

# Studio 24

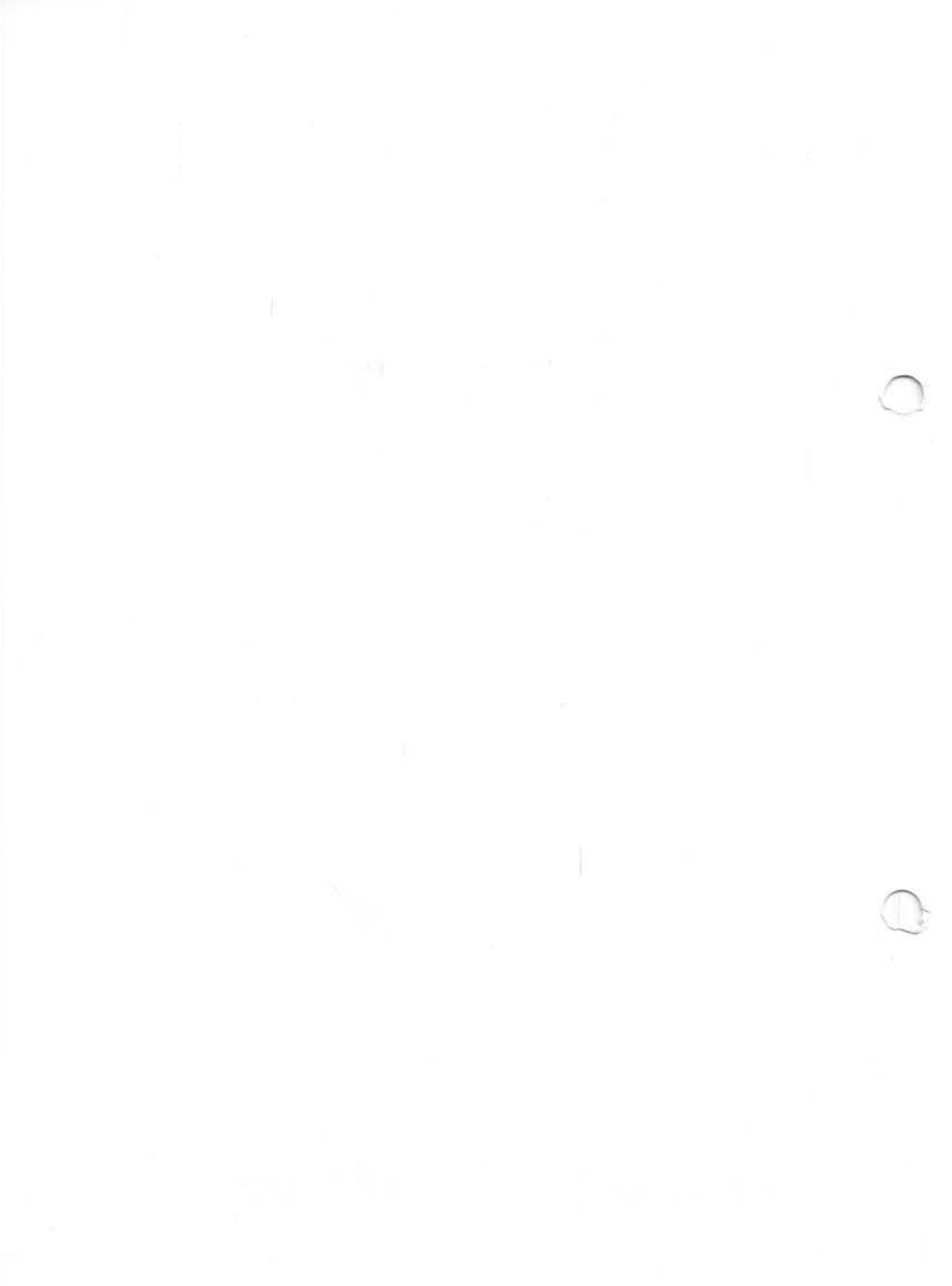
by Adrian Skilling

**Pineapple Software**

# *Studio* **24**

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*Pineapple*  *Software*



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# 1. Introduction

Studio24 is a 24 bit painting program. All image processing is performed in 24 bits (8 bits red, 8 bits green, 8 bits blue) which enables extremely high quality images with smooth colour gradations to be obtained. These advantages are best realised with screen modes using at least 16 bits, but even with a standard Archimedes 8 bit (256 colours) screen mode, powerful error spreading routines enable smooth colour transitions to be achieved providing far superior performance when compared with paint programs using 8 bit processing. Before the advent of the Risc PC range of computers, 16 bit desktop screen modes could only be achieved by using Computer Concepts Colour Card Gold, (and with the latest software the State Machines Graphics cards). Both 16 and 32 bit screen modes are now available using Acorns Risc PC range of computers.

To appreciate how Studio24 works it is important to understand the difference between a 'painting' program and an object based drawing program such as Draw. With a drawing program, individual parts of the image are stored as vector coordinates which are translated into lines whenever the image is on the screen. This enables changes to parts of the drawing to be made very easily as individual items may be scaled, deleted, coloured etc., without affecting any other part of the drawing.

A painting program on the other hand uses a 'pixel map' technique to store the image. This has the advantage that separate parts of the picture may be 'merged' or 'smudged' into each other in the same way that paints can be smudged together on a canvas. The disadvantage is that once the paint brush has been applied to the picture it is much more difficult to remove without affecting areas already painted underneath. Studio24 partly solves this problem by having an 'undo' feature which allows recently painted areas to be removed back to a preset point. The amount of painting which can be undone does depend on the amount of memory available. The option is always available though to save the current picture to

## *1. Introduction*

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disc before making any major changes, particularly those that might be unpredictable such as flood fills, so that if the result is not what was expected, then the previous state of the picture is easily recoverable.

Studio24 has many advanced features to enable high quality artwork to be obtained. One of its most powerful is the way in which many of the various painting options can be applied to the brush simultaneously. For instance, the options for opacity, texture and smoothing can all be applied in varying amounts to a single brush stroke, which enables a very wide range of effects to be obtained with ease.

Another powerful feature is the ability to use a stencil screen. This has exactly the same effect as using a stencil when painting. A completely separate screen layer is created which can include 'cutouts' of any shape or size. If the stencil option is enabled then all the painting processes will only affect the main picture where there is a 'hole' in the stencil. Of course the computer version of a stencil is much more powerful than a cardboard cutout. It can be easily modified and even inverted so that the reverse effect is obtained, painting only occurring where the stencil is not cutout!

With any program of this complexity, describing how to utilise all of its features in a handbook is not an easy task. Nobody wants to sit down and read a handbook for an hour when they can load the program into their computer and start playing with it straight away. On the basis that you've actually read this far, then please try and read at least the first few chapters of the handbook in conjunction with using the program!

There is no specific tutorial section included in the manual although some sections include suggested things to try to familiarise yourself with a particular feature. A separate tutorial disc is included which contains text files and sample images to use for demonstrations of the more complex features of the program.

If a particular description in the handbook does not seem to make sense then experiment with the feature on your

computer. We have attempted to make all the features intuitive to anyone familiar with Archimedes software, but if you are a newcomer to the Archimedes then please persevere, it will all become clear quite quickly!

The order of the description of features in the handbook is arranged in the recommended learning order, so that even if you only read the first few chapters you should be able to paint simple images fairly quickly.

If you can bear to read the whole handbook trying out each feature as you read, then by the time you reach the last page you should at least know all the possible ways of producing particular effects, and the full capabilities of the program. At this stage individual features may be re-learned by reference to the Contents or Index as and when required.

The Hints & Tips chapter gives some extra information about techniques which can be used to provide particular effects which may not be obvious from the simple descriptions of each individual feature. We would expect this part of the handbook to be extended and distributed with future program updates.

Finally, there is always room for improvement in any program and at Pineapple we always listen to our customers comments and suggestions. If you do have any suggestions for improvements then please don't hesitate to contact us, in writing if possible, with your ideas which we may be able to incorporate in future updates.



# 2. Installation

Studio24 is supplied on 3 discs. One disc is the main program installation disc and this has to be installed by each registered owner either onto a working floppy disc, or onto a harddisc. The installation involves embedding the name of the registered user into the program by means of a simple telephone call to Pineapple. This also ensures that you are registered onto the database for future updates which you will receive automatically. Instructions for doing this are included on a separate sheet supplied with the package.

Disc 2 contains extra brushes and textures as well as some sample images produced using Studio24. Disc 3 contains some examples of how to produce advanced effects using some of the more complicated Studio24 features. These should only be attempted when you are familiar with all the program features.

Studio24 will work on any Archimedes computer with RiscOS 3.0 or later. If you have an earlier model Archimedes with RiscOS 2.0 then you will need to upgrade the operating system to RiscOS 3.1. Please contact Pineapple Software for details of how to do this.

Studio24 will work in any screen mode, but for best colour rendering a screen mode with at least 256 colours should be used. For best results with a non-multisync monitor, mode 15 or mode 36 (wide) is preferable. For multisync systems there are a large number of 256 colour modes available in varying resolutions. When using an Arm 2 processor in one of the older 300 or 400 series computers operation may be somewhat slow if a 256 colour mode other than mode 15 is used.

If you have a Computer Concepts Colour Card Gold fitted then this allows 16 bit desktop screen modes to be used (K modes). One of these should be selected when using Studio24 for best results.

Acorns Risc PC computer allows both 16 and 32 bit screen modes to be used. The 32 bit modes provide full 24 bit colour which give the best possible results.

Studio24 conforms very closely to Acorns 'Style Guide'. This means that for anyone familiar with using software on the Archimedes many of the operations will be intuitive. For those not familiar with the functions of the three mouse buttons it is probably worth spending a short time reading the 'Welcome Guide' to become familiar with the standard mouse functions and features such as loading and saving files.

Once Studio24 has been installed either onto a working floppy disc or a harddisc it can be loaded onto the icon bar by double clicking on the !Studio24 icon.

The only likely error message that will prevent this happening is as follows:-

*Application needs at least 512K to start up*

This message will occur if there is insufficient free memory available to load Studio24. If you have a 1Mb computer then you probably won't be able to run Studio24. If you have RiscOS 3 which is necessary for Studio24 then you will probably already have found that you don't have much spare memory available for running programs, so if you have not already upgraded to 2Mb now is a good time!

With 2Mb you should have ample memory for creating at least one full screen size canvas, and probably a second half screen size canvas in a 256 colour screen mode. (The picture will still be stored in 24 bits, 16 million colours, internally). If you still appear short of memory then look in the Task Manager to see where all your memory is being used. Remove any Ramdiscs and make sure that you don't have a large amount of Font cache configured which will not be much use with Studio24.

If you get any other error messages which prevent you loading Studio24 then please make a note of the exact error message and 'phone Pineapple Software for advice.

Once the Studio24 icon has appeared on the icon bar you can proceed to the first section of the handbook which explains how to create a new blank canvas.

# 3. Using Studio24

## 3.1 Creating a New Canvas

A new canvas can be created either by clicking *Menu* over the Studio24 icon on the icon bar, and then clicking *Select* on the 'New image' option, or by simply clicking *Select* over the Studio24 icon. This will cause the window shown in fig 3.1.1 to appear, allowing selection of canvas size and pixel shape.

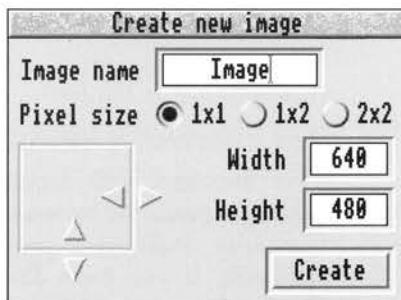


fig 3.1.1

If you have not already selected a suitable screen mode then you should do so now as the settings for horizontal and vertical resolution will default to a value that will create a full screen size canvas. The pixel size setting will also default to the most suitable for the chosen screen mode.

The size of the canvas may be set to anything you choose either by clicking on the adjuster arrows or by entering a number in the writable fields. There is no limit to the size of canvas (other than computer memory limitations) so you are not restricted to a canvas size equal to the screen size. The default name of the first canvas is 'Image' but this may be changed if required.

