

## CHAPTER 5

# EDITING BITMAP IMAGES

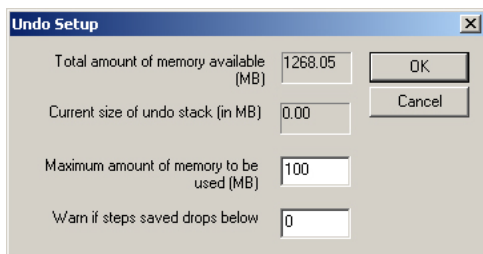
### In This Section...

- Setting memory resources for Undo
- Converting line art to a bitmap
- Creating three-dimensional chiseled or beveled patterns
- Applying color and shape blends between two shapes
- Applying color adjustments, filters and plug-ins from the Image menu
- Using AccuScan to edit bitmap images
- Converting a bitmap into line art
- Using PhotoMachine to line-trace a bitmap

## Undo Setup

Before we get started with editing bitmap images, we should highlight the fact that large images can require quite a bit of your workstation memory and hard drive space. This is particularly significant with respect to performing **Undo** operations to backtrack over your bitmap editing. If the number of **Undo** steps (and their required memory) exceeds the allocated resources, then older **Undo** steps will be discarded.

If you want to have more resources available for your **Undo** operations, then from the SignLab **Options** menu, choose **SignLab Setup | Undo Setup**.



The total amount of memory is the sum of your workstation memory and its available hard drive space. Knowing this limit, you have the freedom to increase the maximum amount, while keeping in mind that you want to leave enough resources for other applications. As such, this is a personal judgement call, but you can generally increase the maximum a certain amount, and if you are finding that there aren't enough undo when working with your bitmaps, then increase the maximum amount again.

## Rendering Bitmaps

From the **Transform** menu, the **Render to Bitmap** command is used to convert a shape into a rectangular bitmap.

When the bitmap is created, empty portions of the bitmap will be set to white. However, AccuScan can be used to make the white transparent.



### Transparent Bitmap Background

- Double-click the bitmap to enter **AccuScan** mode
- Set the **Target Color** to white (above the **Palette** button)
- Press **[Ctrl]** and then left-click the **Target Color**

From the **Image** menu, the **Image Size** command displays size and resolution parameters for the selected bitmap. The **Pixel Dimensions** refers to the on-screen image size listed in pixels. The **Resolution** is listed in pixels per inch (i.e. like dpi or dots per inch). The **Image Dimensions** are the actual size at which the image will be printed or cut, expressed in the current ruler units.

From the **Transform** menu, the **Render Contour Bitmap** command uses process colors to create three-dimension chiseled or beveled patterns. The **Constant Slope** option will cause the chisel/bevel

effect to reach its maximum height/depth at the same rate. For areas of the bitmap that have a short distance between the edge and center, the bitmap will tend to plateau. The **Constant Height** option will cause the chisel/bevel effect to dip/peak along the centerline of the shape.

From the **Transform** menu, the **Render Multitone Bitmap** command is used to convert a process color image into a bitmap that uses only Spot Foil or Spot Colors. Up to four colors may be used. This tool is effective at converting a full color bitmap into a monochrome foil image.

## Image Menu Color Adjustments

From the **Image** menu, the **Color Adjustments** flyout provides tools that are used to clean up or modify bitmap images.

### Color Adjustment tools:

- **Levels** – Adjust the distribution of color intensities throughout the bitmap, either to correct a scanned image, or to create an artistic effect.
- **Contrast/Brightness...** – The **Contrast** setting is used to modify the perceived difference between light and dark areas of the bitmap. The **Brightness** setting is used to modify the overall intensity of the bitmap.

- **Hue/Saturation...** – Adjust the Hue, Saturation, and Lightness values of the bitmap.
- **Curves...** – Adjust the tonal range (shadows, midtones, and highlights) of the bitmap.
- **Invert** – Inverts the colors in the bitmap, making it like a photographic negative. This feature can also be used to invert the color of a grayscale image, making the black white and the white black.
- **Posterize...** – Limit the number of color levels per plane (red, green, and blue). For example, two levels means two of red, two of green, and two of blue.
- **Histo Contrast...** – Increases or decreases the contrast of the bitmap image, using a histogram to determine the median brightness. Once the median brightness has been determined, pixel values above the median are brightened, and pixel values below the median are darkened.
- **Stretch Intensity** – Increase the color contrast in the bitmap without changing the number of discrete intensity values (ordinary contrast adjustments can lose high- and low-end values).
- **Histo Equalize** – Linearizes the number of pixels in the bitmap, based on the specified color space (RGB, Grayscale, etc.). This can be used to bring out detail in dark areas of an image.
- **Balance Colors...** – Redistributes the RGB values of individual bitmap pixels. For each

pixel, its red, green, and blue components are isolated, and the color sliders are then used to increase or decrease the percentage RGB values within each pixel. In this manner, a color cast can be removed from the bitmap, or a color tinge can be created for an artistic effect.

