the design area will return and the cursor will be replaced by a small cross on screen.

To place your scanned image into the design, align the cross into the top left corner of the design and either:
1. Single click the left mouse button
Or
2. Press and keep your finger on the left mouse button and

then move the mouse to reveal a dashed line box. While still holding the left mouse button the box can be scaled in proportion to the required dimensions either to fit the design area created or to a desired scale as displayed at the bottom of the screen in millimetres. The release of the left mouse button will place the image on screen at the specified scale and position.

Inserting an Image

To import an image from another source select the **Image** menu and choose **Insert Image**. The following dialog will appear:



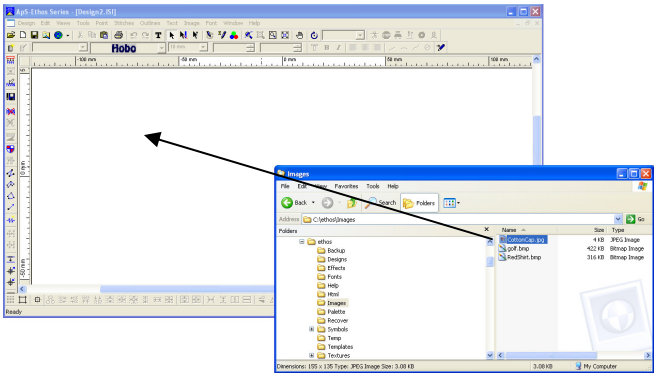
The following explains the function of each box.

Look in - This is where you specify from what source the inserted image is to be taken - in this instance the image is being taken from a 3½ Floppy Disk.
Files of Type - This is where you specify the type of image file you wish to insert - clicking on the arrow next to the box will display the available file types.
To load the image either double click on the file required or single click with the left mouse button to highlight the file and then click on the **Open** button.

To place your scanned image into the design, align the cross into the top left corner of the design and either:
1. Single click the left mouse button
Or
2. Press and keep your finger on the left mouse button and then move the mouse to reveal a dashed line box. While still holding the left mouse button the box can be scaled in proportion to the required dimensions either to fit the design area created or to a desired scale as displayed at the bottom of the screen in millimetres. The release of the left mouse button will place the image on screen at the specified scale and position.

Drag and Drop an Image

It is also possible to drag and drop an image (BMP, JPG, TIF) directly onto the design.



Ethos will receive the image and then display the '**+**' allowing the image to be placed into the design in the standard way.

Vectorising Images – Edge Detect

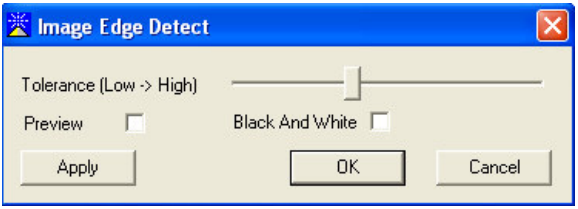
The **Vector Trace** and **Edge Detect** tools found in the **Image** menu **– Vector Trace**, allow quick and easy vectorisation of flat colour images.

To use the Vector Trace option, once an image has been loaded/scanned, select the **Image** menu – **Vector Trace**, two options are available:

Vector Trace
Edge Detect

Vector Trace
When selecting Vector Trace a dropper tool will appear allowing the user to select the specific areas of the image to be converted to Vector data.

Edge Detect
When selecting Edge Detect the whole image will be vectorised automatically. An Image Edge Detect form will appear allowing the user control over the 'vectorisation' process.

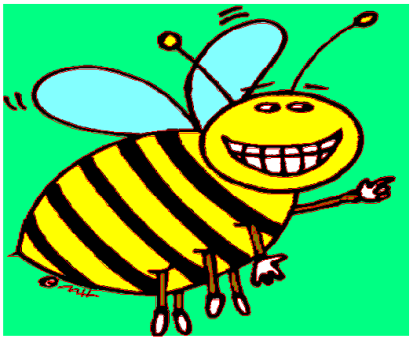


Tolerance - This will determine when a change from one colour to another is detected. Having a ***high*** tolerance will

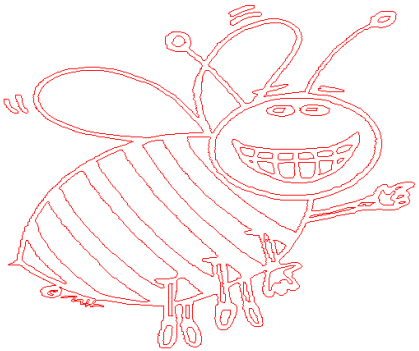
mean areas of similar colours will not be detected while a ***low*** tolerance means the 'vectorisation' will detect the smallest changes in colour to determine the vector edges.
Preview – If ticked, any changes made using the tolerance slider will immediately produce new vectors.
Black and White – This should be ticked if the image is black and white, this will result in faster vectorisation especially on large images.

Select Apply to commence the conversion of the Image to Vectors.

Original Image

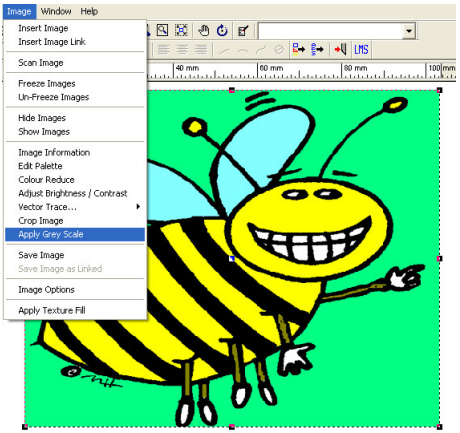


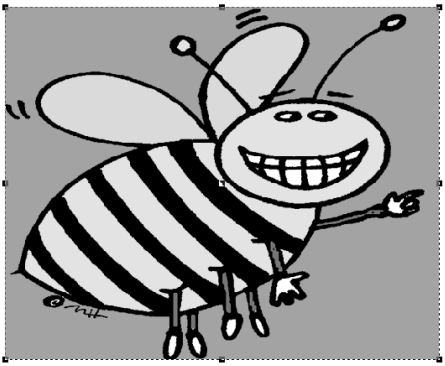
Final Vectors (original image is hidden)



Apply Grey Scale

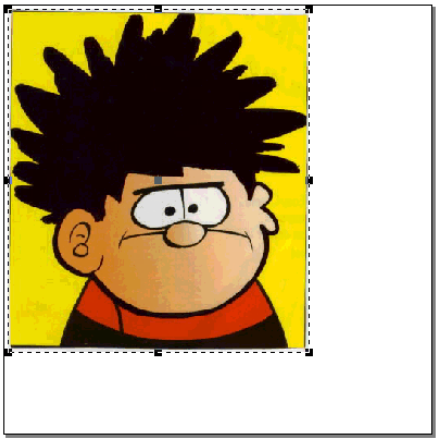
The **Apply Grey Scale** tool in the **Image** menu**,** will turn a colour image into a grey scale image. This is useful when processing images to make them more suitable for monochrome functions such as *edge detect* and engraving output.





Moving an Image

In order to be able to move an image within the design area it is necessary to select it. To do this choose the **Select** icon and click on the image so that it is highlighted with a dashed line box. The image can now be moved to its required position.



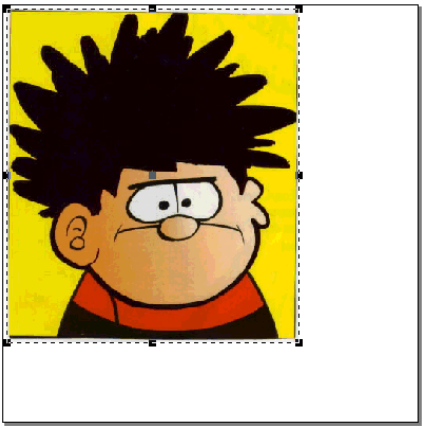
To move the image to a new position, select the middle box. Holding the left mouse button will cause the image to be picked up and as you move your mouse the image will also move on screen. Re-locate the image to a new position and release the mouse button.

Note - If the dashed line box does not appear it may be that the image has been fixed - if so select the **Image** menu - **Unfreeze** Image.

Re-scaling an Image

In order to be able to re-scale an image within the design area it is necessary to select it first. To do this choose the **Select**

icon and click on the image so that it is highlighted with a dashed line box. The image can now be re-scaled to its required size.



The image can be scaled using any of the external boxes.

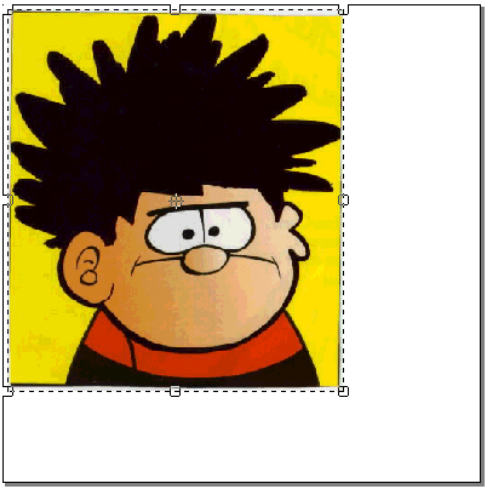
***Corner Boxes* -** Selecting any corner box will allow the selected image to be enlarged or reduced in proportion.
***Vertical Edge Box* -** Selecting a vertical edge box will allow the selected image to be enlarged or reduced in width but the height will not alter.
***Horizontal Edge Box* -** Selecting a horizontal edge box will allow the selected image to be enlarged or reduced in height but the width will not alter.
***Middle Box* -** Selecting the middle box will allow the image to be moved.

Note - If the image has previously been frozen it cannot be selected for re-scaling, until the **Image** menu has been selected and the **Unfreeze** option chosen.

Rotating an Image

In order to rotate an image, choose the **Select** icon and point and press at the required image. Once the relevant image to be rotated has been selected a selector box will appear around it.

At this point select the **Rotate** icon (or select the **Tools** menu - **Rotate**). This will then cause all the solid black boxes to change to white empty boxes. Various options are available at this point, depending which box is selected.



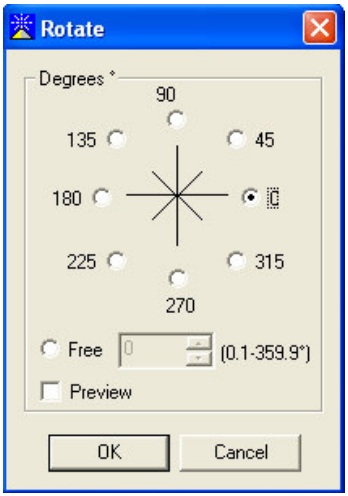
Corner Boxes - Selecting any corner box will allow the image to be rotated clockwise or anti-clockwise. (Pressing and holding **CTRL** when doing this will cause the image to be rotated in intervals of 5˚s rather than 1˚s).