Any number of canvasses may be created at any one time (memory permitting). Subsequent canvasses must be given different names before they can be created. If more than one canvas is present on screen then clicking *Select* on a particular canvas will automatically attach the tool bar to that canvas allowing painting in that window.

Multiple canvasses are very useful especially when using Cut & Paste options. By cutting an area of picture to a new canvas it can be manipulated without affecting the master image and then it can be pasted back once the desired effect has been achieved. See the section on Cut & Paste for a full description of this technique.

Once a canvas has been created it may easily be modified by using the Edit menu options.

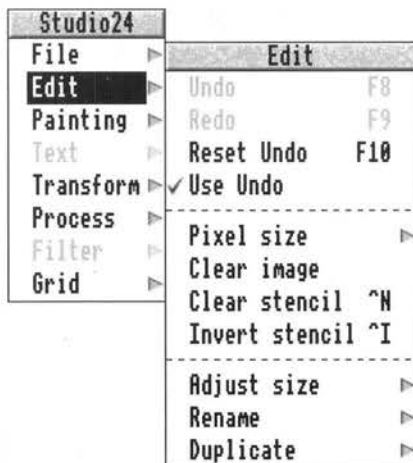


fig 3.1.2

Figure 3.1.2 shows this menu selection obtained by clicking *Menu* over the active canvas and then sliding the pointer to the right over the EDIT arrow. A number of options are available from this menu:-

### Undo (F8) & Redo (F9)

The Undo feature of Studio24 allows you to clear a previous section of painting from the screen if you are not satisfied with what you have just done. Redo allows you to reinstate that last section again. In fact you can toggle between the two repeatedly to see the difference. Undo and Redo are both available from the mode toolbar but they can also be accessed from this menu if required, or by using the F8 and F9 function keys. One or both of these options may be greyed out depending on the current state of the feature.

### **Reset Undo (F10)**

Reset Undo allows you to reset the memory pointer which defines how far back in the painting the Undo feature will work. When you have reached a stage at which you are completely satisfied with your work so far, you can click on Reset Undo or press F10 to reset the memory to this point. The memory is also reset if you start using a different brush or tool to the one you were previously using.

An error box may appear from time to time to warn you that you are about to run out of memory (or that there is not enough memory available to undo the operation you are about to attempt), and you then have the option of using Undo at this point or continuing with the operation, when the undo memory will again be reset.

### **Use Undo**

This allows you to decide whether to actually use the Undo/Redo feature. It is on by default but it may be better to switch off this feature if you have a computer with very little spare memory. This will prevent the error box warning you that you are about to run out of memory continually appearing.

### **Pixel size**

This allows the aspect ratio of the canvas to be changed to suit a particular screen mode. This is most useful when viewing an image in a different mode to that in which it was created.

### **Clear image**

This clears the complete canvas to the current background colour. You will be asked to confirm this option.

### **Clear stencil (Ctrl N)**

A stencil screen is always automatically created with each new canvas. This option allows the stencil screen to be cleared.

### **Invert stencil (Ctrl I)**

This option reverses the effect of the stencil screen, allowing painting everywhere except where the stencil is cutout. See the chapter on stencils for a full description of this feature.

### **Adjust size**

This allows the canvas size to be adjusted after painting has started. The area is increased or reduced to the right and bottom of the screen area. If you want to actually scale the image rather than change the canvas size then you should use the Transform option.

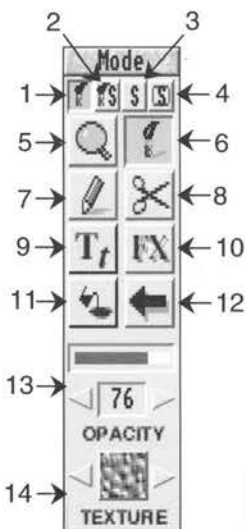
### **Rename**

Allows renaming of the current picture.

### **Duplicate**

Creates a duplicate Studio24 image (memory permitting). The name of duplicate canvasses must be set to be different to existing canvasses.

### 3.2 Mode Tool Bar



Before starting to actually paint anything onto our canvas it is worth giving a full description of the mode tool bar which always sits to the left of the active Studio24 canvas. Some of these descriptions are repeated in more detail under their own chapter entries but a brief description here will help with understanding the overall operation of the program.

The four small icons at the top of the tool bar are to select which screen is being painted (main canvas or stencil), and whether the stencil screen is displayed and active, that is whether or not the paint brush is using the stencil screen to mask off the main canvas.











This paint brush icon when selected indicates that the main canvas is being painted.



This paint brush with the 'S' in the icon determines whether the stencil mask is being painted. This can be selected at the same time as the previous icon which will then allow painting on both the main canvas and the stencil mask screen together.



The 'S' icon determines whether or not the stencil mask is active. When this icon is selected, painting on the main canvas can only take place where the stencil mask is transparent.

4.  This icon when selected displays the stencil mask superimposed on the main canvas. Stencil masks are displayed as a translucent magenta colour.
5.  The magnifying glass icon allows zooming in and out of the canvas. Zooming in is achieved when *Select* is clicked, and zooming out when *Adjust* is clicked. The zoom function allows zooming in or out by up to 16 times the standard size. The hot key Shift/F11 will also zoom out and Ctrl/Shift/F11 will zoom in.
6.  The paint brush icon selects paint mode and displays the painting tool bar at the bottom left of the canvas.
7.  The pencil icon selects drawing mode and displays the drawing tool bar.
8.  The scissors icon selects Cut & Paste mode.
9.  The 'T' icon allows text to be added to pictures.
10.  The 'FX' icon selects special processing and filtering techniques.
11.  The spilling paint can selects flood filling operations.



12.



The arrow icon selects the undo/redo option. When clicked the first time this will cause all previous painting operations to be cleared back to a point where either the brush or paint mode was changed, or the 'reset undo' option in the painting menu was clicked. If clicked a second time then the previous screen will be restored. In other words you can toggle the screen between two states, one of which contains the most recent painting operations.

During any Studio24 operation you may get an error message box telling you that there is insufficient memory to enable the current operation to be 'undone'. If you continue past this point then the undo memory is reset.

### 13. Opacity

Below the main tool selection is the opacity feature. This is located on the main-tool bar as it is a frequently used option and needs to be readily adjustable. The opacity setting controls the effectiveness or density of virtually all the painting, drawing and processing features. It can be altered either by clicking on the adjuster arrows or by clicking or dragging the slider. For best results with the spray brush this should be set to very low values, around 1-10. This allows many passes of the brush to be used to build up the paint gradually.

### 14. Texture

Below the opacity setting is the texture option. This applies the selected texture to all painting, drawing and flood filling operations. As well as all the standard textures provided, new custom designed textures may be created as sprites and dragged onto the texture box to replace existing textures. These may either be individual sprites which will replace just a single texture, or a multiple sprite file which will replace the complete set of textures with a new set. See the chapter on textures for a full description of texture operations.

### 3.3 Colour Window

The colour window has three functions. Firstly it allows the foreground and background colours to be defined for painting. Secondly it is used to set up the start and finish colours for any flood filling operations. Finally, it defines whether stencilling operations create a stencil mask or delete areas of the mask from an existing stencil. Fig 3.3.1 shows the colour window. It can be displayed either by selecting 'Show colours' from the Painting option on the main menu, or more easily by pressing *CTRL C*.

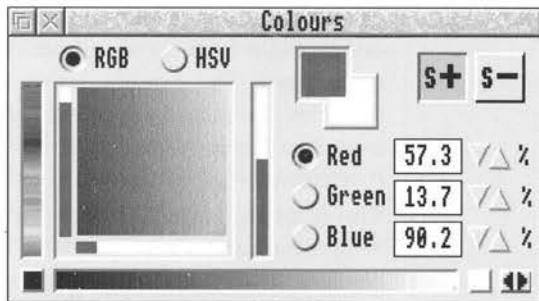


fig 3.3.1

The two overlapping boxes near the top centre of the window show the foreground and background colours. The foreground colour (top left box) is the normal colour used for painting when the *Select* button is pressed. The background colour (right lower box) can also be used for some painting operations by using *Adjust* instead of *Select*, and is also the colour used to wash the canvas when 'Clear image' is selected from the Edit menu.

The colour may be chosen in a number of different ways. First select whether the foreground or background colour is to be set by clicking in the required box. Settings can be made either using the RGB (red, green, blue) mode, or HSV (hue, saturation, value) mode by clicking on the required radio button at the top of the window. Clicking on either the vertical colour slider to the left of the window or anywhere in the colour square will set that colour. For finer control the three sliders or the adjuster arrows may be used to set exact values. The vertical

### 3.3 Colour Window

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slider to the right of the colour square represents the setting of the selected radio button immediately to the right of that slider. The other two sliders to the bottom and left of the colour square set the remaining two values. Alternatively, the adjuster arrows may be used directly to set values. These increment in .1% steps or 1% steps if SHIFT is held down.

The horizontal slider across the bottom of the window is used to set the flood fill colours. Clicking on the box to the left of this slider with either *Select* or *Adjust* will set the start colour for the flood fill operations to the current foreground or background colour respectively. Clicking on the right hand box will set the end colour for flood fill operations. The double arrow to the right of this slider reverses the start and finish colours. Clicking on this bar may also be used to pick colours for setting the main foreground and background colours.

The squares to the top right of the window with S+ and S- symbols are used to set whether the stencil is drawn or cleared. The default stencil screen is normally transparent and if the S+ box is selected, then drawing with the stencil mode on will paint a stencil onto this screen. If the S- box is selected, then painting on the stencil screen will remove any stencils present and make that area transparent.

## 3.4 Painting

If it is not already selected, then click on the large paintbrush icon on the mode tool bar to display the painting tool bar at the bottom left of the canvas as shown in fig 3.4.1

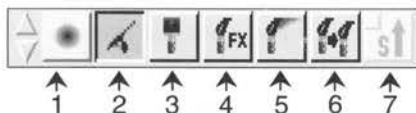


fig 3.4.1



The left hand icon shows the brush size and this is adjusted by clicking on the adjuster arrows to the left of the icon, or by pressing the +/- keys to increase or decrease its size. Sprites may also be dragged to this icon to provide user defined brushes. This feature is fully described in the chapter on user defined brushes.



The next icon selects the spray brush. Try increasing the size of the brush to about half size and then hold down *Select* and move the cursor around the screen to spray with foreground colour. Try altering the opacity setting and selecting a texture to see the effect of these features. For very detailed work it is best to set the opacity to very low values (around 1-10) and gradually build up the amount of paint on the canvas.

Holding down *Adjust* instead of *Select* will spray with background colour. If this has been left set to white (or the current canvas colour), then you can effectively 'rub out' paints from the canvas.



The next icon is the standard paint brush. This will paint with equal density over the whole brush area, although opacity and texture settings will still affect the final

result. Try selecting a different foreground colour and painting with this brush setting.

4. 

The next icon is the Fx (effects) brush. This brush does not actually apply any foreground or background colour to the canvas, it merely affects existing paint on the canvas according to the 'Process' option selected. Select 'Process' from the main menu to see all the options available. The brush size and opacity will both affect the area to be modified. It is best to use a fairly low opacity setting when using the Fx brush as the operation has an increasing effect the longer the brush is kept in the same position on the canvas. For instance, if an increase in saturation is chosen and *Select* is kept pressed without moving the brush, the saturation of that area will gradually increase to maximum possible saturation. By using a low opacity setting and moving the brush around, gradual changes in saturation can be made.

If a fixed amount of change is required then this can be achieved by selecting the stencil paint brush and the stencil option. (Three top left icons on the mode tool bar to on). This then creates a stencil and uses it to prevent further change to that area by subsequent passes of the brush. Another way of achieving a fixed amount of process is to use the Fx mode from the mode tool bar. A full description of the Fx process operations is described in the chapter on effects.

5. 

The next brush on the paint tool bar is the 'smudge' brush. This is a particularly useful tool and very similar in operation to using a finger to smudge areas of colour on a pastel drawing. Again, this brush does not actually paint any colour onto the canvas, it merely modifies paint already present on the canvas. Brush size selection and opacity both affect the power of the tool. Try smudging with a medium size brush between two different colour areas on the canvas with a dragging action from one

colour to the other. This is a very useful tool for removing hard outlines and generally smoothing areas of colour.



