

Vision-Pro 7 - Table Of Contents

■ Introduction	3
The Vision-Pro Reference Guide.....	3
Limited Warranty on CADlink Products	3
Copyright Notice.....	4
■ The Vision-Pro Workspace	5
Workspace Elements.....	5
Multiple Document Windows.....	7
Workspace Colors	7
Plate Size.....	8
Origin Selection	8
Plate Object.....	11
Zoom Tools	11
Order of workspace objects	12
Custom Toolbars.....	13
SmartBar Controls	15
Objects Selected.....	15
Guidelines	17
Locking the Guidelines	18
Align Palette.....	18
Workspace Options	19
General Preferences	19
Other Options and Preferences	21
■ Working with Line Art	29
Basic Shape Creation	29
Ginsu Knife.....	30
Basic Shape Types	31
Circle Tool	31
Ellipse Tool.....	32
Rectangle Tool.....	32
Polygon Tool.....	33
Star Tool.....	33
Arrow Tool.....	35
Fan Tool	36
Monument Tool	37
Path editing	38
Object Types	39
Node Types	39
Polygon Editing	39
Arc Edit tool.....	40
Node Edit tool.....	40
Segment Edit tool.....	41
Free Edit Flyout Tool.....	43

Polyarc Editing.....	43
Snap To	43
Absolute Placement	43
Relative Placement.....	44
Polar Coordinates.....	44
Rectangular Coordinates	44
Arc Radius Mode	44
Arc Edit tool.....	44
Node Edit tool	45
Segment Edit tool.....	46
Trim tool	46
Extend tool.....	46
Divide tool	47
Delete tool.....	47
Delete Segment tool.....	47
Offset Arc tool	47
Snapping Setup	48
Weld Tools.....	49
Basic (Fuse / Color) Weld.....	50
AND Weld	52
XOR Weld	53
Parametric Ruler and Dial.....	54
The Parametric Ruler Shape	54
The Parametric Dial Shape	59
Label Formatting Rules.....	65
Creating a custom label format	66
Format Codes	66
Parametric WASP Barcode.....	69
Bar Height.....	70
Barcode Symbolologies	73
Working with Images.....	79
Render to Bitmap	79
Color Mode	79
Image Size.....	79
Render Contour Bitmap	80
Image Menu Color Adjustments	82
Levels.....	83
Contrast/Brightness.....	84
Hue/Saturation... ..	84
Curves... ..	85
Invert.....	86
Posterize... ..	86
Histo Contrast... ..	87
Stretch Intensity	87
Histo Equalize.....	88
Balance Colors... ..	88
Swap Colors... ..	89

Image Menu Filters	89
Sharpen	90
Unsharp Mask	90
Blur	90
Noise	91
Stylize / Artistic	92
Remove Red Eye.....	93
Plug-ins	93
Applying Plug-ins to sections of a bitmap.....	94
AccuScan	96
Applying Image Filters	96
Selection Tools.....	97
Bitmap Palette	98
Manipulation Tools.....	99
Bitmap Vectorization	102
PhotoMachine	105
Band Settings	105
Style and Options.....	106
Appearance	108
Orientation	109
CenterLine Tracing	109
CenterLine Tracing Features.....	110
Applying CenterLine Tracing	110
Selection Tools.....	110
Manipulation Tools.....	110
CenterLine Tracing Settings	110
■ Working with Text	115
Text Composition.....	115
Horizontal Compression	116
Choosing the Font	119
Picture Guide	121
Displaying an Entire Character Set.....	121
Installing New Fonts	121
Text and Special Effects	123
General Text Attributes.....	123
Slant	123
Text Orientation	124
Justification	124
Line Spacing	124
Case Control.....	124
Character Placement	125
Text Underline	125
Bullets	126
Spell Check	126
Braille.....	127
Style Painter.....	127
Character Width	129

Auto Kern.....	130
Kerning Styles.....	131
On-Screen Kerning Tool.....	131
Auto Layout and Creating Text Frames.....	132
Formula.....	133
Auto Layout Controls	134
Text Justification.....	134
Additional Auto Layout Controls	135
Braille.....	136
Braille Font Types.....	137
Creating Braille.....	137
Braille Engrave	140
Braille Punch.....	141
Braille Photo-Resist	142
Braille Pre-Bled Photo-Resist.....	143
Font Editing	143
Create / Edit Font Dialog	144
■ Importing and Exporting.....	155
Importing and Exporting Files	155
Working with CDL Files	155
The Vision-Pro Import Filters.....	156
The Vision-Pro Export Filters.....	156
Publish to PDF	157
Export Palette.....	157
Importing from CorelDRAW!TM	159
Saving Embedded CDL Files.....	161
Linking Text and Images	161
Linking Text and Images	161
Links	162
Acquire Image.....	164
Acquire Image.....	165
Acquire.....	165
Digitizing Setup	166
Enable Digitizer	166
■ Palettes, Strokes and Fills.....	169
Working with the Color Palettes.....	169
Shop palette.....	170
Edit Color Dialog.....	175
Setting the Color Value.....	176
Color Space.....	177
Color Type	178
Reflectivity.....	179
Color Name.....	179
Pen setting.....	179
Output Tool Paths	179
Shop Palette Context Menu	179
Open Manufacturer Palette	180

Sheet Layer Palette	183
Placing objects on layers	183
Job palette	185
Line Style Tool	186
Lock Proportions	187
Line Above	188
End Styles	188
Corner Styles	189
Cutting Thick Lines	189
Gradient and Pattern Fills	190
Gradient Fills	190
■ Operations on Shapes	201
Selecting Shapes	201
Center Nub	202
Edit mode	203
Sweep selecting objects	204
Select By Size	204
Comparison buttons	205
Select By Open	205
General Nub Actions	205
Nudge	206
Other Shape Commands	206
Slant	206
Measuring Objects	206
Basic Tools for Operations	207
InstantReplay	208
Using InstantReplay	209
Using the Storage Bin	211
The Instant Replay Window	213
Show Storage Bin	214
Decorative Border	215
Border Styles	217
Stencil Tool	220
Stencil Handles	221
Array	226
Spacing Method	227
Spin Amount	227
Arrays on an Arc	227
Alignment and Align	228
Alignment Mode	228
Align to Baseline	229
Vertical and Horizontal Spacing	230
Start Sequence	230
Creating a Sequence	231
Creating a Sequence by Vector	231
Creating a Sequence by List	232
Stretch	232

Constant Stroke Stretching	232
■ Special Effects	235
Outlines and Inlines	235
Contour Object.....	236
Transformation.....	237
Fit Text to Arc.....	238
Fit Text To Path	243
Fit Object To Path.....	247
Metamorphosis.....	248
Shadow.....	249
Round Corner.....	253
Fillet Round Corner	253
■ Production Tools	255
Production Tools	255
Job/Cost Notes	255
Company	256
TimeSign.....	262
Templates.....	263
File	263
Clear Template.....	265
Edit Template.....	265
Clip Art	265
Clip Art Viewer.....	265
■ Cutting and Plotting	267
Cutting and Plotting	267
Engraving workspace objects	267
Creating Tool Paths.....	268
Creating Tool Paths.....	268
Delete Tool Path	269
Edit Tool Path	269
Online.....	269
Male	270
Female.....	274
Fill.....	275
Drill	279
Engrave Preview	280
Sort Cut Order by Color.....	281
Engraving Defaults	290
Copies	291
Options.....	291
Plotter Setup.....	299
Plotter tab	300
Port tab	301
Plotter Options tab	304
Tool Options	305
Contour Cut Lines.....	306
Contour Cutting	306

Contour Cut On/Off	312
Die Cut	312
Tool Library	312
Type	313
Tool Parameters	314
Add.....	314
Change	314
Delete	314
Output Tool Usage.....	315
Show Traveled Distance	315
Output Spooler	316
Using The Output Spooler In Vision-Pro	317
Spooler Controls	317
Output Spooler As A Stand Alone Application.....	319
File Menu	319
Options Menu.....	321
Status Menu	323
Remote Spooling.....	325
The Remote Computer.....	325
■ Sending Print Jobs.....	329
Sending PrintJobs.....	329
The Print Command.....	329
Printer Page Tab.....	329
Printer Page tab	329
Printer.....	330
Preview	330
Moving Objects Within the Tiles.....	331
Scaling the Objects to be Printed.....	332
Activating and De-Activating Tiles	333
Setup	334
Preferences Tab.....	334
Copies	335
Print As Shown On Screen	335
Printing Mode	335
Include Bitmaps	336
Include Dimensions and Notes	336
Include Guidelines	336
Separate Colors	336
Clip Separated Colors	336
Fit to Printer	336
TrueType Hinting.....	336
Print By Color	336
Anti-Aliasing.....	342
Page Setup Tab	342
Margins	343
Overlap.....	343
Units.....	343

■ Advanced Cutting and Plotting	345
Advanced Cutting and Plotting.....	345
Clipping Shapes.....	345
Rubber Stamp.....	346
Nesting.....	347
Starting Corner.....	347
Badges.....	348
Setting the Number of Badges.....	349
Text Substitution.....	352
Paging Tool and Page Control.....	355
Creating Plate Objects.....	357
Create a set of plate objects.....	357
PhotoLaser.....	358
Histogram.....	359
Edge Enhance.....	359
Threshold.....	360
Dither.....	360
Mixing.....	361
Invert.....	361
Flip.....	361
Simulation.....	361
Weed and Power Weed.....	361
Weed Border.....	361
Registration Marks.....	363
Filtering Registration Marks.....	363
Plotter Jog.....	365
Enabling Plotter Jog.....	366
Jogging Controls.....	366
Tiling.....	370
Default Tile Settings.....	370
Creating tiles.....	372
■ Hot Keys	377
Hot Key Summary.....	377
Functions Keys.....	379
■ Index	381



REFERENCE GUIDE

INTRODUCTION

INTRODUCTION

[!\[\]\(d84e7ea36f695d92cb39ec32c307ac93_img.jpg\) The Vision-Pro Reference Guide](#)

[!\[\]\(feabb98897b440bc8695a03336a6e2df_img.jpg\) Limited Warranty on CADlink Products](#)

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THE VISION-PRO REFERENCE GUIDE

This reference guide contains an overview of the features and workflows that are included with the Vision-Pro package, with Spot Color module, and Print & Cut Manager module. This documentation is intended to help orientate the novice user and highlight particular workflows that will improve efficiency. Be aware that Vision-Pro is feature rich, so we invite you to experiment with new designs and methods.

If you have not already done so, then we ask that you perform registration of your package, such that we may better customize our technical support to your needs.

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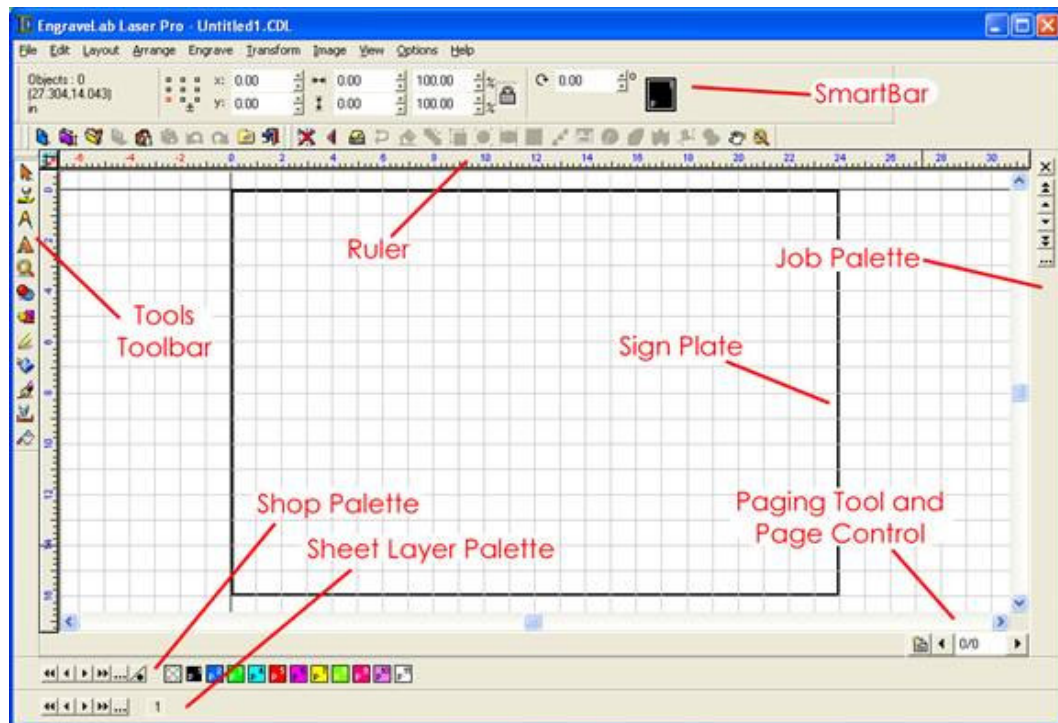
THE VISION-PRO WORKSPACE

THE VISION-PRO WORKSPACE

- [? Workspace Elements](#)
- [? Multiple Document Windows](#)
- [? Workspace Colors](#)
-  [Plate Size](#)
- [? Plate Object](#)
- [? Zoom Tools](#)
- [? Order of Workspace Objects](#)
- [? Custom Toolbars](#)
-  [SmartBar Controls](#)
-  [Guidelines](#)
- [? Align Palette](#)
-  [Workspace Options](#)

WORKSPACE ELEMENTS

The Vision-Pro workspace is arranged to simulate a working area, where the **Sign Plate** can be set as a visual cue of the available space for the sign or cutting area.



The basic display of workspace objects may be modified from the **View** menu.



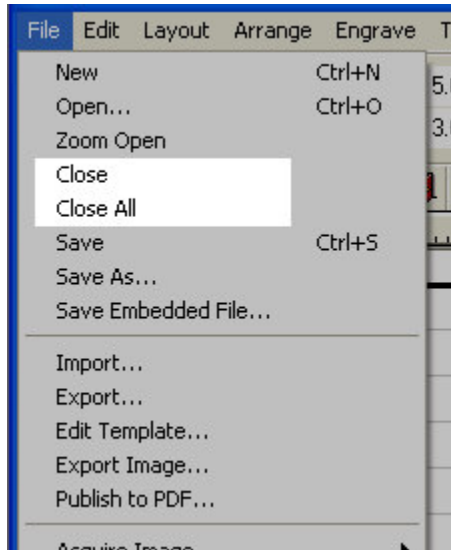
The View menu items are summarized as follows:

Show Plate	Show an outline that visually represents the dimensions over which the cutting tool will have free range.
Show Substrate	Set the plate color according to the substrate color, as indicated by the currently selected Sheet Layer plate. When the Show Substrate option becomes disabled, the plate color will be reset to white.
Show Fill	Toggle the use of wire frames to improve the screen refresh time.
Show Bitmap Outlines	Display outlines in place of bitmaps in order to improve the screen refresh time.
Link Show Fill and Bitmap Outlines	When Show Fill is toggled, also causes wire frames to be shown instead of bitmap image.
Show Tool Diameter	For a shape that has been applied with a tool path, toggle the display of the tool diameter. Also toggles the display of line styles.
Show Tool Paths	For a shape that has been applied with a tool path, toggle display of the tool movements.
Show Tool Paths Only	Hide all workspace objects except for tool paths.
Show Rulers	Toggle the display of workspace rulers.
Show 3D	Simulate cutting depth by creating an on-screen 3D effect.
Show Bitmaps Only	Hide all objects that are not bitmaps.
Show Reduced Bitmaps	For display purposes only, reduce the color depth and resolution of bitmaps. This will improve the screen refresh time.
Show Grid	Toggle the display of grid lines.
Show Guide Labels	Toggle the display of guideline labels.
Palettes	Choose the color palettes that are visible.

Toolbars	Choose the custom toolbars that are visible.
Show InstantReplay	Show the InstantReplay window.
Show Storage Bin	Show the Storage Bin window.

MULTIPLE DOCUMENT WINDOWS

To have more than one Vision-Pro window open at the same time, enable the **Multiple Instance** option under the **Options** menu. To help manage these windows, there will be two additional commands under the **File** menu: **Close** and **Close All**.

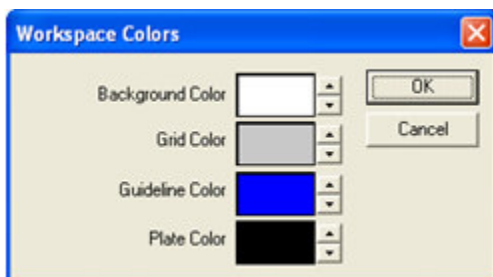


- **Close** – Close the current Vision-Pro window (prompt to save)
- **Close All** – Close all of the Vision-Pro windows

Having extra Vision-Pro windows allows components of the design to be edited separately and then combined. To move a selected object between Vision-Pro windows, use the Copy and Paste commands. In addition, an object can be drag-and-dropped between Vision-Pro windows.

WORKSPACE COLORS

The **Workspace Colors** dialog is used to customize the basic appearance of the workspace. The **Background Color** refers to the area around the plate size, and the **Plate Color** sets the edge color of the plate size.



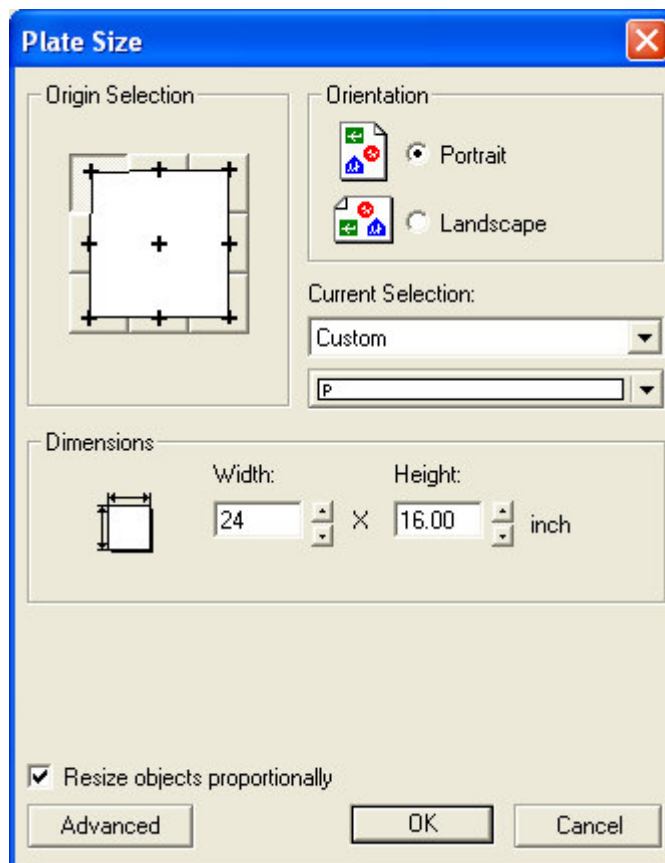
The color within the plate size is set within the **Current Selection** of the **Plate Size** dialog. However, please note that this color is superseded by the **View menu >> Show Substrate** option.

PLATE SIZE

Plate Size

The plate size is a visual representation of the area that is available for printing and/or cutting. The **Plate Size** dialog is used to customize the dimensions and orientation of the sign plate. In this fashion, the spatial arrangement of workspace objects may be verified prior to beginning a print or cut job.

The **Plate Size** dialog is accessed by choosing **Plate Size** under the **Layout** menu.



Origin Selection

Origin Selection

The **Origin Selection** is used to indicate the zero position of the sign plate. By default, the zero position is set to the lower-left corner of the plate.

Orientation

The **Orientation** refers to the rotation of the plate size (i.e. the document orientation). This **Orientation** is independent of the page size orientation that is used when printing.

Current Selection

The **Current Selection** drop-list is used to choose the size (width by height) of the sign plate. If the **Custom** size is chosen, then the **Width** and **Height** fields may be entered.

Below the drop-list is the default color of the sign plate. When a new workspace is created, the sign plate will default to this color.



Note: When the **Show Substrate** option is disabled, the sign plate will default to white instead of using the default **Plate Size** dialog setting. This is a special case that is intended to prevent potential confusion when working with substrate colors.

Dimensions

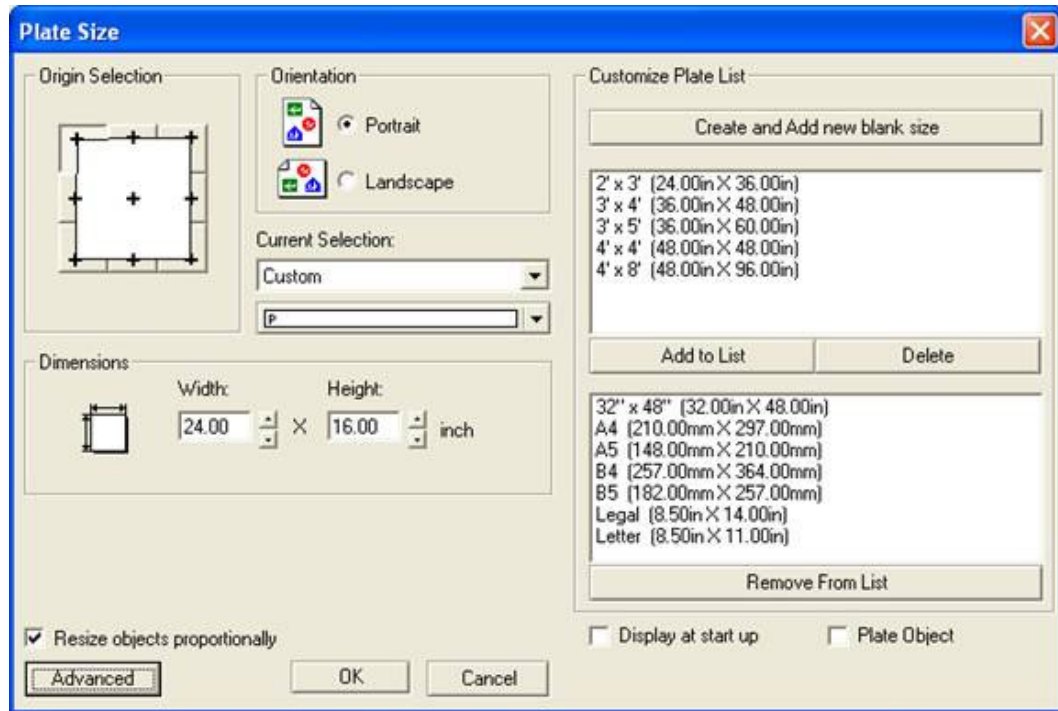
Displays the current dimensions of the sign plate. If the **Landscape** option is enabled, then these values will be swapped (i.e. height by width).

Resize Objects Proportionally

If the **Resize Objects Proportionally** option is checked, then any changes to the plate size will cause the workspace shapes to be resized proportionally.

Advanced Settings

Click the **Advanced** button to toggle the display of advanced plate size controls. These controls are used to create a plate size that can be added to the **Current Selection** drop-list.

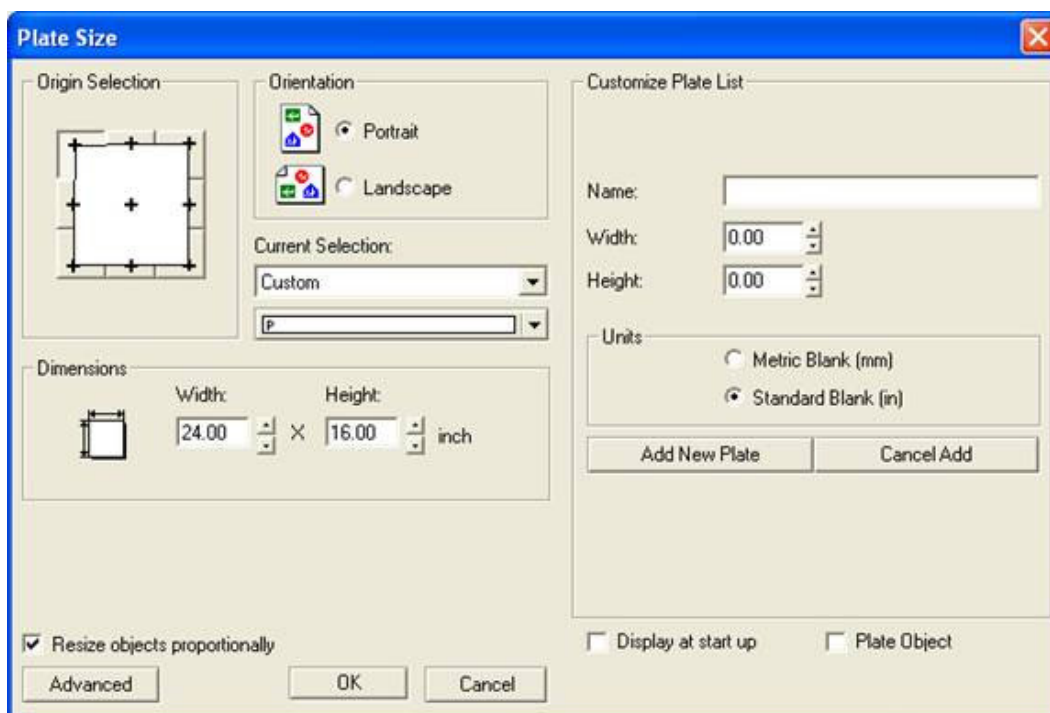


The advanced controls have two lists of plate sizes. The top list contains plate sizes that have yet to be added to the **Current Selection** drop-list. The bottom list contains plate sizes that are available in the **Current Selection** drop-list.

Create and add new plate size

If the "Create and add new plate size" button is clicked, then the advanced plate size controls will be temporarily replaced with controls for entering the new plate size.

After entering the **Name**, **Width**, **Height**, and **Units** for the new plate size, click the **Add New Plate** button. The plate size will be added to the bottom list of plate sizes (i.e. it will be available from the **Current Selection** drop-list).



Add to List

For a selected plate size in the top list, click the **Add to List** button to include the plate size in the bottom list (i.e. add the plate size to the **Current Selection** drop-list).

Delete

For a selected plate size in the top list, click the **Delete** button to remove the plate size.

Remove From List

For a selected plate size in the bottom list, click the **Remove From List** button to remove the plate size (i.e. remove it from the **Current Selection** drop-list). However, the plate size will remain available in the top list.

Display at start up

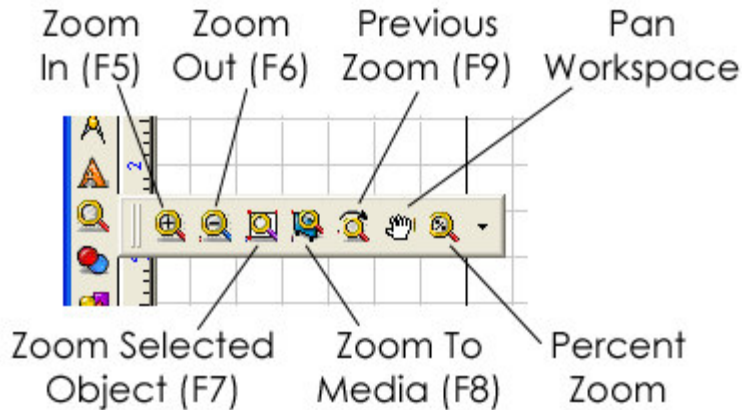
If the **Display at start up** option is enabled, then the **Plate Size** dialog will open when a new workspace is created.

PLATE OBJECT








The **Sign Plate Object** menu item will create a shape that has the same dimensions and coordinates as the plate size. The newly created shape will be placed at the bottom layer order, such that it will appear under other workspace shapes. A spot color may then be assigned to the shape for use as a background.

ZOOM TOOLS

As a tip, pressing the **F8** function key will return the view to the sign plate, which is equivalent to 100% zoom.



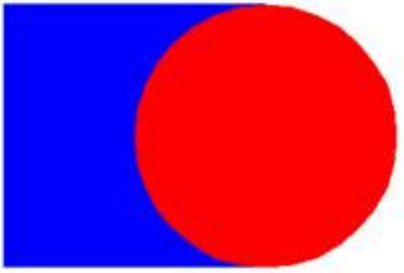
The zoom functions are summarized as follows:

	Zoom In	[F5]	Focus on marquee drawn by cursor. Right-click to zoom out.
	Zoom Out	[F6]	Display more area of the workspace.
	Zoom In	[Shift+F6]	Alternative method to focus on workspace area.
	Zoom to Selected Object	[F7]	Fit the viewing area to the selected objects. If no objects are selected, then fit to all objects.
	Zoom to Plate Size	[F8]	Fit the viewing area to the sign plate.
	Zoom to Previous View	[F9]	Toggle between the current and previous zoom levels.
	Pan Workspace	[Middle Button]	Click-and-hold on workspace, then drag view.
	Percent Zoom	[Mouse Wheel]	View workspace at a specific zoom level.

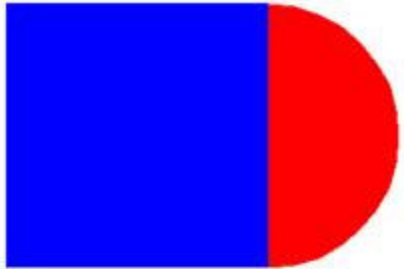
ORDER OF WORKSPACE OBJECTS

Though objects are usually edited in terms of their width and height, workspace objects also have a layering order that determines whether an object will appear to be on top of another object. The order of individual objects may be modified using the following commands:

To Front	[Ctrl + F]	Position the selected object before all other objects
To Back	[Ctrl + B]	Position the selected object behind all other objects
Forward	[Ctrl + U]	Increase the relative position of the object
Backward	[Ctrl + L]	Decrease the relative position of the object
Reverse	[Ctrl + M]	Invert the relative order for a group of selected objects



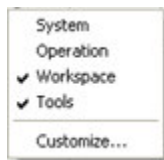
Circle has a **higher** layer order than the square



Circle has a **lower** layer order than the square

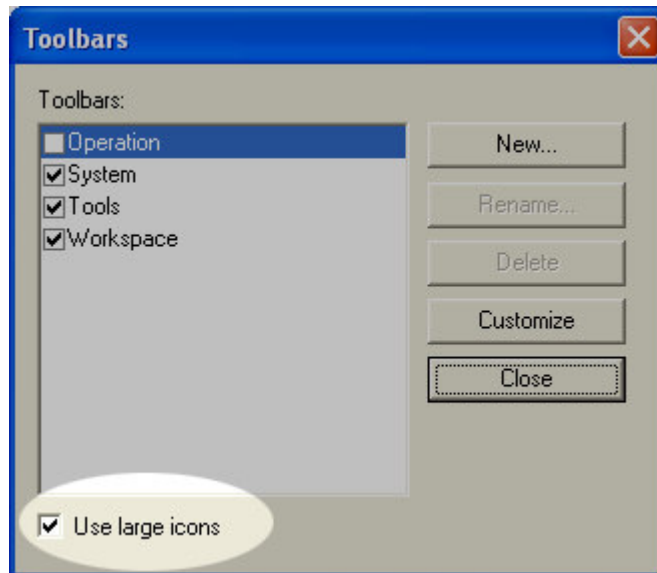
CUSTOM TOOLBARS

Toolbars may be customized by right-clicking any of the toolbars. These customize controls are also available from the **Toolbars** flyout (**View** menu).



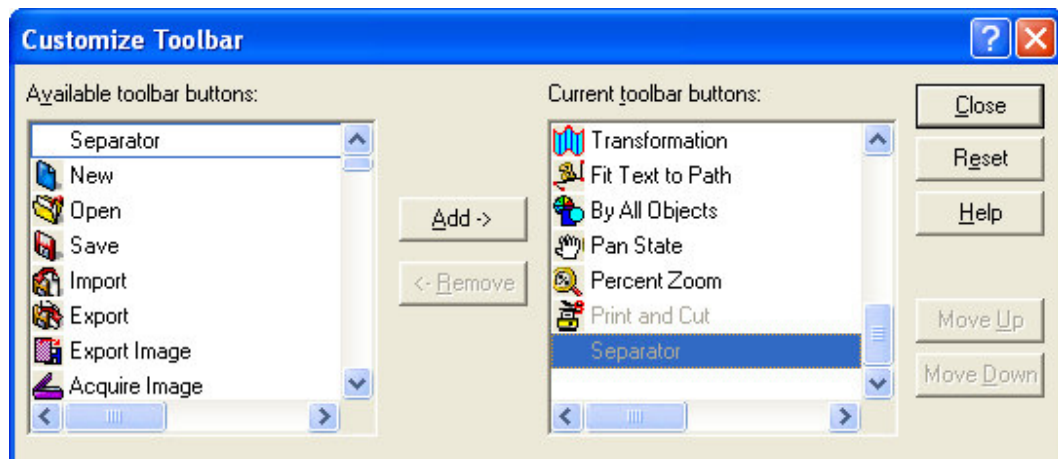
Large Button Icons

When editing the list of toolbars, the “Use large icons” option is used to access a larger alternative set of icons.



Customize

When a new toolbar has been created, the **Customize Toolbar** dialog is used to add, remove and rearrange the available commands.



The **Customize Toolbar** controls are described as follows:

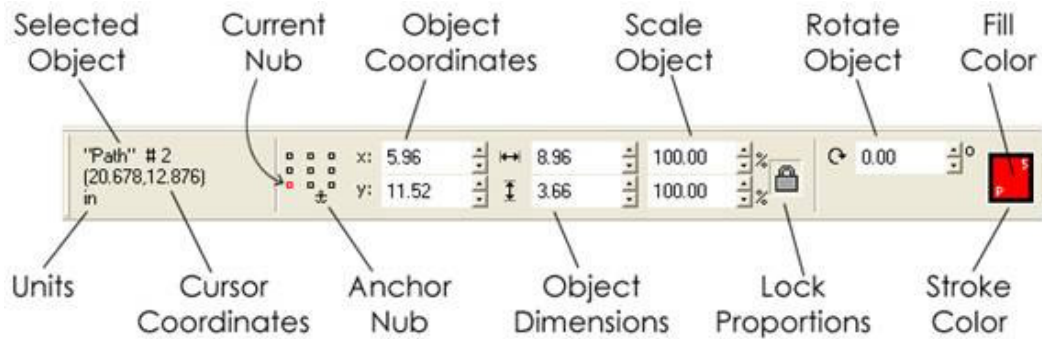
Available Toolbar Buttons	This list displays the buttons that are not currently on the Customizable Tool Palette . To add a button to the palette, first select the button from this list, and then click the Add button.
Add	To add a button to the Customizable Tool Palette, select a button from the “Available toolbar buttons” list, and then click the Add button.
Current Toolbar Buttons	This list displays the buttons that are currently on the Customizable Tool Palette. To remove a button from this list, first select the button from this list, and then click the Remove button.
Remove	To remove a button from the Customizable Tool Palette , select a button from the “Current toolbar buttons” list, and then click the

	Remove button.
Close	Click the Close button to exit the Customize Toolbar dialog.
Reset	The Reset button returns the Customizable Tool Palette to the settings that were in effect when the Customize Toolbar dialog was opened.
Help	Press the Help button to access the On-line Help.
Move Up	To increase the priority of a button, first select that button in the "Toolbar buttons" list, and then click the Move Up button.
Move Down	To decrease the priority of a button, first select that button in the "Toolbar buttons" list, and then click the Move Down button.

SMARTBAR CONTROLS

SmartBar Controls

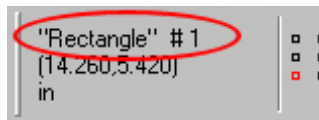
The SmartBar is a special toolbar in Vision-Pro that provides context-sensitive controls according to the type of operation that is being edited. When a shape is selected, the SmartBar displays information such as the shape size and position.



Objects Selected

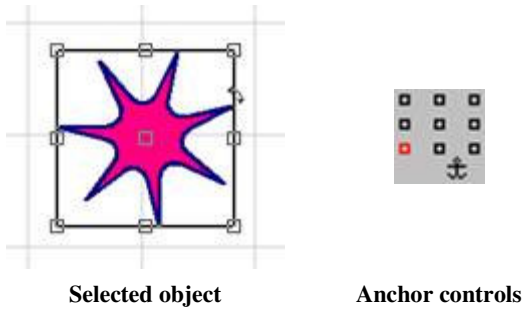
Objects Selected

The shape type is listed at the far-left of the SmartBar. Next to the shape type, the number indicates the database order of the shape. When pressing **[TAB]** to advance between different shapes, the **[TAB]** order is the same as the database order.



Current Nub

Selecting a shape will reveal its bounding-box, which has nine square nubs that are used for moving, scaling and resizing the shape. Within the SmartBar, the anchor controls indicate the current nub. When the SmartBar is used to move or resize a shape, the current nub is used as the reference. For example, clicking the lower-left nub in the SmartBar will indicate that shapes should be resized with respect to their lower-left bounding box.



Selected object

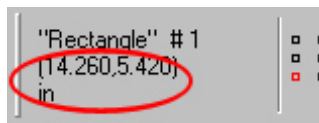
Anchor controls

Anchor Nub

If the anchor nub is clicked in the SmartBar, then a small, "anchor" icon will appear within the bounding box. To use the anchor nub, position the anchor over a specific part of the shape. Then, type new X and Y coordinates in the SmartBar. The anchor will be moved to the new coordinates, and the shape will be moved with the anchor.

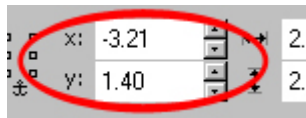
X & Y Coordinates of Mouse/Cursor

Below the Objects Selected field, the X and Y coordinates of the cursor are displayed, as well as the current units of measurement that are being used on the workspace.



Object Coordinates

The X and Y fields display the coordinates of the selected object.



These coordinates may be changed by either dragging the object with the mouse, or by entering a new value in one of the fields. If entering new data in a field, then the data will not be accepted until the Enter key is pressed.

Object Width and Height

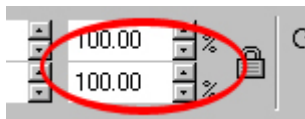
The Width and Height fields display the size of the selected object.



These dimensions may be changed by either resizing the object with the mouse, or by entering a new value in one of the fields. If entering new data in a field, then the data will not be accepted until the Enter key is pressed.

Object Scale

The Object Scale fields are used to resize the object as a percentage of its original dimensions.



The Object Scale arrows will resize the object in 5% increments. Alternatively, the scale may be changed by entering a new value in one of the fields. If entering new data in a field, then the data will not be accepted until the Enter key is pressed.

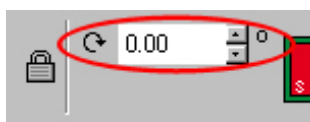
Aspect Ratio

When an object is either resized or scaled, the Aspect Ratio button may be maintained by activating this button:



Rotation

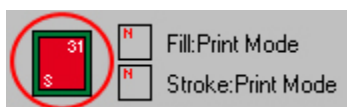
The Rotation field indicates the degrees through which the object will be rotated.



The Rotation arrows will rotate the object in 15 degree increments. Alternatively, the rotation may be changed by entering a new value in the field. If entering new data in the field, then the data will not be accepted until the Enter key is pressed.

Object Color

At the far-right of the SmartBar, the fill and stroke color for the selected object is displayed. If no object is selected, then the default fill and stroke colors are displayed.



GUIDELINES

Guidelines

A guide is a vertical or horizontal reference that is used for placing objects. To create a guideline, right-click on the desired ruler location. Objects will then "snap" to the location as they pass over the guideline.

Note: As many as sixty guidelines in either direction can be displayed on the screen.

Guidelines may be edited by either right-clicking the workspace, or accessing the **Guides** flyout (**Options** menu).

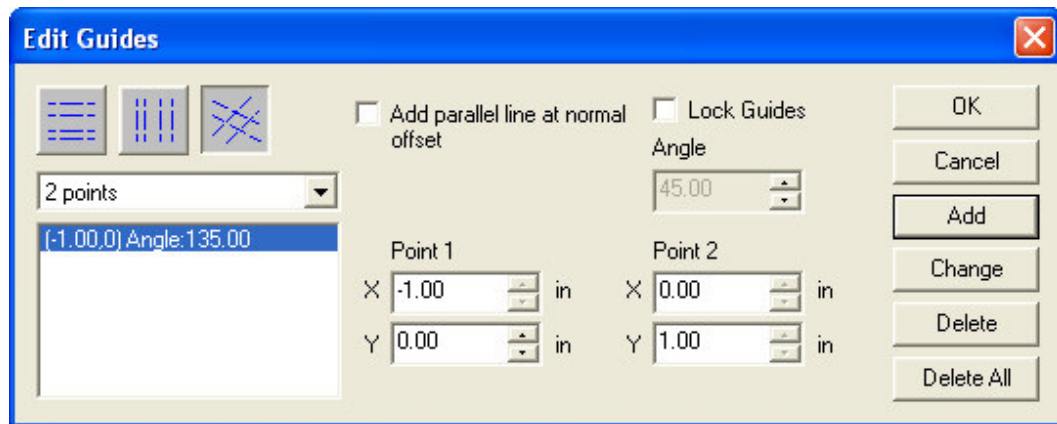
As an example, the following steps will create a guideline between two points:

1. Right-click the workspace to open the **Edit Guides** dialog

Vision-Pro 7 Doc Files

2. Set the guideline orientation to diagonal
3. Choose "**2 points**" from the drop-down list
4. Set the coordinates for both **Point 1** and **Point 2**
5. Click the **Add** button

The resulting guideline will pass through the indicated points. Please note that the Edit Guides dialog will automatically simplify the coordinates that were entered.



Guideline functionality is summarized as follows:

- Right-click a ruler to create a guide
- For a selected object, press **[Shift]** and right-click the object handles to create guides (not when editing a parametric shape)
- To add guides when node editing, press **[Shift]** and right-click the node
- Open the **Edit Guides** dialog by right-clicking on workspace (when there are no objects selected)
- Open the **Edit Guides** dialog by **Options | Guides | Edit Guides**
- When dragging the position of a guide, press **[Shift]** to constrain guideline to nearest ruler increment
- To remove a guide, press **[Shift]** and right-click the guide (when there are no objects selected)

Locking the Guidelines

From the **Edit Guides** dialog, enable the **Lock Guides** option to prevent guides from being moved or deleted using the mouse. Please note that the **Edit Guides** dialog may still be used to change a guideline position.

Locking the guidelines does not prevent them from being deleted from the **Edit Guides** dialog, or via the **Options | Guides | Remove All Guides** command.

ALIGN PALETTE

Holding the **[Control]** key while right-clicking on the workspace will display the **Align Palette**, which provides tools for aligning objects with respect to the grid lines. Typically, these tools are applied to an object nub, though they may also be used when node editing.






Set Origin

Set the grid origin to selected location.

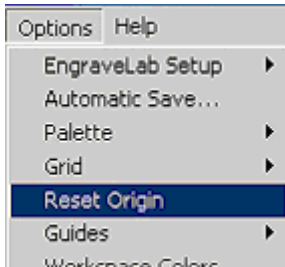


Resize grid

Resize the grid increments based on the distance between the selected location and the grid origin.

	Snap to Grid Intersection	Move the object, such that the nub is at the nearest grid intersection.
	Snap Vertically	Move the object, such that the nub is at the nearest horizontal grid line.
	Snap Horizontally	Move the object, such that the nub is at the nearest vertical grid line.

If necessary, the origin may be reset by choosing **Reset Origin** from the **Options** menu.

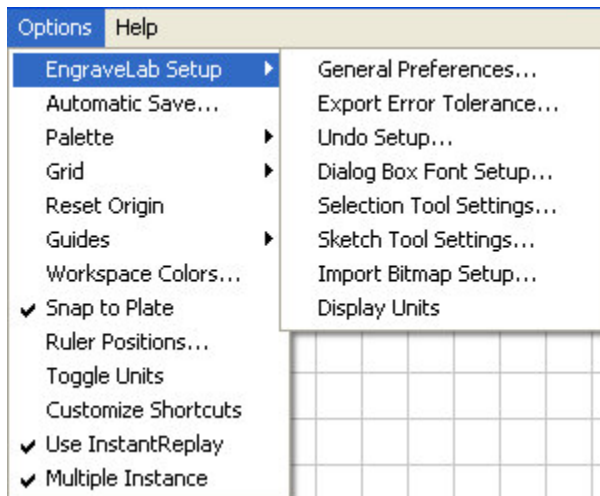


The **Grid Size** may also be set from the **General Preferences** dialog.