The image will be rotated around the pivot point (middle box) depending where this has been located.

Horizontal Edge Box - Selecting a horizontal edge box will allow the image to be sheared along the x axis.

Vertical Edge Box - Selecting a vertical edge box will allow the image to be sheared along the y axis.

Middle Box - Selecting the middle box will allow the pivot point to be moved around which the image will be rotated.
'N' Key – This will cause a form to appear allowing you to specify the rotation that you require.



Note – If the image has previously been 'frozen' it cannot be selected for rotating/deskewing, until the **Image** menu - **Unfreeze** is chosen.

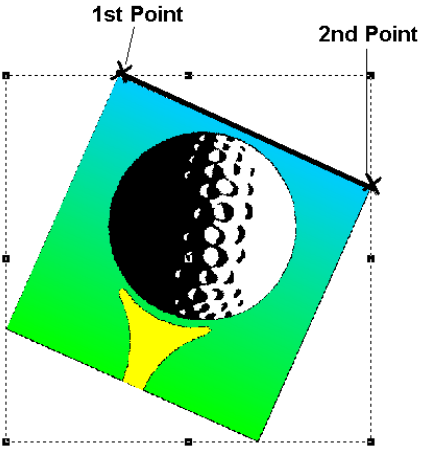
Note - If the image is rotated or deskewed too many times it may become distorted.

Deskewing an Image

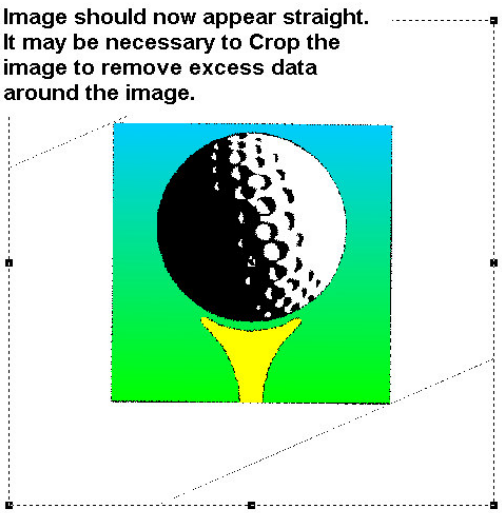
Once an image is on screen, if it is not as horizontal as you would like it to be it is possible to apply the Deskew tool.

1. Select the Image so that it has a dashed line box around it.
2. Select the **Tools** menu – **Deskew.**
3. A small cross will appear, move the mouse to the edge that you wish to deskew, in this example the top left corner of the image. Left click to register a point. See *Figure 1*.

Figure 1



4. Move the mouse along the edge of the image you wish to deskew (see point 2 on *Figure 1*) and then left click again to register this point.
5. The image will now be 'deskewed' and should appear 'level/straight' on screen.



6. It may be necessary to crop the image and get rid of any excess data around the edge of the image.

Note – If the image has previously been 'frozen' it cannot be selected for rotating/deskewing, until the **Image** menu - **Unfreeze** is chosen.

Deleting an Image

In order to Delete an Image from a design, choose the **Select** icon , point at the image and press the left mouse button. This will cause a selector box to appear around the extents of the image. To delete the image press the **Delete** key. The image should then be removed from screen. Or select the **Edit** menu - **Delete**.

Note - If the image has previously been frozen it cannot be selected for deleting until the **Image** menu has been selected and the **Unfreeze** option chosen.

Freeze/Unfreeze an Image

Once your image is on screen and you have made any required edits or adjustments e.g. to the scale, position or appearance, it is necessary to freeze the image into place by selecting the **Image** menu and choosing **Freeze Image**. This ensures that the image is fixed into position and can no longer be edited in terms of scale or placement.
To unfreeze the image select the **Image** menu and choose **Unfreeze Image**. This will allow you to further edit the image or to delete it.

Hide/Show an Image

While creating a design it is possible to hide any images in the

design selecting the **Hide Image** option from the **Image** menu. This will then allow you to see only the drawing outlines on screen.
To restore the image to the screen select the **Show Image** option from the **Image** menu.

Cropping an Image

In order to crop an image, select the **Image** menu - **Crop Image**. A small cross will then appear on screen in place of the cursor arrow. This represents a corner of your crop area i.e. a box that will contain the part of the image you wish to retain - any area outside the crop box will be removed.
To crop the image, position the cross where you want to set a corner of the crop box, click and hold down the left mouse button. Now as you move the mouse a box will appear - drag this around the area of the image you wish to keep and once the area is isolated release the mouse button. This will cause all areas of the image that were outside the box to be removed.

Using the Drawing Tools

Drawing Tools Overview

Cutting Composer allows you to draw and automatically create a number of predefined shapes. The tools can be accessed from the left side icons or by selecting the **Tools** menu - **Draw** and then the appropriate tool.

Draw Line – see ***Page 123***

Draw Bezier – see ***Page 126***

Draw Rectangle – see ***Page 127***

Draw Circle – see ***Page 127***

Draw Ellipse – see ***Page 128***

Draw Triangle – see ***Page 128***

Draw Polygon – see ***Page 129***

Draw Star – see ***Page 129***

Draw Line

Using the Draw Line tool allows you to freehand draw any required shape. An image can be loaded for reference or a Vector file imported.

1. In order to draw a shape a design must firstly be created or loaded.
2. When the design is on screen the **Draw Line** icon should be selected.
3. This will cause the cursor (arrow) to change to a cross.

Press the mouse buttons in order to register the path of the shape.

Left mouse click - Registers a line point represented by a small hollow box.

Middle mouse click - Registers a curve point represented by a small hollow triangle.

This is illustrated in the 3 figures below.

Figure 1

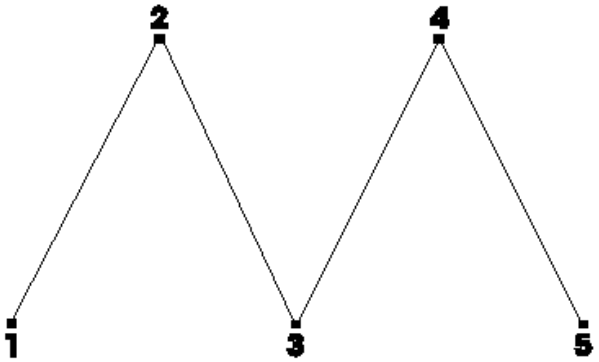


Figure 2

Point 1 = Left mouse button/Line point
Point 2 = Middle mouse button/Curve point
Point 3 = Left mouse button/Line point
Point 4 = Middle mouse button/Curve point
Point 5 = Left mouse button/Line point

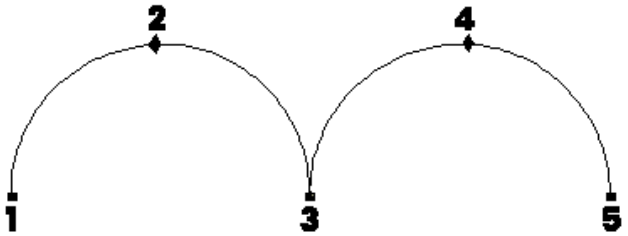
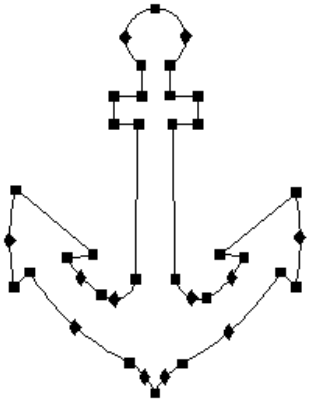


Figure 3



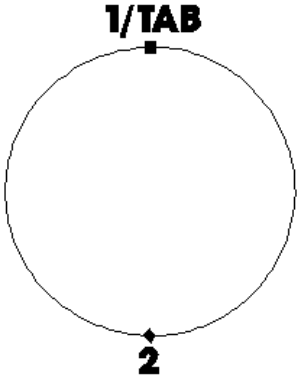
Note - If you do not have an active middle button on your mouse then the alternative keys to use are:
a. The **Delete** key which when pressed will input a curve point wherever the cross is positioned on screen.
b. The **Ctrl** key which when pressed will allow you to input a curve point with your left mouse button.

Backspace Key – Removes the last point entered.

<u>Using the Tab key</u>

1. If the required shape is a closed shape, as in the case of *Figures 3* and *4,* the **Tab** key can be used to automatically close the shape. In *Figure 4* the following keys would have been pressed.

Figure 4



Point 1 = Left mouse button/Line point
Point 2 = Middle mouse button/Curve point
Point 3 = Tab key to automatically close the shape

Draw Bezier

Using the Draw Bezier tool allows you to freehand draw any required shape using a Bezier form of input. An image can be loaded for reference or a Vector file imported.

1. In order to draw a shape a design must firstly be created or loaded.
2. When the design is on screen the **Draw Bezier** icon should be selected.
3. This will cause the cursor (arrow) to change to a cross.

Press the left mouse button in order to input a bezier point. Bezier points should be entered in pairs as this will produce the anchor line required to control the curves.

Draw Rectangle

The Draw Rectangle tool allows you to automatically draw a four-sided shape of any size or proportion. In order to draw a shape:

1. Create/Load a design.
2. Select the **Draw Rectangle** icon .
3. A cross will appear, this represents the top left hand corner of the shape. Single click the mouse to position this corner and then drag the mouse to draw the required rectangular shape.
4. Left click the mouse again to confirm the second corner point

Or

Press the **'M'** key this will produce the Rescale form allowing you to input the exact dimensions of the shape required.

Draw Circle

The Draw Circle tool allows you to automatically draw a circular shape of any size or proportion. In order to draw a shape:

1. Create/Load a design.
2. Select the **Draw Circle** icon .
3. A cross will appear this represents the centre of the circle. Single click the mouse to position this point and then drag the mouse to draw the required circle.
4. Left click the mouse again to confirm the size of circle

Or

Press the **'M'** key this will produce the Rescale form allowing you to input the exact dimensions of the shape

required.

Draw Ellipse

The Draw Ellipse tool allows you to automatically draw an elliptical shape of any size or proportion. In order to draw a shape:

1. Create/Load a design.
2. Select the **Draw Ellipse** icon .
3. A cross will appear this represents the centre of the ellipse. Single click the mouse to position this point and then drag the mouse to draw the required ellipse.
4. Left click the mouse again to confirm the size of the ellipse

Or

Press the **'M'** key this will produce the Rescale form allowing you to input the exact dimensions of the shape required.

Draw Triangle

The Draw Triangle tool allows you to automatically draw a triangular shape of any size or proportion. In order to draw a shape:

1. Create/Load a design.
2. Select the **Draw Triangle** icon .
3. A cross will appear this represents the left hand corner of the triangle. Single click the mouse to position this corner, then drag the mouse and left click the second corner point.
4. Left click the mouse again to confirm the size of the

triangle

Or

Press the **'M'** key this will produce the Rescale form allowing you to input the exact dimensions of the shape required.