Next on the paint tool bar is the 'clone' brush. This allows copies of an area already painted to be made elsewhere on the canvas, but with the copy modified by the opacity setting.

Selecting this icon will produce a small square box on top of the cursor, (the size of which can be controlled by the brush size setting). The cursor (and box) can then be moved to the area which is to be copied. Hold SHIFT down to separate the main cursor from the box, and move the cursor to the point where the copy is required. *Select* is then held down while the required area is 'brushed'. SHIFT can be held down at any time to change the relative distance between the two brushes. This option can even be used between two different Studio24 windows on screen, allowing copies to be made from one canvas to another. To do this first select the clone brush option from the tool bar on the canvas which is to be copied **from**. Then move the cursor onto the canvas which is to be copied **to**, and click *Select* to move the input focus to this canvas. At this stage holding *Select* to brush on the new canvas will produce a copy where the top left of the new canvas will contain the same image as the top left of the old canvas. To change the relative positions of the two brushes simply hold SHIFT while moving the cursor as before.

Pressing Escape will realign the Clone brush



The final option on the paint tool bar is the stencil icon. When selected, this feature uses the stencil screen to determine which part of the canvas can be copied **from**. This is in contrast to the stencil icon at the top of the mode tool bar which allows the stencil screen to affect which part of the canvas is painted **to**. This option is

available for both the smudge brush and the clone brush. For a fuller description of this operation see the chapter on stencils.

The painting sub-menu shown in fig 3.4.2 and shows a few other options which apply to painting features.

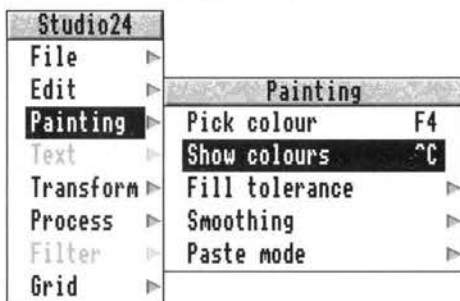


fig 3.4.2

### Pick colour (F4)

The Pick colour option is best accessed by using the hot key F4. This forces the foreground or background colour (depending which one is selected on the colour window) to be set to whatever colour is currently under the cursor.

This is a particularly useful feature when modifying existing pictures or paintings. To remove unwanted items on a picture you can place the cursor over an area of colour which you wish to paint with, press f4 to set the colour, and then use the spray brush over the area to be 'painted out'. This is the only way to get an exact colour match to an existing area of colour if you are using a screen mode which has low colour resolution.

### Show colours (Ctrl C)

This displays the colour window to allow colour selection and flood fill colour settings.

### Fill tolerance

This sets the intensity by which a pixel has to differ from the start pixel in order to be detected as a boundary by the flood fill routines. See the chapter on flood filling for

a full description.

### **Smoothing**

This allows much smoother curved brush strokes to be made than can normally be achieved by just moving the mouse. It affects all the previously described brushes. Basically the brush action trails along behind the actual cursor movement (the amount determined by the smoothing setting), and follows a smoother curve than the path actually taken by the cursor. Try setting the smoothing to maximum and then painting with the main brush to see the effect of this.

### **Paste mode**

The settings here affect the way in which objects are pasted to the screen. See the chapter on Cut & Paste for a full description.



## 3.5 Drawing

Fig 3.5.1 shows the drawing tool bar. This is selected by clicking on the pencil icon on the mode tool bar.

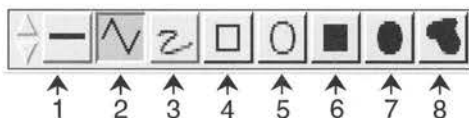


fig 3.5.1



The left hand icon shows the line thickness. This can be changed by clicking on the adjuster arrows to the left of the tool bar or by using the +/- keys.



This icon when selected allows drawing of straight lines. Click with *Select* to start the line and then move the cursor to the required end point and click *Select* again to draw the line. Subsequent movements of the cursor and single clicks with *Select* will draw further lines. To end the line either double click *Select* or click *Adjust*. Note that the line thickness may be changed at any time during line drawing.



This icon selects the freehand drawing routine. To use this option *Select* should be held down while moving the cursor around the screen. For smooth curves it is best to use the smoothing option from the paint sub-menu.



The rectangle drawing option is started and finished by clicking *Select*. If the SHIFT key is held down during this routine then a perfect square will be drawn rather than a rectangle.



The ellipse drawing routine is similar to the rectangle option with the first click of *Select* being the centre of the ellipse and the second click placing the final ellipse on screen. If the SHIFT key is held down then a perfect circle will be produced.



The filled square icon allows rectangular or square shapes to be produced in the same way as the unfilled square. The only difference is that the rectangle is filled with foreground colour. Holding down the SHIFT key produces a square shape.



This works in the same way as the previous icon providing a filled version of the ellipse or circle.



The filled freehand option combines the features of both straight line drawing and freehand drawing as follows. The first click of *Select* starts the line, and if *Select* is released and the cursor moved, a straight edge will be produced. A further click of *Select* will enable the next straight edge to be drawn. If *Select* is held down, then freehand curves can be produced. Another click of *Select* can be used to return to straight line drawing. To end the routine and fill the shape, a second click of *Select* is required. The last end point does not have to be over the start point as a straight line will automatically link the start and finish points if they are not on top of one another.

As with all painting and drawing functions both opacity and texture will affect the final result.

### 3.6 Text Printing

Text cannot be typed directly onto the canvas. This allows the exact form of words, text size, font, text aspect ratio and rotation to be set and examined before committing the result to the painting.

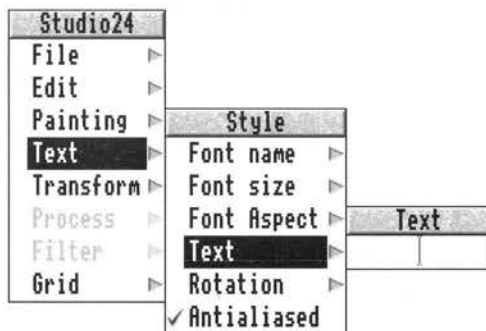


fig 3.6.1

The required wording is typed into the writable field shown in fig 3.6.1. The amount of text is not limited to that which can be fitted into the field, it will automatically scroll to the left as more letters are entered. When the text is correct press RETURN or click *Select* again to produce a movable version of the text on screen with the selected font and font size.

The fonts available will be all those that have been seen by the operating system during the boot sequence as is normal for Archimedes applications.

The option for Anti-aliased text is provided to allow the anti-aliasing to be switched on or off. Most text writing applications have anti-aliasing by default, but for a painting program it is often better to have text without the anti-aliasing option. This gives a harder outline to the text.

Text rotation can be set by typing into the writable field. The figure is entered in degrees of anticlockwise rotation.

The text will move around the screen as the cursor is moved and will be written to the screen whenever the

*Select* button is pressed. If *Adjust* is pressed then the moving text is removed from the cursor until *Select* is pressed once more.

By holding down the SHIFT key the cursor can be moved with respect to the text. This allows any part of the text to be moved off screen if required.

When positioning text it is worth remembering that if the first position is not quite where you wanted it, then you can click on the 'Undo' icon to remove it and try again.

As with virtually all painting operations the text will be affected by opacity, texture and all stencil settings.

### 3.7 Flood Filling

The flood fill routine is a very powerful feature and it is worth spending some time experimenting with all the options available. This routine can have a very powerful effect on a picture and it is sometimes difficult to predict the final outcome. When large areas are to be filled it is unlikely that there will be enough memory for the undo feature to recover the previous picture. For this reason it is often worthwhile saving the current canvas (and stencil) to disc before starting a flood fill operation. This enables the original state of the painting to be recovered easily if the result is not as expected!

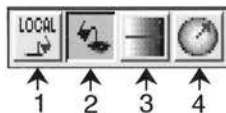


fig 3.7.1

1.  

The left hand icon has two possible states which are changed simply by clicking on the icon. This icon selects whether the flood fill operation will be local or global.

A local operation will fill an area constrained by boundary limits, whereas a global fill will fill the whole canvas regardless of boundaries (but allowing for fill tolerance setting).

2. 

This icon selects a straightforward fill in foreground colour. This does a flat fill in the chosen colour but incorporating the opacity and texture settings. For a global fill operation simply click *Select* with the cursor on the colour that you wish to start the fill on. This will fill any area on the canvas within the constraints of the fill tolerance setting, but without regard for local boundaries. For a local fill the cursor must be inside the chosen boundary area when *Select* is pressed. Whether or not the

fill will spill outside the boundary area depends on how solid the boundary is and also on the fill tolerance setting. See later in this chapter for a description of the function of the fill tolerance.

3.  and 4. 

The linear and radial fills are selected by the next two icons. These provide a fill which can gradually change in colour between two chosen points on the canvas. The start and finish colours are set up on the fill colour slider of the colour window described in chapter 3.3.

To initiate a linear or radial fill three operations are required.

First, the cursor is moved to a point at which the start of the colour change is required. Click *Select* here and then move the cursor towards the point at which the finish of the colour change is to be set. An arrow will be 'dragged' out behind the cursor showing the direction in which the colour will change. When the desired finish point is reached another click of *Select* will fix the arrow in place. A third click of *Select* is then required to start the fill operation. The reason for the third click is to enable the cursor to be moved either inside or outside a boundary to set the area to be filled without having the constraint of having to set the start and finish points of the fill within that boundary.

The following diagrams show the different effects this can produce. All the fills in the following diagrams start at black and finish at white.



fig 3.7.2

Fig 3.7.2 shows a simple local linear fill in a rectangular area. The change in shade from black to white starts at the left hand end of the arrow and finishes at the arrow head. To the left of the arrow is plain start colour and to

the right of the arrow is plain finish colour. The third press of *Select* could be anywhere in the rectangle.

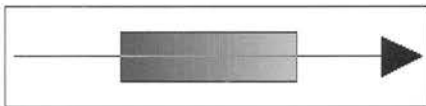


fig 3.7.3

Fig 3.7.3 shows one rectangle inside another. The fill arrow starts and finishes outside the central rectangle but the third press of *Select* to initiate the fill was from inside the central rectangle, so this is the area that was filled. Fig 3.7.4 shows the same setup but with the third press of *Select* with the cursor in the outer rectangle. This has the effect of filling the outer rectangle and not the central one.

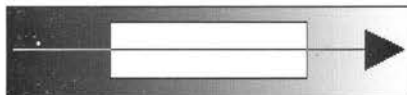


fig 3.7.4

The operation of the radial fill is identical to the linear fill with the obvious exception that the fill is started from a central point and radiates outward from the centre to the edge.

The best way to visualise the fill operation is to remember that the fill starts at some boundary point beyond the start of the arrow shaft, and then travels towards the arrow head. The shade will not change however until it reaches the start of the arrow shaft, and then it changes linearly up to the arrow head, then continuing in the finish colour until it meets the next boundary.

### Fill Tolerance

The fill tolerance setting is provided to help distinguish where the boundaries of fill operations are defined. The tolerance setting determines the maximum difference in colour of a given pixel on screen compared to the value of the start pixel to determine where the fill routine considers a boundary exists.

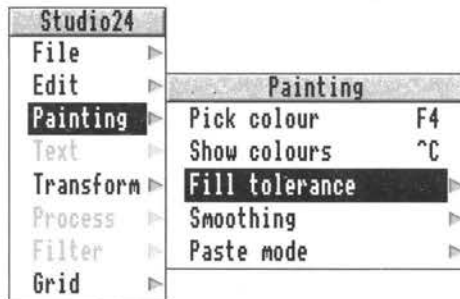


fig 3.7.5



fig 3.7.6

Figs 3.7.5 and 3.7.6 show the fill tolerance adjustment window which is accessed from the painting sub-menu.

The default setting is 10% which implies that a difference in intensity between the start pixel and boundary pixel of only 10% is enough to tell the fill routine that it should not fill past this point.

With a setting of 100% a local fill would fill the whole canvas regardless of how many boxes or lines were drawn on the screen.

Imagine a white canvas with a rectangle drawn in the centre where the rectangle outline was a 50% intensity line. If the fill tolerance was set to less than 50% then a fill initiated inside the rectangle would not spill outside the rectangle. However, if the fill tolerance was set above 50% then the fill routine would ignore the rectangle outline and flood the whole screen.