WORKSPACE OPTIONS

Workspace Options

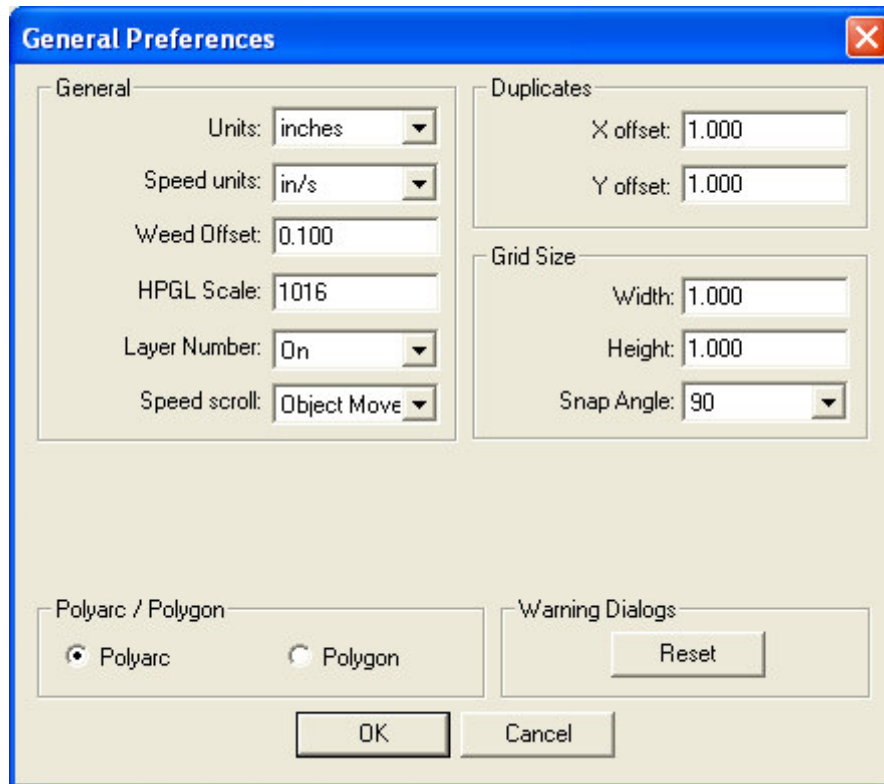
All the preferences settings for the Vision-Pro workspace are available from the **Options** menu.



General Preferences

General Preferences

The **General Preferences** dialog contains basic workspace settings that are generally common to all features.



General

Units

Unless otherwise specified, the **Units** set here will be used throughout the Vision-Pro workspace and features. Clicking on the workspace rulers may also be used to change the units.

Speed Units

If the **Engraving** module is installed, then the **Speed Units** are used to specify feed and plunge rates for tool paths.

Weed Offset

This is the border distance that is maintained around shapes when adding a weed border.

HPGL Scale

Set the **HPGL Scale** to the desired plotter resolution. In the majority of cases, the required setting will be 1016. However, consult the manufacturer specifications to verify the required value.

Layer Number

The **Layer Number** toggles the display of color plate numbers.

Speed Scroll

If **Speed Scroll** is active, then dragging over the workspace edges will scroll the workspace.

- Off** Disable speed scrolling
- Object Move** Only perform speed scrolling when dragging an object.
- Full** Perform speed scrolling when dragging an object, or when dragging a marquee.

Duplicates

When using the **Duplicate** command (**Edit** menu), the **Offsets** specified here will be used to place the new object with respect to the original.

Grid Size

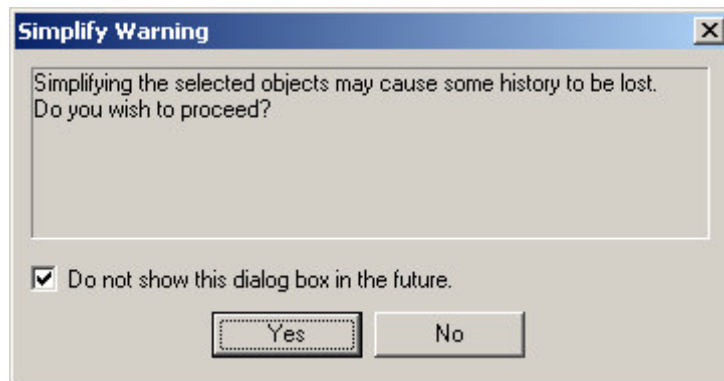
The grid dimensions are set here. The **Snap Angle** is used when the **[Control]** is held during certain operations, such as when editing line segments and corners.

Polyarc / Polygon

The **Polyarc/Polygon** setting indicates the type of shape that is produced by certain features, such as welds, shadows, or outlines.

Warning Dialogs

Throughout Vision-Pro, warning dialogs are used to allow a new user to consider pertinent details before continuing with an operation. As a user becomes more proficient with a given operation, that user may choose to disregard further warning dialogs for that operation. A warning dialog may be disregarded by clicking its “Do not show this dialog box in the future” option. However, if another new user begins to use Vision-Pro, the **Reset** button will force all warning dialogs to be shown during operations.



Other Options and Preferences

Other Options and Preferences

The following sections describe options for which their purpose may not be readily apparent.

[!\[\]\(95b425611cbd2b8716a140cf67c81822_img.jpg\) Export Error Tolerance](#)

[!\[\]\(b4eeff342f60cc7bcd67d869b4fedca2_img.jpg\) Undo Setup](#)

[!\[\]\(4f6bf54ae7e4144a72d78316053e412d_img.jpg\) Dialog Box Font Setup](#)

[!\[\]\(3342c215b2a8b663596a81468d5dc314_img.jpg\) Selection Tool Settings](#)

[!\[\]\(56549452e01ca28bdf2500ced9653143_img.jpg\) Sketching Tool Settings](#)

[!\[\]\(1f56542a42e2413e44a2b2023033aa2e_img.jpg\) Import Bitmap Setup](#)

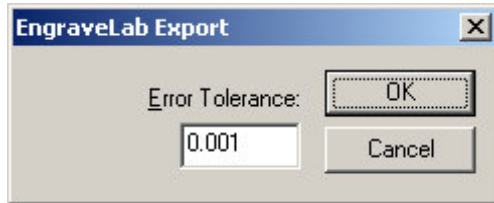
[!\[\]\(19d44b37fb4fa155bf9d60c77a3d3cb2_img.jpg\) Display Units Dialog](#)

[!\[\]\(5a351309c3b87e4420622c1f0e57efc0_img.jpg\) Automatic Saves](#)

[!\[\]\(bff896c19919791b89ab521f039b410a_img.jpg\) Snap To Sign Plate](#)

Export Error Tolerance

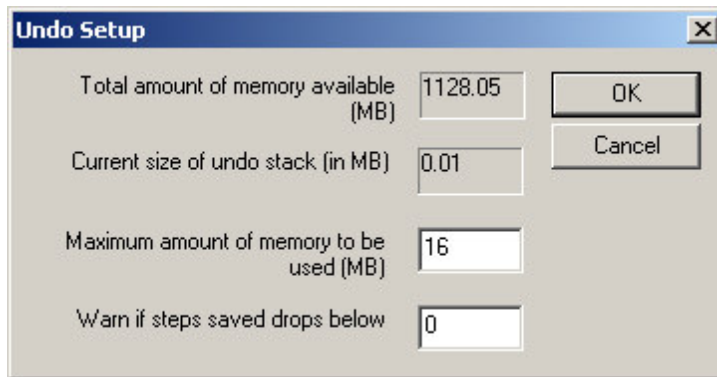
When exporting a file from Vision-Pro, the resulting file sometimes contains a very large number of nodes. This is especially true of artwork that was originally imported from another software. As a solution, Vision-Pro files can be exported using a certain tolerance level. This will make the exported artwork smoother, as well as substantially reduce the number of required nodes.



The Error Tolerance is specified in the current workspace units. We caution against a high Error Tolerance value, since this may introduce distortions of the exported objects. Generally, the default values (0.001 or 1/1,000 of an inch) will work very well with most files.

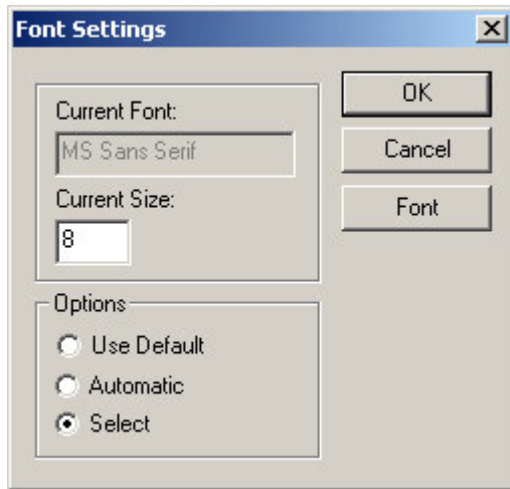
Undo Setup

The **Undo Setup** dialog is used to limit the resources that are used for storing Undo operations. Limiting the resources can prevent the loss of system performance that could occur when large quantities of image data are on the Undo stack.



Dialog Box Font Setup

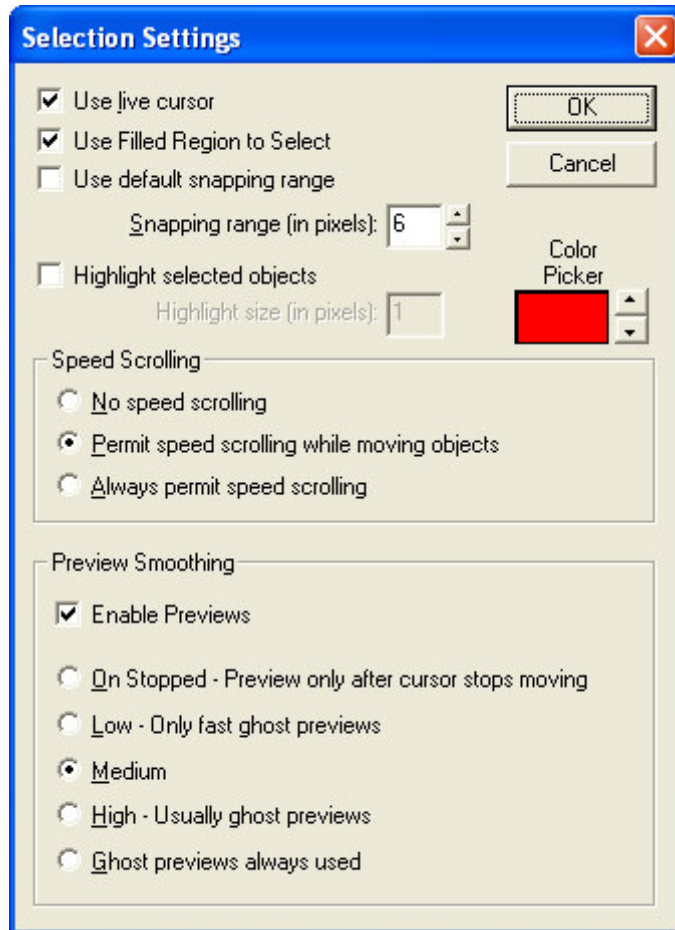
The **Font Settings** dialog is used to specify the font type and point size that are used in Vision-Pro dialog boxes.



- | | |
|--------------------|--|
| Use Default | Indicates that the standard Windows font should be used. |
| Automatic | Chooses the most appropriate font to be used. |
| Select | Enables the dialog font to be chosen. |

Selection Tool Settings

The **Selection Settings** determines the workspace behavior when shapes are selected and moved using the cursor.

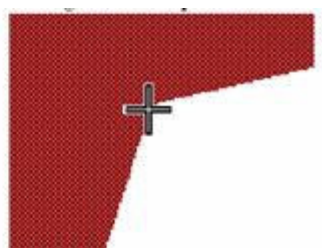


Use Live Cursor

The **Live Cursor** will recognize when it passes over an object. Note that Vision-Pro must be restarted for changes to this option to take effect.



Use Live Cursor (off)



Use Live Cursor turned (on)

Use Filled Region to Select

By default, clicking within the filled region of a shape will cause that shape to become selected. However, this may not be desirable where a complex workspace has multiple overlapping shapes. If the "**Use Filled Region to Select**" option is disabled, then a shape may then only be selected by clicking the edge of that shape.

Use Default Snapping Range

The **Snapping Range** determines how close a mouse click must be before it snaps to the nearest grid or line. The default range is three pixels, though a custom range may be set.

Highlight Selected Objects

The **Highlight selected objects** option is used to draw a Highlight Border around selected objects. The **Highlight size** field may be used to make the highlight more prominent, and the **Color Picker** is used to choose the highlight color.

Speed Scrolling

If **Speed Scrolling** is active, then dragging off the edges of the workspace will cause the workspace to scroll.

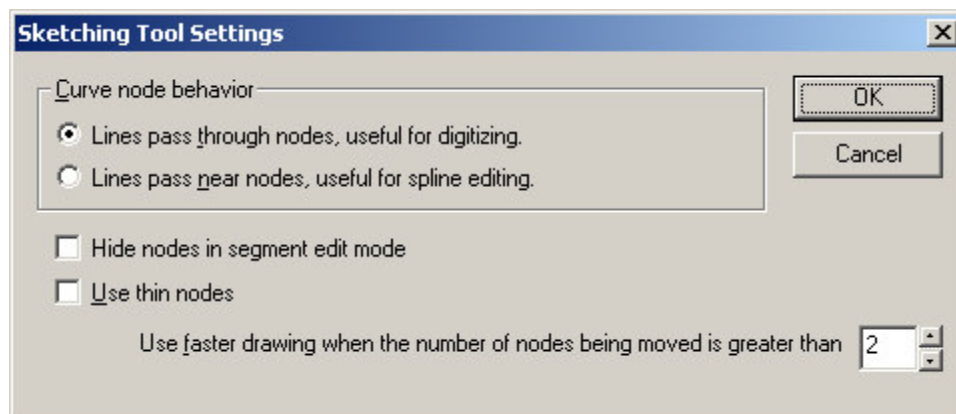
Preview Smoothing

When a workspace object is being dragged, an image or "ghost" of the object is typically shown. In cases where the object is extraordinarily large or complex, only the bounding box for the object will be shown.

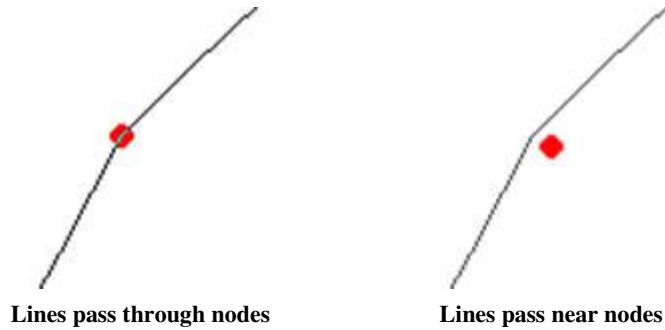
The **Preview Smoothing** option may be used to modify whether bounding boxes or ghost preview are shown. However, note that creating a ghost preview for large objects may impact the responsiveness when dragging the object.

Sketching Tool Settings

The **Sketch Tool Settings** are used with the Graphic Creation tools, as well as for editing vector graphics.

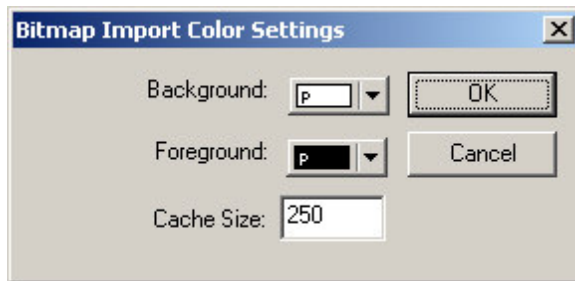


Lines pass through nodes as stated will cause the lines to pass directly through the center of a given node. Lines pass near nodes will cause the line to pass near but not touching or over the node. Note that Vision-Pro must be restarted for changes to take effect.



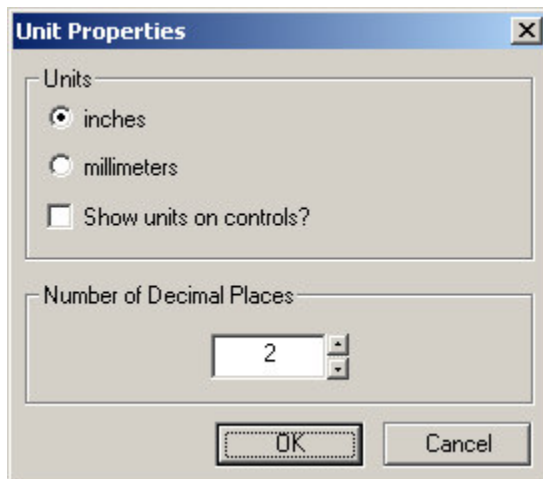
Import Bitmap Setup

When importing a monochrome bitmap, the **Bitmap Import Colors Settings** dialog will specify the **Foreground** and **Background** colors of the bitmap.



Display Units Dialog

The **Toggle Units** dialog specifies the units and precision that are displayed for workspace controls.



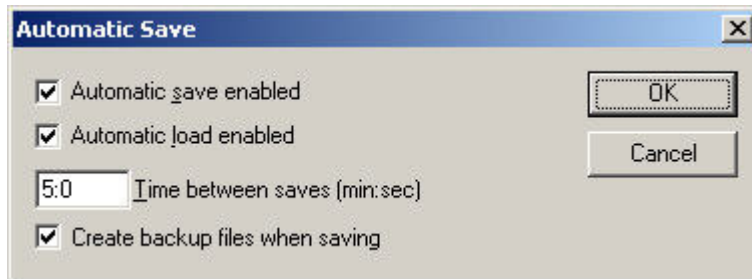
If **Show units on controls** is enabled, then the current units will be displayed within edit fields, such as on the SmartBar.



Automatic Saves

The **Automatic Save** feature is used to store the current workspace at preset intervals. This protects against the loss of work due to system failure, such as Microsoft Windows generating an unrecoverable error.

The preferred settings are to **enable** Automatic Save and set the **Time between saves** to a reasonable value. By doing so, the work will be saved periodically in the event of a system failure.



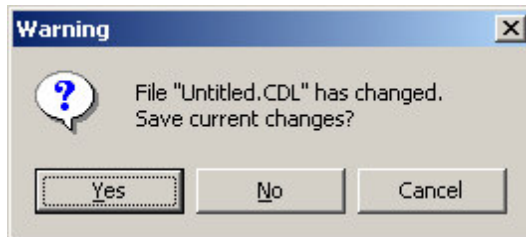
If a system failure does occur, then restarting Vision-Pro will restore the workspace.

The amount of work recovered will depend on the **Time Between Saves** setting. If the time interval is too large, then a significant amount of work could be potentially lost when a system failure occurs. However, setting a time interval that is too small will cause Vision-Pro to frequently interrupt your work when performing automatic saves.

Automatic Load Enabled

Automatic Load is only valid when the **Automatic save** option is also enabled. When active, restarting Vision-Pro will automatically restore the last workspace that had been stored by the Automatic Save option.

This feature is useful where Vision-Pro had been shut down using the **File..Exit** command, but the user had neglected to save the workspace.



When prompted to save, **No** was clicked, and several minutes of editing were lost. However, if the Automatic Load option is enabled, then the lost work will be reloaded when Vision-Pro is restarted. At this point, the workspace should be immediately saved to ensure that the data is not lost.

As discussed with Automatic Save, the amount of data recovered depends upon the **Time between saves** setting.

Create Backup Files When Saving

When the Save or Save as commands are used, the backup (.BAK) file will also be created. The backup file will have the same preface name as the workspace (.CDL) file, and it will be stored in the same directory.

Vision-Pro 7 Doc Files

Note: Back up files are a good safety measure against losing work. However, old backup files must be periodically purged from the system, since they can potentially consume tremendous amounts of hard disk space.

Snap To Sign Plate

Selecting this option causes objects to snap to the edges of the sign plate if placed within six pixels of it. Selected objects will snap to the sign plate at their outer edges, and at their vertical and horizontal centers. A small check mark beside this option indicates that it is selected.

WORKING WITH LINE ART

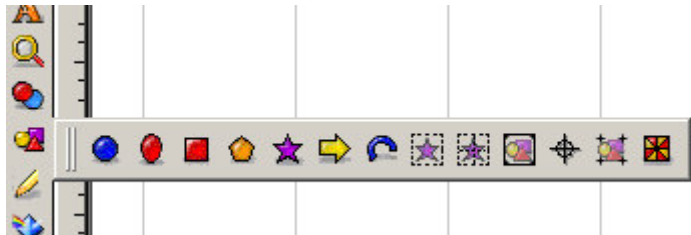
WORKING WITH LINE ART

-  [Basic Shape Creation](#)
-  [Basic Shape Types](#)
-  [Path Editing](#)
-  [Object Types](#)
-  [Polygon Editing](#)
-  [Free Edit Flyout Tool](#)
-  [Polyarc Editing](#)
-  [Weld Tools](#)
-  [Parametric Ruler and Dial](#)
-  [Label Formatting Rules](#)
-  [Parametric WASP Barcode](#)

BASIC SHAPE CREATION

Basic Shape Creation

Basic parametric shapes in Vision-Pro are available from the **Shape Tools** flyout.



As an alternative to parametric shapes, polygon and polyarc are created using the **Graphics Edit Tools** flyout.



Node Edit Flyout tool (Polygon editing)



Free Edit Flyout tool (Polygon sketching)



Arc Edit Flyout tool (Polyarc editing)

Ginsu Knife

The **Ginsu Knife** tools are used to subdivide a selected shape. These tools are available from the **Ginsu Knife Tools** flyout.



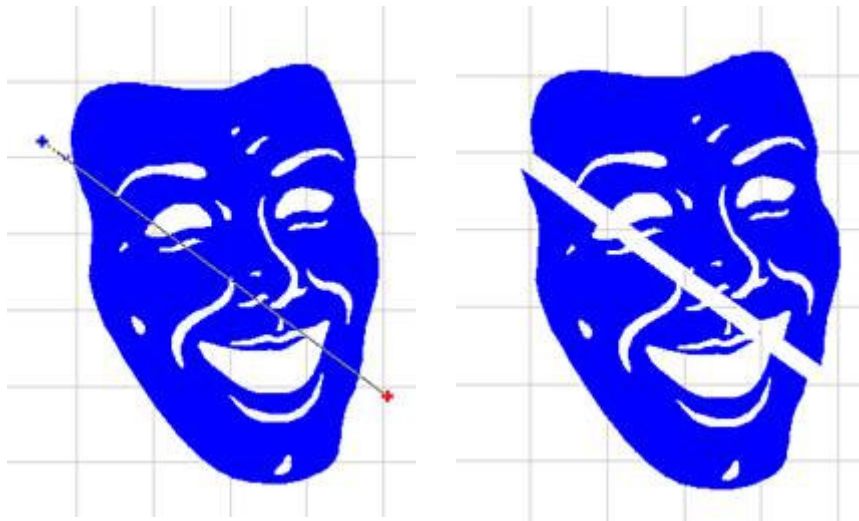
Open path



Close path

The **Open path** tool will leave the subdivided objects as open paths, whereas the **Close path** tool will create closed paths.

When a **Ginsu Knife** tool is chosen, click on the workspace to place one-or-more cutting nodes. The nodes will form a cutting line. Where the selected object is intersected by a cutting line, the object will be subdivided. For example, refer to the following screenshots:



Using the Ginsu Knife tool, one node was After applying the Ginsu Knife operation,

placed at the upper-left of the object, and the second node placed at the lower-right. A cutting line is formed between the two nodes.

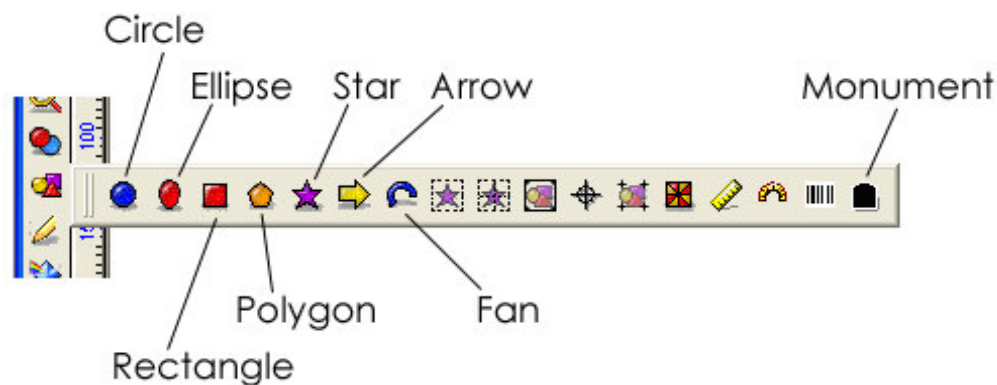
the object has been separated along the cutting line.

Multiple objects may be part of the selection before applying the Ginsu Knife tool.

BASIC SHAPE TYPES

Basic Shape Types

The basic Vision-Pro shapes are created by clicking and dragging to form the shape contour. Parametric shapes have extra editing handles that are used to customize the shape appearance.

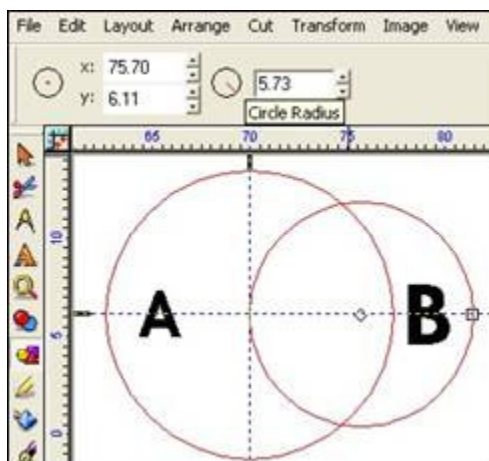


Circle Tool

Circle Tool

Click-and-drag to form the diameter of a parametric circle shape. The further the drag, the larger the circle that will be created.

Pressing **[Shift]** will constrain the circle with respect to its center. For example, the following screenshot shows two guidelines being used as a starting point. For circle A, the **[Shift]** key was pressed, such that dragging will extend the radius of the circle. In comparison, circle B is being formed without pressing the **[Shift]** key.



SmartBar – Circle Controls

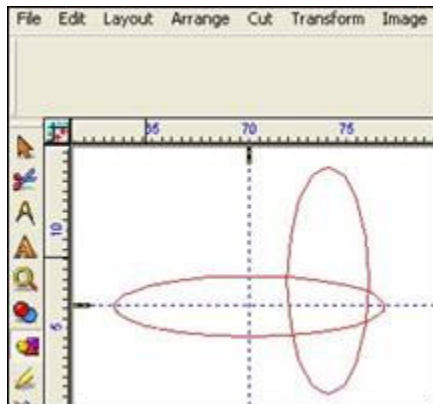
The following circle properties can be edited from the SmartBar:

- X Coordinate
- Y Coordinate
- Radius

Ellipse Tool

Unlike the **Circle** tool, the **Ellipse** tool will not create a parametric shape. Instead, the **Ellipse** tool will create a **Polygon** shape that can be node edited.

There are no SmartBar controls for the **Ellipse** tool. Simply click-and-drag to form the ellipse. The further the drag, the larger the ellipse that will be created.



Like the **Circle** tool, pressing **[Shift]** will constrain the ellipse with respect to its center. In addition, pressing the **[Ctrl]** key will force the ellipse to form a perfect circle.

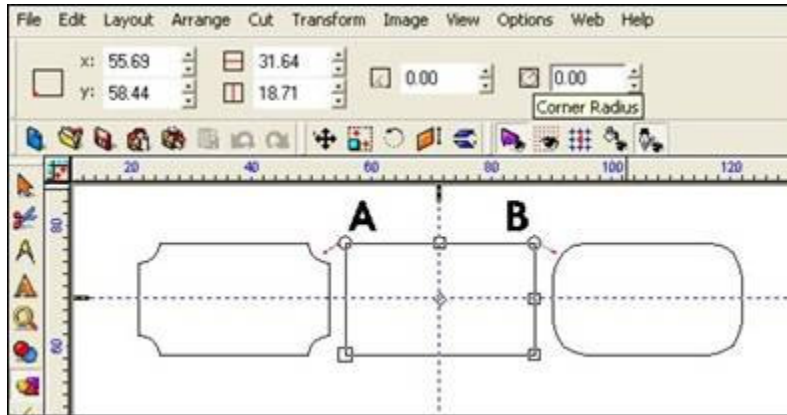
Rectangle Tool

Rectangle Tool

Click-and-drag to form a parametric rectangle. The further the drag, the larger the rectangle that will be created.

Press **[Shift]** to constrain the rectangle with respect to its center. In addition, press the **[Ctrl]** key to form a perfect square.

There are special handles when editing a parametric rectangle. As per the following screenshot, the upper-left handle (A) is used to create notched corners. The upper-right handle (B) is used to create rounded corners.



SmartBar – Rectangle Controls

The following rectangle properties can be edited from the SmartBar:

- X Coordinate
- Y Coordinate
- Angle
- Width
- Height

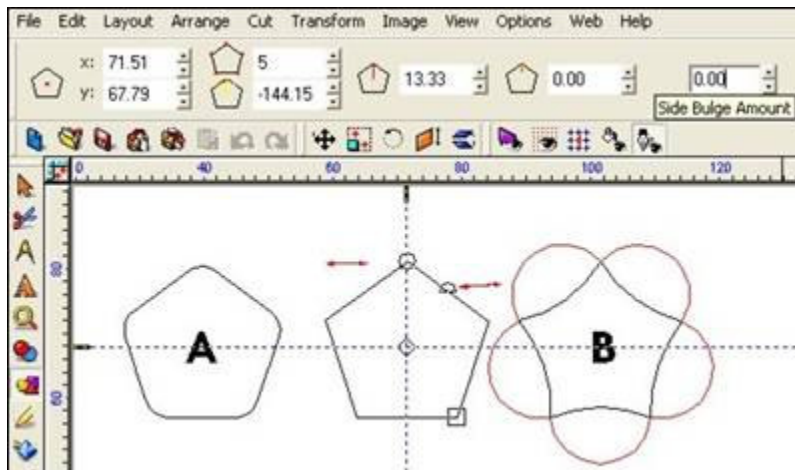
Polygon Tool

Polygon Tool

Click-and-drag to form a parametric polygon. The further the drag, the larger the polygon that will be created.

Press **[Shift]** to constrain the polygon with respect to its center. In addition, press **[Ctrl]** to prevent the polygon from rotating as it is being created.

There are special handles when editing a parametric polygon. As per the following screenshot, the circular handle will round the corners of the polygon (A). The semi-circular handle is used to adjust the “Side Bulge Amount”.



SmartBar – Polygon Controls

The following polygon properties can be edited from the SmartBar:

- X Coordinate
- Y Coordinate
- Angle
- Number of Sides
- Polygon Radius (size)
- Corner Rounding
- Side Bulge Amount

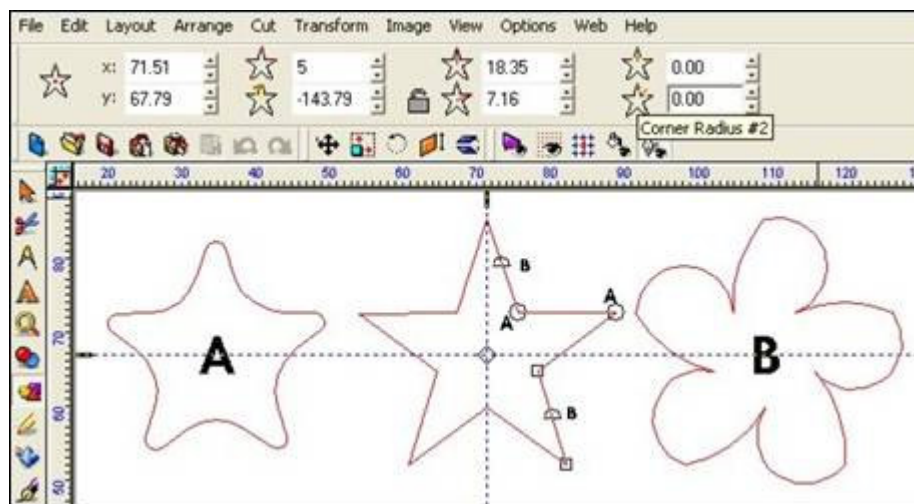
Star Tool

Star Tool

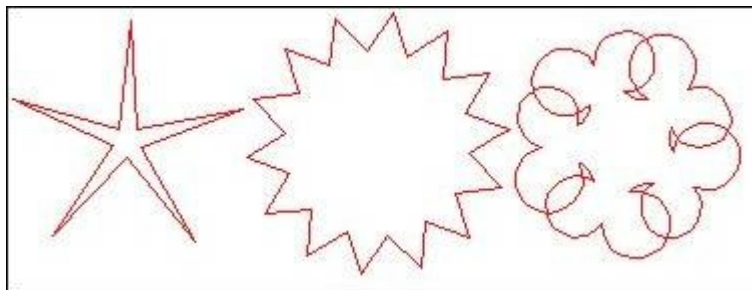
Click-and-drag to form a parametric star. The further the drag, the larger the star that will be created.

Press **[Shift]** to constrain the star with respect to its center. In addition, press **[Ctrl]** to prevent the star from rotating as it is being created.

There are special handles when editing a parametric star. As per the following screenshot, the circular handles will round the corners of the star (A). The semi-circular handles are used to adjust the side bulge amount. The square handles are used to adjust the proportions of the star, which may also be set using **Star Radius #1** and **Star Radius #2** fields in the SmartBar.



By experimenting with the editing handles, a variety of interesting star shapes can be created.

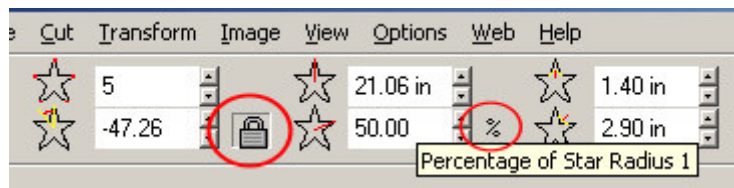


SmartBar – Star Controls

The following star properties can be edited from the SmartBar:

- X Coordinate
- Y Coordinate
- Angle
- Number of Points
- Inside Radius
- Outside Radius
- Point Rounding
- Corner Rounding

The outside “radius” is the distance from the center to each point of the star. The inside “radius” is the distance from the center to each (inside) corner of the star. If the “padlock” icon is active, then the inside radius may be set as a percentage of the outside radius.

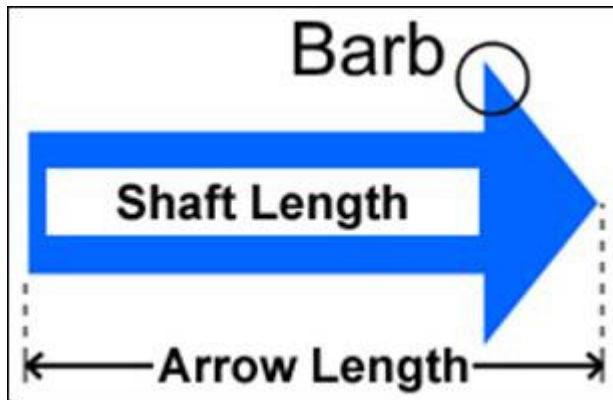


Both the points and corners of the star can be rounded. These controls are referred to as **Corner Radius #1** and **Corner Radius #2**.

Arrow Tool

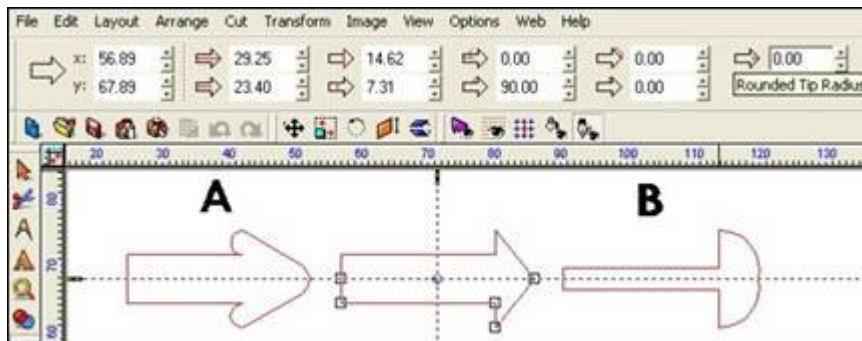
Arrow Tool

Click-and-drag to form a parametric arrow. The arrow shape is composed of an arrowhead at the end of a shaft. The further the drag, the larger the shaft and arrowhead that will be created. The arrow will point in the direction that it is drawn, (i.e. dragging from left-to-right will create an arrowhead that points right).

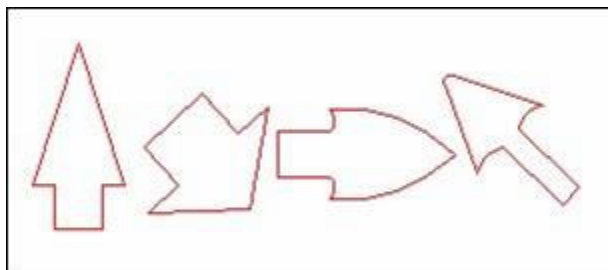


Press [**Shift**] to constrain the arrow with respect to its center. In addition, press the [**Ctrl**] key to constrain the angle of the arrow.

There are special handles when editing a parametric arrow, such that the length, width, and barb of the arrow can be adjusted. If the SmartBar is used to increase the **Rounded Tip Radius**, then two small handles will also become available for adjusting the arrow tip.



By experimenting with the editing handles, the head and shaft can be adjusted to form a variety of interesting arrow shapes.



SmartBar – Arrow Controls

The following arrow properties can be edited from the SmartBar:

- X Coordinate
- Y Coordinate

- Angle
- Total Length
- Shaft Length
- Total Width
- Shaft Width
- Head Angle
- Forward Bulge of Barb
- Rear Bulge of Barb
- Tip Rounding

To edit the barb bulge using the cursor, hold the cursor over the edge of the arrowhead. Then click-and-drag to adjust the bulge.

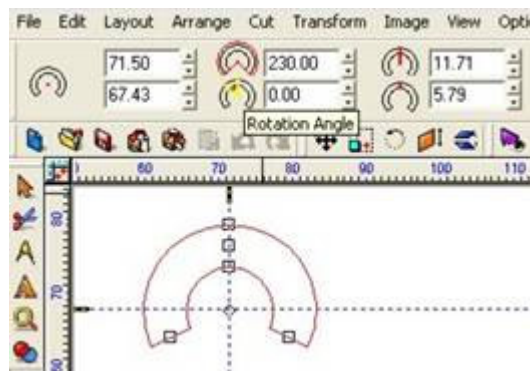
Fan Tool

Fan Tool

Click-and-drag to form a parametric fan. The further the drag, the larger the fan that will be created. The fan is useful for creating arches, bowls, and rainbows to emphasize text shapes that are on an arc. In addition, the ends of the fan can be overlapped to form a ring.

Press **[Shift]** to constrain the fan with respect to its center. In addition, press the **[Ctrl]** key to constrain the angle of the fan.

There are special handles when editing a parametric fan, which are used to adjust the size, position, rotation, thickness, and arc of the fan.



SmartBar – Fan Controls

The following fan properties can be edited from the SmartBar:

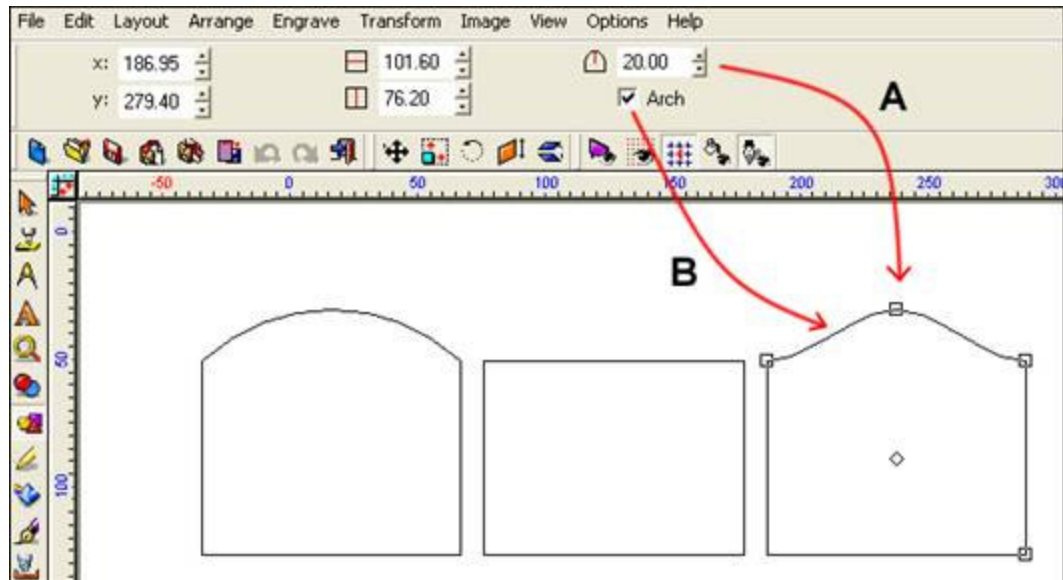
- X Coordinate
- Y Coordinate
- Angle
- Arc of Fan
- Radius of Fan
- Thickness of Fan
- Length of Fan

Monument Tool

Click and drag to form a parametric monument shape, as would be constructed onsite before a large corporate. The further the drag, the larger the rectangle that will be created.

Press **[Shift]** to constrain the rectangle with respect to its center. In addition, press the **[Ctrl]** key to form a perfect square.

There are special handles when editing a parametric monument shape. As per the following screenshot, the top-center handle (A) is used to adjust the bulge amount. In the SmartBar, the Arch checkbox (B) will add a slope to the bulge.



SmartBar – Monument Shape Controls

The following monument shape properties can be edited from the SmartBar:

- X Coordinate
- Y Coordinate
- Width
- Height
- Bulge
- Arch

PATH EDITING

A workspace object is composed of nodes that specify the contours of that object, otherwise known as the object path. If the object contour is complete with no breaks, then it will appear as a solid object on the workspace (assuming that **Show Fills** is active). However, a broken contour will appear as a dashed line.

Make Path

Combine a selection of multiple objects into a single path

Break Path

Revert a combined path of objects into individual paths for each object

Connect Path	For a broken contour, connect nodes to form a contiguous path
Reduce Nodes	Eliminate excessive nodes that may exist after tracing or scanning an object
Text to Graphics	Convert a text object into a path
Convert to Polygon	Substitute the object path with nodes used in polygon editing
Convert to Polyarc	Substitute the object path with nodes used in polyarc editing
Convert to Curves	Substitute the object path with equivalent Bezier curves (this improves the scaling of objects)
Close Graphics	Join the first and last nodes of a contiguous path

OBJECT TYPES

Object Types

With respect to workspace object types, there are three broad categories that determine how their nodes are edited. The distinction between each type is important because the editing tools are specialized for each object type.

Parametric	An object composed using the Shapes flyout tool. As explained in the introductory section, these objects have specialized editing handles that are used to adjust the object properties.
Polygon	An object composed of a combination of corner , curve and tangent nodes. These nodes can be created and edited manually. Please refer to the Polygon Editing section.
Polyarc	An object composed entirely of curve nodes. These nodes may also be created and edited manually. Please refer to the Polyarc Editing section.

For all object types, editing is performed by double-clicking the object.

Holding the [**Control**] key and double-clicking a Parametric object will render it into either a polyarc or polygon, depending on the **Polyarc / Polygon** setting in the **General Preferences** dialog.

Node Types

Node types determine how straight or curved a contour will appear. For object that will be cutting, minimizing the number of nodes will reduce the amount of cutting data that is sent.

The three types of nodes are **Corner** nodes, **Curve** nodes, and **Tangent** nodes, which are defined as follows:

Corner Node	A node that is used to construct straight lines. Placing two Corner nodes on the workspace will create a straight line.
Curve Node	A node that is used to construct a curved contour.
Tangent Node	A node that is used to provide a smooth transition from a straight line to a curved line.

POLYGON EDITING

Polygon Editing



The **Node Edit Flyout** tool is used for creating and editing Polygons.



The **Arc Edit tool** will be active by default, and clicking on the workspace will create a node. As an alternative to clicking with the mouse, new nodes can be placed using the dialog bar edit fields. These fields are located at the top of the workspace, and the usage of each field depends on whether Polar or Rectangular coordinates are being used.

The **Arc Edit** controls are summarized as follows:



Absolute Placement

New nodes will be placed with respect to the Plate Size origin.



Relative Placement

New nodes will be placed with respect to the previously created node.



Polar Coordinates

Polar Coordinates are used to place each new node. In this mode, the edit fields represent the Angle and Length of the new node position.



Rectangular Coordinates

Rectangular Coordinates are used to place each new node. In this mode, the edit fields represent the X-coordinate and Y-coordinate of the new node position.

Arc Edit tool



The **Arc Edit** tool is used to create new nodes for an object. By default, clicking on the workspace will create a Corner node. By holding the right-mouse button, the **Node Palette** can be used to either change the type of node, or to edit the existing nodes.



Corner Node Tool

Change the currently-selected node into a Corner node, or specify that new nodes must be Corner-type.



Join Tool

Join two selected nodes, or join the endpoints of a selected contour.







Curve Node Tool

Change the currently-selected node into a Curve node, or specify that new nodes must be Curve-type.