Draw Polygon

The Draw Polygon tool allows you to automatically draw a multi sided shape of any size or proportion. In order to draw a shape:

1. Create/Load a design.
2. Select the **Draw Polygon** icon .
3. A cross will appear this represents the centre of the polygon. Single click the mouse to position this point, then drag the mouse and left click the second corner point to determine the size.
4. Left click the mouse again to confirm the shape of the polygon

Or

Press the **'M'** key this will produce the Rescale form allowing you to input the exact dimensions of the shape required.

Draw Star

The Draw Star tool allows you to automatically draw a star of any size or proportion. In order to draw a shape:

1. Create/Load a design.
2. Select the **Draw Star** icon .
3. A cross will appear this represents the centre of the

star. Single click the mouse to position this point, then drag the mouse and left click the second corner point to determine the size.

4. Left click the mouse again to confirm the shape of the star

Or

Press the **'M'** key this will produce the Rescale form allowing you to input the exact dimensions of the shape required.

Manipulating Drawing Outlines

Moving a Drawing Outline

In order to move a drawing outline choose the **Select** icon and point and press at the required outline to be moved. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting a Vector Outline – Page 21*.**

***Corner Boxes* -** Selecting any corner box will allow the selected outline/outlines to be enlarged or reduced in proportion.
***Vertical Edge Box* -** Selecting a vertical edge box will allow the selected outline/outlines to be enlarged or reduced in width but the height will not alter.
***Horizontal Edge Box* -** Selecting a horizontal edge box will allow the selected outline/outlines to be enlarged or reduced in height but the width will not alter.
***Middle Box* -** Selecting the middle box will allow the selected outline/outlines to be moved.

Note - If any outlines are moved incorrectly selecting the **Undo** icon would undo the edit.

Rotating a Drawing Outline

In order to rotate an outline, choose the **Select** icon and point and press at the required outline to be rotated. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting an Outline***.

Select the **Rotate** icon or select the **Tools** menu - **Rotate**.

This will then cause all the solid black boxes to change to white empty boxes. Various options are available at this point, depending which white box is selected.

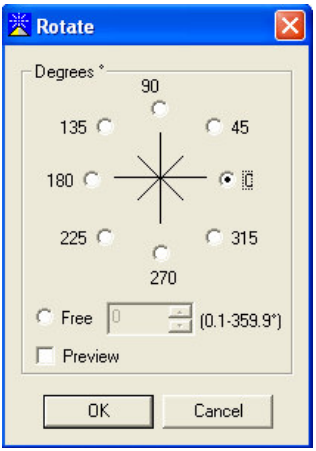
Corner Boxes - Selecting any corner box will allow the outline/outlines to be rotated clockwise or anti-clockwise. (Pressing and holding **CTRL** when doing this will cause the outline/outlines to be rotated in intervals of 5˚s rather than 1˚s). The outline/outlines will be rotated around the pivot point (middle box) depending where this has been located.

Horizontal Edge Box - Selecting a horizontal edge box will allow the outline/outlines to be sheared along the x axis.

Vertical Edge Box - Selecting a vertical edge box will allow the outline/outlines to be sheared along the y axis.

Middle Box - Selecting the middle box will allow the pivot point to be moved around which the outline/outlines will be rotated.

'N' Key – This will cause a form to appear allowing you to specify the rotation that you require.



Note - If any outlines are rotated incorrectly, selecting the **Undo** icon would undo the edit.

Deleting a Drawing Outline

In order to delete a drawing outline from a design choose the **Select** icon and point and press at the outline to be deleted. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting an Outline.*** To delete the selected outlines press the **Delete** key or select the **Edit** menu - **Delete**.

Note - If any outlines are deleted accidentally selecting the **Undo** icon would restore them.

Cut, Copy and Paste

In order to cut and paste a drawing outline/outlines, choose the **Select** icon and point and press at the required areas of the design that you wish to cut, copy or paste. If more than one outline is to be selected or you are unsure how to select an outline see ***Selecting an Outline*****.** Choose either of the following icons:

Cut icon - This will remove the selected outlines from the current design and copy them ready for pasting.

Copy icon - This will leave the selected outlines in the current design and make a copy of them ready for pasting. When an outline has been cut or copied, load the design that you want to merge with onto the screen. Then select the Paste icon.

Paste icon

The merged outlines will then appear in the top left corner of

the screen view and will be automatically selected. Select the middle box and move the outlines to the required location on screen.

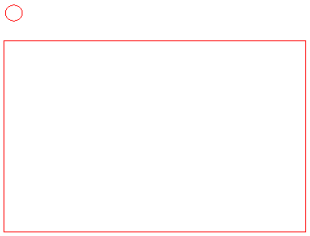
Alternatively there are other Paste options available which can be selected from the **Edit** menu. These allow the pasted outlines to be inserted into the design instead of being placed at the end of the design.

Paste to End or Insert - When this option is selected the outlines being pasted will be occur at the end of the design.
Paste after Last Selection - Before this option is selected an outline should be chosen. When Paste After Last Selection is then selected the pasted outlines will occur after the selected outline.
Paste Before Last Selection - Before this option is selected an outline should be chosen. When Paste Before Last Selection is then selected the pasted outlines will occur before the selected outline.

Perforate

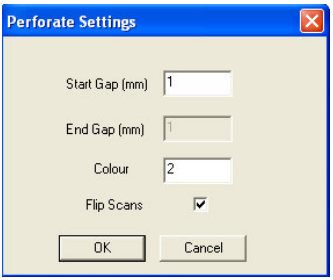
The Perforate tool is a specialist feature that allows shapes to be copied along vector paths. It enables the user to specify the spacing between the copies.

Example 1 – 2 shapes need to be defined, in this case a rectangle and a small circle.



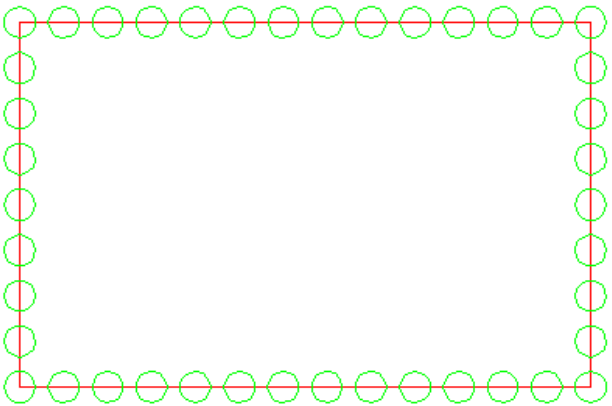
Both shapes need to be selected, firstly select the rectangle,

then holding down the **Shift** key, pick the circle. Next select the **Tools** menu – **Copy – Perforate** the Perforate Settings form will appear.



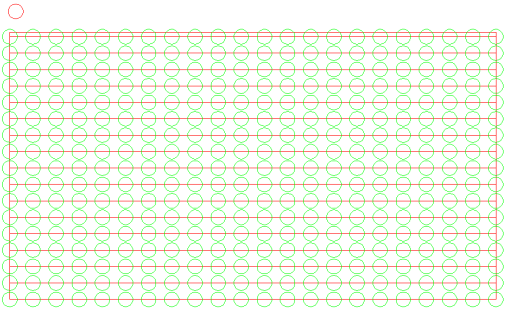
Start Gap (mm) **–** This value represents the gap that will occur between each shape.
End Gap (mm) **–** Not active.
Colour **–** This will be the colour of the newly created objects.
Flip Scans **–** This setting is used when filling a shape (see example 2) and specifies that the copies run left to right then right to left when created.

Selecting OK will copy the circles around the rectangle (circles are inserted into corners where necessary).



Example 2 – Using **Scan Lines** to fill a shape.
In this example the scan line feature has been used to fill the

rectangle. By selecting the scan lines and the circle shape it is possible for the **Perforate** function to place the circles along the scan lines, so filling the rectangle.



Each row of circles runs alternately, left to right, then right to left because the **Flip Scans** in ON.

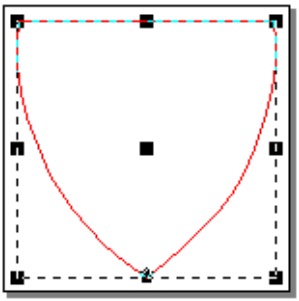
Re-Order Drawing Outlines

The Re-Order tool will allow you to change the order of any outlines in a design. To use this tool see ***Re-Order – Page 26*** or ***Re-Order Cut Path – Page 78.***

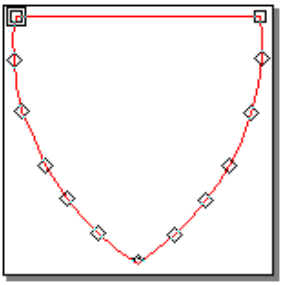
Parallel

The Parallel tool allows you to generate a parallel line to an existing drawing outline. In order to make use of this function:

1. Point and press with the left mouse button at the outline to be paralleled. This will cause a dashed line box to appear around the outline.
2. Select the **Parallel** icon or select **Tools** menu **- Parallels** - **Parallel**.



3. The outline on screen will then be displayed with all the input points shown.



4. Point and press at one of the input points and as the mouse is moved a parallel line will appear. The distance is displayed at the bottom of the screen. Set the distance required and press the left mouse button to confirm. Alternatively press the **'N'** key instead of selecting an outline point and input the required parallel distance.

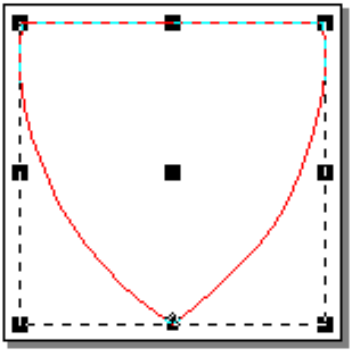
Fatten/Thicken

The Fatten and Thicken tools allow you to generate a **Border** to any existing drawing outlines. In order to make use of this function:

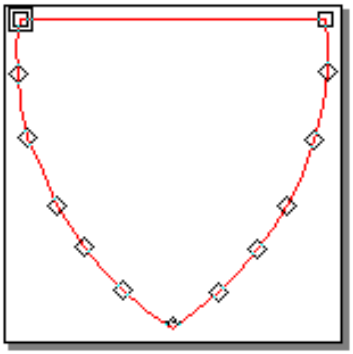
1. Point and press with the left mouse button at the outline

to be bordered. This will cause a dashed line box to appear around the outline.

2. Select the **Tools** menu – **Parallels - Fatten** or **Thicken**.



3. The outline on screen will then be displayed with all the input points shown.



4. Point and press at one of the input points and as the mouse is moved a border will appear. The width is displayed at the bottom of the screen. Set the width required and press the left mouse button to confirm. Alternatively press the **'N'** key instead of selecting an outline point and input the required border width value.