This feature is very useful as it enables two fills to be used on top of each other (maybe in different directions), but high settings of fill tolerance must be used with care as larger areas than expected can easily be filled by



### 3.7 Flood Filling

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accident!

Note that there is also an option for soft or hard edges to the fill area. When filling linear or radial fills on top of each other this determines whether pixels close to the boundaries are gradually mixed together or set to a hard edge.

Opacity and textures can both be applied to all types of flood fills for interesting effects.

## 3.8 Undo /Redo

This is a very useful feature as it allows the artist to change his mind about something he has just painted, not easily possible when using real paint!

It can also be useful to observe the effect of Process and Filter effects. After the effect has been applied the Undo/Redo feature can be clicked to rapidly toggle between the before and after state of the picture.

There are four functions associated with this feature. They are selected from the edit submenu as shown if fig 3.8.1.

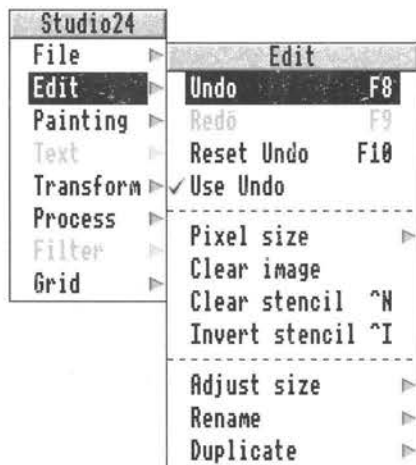


fig 3.8.1

### Undo (F8) & Redo (F9)



#### (from mode tool bar)

The Undo feature of Studio24 allows you to clear a previous section of painting from the screen if you are not satisfied with what you have just done. Redo allows you to reinstate that last section again. In fact you can toggle between the two repeatedly to see the difference. Undo and Redo are both available using the same icon from the mode tool bar but they can also be accessed from the edit

sub-menu if required, or by using the F8 and F9 function keys. One or both of these options may be greyed out depending on the state of the feature.

### **Reset Undo (F10)**

Reset Undo allows you to reset the memory pointer which defines how far back the Undo feature will work with the current tool. When you have reached a stage at which you are completely satisfied with your work so far, you can click on Reset Undo or press F10 to reset the memory to this point. The memory is also reset if you start using a different brush or tool to the one you were previously using.

An error box may appear from time to time to warn you that you are about to run out of memory and you then have the option of using Undo at this point or continuing, when the memory will again be reset.

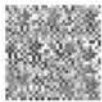
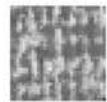
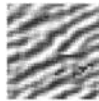
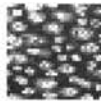
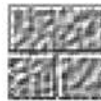
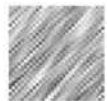
### **Use Undo**

This allows you to decide whether to actually use the Undo/Redo feature. It is ticked on by default but it may be better to switch off this feature if you have a computer with very little spare memory. This will prevent the error box warning you that you are about to run out of memory continually appearing.

## 3.9 Textures

Textures have already been mentioned briefly in conjunction with painting and flood filling operations. This chapter gives a more detailed description of their use together with details of how to create new textures.

Different textures are selected using the adjuster arrows to the left and right of the texture display box on the mode tool bar. The ten default textures are shown below.

*Canvas**Paper**Crayon**Rough**Pastel**Pencil**Ripples**Stones**Brick**Diagonal*

### Using textures

When a texture has been selected, any painting operations will use this particular texture with the amount of the effect being controlled by the opacity setting. All operations including flood filling and text printing operations will be affected.

### Creating new textures

Any of the ten default textures may be replaced by new textures in the form of 32 x 32 pixel sprites. Sprites may be simply dragged onto the texture square to replace the existing texture. Note that the blank texture square cannot be changed. Groups of ten sprites stored as a single multiple sprite file may be loaded to replace all of the current textures with the ten new ones.

To create your own textures it is best to use Studio24 itself. Create a 32 x 32 pixel canvas and using shades of grey draw the required texture. Save this using the Export option for a 256 grey level sprite which can be saved and then dragged to the required texture square.

To create multiple sprite files it is easiest to create

individual texture sprites using Studio24 and then group them together using Paint.

The Textures directory supplied on disc 1 contains one group of sprites called Halftones and twenty other individual texture sprites which may either be loaded individually or grouped according to your own requirements.

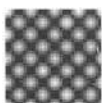
### Halftones



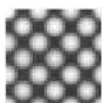
1



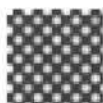
2



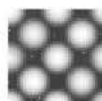
3



4



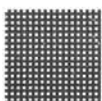
5



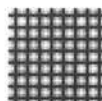
6



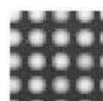
7



8



9



10

### Individual texture sprites



*Paper*



*Rough*



*Pencil*



*Ripples*



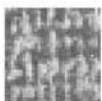
*Charcoal*



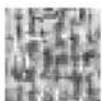
*Crayon*



*Diagonal*



*Pastel 1*



*Pastel 2*



*Pastel 3*



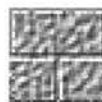
*Random*



*Watercolour*



*Canvas*



*Brick*



*Stonewall*



*Marble*



*Chalk*



*Stones*



*Woven*



*Bumps*

## 3.10 User defined brushes

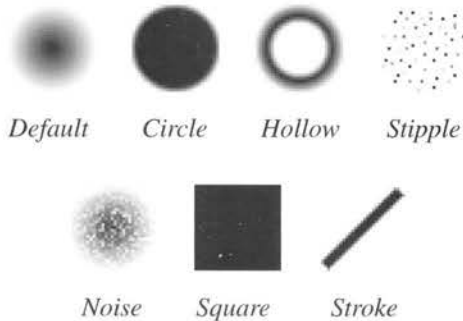
The standard circular brushes on the painting tool bar can be replaced individually or as a group by pre-defined sprites in the same way as the textures.

Sprites up to 255 x 255 pixels can be used (memory permitting), so some very interesting effects can be achieved.

If a group of ten sprites is defined, then all ten brushes can be changed to provide, say, different size shapes of the same type.

To return to the standard set of circular brushes drag the sprite file called 'Default' from the brushes directory onto the brush window.

The different brush sets currently available in the brushes directory are shown below.



When defining new brushes it is best to use Studio24 itself and create the required size canvas for each brush.

Shades of grey should be used and the darker the shade the less painting effect it will have. This means that the brushes shown above actually need to be created in a negative format compared to the pictures shown. This is very easy with Studio24 as the 'Invert' option can be used if required.

The easiest way to see how this needs to be done is to drag one of the existing brush sets into !Paint to see what is required.

### 3.10 User defined brushes

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After designing a brush, save it using the Export option for a '256 grey sprite'.

To make multiple brush sets drag the individual brushes you have created into !Paint and then save the composite sprite file in the usual way. If you are not familiar with !Paint you can read about it in the RiscOS Applications guide.

## 3.11 Transform

The transform operations all apply to the whole canvas area. As many of the operations will often be required on just part of the main canvas, it is usual to use 'Cut & Paste' to transfer the required section of picture to a new canvas before performing the transformation.

The transform menu is available from the main menu as shown in fig 3.11.1.



fig 3.11.1

### Flip horizontally

This option does just what it says, it flips the whole canvas from side to side.

### Flip vertically

This is exactly the same as the previous option with the exception that the image is flipped from top to bottom.

### Rotate (Ctrl R)

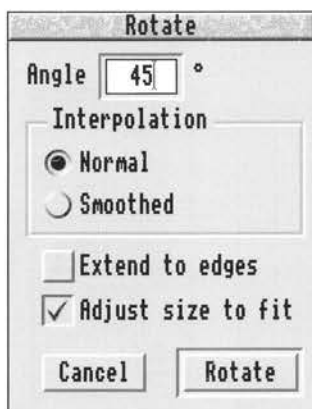
This option allows the whole picture to be rotated by any amount. Extra options are available as shown in fig 3.11.2.

The writable field at the top of the rotate menu allows the number of degrees of rotation to be entered. This is specified in degrees of anticlockwise rotation.

The smoothed option allows a routine to be used which calculates the new pixel positions and interpolates



adjacent pixels to give a result with less 'jagged' diagonal lines. This can take considerably longer with large images. Clearly, rotating a square image within a square box will cause some blank corners to appear in the resulting image. The 'Extend to edges' facility replaces the blank corners with colour which is copied from the nearest edge pixel.



*fig 3.11.2*

The 'Adjust size to fit' option will automatically increase the size of the canvas when rotating the image to ensure that the complete image is still present after rotation.

If a full canvas stencil is created before rotation (possibly by just using the 'Invert stencil' option), then the stencil is rotated along with the picture. If the stencil is then inverted after rotation and selected, the resultant picture can be pasted back into the main canvas without any blank corners being pasted back to the main image.

## Scale (Ctrl S)

The scale option also has a sub window as shown in fig 3.11.3

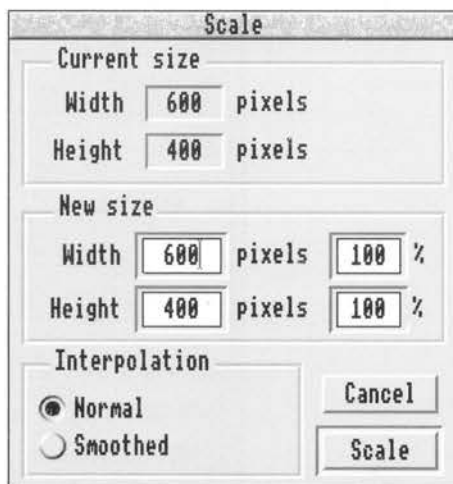


fig 3.11.3

The scale sub menu indicates the current canvas size and allows the new size to be specified either in H & V pixels, or as a percentage increase or decrease.

As with the rotate option, a standard routine can be used or a smoothed routine which takes longer but will give a better result. If the result appears slightly blurred (because of the interpolation of adjacent pixels), then the 'Sharpen' option can be used from the Fx menu to restore the original picture sharpness.

### Warp (Ctrl W)

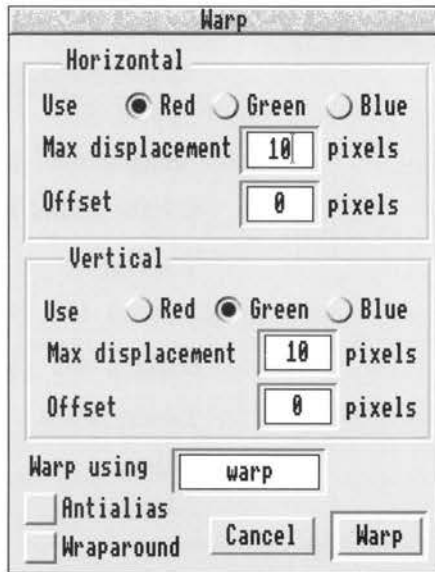


fig 3.11.4

The warp feature is rather complicated to describe but can produce some quite amazing effects. The warp sub-menu is shown in fig 3.11.4.

Warp uses one image to affect another one. The one to be modified would normally be the main canvas or a part of it that has been Cut & Pasted to a temporary canvas. The warp control image is another canvas which is currently on screen, that has either been created specially for the purpose or could be one of a group of predefined images kept on disc and loaded to screen by dragging to the Studio24 icon on the icon bar.

The idea of this feature is to be able to shift the position of just certain parts of the main canvas by using the warp image. The control is effected by using different colours in the warp image to shift parts of the main canvas in a controlled direction and by a controlled amount.

The warp image does not have to be the same size as the

main image because if it is smaller then it will be repeated across and down the canvas to ensure that every part of the main canvas is affected.

The horizontal and vertical displacements are controlled separately by any of the selected colours. A fixed displacement may also be added to each direction of movement.

The amount of the displacement depends on the intensity of the selected colour, but only up to the maximum displacement specified.

Normally, a single pixel is used from the warp image to perform the displacement of the main picture pixel. However, if the Anti-aliasing option is selected then a group of four pixels is used which can provide a smoother result.

The wraparound option determines where pixels are obtained to perform the warp near the edges of the picture when there might not be a pixel available in the required position. If wraparound is selected then pixels are obtained from the opposite edge of the picture. This may cause odd effects at the picture edges so is not always desirable.