- **Swap Colors...** – Swap the color channels of the original bitmap. This feature is useful for obtaining artistic effects that would otherwise be difficult to achieve using the other Color Adjustment tools.

## Image Menu Filters

From the **Image** menu, the **Filters** flyout provides a selection of effects that can be applied to bitmap images.

### Sharpen filters:

- **Sharpen** – Increase or decrease the sharpness of the bitmap.
- **Unsharp Mask** – Despite its name, this is actually a sharpening function because it increases the contrast between light and dark areas of the bitmap. Wherever there is a brightness transition between light and dark, the light area is made lighter, and the dark area is made darker, such that the transition becomes more distinct.

### **Blur filters:**

- **Average** – Changes the color of each bitmap pixel to the average color of pixels within the surrounding pixels. This results in a blur effect.
- **Gaussian Blur** – Smooth or blur pixels with respect to their surrounding pixels. The **Radius** determines the surrounding area that is considered when blurring a pixel.
- **Motion Blur** – Blur the bitmap to create the illusion of movement within the image. Positive angles indicate a clockwise blur, and negative angles indicate a counter-clockwise blur.
- **Median Filter** – Changes the color of each bitmap pixel to the median color of pixels within the surrounding pixels.

### **Noise filters:**

- **Add Noise** – Add random pixels to the bitmap. Adding noise can be an effective means of making an image appear older or dirtier, especially where the purpose is to distract the eye from imperfections in the original image.
- **Despeckle** – Removes speckles from the bitmap, such as those present in scanned images.

### Stylize / Artistic filters:

- **Emboss** – Applies an emboss effect to the bitmap, letting you specify the depth and direction of the effect.
- **Solarize** – Creates an effect that mimics the accidental exposure of photographic film to light. This is done by inverting all color intensities that exceed the **Threshold** value.
- **Oilify** – Create an oil-painting effect. For each pixel, the **Amount** indicates the number of surrounding pixels that are considered when creating the effect.
- **Mosaic** – Create a mosaic effect by dividing the bitmap into tiles of the specified size, and then averaging the pixel colors within each tile.
- **Spatial Filter** – An assortment of artistic filters.
- **Halftone** – Converts a bitmap with any resolution to a halftoned bitmap. A halftoned bitmap is a 1-bit bitmap that has been dithered for black and white printing or display.
- **Intensity Detect** – Set all pixel color intensities to 255, or clear them to zero. If a pixel's intensity is between Low and High, then set the intensity to 255. Otherwise, clear the intensity to zero.

### Remove Red Eye

Removes the “red eye” effect that results from flash photography. For each pixel, only the red color component is evaluated.



## Image Menu Plug-In Filters

Plug-ins are software modules that are used to create special effects for bitmaps. These modules may be obtained through either Adobe or third-party plug-in developers.

After plug-ins have been installed, use **Image | Options | Plug-In Paths** to indicate the location of the plug-ins. The plug-ins will then be available under the **Image** menu.

Some plug-ins require that a foreground and background color be set. In this case, use the **Set Foreground Color** and **Set Background Color** commands.

### *The Plug-ins Helper Dialog*

Plug-in effects can create a bitmap from line art shapes. As a preliminary aid to editing your plug-in, the **Plug-in Helper** dialog can automatically apply your original line art as a clipping path on the resulting bitmap. In this way, the following advantages are obtained:

1. The "empty" portions of the plug-in bitmap are usually set to a white color, which are undesirable when arranging the bitmap with surrounding objects. Clipping to the original line art will hide the empty portions of the bitmap.
2. The bitmap that is produced by the plug-in will often have a jagged edge, which will look poor when scaled up to a large poster size.

Clipping will "trim" the jagged edge, such that scaling is acceptable.



Note: A good alternative to case (2) is to scale your original line art to the desired size before applying the plug-in effect. Line art shapes will scale without diminishing their details.







## ACCUSCAN

From the **Scan Tools** flyout, the **AccuScan** tool is used to edit bitmaps. Double-clicking a bitmap will also activate the AccuScan editing mode. The AccuScan tools may then be used to edit the bitmap, apply filters and plug-ins, and convert the bitmap into a line-traced drawing format.

## Selection Tools

When creating a selection, the **[Shift]** key may be used to extend the previous selection. In addition, the **[Control]** key subtracts from the previous selection.