If the **Fatten** tool is used then the original outline will be

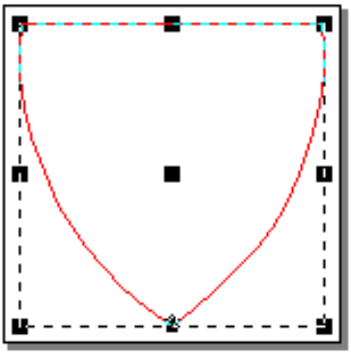
replaced with the new border.

If the **Thicken** tool is used then a new border will be added in addition to the original outline.

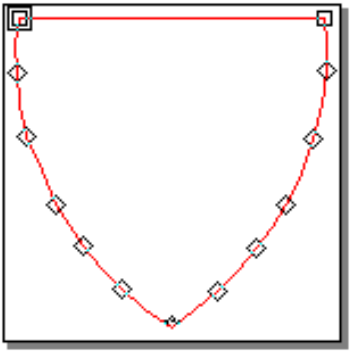
Obi Fill

The Obi Fill tool allows you to generate concentric outlines to any existing drawing outlines. In order to make use of this function:

1. Point and press with the left mouse button at the outline to be Obi filled. This will cause a dashed line box to appear around the outline.
2. Select the Obi Fill icon or the **Tools** menu - **Parallels** - **Obi Fill**.



3. The outline on screen will then be displayed with all the input points shown.



4. Point and press at one of the input points and as the mouse is moved a parallel outline will appear. The distance is displayed at the bottom of the screen and represents the distance between each concentric shape. Set the distance required and press the left mouse button to confirm. Alternatively press the **'N'** key instead of selecting an outline point and input the required distance value.

Note – This tool will only work on **Closed** shapes.

Outline Selected

The Outline Selected tool allows you to generate parallel lines to multiple drawing outlines. In order to make use of this function:

1. Using the Shift key and left mouse button select the shapes you wish to outline.
2. Select the **Outline Selected** icon or select **Tools** menu **– Parallels - Outline Selected**.
3. The outline on screen will then be displayed with all the input points shown.
4. Point and press at one of the input points and as the mouse is moved parallel lines will appear. The distance is displayed at the bottom of the screen. Set the

distance required and press the left mouse button to confirm. Alternatively press the **'N'** key instead of selecting an outline point and input the required parallel distance.

Merge Outline Selected

The Merge Outline Selected tool allows you to generate parallel lines to multiple drawing outlines and merge the parallels at the point of overlap. In order to make use of this function:

1. Using the Shift key and left mouse button select the shapes you wish to outline.
2. Select the **Merge Outline Selected** icon or select **Tools** menu **- Parallels** - **Merge Outline Selected**.
3. The outline on screen will then be displayed with all the input points shown.
4. Point and press at one of the input points and as the mouse is moved parallel lines will appear. The distance is displayed at the bottom of the screen. Set the distance required and press the left mouse button to confirm. Alternatively press the **'N'** key instead of selecting an outline point and input the required parallel distance.

Note – This tool will only work on **Closed** shapes.

Merge

The Merge tool allows you to select multiple drawing outlines and merge them together at the point of overlap. In order to make use of this function:

1. Using the Shift key and left mouse button select the shapes you wish to merge.
2. Select the **Merge** icon . The selected outlines will be merged into a single shape.

Note - The selected outlines must overlap for the Merge facility to work.
Note – This tool will only work on **Closed** shapes.

Overlap

The Overlap tool allows you to select two drawing outlines and overlap them at a user defined width. In order to make use of this function:

1. Using the Shift key and left mouse button select the two shapes in the order you wish them to overlap.
2. Select the **Overlap** icon .
3. A Parallel Distance form will appear. Input the required amount of overlap.
4. The selected outlines will be overlapped. This means that the first selected shape will be altered in relation to the second selected shape and overlapped at the defined distance.

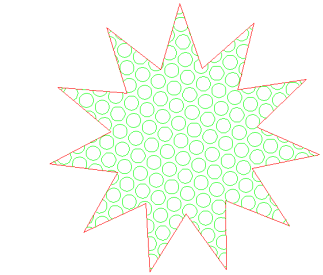
Note - The selected outlines must already overlap for the Overlap facility to work.
Note – This tool will only work on **Closed** shapes.

Hatching

The Hatching tool allows new and exciting vector fill patterns to

be created, it allows one shape to be filled with another shape. The 2nd shape is automatically clipped to fit inside the first.

Examples



Two shapes are required to perform the function, a major shape and a minor shape. These shapes can be imported from vector files, or created as Drawing Outlines

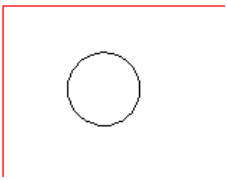
Major Shape

Minor Shape

To generate hatching fills firstly select the major shape, then press and hold the **Shift** key and select the minor shape. Next

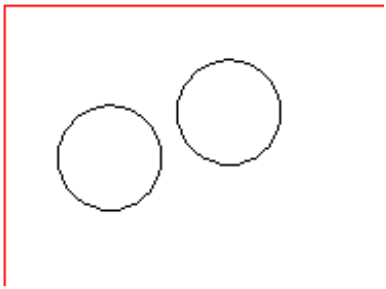
select the **Tools** menu **– Hatching – Open Vectors** or **Closed Vectors**. (Both the Open Vectors and the Closed Vectors tools work in the same way but the results of the fill are slightly different.) You will now see that the cursor becomes a copy of the minor shape and can be move around the screen. Place the minor shape somewhere in the major shape by single clicking. See *Figure 1*.

Figure 1



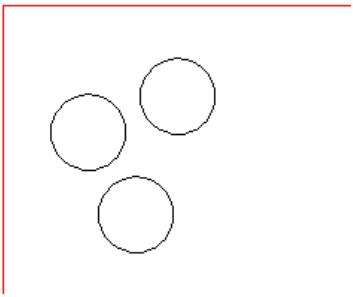
Then you will be requested for the placement of a second minor shape, place this next to the first shape (by a single click) to form the start of a **row** (the row does not need to be horizontal, it can be at an angle) see *Figure 2.*

Figure 2



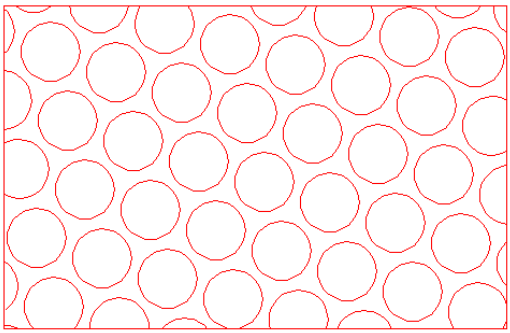
Finally you will be requested to place a 3rd minor shape below the first minor shape (by a single click) to form the start of a column see *Figure 3.*

Figure 3



Using these 3 shape placements the system will then calculate the rows and columns of minor shapes and place them inside the major shape, at the edge of the major shape the minor shape will be clipped to stay within it see *Figure 4.*

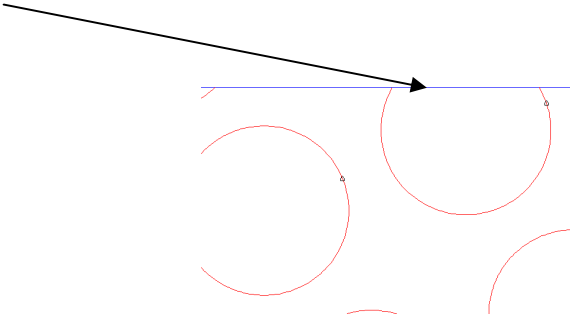
Figure 4



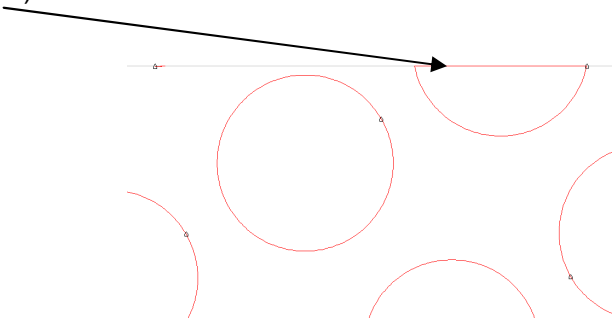
Open and Closed Hatching

The hatching tool operates in 2 modes, **Open Vectors** (as shown in *Figure 4*) and **Closed Vectors**. If the closed version is used then the minor shapes will be closed when they are clipped at the edge.

Open Vectors (clipped minor shape is incomplete)

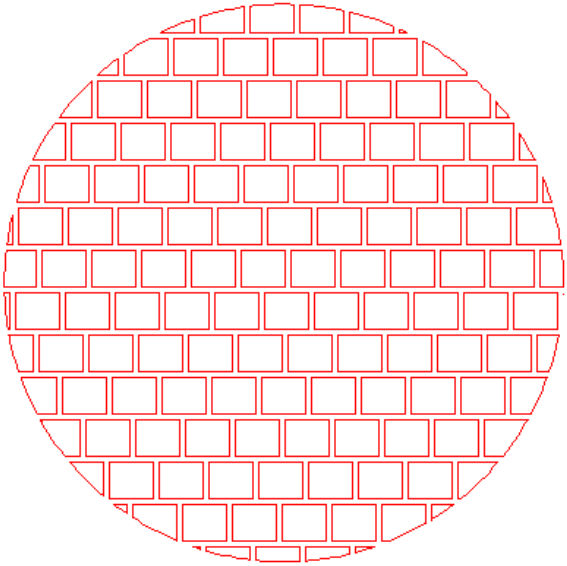


Closed Vectors (extra points are added to the minor shape to close it).



The **Open Vectors** option is useful if you wish to minimise the amount of vectors at the edge of the shape. The **Closed Vectors** option is useful as it helps define the original major shape, see *Figure 5*.

Figure 5

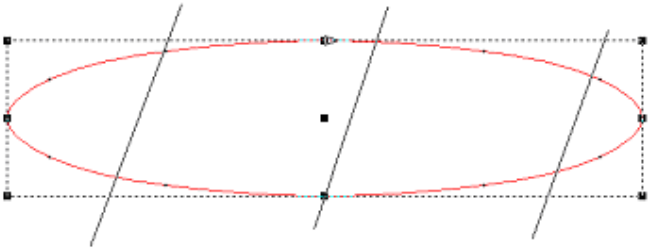


The generated shapes are normal vector objects and can be used for drawing purposes as well as output for the laser cutting systems.