The name of the canvas being used to perform the warp effect must be entered into the writable field.

Disc 3 (Hints & Tips) provides examples of how to use the Warp feature together with some sample warp images.

### 3.12 Grid

The Grid options are selected from the grid sub menu. The facilities are very similar to other Archimedes applications. The grid colour is selected from a choice of 16 colours.

The size selection will set an equal horizontal and vertical size. The number entered in the writable field for grid size represents the number of pixels between grid points. The vertical size may be entered separately if a grid with different horizontal and vertical scales is required.

To display the grid use either the menu option or the F1 key. To lock actions to the grid you can again use either the menu option or SHIFT F1. When grid lock is in operation the word 'LOCK' is displayed in the title bar of the current Studio24 window.

All drawing, painting, text and Cut & Paste facilities can use grid lock options.

### 3.13 Fx

The Fx tool bar is shown in fig 3.13.1. A number of options are available which allow selection of one or more areas of canvas. Once selected the area can be treated by either the 'Process' options or the 'Filters'. these are described separately in the following chapters.

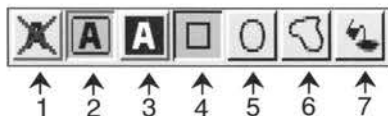





fig 3.13.1

The letter 'A' on the first three icons stands for 'Area' and indicates functions to do with displaying, clearing and selecting full screen areas.

The basic rule with selecting areas is that if a new area is selected which overlaps an already existing area then the overlap becomes deselected.

1.  **(Ctrl Z)**  
The 'A' with the cross is a clear icon which will clear all selected areas.
2.   
This icon is used to toggle between displaying or not displaying the selected areas. Selected areas are displayed in inverse video to identify them, and this icon defaults to the condition where the selected areas are displayed. Clicking on this icon therefore does not clear any areas it simply returns the display to normal video, so that the effect that is being used can be seen in normal rather than reverse video.
3.   
This icon when clicked will invert any current selections. If any other areas were already selected then they will become unselected because this is what happens when

selected areas overlap!



This is the rectangular area select icon. The first click of the *Select* button will set one corner of the required rectangle and then a second click will set the diagonally opposite corner.

If icon 2 is selected then the chosen area will change to inverse video to show that it is selected. Further areas may be selected in the same way if required.



This icon selects ellipse shaped areas (or circular areas if SHIFT is held down) in the same way as the rectangular area selection.



This icon allows selection of irregular shaped areas. This is particularly useful when an area needs to be selected which has a random outline. The first click of *Select* sets the start point and then if *Select* is released the cursor can be moved to a point which will create a straight line at the second press, or if *Select* is held down then the outline will follow the cursor movements. A double click of *Select* will terminate the area. If the final click is not over the start point then a straight line will automatically link the start and finish points.



This is the flood fill icon which allows areas to be flood filled to generate a selected area.

The cursor must be inside the area to be filled when *Select* is clicked and the fill tolerance setting will affect whether the fill spreads outside the chosen boundary.

The fill tolerance setting (selected from the paint sub menu) distinguishes where the boundaries of fill

operations are defined. The tolerance setting defines the maximum difference in colour of a given pixel on screen, compared to the value of the start pixel, to determine where the fill routine considers a boundary exists. If the tolerance setting is greater than zero then the flooded area can spread outside the expected boundary.

### **Ctrl A**

In addition to the above icons CTRL 'A' will perform a 'select all' operation. This would be the same as icon 3 if there were no current selections, but if areas were already selected then it would produce a different result.

In other words CTRL A always selects the whole screen area, whereas icon 3 just inverts the current selection, so areas already selected would become deselected.





## 3.14 Process

Once an area to be modified has been selected using the Fx tool bar options, the Process features can be used to actually perform the modification. The Process features can also be used directly with the Fx brush if required.

Don't forget that with any of these effects if you don't like the result, you can simply click on the Undo/Redo icon to see the selected area with and without the effect you have just applied.

The Process options are shown in the sub menu (fig 3.14.1).

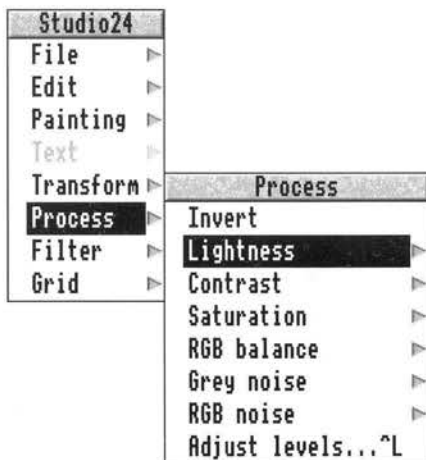


fig 3.14.1

### Invert

The invert option simply inverts the R,G & B signals. This can be slightly confusing because the selected area is shown in inverted video anyway so the invert option actually appears to make the area return to normal. Clicking on icon 2 of the Fx tool bar to remove the option to show selected areas will then show show the image as it really is now, with the chosen section inverted.

### Lightness

The lightness facility adds or subtracts a fixed amount of

equal R,G & B to the selected area. The window to allow adjustment is shown in fig 3.14.2.

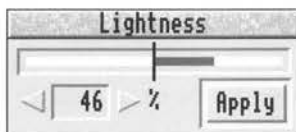


fig 3.14.2

The slider allows the lightness to be set either above or below the central bar of the slider to increase or decrease the lightness by up to 100%. Alternatively, the amount required can be set by clicking on the adjuster arrows to the left and right of the number box. Clicking on 'Apply' will perform the effect.

### Contrast

The contrast option uses the same type of box to set the amount of adjustment. The effect of the contrast adjustment is to increase the level of the R,G and B if the average level is above 50%, or reduce the level if it is below 50%. An equal amount of adjustment is applied to R,G & B.

### Saturation

The saturation control increases (or reduces) the strength of colour in the selected area.

### RGB balance

The RGB balance has three sliders as shown in fig 3.14.3.

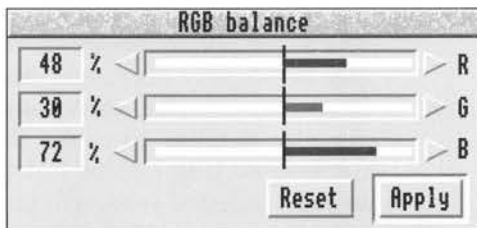


fig 3.14.3

Each slider affects its respective colour by the percentage shown in the boxes. Adjustment is either by clicking on the sliders themselves or by clicking on the adjuster arrows to the left and right of the sliders.

### Grey noise

The effect of grey noise is to lighten/darken individual pixels in a random fashion.

### RGB noise

RGB noise is similar to grey noise except that the random changes in level are not applied equally to the R,G & B levels. This causes random colour to be added.

### Adjust levels (Ctrl L)

The adjust levels facility is an extremely powerful one which enables the colours of a selected area to be altered in an almost infinitely variable number of ways. The way in which it works is slightly difficult to grasp, but worth spending some time to achieve an understanding of what is possible.

The adjust levels window is shown in fig 3.14.4

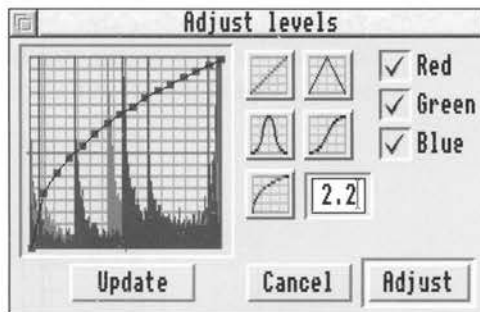


fig 3.14.4

The box with the grid to the left of the window gives a graphical representation of the colour distribution in the selected canvas areas. If no areas are selected then this box will remain blank. The horizontal scale from left to right shows colour intensities, while the vertical scale

shows the frequency of use of each particular colour.

This implies that for any given vertical line on the graph, the horizontal position shows a particular colour intensity, while the vertical height shows the frequency with which that particular colour is used in the selected areas. The display shows all three colours by default, but the ticked boxes to the right of the window allows display (and alteration) of just one or two colours.

The diagonal line from bottom left to top right of the graph shows the current standard colour setting. By moving this line the colours in the selected areas can be manipulated in many ways.

The five smaller graphs to the right of the main one allow five default settings to be easily achieved. The top left one is the standard setting. To the right of that is a shape which gives a solarisation effect. Below to the left is a cosine function setting, and to the right of that a mid range expansion setting. The lower left box is a gamma curve adjustment. The gamma value can be set by typing into the writable field to the right of the gamma curve graph.

Manual settings can be made by clicking *Select* inside the graph display which will produce a small square on the line and move it to the position where the mouse was clicked. This is shown in fig 3.14.5.

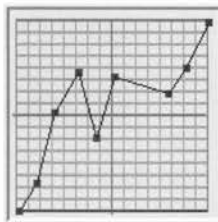


fig 3.14.5

The small squares can be picked up and dragged by using *Adjust* to move their position if required.

The box under the main graph window allows the graph display to be updated if the selected areas are changed

while the Adjust levels window is on screen.

Adjustments are only made to colours which are ticked in the colour boxes.

Once the required adjustments have been made the Adjust box to the lower right of the window can be clicked to perform the colour adjustments.

If the result is not as expected, then use the Undo feature to restore the previous colour settings and try new settings in the Adjust levels window.



## 3.15 Filter

The filter sub menu is displayed from the main menu if the Fx feature is selected on the mode tool bar. The menu has many predefined options and is shown in fig 3.15.1.



fig 3.15.1

All of the options in the top section of the menu have similar adjustment windows which all default to maximum setting. Note that these adjustments can only be made to selected areas and not by using the Fx brush.

The Undo/Redo feature is very useful when applying filter effects. After an effect has been used, clicking on the Undo/ Redo icon will instantly show the difference between the before and after state of the selected area over which the effect has been applied.

All of the filter effects are based on a technique which involves calculating a new value for each pixel by comparing it and performing a mathematical function



with up to 24 surrounding pixels. All of the predefined filters can be examined by selecting the custom filter option. This option allows you to design your own filters as well as examine and modify the existing ones. For a full description of the method of calculating the pixel values see the paragraph on custom filter design.

### **Small blur**

The small blur effect performs a simple softening effect using eight surrounding pixels to affect the pixel being modified.

### **Large blur**

The large blur also blurs the image but uses twenty four surrounding pixels to calculate the new value for the pixel being modified. The effect of the large blur filter is shown below.



*Normal*



*Large Blur*

### **Sharpen**

Sharpen uses eight surrounding pixels to produce the opposite effect to blur.

### **Wide sharpen**

Wide sharpen uses twenty four surrounding pixels to sharpen the image.

### **Emboss**

This effect adds a raised appearance to parts of the image by adding a shadow effect to the right and bottom of selected areas. This uses a single pixel to the right and bottom of areas to achieve the effect.

### **High emboss**

This works in a similar way to Emboss but uses two pixels to the right and bottom to obtain the effect. The effect of Emboss and High Emboss are shown in the

graphic display below.

**Art**

*Normal*



*Emboss*

*High Emboss*

### Box 3x3

This averages the surrounding pixels over a  $3 \times 3$  area. It produces a similar effect to small blur.

### Box 5x5

This also produces an averaging effect but using twenty four surrounding pixels in a similar way to large blur.

### Add relief

This is similar to emboss but maintains the original picture colours.

### All Edges

This detects horizontal and vertical transitions and displays them as white lines on a black background. The effect of the edge filter is shown below.

**Art**

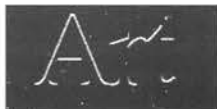
*Normal*



*Edge detect*

### Horizontal Edges & Vertical Edges

These filters detect just horizontal or vertical edges respectively.



*Horizontal edge*



*Vertical Edge*

### Pattern

The pattern filter applies a fixed pattern to the edges of images as shown in the example.

# Art

*Pattern filter*

### Duplicate x4

This produces a duplicate image offset by 4 pixels from the main image as shown below.

# Art

*Duplicate x4 filter*

The next group of filters can all have the radius over which they operate set in a writable box by the user. Clearly, if very large radius settings are used the time taken to perform the calculations required can be considerable. It is usually best to start with a 1 pixel radius to see the effect, then use Undo to restore the original before trying larger radii which may take considerably longer if large areas are being filtered.