Toggle Rotation Tool

Toggle the direction of the selected contour between Clockwise and Counter-Clockwise.

	Set Start Point Tool	Set the start point at which routing or engraving this contour will begin.
	Trash Can Tool	Delete the selected nodes.
	Break Tool	Break the contour at the selected node.
	Tangent Node Tool	Change the currently-selected node into a Tangent node, or specify that new nodes must be Tangent-type.

Node Edit tool



Use the **Node Edit tool** to either drag or manipulate nodes. Clicking a node will select that node. Shift-clicking will add nodes to the current selection, and right-clicking will display the Node Palette.

When node editing a shape, clicking the fill region of another shape will switch node editing to the other shape. When node editing a shape that overlaps another shape, hold the **[ALT]** key to prevent the accidental selection of the underlying shape.

The following table summarizes the Hot Keys that may also be applied:

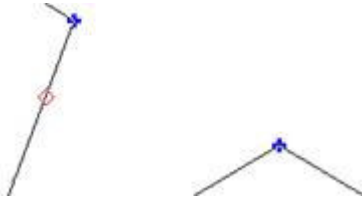
Hot Key	Function Name	Purpose
A	Add node	Create a node at the current cursor location.
C	Change node	Cycle the type of the selected node. The type will cycle through Corner, Curve, and Tangent type nodes.
R	Remove	Delete the selected node.
L	Locate origin	Set the grid origin to correspond to the selected node.
G	Grid dimensions	Resize the grid increments based on the distance between the selected node and the grid origin.
S	Snap to intersection	Move the selected node to the nearest grid intersection.
H	Snap to horizontal grid line	Move the selected node to the nearest horizontal grid line.
V	Snap to vertical grid line	Move the selected node to the nearest vertical grid line.
J	Join	Join the two selected nodes with a connecting line.
B	Break	Break the contour at the selected node.
D	Deselect	Clear the current node selection.
O	Create perfect circle	Based on existing nodes, transform an oval contour into a perfect circle. If necessary, nodes will be added to complete the circle.
T	Toggle start point	Set the start point at which routing or engraving this contour will begin.
K	(K)lick	Select the node under the mouse cursor.

Segment Edit tool

Segment Edit tool



The **Segment Edit tool** is used to reshape a section of the contour to fit either a straight line, a corner, or a curve. To define a segment, select the Segment Edit tool. Notice the small, red circle that now follows the contour of the object.



Moving the mouse will also move the circle. Click once to establish the start of a segment. Move the circle to the segment end and then click again. The segment is now defined.

Once the segment is defined, holding the right-mouse button will display the Segment Palette.

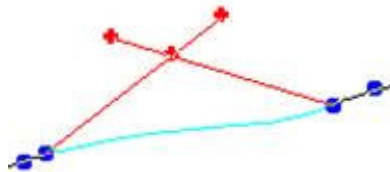


Choose a Segment Palette tool that will be applied to the current segment. The Segment Palette tools are described as follows:

Corner Segment Tool



Fit the segment to a corner. When this tool is selected, three handles appear that allow the corner to be adjusted. When adjustments are complete, click the Checkmark tool in the Edit Toolbox.



Editing the corner

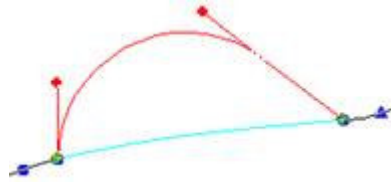


After applying the corner

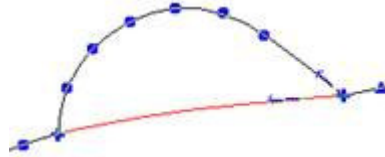
Arc Segment Tool



Fit the segment to an arc. When this tool is selected, two handles appear that allow the arc to be adjusted. When adjustments are complete, click the Checkmark tool in the Edit Toolbox.



Editing the arc



After applying the arc

Line Segment Tool



Fit the segment to a line. When this tool is selected, the segment will be replaced with a straight line.

Guide Line Tool



Create a guide line that corresponds to the segment.

Trash Can Tool



Delete the segment. If the contour had previously been closed, then it will now be a broken contour.

FREE EDIT FLYOUT TOOL



The **Free Edit Flyout** tool is used to trace a polygon object by hand. Click and drag across the workspace to draw the object. Release the mouse button to create the object. If the start and end strokes are close in proximity, then a closed contour will be formed. Otherwise, either use the **Close Graphics** command from the **Arrange** menu to close the contour, or edit the contour using the **Node Edit** tool.

POLYARC EDITING

Polyarc Editing



The **Arc Edit Flyout** tool is used for creating and editing Polyarcs.



The **Arc Edit** tool will be active by default, and clicking on the workspace will create a node. As an alternative to clicking with the mouse, new nodes can be placed using the SmartBar fields.

Snap To

As an aid for adding new nodes, the Snap To feature may be used. For more information about this feature, please refer to **Snapping Setup** in the next section.

	Toggle Snapping
	Snapping Setup

Placement of each node depends on whether Polar or Rectangular coordinates are being used. The placement controls are summarized as follows:

Absolute Placement



New nodes will be placed with respect to the Plate Size origin.

Relative Placement



New nodes will be placed with respect to the previously created node.

Polar Coordinates



Polar Coordinates are used to place each new node. In this mode, the first and second edit fields represent the Angle and Length of the new node position.

Rectangular Coordinates



Rectangular Coordinates are used to place each new node. In this mode, the first and second edit fields represent the X-coordinate and Y-coordinate of the new node position.

Arc Bulge Mode



In this mode, the third edit field will represent the bulge of the curved line segment. The bulge is used as follows:

- 1) Determine the mid-point of the line segment without a bulge.
- 2) From the mid-point, draw a perpendicular line that is equal in length to the bulge.
- 3) Using the end of the perpendicular line, construct the curved line segment.

Arc Radius Mode



In this mode, the third edit field will represent the radius of an imaginary circle. The new line segment will be drawn as if it had been traced along the circumference of the imaginary circle, while still connecting the two point that would have formed a straight line segment.

Arc Edit tool



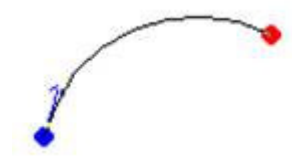
The **Arc Edit** tool is used to create new nodes for an object. For polyarcs, clicking on the workspace will create a Curve node. When working on a polyarc object, two curve nodes will form a segment, and then the cursor may be used to drag the segment to form an arc.



Straight line formed by two curve nodes



Drag line to form arc



Release cursor to create the arc

By holding the right-mouse button, the **Node Palette** can be used to edit the contour.



Join Tool

Join two selected nodes, or join the endpoints of a selected contour.



Toggle Rotation Tool

Toggle the direction of the selected contour between Clockwise and Counter-Clockwise.



Set Start Point Tool

Set the start point at which routing or engraving this contour will begin.



Trash Can Tool

Delete the selected nodes.



Break Tool

Break the contour at the selected node.

Node Edit tool



Use the **Node Edit** tool to either drag or manipulate nodes. Clicking a node will select that node. Shift-clicking will add nodes to the current selection, and right-clicking will display the Node Palette.

When node editing a shape, clicking the fill region of another shape will switch node editing to the other shape. When node editing a shape that overlaps another shape, hold the **[ALT]** key to prevent the accidental selection of the underlying shape.

The following table summarizes the Hot Keys that may also be applied:

Hot Key	Function Name	Purpose
A	Add node	Create a node at the current cursor location.
R	Remove	Delete the selected node.
L	Locate origin	Set the grid origin to correspond to the selected node.
G	Grid dimensions	Resize the grid increments based on the distance between the selected node and the grid origin.
S	Snap to intersection	Move the selected node to the nearest grid intersection.
H	Snap to horizontal grid line	Move the selected node to the nearest horizontal grid line.
V	Snap to vertical grid line	Move the selected node to the nearest vertical grid line.
J	Join	Join the two selected nodes with a connecting line.
B	Break	Break the contour at the selected node.
T	Toggle start point	Set the start point at which routing or engraving this contour will begin.

Segment Edit tool

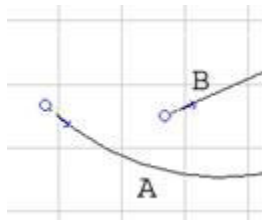


The **Segment Edit** tool has been discussed previously under the Polygon editing section.

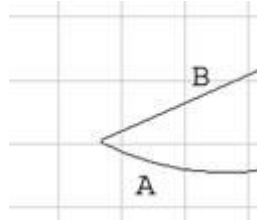
Trim tool



The **Trim tool** will reduce the length of a line segment, such that it will intersect another line segment.



Click the **Trim tool**, click segment A, and then click segment B.

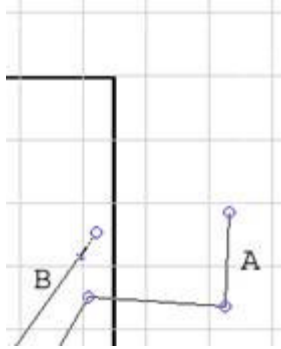


Segment A will be reduced in length, and it will be joined to segment B.

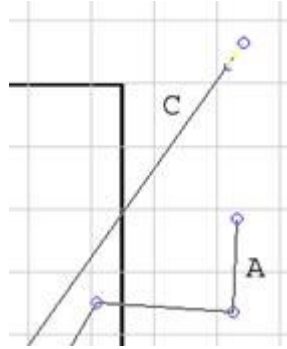
Extend tool



The **Extend tool** will increase the length of a line segment, such that it will project to intersect another line segment. Note that the projection can be to an "imaginary" intersection point. In the following example, segment B is extended to intersect with segment A.



Click the **Extend** tool, click segment A, and then click segment B

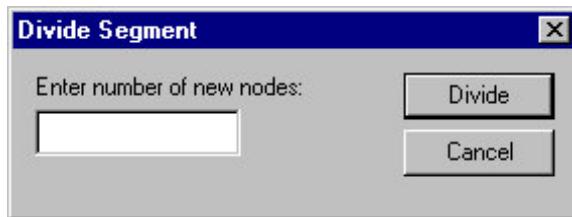


Segment B will be projected to the imaginary intersection point formed with segment A.

Divide tool



The **Divide** tool will subdivide a line segment with additional nodes. Click the required line segment, and the **Divide Segment** dialog will open.



Specify the number of new nodes to insert, and then click the **Divide** button.

Delete tool



After activating the **Delete** tool, clicking on nodes or line segments will delete them.

Delete Segment tool

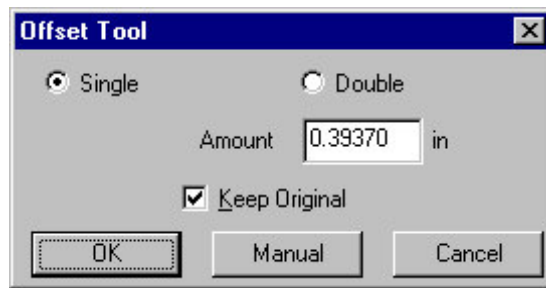


The **Delete Segment** tool is used to remove part of an object path. When active, a small, red circle will track the object path. Click once to set the segment beginning, and then click a second time to set the segment end. The segment will then be deleted.

Offset Arc tool



For a segment that has been selected using the **Segment Edit** tool, the **Offset Arc** tool will create a duplicate segment that is offset by the indicated amount.

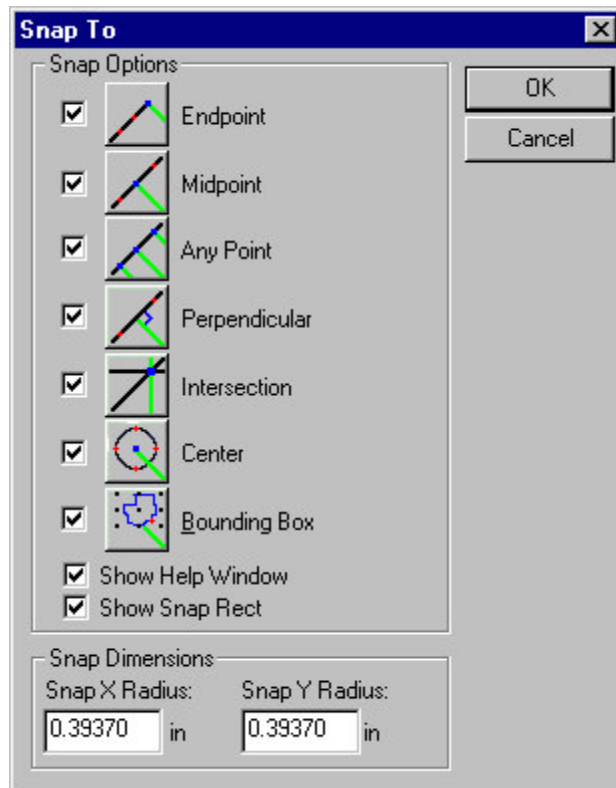


If **Double** offsets are created, then the offsets will be to either side of the original segment.

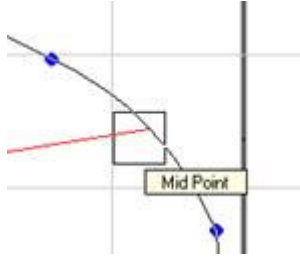
Snapping Setup

Snapping Setup

The **Snap To** tools are available when creating nodes in the polyarc editing mode. These tools will identify certain workspace coordinates, such as midpoints, intersection points, and the end of line segments. The mouse focus will then "snap" to the identified coordinate, and pressing the left-mouse button will create a new node at those coordinates.



A "snap rectangle" is drawn about the cursor, which is used as a limit when identifying coordinates. For example, if a midpoint falls within the snap rectangle, then it will be identified as a valid coordinate for the focus.



Snap Options

The **Snap Options** determine the valid workspace coordinates that will be identified when editing polyarc nodes. These options are as follows:

	Endpoint	Snap to the end of a segment, as identified by the existence of a node.
	Midpoint	Snap to the midpoint of a segment. This may be either a line or curve segment, as formed between two nodes.
	Any point	Snap to a point that is along a segment. This helps to place a node that is flush with the given segment.
	Perpendicular point	Snap to point so as to form a perpendicular line segment.
	Intersection point	Snap to intersection point that would be formed by extending two line segments.
	Center point	Snap to center of circle that would be formed by a curved segment.
	Bounding box point	Snap to one of the eight nubs (corner, sides, top or bottom) that form the bounding box of a given Vision-Pro object.

Show Help Window

When this option is on, a tooltip will appear to help identify the coordinate that the Snap To tool has found.

Show Snap Rectangle

The **Show Snap Rectangle** option toggles the visibility of the snap rectangle. Though not visible, the bounds of the rectangle will still be used to identify valid workspace coordinates.

Snap Dimensions

The Snap X Radius and Snap Y Radius determine the width and height of the snap rectangle.

WELD TOOLS

Weld Tools

The **Weld Tools** are used to bond overlapping shapes into a combined object.



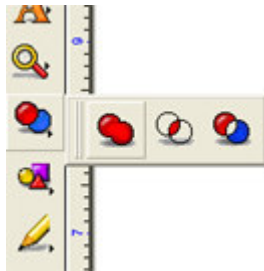
Non-welded Lettering



Welded Lettering

The resulting object type will be either polyarc or polygon, depending on the **Polyarc / Polygon** setting of the **General Preferences** dialog.

The **Weld** tools are accessible through the **Weld Tools** flyout:



The available welds are:



Basic (Fuse / Color) Weld



AND Weld



XOR Weld

About Complex Welds

There is an upper limit for the number of nodes that can be processed during a weld. This limit is based on the amount of physical memory available.

If a weld is attempted and an error message is received (such as stack overflow), then break the welded objects into two portions before applying the weld. Doing this will reduce the number of nodes in each weld. Once each portion is welded, both portions can be welded into the final object.

Basic (Fuse / Color) Weld

Basic (Fuse / Color) Weld



[? Fuse Weld](#)

[? Color Weld](#)

[? Using Color Weld](#)

Fuse Weld

The **Fuse Weld** tool is used to merge selected objects of the same color layer into one combined object. This tool is useful when working with script fonts that have a “lead-in” and “lead-out” (kerning) on each character that overlaps the adjacent letter.



Unless the overlapping letters are welded, the letters will be cut with overlapped cutting lines. The **Fuse Weld** tool removes those overlaps to make script-lettering flow together as a single object.

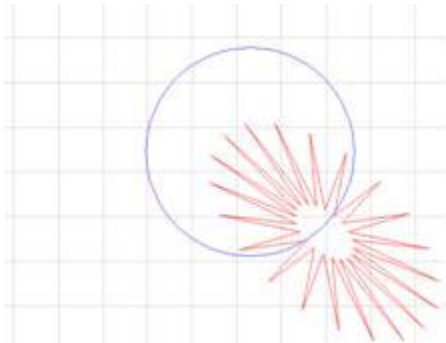


Note: Welding will automatically apply the **Text to Graphics** command (**Arrange** menu).

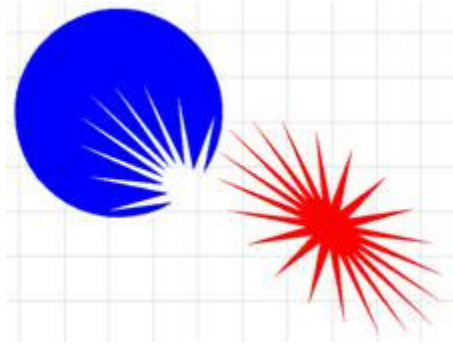
Color Weld

The **Color Weld** tool is used to delete overlapping sections between two different objects in separate color layers. Welding will reshape objects, such that underlying portions are removed.

The following image shows two objects with their fills turned off. With respect to their layer orders, the star is resting above the circle shape.



After the weld is applied, the star shape is unchanged, but the underlying circle shape has been modified.



If an object has the same color as that of either the sign plate or workspace background, then that object will be discarded. A warning dialog will query for confirmation before discarding takes place.

Using Color Weld

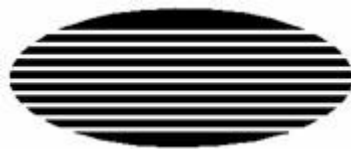
The **Color Weld** feature can create some interesting visual effects, such as 'pinstripes' and 'knock-outs.' The following screen shots demonstrate pinstripes:



Two objects (the stripes have a hairline edge for clarity)



The two objects overlapped. Note the stripes are the same color as the sign plate or background.

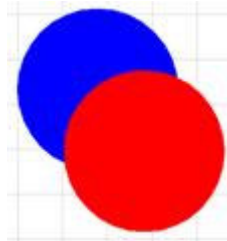


The result after color welding

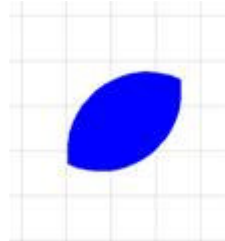
AND Weld



The **AND** Weld will generate a combined object that is composed of only overlapping sections of the original objects.



Two objects prior to weld



Result of performing
AND weld

The resulting object is defined by the area where the two circles overlap, and is the same color as the previously hidden portion.

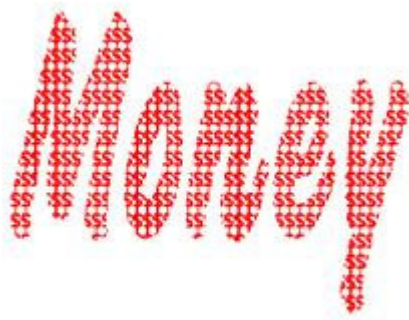
The **AND** Weld tool is used for graphical effects such as fancy clipping as follows:



Initially, a simple background pattern was created. For the text object, both a Duplicate and Outline were applied.



Select the text object and pattern together.



Applying the **AND** weld produces an interesting pattern.



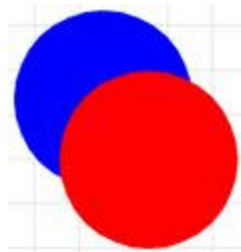
The Duplicate and Outline that were created earlier serve to enhance the effect.

Note: Only two overlapping objects or group of objects can be welded at the same time. If there are three or more objects that overlap at the same location these must be organized into two groups before they can be welded.

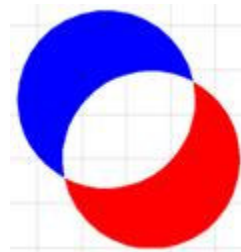
XOR Weld



The **XOR Weld** (Exclusive-Or Weld) will produce an object that is composed only of sections that **did not** overlap in the original objects.



Two objects prior to weld



Result of performing XOR
weld

The **XOR Weld** is useful for creating unique special effects:



Text is placed over a sphere



Applying the XOR Weld produces this
"punched out" result.

Note: Only two overlapping objects or groups of objects can be welded at the same time. If there are three or more objects that overlap at the same location, they must be organized into two groups before they can be welded.

PARAMETRIC RULER AND DIAL

Parametric Ruler and Dial

The Parametric Ruler and Dial are instant shapes that are available from the Shape Tools flyout.



The Parametric Ruler Shape

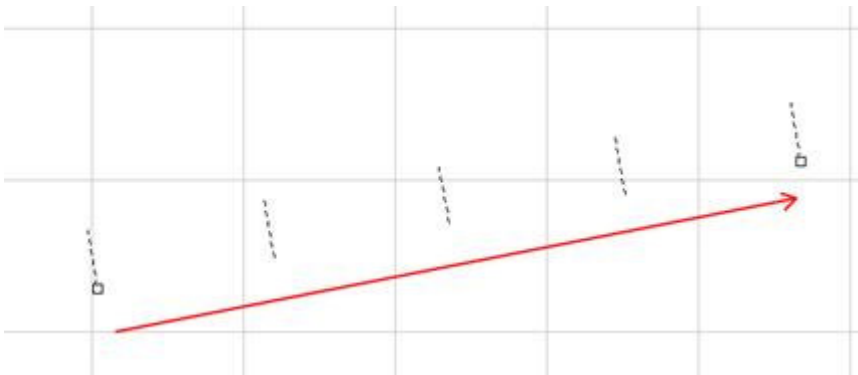
The Parametric Ruler Shape

The **Parametric Ruler Shape** is an object that can be created on the workspace, much like a parametric circle or rectangle. Like other parametric shapes, the parametric ruler has handles that are used to adjust the ruler properties on the workspace, and additional SmartBar controls are also available.

To create a parametric ruler shape, choose the **Ruler** button from the **Shape Tools** flyout.

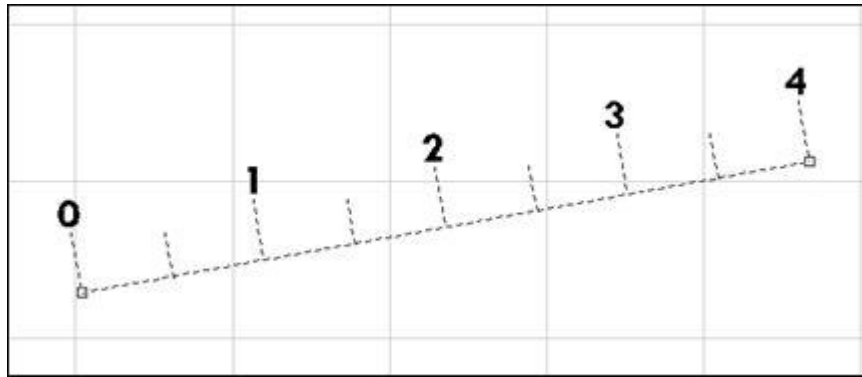


After choosing the **Ruler** button, click and drag within the workspace to form the initial coordinates, length, and angle of the ruler shape. The ruler will be automatically subdivided into equal sections, as indicated by the major ticks that are marked along the ruler.

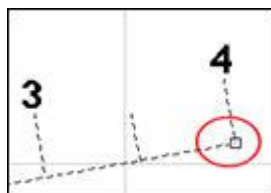


In the above screenshot, a basic ruler shape is shown that has no extra settings. This ruler shape is shown as having five "major ticks," which are drawn perpendicular to the ruler angle.

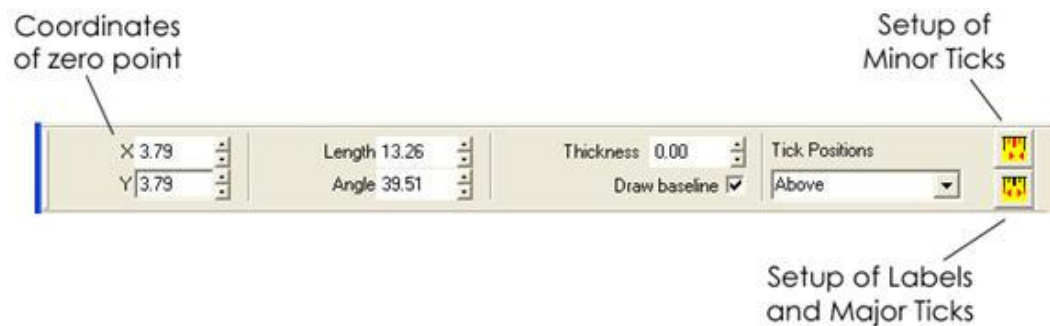
In contrast, the following screenshot shows the same ruler shape, except that labels, minor ticks, and a baseline have been added.



At each end of the ruler shape is a handle that is used to modify the placement of the ruler.



Edits to the ruler shape are displayed within the SmartBar.



The SmartBar controls are described as follows:

Coordinates of ruler shape

At the far-left of the SmartBar are the coordinates at which the ruler shape is placed on the workspace. With respect to these coordinates, the **Length** and **Angle** values are used to construct the ruler shape.

Length

The **Length** field indicates the physical length of the ruler shape on the workspace.

Angle

The **Angle** field indicates the rotation of the ruler. If the **Angle** is zero, then the ruler extends from left-to-right, starting from the ruler coordinates, and extending as far as the **Length** value.

Thickness

The **Thickness** field indicates the thickness of the ruler baseline and ticks. If the **Thickness** value is zero, then the ruler baseline and ticks will be drawn as hairlines.

Draw base line

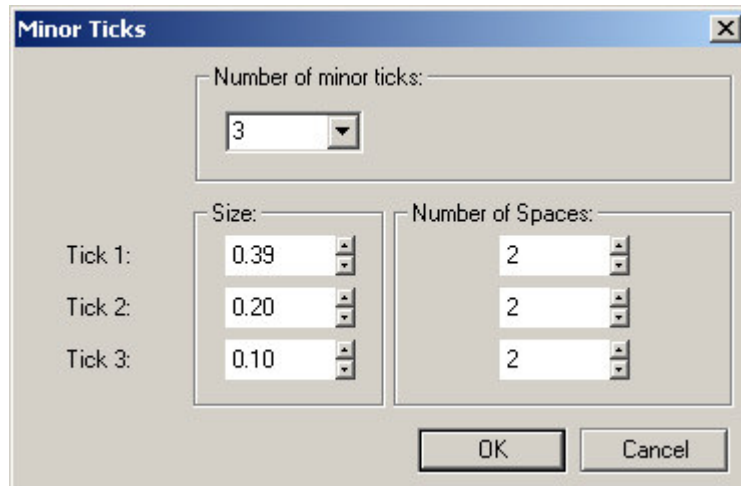
If the **Draw base line** option is enabled, then the ticks will be connected ala a baseline. Disable this option to draw the ticks without a baseline.

Tick Positions

The **Tick Positions** drop-list is used to choose the style of the ticks. The ticks may be place either Above, Below, or Centered on the baseline.

Minor tick marks

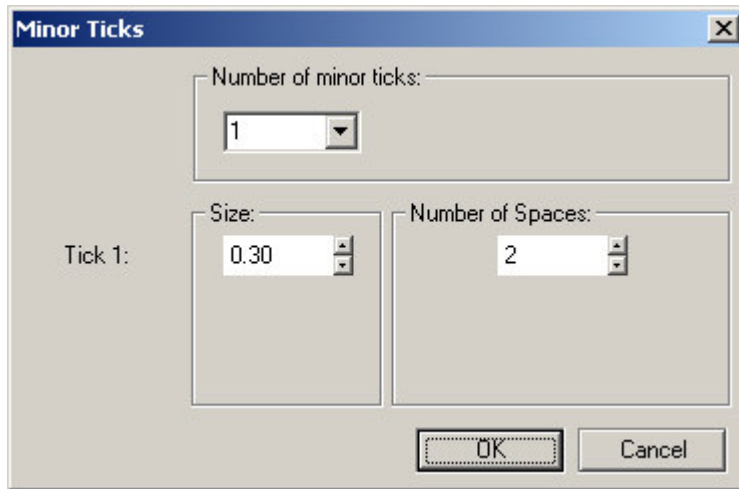
Click the **Minor tick marks** button to open the **Minor Ticks** dialog.



Up to three sets of minor ticks may be created. For example, suppose that the following settings are used to create one set of minor ticks:

- | | |
|------|-----------------------------|
| 1 | Number of minor ticks |
| 0.30 | Size of Tick 1 |
| 2 | Number of spaces for Tick 1 |

The **Minor Ticks** dialog will appear as follows:



Click **OK** to accept the new settings, and the ruler shape will be updated on the workspace.



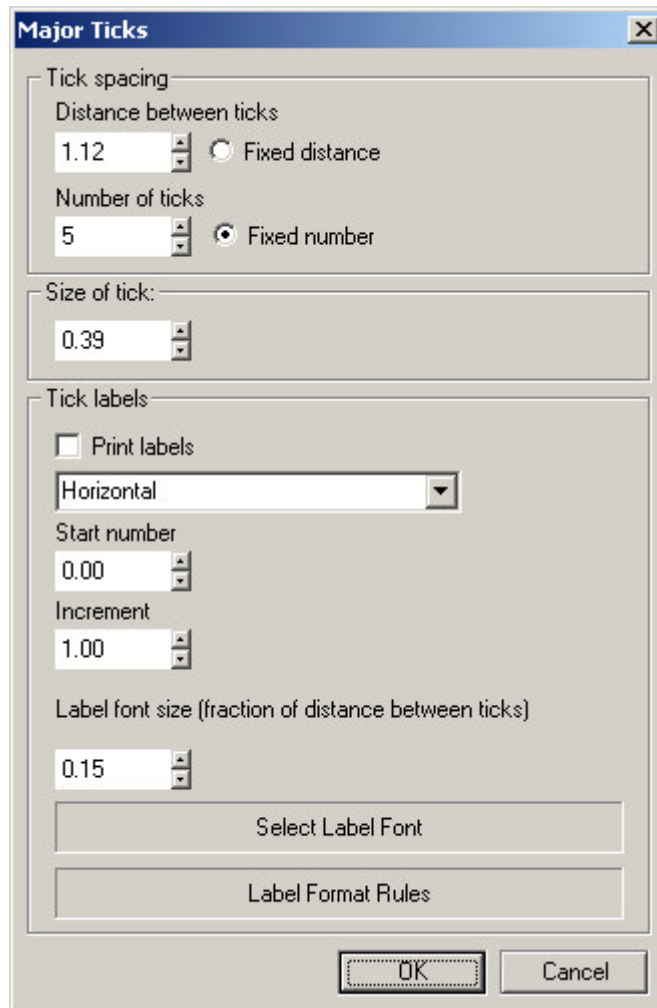
The basic ruler shape with no minor ticks.
The ruler is subdivided into four sections.



The same ruler shape, except that one set
of minor ticks has been created. Each
section has been subdivided into two sub-
sections.

Labels and major ticks

Click the **Labels and major ticks** button to open the **Major Ticks** dialog.



Tick spacing

If the **Fixed number** option is enabled, then the length of the ruler will be divided equally according to the **Number of ticks** setting. The length of each segment will depend upon the ruler length, as divided by the number of ticks.

If the **Fixed distance** option is enabled, then the distance between each tick will be set according to the **Distance between ticks** setting. On the workspace, major ticks will be created or removed to correspond to the ruler length.

Size of tick

Each tick is drawn perpendicular to the ruler length. The **Size of tick** field indicates the length of each major tick.

Tick labels

If the **Print labels** option is enabled, then each major tick will be numbered.

Note: If a label font has not been selected, then the **Font Detective** dialog will open. When the desired label has been selected, click the **Select** button to close the **Font Detective**.

Label Orientation

Below the **Print labels** option, the drop-list indicates the **Orientation** of the labels. If printed **Horizontally**, then the labels are oriented with respect to the workspace x-axis. If printed **"On Ticks,"** then the labels are oriented with respect to the ruler length.

Start Number and Increment

The **Start number** indicates the numeric value that is assigned to the first major tick. Each subsequent major tick will then be assigned a value according to the **Increment** value.

Note: Values are rounded according to the label format. Please refer to the *Label Formatting Rules* section for more information.

Label font size

The size of the label font is expressed as a decimal percentage of the distance between each major tick. For example, a **Label font size** of 0.15 is equivalent to 15% of the distance between each major tick.

Select Label Font

To change the font of the labels, click the **Select Label Font** button. The **Font Detective** dialog will open. When the font is chosen, click the **Select** button to close the **Font Detective**.

Label Format Rules

To set the format of the labels, click the **Label Format Rules** button.

Note: Please refer to the *Label Formatting Rules* section for more information.

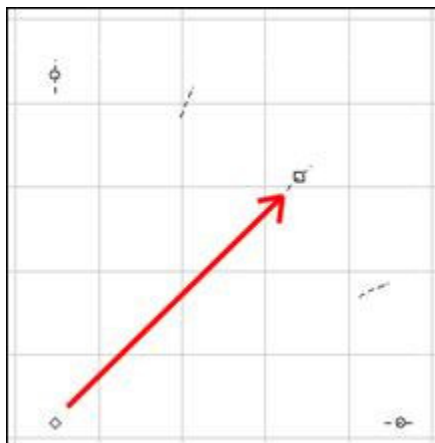
The Parametric Dial Shape

The Parametric Dial Shape

The **Parametric Dial Shape** is similar to the parametric ruler shape. To create a parametric dial shape, choose the **Dial** button from the **Shape Tools** flyout.

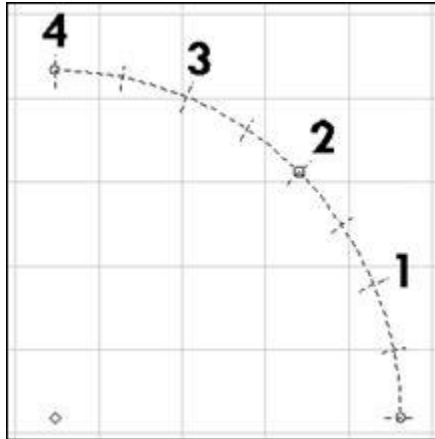


After choosing the **Dial** button, click and drag within the workspace to form the initial coordinates and radius of the dial shape. The dial will be automatically subdivided into equal sections, as indicated by the major ticks that are marked along the dial.

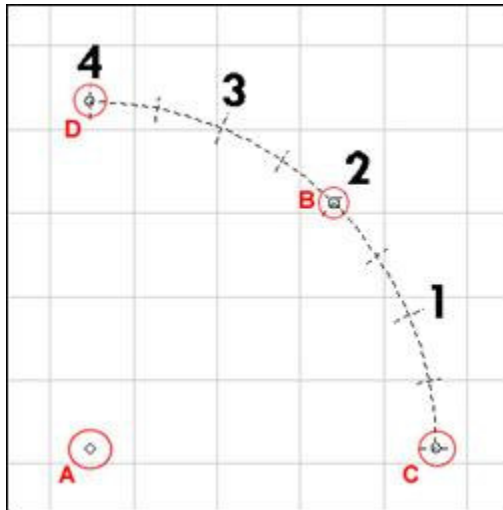


In the above screenshot, a basic dial shape is shown that has no extra settings. This dial shape is shown as having five "major ticks," which are drawn perpendicular to the dial path.

In contrast, the following screenshot shows the same dial shape, except that labels, minor ticks, and a baseline have been added.



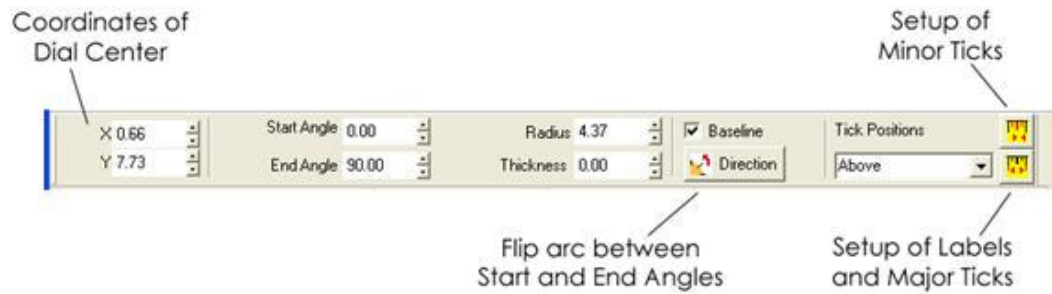
Workspace handles are placed about the dial shape, which may be used to modify the dial parameters.



The dial handles are used to set the following dial parameters:

- A** Coordinates
- B** Radius
- C** Start Angle
- D** End Angle

Edits to the dial shape handles are displayed within the SmartBar.



Coordinates of the dial shape

At the far-left of the SmartBar are the coordinates at which the dial shape is placed on the workspace. With respect to these coordinates, the **Start Angle**, **End Angle**, and **Radius** are used to construct the dial shape.

Start Angle and End Angle

The **Start Angle** and **End Angle** indicate the dial arc. By default, the dial will be drawn clockwise from the **Start Angle**, and it will terminate at the **End Angle**.

Radius

The **Radius** field indicates the size of a "circle," upon which the dial will modeled.

Thickness

The **Thickness** field indicates the thickness of the dial baseline and ticks. If the **Thickness** value is zero, then the dial baseline and ticks will be drawn as hairlines.

Direction

The **Direction** button toggles the dial orientation between **Clockwise** and **Counter-Clockwise**. Depending on the orientation, the dial will be formed between the **Start Angle** to the **End Angle**.

Draw base line

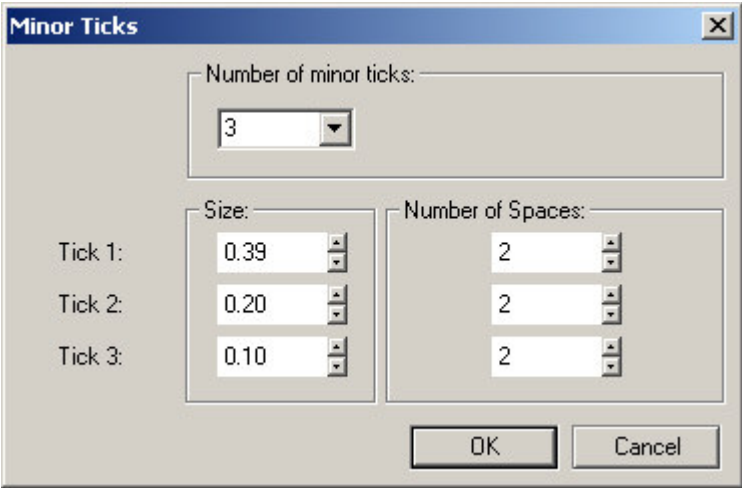
If the **Base line** option is enabled, then the ticks will be connected ala a baseline. Disable this option to draw the ticks without a baseline.

Tick Positions

The Tick Positions drop-list is used to choose the style of the ticks. The ticks may be place either Above, Below, or Centered on the baseline.

Minor tick marks

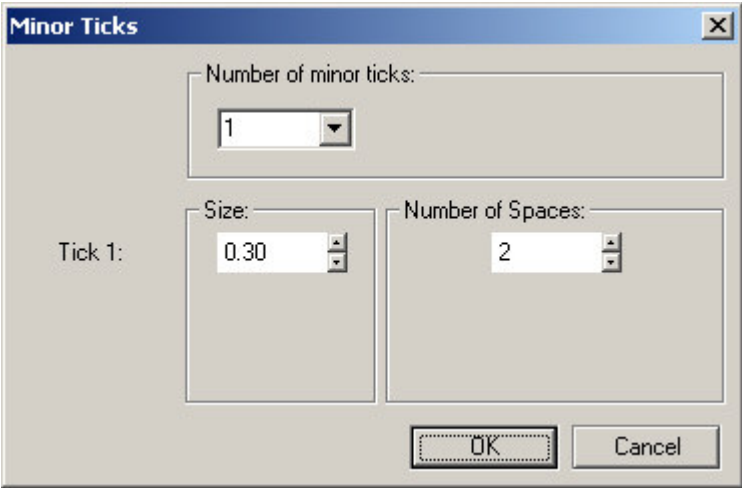
Click the **Minor tick marks** button to open the **Minor Ticks** dialog.



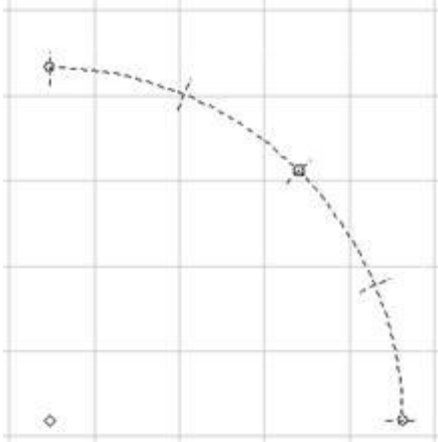
Up to three sets of minor ticks may be created. For example, suppose that the following settings are used to create one set of minor ticks:

- 1 Number of minor ticks
- 0.30 Size of Tick 1
- 2 Number of spaces for Tick 1

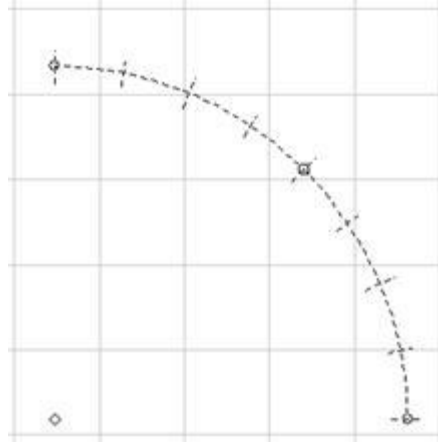
The **Minor Ticks** dialog will appear as follows:



Click **OK** to accept the new settings, and the dial shape will be updated on the workspace.



The basic dial shape with no minor ticks. The dial is subdivided into four sections.



The same dial shape, except that one set of minor ticks has been created. Each section has been subdivided into two sub-sections.

Labels and major ticks

Click the **Labels and major ticks** button to open the **Major Ticks** dialog.

Tick spacing

If the **Fixed number** option is enabled, then the length of the dial will be divided equally according to the **Number of ticks** setting. The length of each segment will depend upon the dial arc, as divided by the number of ticks.

If the **Fixed distance** option is enabled, then the distance between each tick will be set according to the **Distance between ticks** setting. On the workspace, major ticks will be created or removed to correspond to the dial arc.

Size of tick

Each tick is drawn perpendicular to the dial arc. The **Size of tick** field indicates the length of each major tick.

Tick labels

If the **Print labels** option is enabled, then each major tick will be numbered.

Note: If a label font has not been selected, then the **Font Detective** dialog will open. When the desired label has been selected, click the **Select** button to close the **Font Detective**.

Label Orientation

Below the **Print labels** option, the drop-list indicates the **Orientation** of the labels. If printed **Horizontal**, then the labels are oriented with respect to the workspace x-axis. If printed "**On Ticks**," then the labels are oriented with respect to the dial arc.

Start Number and Increment

The **Start number** indicates the numeric value that is assigned to the first major tick. Each subsequent major tick will then be assigned a value according to the **Increment** value.

Note: Values are rounded according to the label format. Please refer to the *Label Formatting Rules* section for more information.

Label font size

The size of the label font is expressed as a decimal percentage of the distance between each major tick. For example, a **Label font size** of 0.15 is equivalent to 15% of the distance between each major tick.

Select Label Font

To change the font of the labels, click the **Select Label Font** button. The **Font Detective** dialog will open. When the font is chosen, click the **Select** button to close the **Font Detective**.