Vector Slice

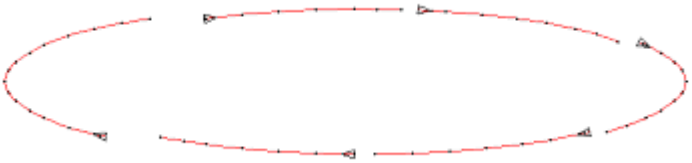
It is possible to split vector shapes by placing slice lines across an outlines. To use the slice tool, select the outline/outlines to be sliced. Then select the **Tool** menu - **Vector Slice**. The cursor will now change to a small knife cursor. To slice the outline, simply click point pairs across the shape (click once then move the mouse to create a line, click again to place the line). The lines represent where the slice/slices will occur.

Figure 1



Press the right-mouse button to exit from the tool. The shape will then be split up (the split parts in *Figure 2* have been moved apart for clarity).

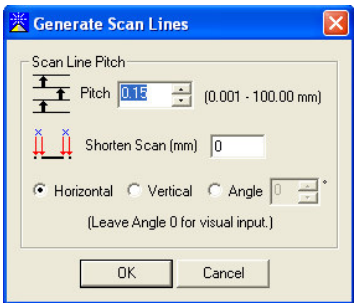
Figure 2



This feature is particularly useful for changing the colour or cutting effect of part of a shape.

Generate Scan Lines

To use the Generate Scan Lines tool select an outline/outlines followed by the **Tool** menu **- Generate Scan Lines.**

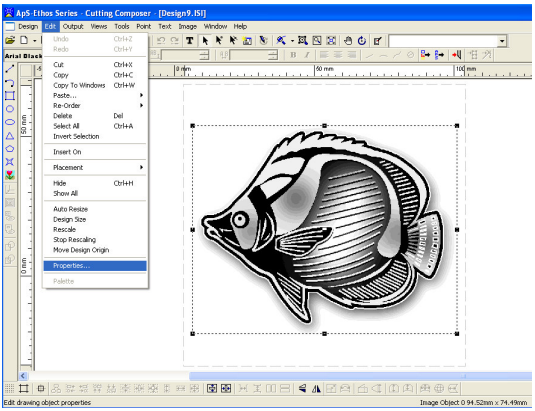


Set the details as required and the appropriate scan lines will be generated for the selected outline/outlines.

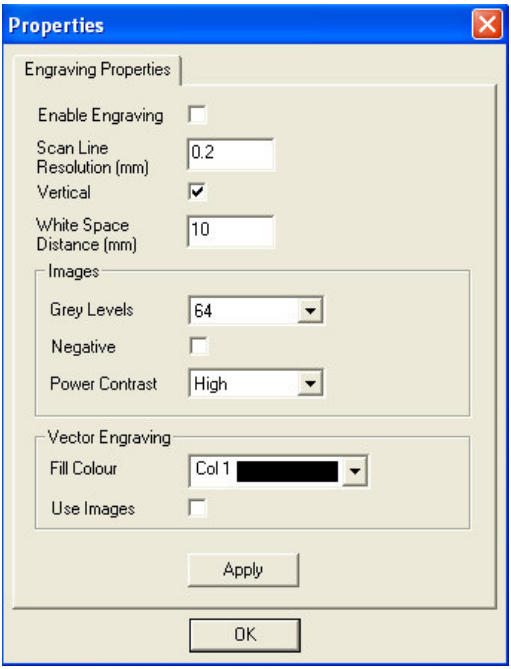
Engraving Properties

It is possible to specify engraving settings for a design (without it being necessary to switch to the LMS engraving module).

Figure 1



Properties can be assigned to individual objects without the need to create extra complex engraving data by selecting the **Edit Properties** icon .

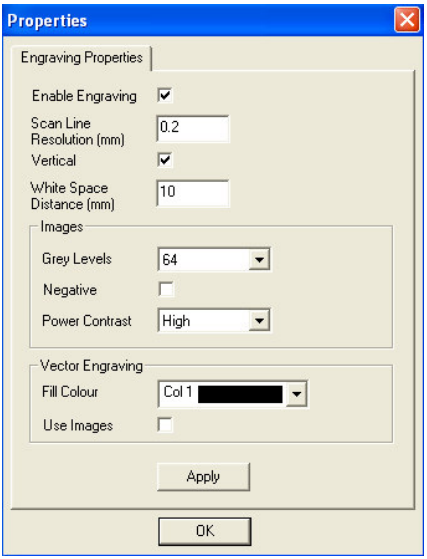


Engraving Properties 'tab'
To enable an image for engraving the **Enable Engraving** box should be ticked.

Scan Line Resolution - This is the distance between the laser lines as it scans back and forth across the image. A setting of 0.2 will give a good definition, higher values will produce a lined appearance (less dense coverage).
White Space - This setting is the overrun value added to either end of the scan lines to allow the laser head to accelerate to the correct speed before laser firing begins. In most cases 10mm is adequate. In the future, if the laser head speed is increased this value may also need to be increased.
Vertical – This setting should usually be left ON. This setting dictates whether the engraving is made by up and down motions or side to side. For laser machines other than the 400 series, the engraving motion is more efficient in the vertical axis.

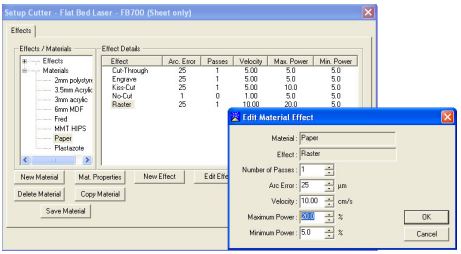
Grey Levels - This setting is used at output time and indicates the colour reduction to be applied to the grey scale image. For example the default of 64 will produce upto 64 different laser power levels, while 16 will only produce upto 16. The value you choose will be dependent on the image you are engraving (photos may require 64 greys while a flat colour clip art may only require 16). A lower value can significantly reduce the amount of data sent to the laser machine, and, depending on the image, may not have a significant effect on the engraving results.
Negative - This setting is usually OFF, but when engraving on dark materials (such as denim) should be set to ON to invert the colours of an image.
Power Contrast - This setting is an output parameter which will process the laser powers used by the image to enhance the final engraving results. Usually on tonal images the “high” value gives excellent results but you may find that you will need to drop this value down for more flat colour images which use less colours.
Fill Colour and ***Use Images -*** These are not used in this case and should be left as they are for further information see ***Engraving Vectors – Page 153*** .

In this example the default settings are adequate and the **Enable Engraving** box is ticked.



Select **Apply** to assign these settings to the image. If you have imported a colour image then it will be automatically converted to a 256 grey scale image when the settings are applied.

When the design is sent to the Laser by selecting the **Output Design** icon the software will create or use the laser effect called '**Raster'** to determine the minimum and maximum powers to be used on the grey colours. The default powers for this effect are 5% and 20%. If you find this does not give you the correct results then you should edit the effect in the normal manner and change the powers accordingly.

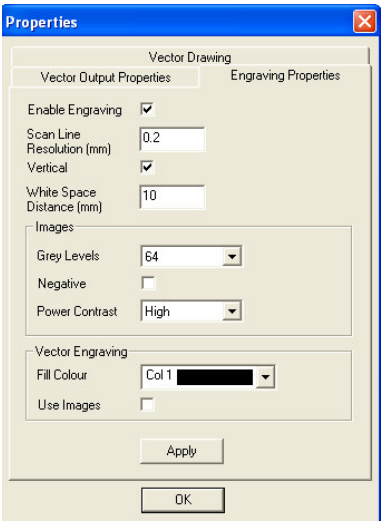


Engraving Vectors

Using the same engraving properties it is also possible to engrave-fill closed vectors and text.

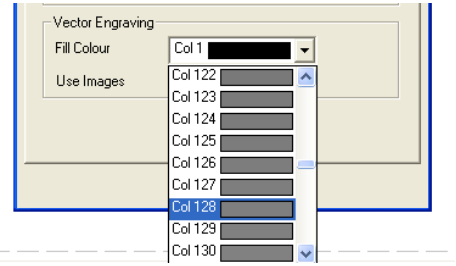
This example shows some text underlined with a thin vector rectangle. The colour of these objects has been set to **'No-Cut'** to avoid them being cut out by the laser (although you can engrave & cut if you wish).

Select both objects and then select the **Edit Properties** icon . Next select the **Engraving Properties** tab and enable the engraving option, then press **Apply.**



When the design is sent to the Laser the objects will be

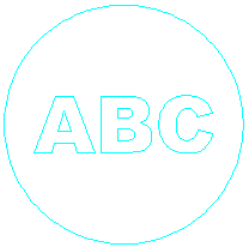
engrave-filled with ‘colour 1’ which is the maximum power from the ‘*Raster*’ effect. The intensity of the engrave fill can be controlled by using the grey levels in the ‘*Fill Colour*’ drop down list, for example a grey level of 128 will give a lighter result halfway between black and white (each object can have it’s own fill colour).



Vector Fills Using Glued Objects

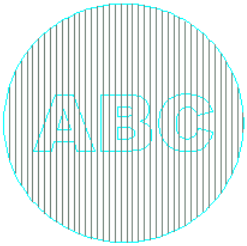
To create holes or reverse the way vectors are engraved it is possible to engrave glued vector objects see *Figure 1*.

Figure 1



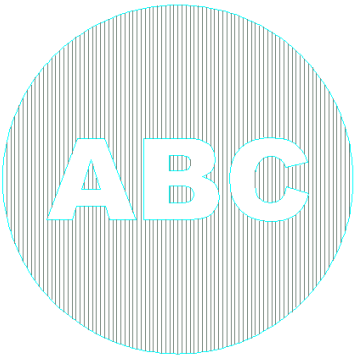
In *Figure 2* we have 2 objects, some text inside a circle. If the engraving properties are applied to these unrelated objects then they will be engraved individually. This would give this type of result (incorrect).

Figure 2



To correct this, the objects need to be associated by gluing them. First select the objects, then select the **Output** menu – **Nesting - Glue.**

The result will be a single object. When the engraving properties are applied to this glued object the engrave-fill will give a much more appropriate result.



Filling Vectors Using Background Images

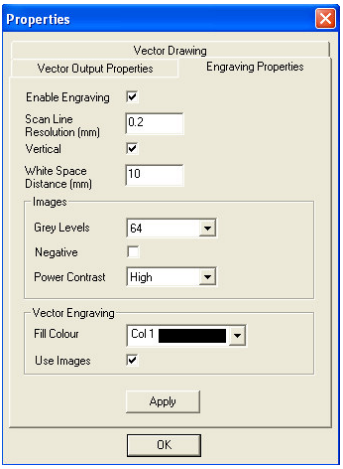
It is also possible to create engraving fills for vectors which use the images in the background. See *Figure 1.*

Figure 1

Firstly the image is converted to grey scale via the **Image** menu – **Apply Grey Scale** and some text added (with a **No-Cut** colour) and placed over the image.

The text is selected and then the **Edit Properties** icon highlighted.