### Min

The min filter finds the darkest pixel within a given radius and sets the central pixel to that colour. One use for this might be to thicken lines as shown below.

# Art

*Normal*

# Art

*Min (radius 1)*

### Max

The max filter finds the lightest pixel within the given radius and sets the central pixel to that colour. This can be used to reduce the thickness of lines as shown below.

# Art

*Normal*

# Art

*Max (radius 1)*

## Median

The median filter sorts the pixels within the chosen radius and sets the centre pixel to the value of the pixel half way in the sorted list. This can be used as a noise removal filter or for special effects.

## Gaussian blur

This performs a blurring effect using a Gaussian characteristic over the chosen radius. By using a large radius very strong blurring effects can be obtained.

## Motion blur

This filter will produce the effect of a moving subject or camera. The direction and distance of the effect can be set as shown in fig 3.15.2. The angle denotes the direction of blur in an anticlockwise rotation.

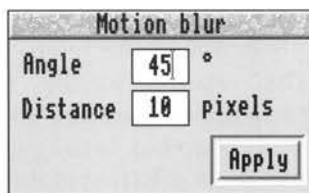


fig 3.15.

The effect is demonstrated below where the angle of blur is set to 45 degrees.

**Art**

*Normal*

**Art**

*Motion Blur (radius 3)*

### Custom

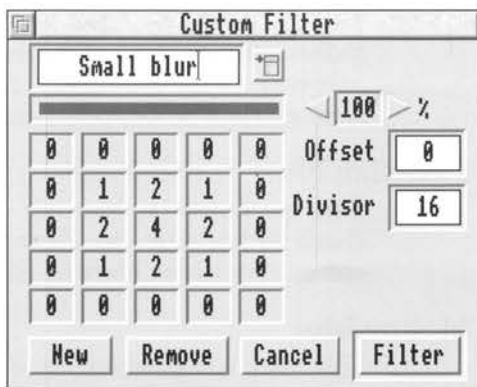


fig 3.15.3

The custom filter option allows the design of specialised filters not included in the default set. The custom window is shown in fig 3.15.3

This window initially shows all the settings for the predefined filters contained in the filter list. Clicking on the pop up box to the right of the name field will display and allow selection of the current filters.

To create a new custom filter click on the 'New' box and the default name for the new filter will appear. The first name will be Custom15 though this may be changed as you wish. The new values will initially stay the same as the previous filter displayed, but may be changed as required. This can be done by clicking *Select* in the required box which will increment the value or *Adjust* which will decrement it.

The new filter is added to the available list immediately. Any filters may be removed from the list by clicking on the Remove box. Clicking on the Filter box will perform the filter action on the selected Fx area.

The calculation is performed for each individual pixel (and separately for R,G and B pixels) in the selected area using the surrounding pixels shown in the 5 x 5 box.

The algorithm for calculating the new value of the central

pixel is as follows:-

Each pixel is multiplied by its corresponding value in its box, (including the central one), they are all added together, the offset is also added and then the result is divided by the divisor.

### **Wraparound**

When filters are being used for areas which touch the edges of the picture, the pixels used for calculations at the edges can be obtained in two different ways.

If 'Wraparound' is selected then the pixels for calculating the values near the edges are obtained from the opposite edge of the picture. If 'Wraparound' is not selected then the pixels used for calculations will be the nearest ones available.

### **Saving Custom Filters**

Any Filter sets may be saved from the 'Choices' menu. These will then be automatically loaded each time Studio24 is run.

See the chapter on 'Choices' for more details.



## 3.16 Cut & Paste

The Cut & Paste facility is one that can be used extremely effectively when manipulating just part of an image. The features such as transform and scale can only normally be applied to a complete canvas, but by using Cut & Paste, part of a canvas can be cut to a new Studio24 image, manipulated, and then restored to the original canvas with ease.

Existing sprite images can also be positioned on any canvas using Cut & Paste. The sprite is first dragged to the Studio24 icon on the icon bar to load it into its own canvas, and this can then be Cut and Pasted to any required part of the main canvas.

It is well worth spending some time familiarising yourself with all the features of Cut & Paste as this can save a considerable amount of time when painting or manipulating complicated images.

There are two basic modes of Cut & Paste operation. The simple mode will cut or copy an area of canvas to a 'clipboard' which then becomes visible attached to the cursor. This can then be pasted back to the same canvas in a different position, or pasted to any other canvas on screen.

The area to be cut is first selected using either the rectangular, circular, or irregular selection icons on the Cut & Paste tool bar. After the area has been selected, moving the cursor will move the selected area around on the current canvas. Clicking *Select* will paste the area back to the canvas in any number of chosen positions. When the selected area is no longer required, clicking *Adjust* will remove it from the cursor.

There are a number of important points to note:--

Holding down the CTRL key when the area is first selected will perform a 'cut' operation rather than a 'copy'. In this case the original area will be replaced by the currently selected background colour. The opacity setting will affect the original area. If set to 100% then the original area will be replaced completely by background



colour. If the opacity is set to 50% then the original area will be a mix of background colour and the original image.

Holding down SHIFT after the area has been cut will allow the cursor to be moved with respect to the selected area. This allows the area to be moved partly off canvas in any direction before pasting.

To paste the area to a different canvas simply make the new canvas the active one by clicking in its window, and the cut area will appear in the new canvas attached to the cursor as before.

When the area is pasted back to the canvas the resulting image will be affected by the opacity setting and the Paste Mode option.

The second type of Cut & Paste operation will automatically generate a new canvas which contains just the selected area which has been cut. This allows any required operations (such as scaling, flipping, filtering, processing etc.) to be carried out on the selected area before it is pasted back to the original canvas.

The Cut & Paste tool bar is shown in fig. 3.16.1

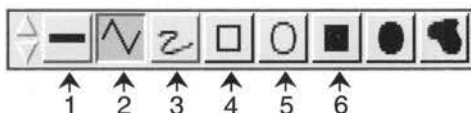



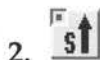
fig 3.16.1

1. 

The first icon represents an option which automatically creates a new canvas containing the area which has been copied or cut to the clipboard. The name of the first new canvas will be 'Cutout1', but as many as memory will allow may be created and they will be named 'Cutout2' etc. The new canvas will be selected as the current one and the tool bar will be attached to this new canvas.

The new canvas is now exactly the same as any other

Studio24 image. It can be manipulated in any way without danger of affecting the original image, and may then be pasted back to the original if required.



This icon changes state when clicked, and if selected to on (dot visible in top left), will use the stencil screen as a mask when cutting the selected area to the clipboard. For a fuller description of this feature see the chapter on Stencils.



This icon when clicked, selects the whole canvas as the area to be cut to the clipboard. This is most useful when a small secondary image needs to be copied to the main canvas, or when a sprite needs to be positioned on a canvas. In this case the sprite is first loaded into a new canvas and then the whole canvas selected, and copied to the main image where it can be positioned as required.



This is the standard rectangular icon which allows any square or rectangular area to be selected and cut to the clipboard. Clicking *Select* will position the first corner and then moving the cursor will drag out a box to define the area to be cut. If SHIFT is held during this operation then a square shape will be produced. A second click of *Select* will define the area, cut it to the clipboard and attach it to the cursor. Holding the Ctrl key during the final click of *Select* will replace the original area with background colour. Moving the cursor will move the area around the screen and further presses of *Select* will paste the image as often as required to screen.



This icon allows selection of circular or elliptical areas. Holding down SHIFT will produce a circular shape.

6. 

This icon allows the selection of any irregular shaped area. Clicking *Select* at sequential positions will produce straight lines, and holding *Select* while moving the cursor will draw a continuous line following the cursor movement. Double clicking *Select* will end the area selection and if the start and finish points are not on top of each other then a straight line will be drawn between the two.

### Cut or Copy ?

The option to allow either cutting an area to the clipboard or copying an area to the clipboard is provided.

The default action is to copy the selected area to the clipboard leaving the original area on the canvas, but if the Ctrl key is held as the area is selected, then the original area is replaced with background colour. Note that if the opacity is not set to 100% then a mix will be performed between the original image and background colour in the proportions set by the opacity value.

If you have changed the background colour during painting operations then it can easily be reset to a similar colour to the area being cut by using the F4 hotkey.

Select the background colour box on the Colour window and then position the cursor over the colour which you wish to replace the area you are about to cut. Press F4 to set the background colour and then perform the 'Cut to clipboard' operation as described previously. This will ensure that the colour replacing the cut area will merge nicely with surrounding colours. The smudge brush can always be used to merge coloured areas together.

### Paste Mode

A number of different options are available when pasting the image back onto the canvas. The Paste mode is selected from the Painting sub-menu and this controls the way in which the image is pasted onto the canvas. This menu is shown if fig 3.16.2

All the options except 'Difference' will use the Opacity setting as well as the chosen effect.

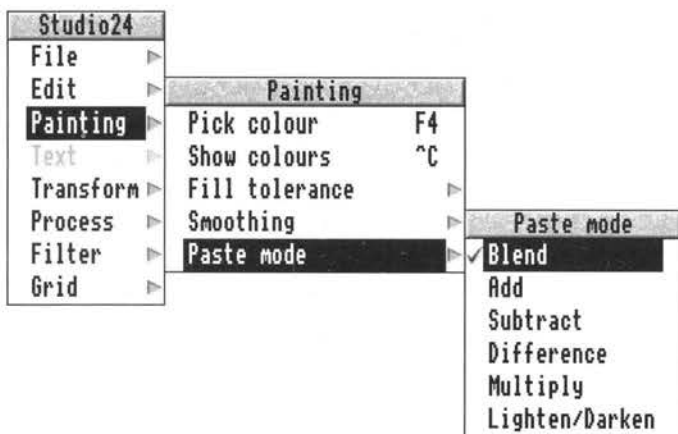


fig 3.16.2

### Blend

This is the default selection and if the opacity is set to 100% will replace anything on the canvas with the pasted image. By reducing the opacity setting, a mix in varying proportions may be obtained between the existing image and the pasted image.

### Add

This performs an addition between the two images before pasting the result onto the canvas.

### Subtract

This subtracts the paste image from the image on the canvas before displaying the result.

### Difference

This takes the difference between the two images and displays the result on the canvas.

### Multiply

This option performs a multiplication between the image

on the canvas and the image to be pasted before putting the result onto the canvas.

### **Lighten/Darken**

This option controls how the image is pasted depending on the intensity of the pixels in the image being pasted.

If the pixels in the paste image are lighter than mid grey then the image is lightened. If they are darker than mid grey then they are made darker.

Note that with coloured images the colour may change due to the R,G, & B channels being treated separately.

## 3.17 Stencils

The stencil facility greatly enhances the power of the program to produce interesting effects. Although the basis of operation is very similar to a normal artists stencil, the electronic implementation allows many extra facilities to be provided. This chapter describes all the facilities available, although the practical implementation of stencils is extensive and many uses can be thought up to provide particular useful effects.

Fig 3.17.1 shows a representation of the main canvas and stencil screen.

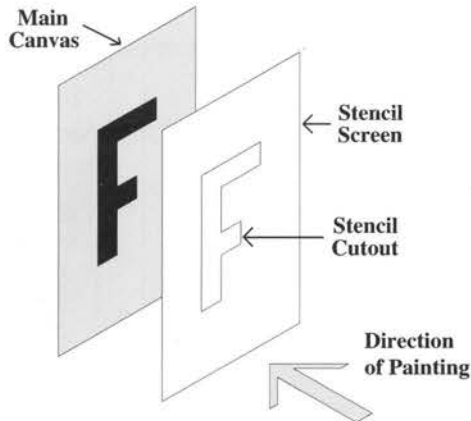


fig 3.17.1

The stencil screen is normally invisible but may be displayed superimposed on the main canvas when required. When displayed, the opaque part of the stencil is shown as a translucent magenta colour.

When the stencil screen is active, any painting actions are only allowed to reach the main canvas where there is a hole in the stencil. This applies to all actions that would put paint onto the canvas including text, flood filling, Fx and Cut & Paste facilities.