Label Format Rules

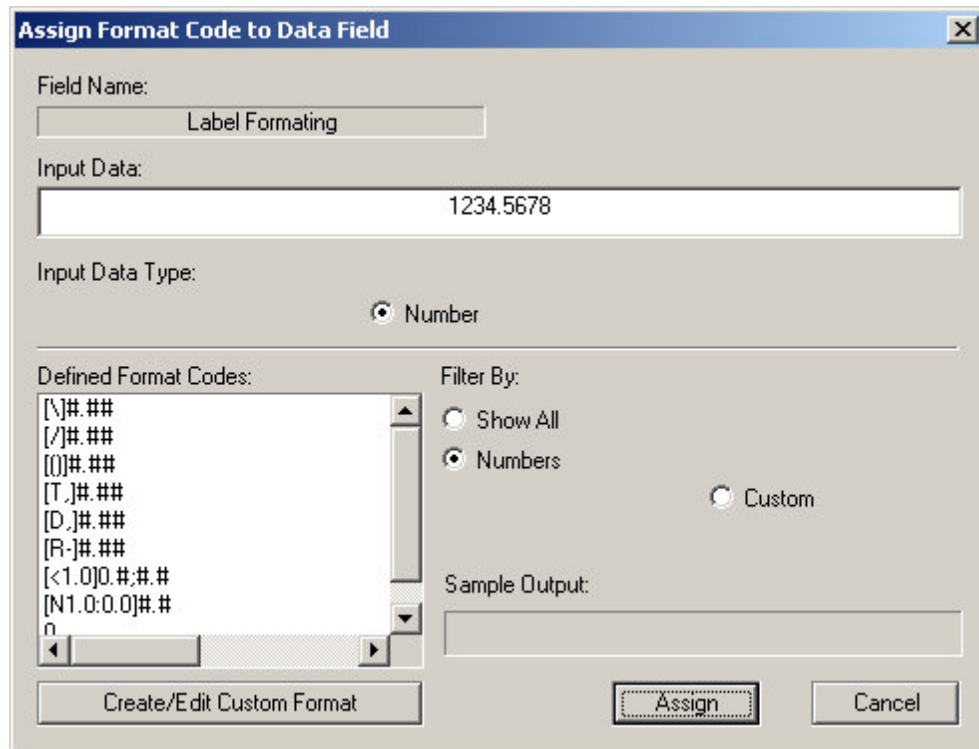
To set the format of the labels, click the **Label Format Rules** button.

Note: Please refer to the *Label Formatting Rules* section for more information.

LABEL FORMATTING RULES

Label Formatting Rules

The **Label Format Rules** are used to define the appearance of labels on parametric ruler and parametric dial shapes. For either type of shape, the label format may be set on the **Major Ticks** dialog by clicking the **Label Format Rules** button. The following dialog will open:

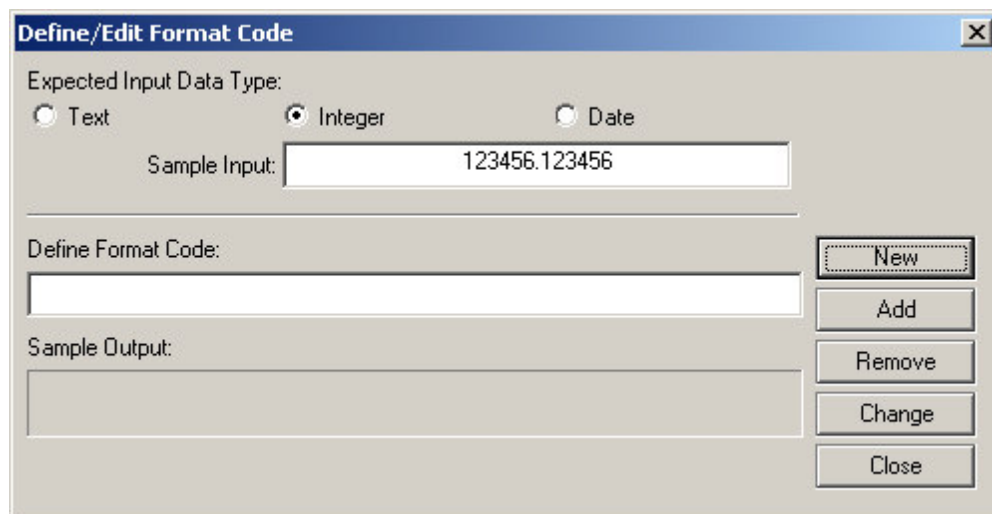


From the **Defined Format Codes** list, choose the formatting of the ruler or dial labels. When a format is clicked, the **Sample Output** field will display the results of applying that format to the **Input Data** field.

Enable the **Filter by Numbers** option to display formats that are useful for numeric values. Enable the **Custom** option to display only formats that you have created.

Creating a custom label format

Click the **Create/Edit Custom Format** button to create a custom format. The following dialog will open.



For the **Expected Input Data Type** options, choose the type of format. For numeric labels, choose **Integer**. The **Sample Input** field will be reset according to the chosen format.

In the **Define Format Code** field, enter the codes that will make up this custom label format. As edits are made to the **Define Format Code** field, the **Sample Output** field will display the result of applying the format to the **Sample Input** field.

Format Codes

Format Codes

The following is a list of format codes that may be entered in the **Define Format Code** field. More than one format code may be used, though an incorrect arrangement of codes will produce a nonsensical result.

Numeric Formatting

Numeric formatting is divided into three categories: Symbols, Flags, and Negative formats.

Symbols

There are several characters that are used to indicate a special purpose or symbol. These characters are summarized as follows.

#	The '#' (hash) symbol is used to display a significant digit. More than one '#' symbol may be placed to either the left or right of the decimal point.
0	The '0' (zero) symbol is used to display significant digits, though more than one '0' symbol may be used to create either leading or trailing zeroes.
\	The '\' (backslash) symbol is referred to as an "escape" character, which is used to prevent a symbol from being interpreted as a formatting code. For example, the '#' is automatically interpreted to indicate a significant digit. But if the '#' is preceded by a backslash, ala "\#", then the '#' will be printed as a normal character. The '\' symbol may be used as an escape sequence for: '0' (zero), '#' (hash), '\' (backslash), '[' (open square bracket), ']' (close square bracket), ';' (semicolon), and '-' (dash).

Several examples are provided here to help demonstrate how these symbols are used:

Sample Input	Define Format Code	Sample Output
123	#	123
123	##	123
123	#.00	123.00
123	0000.00	0123.00
123	\[0000\]	[0123]
123	\\#\	\\123

Flags

Flags are special codes that are used to modify the label format. Flags are always placed between the square brackets '[' and ']'. The available flags are described as follows:

[Tc] This flag is used to insert a **thousands place** character. For example, the first thousands place character will be inserted at the fourth position left of the decimal point, and additional characters will be placed at each 3rd power of ten. The 'c' indicates the type of character to use as a separator. If 'c' is not specified, then a ' ' (space) character will be used as the thousands place character.

[Dc] This flag is used to indicate the decimal point that separates the whole part from the fractional part. By default, a '.' (period) will be used as the decimal point. If the [Dc] flag is used, then the 'c' indicates an alternative character to be used as the decimal point.

[Rc] This flag indicates any rounding that should occur. If the [Rc] flag is not specified, then natural rounding will be used as default. However, the 'c' indicates alternative type of rounding. If 'c' is '-' (minus sign), then rounding down will always occur. If 'c' is '+' (plus sign), then rounding up will always occur.

[Ef] Indicates to use scientific notation to display value. The format f specified is a simple number format using 0 and # only. When E is specified, the number of 0's and #'s indicate the field length in the decimal part of the format code. This indicates the number of significant digits to display, and thus the amount of the exponential value to apply to use in the scientific notation.

[C] Conditional flag. C is of format [{<,<=,>,>=,<>}X] where X is a number. When defining the conditional flag, two sets of format code are given, separated by a semi-colon. The first code is used if the condition C is true, the second code is used if the condition C is false. If a second format code is not given, then if the number is false, an error will return.

[NX:Y] Range flag. The input value must fall between the values of X and Y where X > Y. If the value is not within this range, an error is returned.

Sample Input	Define Format Code	Sample Output
123456.123456	[T,]#	123,456
123456.123456	[D:]#####	123456:123456
123456.123456	[R-]#.#	123456.12
123456.123456	[R+]#.#	123456.13

Negative Formats

The following formats indicate how a negative value should be displayed:

[N]	Display the negative sign '-' to the left of the value.
[/]	Display the negative sign '-' to the right of the value.
[()]	Enclose the value with parentheses ().

Text Formatting

For text formatting, the '@' sign is an input string placeholder. Input text will be placed at the location specified by the '@' symbol. If the '@' symbol appears multiple times, then each '@' symbol will designate one word from the input string.

Flags

The following codes must be contained within square brackets [] for global formatting, and between braces { } for local formatting. All flags between braces apply to the '@' character that immediately follows the braces.

Note: When inserting a string literal, the ", [, and] characters must be typed as escaped characters. This remains true for characters that are enclosed within double quotes.

Fx	Used to indicate the number of characters (x) to output. If x is either negative one (-1), or this flag is not specified, then all characters of the input text will be displayed.
----	--

P{l,r}:c	Padding (or trimming) that is applied to text. Use 'l' or 'r' to indicate either left or right padding. The 'c' indicates the number of characters used for padding. If 'c' is not specified, then there will be no characters for padding, but the text can be trimmed left or right.
U	Make all text upper-case
L	Make all text lower-case

Date Formatting

The following codes are used to apply date and time formatting:

D	Day as number of the month 1 – 31
DD	Day as number of the month 01 – 31
DDD	Day as short name Sun – Mon
DDDD	Day as long name Sunday – Monday
DDDDD	Day as number of the year 001 – 356

M	Month as number 1 – 12
MM	Month as number 01 – 12
MMM	Month as short name Jan – Dec
MMMM	Month as long name January – December

Y	Year as 2 digit number
YY	Year as 2 digit number
YYY	Year as 4 digit number
YYYY	Year as 4 digit number

h	Hour as 12 hour clock 1 – 12
hh	Hour as 24 hour clock 00 – 23

m	Minute as number 00 – 59
mm	Minute as number 00 – 59

s	Second as number 00 – 59
ss	Second as number 00 – 59

A	Show the AM/PM symbol
----------	-----------------------

Note: A text literal that is within the date formatting must be enclosed with double quotes ". This includes escape characters that use backslash.

PARAMETRIC WASP BARCODE

Parametric WASP Barcode

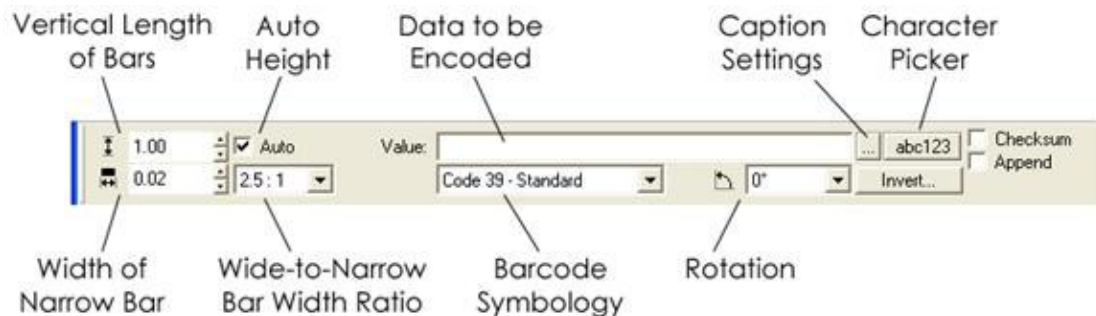
A barcode is an arrangement of vertical lines (of varying thickness and spacing) that form a machine-readable label. Depending on the type of barcode, the label can contain either numeric or alphanumeric data, which may then be scanned using a barcode reader.



To create a parametric barcode shape, choose **WASP Barcode** from the **Shape Tools** flyout.



The barcode controls will become available within the SmartBar.



Bar Height

Bar Height

Specifies the height of the barcode shape, as expressed in current workspace units. The minimum bar height is 0.2 inches.

Bar Width

Specifies the width of a narrow bar (sometimes called the X dimension) in the current workspace units. The minimum bar width is 0.0075 inches.

The UPC/EAN/JAN barcode sizes are specified as a percentage of nominal rather than an actual bar width. Consequently, valid ranges for this field are 80 to 200 for the UPC/EAN/JAN symbologies.

Since the PostNet symbology is of a fixed width, this field is not used.

Bar Ratio

Specifies the wide-to-narrow bar ratio. For example, a **Bar Ratio** of 2.5:1 indicates that a wide bar is 2.5 times the width of a narrow bar.

This parameter has a valid range from 2.0:1 to 3.0:1, and it is only used with the following barcode types: Code39, Interleaved 2 of 5, Codabar, and MSI.

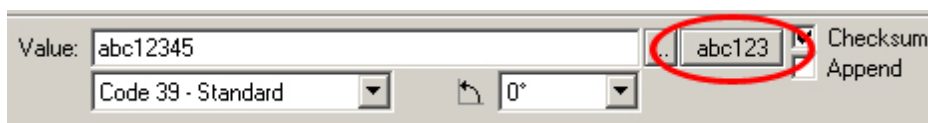
Value

The **Value** field is used to type the barcode characters that will be encoded into the barcode. Please note that each type of barcode has its own rules concerning the entry of numbers, letters, and extended characters. Later this chapter, the *Barcode Symbology* section discusses each barcode type, including the valid characters. If an invalid character is typed and the **Apply** button clicked, then a warning dialog will prevent the barcode from being created.

For some barcode symbologies, only numeric or a limited selection of alphabetical characters are allowed. Some of the more flexible symbologies can encode the ASCII table (values 0-127), though only a few symbologies support the extended ASCII table (values 128-255). Where the barcode symbology supports encoding of the full ASCII character set, a special method of entering non-printing ASCII characters is required. Three such methods are available: 1) using the character picker on the SmartBar, 2) using a Tilde escape sequence, and 3) using the [Alt] key in combination with the numeric keypad. These two methods are discussed as follows:

Character Picker

To the right of the **Value** field is the **Character Picker** button.



Click the **Character Picker** button to expand a pop-up list of all the valid characters for the chosen barcode symbology. Click a character within the pop-up list, and that character will be inserted into the **Value** field.



For some symbologies, the pop-up list displays non-printing characters as a Tilde Escape Sequence. The Tilde Escape Sequence is described within the following sub-section.

Tilde Escape Sequence

The [**Tilde**] character may be used to enter the ASCII value for a character that could not otherwise be entered within the **Barcode text** edit field. The [**Tilde**] key is located near the top-left of the keyboard, usually just below the [Esc] key, and to the left of the [Number 1] key. To create a [**Tilde**] character, press [Shift + Tilde].

Note: This documentation describes a standard QWERTY keyboard configuration. Where custom key assignments have been performed, please refer to the notes that were provided with the given keyboard.

Once the [**Tilde**] character (~) has been entered, type the three-digit value for the ASCII character. For example, type ~065 to create the letter 'A'. In ASCII code, the value 65 represents 'A', 66 represents 'B', 67 represents 'C', and so on. Likewise, a non-printing ASCII character value may be specified. However, please note that a three-digit value must follow the [**Tilde**] character. For this reason, a two-digit ASCII value like 67 must be padded with a zero (067).

For any tilde sequences within the **Barcode text** field, translation into ASCII will not occur until the **Apply** button has been clicked. Once the **Apply** button is clicked, each tilde sequence will be converted into its corresponding ASCII character, and then the **Barcode text** field will be encoded as barcode data.

Alt and the Numeric Keypad

As an alternative to entering a [Tilde] sequence, Windows provides a means of entering an ASCII value that will be immediately converted into its corresponding ASCII character. This provides the ability to enter values 128-255 (extended ASCII), which otherwise would not be accessible using a standard keyboard. Unfortunately, the disadvantage of this technique is that non-printing ASCII characters will be ignored (i.e. values 0-31).

To create an extended ASCII character:

- 1) Click within the **Barcode text** field to indicate where the character should be inserted.
- 2) For the numeric keypad of your keyboard, verify that [Num Lock] is enabled.
- 3) Press the [Alt] key, but do not release it yet.
- 4) Using the numeric keypad, type the three-digit value that corresponds to the desired ASCII character.
- 5) Release the [Alt] key.

The desired ASCII character will then be inserted within the **Barcode text** field. If the ASCII value is of a non-printing character (000-031), then no character will be inserted.

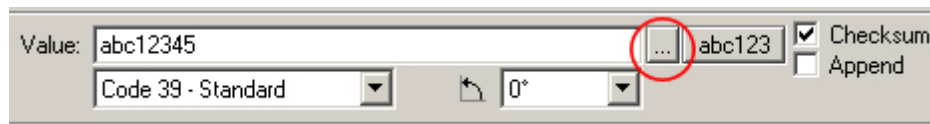
Barcode Symbology

Below the **Value** field, the drop-list is used to choose the barcode symbology that will be applied when encoding the characters. The choice of symbology determines both the available SmartBar controls, and the characters that may be entered within the **Value** field.

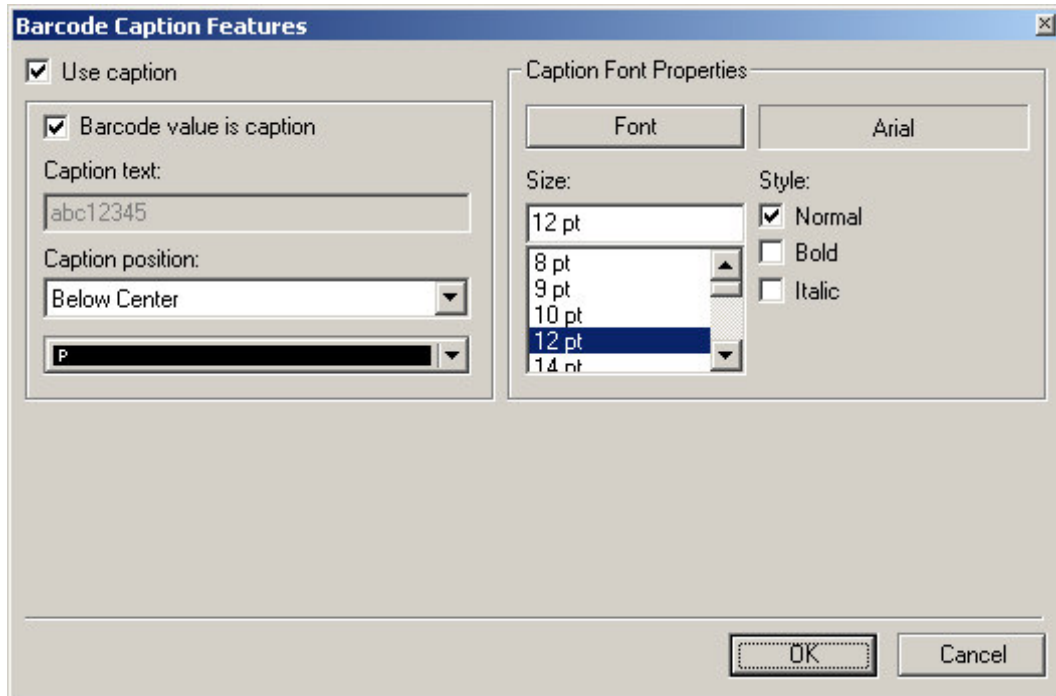
The barcode symbologies are discussed later in this section.

Caption Settings

To the right of the **Value** field, click the ellipsis button to open the **Barcode Caption Features** dialog.



The **Barcode Caption Features** dialog is used to specify the font, point size, and style of the barcode caption.



The **Caption position** indicates the placement of the caption with respect to the barcode. Please note that some barcode symbologies restrict the caption placement. As such, an invalid caption placement will be ignored.

Checksum

Specifies whether to calculate and apply a checksum character to the barcode. The checksum method depends upon the barcode type.

Note: This option is only used for the following barcode types: Code39, Interleaved 2 of 5, Codabar, and MSI Plessey. For MSI Plessey, disabling this option indicates **one** modulo 10 check digit, and enabling this option indicates **two** modulo 10 check digits.

Append

Certain symbologies allows several individual barcodes to be concatenated into a single, long barcode. Each barcode is printed as per a regular barcode. However, when the barcodes are later scanned, the reader will recognize that the barcodes must be concatenated.

For example, suppose that three Code 128 barcodes (A, B, and C) must be concatenated. When creating barcode A, enable the **Append** option. When creating barcode B, enable the **Append** option as well. However, when creating barcode C, disable the **Append** option. Later, when these barcodes are being scanned, the following actions will occur:

- Barcode A will be identified as requiring concatenation with a subsequent barcode.
- Barcode B will be appended to Barcode A. However, Barcode B will also be identified as requiring concatenation with a subsequent barcode.
- Barcode C will be appended to Barcodes A and B. The barcode reader will recognize that no further barcodes need be appended.
- The result will consist of the concatenated data from barcodes A, B, and C.

To continue appending barcodes in this fashion, simply create more barcodes with the **Append** option enabled. For the last barcode in the sequence, disable the **Append** option.

Rotation

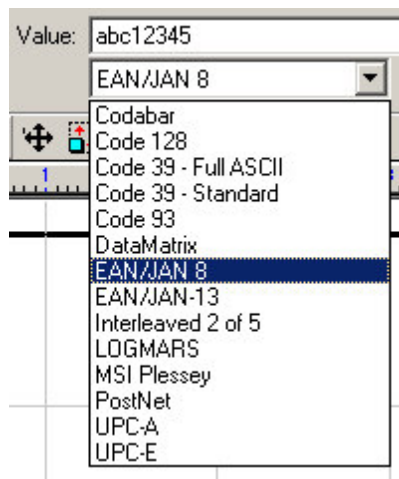
The **Rotation** drop-list is used to specify the bar code angle. The fixed angles are 0°, 90°, 180°, and 270°.

Barcode Symbolologies

Barcode Symbolologies

A barcode symbology is a set of rules for encoding data, such that a scanning device may use the same rules to extract the data. Depending upon the sophistication of the barcoding system, the data may describe a variety of details about the scanned item, or the data may simply be a lookup value for a database.

From the SmartBar, choose the **Barcode Symbology** from the drop-list.



The available barcode symbolologies are described in the following sections. However, it is beyond the scope of this documentation to provide specifications for each barcode symbology. Instead, there are standards agencies that will provide printed specifications for each barcode symbology. As a general rule, your client should indicate the barcode symbology that will be used, as well as any custom functionality (if any).

Codabar

Codabar is a variable-length symbology that is capable of encoding 16 characters within any length message. In addition to numeric values (0-9), the capital letters A through D are valid, as well as the following characters:

-	Dash
\$	Dollar Sign
:	Colon
/	Forward Slash
.	Period
+	Plus Sign

Start/Stop Characters

The capital letters A through D are used as start and stop characters. For example, the string “A6479309B” indicates that ‘A’ is the start character, and ‘B’ is the stop character.

Checksum

If the **Checksum** option is enabled, then a modulo 16 check character will be used to enhance data security for Codabar barcode. The last digit of the barcode is assumed to be the check digit, and it is compared to a calculated check digit to verify the barcode.

Code 128

The Code 128 symbology can encode the ASCII character set (0-127). Code 128 is the most easily read code with the highest message integrity due to several separate message check routines.

Of all the common linear symbologies, Code 128 is the most flexible. It supports both alpha and numeric characters easily, has the highest number of characters per inch, and is variable length. Code 128 is usually one of the best choices when implementing a new symbology.

Code 39 - Standard

Code 39 is an alphanumeric symbology that can encode numbers (0-9), capital letters (A-Z), a space character (ASCII 32), and the following four special characters:

\$	Dollar Sign
/	Forward Slash
+	Plus Sign
%	Percentage Sign

If lower-case letters (a-z) or other ASCII must be encoded, then please refer to **Code 39 – Full ASCII**, discussed in the next section.

Checksum

If the **Checksum** option is enabled, then a modulo 43 check character will be used to enhance data security for the Code 39 barcode. The last digit of the barcode is assumed to be the check digit, and it is compared to a calculated check digit to verify the barcode.

Code 39 – Full ASCII

The **Code 39 – Full ASCII** symbology is an enhancement upon **Code 39 – Standard**, where the four special characters are used to encode the ASCII character set (0-127). This is done by pairing one of the special characters (\$, /, +, %) with a letter (A-Z). When the given pair of characters are scanned by a barcode reader, they will interpret the result as an ASCII character.

Vision-Pro will automatically generate the necessary character pairs, based on the **Barcode text** that has been entered. For example, if lowercase 'a' is typed in the **Barcode text** field, then clicking **Apply** will cause the lowercase 'a' to be translated to "+A" within the barcode. A barcode reader will then interpret the "+A" as being a lowercase 'a'.

Code 93

Code 93 is an alphanumeric symbology that can encode the ASCII character set (0-127). Simply type the required ASCII characters within the **Barcode text** field.

Background

Like Code 39, the Code 93 symbology encodes numbers (0-9), capital letters (A-Z), a space character (ASCII 32), and the following four special characters:

\$	Dollar Sign
/	Forward Slash
+	Plus Sign
%	Percentage Sign

However, Code 93 also uses four shift characters: [S1], [S2], [S3], and [S4]. These shift characters are used in combination with the basic Code 93 characters to encode the entire ASCII character set.

Vision-Pro 7 Doc Files

Vision-Pro will automatically insert any shift characters that are necessary for the encoding. For example, if lowercase 'b' were typed in the **Barcode text** field, then clicking **Apply** will cause the lowercase 'b' to be translated to "[S4]B". A barcode reader will then interpret the "[S4]B" as being a lowercase 'b'.

DataMatrix

The DataMatrix symbology is a two-dimensional symbology, where data is encoded in both the horizontal and vertical planes. In contrast, a one-dimensional symbology, such as UPC-A, encodes data from left-to-right. Whereas reading the UPC barcode is performed using a linear barcode reader (such as a wand), the DataMatrix code requires a two-dimensional scanner.

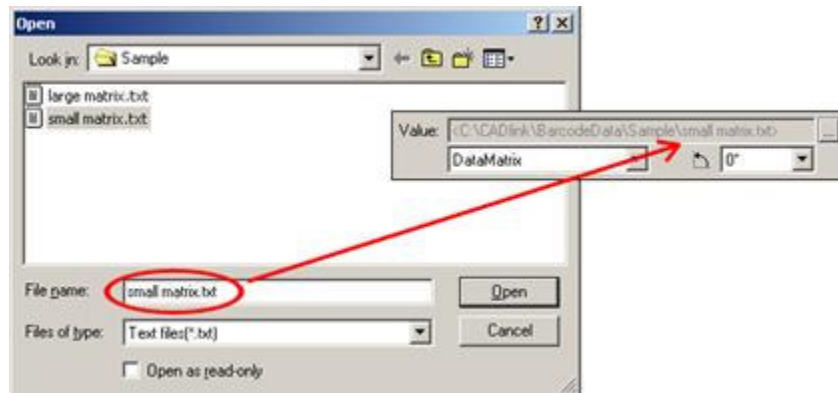
The DataMatrix symbology can encode values 0-127 (ASCII character set), and values 128-255 (extended ASCII).

Entering Barcode Text

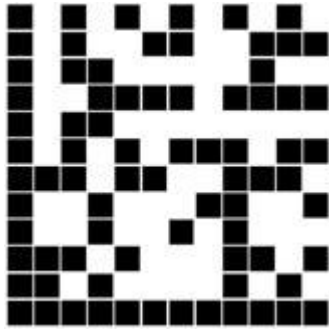
The data for a DataMatrix barcode must be read from a text file, where whitespace is considered to be the delimiter between each data element (whitespace characters are the space character, tab, and newline). From the SmartBar, click the ellipsis button that is next to the **Value** field.



The **Open** dialog may then be used to choose the text file that contains the barcode data. Choose the data file and click **Open**. The focus will return to the SmartBar, where the chosen filename will appear within the **Barcode text** field.



Click **Apply** to create the DataMatrix barcode. The shape will appear similar to the following.



EAN/JAN-13

The abbreviation EAN/JAN refers to European Article Numbering/Japanese Article Numbering. The EAN-13 symbology is a superset of the UPC-A symbology that is used in North America. The EAN-13 symbology was implemented because the UPC-A symbology was insufficient for international use.

Like UPC-A, the EAN-13 symbology contains a manufacturer code and a product code. However, where UPC-A encodes twelve digits, the EAN-13 symbology encodes a thirteenth digit. The thirteenth digit is used as part the number system to indicate the country or economic region that had assigned the manufacturer code (to a specific company).

The JAN-13 symbology is simply EAN-13, where the country code is 49.

Note: Since EAN-13 is a superset of UPC-A and requires very little additional effort to handle than an UPC-A code, it is recommended that all new designs implement EAN-13 rather than UPC-A. Otherwise, the design will be restricted to the U.S. and Canada. In addition, the UCC Council has announced that as of January 1, 2005, all barcode systems in the U.S. and Canada must be able to handle EAN-13 barcodes, such that international manufacturers do not have to worry about printing a different barcode for products shipped to North America.

The nominal height for the EAN/JAN-13 bar code is one inch. The reduced size is 80% of the nominal size.

EAN/JAN-8

The abbreviation EAN/JAN refers to European Article Numbering/Japanese Article Numbering.

EAN-8 is the EAN equivalent of UPC-E in the sense that it provides a "short" barcode for small packages. However, unlike the EAN-13 compatibility with UPC-A, the EAN-8 symbology has no compatibility with UPC-E.

The JAN-8 symbology is simply EAN-8, where the country code is 49.

The nominal height for the EAN/JAN-8 barcode is one inch. The reduced size is 80% of the nominal size.

Interleaved 2 of 5

Interleaved 2 of 5 is a numeric (0-9) symbology that is typically used in industrial and warehousing applications.

Checksum

If the **Checksum** option is enabled, then a modulo 10 check character will be used to enhance data security for the Interleaved 2 of 5 barcode. When this option is enabled, the last digit of the barcode is assumed to be the check digit, and it is compared to a calculated check digit to verify the barcode.

LOGMARS

LOGMARS (Logistics Applications of Automated Marking and Reading Symbols) is a special application of Code 39 used by the U.S. Department of Defense. LOGMARS is an alphanumeric symbology that can encode numbers (0-9), capital letters (A-Z), a space character (ASCII 32), and the following four special characters:

\$	Dollar Sign
----	-------------

Vision-Pro 7 Doc Files

/	Forward Slash
+	Plus Sign
%	Percentage Sign

For reference, the LOGMARS symbology is governed by Military Standard MIL-STD-1189B. The Modulus 43 check digit, optional with Code 39, is defined and recommended in this specification.

Checksum

If the **Checksum** option is enabled, then a modulo 43 check character will be used to enhance data security for the LOGMARS barcode. The last digit of the barcode is assumed to be the check digit, and it is compared to a calculated check digit to verify the barcode.

MSI Plessey

MSI Plessey is a variable length numeric (0-9) symbology that is used for retail inventory control.

Second Check Digit

A modulo 10 check digit calculation is always performed on the data string. Enabling the **Checksum** option will activate a second modulo 10 check digit, which will perform a check on the entire string, including the first check digit.

PostNet

PostNet is used by the United States Postal Service to encode mail. This symbology can encode either a standard 5-digit Zip Code, a Zip+4 code, or a full 11-point delivery point code. For example:

Postal Code	Example
5-digit Zip Code	64081
Zip+4	64081-2747
Full 11-point delivery point code	64081-2747-01

When entering values in the **Barcode text** field, the dash between values is optional. Dashes will not be encoded as part of the barcode data.

With respect to the "Delivery Point Code," the last two digits correspond to the last two digits of the street address of P.O. Box. For example, if the address were 401 SW Oldham Pkwy, then the delivery point code is "01."

Checksum

A checksum is always applied to the PostNet barcode.

Standard Code 39

Please refer to the **Code 39 – Standard** symbology, which is discussed earlier in this chapter.

UPC-A

The UPC-A (Universal Product Code-A) symbology encodes 12-digit numeric values, which are commonly used in North American retail labeling. The nominal height for the UPC-A bar code is one inch. The reduced size is 80% of the nominal size.

It is recommended that all new designs implement EAN-13 rather than UPC-A. Please refer to EAN/JAN-13 for more information.








UPC-E

The UPC-E (Universal Product Code-E) symbology is a compressed form of UPC-A. Both UPC-A and UPC-E encode 12-digit numeric values, but the UPC-E barcode is about half the size of an UPC-A barcode. Typically, the UPC-E barcode is used on small items, where an UPC-A barcode would not fit.

The nominal height for the UPC-E bar code is one inch. The reduced size is 80% of the nominal size.

WORKING WITH IMAGES

WORKING WITH IMAGES

-  [Render to Bitmap](#)
-  [Image Menu Color Adjustments](#)
-  [Image Menu Filters](#)
-  [Plug-ins](#)
-  [AccuScan](#)
-  [PhotoMachine](#)
-  [CenterLine Tracing](#)

RENDER TO BITMAP

Render to Bitmap

The **Render To Bitmap** feature converts any selected vector or bitmap object. The possible color depths are as follows:

Color Depth	Description
Monochrome	Convert the selected objects to black and white bitmaps
16 gray levels	Convert the selected objects to gray scale bitmaps with 16 shades
256 gray levels	Converts the selected objects to gray scale bitmaps with 256 shades of gray
16 colors	Convert the selected objects to 4-bit color bitmaps with 16 colors
256 colors	Convert the selected objects to 8-bit color bitmaps with 256 colors
Full color	Convert the selected objects to 24-bit color bitmaps with millions of colors

The resolution of the bitmap is specified in Dots Per Inch (DPI). The default resolution is 72 dpi, though this may be changed manually.

Color Mode

The Color Mode indicates the maximum number of discrete colors that the image can have. There are four color modes available:

- **RGB** – This is also known as a “full color” or “24-bit” image. This mode allows the maximum number of colors to be used in the image.
- **Grayscale** – This mode allows for a maximum of 256 shades of gray.
- **Indexed Color** – This is a special image mode that allows for a maximum of 256 colors. These are not limited to shades of gray.
- **Monochrome** – This is also known as a two-color image, such as a black and white image.

Image Size

Under 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.

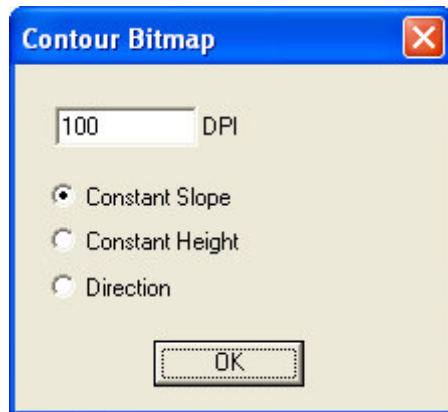
- The **Resolution** is listed in pixels per inch (i.e. like dpi).
- The **Image Dimensions** are the actual size at which the image will be printed or cut, expressed in the current ruler units.

Render Contour Bitmap

Render Contour Bitmap

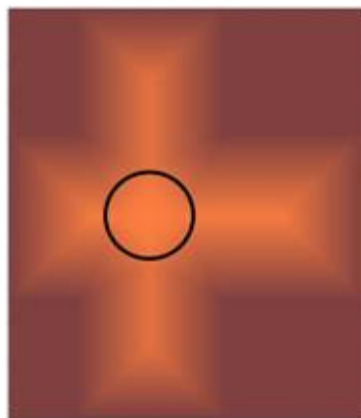
The **Render Contour Bitmap** feature is used to create three-dimensional chiseled or beveled patterns using process colors. When a shape varies in thickness, the effect will be adjusted to maintain consistent proportions throughout the shape.

When the **Render Contour Bitmap** command is chosen, the **Contour Bitmap** dialog will open. The **DPI** field indicates the "Dots Per Inch" of the bitmap that will be produced. A high **DPI** setting will produce a higher resolution bitmap (i.e. less aliasing), but a large file size will be required to store the bitmap.

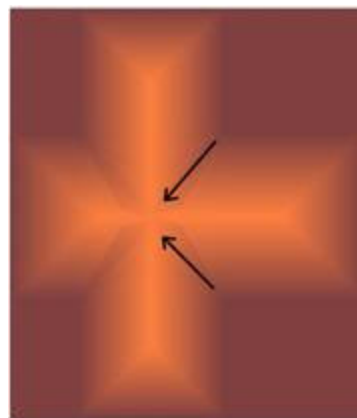


As a general rule, the bitmap DPI should be set at about 25% to 30% of the output device resolution, assuming that the bitmap is not being scaled. For example, if the output device has a resolution of 600 dpi, then the bitmap should be set from about 150 to 200 DPI.

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. The **Direction** option creates a chiseled appearance that is effective with lettering.

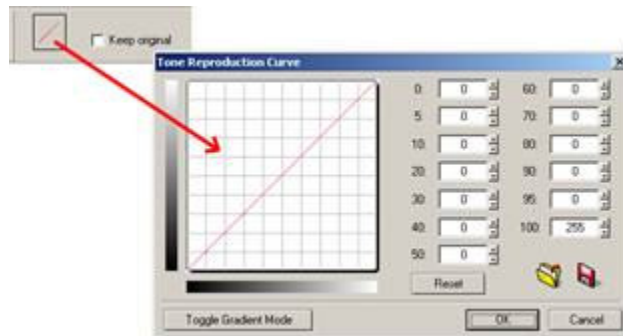


Using the Constant Slope setting, a plateau is produced at the intersection between two rectangles.



Using the Constant Height setting, the slopes are varied so that a peak is produced at the maximum height.

Clicking **OK** will close the **Contour Bitmap** dialog, and a preview of the bitmap will be displayed. At the far-left of the SmartBar will be a graph button, which may be clicked to open the **Tone Reproduction Curve** dialog.



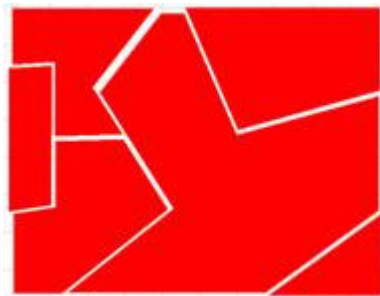
The **Tone Reproduction Curve** dialog is used to edit the distribution of tints in the chisel/bevel effect. By default, the curve will be a straight line from the bottom-left (100% tint) to the top-right (0% tint) of the graph.

Subdividing Shapes

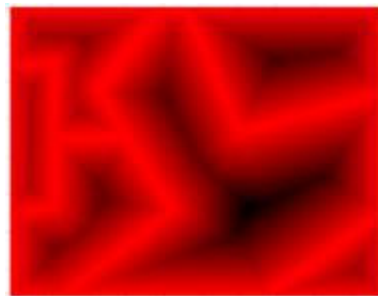
Before converting a shape into a contour bitmap, the **Ginsu Knife** tool may be used to subdivide the shape.



For example, suppose that the **Ginsu Knife** tool has been used to subdivide a rectangle shape into several small pieces. Using the **Select** tool, resize and nudge the pieces to create a small gap between each piece. When ready, select all of the pieces and apply a **Render Contour Bitmap** operation. A chisel/bevel effect will be created for each piece, which is then combined into the final bitmap.



Rectangle shape that has been subdivided using the Ginsu Knife tool.



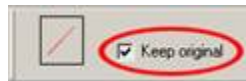
Select the pieces and apply a Render Contour Bitmap operation.

If a small gap is not created between the pieces, then the **Render Contour Bitmap** feature will create a bitmap that shows no separation between the adjoining shapes.

Clipping the edges of the bitmap

Once a contour bitmap has been created, the original shape may be used to clip the bitmap, as follows:

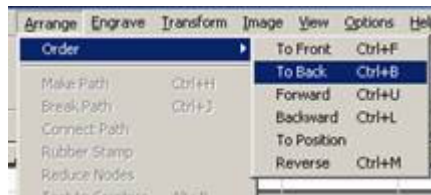
- A) When editing the contour bitmap, enable the **Keep Original** option within the SmartBar.



B) After clicking the **Apply** button and returning to the Select mode, the bitmap object will be "above" the original shape.



C) Click the bitmap, such that it becomes the current selection. Then choose the **To Back** command under the **Arrange** menu.



D) The bitmap will now be behind the original shape. Drag a selection marquee around both the bitmap and shape, such that they are both selected.

E) Under the **Arrange** menu, choose **Clipping** from the **Clipping** flyout.

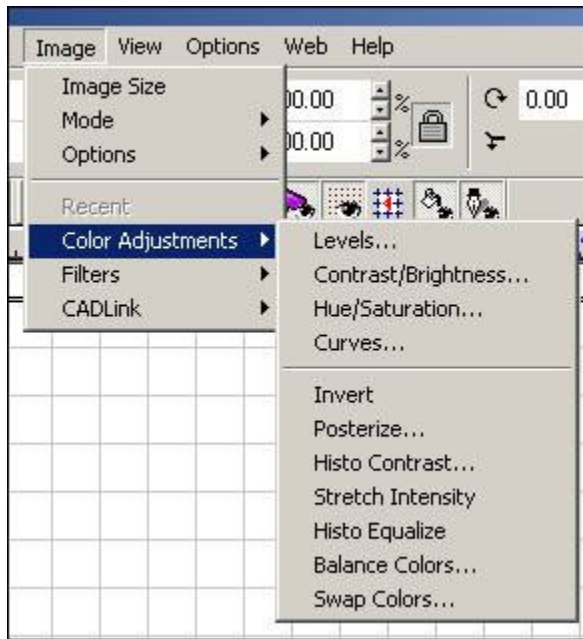


The bitmap will now be clipped according to the contour of the original shape.



IMAGE MENU COLOR ADJUSTMENTS

Image Menu Color Adjustments

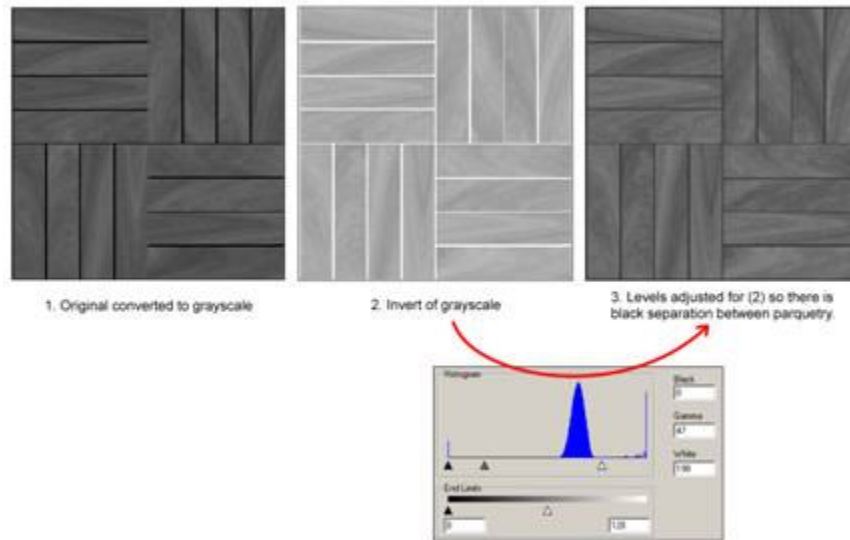


Levels

Adjust the distribution of color intensities throughout the bitmap, either to correct a scanned image, or to create an artistic effect. Increasing the **Black** level will equate the darkest portions to black, whereas decreasing the **White** level will equate the lightest portions to white. Increasing or decreasing the **Gamma** will modify the overall intensity of the bitmap.

The **End Limits** are used to adjust the White and Black values, which is an effective means of removing absolute white or black from the bitmap.

Note: A histogram is a chart consisting of horizontal or vertical bars, the widths or heights of which represent the values of certain data (in this case, the data represents pixel brightness across the bitmap).



Example of Using Levels – After a grayscale image has been inverted, the separations between the parquetry in (2) is white. Using the **Levels** feature, the **White** point is lowered to equate all the separations to white. The white End Limit is reduced to remove the separations. And then the Gamma is reduced to create a bitmap that is as dark as in the original grayscale (1).

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.

- **Hue** is the visual perception of a specific color, such as red, yellow, violet, or orange-brown. The Hue setting is arranged like a color wheel (ROYGBIV), where adjusting the Hue setting will rotate the bitmap colors through the color wheel.
- **Saturation** is the colorfulness of an area in consideration of its brightness level. For example, as a color falls under increasing levels of shadow, the color appears darker, even though its saturation remains constant.
- **Lightness** is the appearance of a color in terms of how white or black it appears.

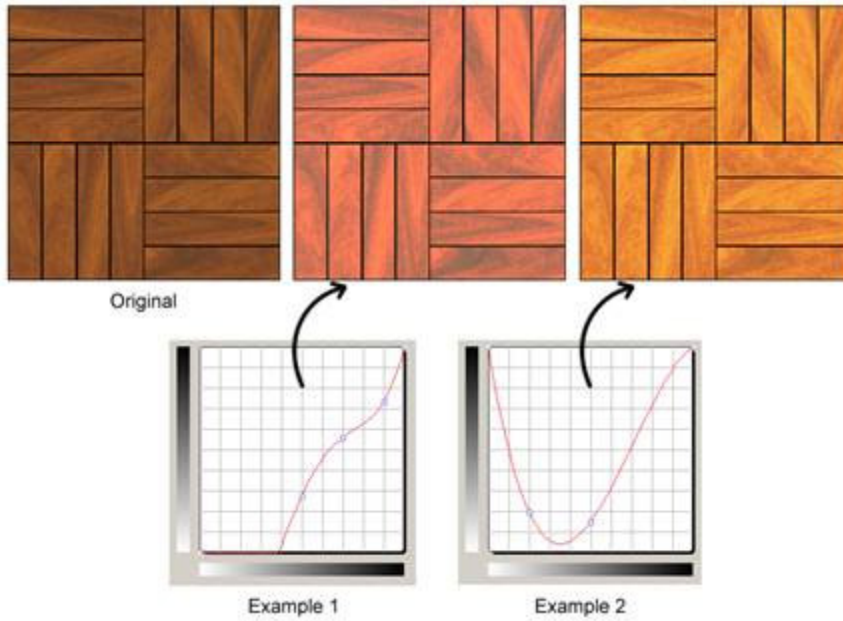


Curves...