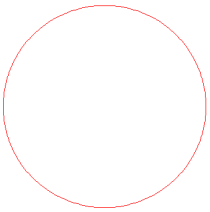
On the following form the Engraving Properties tab should be selected and the **Enable Engraving** and **Use Images** boxes ticked. Select the **Apply** box to assign the settings.



When the design is cut the vector text will be engraved-filled with the background image (only the parts of the image within the text will be engraved).

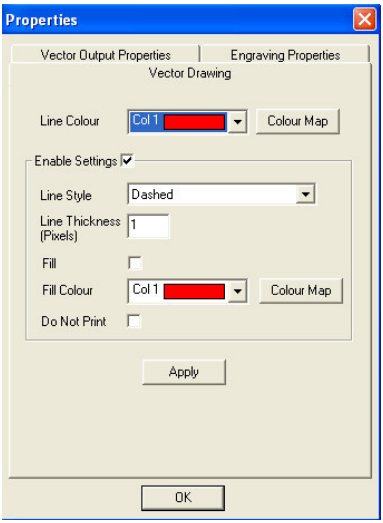
Dashed Lines on Laser Output

It is possible to produce dashed lines on an outline with the flatbed laser machines. First draw a circle in a blank laser design.

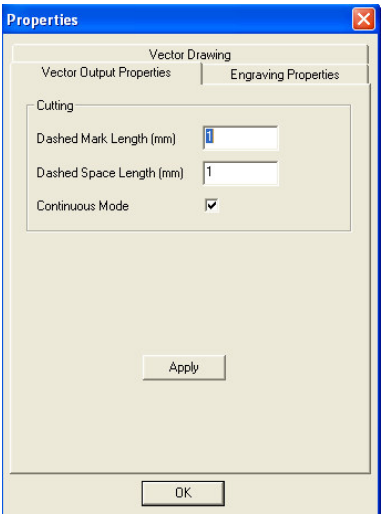


Select the circle and then press the **Edit Properties** icon .

On the **Vector Drawing** tab tick the **Enable Settings** box. Then from the **Line Style** drop down list select **Dashed.** Then select the **Apply** box.

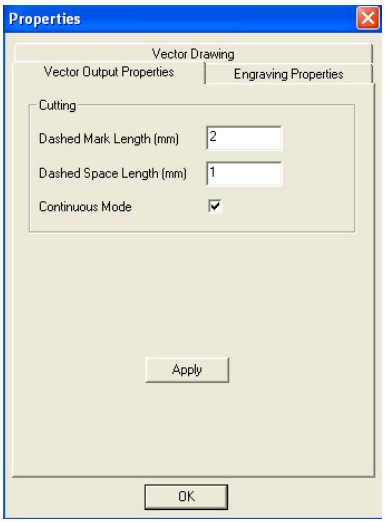


Next select the **Vector Output Properties** tab.

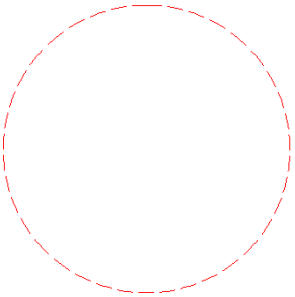


This form defines the dashed line size for the laser output, the dash length and the gap between the dashes. In this example

a dash length of 2mm with a gap of 1mm was used (the **Apply** box must be selected).



Note - In most cases **Continuous Mode** should be left on, this will give the most efficient pulsed laser output.



You will now see that the circle is drawn as dashed (to represent the laser output). When the circle is cut it will be output as a series of 2mm lines with a 1mm gap between each one. This feature is obviously useful for producing laser cut shapes which are perforated or include perforated sections.

Flatbed Laser Hardware Notes
To be able to use the engraving and dashed lines features shown above the flatbed laser machine will require at least **a Mark II control board**. These were fitted as standard after 2004.

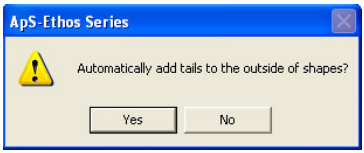
For the dashed lines feature the laser machine must have at least **firmware version 17g** (file *LaserFB17g.abs*). This firmware is available from the **Support** directory on the **Ethos** software CD.

If you have any questions, please contact your distributor.

Add Laser Tails

This tool allows Laser Tails to be added to an outline**.**
This is particularly useful when the material being cut out is sensitive and shows a mark at the start of the design. When a laser tail has been applied the laser will begin at the start of the laser tail and then the cut shape should not show the visible start of the cut.

To use this feature select the outlines to edited followed by the **Tools** menu **– Specials – Add Laser Tails.** The following form will appear.



If Yes is chosen then the selected outlines will have tails added to them, see *Figures 1 & 2.*

Figure 1 – Original Outline

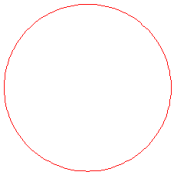
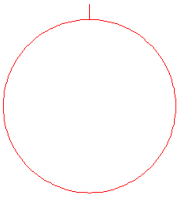


Figure 2 – Outline after Laser Tails have been added



Manipulating Drawing Outline Points

Selecting Outline Points

There are two types of point which can be selected depending on the type of outline that has been created. To activate the points for editing purposes either:

1. Select the outline and then select the **Select Vector Points** icon or the **Select Bezier Points** icon

Or

2. Double click on the outline.

Once the points of the outline are displayed single or multiple points can be selected for editing.

Selecting Single Points

1. Position the cursor arrow over the centre of the required point and click the left mouse button. The chosen point should now be filled in black.

Selecting Multiple Points

1. Hold down the **Shift** key and point and click at the required points - the points should fill in black when selected.

or

2. Hold down the left mouse button and drag a box around all the points that are to be selected.

Arrow Markers

It is possible to apply Marks to an outline shape via the **Views** menu **– Options – Marks**. This will cause all the points on a shape to be marked until the feature is turned off. This feature also displays an arrow on each outline that indicates the start point and the direction that the outline was drawn and

therefore in which direction the shape would be cut.

Moving Outline Points

To move a point the required point should first be selected - see ***Selecting Outline Points*.**
Once the points have been chosen, position the cursor arrow over a point, click and keep the left mouse button pressed down. A four way directional arrow should now appear on screen. Keeping the left mouse button pressed down move the mouse - as you move the mouse you will see the position of the point/points changing. Place the points in the required position and release the mouse button.

Note - If the point/points have been moved incorrectly clicking the **Undo** icon will restore them to their previous position.

Deleting Outline Points

To delete a point the required point should first be selected - see ***Selecting Outline Points*.**
Once the relevant point has been chosen press the **Delete** key or select the **Point** menu - **Delete**.

Note - If the point/points have been wrongly deleted clicking the **Undo** icon will restore them.

Inserting Outline Points

To insert a point the point you wish to insert before should first be selected - see ***Selecting Outline Points*.** Once the relevant point is selected press the **Insert** key or select the **Point** menu

- **Insert**. A rubber band line will now appear on screen attaching you between your chosen point and the point preceding it. The cross on the rubber band line allows you to position the point you wish to insert. Pressing the left mouse button when this cross is in position will insert a line point represented by a square. To insert a curve point, represented by a triangle you have the following options:

1. If your middle mouse button is active place the cross in the desired position and press it - a curve point should appear.
2. Place the cross in the required position, hold down the Ctrl key and click the left mouse button to input the point.
3. Place the cross in the required position for the point and press the **Delete** key - this will input a curve point at the specified position.

Note - This function will only work with Vector points.

Note – Applying Marks to an outline via the **Views** menu - **Options- Marks** tool is useful when inserting points as you can identify the insert position more easily.

Adding Outline Points

To add a point, a point on the outline to which you wish to add should first be selected - see ***Selecting Outline Points***. Any point can be selected - it is not necessary to select the final point of the outline.

Once a point is selected press the **Add** key (**+**) or select the **Point** menu - **Add**. A rubber band line will now appear on screen attaching you to last point of the chosen outline. The cross on the rubber band line allows you to position the point you wish to add. Pressing the left mouse button when this cross is in position will add a line point represented by a square. To add a curve point, represented by a triangle you

have the following options:

1. If your middle mouse button is active place the cross in the desired position and press it - a curve point should appear.
2. Place the cross in the required position, hold down the **Ctrl** key and click the left mouse button to input the point.
3. Place the cross in the required position for the point and press the **Delete** key - this will add a curve point at the specified position.

Note - This function will only work with Vector points. If the point/points have been wrongly added clicking the **Undo** icon will remove them.

Toggling Outline Points

To change a line point to a curve point and vice-versa the relevant point should first be selected - see ***Selecting Outline Points*****.** A square represents a line point, a triangle a curve point.
When the point has been chosen, position the cursor arrow over the point and double click the left mouse button. The selected point will now change to the opposite point type i.e. if it was a line point it will now be a curve, and if it was originally a curve point it will now be a line point. Alternatively select the point, choose the **Point** menu - **Curve Toggle**.

Note - If a point has been wrongly changed clicking the Undo icon will return it to its previous state. Alternatively you can double click the point again.

Splitting Outline Points

By using the Split tool a single drawing outline can be separated into multiple outlines.
To split an outline the relevant point should first be selected - see ***Selecting Outline Points*.** When the point has been chosen select the **Point** menu - **Split**. This will cause the drawing outline to be separated at this point.

Note - If a point has been wrongly split clicking the **Undo** icon will return it to its previous state.

Round Corners

The Round Corners tool will allow any sharp corner or line point to be rounded.
To round a corner the relevant point/points should first be selected (if all 4 corners on a rectangle are to be rounded, all 4 corner points may be selected at once) - see ***Selecting Outline Points – Page 162*.** When the point/points have been chosen select the **Point** menu - **Round Corners**. This will cause a Round Corners form to appear. Set the required Curve Radius and click OK.

Note - If a point has been wrongly changed clicking the **Undo** icon will return it to its previous state.

Reverse Points

Using the Reverse Points tool it is possible to Reverse the point order of an outline, this is particularly useful for controlling the direction of the cut. To use the tool select the

outline/outlines to be edited and then select the **Point** menu – **Reverse**. The order that each point occurs will then be reversed.

Note – If the **Views** menu **– Options – Marks** tool is applied then directional markers will be displayed on screen showing the direction of the points.

Move Start

The Move Start tool will allow the start point on an outline to be moved allowing the user to specify where the cut will begin. To move the Start Point on an outline the relevant point should first be selected see ***Selecting Outline Points – Page 162*.** When the point has been chosen select the **Point** menu **– Move Start.**

Note – The Start point on each shape is defined by a ‘double box’ if a line point or a ‘double triangle’ if a curve point.

Text

Creating Text

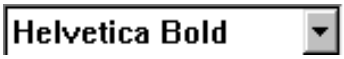
In order to create any text a design must first be active on screen. To do this either:

a. Load an existing design

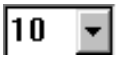
b. Create a new design.