In addition to this facility there is an option which is not available to the normal artist. This function allows certain features to use the stencil screen when copying areas of

### 3.17 Stencils

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canvas, such as when using the 'Clone' brush or when cutting areas using the Cut & Paste option. In this case it is best to envisage using the stencil screen as a mask through which parts of the image are 'picked up' rather than painted. In this mode only areas of canvas visible through the mask will be copied or cut to the clipboard.

Both of these stencil facilities are available independently so that both may be used at the same time if required, and this facility can be very useful for certain types of effect.

Fig. 3.17.2 shows the top section of the mode tool bar which contains the icons which select which of the two screens will be painted to, and control the operation and display of the stencil screen.

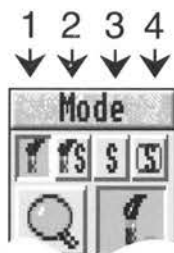


fig 3.17.2

Note that the default setting for these icons is with just the main canvas displayed and painting allowed to the main canvas only. All of these icons may be selected independently so all four may be selected together if required.

1.

This first icon when selected allows painting onto the main canvas. This is the normal default selection when painting without creating or using stencil masks.

2.

This icon when selected causes a mask to be generated by the tool being used. This may be selected at the same time

as icon 1 in which case painting will occur on the main canvas at the same time as the mask is being created. The difference between the two is that the stencil mask screen only has two states, it is either opaque or transparent. Any brush movements over the canvas will generate an opaque area on the stencil screen.

### 3.

This icon when selected makes the stencil mask active. This means that if selected, painting is only possible on the main canvas where the stencil mask is transparent.

This is exactly the same as holding up a physical stencil cutout in front of a real painting, and then spraying with paint. The paint only reaches the canvas where the stencil mask is cutout.

If this icon is not selected then the main canvas can be painted normally even if the stencil mask is opaque. NOTE: If for any reason you find that none of the tools appear to be working, then the most likely reason is that the stencil screen is active and not transparent! Try deselecting this icon.

### 4.

This icon selects whether the stencil mask is displayed. Normally only the main canvas is displayed, but if this icon is selected then the stencil mask is superimposed on the main canvas. Stencil masks are displayed as a solid magenta colour.

The default stencil mask is transparent and any painting to this screen will produce a translucent magenta coloured stencil which will act as a barrier to any painting on the main screen when icon 3 is selected.

The facility is available however, to invert the stencil mask when any previously opaque areas become transparent and vice versa. This is available from the Edit sub-menu or by pressing *Ctrl I*.

It should be noted that the stencil mask does not need to be displayed for it to be painted to, or for it to actively



prevent painting to masked areas of the main canvas. The four icons at the top of the mode tool bar control what actually happens regardless of whether the mask is actually displayed.



These icons are both on the main colours window which is accessed either from the Painting sub-menu or by pressing *Ctrl C*. They control whether stencil painting operations paint the stencil as an opaque mask or cut a hole in an already opaque area. The S+ icon is selected by default and this causes the stencil to be painted as an opaque mask on the default transparent stencil screen. If S- is selected then any stencil painting operations will paint a transparent hole in any areas where the stencil is opaque. This might be necessary for instance if the stencil screen had been inverted and some areas needed to be made transparent.



This icon can best be described as the 'Pickup stencil' icon. This appears on both the painting tool bar and the Cut & Paste tool bar and controls how the stencil is used when copying or cutting areas of canvas.

It is easiest to imagine looking through the transparent part of the stencil at the main canvas. Any selected areas of canvas which are being copied, smudged, or cut to the clipboard will only 'pickup' the parts of the main canvas that can be seen through the hole in the stencil mask.

If this icon is deselected then the stencil has no effect on how the image is copied from the canvas.

### Smudge brush

When used with the smudge brush the 'pickup' icon can be selected in conjunction with a stencil mask to prevent the smudge colours being picked up from certain masked off areas.

### Clone brush

Used with the clone brush the effect is fairly straightforward in only allowing areas to be cloned that are visible through the stencil mask.

### Cut & Paste

With Cut & Paste the 'pickup' icon will affect which areas are cut to the clipboard by only allowing areas visible through the stencil mask to be cut.

### Using Stencils

The following short tutorial will explain the basic use of stencils in step by step operations.

1. First create a new blank canvas.
2. Deselect icon 1 from the top row of four small icons on the main tool bar. Now select icons 2 and 4. This will prevent painting on the main canvas, allow painting on the stencil mask and display the stencil mask.
3. Select painting mode from the mode tool bar and increase the brush size to nearly full size. Select the spray brush.
4. Move the cursor near the centre of the screen and hold *Select* while moving the cursor to create a few random lines on screen. This will produce a hard edged magenta coloured line on the screen which is the stencil mask you are creating.
5. Now deselect icons 2 and 4 on the top row of small icons on the mode tool bar, and select icons 1 and 3. This should leave a blank canvas as now only the main canvas is being displayed.
6. With the spray brush still selected, paint over the area where the stencil was created and note that the stencil completely blocks any painting where the stencil is present.
7. Click *Menu* over the canvas and move to the Edit sub-menu. Click *Select* on the 'Invert stencil' option and try painting on the main canvas again. This time only the area where the original stencil was created will be

painted. The rest of the canvas will be masked off and no painting will be allowed anywhere else on the canvas.

8. Try selecting icon 4 now to display the stencil mask again. This shows how the stencil mask can be superimposed on the main canvas. Try pressing *Ctrl I* to invert the stencil again and see the effect.

If you have followed the previous section without any problems then you should have a good understanding of the basic features of stencilling. Try experimenting with the technique of using a stencil to only copy unmasked areas with the clone brush or Cut & Paste facilities to see the effect of these features.

One particular technique that is quite useful involves having icons 1, 2 and 3 all selected together. This means that the main canvas and the stencil screen are being painted at the same time, and the stencil is active.

This can be very useful when using the Fx brush from the painting tool bar. Normally when using this brush the effect is additive the longer the brush is held over one point on the canvas, so varying amounts of effect are obtained. By using the above combination of stencil brushes a once only effect can be obtained, thus causing just the desired amount of effect over a particular area.

This happens because the Fx brush is creating a stencil as it is applying the effect, and because the stencil is also active, then once the stencil is created, no further effect can be applied to that area. This therefore only allows the effect to be performed once on a particular area.

## 3.18 Saving and Exporting Files

Studio24 can save files in a variety of formats. The standard format is as a ClearFile which is a 24 bit format file.

Other formats include 16 and 32 bit sprites which are used by the Risc PC range of computers, and JPEG files which are an industry standard compressed file format. The PBM format (Portable Bit Map) is also catered for which is used with some PC programs.

Fig 3.18.1 shows the file sub-menu.

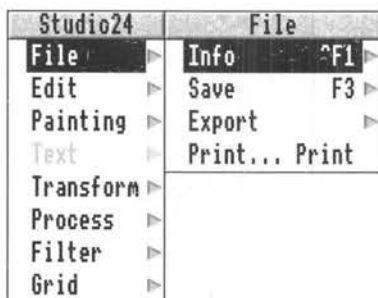


fig 3.18.1

### Info

The info option displays information about the current image. This window is shown in fig 3.18.2

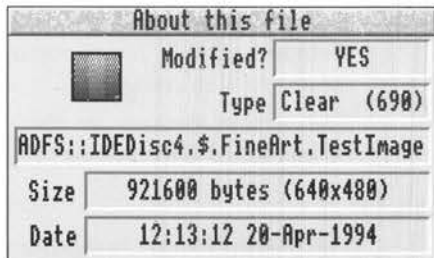


fig 3.18.2

Information is given indicating if the file has been modified since it was loaded, the file type, the size and date when it was created and the complete file name. The

size information is particularly useful if you wish to store it to a floppy disc.

### Save

The Save window shown in fig 3.18.3 is identical to any other Archimedes save window.



*fig 3.18.3*

If it already contains a full file pathname then clicking on the OK box will save the image back to the same file location. If the default filename appears in the window as will be the case for a newly created file, then the file icon should be dragged to a directory window to save the file. The name of the file may of course be set by typing in the writable field.

The default file type is the Clearfile which is a 24 bit format which does not save the stencil together with the image. This file type is widely used by Archimedes applications which use 24 bit images.

### Export

The export option allows files to be saved in a variety of formats suitable for exporting to other applications and other types of computer.

The current formats are shown in fig 3.18.4 but these may be increased with future versions of the software.

### Stencil

The Stencil format is simply a 1 bit sprite file which saves just the stencil image for the current canvas. This is necessary if you have created a picture which you are going to save as a Clearfile and you also want to keep the stencil image. After reloading the Clearfile the stencil image is loaded by dragging the sprite to the Studio24

canvas. An error will occur if the stencil is not the same size as the original canvas.



fig 3.18.4

### 8-bit sprite

This is the standard Archimedes sprite format used by many applications using up to 256 colour screen modes. The format can be used to transfer images into virtually every other Archimedes application which accepts pictures. These sprites can also be grouped together using the !Paint application.

The stencil image may be stored with the main sprite in this format if the option to do this is set in the 'Choices' menu. (The Choices menu is accessed by clicking *Menu* over the Studio24 icon on the icon bar).

### 16-bit sprite

This is a new sprite format used by the Risc PC range of computers which stores 15 bits of picture information and 1 bit of stencil information. The stencil will only be saved if the option is set in the choices menu.

### 32-bit sprite

This is another new sprite format for the Risc PC which stores the full 24 bit image information together with the stencil screen. The stencil will only be saved if the option is set in the choices menu as for the two previous sprite file types.

### 256 greys sprite

This format stores a standard 8 bit sprite image but with a palette set to give 256 grey levels. This is particularly useful for creating new textures and brushes. See the section on textures and brushes for more details of this feature.

### PBM

This format is called the Portable Bit Map which is used by some PC applications.

### JPEG

This format is very useful as it is a compressed file format which can save the image with considerable savings in disc space.

The amount of compression can be adjusted before saving, but the quality will be affected if the setting is too low. The default setting is 75% (the lower the setting the more compression), which gives a reasonable amount of compression together with good quality. There is also an optimisation option which can give slightly improved results when large amounts of compression are used.

Very small quality settings will give very highly compressed files but with poor quality. Settings higher than about 95% will give high quality but probably a larger file size than the original!

The setting is made from the Choices menu which is accessed by clicking *Menu* over the Studio24 icon on the icon bar. The setting can be saved with the !Studio24 application. See the handbook section on Choices for more information.

### 3.19 Loading Files

File loading is very straightforward with Studio24. All of the standard Archimedes methods may be used.

Double clicking on ClearFiles, PBM files and JPEG files will automatically load the !Studio24 application and the file itself if !Studio24 has been seen by the filer.

For those not familiar with the phrase 'seen by the filer', this means that at some stage after switching on your computer you have opened a directory window which contains the !Studio24 application. Alternatively, it is possible to set up your !boot file to make your computer aware of the existence of !Studio24. See your Welcome Guide for details of how to do this.

If you have other applications that recognise any of the above filetypes or you want to load a standard Archimedes sprite, then you may need to first load Studio24 onto the icon bar, and then drag the file you wish to load onto the Studio24 icon.

The above procedure will load any of the image files that Studio24 recognises onto a canvas where the canvas size is determined by the size of the image being loaded.

#### **Loading Stencil files**

The only difference to the above procedure is if you wish to load a stencil file that you have previously saved using the save stencil option. In this case you must drag the stencil file to a Studio24 canvas which is already on screen, and is the same size as the stencil you are loading.

#### **Loading Texture files**

To load new textures you simply drag a texture sprite to the texture box on the mode tool bar. Single sprites will load in place of the currently selected texture and multiple sprite images will replace all the existing textures with new ones.

#### **Loading Brush files**

Similarly with new brushes. Drag a brush sprite to the brush icon on the Paint sub-tool bar to replace that brush



with a new one, or drag a multiple sprite image to replace the whole set of brushes.

#### **Compressed files**

JPEG files will automatically be decompressed by Studio24 when they are loaded without any further action being required.

Another way of compressing files is to use the !Squash application which is supplied in the Apps1 directory with RiscOS 3.1. If files have been compressed using the !Squash application then it is possible to decompress them without having to resave the decompressed file to disc before loading it into Studio24.

Load !Squash onto the icon bar in the normal way and then drag the compressed file to the Squash icon. Then simply drag the file from the Squash save box straight to the Studio24 icon on the icon bar.