Adjust the tonal range (shadows, midtowns, and highlights) of the bitmap. The horizontal scale of the graph represents the range of intensity values (shadows progressing to light, or vice-versa), and the vertical axis represents the current intensity values. The initial diagonal line represents the original distribution of intensities across the bitmap tonal range.

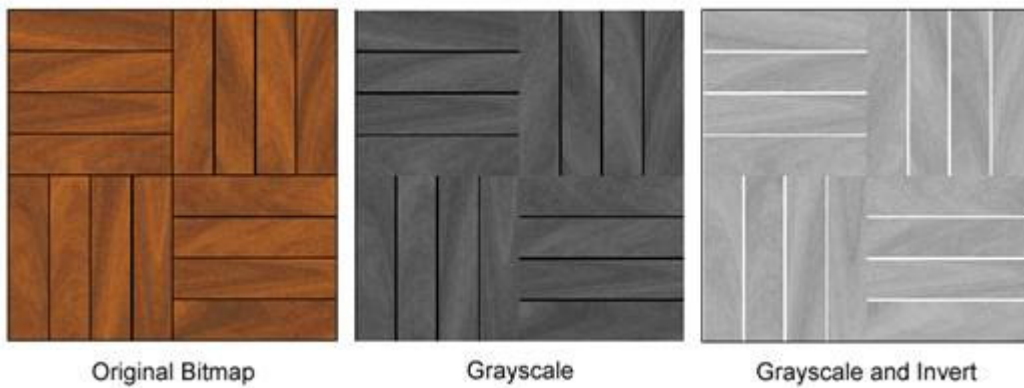
The **Toggle Gradient Mode** button is used to alternate how the intensity values are displayed. The graph can either display shadows to highlights (with values increasing from 0 to 255), or display highlights to shadows (with values increasing from 0% to 100%).

To set specific intensity values, either click within the graph, or enter the value using the edit fields. A maximum of thirteen intensity values can be set.



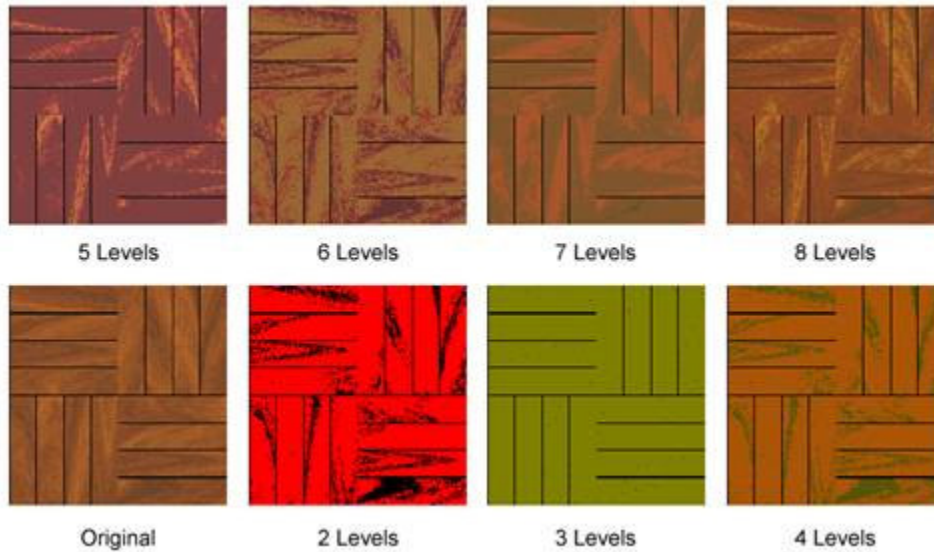
Invert

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. The valid range for the number of levels is from 2 to 64.



Histo Contrast...

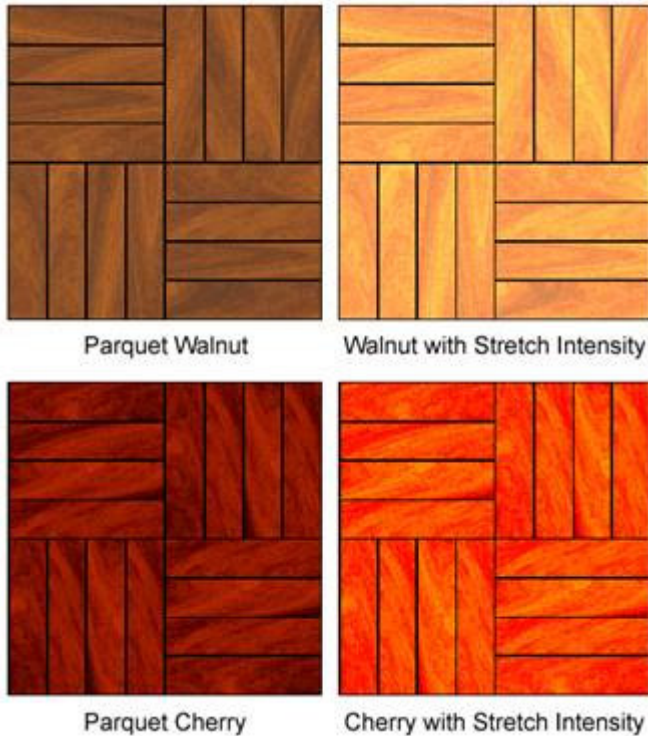
Increases or decreases the contrast of the bitmap image, using a histogram to determine the median brightness. Once the median brightness has been determined, pixel values above the median are brightened, and pixel values below the median are darkened.

Note: A histogram is a chart consisting of horizontal or vertical bars, the widths or heights of which represent the values of certain data (in this case, the data represents pixel brightness across the bitmap).



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.

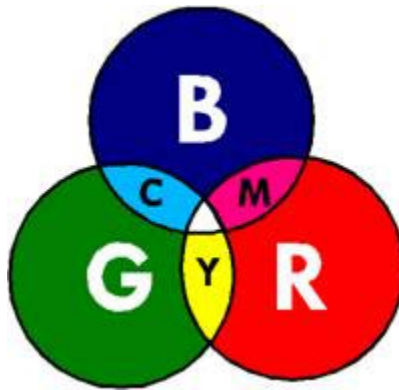


Balance Colors...

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.

When adjusting the color sliders, the original image is maintained when the Red Factor = 100% Red, the Green Factor = 100% Green, and the Blue Factor = 100% Blue.

As per the following color mixing diagram, setting all color sliders to 100% will result in a bitmap that is entirely white. Conversely, setting all color sliders to 0% will produce a black bitmap.

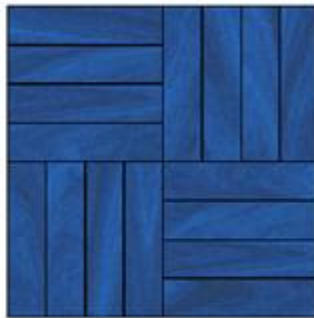


Swap Colors...

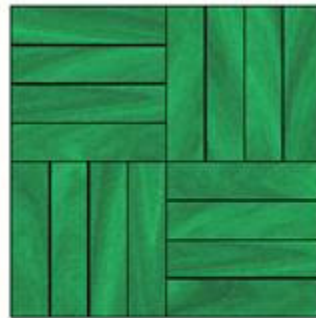
Swap the color channels of the original bitmap. This feature is useful for obtaining artistic effects that would otherwise be difficult to achieve using the other Color Adjustment tools.



Original Bitmap



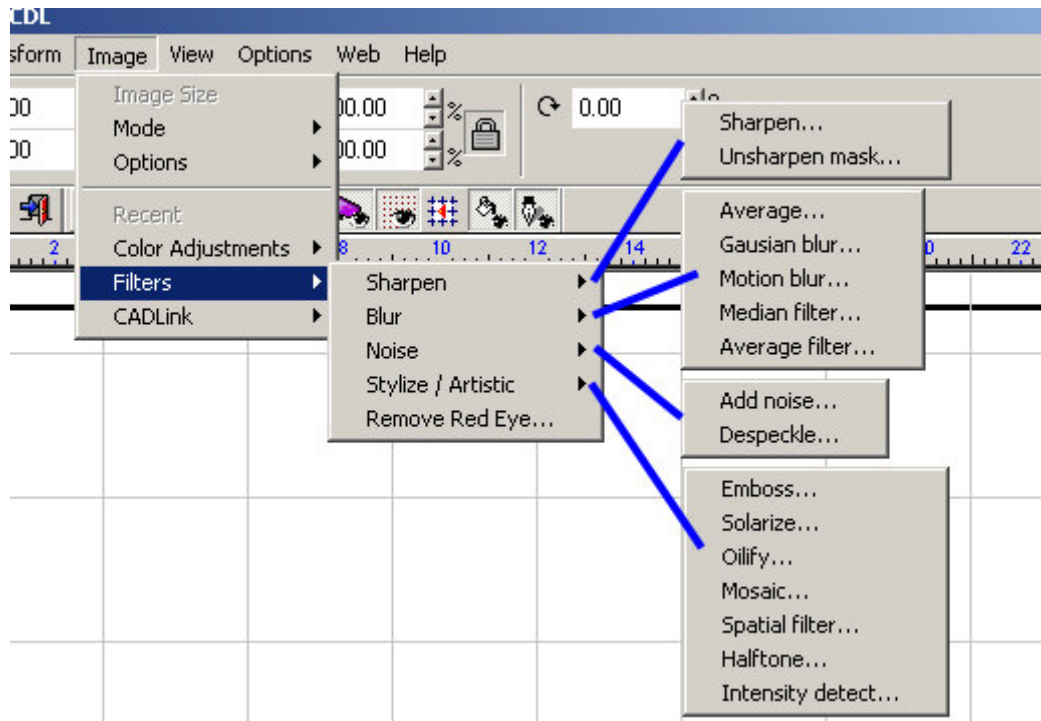
Red To Blue
Blue To Red



Red To Green
Green To Blue
Blue To Red

IMAGE MENU FILTERS

Image Menu Filters



Sharpen

Increase or decrease the sharpness of the bitmap.

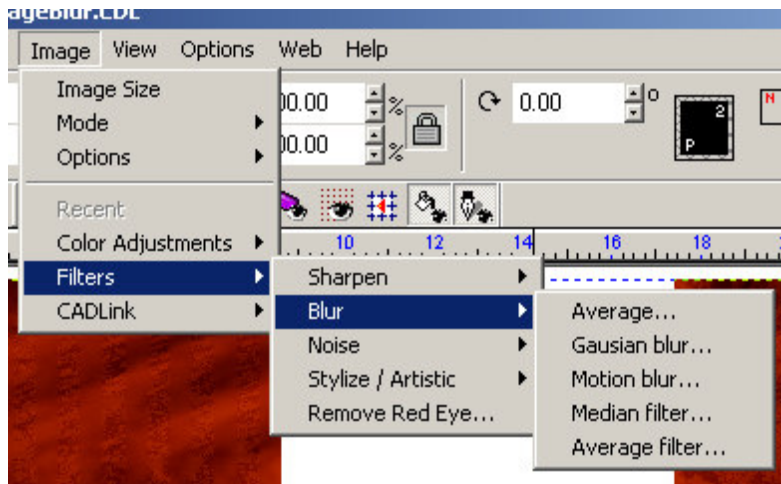
Unsharp Mask

The Unsharp Mask feature is actually considered to be 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.

- 1) A blurred copy of the bitmap is created, where the amount of blurring depends upon the **Radius** setting
- 2) The blurred copy is then subtracted from the original (the resulting difference bitmap is referred to as the "mask")
- 3) Pixel-by-pixel, where the difference exceeds the **Threshold** setting, the difference is multiplied by **Amount** and then added to the original bitmap
- 4) Where the difference does not exceed the **Threshold** setting, the original pixel value remains unchanged

Blur

Blur



Average Filter

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. The size of the blur is moderated by the **Blur Effect** setting. The **Angle** indicates the rotation of the blur, where a positive Angle indicates a clockwise blur, and a negative Angle indicates a counter-clockwise blur.

If the **Unidirectional** option is checked, then the blur effect will extend only in the direction specified by **Angle**. If the **Unidirectional** option is unchecked, then the blur effect occurs both the **Angle** direction, and the opposite direction from **Angle**.

Median Filter

Changes the color of each bitmap pixel to the median color of pixels within the surrounding pixels.

The Median Filter is similar to the Average Filter, except that Median Filter is primarily used for noise reduction, rather than a blur effect.

Noise

Noise

[Add Noise](#)

[Despeckle](#)

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

Stylize / Artistic

 [Emboss](#)

 [Solarize](#)

 [Oilify](#)

 [Mosaic](#)

 [Spatial Filter](#)

 [Halftone](#)

 [Intensity Detect](#)

Emboss

Applies an emboss effect to the bitmap, letting you specify the depth and direction of the effect. The **Depth** indicates the apparent depth of the emboss 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. Increasing the Amount will result in less detail in the resulting image.

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, including emboss, gradient, and various mathematical transforms (Laplacian, Sobel, Prewitt, etc.).

Halftone

Convert the bitmap to a grayscale halftone bitmap. The **Angle** setting is used to rotate the halftone pattern.

The available patterns are:

Circular	Apply a circular halftone pattern
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Elliptical	Apply an ellipse halftone pattern
Linear	Apply a linear halftone pattern
Print	Apply a halftone pattern for printing
Random	Apply a random halftone pattern
Rectangular	Apply a rectangular halftone pattern
View	Apply a halftone pattern for monitor display

Converts a bitmap with any resolution to a halftoned bitmap, with a specified pattern rotation. A halftoned bitmap is a 1-bit bitmap that has been dithered for black and white printing or display.

Intensity Detect

Pixel intensities within the bitmap range from 0 to 255 for each color plane (red, green, and blue). The **Intensity Detect** filter compares each pixel intensity with the **Low** and **High** values, and the pixel intensity is set as follows:

Pixel Intensity	Result
Between Low and High	Increase intensity to 255
Less than Low	Clear intensity to zero
Above High Setting	Clear 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. This feature has no effect on grayscale images, since there is no “red eye” effect in a grayscale image. If desired, a new color can be substituted that is closer to the original eye color.

The AccuScan tool should be used to select a small region around the eye. Otherwise, all pixels within the bitmap will be affected.

Red Component of Pixel	Result
Greater than Threshold	Pixels are replaced (Lightness value is applied)
Less than Threshold	No change

Lightness – A “Percentage” value that indicates whether the pixels that are replaced are lightened or darkened. If this value is greater than 100, the replaced pixels will be lightened. If this value is less than 100, the replaced pixels will be darkened. This function preserves the lightness of the original pixels and substitutes the red color with the new color.

PLUG-INS

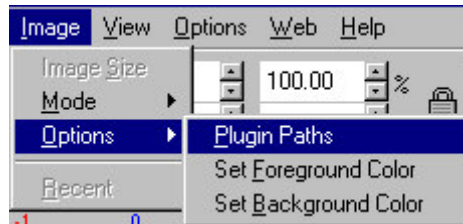
Plug-ins

Vision-Pro 7 Doc Files

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.

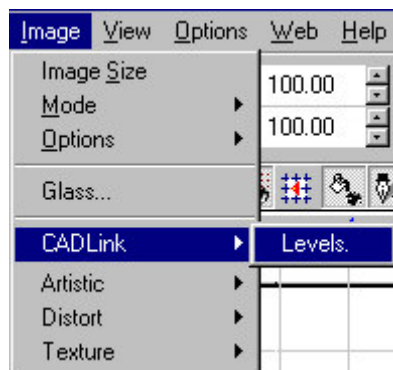
Note: A plug-in file is recognized by its *.8bf file extension.

To access a plug-in from within Vision-Pro, use the **Plug-in Paths** option (**Image** menu) to specify the directory wherein the plug-in has been installed. More than one directory may be specified as containing plug-ins.



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.

When the directory of a plug-in has been specified, the available plug-ins will appear under the **Image** menu. For example, the following screenshot shows that the CADlink Levels filter has been installed, as well as several other plug-ins.

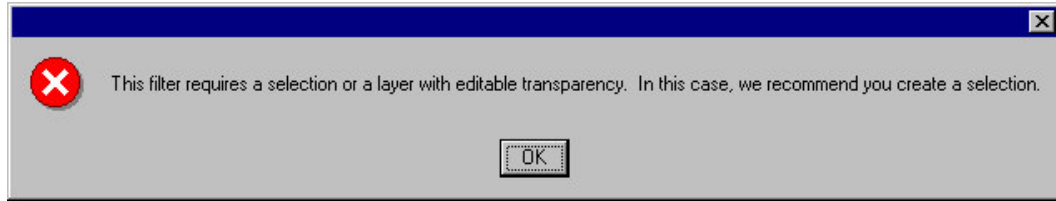


To use a plug-in, select a bitmap and then choose the given plug-in from the **Image** menu. Depending on the type of plug-in, a dialog will open that allows the parameters of the plug-in to be edited.

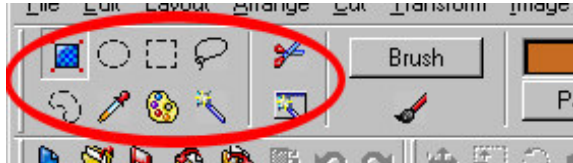
Note: For instructions on using specific plug-ins, please refer to the documentation that was provided with the plug-in installation package.

Applying Plug-ins to sections of a bitmap

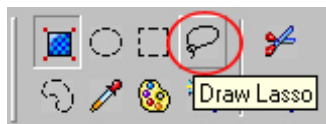
In some cases, a plug-in may require that only part of the bitmap be selected. If a selection has not been made, then a warning dialog will indicate that a selection is needed:



To select part of a bitmap, double-click the bitmap to activate AccuScan mode. At the far-left of the SmartBar will be tools for selecting portions of the bitmap.



For example, suppose that a bitmap containing several leaves is being edited, and the plug-in effect should be applied only to one of the leaves. In this case, the **Draw Lasso** tool is useful.



Select the **Draw Lasso** tool and sketch a selection area around a leaf.



From the **Image** menu, choose the given plug-in and a dialog will open that allows the plug-in parameters to be edited. Once the parameters have been set, the effect will be applied to the selected portion of the bitmap. In this case, the plug-in created a motion blur effect.



For more information about the AccuScan selection tools, please refer to the AccuScan chapter.

AccuSCAN

AccuScan



The **AccuScan** feature contains the tools required to convert a bitmap into a line-traced drawing format, which can then be cut by Vision-Pro. In addition, **AccuScan** provides the necessary tools for manipulating bitmaps and combining them with other objects.



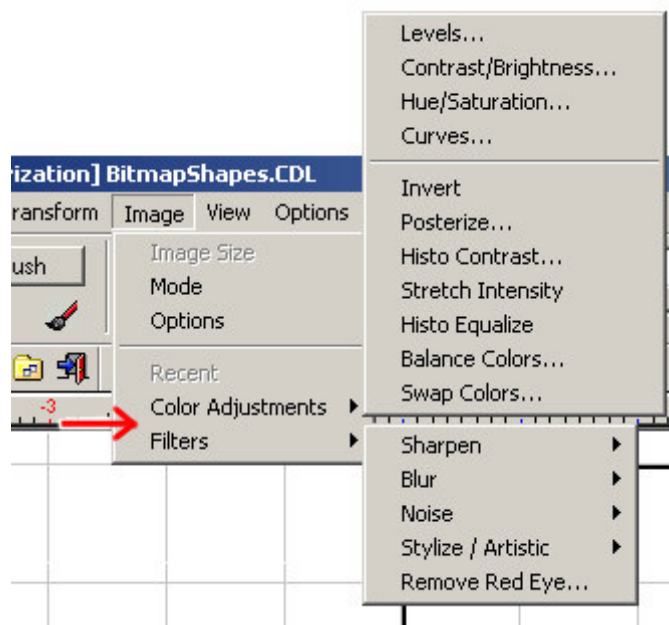
Though any color can be selected for the foreground and background of a bitmap, these descriptions assume that the foreground is black and that the background is white

To use **AccuScan**, select an imported bitmap and click the **AccuScan** tool. As an alternative, double-clicking a bitmap will also activate AccuScan. In either case, the AccuScan controls will become available in the dialog bar. However, note that only one bitmap can be edited at a time.

Applying Image Filters

Applying Image Filters

Vision-Pro includes a wide variety of image filters for working with bitmaps. These filters can also be applied within AccuScan. If only a portion of the bitmap is selected, then the filter effect will only apply to the selected area. Similarly, any third-party Plug-Ins can be also be used.



A Note About Colors and the Filters

Colors displayed on screen are created using a mixture of red, green, and blue channels (components). Each of these channels range from zero (no saturation) to 255 (complete saturation). As all three color channels approach values of 255, the displayed color becomes white, whereas channel values of zero will produce black.

The number of distinct colors available for a bitmap depends on the bit depth of the bitmap. Without elaborating on the mechanics of calculating the maximum number of palette colors, it is sufficient to use the following table as a guide.












Bit Depth	Number of Colors
1	2 (monochrome)
4	16
8	256
16	approximately 65,000
24	approximately 16.7 million (photographic quality)

Fundamentally, the bit depth is a measure of how much computer memory is required to store color information about each pixel in the bitmap, which is why a high color bitmap requires a large data file for storage.

Selection Tools

Selection Tools

The following selection tools are available when preparing a bitmap for scanning:

	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 the bitmap.
	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."
	Magic Wand Setup	Adjust the range of color intensities that the magic wand uses when determining a region. The Fill Holes option will include any gaps as part of the overall selection.
	Clip Region	Create a clipping shape from the current selection. The Clipping Clear command can be used to remove this clipping.
	Invert Selection	Invert the current selection area

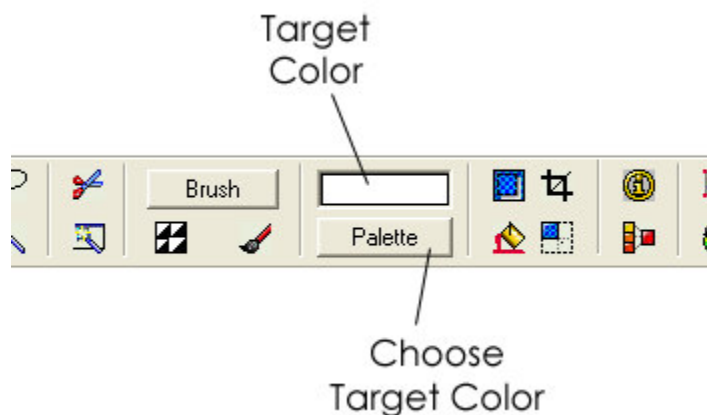
Modifier Keys

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.

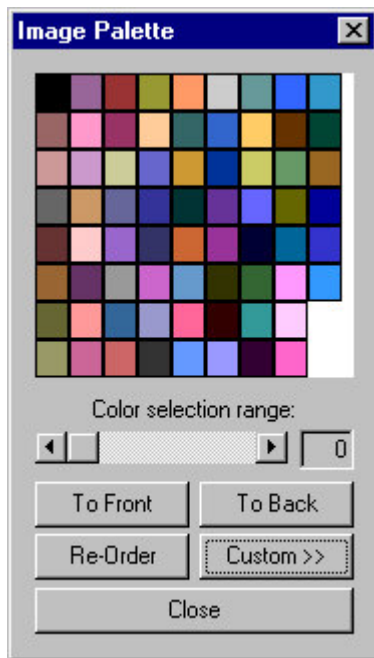
Bitmap Palette

The **Target** palette color is displayed above the **Palette** button. Double-click the **Target** color to add colors to the palette. The new color will not be added until used with either the **Brush** or **Fill** tools. New colors will be automatically appended to the end of the palette.

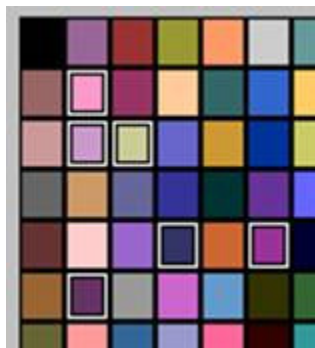
Note: If there is not enough space in the palette for new colors, then refer to the **Merge Colors** feature.



Clicking the **Palette** button will display the current colors in the bitmap palette.



The **Image Palette** dialog may be used to select existing palette colors. For example, several of the colors may be clicked, which will cause them to be highlighted.



Clicking the **To Front** button will shift these colors to the start of the palette, whereas clicking the **To Back** button will shift these colors to the end of the palette.

In addition, the **Re-Order** button will sort the palette from most- to least-prevalent colors in the bitmap. All palette colors will be sorted, and no selection is required.

The **Custom** button may be used to add colors to the palette, though as mentioned previously, new colors will not be added until either the **Brush** or **Fill** tools are used with that color.

Manipulation Tools

Manipulation Tools

The tools for manipulating a bitmap are as follows:

 [Brush Tool](#)

 [Move Region](#)

[!\[\]\(d263118e0bfd47dc6bc704167d936b83_img.jpg\) Crop Tool](#)

[!\[\]\(34b4f260a8587d2e97eeaee361cc357b_img.jpg\) Fill Region](#)

[!\[\]\(3d8c13c92b853674f749aac6fa869926_img.jpg\) Quarter Bitmap](#)

[!\[\]\(6605b201d6f14d9b3bcb8ab5f274d107_img.jpg\) Extended Information](#)

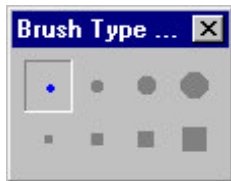
[!\[\]\(96cc62f861fdd6e50510c0224a756dff_img.jpg\) Merge Colors](#)

[!\[\]\(fa6f3af6bfa46c5d4a2d362681095beb_img.jpg\) Posterize Region](#)

Brush Tool



The **Brush** tool uses the **Target** color to touch up the bitmap. There are several brush shapes available by clicking the **Brush Selection** button.



Move Region



The Copy tool may be used to accomplish one of two tasks, use it to move a selected area to another position within the bitmap, or use it to copy a selected area to another position.

Copy A Selection

To copy a selected area, click the **Move Region** button. The mouse cursor may then be used to drag the selection.

Move A Selection

To move a selected area, click the **Move Region** button, and then hold the **[Control]** key when dragging the selection. The area vacated by the selection will be filled with the Target color.

Crop Tool



The **Crop** tool removes all of the bitmap except for selected areas.

Fill Region



The **Fill Region** tool will fill a selected area with the **Target** color. To use this tool:

- Select a **Target** color by double-clicking one of the palette colors in the **Image Palette** dialog
- Select the area to be flooded using the selection tools
- Click the **Fill Region** button

Quarter Bitmap



The **Quarter Bitmap** button will reduce the screen resolution of the bitmap by 50% in terms of its width and height. Though the storage requirements for the bitmap will be reduced, the visual quality of the image may suffer.

Extended Information



Display information concerning the dimensions and resolution of the bitmap. Clicking the **Resample** button will perform the same function as the **Quarter Bitmap** command (discussed previously).

Merge Colors



The **Merge Colors** buttons performs two tasks:

- It removes all unused colors from the bitmap palette.
- It merges colors that are selected in the **Image Palette** dialog (opened by clicking the Palette button). These colors will be replaced with the current **Target** color.

Merge Cursor



Opening the **Image Palette** dialog also activates the **Merge Cursor**. Colors may then be merged on the bitmap as follows:



Wherever the mouse is released, the **Target** color will be set to the underlying color.

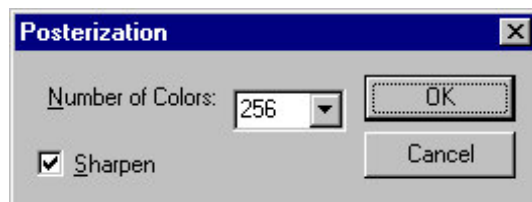
Using the **Merge Cursor**, Shift-clicking on the bitmap will add colors to the current selection. Selected colors will be highlighted in the **Image Palette** dialog. Similarly, Control-clicking will remove colors from the selection. When the selection is complete, click the **Merge Colors** button to set the selected colors to the **Target** color.

Double-clicking on the bitmap will set the **Target** color.

Posterize Region



Posterization is the process of generating a color palette for a bitmap where none exists, or expanding/reducing the size of the palette attached to a bitmap. Click the **Posterize Region** button to open the **Posterization** dialog, and choose the number of colors that will compose the resulting bitmap.



The **Sharpen** option indicates that the color boundary between objects in the bitmap are to be narrowed, which will create the impression of sharp edges for the objects.

Posterizing scanned images

Scanners often generate new colors at the edges where two colors meet in an original image. Scanners can also detect a range of a given colors that we perceive only one color, such as four similar shades of blue. To avoid eliminating essential colors during the posterization process, use either at least three more colors than can easily be counted in a bitmap, or 50% more colors than can easily be counted (whichever is **more**).

Bitmap Vectorization



Bitmap Vectorization

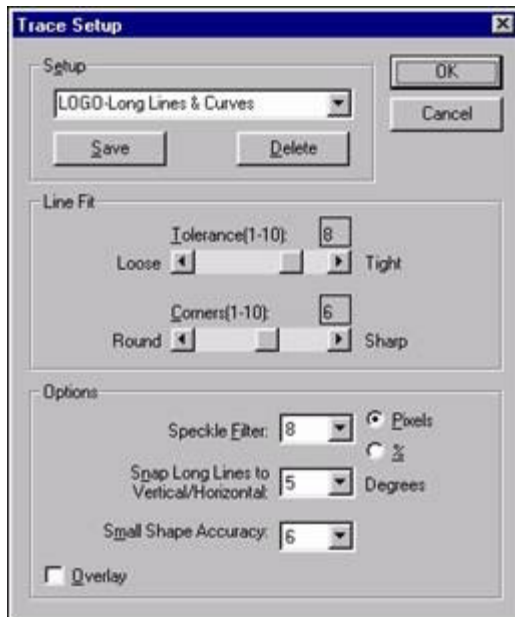
The **Bitmap Vectorization** tools are used to trace the components of a bitmap and generate a corresponding sequence of vectors. These vectors may be then be edited and cut like regular workspace objects.

Note: The **Vectorization** feature may only be applied to bitmaps of 8 bits or less (256 colors). However, **AccuScan** filters (discussed later) will produce 24-bit bitmaps. Therefore, if a filter has been applied to a bitmap, then the **Mode** of the bitmap must be reduced (**Image** menu) before tracing may occur.

The level of **Vectorization** detail is determined by the **Trace Setup** controls, which are located at the far-right of the **AccuScan** controls.

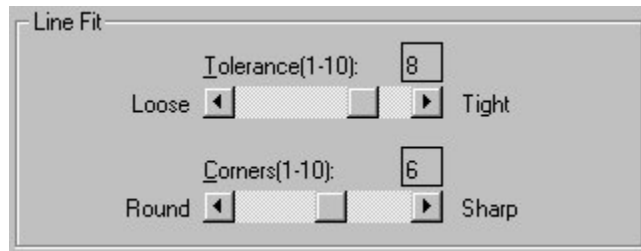


The **Vectorization** button  will begin the process of generating the vectors, and the drop-list is available for selecting previous saved settings. Click the **Trace Setup** button  to edit these settings, which will open the **Trace Setup** dialog.



Line Fit

The **Line Fit** controls will determine how close the tracing will occur along the edges of scanned artwork. Careful settings can produce a high-quality trace from poor quality bitmaps.



Tolerance

The Tolerance will indicate the precision with which edges are traced. A tight Tolerance will indicate that a high precision must be used.

- For a detailed bitmap, a tight Tolerance should be used (7 or greater).
- If the bitmap is of poor quality, or the bitmap has long, smooth edges, then a loose Tolerance should be used (3 or less). A loose Tolerance will avoid imperfections in the bitmap, though fine details may also be lost.

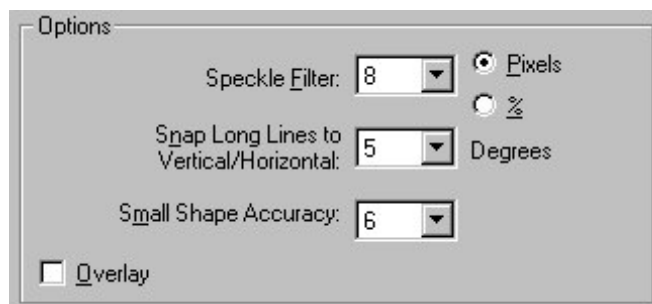
Corners

The **Corner** setting modifies corner recognition. In other words, this settings is used to help distinguish parts of the bitmap that represent a corner, versus parts that represent a tight curve.

- For angular bitmaps that are composed mostly of sharp corners, use a sharp Corners setting (7 or greater).
- For bitmaps that are composed mostly of curves, then use a round Corners setting (3 or less).
- For bitmaps that have a mixture of curves and sharp corners, use a moderate Corners setting (4 to 6).

Tracing Options

The **Tracing Options** set general rules that are applied to the trace.



Speckle Filter

Bitmaps that are generated using a scanner can often contain undesirable speckles, which are typically caused by a scratched or dirty scanner bed. To ignore these imperfections, the **Speckle Filter** may be applied as part of the trace. However, be cautious of using a high setting, since small details may be potentially mistaken for speckles.

Set the **Speckle Filter** to the number of pixels that will be recognized as being a speckle. During the trace, only objects that are larger than the set value will be considered.

Speckles may also be recognized in terms of a percentage of the overall bitmap size. Setting the Speckle Filter to a percentage is useful when the bitmap is particularly dirty.

Snap Long Lines to Vertical/Horizontal

When using a scanner to create a bitmap, the original document may not be perfectly aligned on the scanner bed. As a result, lines that were intended to be precisely horizontal or vertical will be slightly incorrect.

The "**Snap long lines to vertical/horizontal**" setting can compensate for misalignment of the original document. For example, a setting of 5 degrees will correct lines that are "off" by that amount. If the **Degrees** can not be set high enough, then the document should be scanned again, or the bitmap can be rotated on the workspace.

Small Shape Accuracy

The effectiveness of the Line Fit settings may depend upon the relative size of the bitmap versus the component objects that make up the bitmap. For example, a small object may be considered as dirt when the bitmap is large. However, the same object will be more significant when the bitmap is small.

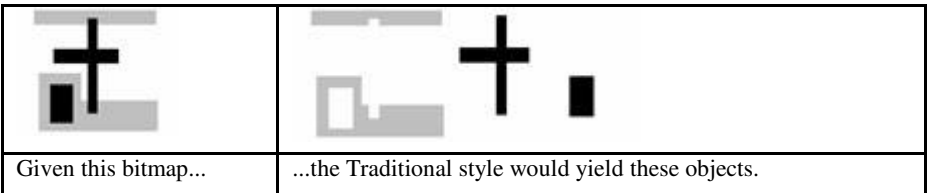
To use Small Shape Accuracy, assess the size ratio between the largest bitmaps objects versus the smallest. When the ratio appears large, set the accuracy to high (7-10). Where objects are similar in size, set the accuracy to low (Off-3).

Overlay

As part of the tracing, the bitmap is scanned in order to identify the component objects of the bitmap. The Overlay option is used to choose the style of scanning that is used: Traditional or Overlay.

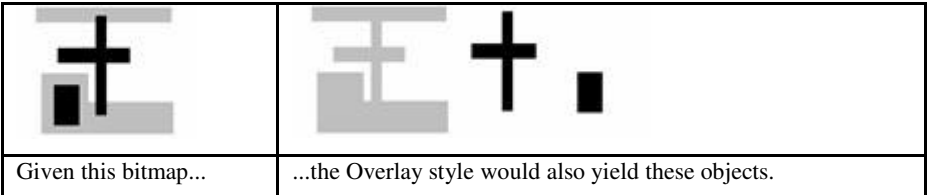
Traditional Scanning Style

If the **Overlay** button is disabled, then the **Traditional scanning** style will be used, and each object will be identified as an independent part of the bitmap. For example, individual objects will be recognized as within a surrounding object.



Overlay Scanning Style

Overlay scanning will create a mask for each palette color, and each mask will then be evaluated to help identify distinct objects.



Since masks are evaluated according to the order of their colors in the bitmap palette, it is recommended that the **Re-Order** button first be used (**Image Palette** dialog) to signify the importance of the more frequently used bitmap colors.

Overlay tracing has the following benefits over Traditional tracing:

- Simpler objects are produced
- No overlap will occur between objects

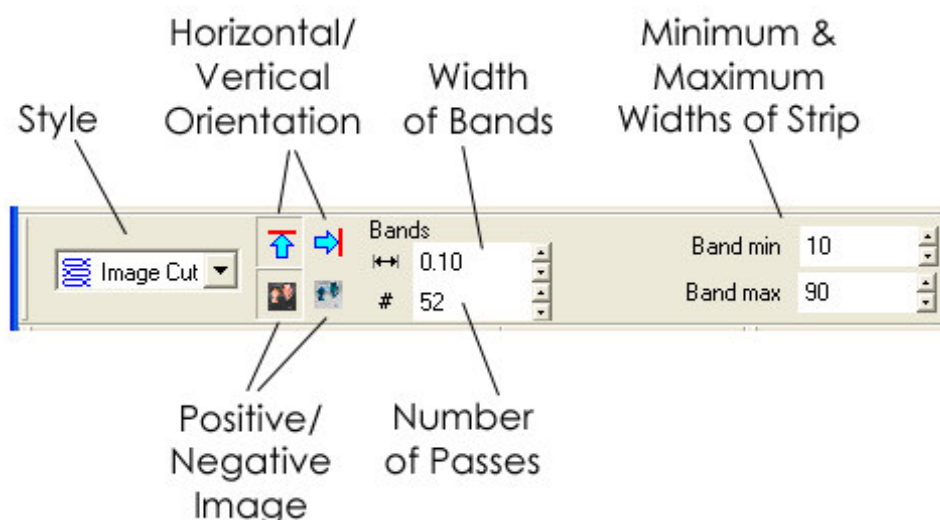
However, objects are typically larger than where Traditional tracing had been used.

PHOTOMACHINE

PhotoMachine



The **PhotoMachine** tools that are required to convert a bitmap into a line-traced drawing format that can be cut, routed, or engraved by Vision-Pro.

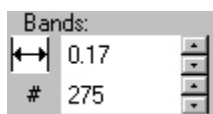


PhotoMachine traces the selected object based on the selected style. For example, the Image Cut style will trace the lighter portions of the image with thin lines, whereas darker portions are traced with thick lines. Though the **Image Cut** style is strictly for use with cutters, advanced engraving options are available for use with cutters, routers, and engravers.

Note: Under the **View** menu, there is a **Show Reduced Bitmaps** option, which can be used to improve screen refresh rates. When working with the Scan Tools, Vision recommends that the **Show Reduced Bitmaps** option be active, so that large bitmaps may be redrawn quickly.

Band Settings

The number of bands used in the scan will determine the quantity of detail that will be extracted from the original image. For the band settings, the band width and the number of bands are interdependent. Changing one value will update the other value.

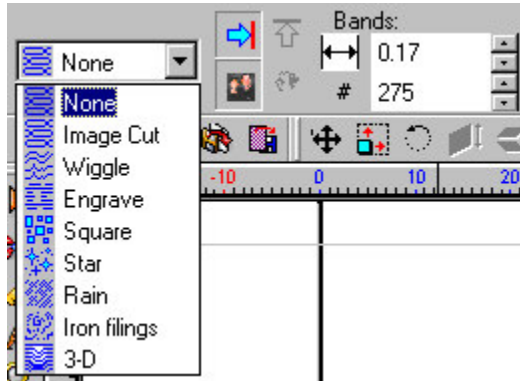


In addition, several of the other settings can be adjusted to modify the banding effects.

Style and Options

Style and Options

At the far-left of the Dialog Bar, the tracing styles are accessible from the drop-down list. Next to each list item is a visual representation of the style.



The available options vary according to the selected Style.

None

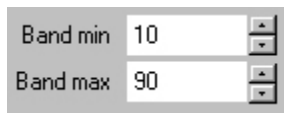


No style is applied and no **Options** are available. When the bitmap is photomachined, a grayscale bitmap will be produced.

Image Cut



This style is strictly for use with cutters.



The **Image Cut** style options are:

Band Minimum

The minimum width of the bands for light areas, represented in terms of the Band Width. If the minimum is too low, then weeding the vinyl will be difficult because the strips will be too thin to handle.

Band Maximum

The maximum width of the bands for dark areas, represented in terms of the Band Width. If the maximum is too high, then weeding the vinyl will be difficult because little space will remain between bands.

Wiggle



For use with low-resolution engraving, this style creates a pattern that appears to wiggle across the image.

1st grey limit	2	<input type="button" value="▲"/> <input type="button" value="▼"/>
2nd gray limit	40	<input type="button" value="▲"/> <input type="button" value="▼"/>

The **Wiggle** style options are:

- 1st gray limit** Any shade below this limit will have no wiggle, but will instead be represented as a straight line.
- 2nd gray limit** Any shade above this limit will have a “double-wiggle” applied.

When using **Wiggle** with a mechanical engraver, the recommendation is to set the 1st gray limit to zero, so as to limit the number of tool lifts. The 2nd gray limit should be set low, so as to achieve a good final image. Laser engravers can handle higher values for each limit.

Output Tool Paths



For use with low resolution engraving, creates a standard engraving pattern. There are no **Options** settings for this Style, though the **Double-density** appearance may be set.

Squares



This style is specifically for use with cutters. A pattern of variable-sized squares is used to depict the image. Smaller squares represent lighter shades of gray, and larger squares represent darker shades of gray.

Minimum size	10	<input type="button" value="▲"/> <input type="button" value="▼"/>	<input type="checkbox"/> White Space
Maximum size	90	<input type="button" value="▲"/> <input type="button" value="▼"/>	

The **Squares** style options are:

- Minimum size** Sets the smallest possible size of the small squares (light gray objects) to a percentage value of the possible square size.
- Maximum size** Sets the largest possible size of the large squares (dark gray objects) to a percentage value of the possible square size.

The farther apart these values are, the more detail is shown in the final image, however too large a difference can create one large black square.

Stars



This style is similar to the Squares style, except that star shapes are used instead of square shapes.

Rain



For use with laser-engravers, creates multiple lines for each pixel. The **Options** settings available with **Rain** are:

Density	2		
Angle	45.00		

The **Rain** style options are as follows:

- | | |
|----------------|---|
| Density | This field indicates the number of lines per pixel. |
| Angle | The angle to use when rendering the Rain lines. |

Iron filings



This style is similar to **Rain**, though the **Angle** option is not present. Instead, all lines are created at random angles.

3D Image



The **3D Image** style 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.

Depth	1000.00			Tool Dia.		
Slope	100					

The **3D Image** style options are as follows:

- | | |
|------------------------|---|
| Depth | Sets the maximum depth for the tool path. When routed, all shades of gray will fall between this depth and the surface of the material. |
| Slope Threshold | Represents a maximum ratio of change in depth to change in horizontal movement, as the tool cuts the image out of the material. |
| Tool diameter | The diameter of the tool that will be used to route the image. Any image sections that are smaller than the tool diameter will not be routed. |

Note: Routing and engraving are both particularly detailed processes. The higher the resolution of a given image, the finer will be the results of the job. However, using a higher resolution will require a corresponding increase in time for processing.

Appearance

Appearance

The **Appearance** options effect how an image will appear after the PhotoMachine has been applied. The available options depend upon which style has been selected.

Negative and Positive Image

Either the **Negative** or **Positive** option will be used with each Style. The **Positive Image** setting will apply thin bands to dark colored areas, and wide bands to light colored areas.

The Negative Image will reverse the banding effect, such that wide bands are applied to light colored areas and thin bands are applied to dark colored areas.



Negative image



Positive image

Double Density

The Double Density option is available for the Engrave Style only. When the Double Density check box is activated, the frequency of the lines is doubled. This can be applied to both a Negative and a Positive image.

White Space

The White Space option is available for the Stars and Squares Styles. When the White Space check box is activated, all white areas are left blank with no Squares or Stars placed within. This can be applied to both Negative and Positive images and results in a cleaner image.

Orientation

The Orientation options are output device dependent. Check the device manual, regarding how the device relays the X and Y axes. In order to maintain a good quality cut, use the option that uses less movement of the device. Generally, the vertical option is more commonly used.