Once a design exists on screen select the **Text** icon and choose the required, height, and justification. The font list will display any True Type fonts that may be installed on your computer.

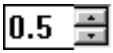
Most of the icons that relate to creating text are located in the second horizontal icon bar. These options may either be altered before you begin typing in the text or after it has been entered on screen. An explanation of each tool is found below:



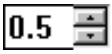
Font Field - This is the Lettering style that will apply to any letters. A full list of all your available fonts will appear if you select the down arrow next to the selected lettering style.



Size Field - This is the size in mm that will apply to any letters. A list of available heights will appear if you select the down arrow next to the currently selected height. Alternatively you may type in the height of your choice.



Offset Field - This is the offset figure that will apply to any letters. This will allow the selected text to appear above or below the original input line.



Spacing Field - This is the spacing figure that will apply to any letters. This will allow you to specify any specific spacing you require between two or more letters.

Bold Icon - This allows the text to be boldened. You may do this either before or after you have created the text.

Italics Icon - This allows the text to be italicised. You may do this either before or after you have created the text.

Left Justification - This allows you to specify the text to be left justified. You may do this either before or after you have created the text.

Centre Justification - This allows you to specify the text to be centre justified. You may do this either before or after you have created the text.

Right Justification - This allows you to specify the text to be right justified. You may do this either before or after you have created the text.

Line Text

Arc Text

Spline Text

Circle Text

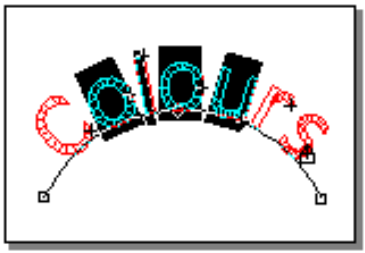
Once the required settings have been chosen you will be ready to enter the text. The text will appear on screen as you

type. You may swap between upper and lower case letters as required. In order to change any of the settings on the text after you have typed it, you need to make sure that the text is still active.

To make the text active after you have quit the text option select the **Text** icon and point and press at one of the letters. This will cause the input line underneath the text to appear. At this point you could continue typing or highlight any of the letters that you wish to manipulate. To highlight them either:

1. Place the arrow over the first letter and press and hold down the left mouse button. As you then swipe the mouse over the letters a black box will appear over them. The black box indicates which letters you have selected to alter.

Or

2. Double click the mouse when it is located over any letter in the line and this will cause all the letters on the line to be selected.
3. 

   When you have chosen the required letters, select the changes that you wish to apply, i.e. height, letter style, colour etc.

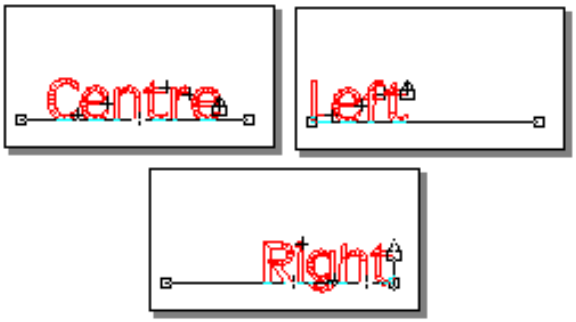
Line Text

In order to create any text a design must first be active on screen. To do this either:

a. Load an existing design.
b. Create a new design.

Click the Text icon and choose the required lettering style, height, and justification.

1. Select the **Line Text** icon .
2. The cursor will change to a cross and two points should be entered, one on the left hand side and one on the right hand side.
3. A flashing cursor will appear between the two points a line will appear.
4. It is between the first and last point on this line that the selected justification is applied.



5. If the line is entered on a slant then the text will appear on a slant.

6. If the **Enter** key is pressed then a second input line will be activated to enter more text.

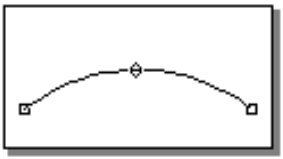
Arc Text

In order to create any text a design must first be active on screen. To do this either:

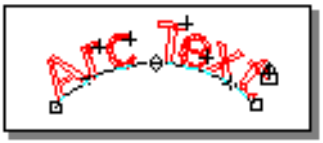
a. Load an existing design.
b. Create a new design.

Click the **Text** icon and choose the required lettering style, height, and justification.

1. Select the **Arc Text** icon .
2. Following this the cursor will change to a cross and three points should then be entered. One on the left hand side, one on the right hand side and then a middle point which will determine the type of arc.



3. The text will appear on screen as you type.



4. It is between the first two points entered that the justification applies.
5. If the arc is entered on a slant then the text will appear on a slant.
6. If the **Enter** key is pressed then a second input line will

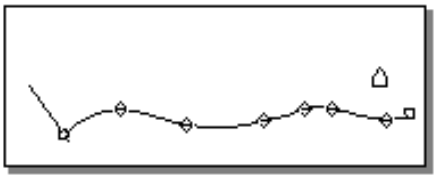
be activated to enter more text.

Spline Text

In order to create any text a design must first be active on screen. To do this either:
a. Load an existing design.
b. Create a New design.

Click the **Text** icon and choose the required lettering style, height, and justification.

1. Select the **Spline** text icon .
2. Following this the cursor will change to a cross and points may now be entered to represent the path that you wish the text to follow. If the Middle mouse button (Delete key) is pressed to register a point instead of the left mouse button then a curve point will be entered rather than a line point. The text input points may also be edited afterwards if required.



3. The text will appear on screen as you type.

4. It is between the first and last points entered that the

justification applies.

Text Copy and Paste

It is possible to paste text from other applications via the *Windows* clipboard directly into a design or into the text tool. For example, using *Windows Wordpad* some text can be typed and copied to the clipboard using the standard copy function. When the **Paste** icon is selected in Ethos the text is automatically created with a default block font at 10mm height.

Alternatively the font and height settings can be controlled by selecting the text tool before pasting.

Note - This feature is useful for utilising spell checking facilities in other packages, e.g. prepare the spell checked text in MS-Word, then copy and paste it into Ethos.

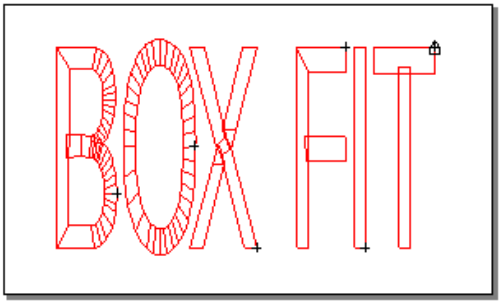
Text Deforms

There are various advanced deform options that can be applied to a selected text entry or any other object.
The advanced deform tools can either be accessed by the icons on the base line tool bar or by selecting the **Tools** menu - **Deform**.

Box Fit

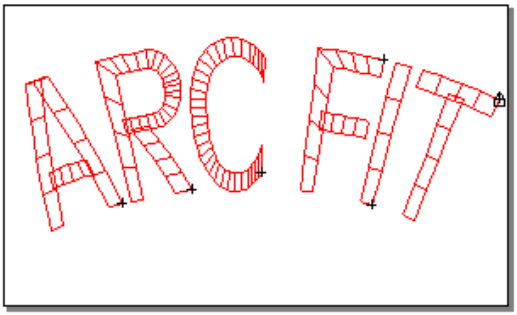
Selecting Box Fit will allow any text or objects that have been selected to be stretched and manipulated. Once selected a cross will appear allowing you to specify the placement and type of box that the selected items are to fit to. Usually a left corner point, followed by a right corner point followed by a height point would be entered. This will cause the following

type of text to appear.



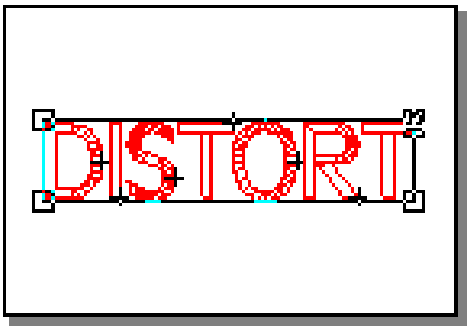
Arc Fit

Selecting Arc Fit will allow any text or objects that have been selected to be stretched and manipulated. Once selected a cross will appear allowing you to specify the placement and type of arc that the selected items are to fit to. Usually a left corner point, followed by a right corner point then a centre point followed by a height point would be entered. This will cause the following type of text to appear.

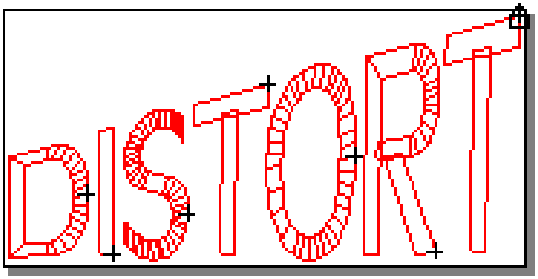


Distort

Selecting Distort will allow any text or objects that have been selected to be stretched and manipulated. Once selected a wire box will appear around the selected items.



At this point, picking any of the corner points will result in the selected objects being distorted. In the example below the top right corner point was used.



Perspective

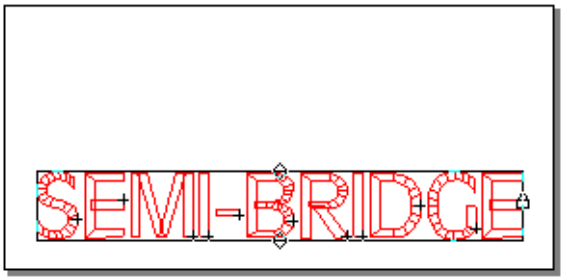
Selecting Perspective will allow any text or objects that have been selected to be stretched and manipulated. Once chosen a wire box will appear around the selected items.

At this point, picking any of the corner points will result in the text being distorted. In the example below the top right corner

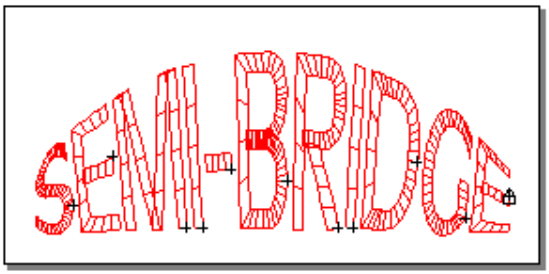
point was used.

Semi-Bridge

Selecting Semi-Bridge will allow any text or objects that have been selected to be stretched and manipulated. Once chosen a wire box will appear around the selected items.

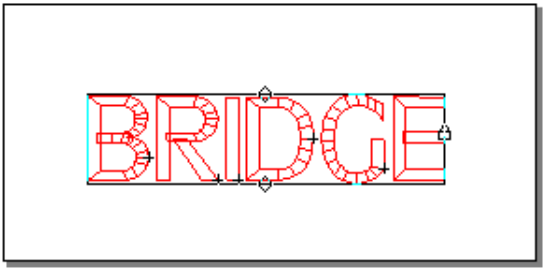


At this point, picking either the middle top or bottom points will result in the text being distorted. In the example below the top middle point was used.