This will automatically decompress the file and load it into Studio24.

!Squash will not give as much compression as JPEG files but will restore the image exactly the same as the original.

## 3.20 Printing

The print window is accessed from the File sub-menu as shown in fig. 3.20.1



fig 3.20.1

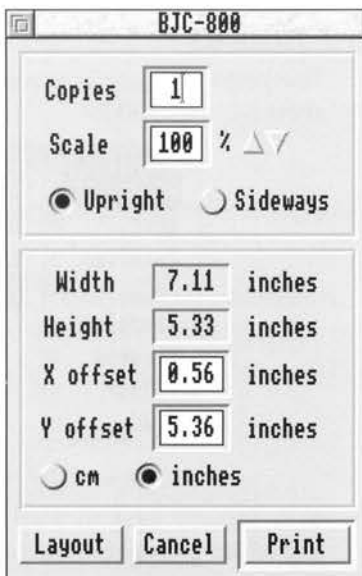
It is usually best to load a printer driver to suit your particular printer before you select 'Print' from this menu. If you are not familiar with loading or configuring a printer driver then you should read your RiscOS 3 User Guide for full details of how to do this.

When the printer driver is present on the icon bar you can call up the print window as shown in fig. 3.20.2.

The title bar will show the type of printer that the printer driver is currently set up for. Immediately below that are two writable fields to enable the number of copies and the scale of the print to be set. Upright or Sideways can also be selected to allow you to choose which way you would like the picture to be orientated.

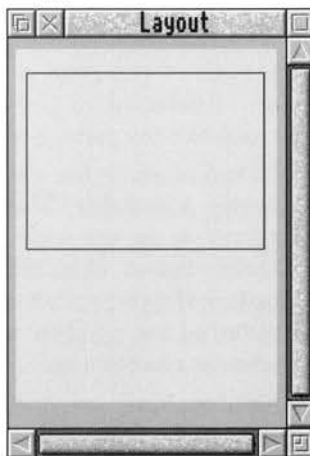
The top boxes in the lower section of the window are not directly adjustable. These show the size of the printout depending on the scale setting and the actual size of the canvas. Below that the X & Y offsets may be set to position the picture on the paper. The radio buttons at the bottom of the window allow the units to be expressed in inches or centimetres.

The 'Print' box on the lower right of the window will initiate the actual printout when all the settings are finalised.



*fig 3.20.2*

To make the positioning and scaling of the image somewhat simpler, a facility is provided to view the picture as it will be positioned on the paper. This is selected by clicking on 'Layout' when a window as shown in fig. 3.20.3 will appear.



*fig 3.20.3*

This window shows the printer paper limits as a greyed area around the edge of the paper, and the outline of the picture to be printed is superimposed on this.

Changing the scale setting in the main window will alter the size of the rectangular outline.

To position the picture on the paper it can simply be dragged using *Select*. As the outline is moved around the paper the X & Y offsets will change on the main print window automatically.

### 3.21 Choices

The Choices window is accessed by clicking *Menu* over the Studio24 icon on the icon bar. This window allows various settings to be made and saved, which are then restored every time Studio24 is used. The menu to access Choices is shown in fig. 3.21.1, and the window itself in fig. 3.21.2.



fig 3.21.1



fig 3.21.2

The top half of the Choices window allows various options to do with colours, painting and filters to be saved. The current foreground and background colours may be saved by ticking the top option.

The painting options will save the current settings for Smoothing, Fill Tolerance and Soft Edges.

The custom filters option will save the currently available filters. This will include any new ones you have created, but will not include any default ones that you have deleted. If you save a set of filters and have deleted some of the default ones then these can be restored by clicking on the 'Default' box at the bottom left of the Choices window.

The lower half of the Choices window allows setting of some of the file options. The 8, 16 and 32 bit sprite format may be set to include the saving of the stencil screen as an integral part of the file.

The JPEG importing option can have smoothing switched on. This gives a slight improvement in quality when loading JPEG files which have been heavily compressed.

The JPEG export options can have the optimised feature switched on which improves quality with large amounts of compression. The actual compression setting can be saved if required.

Clicking on the 'Set' box will put the options into effect and the 'Save' box will save the options to disc so that they may be restored when Studio24 is next used. 'Default' will restore all the programs default settings and 'Cancel' will simply remove the window without any actions being taken.

### **Minimise Memory**

The minimise memory option performs a similar function to 'Reset Undo'. It resets the undo pointer and recovers memory that has been used to store previous painting operations. The difference is that Minimise memory will recover undo memory from all canvasses on screen, whereas Reset Undo will only reset and recover memory from the canvas which is currently being used.



## 4.0 Hotkey Functions

<b>F1</b>	<b>Show grid</b>
<b>F3</b>	<b>Display Save box</b>
<b>F4</b>	<b>Pickup colour</b>
<b>F8</b>	<b>Undo</b>
<b>F9</b>	<b>Redo</b>
<b>F10</b>	<b>Reset Undo</b>
<b>Shift F1</b>	<b>Lock to grid</b>
<b>Shift F11</b>	<b>Zoom out</b>
<b>Ctrl/Shift F11</b>	<b>Zoom in</b>
<b>Ctrl F1</b>	<b>Display File info</b>
<b>Ctrl F2</b>	<b>Close Canvas window</b>
<b>Ctrl A</b>	<b>Fx - select all</b>
<b>Ctrl C</b>	<b>Display Colours window</b>
<b>Ctrl I</b>	<b>Invert stencil</b>
<b>Ctrl L</b>	<b>Adjust levels window</b>
<b>Ctrl N</b>	<b>Clear Stencil</b>
<b>Ctrl R</b>	<b>Display Rotate window</b>
<b>Ctrl S</b>	<b>Display Scale window</b>
<b>Ctrl W</b>	<b>Display Warp window</b>
<b>Ctrl Z</b>	<b>Fx - clear selection</b>
<b>Shift</b>	<b>Force square (Rectangular tools)</b>
<b>Shift</b>	<b>Force circle (Ellipse tools)</b>
<b>Shift</b>	<b>Move cutout</b>
<b>Shift</b>	<b>Move clonebrush</b>
<b>Shift</b>	<b>Move text</b>
<b>Ctrl</b>	<b>Remove cutout in Cut &amp; Paste (Cut instead of Copy)</b>
<b>Print</b>	<b>Display print window</b>
<b>Esc</b>	<b>Align clone brush</b>
<b>Esc</b>	<b>Cancel operation</b>
<b>+ / -</b>	<b>Increase/Decrease brush size, line thickness</b>
<b>Cursor keys</b>	<b>Move cursor by 1 pixel</b>



### 5.0 Hints & Tips

This chapter attempts to give some ideas on ways in which Studio24 features can be used which may not be obvious from the preceding chapters. They are not given in any particular order and should be treated as individual suggestions.

If you are not fully conversant with all the features of Studio24 then you may need to refer back to various previous chapters to be able to follow the way in which some of the Hints & Tips are implemented.

#### Freehand Painting

When painting with the spray brush it is always best to use a very low opacity setting. Start with the opacity set at around 2 - 10 and gradually build up the amount of paint on the canvas with repeated brush strokes. If you do apply more paint than you intend then you can easily just go over the area again using *Adjust* to add more background colour.

#### Using the Mouse and Cursor keys

For those not fully conversant with the features of RiscOS there are a number of useful features which can speed up the operation of windows and menus.

If you open a directory using *Adjust* instead of *Select* then the previous directory will disappear from the screen. Similarly if you close a directory with *Adjust* then the parent directory will reappear.

Using *Adjust* instead of *Select* on arrow icons will have the opposite effect. This is useful when increasing or decreasing numeric settings as you don't have to keep moving the pointer from the up arrow to the down arrow you can simply press *Adjust* to move the value in the opposite direction.

Studio24 allows you to use the cursor keys as well as the mouse to move the pointer around the canvas. Each press of a cursor key will step the pointer one pixel on the canvas. This can be very useful when zoomed in to modify individual pixels.

### Using Adjust when painting

As well as using *Select* to paint in the current foreground colour the *Adjust* button can be used to paint in background colour. This can be very timesaving as two colours can be defined and used without having to keep returning to the colour window. Also, it provides an easy way of removing paint if too much is applied to the canvas with *Select*, as *Adjust* can be used to paint background colour onto the canvas again.

### Using 'Pick Colour' (F4) when painting

The 'pick colour' feature can be used very easily to save frequent visits to the colour window. This feature allows setting of the selected colour (foreground or background) by simply placing the cursor over the required colour and pressing the hot key F4.

If a number of frequently used colours are predefined and placed in an unused corner of the canvas then they can be easily selected for painting operations by simply putting the cursor over the required colour and pressing F4.

This feature is also very useful when touching up scanned images. It allows an exact colour match to be obtained without having to carefully set up colour values on the colour window on a trial and error basis.

It also allows reading of the exact colour values of pixels in scanned images because once F4 has set the colour, the R,G and B values can be read directly from the colours window.

### Using predefined textures and brushes

An easy way to speed the loading of different textures and brushes is to use the Pinboard to keep frequently used items readily available.

### Adding textures to an image

If you want to add a texture to an already existing image then it can be done using the following procedure.

With the main image already on screen, drag the required

texture sprite from the textures directory onto the Studio24 icon on the icon bar. This will create a second canvas which is 32 x 32 pixels and contains just the required texture.

Move the cursor over the main window and set the grid size to 32 and set grid lock to on. Set Paste Mode to Add and reduce the Opacity to about 15%.

Now move back to the window containing the texture and select Cut & Paste mode. Select full screen from the Cut & Paste tool bar and move the cursor back over the main canvas and click *Select*. The cursor should now have the texture sprite attached to it.

Move the texture sprite to the top left corner of the canvas and click *Select* to add the texture to the top left corner. Now move the texture sprite to the right by 32 pixels and click *Select* again. Continue over the whole canvas until the texture has been added everywhere. If the main canvas size was not a multiple of 32 pixels when it was created then there are likely to be gaps down the right and bottom edges where you could not move the texture sprite far enough off screen to add it at these points. To add the texture at these points hold down SHIFT and move the cursor with respect to the texture sprite so that it can be positioned correctly at the edge of the canvas. This basic procedure can be used quite effectively, and the degree of texturing can easily be controlled by varying the opacity or using a different Paste Mode setting.

### Placing Sprites on a canvas

Sometimes it is necessary to import a Sprite onto a painting which is part completed. To do this the main canvas should first be displayed in the normal way. The required sprite is then dragged to the Studio24 icon on the icon bar which will automatically open up a new canvas containing the sprite.

The Cut & Paste mode is then selected on the Sprite canvas and full screen Cut selected from the Cut & Paste tool bar.

Move the cursor over the main canvas and click *Select*. This will attach the sprite to the cursor and it can be moved around the main canvas and positioned before clicking *Select* to place it on the canvas.

Remember that Paste mode and Opacity settings will both affect the way in which the sprite is placed on the canvas. If the final result is not exactly as required then use Undo to remove the sprite and reposition it before trying again.

### Changing default textures and brushes

The textures and brushes which are loaded the first time you run !Studio24 are normally the default ones supplied with the program.

The brushes and textures directories contain extra brush and texture sprites which can be dragged into the program as explained elsewhere. These directories also contain files called 'Default' which allow you to easily restore the default brushes or textures if you have loaded in a different set and wish to restore the originals.

The default brushes and textures which are loaded when the program first runs are actually contained inside the !Studio24 application. If these are changed to your own preference then !Studio24 will load these when the program is first run.

### Using the FX brush

The process options for modifying Contrast, Lightness, Saturation etc. can be used either on selected areas from the Fx tool bar or from the Painting tool bar using the Fx brush. Because the Fx brush will continually apply a particular process as long as the Select button is pressed, this can make achieving a consistent result quite difficult. For instance, when using the Saturation option with a small amount of desaturation applied, it only needs the Select button to be held for a short time to cause complete desaturation to a monochrome image! The following technique allows the Fx brush to apply just the preset amount of any of the process features.

Select the stencil paint brush and the stencil option as

## 5. Hints & Tips

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well as the normal canvas paint brush. (Three top left icons on the mode tool bar to on). Now, when using the Fx brush a stencil is created and also used to prevent further change to the area being painted by subsequent passes of the brush.

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