-  **Whole Bitmap:** Select the entire bitmap
-  **Ellipse Select:** Select an oval area

-  **Rectangle Select:** Select a rectangular area
-  **Draw Lasso:** Select a freehand area
-  **Draw Select:** Define an area that has an irregular shape
-  **Eyedropper:** Pinpoint a color in bitmap and add it to the Shop Palette
-  **Palette:** Select regions based on specific colors. Colors may be either added or subtracted from the current selection.
-  **Magic Wand:** Select region based on similar colors. The Magic Wand setup may be used to customize what is considered to be "similar."

## Applying Image Menu Filters and Plug-Ins

When in AccuScan editing mode, the **Image** menu Color Adjustments, Filters, and Plug-Ins can all be applied to bitmaps. If only part of the bitmap is selected, then the effect or filter will only be applied to the selection.

## Bitmap Palette Colors

Click the **Palette** button to display the current colors in the bitmap palette. The **Image Palette** dialog may be used to select palette colors and move them to the front or back of the palette.

If there is not enough space in the palette for new colors, then use the **Merge Colors** tool to reduce the number of palette colors.

## Transparent Bitmap Color

Above the **Palette** button is the current **Target** color. The target color is used with the **Brush** and **Fill** tools.

The target color can be set to be transparent by pressing the [Ctrl] key and then left-clicking the **Target** color.








## Bitmap Manipulation Tools

The bitmap editing tools are summarized as follows:

### Bitmap manipulation tools:



**Brush** – Edit the bitmap using the Target color.

-  **Move Region** – Copy the selection and move it to a new location. Press [Ctrl] to fill the old region with the Target color.
-  **Crop Tool** – Trim the bitmap to the selected area.
-  **Fill Region** – Fill the selected area with the Target color.
-  **Quarter Bitmap** – Reduce the resolution of the bitmap by 50% in terms of its width and height.
-  **Extended Information** – Display information concerning the dimensions and resolution of the bitmap.
-  **Merge Colors** – Used to remove all unused colors from the bitmap palette, and to replace selected colors in the Image Palette dialog with the Target color.
-  **Posterize Region** – Generating a color palette for a bitmap where none exists, or expand/reduce the size of the bitmap palette.

### How to merge palette colors

1. Use the **Posterize Region** tool to reduce the number of colors in the bitmap to 256 or less



2. Beneath the **Target** color, click the **Palette** button
3. The **Image Palette** dialog will open
4. In the **Image Palette** dialog, click two-or-more colors, such that they have white borders
5. Click the **Merge Colors** button, and the selected colors will be set to the **Target** color

## Converting a Bitmap into Line Art

In AccuScan, a bitmap can be vectorized to produce line art that can be cut with a cutter. To get the best results from vectorizing a bitmap, use the **Posterize Region** and **Merge Color** tools to simplify the number of colors in the bitmap.



### Posterize the bitmap

1. Use the **Posterize Region** tool to reduce the number of colors in the bitmap, such as 8 or 9

### Merge similar colors

2. Beneath the **Target** color, click the **Palette** button to open the **Image Palette** dialog
3. In the **Image Palette** dialog, click the similar colors, such that they have white borders
4. Double-click the color these similar colors should be merged into. The **Target** color will be set.

5. Click the **Merge Colors** button, and the selected colors will be set to the **Target** color

#### **Vectorize the bitmap**



6. At the far-right of the AccuScan SmartBar, choose the vectorization settings from the drop-list
7. Click the **Vectorization** button

The bitmap will now be vectorized, and the resulting vector shapes will be grouped.








## **PHOTOMACHINE**

The **PhotoMachine** tools are used to convert a bitmap into a line-traced drawing that can be cut, routed, or engraved.

#### **PhotoMachine styles:**

-  **None** – Produce a grayscale bitmap
-  **Image Cut** – For use with cutters only. Weeding lines for vinyl are produced, where thin bands represent light portions of the bitmap, and thick bands represent dark portions.



-  **Wiggle** – For use with low-resolution engravers. Creates a pattern that appears to wiggle across the image.
-  **Output Tool Paths** – For use with low resolution engravers. Creates a standard engraving pattern.
-  **Squares** – For use with cutters only. A pattern of variable-sized squares is used to depict the image. Smaller squares represent light portions of the bitmap, and larger squares represent dark portions.
-  **Stars** – This style is similar to Squares, except that star shapes are used.
-  **Rain** – For use with laser-engravers. Creates multiple “falling rain” lines for each pixel.
-  **Iron filings** – This style is similar to Rain, except that all lines are created at random angles.
-  **3D Image** – Creates a 3D tool path based on the image. For devices that support depth control, the tool path may be used to render a three-dimensional relief image on the loaded material.