CENTERLINE TRACING

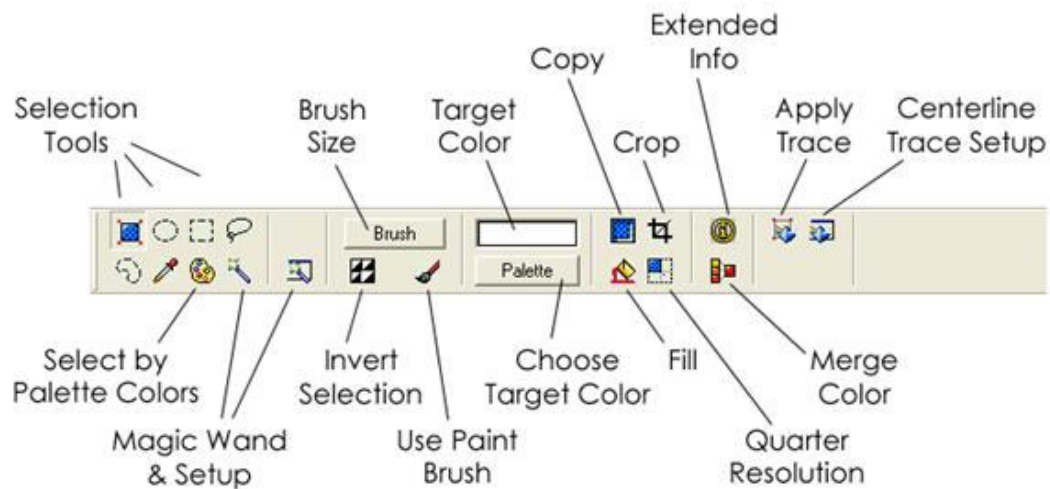
CenterLine Tracing



The CenterLine Tracing feature is available from the **Scan Tools** flyout.

The CenterLine Tracing feature uses a *bitmap* to produce a CenterLine-traced drawing that can be cut, routed, or engraved by Vision-Pro. This feature works best with larger size objects where v-bits and/or conical bits have an obvious effect. As a result this feature does not work as well with photographic images, in which case PhotoMachine would be a more effective tool.

When creating a CenterLine Tracing, select the object to be traced and choose the CenterLine option from the Scanning tools fly-out. The dockable toolbar will display the CenterLine tools.



Note: The CenterLine feature can only be applied to gray-scale images, color images must be resampled to gray-scale using the Render to Bitmap option available from the Transforms menu and explained in the Transformations chapter.

CenterLine Tracing Features

The CenterLine Tracing tools behave like the other bitmap editing tools available with Vision-Pro (i.e., AccuScan).

Applying CenterLine Tracing

Pressing the Vectorization button applies a CenterLine Trace to the selected object based on the settings provided.



Selection Tools



With CenterLine Tracing activated, there are eight different tools available from the Select Tool in the tool bar. These tools are designed to help define those areas to scan, and each is different from the others. These tools are described in detail in the AccuScan chapter earlier.

Manipulation Tools

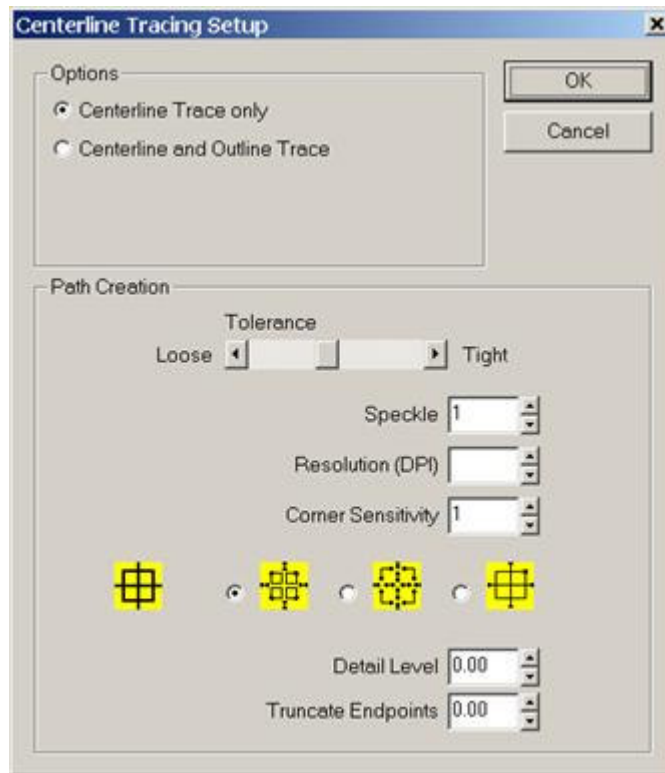
There are several tools available within the CenterLine Tracing dialog box for manipulating a bitmap, allowing to prepare it for either routing or printing.

The Copy , Crop , Fill Region, Quarter Bitmap, Extended Information, Merge Colors, Brush and Brush Selection tools are all explained in detail in the AccuScan section.

CenterLine Tracing Settings

CenterLine Tracing Settings

Pressing the CenterLine Tracing Settings button opens the CenterLine Tracing Setup dialog box.



Options

There are two options for performing CenterLine Traces: CenterLine Trace only; and CenterLine and Outline Trace which traces the center of the image as well as tracing the Outlines of the image. Activating one Option deactivates the other Option.

Tolerance

The Tolerance setting specifies how closely the CenterLine Trace follows the lines of an object in a bitmap. A loose setting will approximate an object's shape rather loosely, while a tight setting will follow the lines very precisely.

Tolerance should be set tight if a bitmap is very detailed and accurate. This allows for all of the fine detail to be traced. In general, the higher the detail, the higher the Tolerance setting.

The Tolerance should be set loose if a bitmap contains long smooth edges, or if it is of poor quality. This results in CenterLine Tracing ignoring small errors in the edges of the objects, but can also result in a loss of the finer details.

Speckle

Many bitmaps contain undesirable bits of dirt. These random spots of color usually appear due to a scratched or dirty scanner bed. The Speckle Filter allows for removal of these specks and creation of a cleaner finished product.

The speckle filter sets the threshold at which CenterLine Tracing recognizes a group of pixels as an object. Once the filter is set, an object must be larger than the set value in order to be traced during a scan. For example, if the Speckle Filter setting is four pixels, then objects must be five pixels or larger in order to be recognized as a true object, and therefore scanned.

Note: While higher Speckle Filter settings result in fewer extraneous objects being traced, it may also result in the loss of smaller objects. Exercise caution when choosing an appropriate filter setting.

Resolution

As part of the CenterLine trace process, the original vector- or bitmap-based object undergoes rasterization to the set Resolution value, and then a trace is performed. The default value of 300 DPI (dots per inch) is adequate for most cases.

Corner Sensitivity

The Corner Sensitivity is used to differentiate a corner from a tight curve during the tracing operation. If an object contains sharp corners and is mostly angular, then set the Corner Sensitivity to high (7 or greater). If the object is composed mostly of curves, then set the Corner Sensitivity to low (3 or less). Moderate settings (4 to 6) work best for objects that are composed of a mix of corners and curves.

Path Type



There are three choices for the type of path for a CenterLine Trace:

	Loops	The Loops path type traces the entire image as one object.
	Individual Lines	The Individual Lines path type traces each line as a separate object.
	Longest Lines	The Longest Lines path type selects continuous lines and traces each as an object.

Detail Level

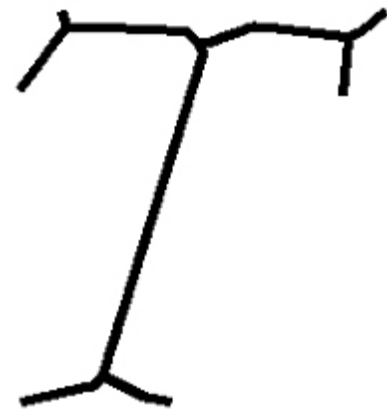
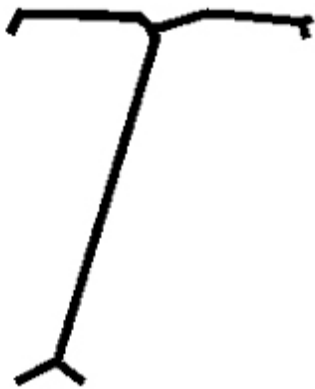
The Detail Level setting controls CenterLine Tracing detail recognition ability.

If a bitmap contains a lot of detail, set the Detail Level to a higher value. If it is a simple image, set the Detail Level lower. Moderate settings work best with images that include areas of high detail with areas of low detail.

Truncate Endpoints

The Truncate Endpoints setting controls the CenterLine Tracing corner and endpoint recognition ability. CenterLine Tracing uses this setting to determine which parts of a trace represent a corner/endpoint, and which parts represent a tight curve. CenterLine Tracing will place a buffer value so the engraver/router can have a smooth rise to the true endpoint of the image.

If a bitmap contains sharp corners, and is mostly angular with sharp endpoints, set Truncate Endpoint to a lower value. If it is mostly curves, set Truncate Endpoint to a higher value. These values are also dependent on the depth to which the image is being engraved. The following CenterLine Trace shows the difference between a high and low Truncate Endpoint values:















Original Bitmap
using a low Truncate Endpoint value (0.02)

Result that occurs using a high Truncate Endpoint value (0.1)

Result that occurs

WORKING WITH TEXT

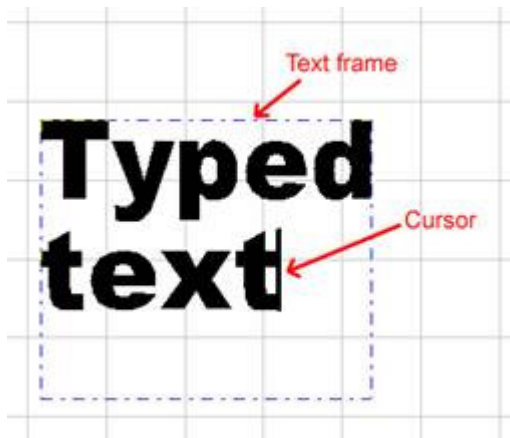
WORKING WITH TEXT

-  [Text Composition](#)
-  [Choosing the Font](#)
-  [General Text Attributes](#)
-  [Auto Kern](#)
-  [On-Screen Kerning Tool](#)
-  [Auto Layout and Creating Text Frames](#)
-  [Auto Layout Controls](#)
-  [Additional Auto Layout Controls](#)
-  [Braille](#)
-  [Braille Font Types](#)
-  [Creating Braille](#)
-  [Font Editing](#)

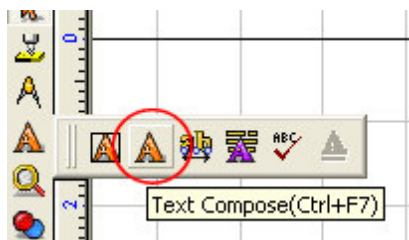
TEXT COMPOSITION

Text Composition

Text composition is begun by defining the text frame, which is the dashed rectangular bounds that encloses the text. When typing characters into a text frame, the properties of the text frame determine how the text will compress, expand, wrap, etc. For example, each line of text can be compressed to fit the text frame width, or text can be expanded in width and height to fill the entire text frame.



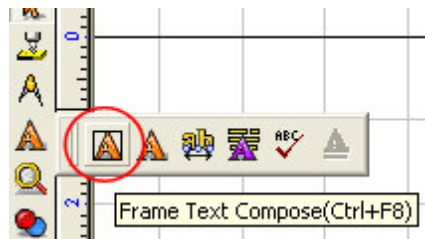
To create text, choose **Text Compose** from the **Text Tools** flyout.



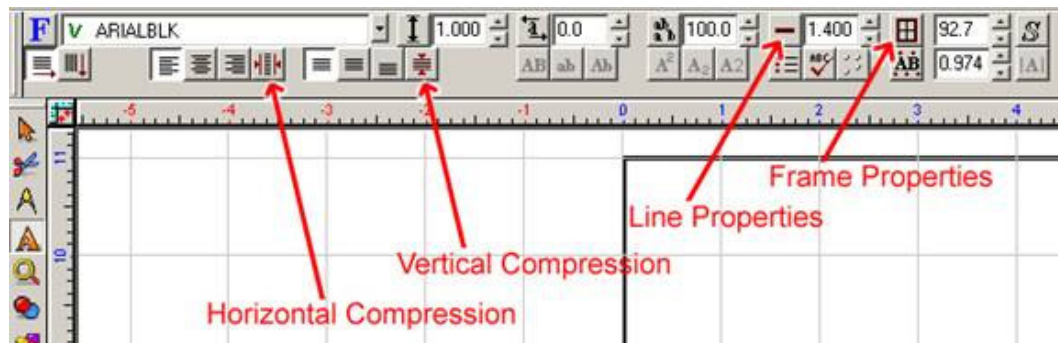
After choosing the **Text Compose** tool, there are three methods of setting the text frame.

- **Click on workspace:** This will set an entry point for the text. As text is typed, the text frame will expand and contract to enclose the text.
- **Click and drag marquee:** Dragging a marquee with the mouse will set the text frame bounds. This is particularly effective where guides have been arranged to help the cursor snap to the required coordinates. As text is typed, the text frame will remain fixed, and the text will be constrained according to the text frame properties.
- **Press [Shift] and click on workspace:** This will set the text frame equal in size to the sign plate.

In addition to the **Text Compose** tool, the **Frame Text Compose** tool will automatically set the text frame equal in size to the sign plate.



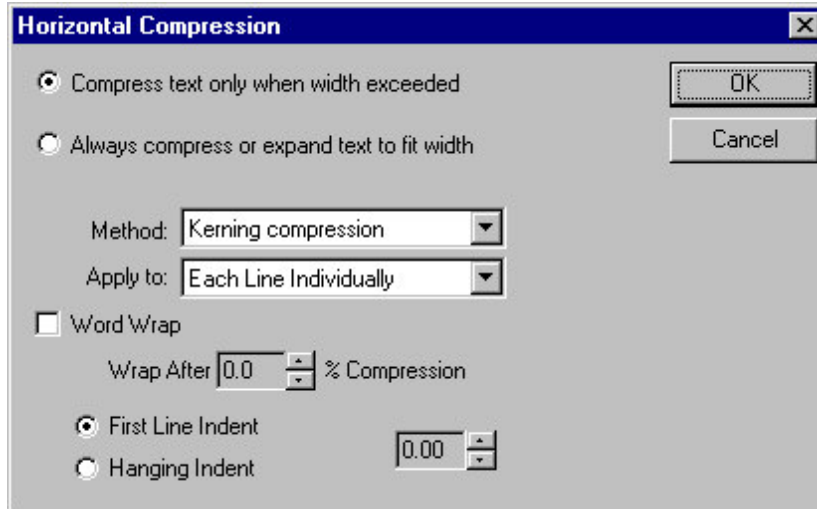
Regardless of how the text frame was created, the **Horizontal Compression**, **Vertical Compression**, **Line Properties**, and **Frame Properties** buttons are used to change the behavior of how text fits within the frame.



Horizontal Compression

Horizontal Compression

Click the **Horizontal Compression** button to modify how text is arranged to fit on a line. This command is only available when the text frame width is fixed. Using compression, text may be prevented from exceeding a set line length. Conversely, expansion may also be used to spread text over the entire line length. The **Word Wrap** can be set to occur after a specific amount of compression has occurred.

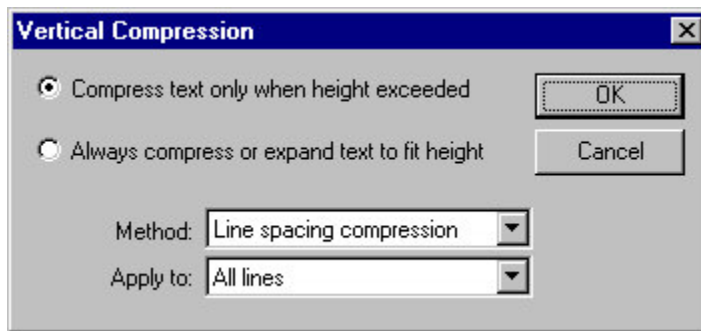


The available methods of compression and expansion are:

Width	Constrain text by modifying the character width.
Height	Constrain text by modifying the character height.
Kerning	Constrain text by modifying the distance between characters.
Word Kerning	Constrain text by modifying the distance between words.

Vertical Compression

The **Vertical Compression** button may be clicked to specify how lines of text are arranged to with within a fixed text frame. This command is only available when the text frame height is fixed.



The available methods of compression and expansion are by:

- Character height, which constrains text by modifying the character height.
- Line spacing, which constrains text by modifying the spacing between lines of text.

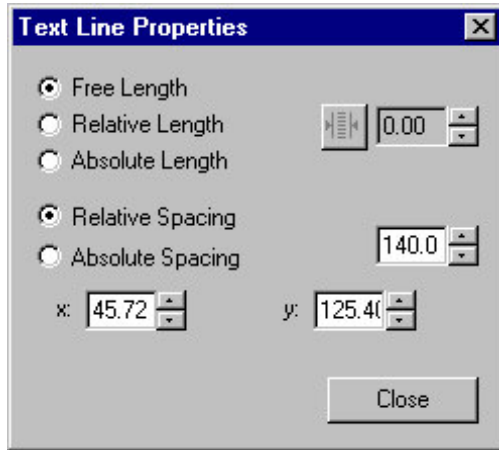
Note: If a given line of text contains a mix of character sizes, then vertical compression will be based on the height of the first character on that line.

Line Properties



The field next to the **Line Properties** button is used to adjust the line spacing. This field is also accessible from the **Line Properties** dialog.

Clicking the **Line Properties** button opens the **Text Line Properties** dialog:



The **Free Length** option allows the line to run to its "natural" length, based on the height, width, and kerning settings. The **Relative Length** will resize the line to a percentage of its natural length. The **Absolute Length** will fix the line to a specific length.

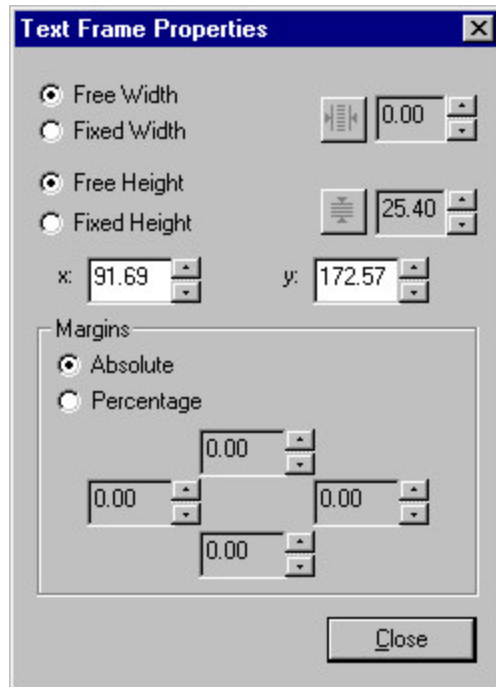
The **Spacing** is used to determine the vertical distance between successive lines of text. A relative spacing is expressed as a percentage of the font height. Typically, a relative spacing of 150% is a reasonable default. An absolute spacing will maintain the set distance between successive lines, expressed in current workspace units.

The **X** and **Y** fields will position the line of text at specific coordinate with respect to the sign plate origin.

Frame Properties



The purpose of the text frame is to constrain text to the given height and width.



With respect to either **Free Width** or **Free Height**, the text will be set according to the height, width and kerning settings for the given font. Alternatively, fixed width or height may be set.

The **X and Y** fields are to position the line of text at specific coordinate with respect to the sign plate origin.

The text frame margins may be set in terms of absolute distances from the text frame edge, or by a percentage of the text frame size.

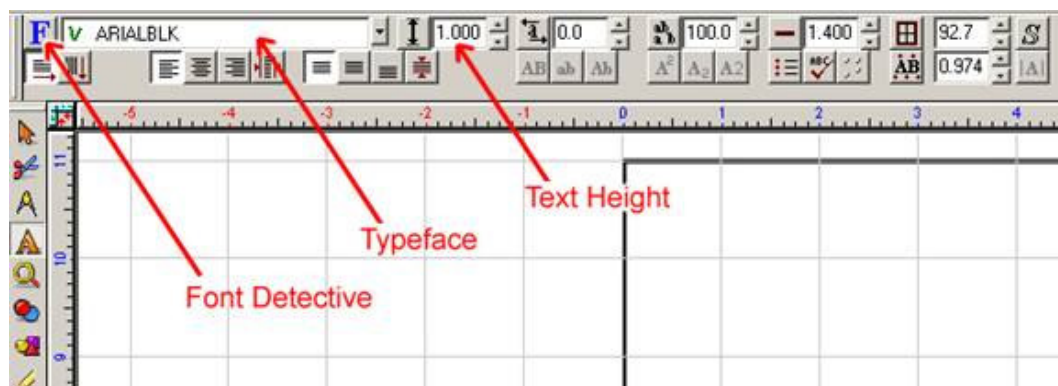
Line Compression

Next to the **Frame Properties** button is the **Line Compression** field. This field is used to compress a line width to a percentage of its original width. For example, enter 50 to compress the line to 50% of its original length.

CHOOSING THE FONT

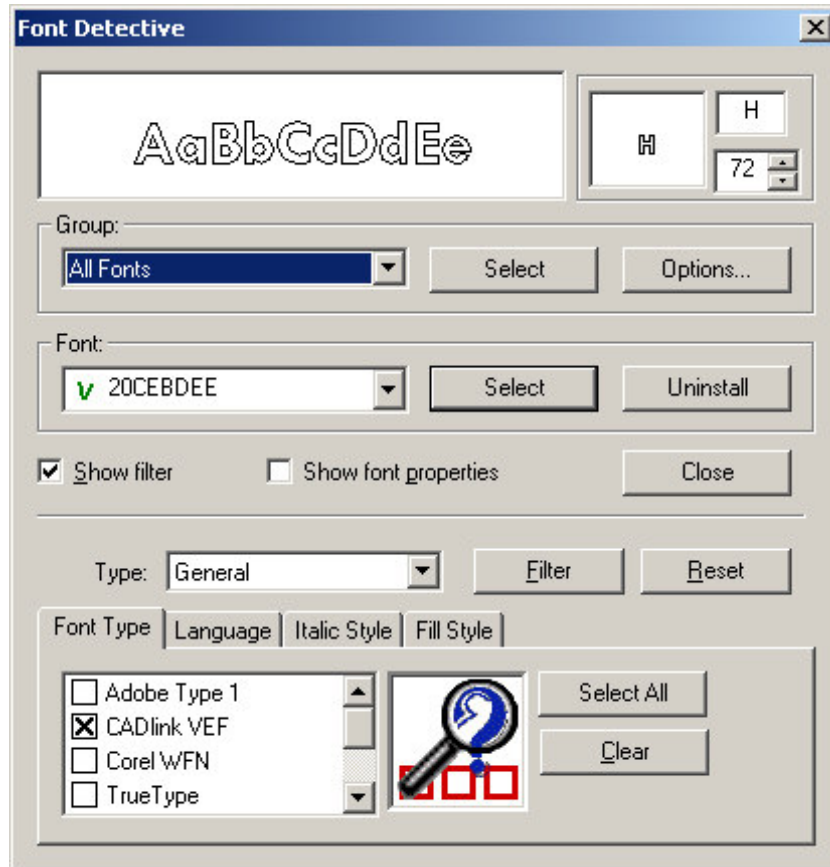
Choosing the Font

At the far-left of the SmartBar, the **Typeface** drop-list will display all of the installed fonts in alphabetical order.

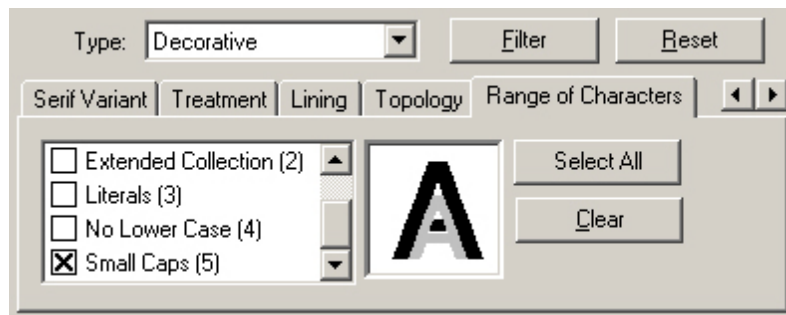


In addition to the drop-list, the **Font Detective** can also be used to search the installed fonts in terms of specific criteria, such as thickness, script lettering, serifs, etc.

In addition to both general info and location information about each font, **Panose** font information is displayed. **Panose** is a typeface matching system used to classify and/or match type styles.

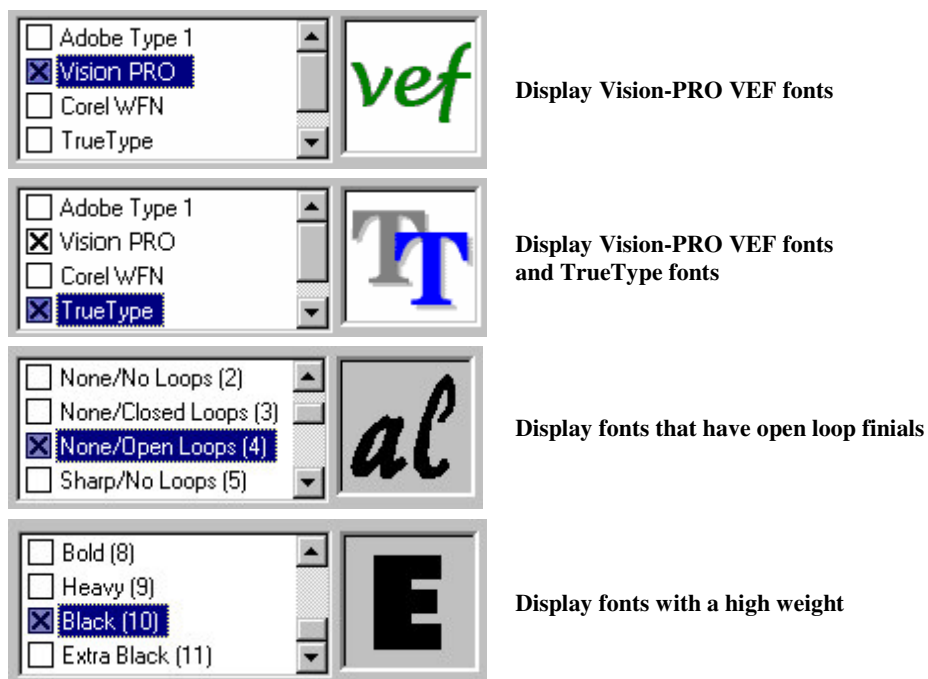


For example, suppose that all Small Caps fonts must be located. Set the **Type** of font to "Decorative," and limit the **Range of characters** to "Small caps." By clicking the **Filter** button, the Font Detective will show all the available Small Caps fonts.



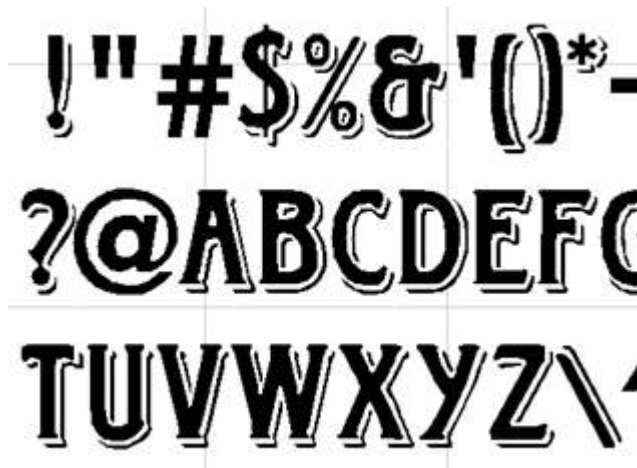
Picture Guide

When choosing which font attributes to filter, a picture guide is provided as a memory aid. Some examples are as follows:



Displaying an Entire Character Set

From the **Text Tools** flyout, right-clicking the **Text Compose** button will open the **Font Detective**. However, after selecting a given font, the workspace will be updated with a display of all the characters in that font.



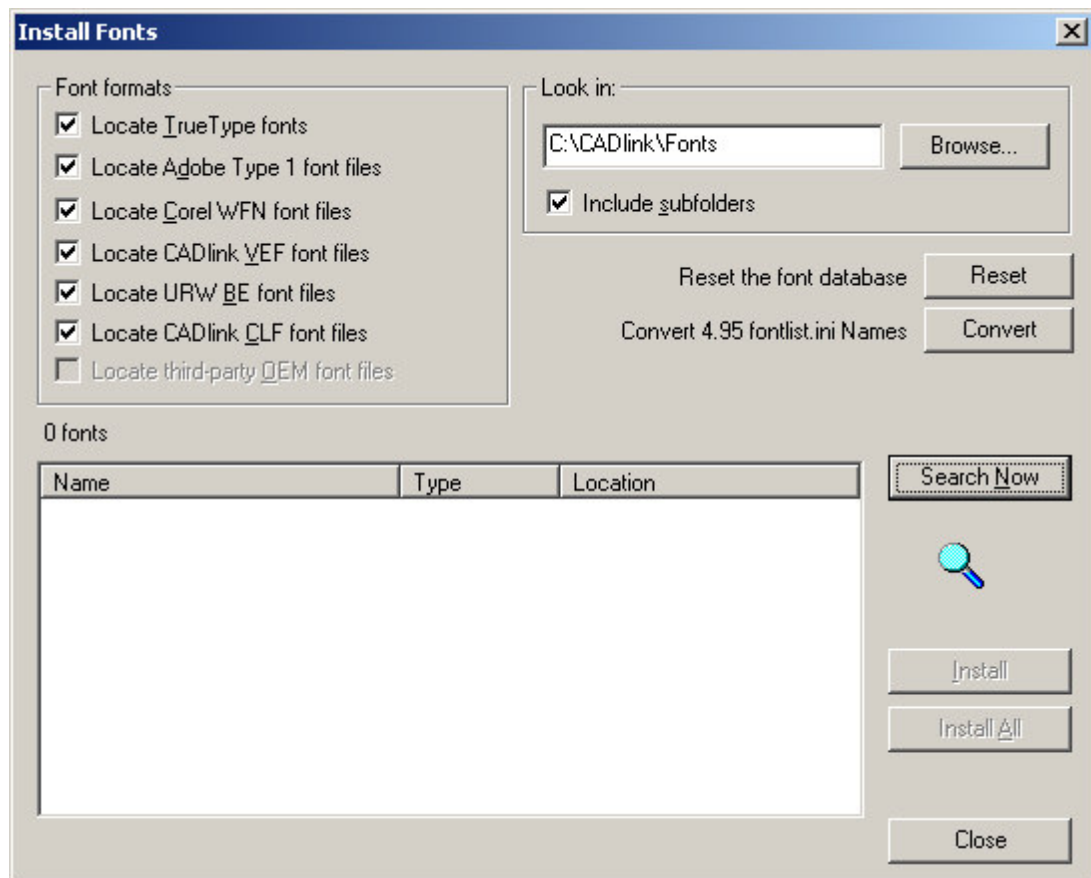
Installing New Fonts

Installing New Fonts

Vision-Pro supports a wide range of font technologies, such as TrueType and Adobe Type 1 fonts. During the Vision-Pro installation process, any such fonts were located and registered with Vision-Pro, such that the fonts could be used within Vision-Pro. Similarly, an install option had been given to install additional **Vision-PRO** VEF fonts from the *Fonts and Sign Clip Art* CD.

In order to use a new font with Vision-Pro, or to use a VEF that had not been installed with Vision-Pro, first copy the font files into a common directory on the local hard drive. From the Vision-Pro **File** menu, choose **Install Fonts** to open the **Install Fonts** dialog. This dialog is used to locate and register the new font files that have been copied onto the hard drive.

Note: Be cautious of registering fonts on a CD or other removable media, since this will require that the CD be inserted prior to beginning Vision-Pro sessions.



Specify the type of font formats that are required, and browse to the directory in which the fonts are located. When ready, click the **Search Now** button to display the fonts that have been found. These fonts may then be installed individually, or the **Install All** button may be clicked. Installing fonts in this manner causes them to be registered for used with Vision-Pro, and they will then be available from the **Typeface** drop-list when editing text.

Though not recommended for regular usage, the **Reset** button will remove all fonts from the database, except for **Vision-PRO** VEF fonts. The **Reset** button is provided as a means of purging the database after perhaps years of adding fonts from different sources. This is a convenient means of reconciling perhaps hundreds of font references. The fonts may then be loaded again from a common folder.

Convert button

When composing text, many of the font names are abbreviations based on the old Windows filename restrictions (i.e. eight characters for the filename, with three characters for the filename extension). Unfortunately, these restrictions forced the usage of font names that were sometimes cryptic. To solve this problem, click the Convert button to replace the abbreviated font names with more meaningful names. These meaningful names will appear in the Font Type drop-list when composing text.

Note: The list of font names that are substituted is contained within the fontlist.ini file, which is in the Vision-Pro install directory.

Text and Special Effects

In most cases, text will still be editable after it has been subjected to a transformation, such as fitting text to a path, a rotation, or an outline operation.

If individual words or characters of a text object must be edited, then perform an **Ungroup** operation to the text. However, once a text object has been Ungrouped, the characters will thereafter be treated as individual objects.

Some operations automatically apply the **Text to Graphics** operation, which will convert the text characters into individual graphic objects. If so, then these characters will no longer be editable as if they were text.

GENERAL TEXT ATTRIBUTES

General Text Attributes

- [? Slant](#)
- [? Text Orientation](#)
- [? Justification](#)
- [? Line Spacing](#)
- [? Case Control](#)
- [? Character Placement](#)
- [? Text Underline](#)
- [? Bullets](#)
- [? Spell Check](#)
- [? Braille](#)
- [? Style Painter](#)
- [? Character Width](#)

Slant

To the right of the font height field is the **Slant** control. The **Slant** is used to tilt the text either right or left. This is not a substitute for choosing an italic font, but it does create an effect that is similar to italics.



The **Slant** is expressed in degrees, which ranges from +15 (right) to -15 (left) degrees. Clicking the **Slant** button will clear the slant value to zero.

Slant of +15 degrees

Slant of -15 degrees

Text Orientation

Indicates the direction that the text should be read.



Horizontal Text

Arrange text from left-to-right.



Vertical Text

Arrange text from top-to-bottom.



Arabic Text

Arrange text from right-to-left.

Justification

Indicate how the text should be justified horizontally within the text frame.



Left Justify



Center Justify



Right Justify

Line Spacing

Indicate how the text should be justified vertically within the text frame.



Top Spacing



Center Spacing



Bottom Spacing

Case Control

Case controls are applied to the currently selected text.



Upper Case

Convert to upper case.



Lower Case

Convert to lower case.



Proper Name Case

For each word, make the first letter upper-case, and the remaining letters lower-case.

Character Placement

Use these controls to create superscripts and subscripts.



Superscript

Create raised lettering.



Subscript

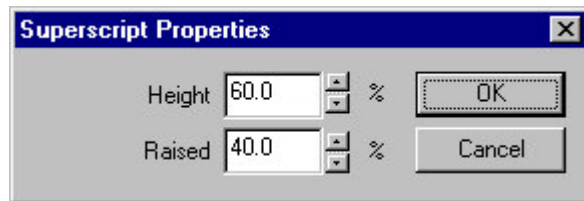
Create lowered lettering.



Unscript

Remove superscripts and subscripts.

Either the Superscript or Subscript buttons may be right-clicked to customize the settings. The percentage by which to reduce the text size may be specified, as well as the amount that the text will be raised or lowered.

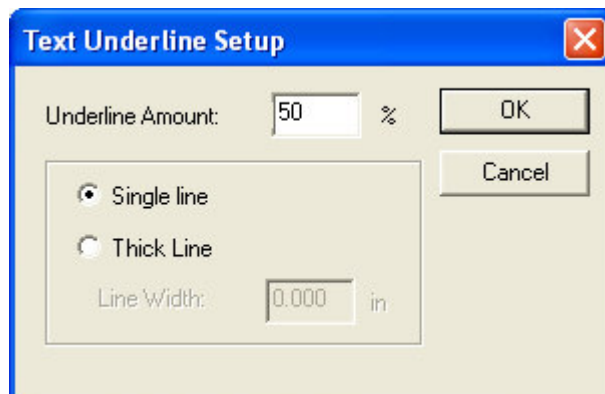


Text Underline

To add an underline to a text object, choose **Text Underline** from the **Text Tools** flyout.



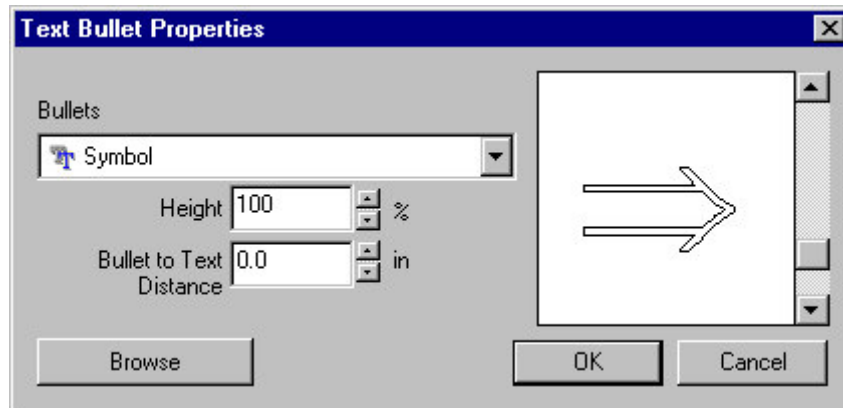
The underline settings are taken from the **Text Underline Setup** dialog, which is accessed by right-clicking the **Text Underline** button.



Bullets



Clicking the **Bullets** button will place a bullet. To customize the shape of the bullet, right-click the **Bullets** button.



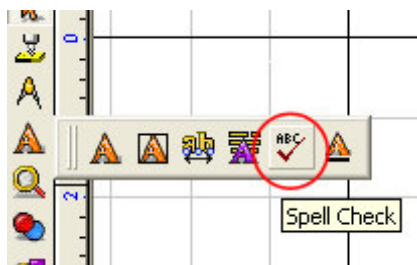
The bullet pattern may be chosen from any of the registered fonts. Click the **Browse** button to open the **Font Detective**, which is used to choose the font from which the bullet will be chosen. The font will then be available from the drop-list in the **Text Bullet Properties** dialog.

Spell Check



When editing text, click the **Spell Check** button to verify the spelling of the currently selected text. If no text is selected, then the entire text object will be checked.

To spell check all of the text objects on the workspace, choose **Spell Check** from the **Text Tools** flyout.



If any spelling errors are found, then the **Spell Checker** dialog will open.



Default dictionaries for several languages are provided. The **Main dictionary** selection represents the active dictionary. In addition, a **User dictionary** may be created by clicking the **New** button.

When spell checking, both the Main and User dictionaries are used. If any new words are added, then the User dictionary will be used to store the new word. The Main dictionary will remain static.

Braille



The *Braille* module is used to create accurate, ADA-compliant Braille translations. The resulting Braille may then be rendered by means of either drilling, punching or photo-etching.

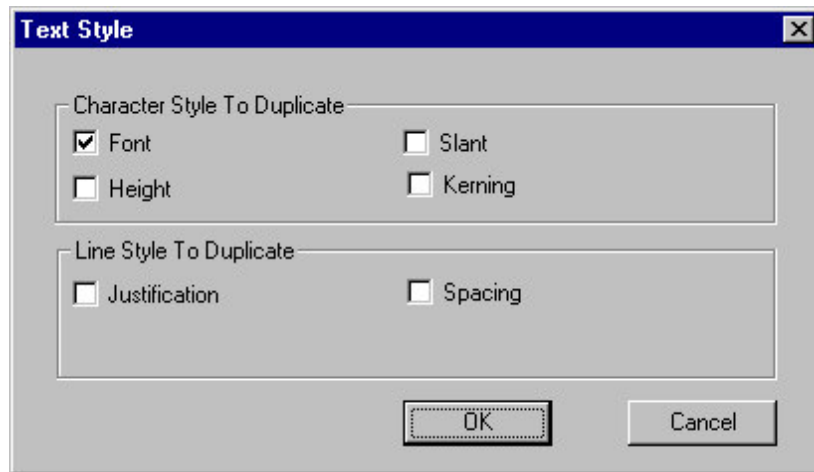
This operation of this feature is described in the **Braille** section, located later in this guide.

Style Painter

Style Painter



When editing a paragraph of text, the **Style Painter** tool is used to copy the font style from one sentence to another. By right-clicking the **Style Painter** button, the **Text Style** dialog is used to select what style elements will be copied.



Copying a style within a paragraph

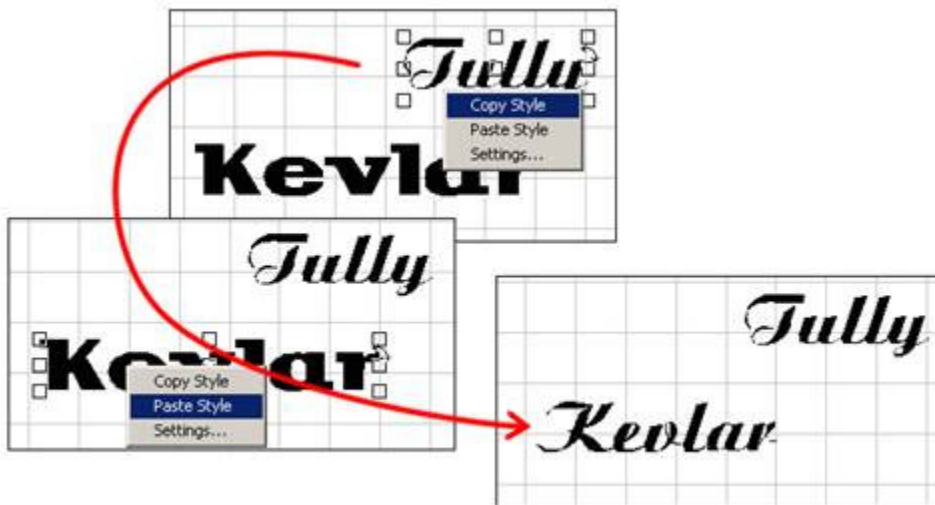
1. Highlight the text that will be copied from
2. Click the **Style Painter** button to copy the style
3. Click within the text that will be pasted to
4. Click the **Style Painter** to preview the result
5. With the cursor, highlight the text to paste the style

Copying Text Styles

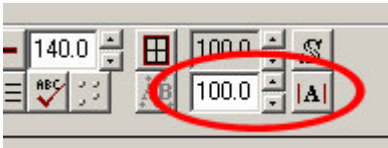
When there are two separate text shapes, the text style can be copied between the two shapes.

Copying a style between two text shapes

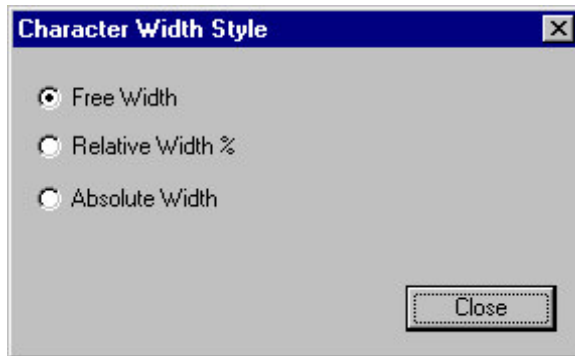
1. Select the text shape that will be copied from
2. Right-click anywhere except the handles of the text shape
3. From the context menu, choose Copy Style
4. Select the text shape that will be pasted to
5. Right-click anywhere except the handles of the text shape
6. From the context menu, choose Paste Style



Character Width



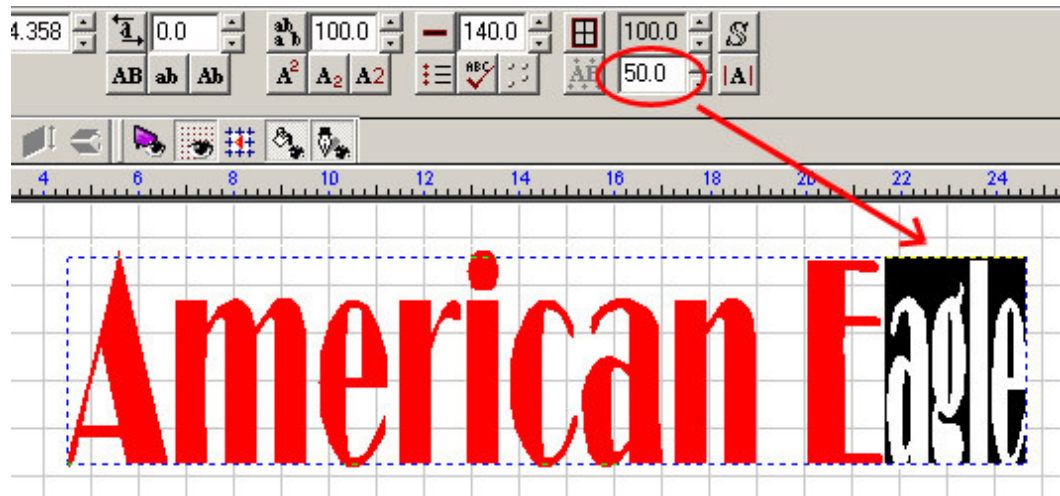
The **Character Width** tool can apply compression to individual characters of a word. Right-clicking the **Proper Character Width** button opens the **Character Width Style** dialog.



The Width Style options are as follows:

Free Width	Maintain the characters at their original widths. This setting does not allow the Character Width to be adjusted.
Relative Width Percentage	Adjust the character width as a percentage of the original width.
Absolute Width	Adjust the character width to be a specific width.