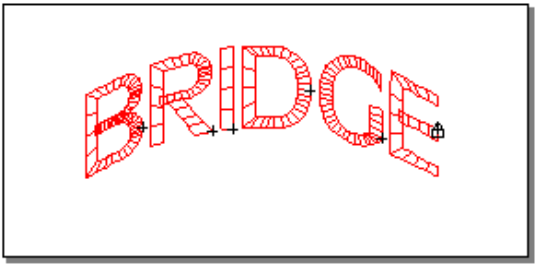


Bridge

Selecting Bridge will allow any text or objects that have been selected to be stretched and manipulated. Once chosen a wire box will appear around the selected items.

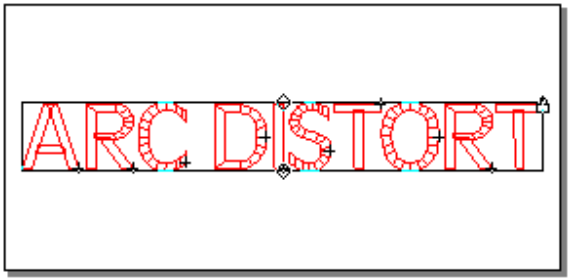


At this point, picking either the middle top or bottom points will result in the text being distorted. In the example below the top middle point was used.

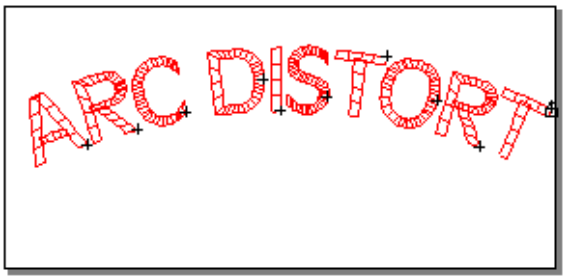


Arc Distort

Selecting Arc Distort will allow any text or objects that have been selected to be stretched and manipulated. Once chosen a wire box will appear around the selected items.

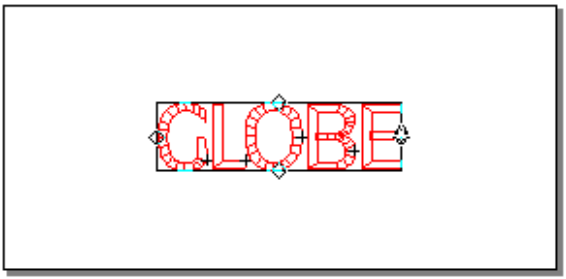


At this point, picking any of the control points will result in the text being distorted. In the example below the top middle point was used.



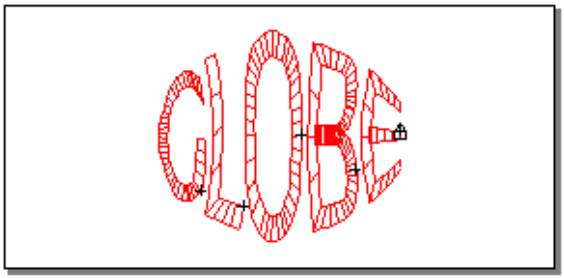
Globe

Selecting Globe will allow any text or objects that have been selected to be stretched and manipulated. Once chosen a wire box will appear around the selected items.



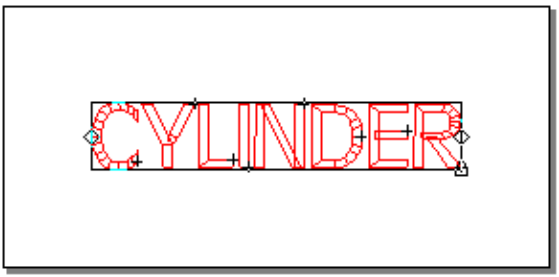
At this point, picking any of the control points will result in the text being distorted. In the example below the top middle point

was used.

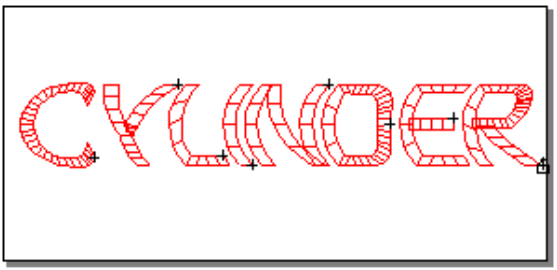


Cylinder

Selecting Cylinder will allow any text or objects that have been selected to be stretched and manipulated. Once chosen a wire box will appear around the selected items.



At this point, picking any of the control points will result in the text being distorted. In the example below the left middle point was used.



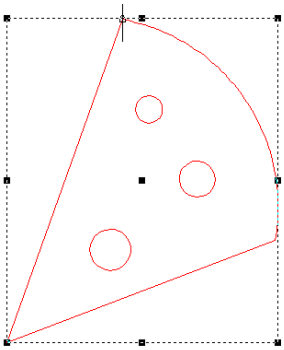
Condense Width

This option allows text placed on a line or arc to be condensed between the start point and end point.
In order to change the width of the lettering to fit to the original input line, remain in the text tool and select the **Text** menu - **Placement** - **Condense Width**.

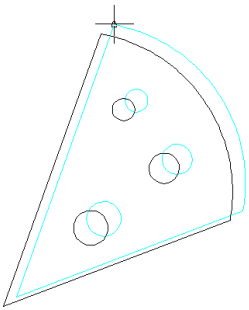
Selecting the **Text** menu - **Placement** - **Condense Width** will untick the option allowing text to be entered as normal.

Add Shadow

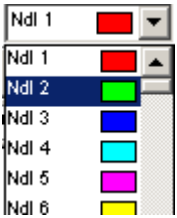
It is possible to add a simple shadow effect to any fill stitch outline, satin stitch outline or text. First you must select the shape you wish to shadow.



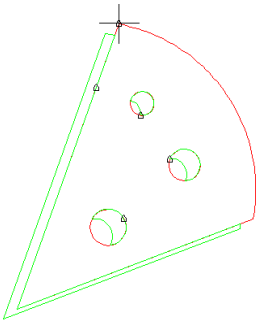
Now select the **Tools** menu **– Add Shadow**.
The system will now show you where you can place your shadow (move your mouse then press the left button when you are happy with the position).



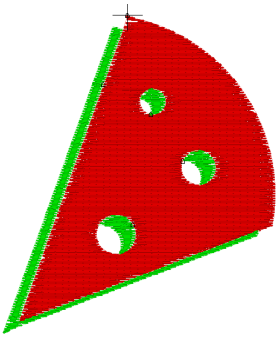
The system will then calculate the shadow. The outlines which are created will automatically be assigned a fill effect and become selected so that you can re-assign the colour if you wish. In this case we will select colour 2 from the colour drop down.



At this point it is also possible to alter the angle of the shadow.

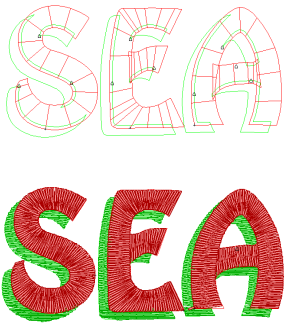


The design will now look something like this when stitched in.



The shadow is generated ‘behind’ the chosen features (the shadow occurs before the features in the design). It is also possible to specify an overlap so that the shadow tucks underneath the foreground features. The overlap can be specified on the main settings form **Edit** menu **– Settings**. The value is in mm and should range up to 1mm. The default is 0.5mm.

Example with overlap



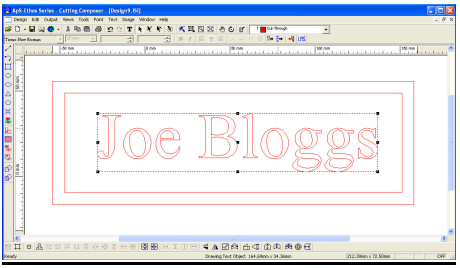
Fill Text (30mm)

Note - When shadowing multiple sections that overlap, each section should be shadowed individually.

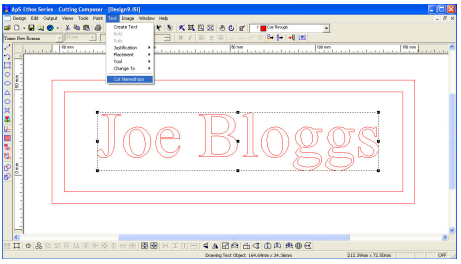
Cut Name Drops

This new feature is intended to be used when outputting a list of names or other text to the laser cutter.

For example if this design was being cut but the text in the centre of the design changed to create custom designs.



Select the text, then select **Text** menu **- Cut Name Drops**.



A list dialog will then appear. You should now enter the names which will appear at the text location.

When OK is pressed the system will replace the selected text and output the modified design to the cutter (one by one down the list).

Note - To avoid text get too long you should use the **Text** menu **– Placement – Condense Width** option. This will limit the text length to the input base line of the text (using line or arc text).

Index

A

Add a new category 43, 44
Add a new customer 46
Add a new design state 46
Adding a new customer when a design is saved 59
Adding designs to the browser 39
Advanced Tab 42
Align 61
Apply Grey Scale 115
Archiving Designs 54
Assigning an effect to a design 107
Assigning effects 106
Auto Sheet Nesting 82

B

Backing Up Designs 38
Backing Up User Profiles 36
Browser overview 39

C

Centre 65
Create a new template 33
Creating material effects 102
Creating new effects 105
Creating new materials 104
Cut design 72
Cut Name Drops 184

D

Dashed Lines on Laser Output 157, 160
Deleting designs 43
Design state 49
Devices and material 15

E

Engraving Properties 149
Engraving Vectors 153
Evenly Space 66

F

Fatten/Thicken 137
Find 50

G

General tab 40
Generate Scan Lines 148

H

Hatching 142

I

Importing vector files 20
Installing cutter drivers 9

J

Join 67

M

Material effects overview 101
Material effects when using FB laser cutters 102
Material effects when using vinyl cutters 101
Material Manager 14
Move Start 167

N

Nesting 16

O

Overlap 142

P

Perforate 134
Port setup 12

R

Reverse Points 166
Round Corners 166

S

Save as new design In database 57

Save as new design NOT in database **58**
Save as template **58**
Saving designs **57**
Search by category **47, 48, 50**
Search by customer **47**
Search by industry **48**
Search by keywords **49**
Searching overview **46**
Selecting Outline Points **162**
Selection tab **76**
Setting a default cutter **12**
Shadow **181**
Spacing **18**

T

Templates overview **32**

U

User Management **34**

V

Vector Slice **147**
Vectorising Images – Edge Detect **113**