Once the type of Width Style has been selected, highlight the text and set the Character Width edit field. For example, the following screenshot indicate characters that have been compressed to 50% of their normal widths.



AUTO KERN

Auto Kern

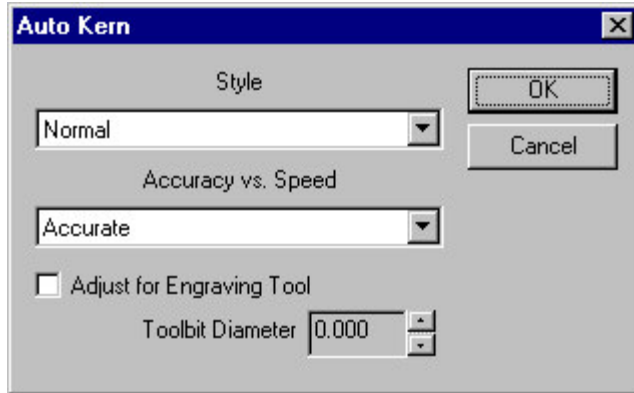


The **Auto Kern** command balances the white space between characters, such that a more pleasing arrangement of text is created.

The **Kern Percent** field is used to specify that a percentage of the regular kerning is to be applied. Reducing the percentage will decrease the space between characters, while increasing the percentage will move characters further apart.

Kerning of 115%
Kerning of 90%

The Auto Kern feature may be customized by right-clicking the **Auto Kern** button.



Kerning Styles

Kerning Styles

The available kerning styles are:

Normal	Balance the amount of white space, while maintaining a normal character spacing.
Wide	Insert approximately 20% extra white space between characters.
Narrow	Remove approximately 20% of white space between characters.
Touching	Arrange the characters so that their finials touch, yet do not overlap.
Overlap	Force adjacent characters to overlap by approximately 5%.

Accuracy versus Speed

Due to the number of calculations involved with finding the best kerning for a given pair of characters, it may be desirable to sacrifice some of the kerning accuracy in exchange for faster results. If so, then choose the **Fast** setting instead of **Accuracy**. The **Fast** setting will often produce acceptable results.

Auto Kern and Engraving Tools

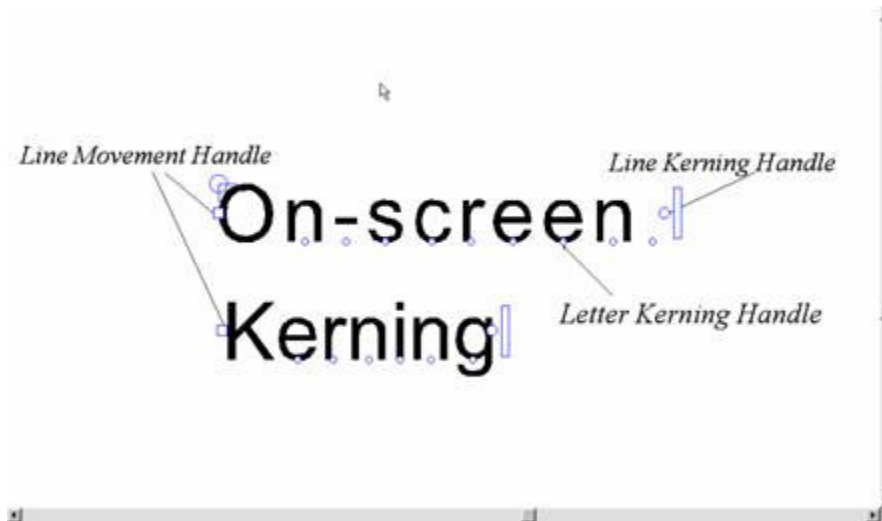
When an engraving tool is to be used, set the **Tool bit Diameter** to ensure that kerning compensates for the bit size.

ON-SCREEN KERNING TOOL



The **On-Screen Kerning** feature is used to make manual adjustments to text using a special set of kerning nubs. The kerning nubs may be used to adjust inter-line spacing, line kerning, individual letter pair kerning, and the alignment skew of text.

On-Screen Kerning is accessible from the **Text Tools** flyout, as well as from the Text Compose toolbar. In addition, holding the **Control** key and double-clicking a text object will enter On-Screen Kerning mode.



Kerning handles may be dragged using the mouse. In addition, by clicking on a handle, that handle will become selected. The cursor keys may then be used to move that handle by one pixel. Holding the **[Shift]** key will move a handle by five pixels.

The types of kerning handles are described as follows:

Line Movement Handle

Used to position the line of text. Holding the **[Control]** key may be used to constrain the movement of the line. Holding the **[Shift]** key will align all the text lines along a path between the current handle and the handle of the first line.

Line Kerning Handle

Used to adjust kerning for the current line. Holding the **[Control]** key will adjust the word kerning, while keeping the space between adjacent characters constant.

Letter Kerning Handle

Adjusts the kerning of characters that are opposite the **Line Kerning** handle.

AUTO LAYOUT AND CREATING TEXT FRAMES

Auto Layout and Creating Text Frames

The **Auto Layout** feature is a convenient method of creating a text frame that is segmented into horizontal and vertical cells. Text and/or graphics may then be placed within each cell.

The **Text Edit** field may be used to enter text for a given field, and pressing the **Tab** key will advance the focus to the next cell. When entering text is complete, clicking the **Apply** button will open the **Font Detective**, which in this case will be used to select the font for the layout.

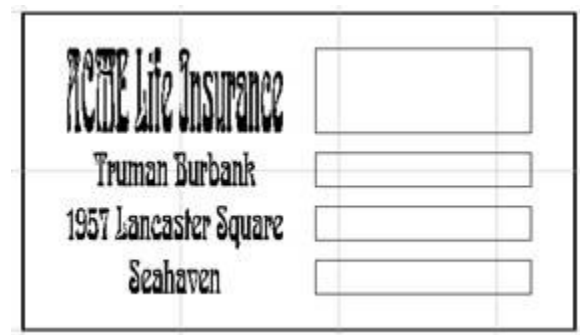
When working with the Auto Layout feature, the **Undo** function is temporarily disabled. As a result, be careful about using the delete function available in Auto Layout.

Note: The Auto Layout feature is part of the **Engraving** module.

Each cell is represented by a blue outline, and the active cell is indicated by a red outline.



Created two columns and four rows of cells



Result of entering text and clicking the Apply button



Layouts may be stored for later use. In this manner, a layout library can be made available for other projects. Layouts are customized as follows:



Plate Parameters

Set the dimensions of the plate, as well as the initial number of rows for the layout.

Advanced

Specify the margins around the plate, as well as the compression mode for the text.

The initial plate dimensions will be sized to the selected object. If no object is selected, then the sign plate dimensions will be used by default.

Formula

Offset

The Offset is expressed as a percentage of the overall plate height, and

it is used to indicate the amount by which the bottom margin is larger than the top margin. A positive value will increase the bottom margin, whereas a negative value will increase the top margin.

Multiplier

Take the average inter-line spacing and increase it by the Multiplier. The result will determine the size of both the top and bottom margins.

Example	Offset	Multiplier	Result
1	0	2	Both top and bottom margins are equal in size, and they are each twice the average inter-line spacing.
2	10	2	The top and bottom margins are initially twice the average inter-line spacing. However, the bottom margin is larger than the top margin by ten percent of the plate height.
3	-20	1	The top and bottom margins are initially the same as the average inter-line spacing. However, the top margin is larger than the bottom margin by ten percent of the plate height.

AUTO LAYOUT CONTROLS

Auto Layout Controls

The general controls for Auto Layout are as follows:

 [Text Justification](#)

 [Additional Auto Layout Controls](#)

 [Braille](#)

 [Braille Font Types](#)

Text Justification

Text Justification

Text justification may be defined according to individual cells.



Left Justify



Center Justify



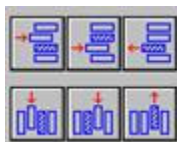
Right Justify

Line and Cell Number

The Line and Cell Number fields are used to index the layout cells. These fields indicate the currently active cell.



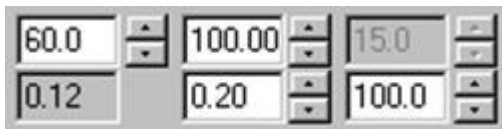
Line and Cell Controls



The Line and Cell controls are used to insert cells both horizontally and vertically. Cells may also be deleted.

Cell Behavior

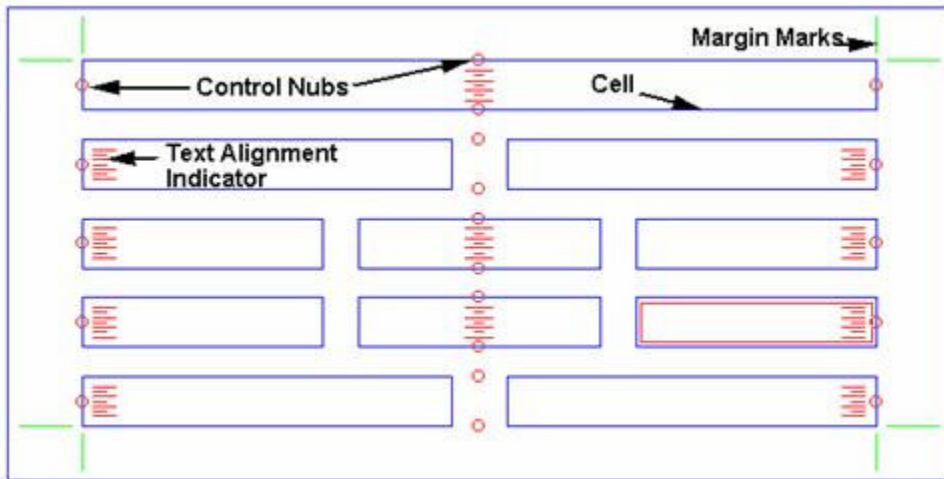
The remaining edit fields are used to customize the cell behavior.



Percent and Absolute Spacing	Used to set the distance from the bottom of one cell and the top of the next.
Relative Line Height	When editing a layout is begun, all lines are considered to be at 100% height. The Relative Line Height field is used to set the selected cell to a percentage of this initial height, though in so doing the remaining lines will be changed in height. However, the remaining lines will still be considered to be at 100% height.
Absolute Line Height	Specify the height of the current line. Note that changing this value will affect the relative height value.
Percent Cell Spacing	For the current line, this field specifies the spacing between horizontal cells, expressed as a percentage of the cell widths.
Percent Kerning	Set the text kerning (space between characters) for the selected cell. This is expressed as a percentage of the normal kerning associated with the given font.

ADDITIONAL AUTO LAYOUT CONTROLS

For reference, the following diagram indicates common elements when editing the layout:



Note that:

- The plate outline is blue.
- The four margin marks (crop marks) are green.
- Control nubs are red, and each line has four of them. Control nubs are located at the right, left, top, and bottom edges of each line.
- The text alignment indicators are red, with each cell containing one indicator.
- The cell outlines are blue, with the selected cell denoted by a red frame within the outline.

When the Keyboard options:

- Pressing **[Enter]** after entering text in box adds an identical line of cells below the selected cell.
- Pressing **[Shift+Enter]** adds an identical cell to the selected line, and resizes the cells to fit the line.
- Pressing **[Tab]** shifts the focus into the next adjacent cell in the layout (moving from left to right, top to bottom).
- Pressing **[Shift+Tab]** shifts the focus to the previous adjacent cell in the layout (moving from right to left, bottom to top).
- Pressing the **[Up or Down Arrow]** on the keyboard move the focus to the cell before (UP), or after (Down) the currently selected cell.

Mouse Controls

Holding the **[Shift]** key when clicking either a cell will add a new cells. **Shift-clicking** either top or bottom control nubs will create a duplicate of the current line. In contrast, the **[Control]** key will remove cells and lines.

Dragging either left- or right-control nubs will adjust the margin for the given line. Holding the **[Control]** key will adjust left- and right-margins of the line equally.

BRaille

The **Braille** module is used to create accurate, ADA-compliant Braille translations. The resulting Braille may then be rendered by means of either engraving, punching or photo-etching.

Braille cannot be modified using the Auto Kern feature. The Braille fonts are carefully constructed to meet the Federally-mandated ADA standard in the United States, and using any special kerning modes (Wide, Narrow, etc.) will cause the text to be non-standard.

Note: The Braille feature is included with the **Braille** module.

BRaille FONT TYPES

There are four types of CADlink VEF fonts that are used for generating Braille. The following chart indicates where each font is used:

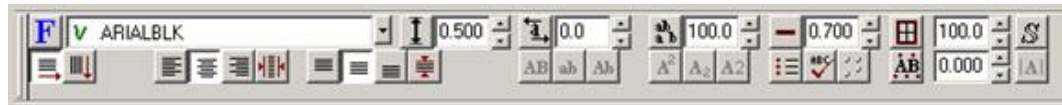
Braille Rendering method	Braille font used
Engrave	BrRout.vef
Punch	BrRoutCA.vef
Photo-resist	BrPunch.vef
Pre-bled photo-resist	BrPunchCA.vef

CREATING BRAILLE

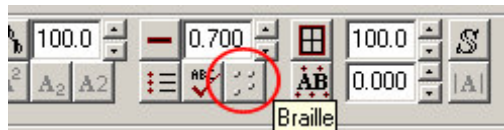
Creating Braille

To avoid spelling errors, type the initial text using a non-Braille font, and then convert the text into Braille. The typical steps for creating Braille are as follows:

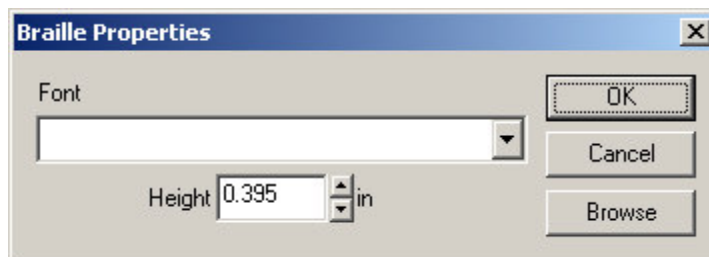
- 1) Choose **Text Compose** from the **Text Tools** flyout, and then click on the workspace to place the text. The **Text Compose** controls will be displayed within the SmartBar.



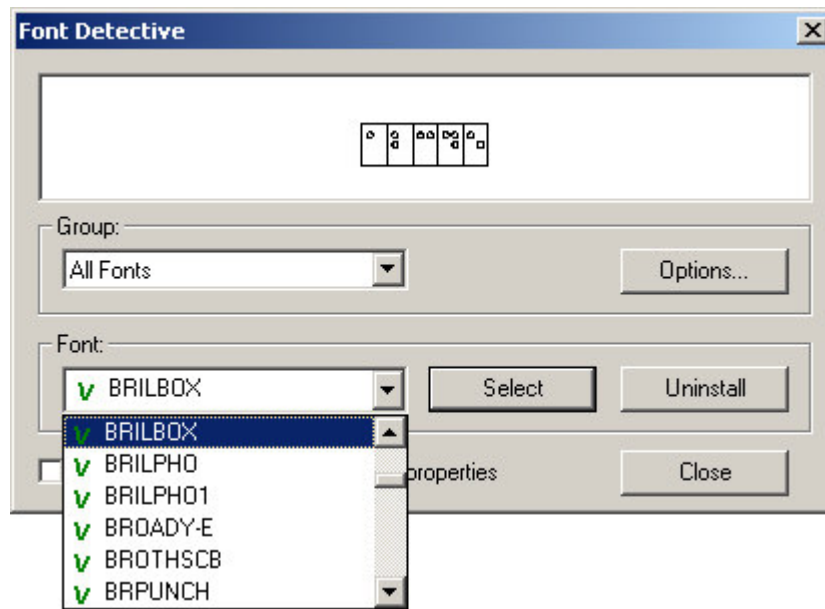
- 2) There are several Braille fonts provided with Vision-Pro. To set the default Braille font, right-click the **Braille** button within the SmartBar.



- 3) The **Braille Properties** dialog will open.



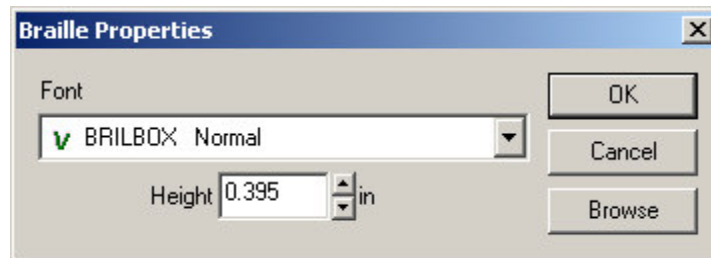
- 4) Click the **Browse** button, and the **Font Detective** window will open.



- 5) From the **Font** drop-list, choose the Braille font that will be used. In this case, the `brilbox.vef` engraving font was chosen.

Note: If the required Braille font is not available, then refer to the *Font Installation* section.

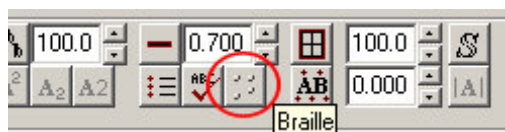
- 6) Click the **Select** button to close the **Font Detective**, and the selected Braille font will become available within the **Braille Properties** dialog.



- 7) Click **OK** to close the **Braille Properties** dialog.
- 8) The focus will return to the Vision-Pro workspace. Type the text that must be converted into Braille.



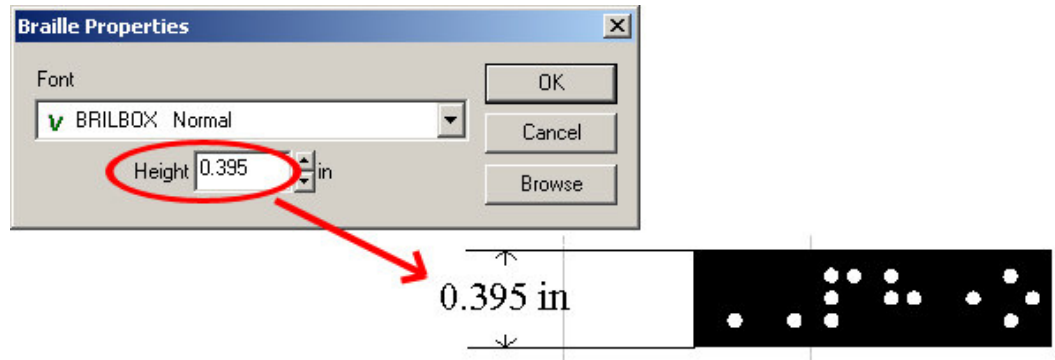
- 9) Within the SmartBar, left-click the **Braille** button.



- 10) The text will be converted into Braille.



- 11) To finish text editing, click within an empty portion of the workspace. Note that the height of the Braille is automatically set to 0.395 in, as per the default setting within the **Braille Properties** dialog.



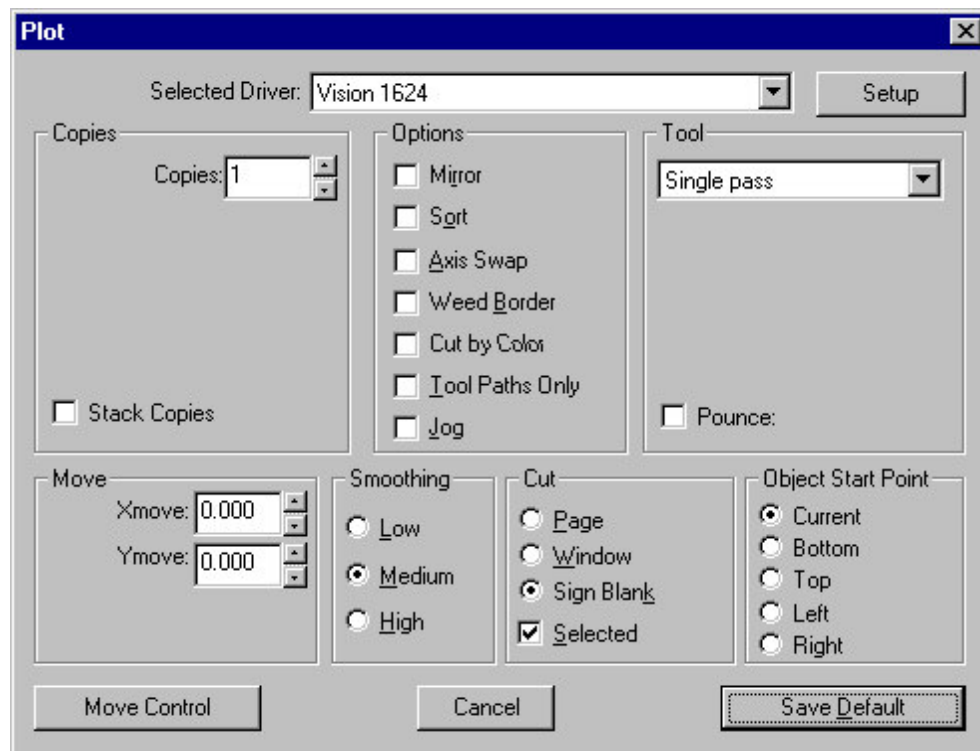
Braille Engrave

The **Braille Engrave** method is intended for use with a router or engraver. The characters consist of uniform rectangles, which are hollowed out to leave only the dots that distinguish the Braille characters. Use the *brilbox.vef* font when engraving Braille.

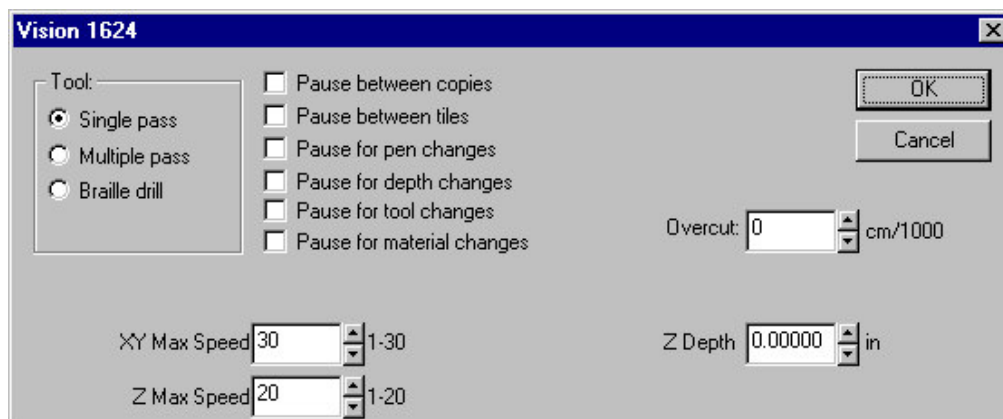
Note: Engraving both Braille and regular text in the same engraving job is not supported. As an alternative, engrave the Braille as a single job, and then engrave the regular text as a follow-up job.

The following steps summarize how to configure a driver to engrave Braille. For a complete description of configuring the **Plot** dialog, please refer to the *Cut Menu* section.

- Under the **Cut** menu, choose the **Plotting Defaults** option.
- The **Plot** dialog will open.



- In the **Plot** dialog, set the **Selected Driver**. For this example, the *Vision 1624* driver was used.
- From the **Tool** drop-down list, verify that the “Single pass” option is active.
- In the **Options** section, verify that the **Tool Paths Only** checkbox is off.
- Click the **Move Control** button. The **Move Control** dialog for the **Selected Driver** will open.



- In the **Tool** section, choose the **Single Pass** option.
- Set the other **Move Control** settings as required.
- Click **OK** to close the **Move Control** dialog. The settings will be automatically saved.
- Back in the **Plot** dialog, click the **Save Default** button. The current driver settings will now be stored for future sessions.

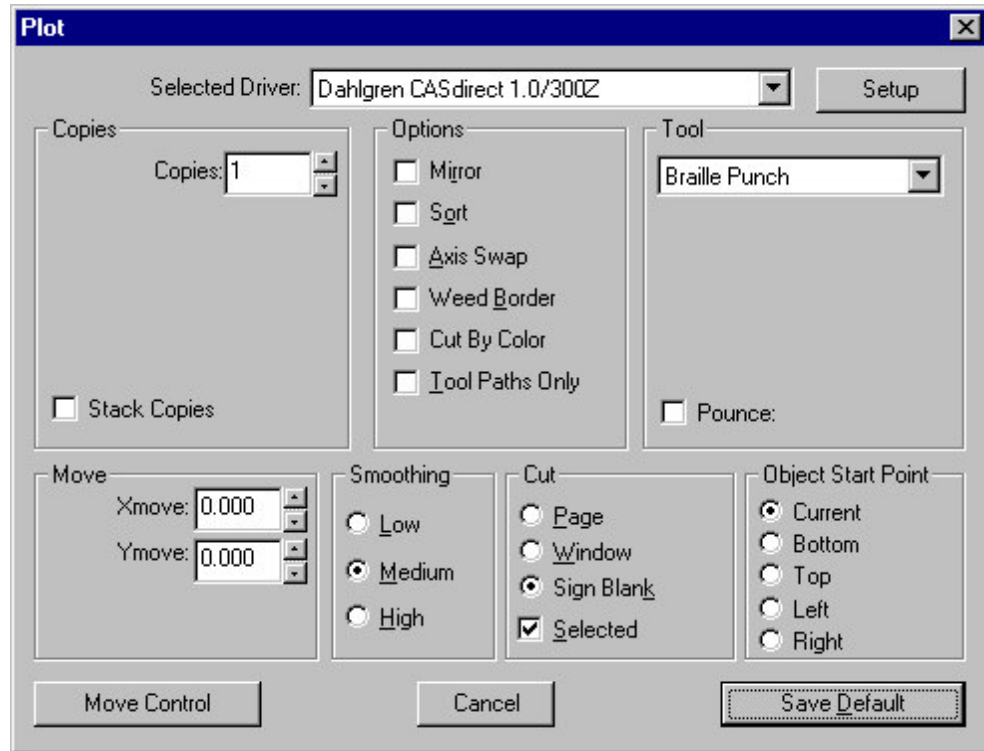
The **Plot** dialog will close, and the driver is now configured to **engrave** Braille.

Braille Punch

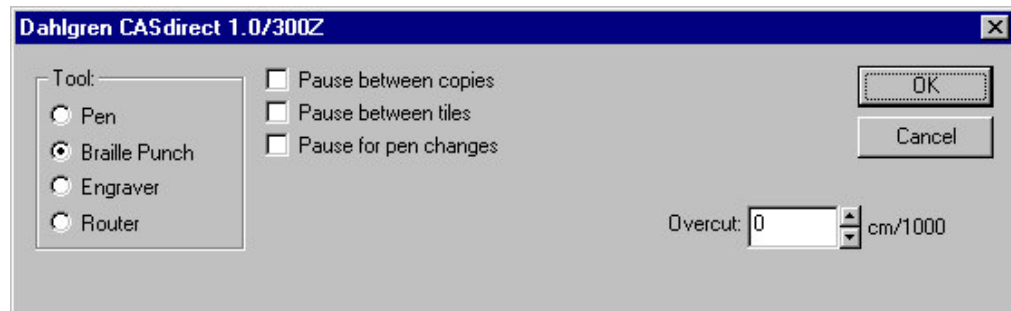
The **Braille Punch** method uses a mechanical punch, where the Braille lettering is punched onto the underside of a plastic sheet. The Braille will then be readable on the topside of the plastic sheet. When the Braille is punched, the lettering is automatically mirrored, such that the topside of the plastic sheet will be readable. Use the *brpunch.vef* font when punching fonts.

The following steps summarize how to configure a driver to punch Braille. For a complete description of configuring the **Plot** dialog, please refer to the *Cutting and Plotting* section.

- Under the **Cut** menu, choose the **Plotter Setup** option. The **Plot** dialog will open.



- In the **Plot** dialog, set the **Selected Driver**. For this example, the *Dahlgren CASdirect 1.0/300Z* driver was used.
- From the **Tool** drop-down list, verify that the “Braille Punch” option is active.
- In the **Options** section, verify that the **Tool Paths Only** checkbox is off.
- Click the **Move Control** button. The **Move Control** dialog for the **Selected Driver** will open.



- In the **Tool** section, choose the **Braille Punch** option.
- Set the other **Move Control** settings as required.
- Click **OK** to close the **Move Control** dialog. The settings will automatically be saved.
- Back in the **Plot** dialog, click the **Save Default** button. The current driver settings will now be stored for future sessions.

The **Plot** dialog will close, and the driver is now configured to **punch** Braille.

Braille Photo-Resist

The **Braille Photo-Resist** method is designed for printing onto a transparency. The transparency may then be used as a mask to expose photo-sensitive material to ultraviolet light, thereby constructing the dots that compose the Braille lettering. Use the *brilpho.vef* font for designing a transparency mask.

Braille Pre-Bled Photo-Resist

The **Braille Photo-Resist** method may in some cases produce dots that are larger than the acceptable standard for Braille lettering. The **Braille Pre-Bled Photo-Resist** method corrects this problem by resizing the *brilpho.vef* font to compensate for dot sizes that are too large. In this case, use the *brilpho1.vef* font for designing a transparency mask.

FONT EDITING

Font Editing

Vision-Pro can modify existing fonts, or create new ones from scanned, digitized, or hand-drawn objects on-screen. Regardless of whether the font is new or edited, it will always be saved in .VEF format, even if the original font had been stored in another format, such as True Type (TTY) Postscript (PFB).

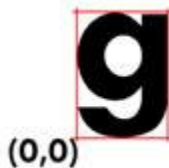
Any workspace object can be converted into a font character. However, the object must be a single-path graphic. Imported or grouped objects must be welded and/or converted to a single path prior to creating a font version from those objects.

To import objects that have multiple paths, use the Make Path command to convert them into a single path. Also, the Text To Graphics command must also be applied.

There are two functions that the **Font Editor** performs. The first is the editing of an existing fonts. The second it when a font is being created from scratch. In either case, the resulting font will be stored in a .VEF format. If the font was originally in .VEF format, then be aware that saving the font in its original name will overwrite the original font.

When editing fonts, it is important to understand how the placement of individual letters is accomplished. As a rule, each character's font metrics include two general types of information: (a) the shape and size of the character itself, and (b) its placement in relation to the other characters in the font.

The area that a character occupies can be thought of as being an enclosed box. The box is considered to have an x-axis, a y-axis, and an origin in the lower-left corner.



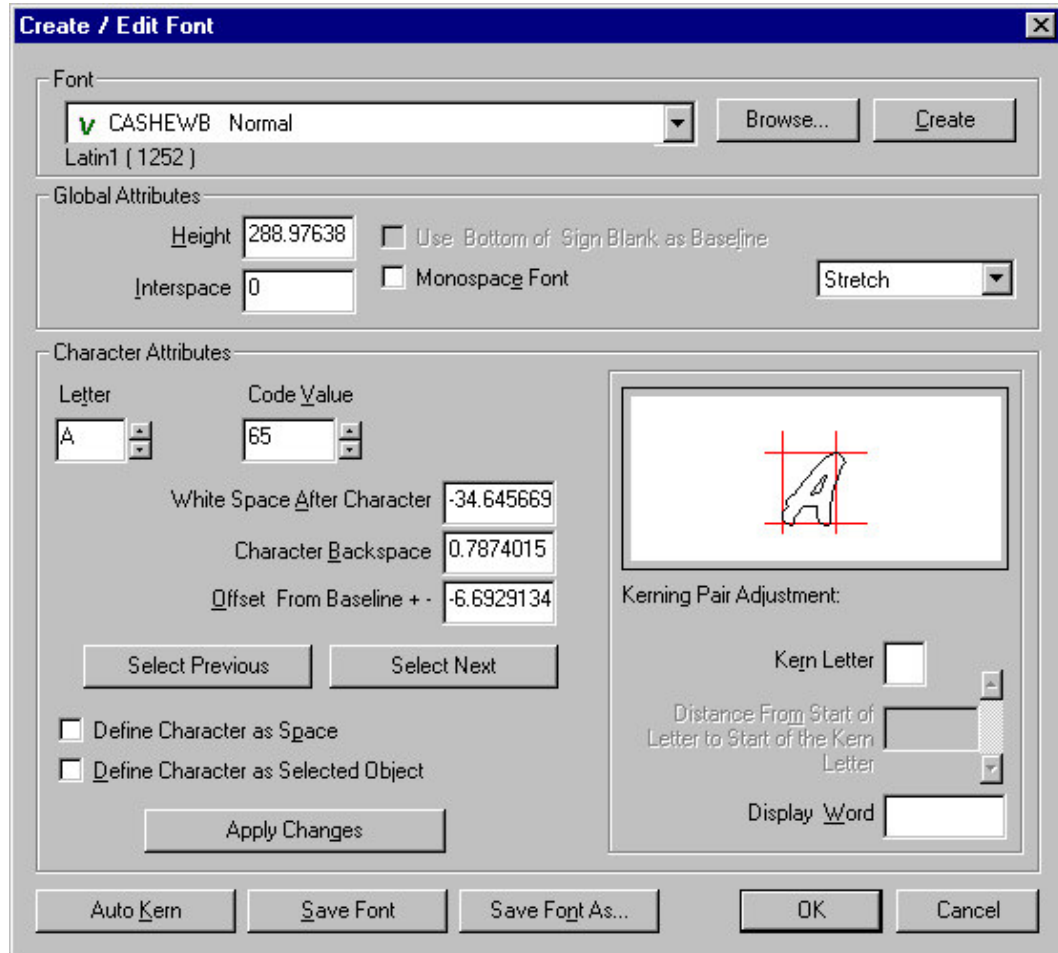
Such placement information is necessary to help arrange adjoining letters correctly, while also considering any possible descenders. The three primary adjustments are (i) the white space after the character, (ii) the character backspace, and (iii) the offset from the baseline.

- The white space after the character adjusts the right (or trailing) side of the bounding box
- The character backspace shifts the beginning of the character in relation to the left side of the bounding box
- The offset from baseline shifts the character above or below the bottom of the bounding box

Create / Edit Font Dialog

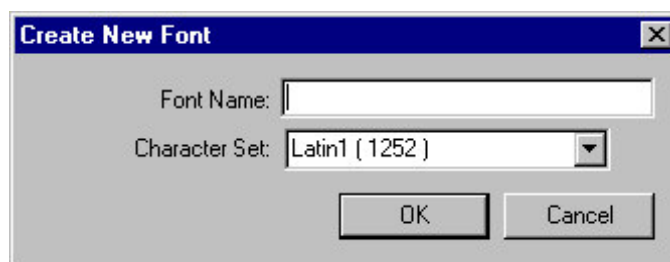
Create / Edit Font Dialog

Choosing Edit Font from the Edit menu will open the Create / Edit Font dialog.



When editing a font, there are two broad classes of adjustment. **Global** adjustments are applied to all of the characters in a given font, whereas **Character** adjustments are specific to a single character within the font.

To create a new font, click the **Create** button. You may enter the name of your new font in the **Create New Font** dialog. After clicking **OK**, you will also be queried to save the font.



Note: As a precaution with .VEF fonts, use a Font Name that is different from the original font. Otherwise, the original font data will be overwritten.

Global Attributes

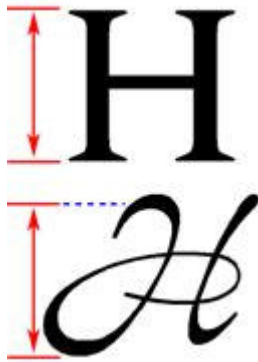
Adjustments to the Global Attributes are used to define the general appearance of a font. These adjustments will be applied to all the characters within the font.

Font Height

The Font Height defines the actual height of the font as it was created. When creating a new font, the height of a reference letter should be entered, so that the remaining characters can be sized correctly.

For example, suppose that an uppercase 'M' were chosen as the reference letter (this is a typical choice). For the Height field, you would measure the height of the 'M'.

It is very important to assign an appropriate height to a font being created. The height of a font is often based on the height of an uppercase M or H. The precise letter height will be used when creating a block-style font, whereas script fonts may require a more creative estimate of height. In the following example, notice how the script character is slightly taller than the non-script character.



Interspace

We mentioned previously that characters are considered to be within an enclosed box. Interspace is the nominal amount of trailing white space that will provide a gap between the following letter. By modifying the Interspace, fonts can be given either a wide or narrow kerning, such that the characters appear either closer or further apart. For example, using a negative interspace value will create a condensed font.

Cat
Cat

Use Bottom of Sign Plate as Baseline

The space occupied by a given character has been described earlier as an enclosed box, and the bottom of this box is considered to be the baseline of the character. This baseline will determine the vertical position of the characters. When creating a new font, the vertical position of each character is defined in relation to the baseline. To the vertical position of the characters, either (i) manually adjust each of the characters using the Offset from Baseline (described later), or (ii) use the Use Bottom of Sign Plate As Baseline option.

Vision-Pro 7 Doc Files

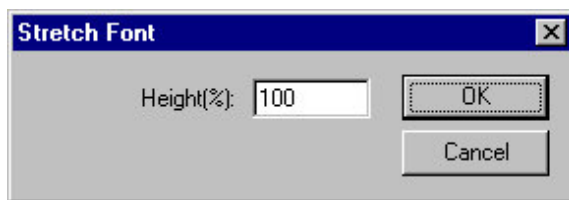
For the second option, use the Align feature to arrange the characters along the bottom of the sign plate. Then return to the **Create / Edit Font** dialog and enable the **"Use Bottom of Sign Plate as Baseline"** option. Vision-Pro will automatically perform the calculations, such that all the characters will be placed along a consistent baseline.

Monospace Font

The Monospace Font option converts the font to a fixed-width font, in which each character occupies the same amount of horizontal space regardless of its width — for example, the character 'i' taking as much width as an 'm'.

Stretch

The Stretch Font dialog is used to adjust the ratio between the font height and width, expressed as a percentage. A value less than 100 produces a font that is both short and wide, whereas a value greater than 100 produces a font that is both narrow and tall.



Slant

The Slant Font dialog is used to specify the slant degree for the font characters. A positive slant will create an Italic font, whereas a negative slant will create a "backhand" appearance.



Character Attributes

Letter

This box is used to specify the character currently being operated upon. The edit box displays the actual character.

Code Value

For computers to recognize text characters, a numeric code value called the ANSI standard is used. This is a widely accepted standard that ensures that text data will be understandable between different models of computers. For a given font, there are 255 characters in the ANSI character set, which encompasses upper-case letters, lower-case letters, numbers, and (sometimes) special symbols.

Because some of these ANSI values are intended for communication protocols between devices, not all of the characters will be printable. For example, the first 31 characters are reserved for special command sequences that would be recognizable by a modem or printer, but which have no significance for our purposes of editing a font. However, it is sufficient for us to use the characters that are allocated for us to create normal, printable characters.

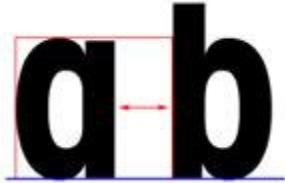
The following table indicates some sample values:

ANSI code value	Which we know as:	CASHEWB font	EMBASSY font
65	The letter 'A'	A	<i>A</i>
66	The letter 'B'	B	<i>B</i>
67	The letter 'C'	C	<i>C</i>
97	The letter 'a'	a	<i>a</i>
98	The letter 'b'	b	<i>b</i>
99	The letter 'c'	c	<i>c</i>
48	The number '0'	0	<i>0</i>
49	The number '1'	1	<i>1</i>
50	The number '2'	2	<i>2</i>

51	The number '3'	3	<i>3</i>
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White Space After Character

This field is used to adjust the width of a character bounding box. In effect, this will increase the separation from the following character. Though this is similar to Interspace, keep in mind that this setting is applied on a per character basis, whereas Interspace is used to adjust the overall kerning of the font characters.



Character Backspace

Character Backspace is used to move the character with respect to its bounding box origin. In effect, this will place the character either further away, or closer to, the preceding character.



Offset from Baseline

The Offset From Baseline adjusts the vertical character placement with respect to the baseline.

For example, an uppercase H in a sans serif font will generally have an offset of 0 (no offset). This means that the bottom of the actual letter will be the same as the bottom of the letter's bounding box.



On the other hand, a lowercase 'g' will require a negative offset, so that its descender (the tail) will fall below the baseline.



Select Previous and Select Next Buttons

Font characters can be designed on the Vision-Pro workspace and then added to a new font. Vision-Pro orders workspace objects according to the sequence in which they were created. Using the Select Previous and Select Next buttons, you may browse workspace objects without leaving the Create / Edit Font dialog. When the correct object is selected, click the Apply Changes button to create the character.

For example, suppose that you have created a new alphabet, such that you have objects for "A B C D E F..." etc. on the workspace. From the Create / Edit Font dialog, you would set the Code Value to 65, and then you would use the Select Next button to select the 'A' object on the workspace. At this point, clicking Apply Changes would create the new character. Then, you could increment the Code Value to 66, click the Select Next button to select the 'B' object, and click Apply Changes again. This process would be repeated for each character that you create for the font.

Define Character as Selected Object

When editing a font, select an object to be included in the font as a character. To designate a selected object as the current character, check this box.

Define Character as Space

There is also a non-printing character that is often forgotten, but which must be present in a font: the space character. Without the space character, which appears when the space bar is pressed, there will be no spaces between the words created when composing text, so it is critical that a space character be included when generating a font.

There are two ways to create the space character:

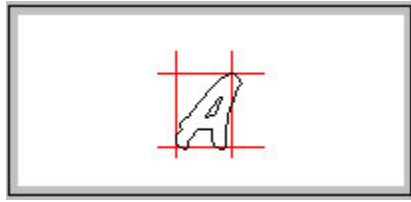
1. To use an existing character, select a character that best represents an appropriate space, and enable the **Define Character As Space** option.
2. To create the space character using an object, exit the **Create / Edit Font** dialog and create an object that has an area that is appropriate for the font. Once the object is selected, open the **Create / Edit Font** dialog and enable the **Define Character As Space** option.

Apply Changes

Clicking Apply Changes will save the character information and begin editing another character. Note that the changes are not saved to disk until the font is saved using the **Save Font** or **Save Font As** button.

Display Box

This box displays the current information for the character being edited. It also displays the bounding box for the selected character (including a top line representing the font height) and the character's current placement within the box. When changes are made to the character, those changes are immediately reflected in the display box, but those changes are not permanent until the Save Font button is clicked.



The Display Box will display kerning pairs, as well as words where necessary.

Kerning Pair Adjustment

The Vision-Pro font maker provides the ability to adjust individual kerning pairs manually.

Kern Letter

The Kern Letter field indicates the character to be manually kerned in the trailing position, relative to the character currently being edited. The letter pair will then be displayed in the **Display Box**.

Distance From Start Of Letter To Start Of Kern Letter

Adjust the kerning white space between the current character and the kerning letter.



Specifically, this setting identifies the exact distance between the start points of the two characters. A larger number increases the space while a smaller figure reduces the space.

This setting is grayed out and unavailable unless a kern letter is selected to be paired with the current character.

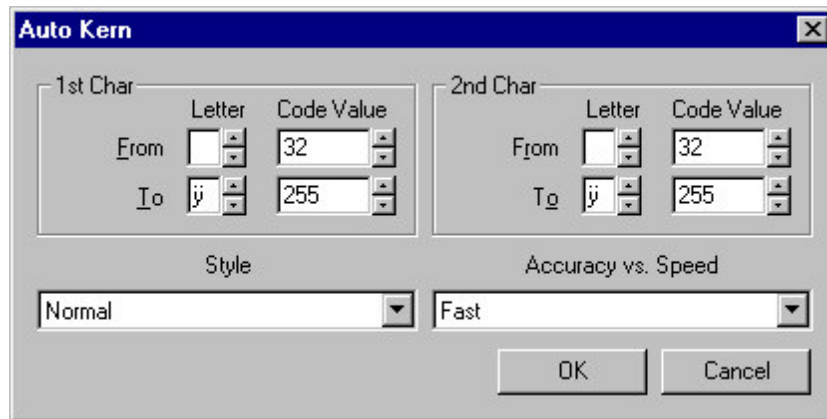
Display Word

To examine the kerning set for a given letter in a realistic context, type a word containing the letter in the Display Word box. The word will be displayed in the Display Box.

Note: In order for the word to appear in the display box, it must contain the character currently being edited.

Auto Kern

This button opens the **Auto Kern** dialog box.



Auto Kern is used to automatically generate a kerning table for a given font. Kerning tables contain information about the spacing between pairs of characters.

Why Use Auto Kern?

The Auto Kern feature is similar to the Text On-Screen Kerning feature that is available from the Text Tools flyout. Once kerning information is created for a font, Vision-Pro will simply duplicate the kerning table already defined.

Due to the time required to generate a kerning table on-the-fly, the main advantage of using Auto Kern at the font generation stage is that Vision-Pro generates paragraphs of text very quickly when entered in Text Compose, since Auto Kern will not be used at that stage.

There are four settings that can be adjusted in order to generate a custom kerning table for a font.

1st Character

By definition, a kerning pair has a first (or leading) character and a second (or trailing) character. Use the two entry boxes to specify the range of characters (from first to last) to be set to Auto Kern in the first position. By default, Vision-Pro will kern all 255 ANSI characters in the leading position.

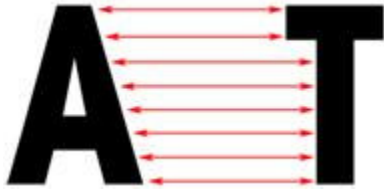
2nd Character

Use these two entry boxes to specify the range of characters to be set to Auto Kern in the second position. By default, Vision-Pro will Auto Kern all 255 ANSI characters in the trailing position.

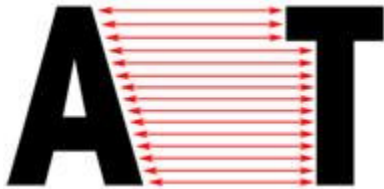
Accuracy Vs. Speed

Auto Kern works by checking and adjusting the distances between a number of points along the height of letter pairs. From the **Accurate versus Speed** drop-list, there is a choice between **Accurate** and **Fast**, that provides the ability to draw a balance between speed and precision.

Using **Fast** will speed the kerning process by examining only a limited number of points.



Using Accurate will result in kerning based on the examination of substantially more points.



Style

Auto Kern can generate a font with one of five different kerning styles — Normal, Wide, Narrow, Touching, and Overlap.

- The **Normal** setting kerns the font normally, adding white space roughly in proportion to the width of the letter.
- The **Wide** setting kerns fonts at a rate of Normal kerning plus 20% (i.e., there is 20% more white space added between each letter).
- The **Narrow** option sets kerning at Normal kerning minus 20%.
- The **Touching** setting causes letters to touch, but not overlap.
- The **Overlap** setting causes letters to overlap each other by 5% of their Normal kerning.

Save Font

When editing a font, the new information is not written to the hard drive until actually told to save the font. Until then, the font is buffered. A buffered font is somewhat in limbo — it exists and is available to Text Compose, but it has not been committed to the hard drive. This means that the option to save or discard changes to the font before exiting Vision-Pro is still available.

Saving a font means moving the information out of the buffer to the hard disk, thus making it permanently available. Any font saved is placed in the directory where the existing .VEF fonts are currently located.

Clicking on the Save Font button will result in the font being written to disk immediately. The alternative is that Vision-Pro provides the option to save the font when issuing an exit command. If the font is not saved before exiting the Font Maker dialog box, a prompt to do so when either beginning a new session with the New command under the File menu, or exit Vision-Pro.

Save Font As

The function of this button is very similar to the Save As command in the File menu. Specifically, it provides the opportunity to give an edited font a new name, and then save the font under a new name. This is particularly useful when creating a new font by editing an existing font, since it allows to save the changes under a new name without losing the original font information.

OK

Clicking **OK** will accept the current font changes and close the **Create / Edit Font** dialog.

It will not save the font or changes to individual characters, but will commit them to memory so that they can be saved later.

Font changes may be saved by (i) using the **Save Font** button in the **Create / Edit Font** dialog, (ii) using the **New** command under the **File** menu, or (iii) exiting Vision-Pro. By not saving, font changes will be discarded when exiting Vision-Pro.

IMPORTING AND EXPORTING

IMPORTING AND EXPORTING

-  [Importing and Exporting Files](#)
-  [The Vision-Pro Export Filters](#)
-  [Publish to PDF](#)
-  [Export Palette](#)
-  [Importing from CorelDRAW!™](#)
-  [Linking Text and Images](#)
-  [Acquire Image](#)
-  [Digitizing Setup](#)

IMPORTING AND EXPORTING FILES

Importing and Exporting Files

All graphic software applications have their own proprietary file formats that are used to store data files. As such, there are a wide range and complexity of file formats currently in use, which creates challenges when exchanging files between different software. For this reason, most graphic software applications provide import and export filters to facilitate the exchange of data files.

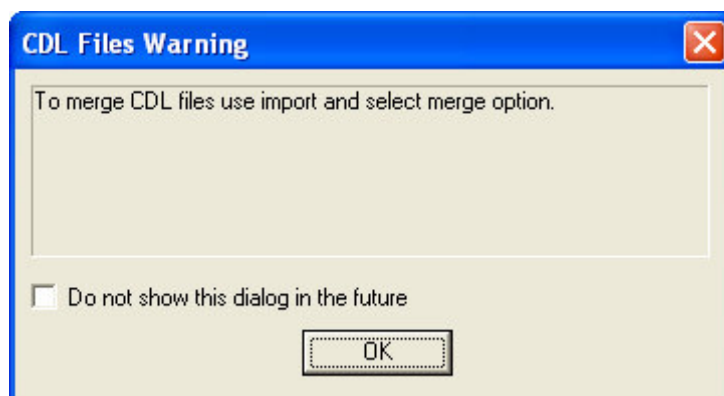
Each file format is used with a specific intent for the data being stored. Most the most part, file formats are designed to store either line art (vectors and curves), or bitmaps (raster images). The Vision-Pro workspace supports both line art and bitmaps, so either type of data can be imported or exported via Vision-Pro. The Vision-Pro file format, known as the Vision Drawing File (*.CDL) format, is referred to as a “combination file” because it can contain both line art and bitmap data.

Working with CDL Files

Working with CDL Files

The Vision Drawing File (*.CDL) can be opened into its own workspace (using **File | Open**). In addition, a CDL file can also be imported into an existing workspace (**File | Import**), provided that the **Merge** option is enabled.

When using the **File | Open** command for the first time, Vision-Pro will query whether the intention had actually been to use the **Import** command.



Restoring Printer Info

When a CDL is saved (**File | Save**), the printer and cutter information from the **Print and Cut Setup** dialog is stored with the CDL file. When opening the CDL file, enable the “**Restore Printer Information**” checkbox to load the printer and cutter settings.

Zoom Open

When the **File | Open** command is used, the workspace will zoom to the loaded objects. The **File | Zoom Open** command is similar to the **Open** command, except that the zoom level will alternate between 1) the current zoom level, and 2) zooming to the loaded objects. As such, Zoom Open should be considered to be a special purpose variant of the Open command.

The Vision-Pro Import Filters

The Vision-Pro Import Filters

The Vision-Pro import filters are designed to convert the file data into objects that can be edited upon the Vision-Pro workspace. Often, a customer will send an obscure file format that they intend as their concept for the job being ordered. Similarly, there may be a need to reuse artwork from older CAD software that is no longer in use. In either case, Vision-Pro supports a wide range of import filters, such that there should hopefully be few restrictions when loading such files.

The Import Command

The **Import** command is under the **File** menu.

When importing with the **Merge** option checked, the imported file will be added to the existing workspace objects. If the **Merge** option is unchecked, then the existing workspace objects will be deleted.

For certain types of files, the **Customize** button will become active in order to specify certain parameters for the given file type. For example, if the **Files of type** drop-list is set to “Bitmap Files (*.bmp),” then the foreground and background of monochrome bitmaps can be set.

The **Filter** button is used to customize the file types that are listed within the **Files of type** drop-list.

Importing DWG Files

On the **Import** dialog, the **Files of type** drop-list is used to distinguish between differing file extensions. For example, there is an AutoCAD (DWG) file extension, which is not to be confused with GraphicCAD (DWG), GenericCAD (DWG), and MonuCAD (DWG).

Note: Vision-Pro does not include an import filter for the AutoCAD (DWG) file format. Instead, use the AutoCAD DXF format.

Importing EPS Files

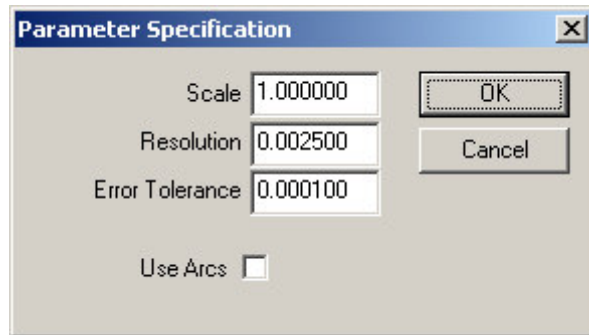
When importing Encapsulated PostScript (*.EPS), please note that there is a fair amount of variety in how different graphics applications export data to the EPS file format. If there are problems encountered when importing the EPS file into Vision-Pro, then a useful alternative is to export an Adobe Illustrator (*.AI) file instead. Vision-Pro will then be able to import the AI file.

THE VISION-PRO EXPORT FILTERS

There are two commands for exporting objects from Vision-Pro: **Export** and **Export Image**.

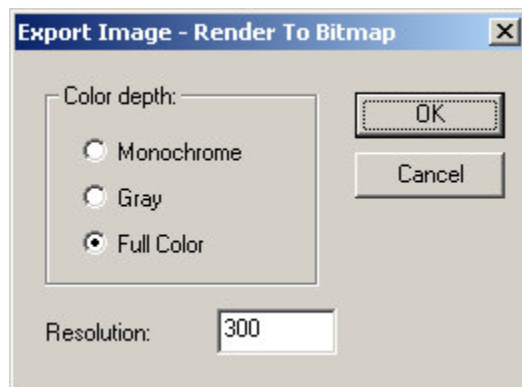
The **Export** command is mainly used to export line art shapes. However, for file formats that are capable of storing both line art and bitmap shapes (i.e. combination files), the **Export** command can also be used to export bitmap shapes.

When exporting line art, caution is required to prevent creating file objects that contain excessive numbers of nodes. This is especially true of artwork that was originally imported from other software. To overcome this problem, click the **Customize** button on the **Export File** dialog. The **Parameter Specification** dialog will open:



The **Parameter Specification** dialog is used to substantially reduce the nodes of exported objects. If the default values are insufficient, then caution is urged against setting a high value for the **Error Tolerance**. As a rule, the default value (0.001 or 1/1,000 of an inch) will work very well with most files.

The **Export Image** command is used to bitmap (raster) images, such as Bitmap, JPEG, PNG, etc. If line art shapes are being exported, then Vision-Pro will render the line art into raster data during the exporting process. Vision-Pro will prompt for the resolution and color depth of the raster data.



PUBLISH TO PDF

The **File | Publish to PDF** command is used to save the current workspace as a Portable Document Format (PDF) file. The utility of PDF files is that they can be viewed using the freely available Acrobat Reader application, which is available from the Adobe web site.

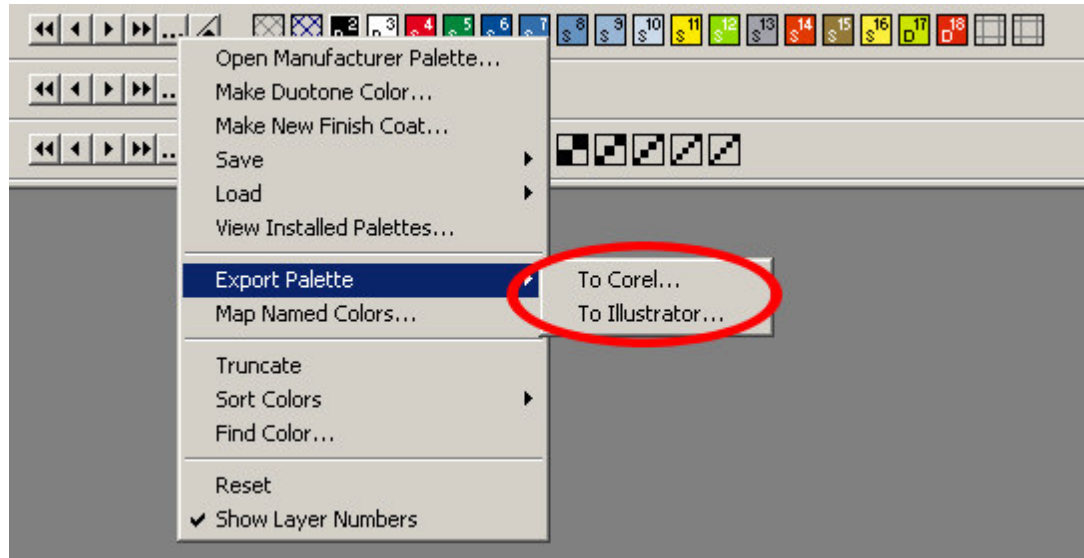
On a side note, the Vision-Pro install includes Acrobat Reader for viewing Vision-Pro help documents. However, the most recent version of Acrobat Reader is available through Adobe.

EXPORT PALETTE

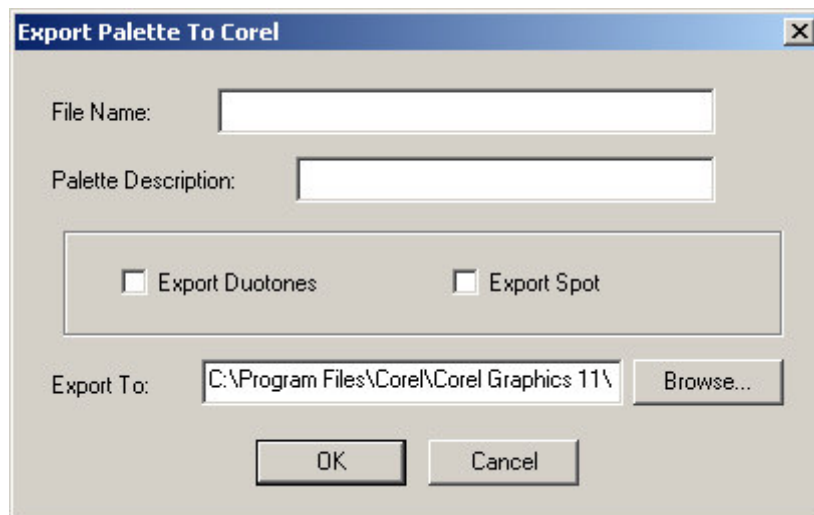
Vision-Pro 7 Doc Files

The spot and duotone colors in Vision-Pro palettes may be exported to either CorelDraw or Adobe Illustrator. This allows the reuse of custom Vision-Pro palettes that have been configured with the current inventory of foils in your sign shop. If the CorelDraw or Adobe Illustrator file is then brought back into Vision-Pro, then the imported colors should have a one-to-one correspondence with the custom Vision-Pro palette. If necessary, the **Map Named Colors** dialog may be used to confirm that the imported colors are matched correctly.

Please note that only spot and duotone colors can be exported. To export the Shop Palette, choose **Export** from the Shop Palette context menu. At the time of this writing, the palette may be exported to either CorelDraw or Adobe Illustrator.



The **Export Palette** dialog will open. Enter the **File Name** and **Palette Description**. In addition, at least one of either the **Export Duotones** or **Export Spot** options must be selected.



The **Export To** field indicates the save location of the exported palette. As a general rule, save the palette in a location that is convenient for retrieval.

IMPORTING FROM CORELDRAW!™

Importing from CorelDRAW!™

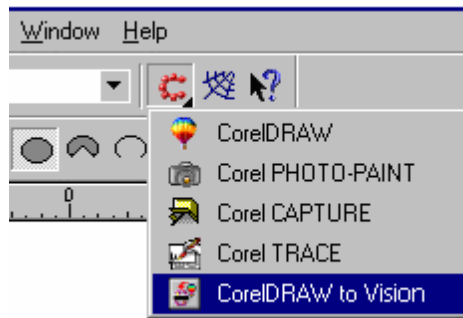
Using CMF files

When Vision-Pro is installed, and either of CorelDRAW!™ versions 3, 4, or 5 has already been installed, Vision-Pro will install an export filter into the CorelDRAW!™ export menu. This custom export filter is optimized for file exchange between CorelDRAW!™ and Vision-Pro. The filter will appear in the CorelDRAW!™ export menu as "Export To Vision-Pro," and it will generate *.CMF files. This is the preferred method of file exchange for these versions of CorelDRAW!™.

Note: The CMF filter is not available if CorelDRAW!™ is running from the CD-ROM.

Using the Application Launcher

For CorelDRAW!™ versions 5 through 9 inclusive, the Application Launcher may be used. On the Standard CorelDRAW!™ toolbar, the "CorelDRAW to Vision-Pro" option may be chosen from the Application Launcher.



The focus will then switch to the Vision-Pro workspace, where the exported object may then be placed on the sign plate.

Creating a "2signlab.csc" toolbar button

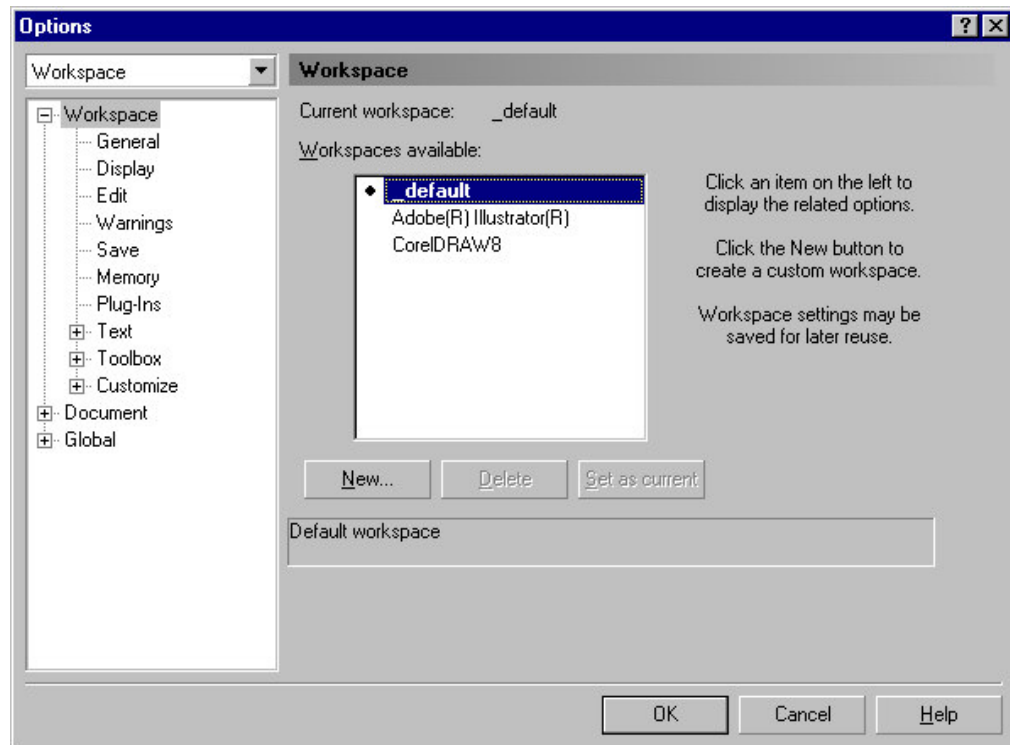
For versions of CorelDRAW!™ versions 8 and 9, a toolbar button may be created by using the "2SignLab.CSC" file that is available from CADlink. The following steps describe how to create this toolbar button. Before following these steps, please verify that you have the "2SignLab.CSC" file. If this file was not installed with Vision-Pro, then it is available as a download from the CADlink web site.

- 1) Using Windows Explorer, copy the "2SignLab.CSC" file into the following directory:

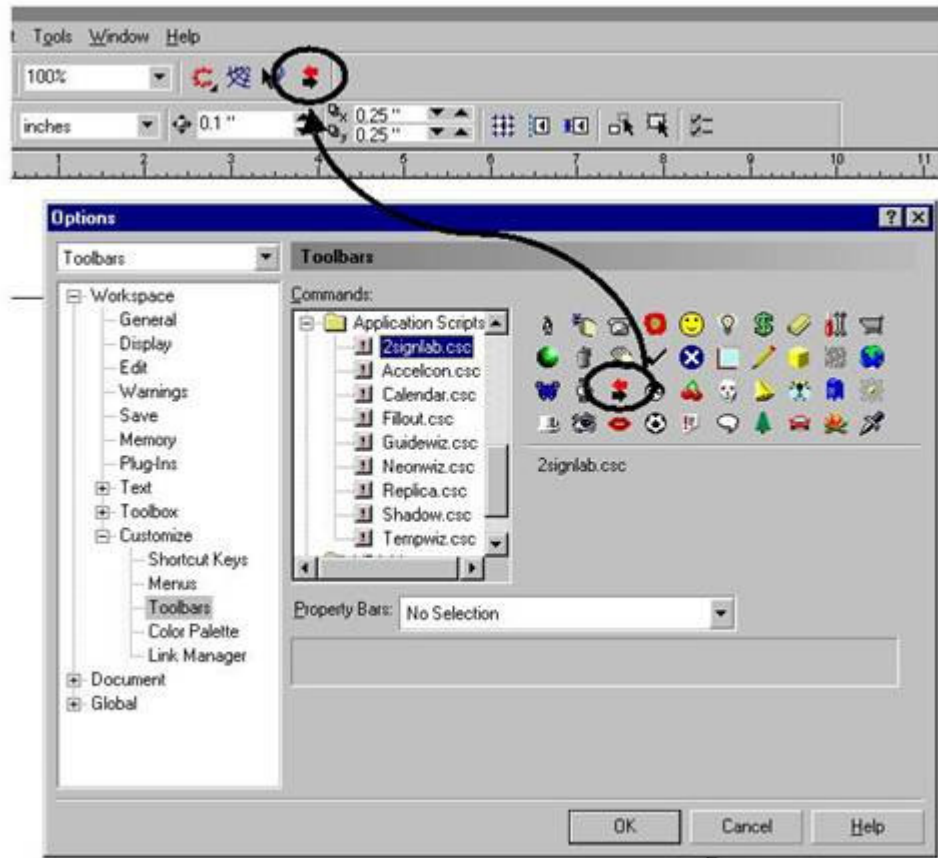
C:\Program Files\Corel\Graphics9\Draw\Scripts\Scripts

Note: This is a default directory that would have been set up during the installation of CorelDRAW. If CorelDRAW has been installed to an alternative directory path, then place the "2SignLab.CSC" file in the appropriate sub-directory.

- 2) From within CorelDRAW, choose **Options** from the **Tools** menu. The **Options** dialog will open.



- 3) On the left-hand side of the **Options** dialog, expand the **Customize** item, and then choose the **Toolbars** option.
- 4) A list of **Commands** will appear in the center of the **Options** dialog.
- 5) Expand the **Application Scripts** item, and then choose the "**2signlab.csc**" option. To the right of the **Commands** list, a group of available icons will appear.
- 6) Click and drag the icon that will be used to represent the "2SignLab.csc" button.



- 7) Drag the icon to the CorelDRAW toolbar where the new button will be placed. An insertion cursor will appear as you hold the icon over a given toolbar. In this example, the button was created on the Standard toolbar.
- 8) When the icon is in the desired toolbar position, release the mouse button. At this point, a toolbar button for the "2SignLab.CSC" file has been created.
- 9) Click the **OK** button to close the **Options** dialog.

As a test, create an object in CorelDRAW, select that object, and then click the "2SignLab.CSC" toolbar button. The focus will shift to Vision-Pro, and the object will be placed on the sign plate.

Saving Embedded CDL Files

The **File | Save** command is used to save the current workspace as a CDL file. If the workspace contains linked images (using the **Link** command), then the CDL file will contain a reference to the linked file.

The **File | Save Embedded File** command is like **Save**, except that the entire data of linked files will be stored within the CDL file. As such, the CDL file can be sent to another workstation without worrying about broken links.

LINKING TEXT AND IMAGES

Linking Text and Images

Introduction

Microsoft OLE (Object Linking and Embedding) technology is designed to facilitate the sharing of text and graphics between Windows applications. For example, an editing area may be created within Application A, wherein objects from Application B may be created or modified.

Sharing between applications is commonly done by dragging a text or graphic object from one application to another. Simply select the object, left-click it and drag, and then release the object when it is over the other application window. After dragging an object, releasing the left-mouse button is referred to as "dropping" the object.

In addition to simply dragging-and-dropping an object, there are modifier keys that specify the operation that should be performed. The modifier keys are summarized as follows:

Modifier Keys	Action performed
[none]	Move object to the target application.
[Control]	Copy object to the target application.
[Control + Shift]	Create a link for the object in the target application.

Creating a linked object between two applications will allow either application to edit that object. Edits made in one application will be shown in the linked application, and vice-versa. However, note that the frequency of updates is determined by the operating system, so updates may not be immediate.

To create linked text within Vision-Pro, suppose that a paragraph of text had been created within MSWord 97:

- Select the paragraph that will be linked.
- With the left-mouse button, click and drag the paragraph over to the Vision-Pro workspace. However, do not release the mouse button.
- Press and hold both the **[Shift]** and **[Control]** keys. Notice that the mouse cursor will indicate an "insertion" arrow.
- While still holding the **[Shift]** and **[Control]** keys, release the left-mouse button. The link to the text will be created within the Vision-Pro workspace.

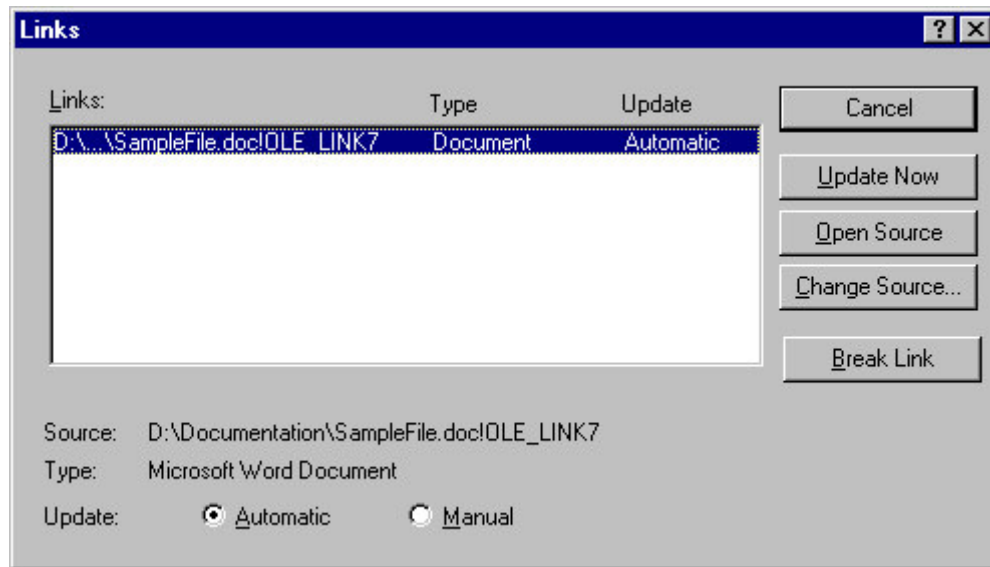
In the above example, once the link has been established, any edits within MSWord would also be shown on the Vision-Pro workspace.

Note: Though Microsoft has specified a standard for OLE implementation, support of OLE functionality may not be available with certain applications. In some case, there is support for moving and copying objects, but not for creating links.

Links

Links

Multiple objects may be linked into the Vision-Pro workspace. To view the current links, choose the **Links** command (**Edit** menu).



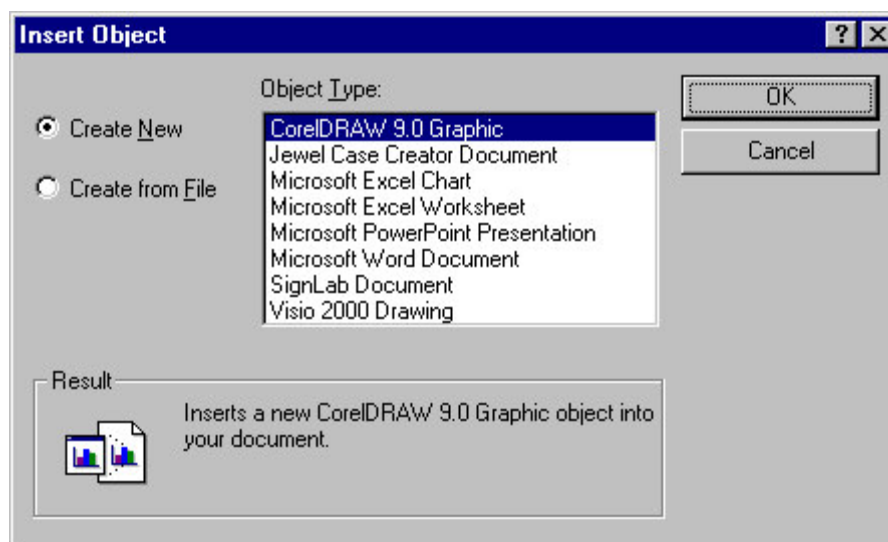
The following actions are available for the selected link:

Update Now	If edits have occurred in the linked file, then update this information on the Vision-Pro workspace.
Open Source	Open the object in its associated application.
Change Source	Modify the link, such that it points to a different file. If the file is valid, then changing the type of file is acceptable.
Break Link	Remove the link that exists between the Vision-Pro workspace and the original application. Edits within the application will no longer be shown within Vision-Pro.

The **Update** options are Automatic and Manual. The Automatic option will refresh changes to linked objects periodically. The Manual option will require that the **Update Now** button be clicked before changes are shown.

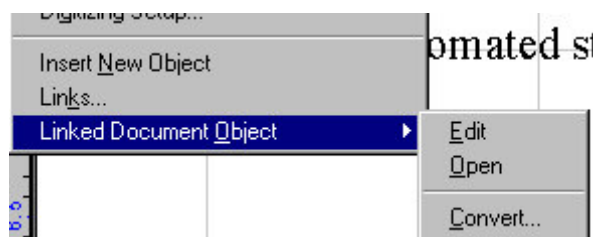
Insert New Object

As an alternative to dragging-and-dropping, the **Insert New Object** command will link objects that are from another application. Either a previously created file may be used for linking, or a new object may be created within the Vision-Pro workspace.



Editing Linked Objects

After an object has been inserted, it may be double-clicked to continue editing. In addition, selecting the object will activate the following **Edit** menu flyout commands:



- Edit** Edit the object within the Vision-Pro workspace.
- Open** Open the object within its associated application.
- Convert** Convert the object type, such as from MSWord 97 into MSWord 2000.
This command is provided in cases where objects from a previous release must be accessed.

Convert to Vision-Pro Object

After an object has been inserted into the Vision-Pro workspace from another application, this command will convert the object into an actually Vision-Pro object. Once this conversion has been performed, there will be no method of editing the object in the original application.

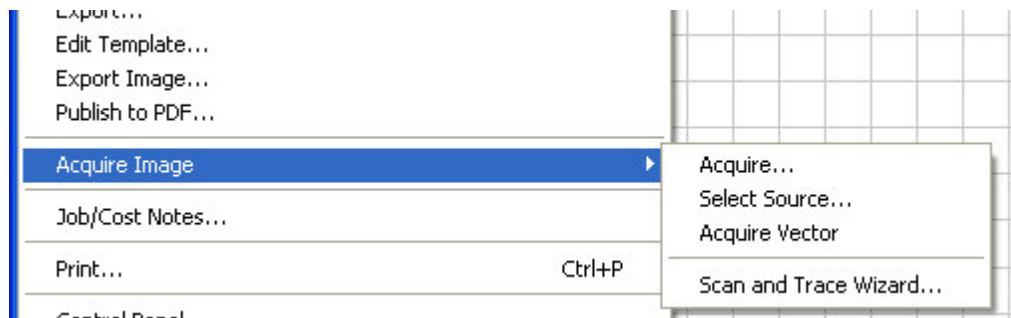
If the object being converted is a text object, then the resulting Vision-Pro object will be a text object. Otherwise, the converted object will be of either type polyarc or polygon, depending on the **Polyarc / Polygon** setting in the **General Preferences** dialog.

Note: The result of the conversion will be grouped, though an Ungroup [Alt + G] command may be performed.

ACQUIRE IMAGE

Acquire Image

The **Acquire Image** item provides access to the TWAIN support offered by Vision-Pro. This support provides the ability to operate TWAIN-compliant scanners directly from within Vision-Pro, without any intermediary software. To function properly, the scanner control software must be properly installed within Windows, and must be TWAIN-compliant.



Acquire

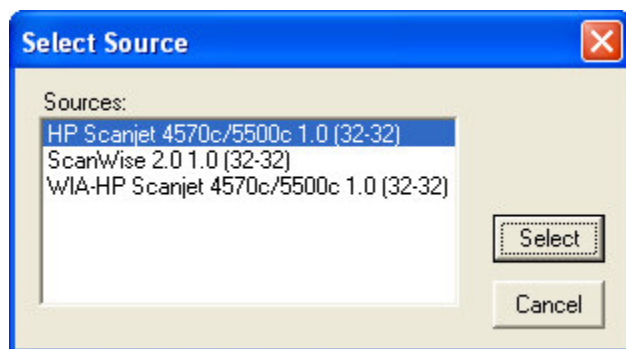
Acquire

This option calls the TWAIN-compliant software, initializes the scanner, and prepares the system to receive a scanned image. Upon exit from the scanning software, the acquired image will be imported into Vision-Pro.

Select Source

This option provides the ability to choose the TWAIN input device that will acquire images.

If only one source (i.e., only one scanner and/or scanning software) is attached to the system, set this once. However, if more than one source of TWAIN-compliant input (i.e., both a flat bed scanner and a hand-held device) is attached, this feature provides the ability to choose between the devices to suit specific needs at any time. Select Source opens the Select Source dialog box:



The **Sources** list is of all available TWAIN-compliant devices attached to the system. After choosing the source device, click the **Select** button.

Acquire Vector

This is a variation on the Acquire command. Where the **Acquire** command will produce a bitmap image, the **Acquire Vector** will produce line art from the scanned image.

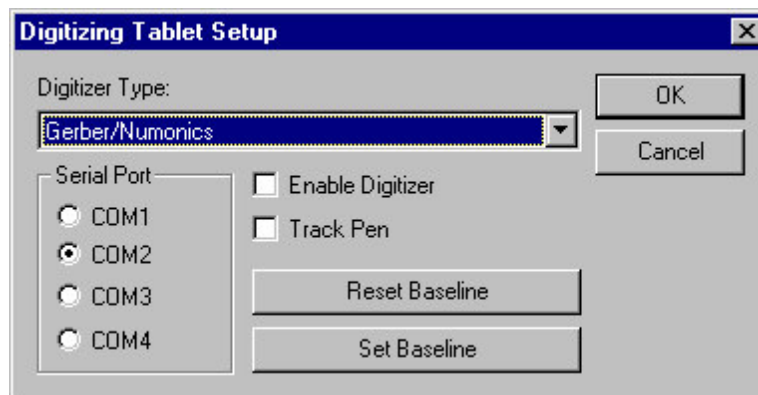
Scan and Trace Wizard

The Scan and Trace Wizard includes all the steps to import and trace and image. In addition to importing a scanner image, the wizard can accept either an image data file, or an images that was copied to the Windows clipboard from another application.

DIGITIZING SETUP

Digitizing Setup

Vision-Pro will interface cleanly with a digitizing tablet, and no other intermediary software drivers are required. However, verify that the tablet is correctly connected to the computer, as per the manufacturer instructions. Once connected, configure the tablet using the **Digitizing Tablet Setup** dialog.



Enable Digitizer

Enable Digitizer

This check box is used to enable and disable the digitizer. In order to reduce the load on the system, it is recommended that the digitizer be disabled when not in use. This will prevent Vision-Pro from polling the tablet, and therefore free up system resources.

Track Pen

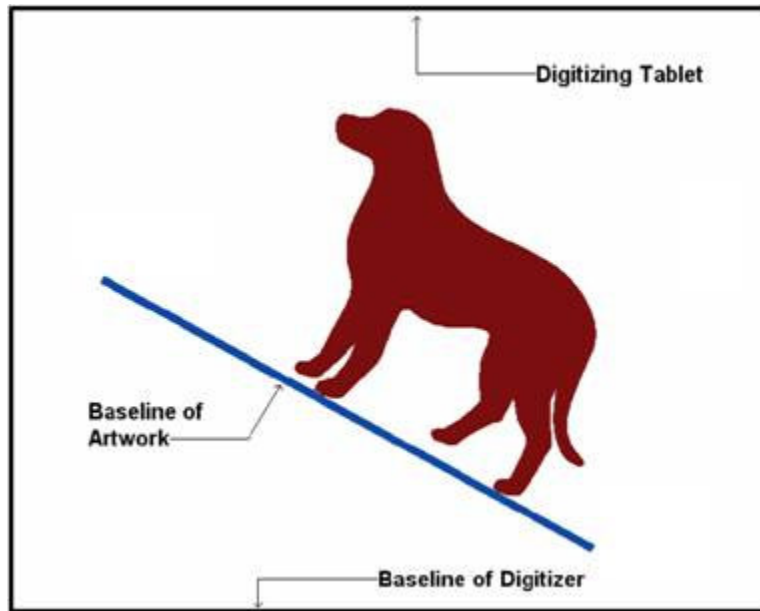
This check box is used to enable and disable the tracking of the digitizing pen. In order to reduce the load on the system, it is recommended that the digitizer be disabled when not in use. This will prevent Vision-Pro from polling the tablet, and therefore free up system resources.

Reset Baseline

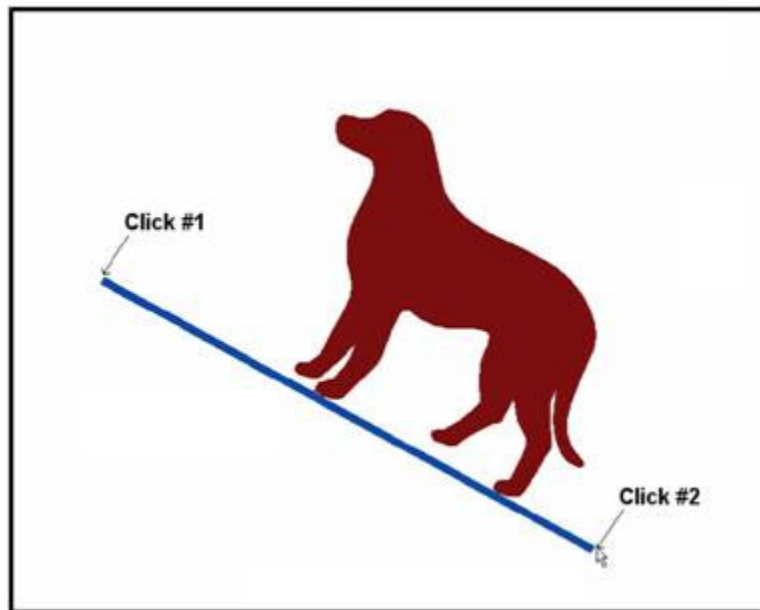
When starting a new drawing, or if the original angle and position of the tablet baseline need to be restored, select the Reset Baseline option. The baseline of the tablet will be reset to match that of the material. See Set Baseline below for more information regarding baselines.

Set Baseline

The baseline of a drawing defines both the bottom of the artwork, as well as the angle of the horizontal axis.



Typically, a digitizer designates the bottom of the tablet as the baseline, which Vision-Pro will also use as a reference. Use the Set Baseline button to align the baseline with that of an artwork, rather than the tablet bottom. This avoids the requirement that the artwork be precisely aligned with the bottom of the tablet.



Using the Digitizer

Vision-Pro responds predictably to the four buttons on a standard four-button puck.



Button	Function	Description
Top	Corner node	Place corner node on workspace
Left	Curve node	Place curve node on workspace
Bottom	Tangent node	Place tangent node on workspace
Right	Finish	End and close contour, or create custom shapes. Double-clicking will close the contour.


The **Curve** nodes drawn by the digitizer are different from those drawn by the mouse in standard draw mode. Draw mode uses the nodes as control handles that pull at the curve as it is formed, while a curve drawn in digitizing mode will pass directly through the nodes as they are placed.

Button Combinations

Certain button combinations may be used to form basic shapes. Place two Corner nodes to form the opposite corners of a rectangle, and then double-click the Finish button to complete the rectangle. Similarly, place two Curve nodes to form the diameter of a circle, and then double-click the Finish button to complete the circle. In addition, placing three Curve nodes and then double-clicking the Finish button will fit a circle to the three nodes. If four or more Curve nodes are placed, then a circle will be created that best fits those nodes.

PALETTES, STROKES AND FILLS


PALETTES, STROKES AND FILLS

 [Working with the Color Palettes](#)

 [Edit Color Dialog](#)

 [Shop Palette Context Menu](#)

 [Sheet Layer Palette](#)

 [Job palette](#)

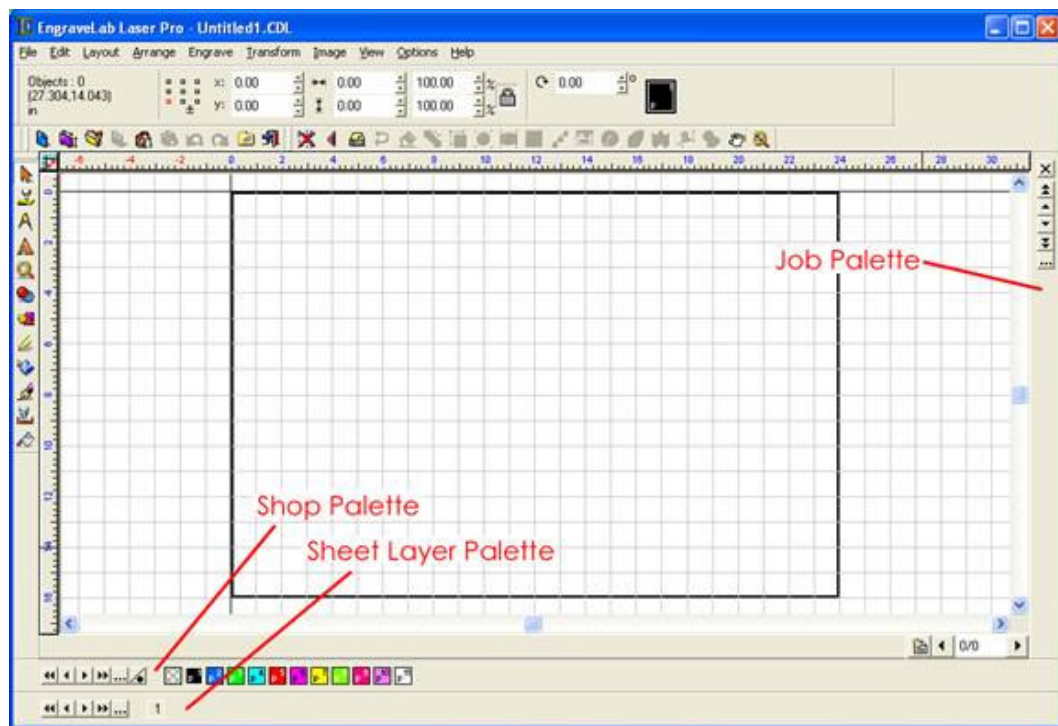
 [Line Style Tool](#)

 [Gradient and Pattern Fills](#)

WORKING WITH THE COLOR PALETTES

Working with the Color Palettes

The basic color palette is the Shop palette, which lists the color plates that are available for use on the workspace. The other palettes are designed as an aid for working with spot colors, particularly with respect to foils. By default, color palettes are docked at the edges of the Vision-Pro workspace, as indicated in the following screenshot.



Though docked, a palette may be "undocked" by clicking-and-dragging the palette away from its docked position. The palette may then be said to be "floating" over the workspace. Alternatively, double-clicking a palette will toggle its position between docked and undocked.

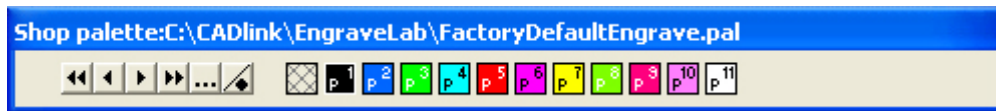


In addition, Vision-Pro also has the functionality to open stand-alone **Manufacturer palettes**. Specific color plates may then be dragged from a manufacturer palette and added to the shop palette. In this manner, the Shop palette may be quickly customized to include the most frequently used color plates. Manufacturer palettes are discussed later in this chapter.

Shop palette

Shop palette

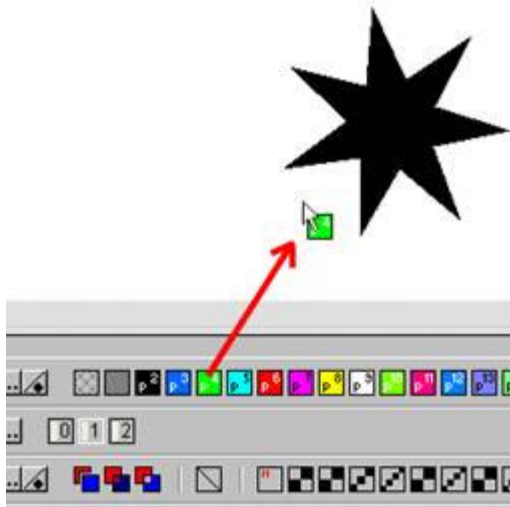
The default location of the **Shop palette** is along the bottom of the workspace, and it is commonly referred to as simply the **color palette**. The Shop palette contains all the color plates that are currently available for use on the workspace.



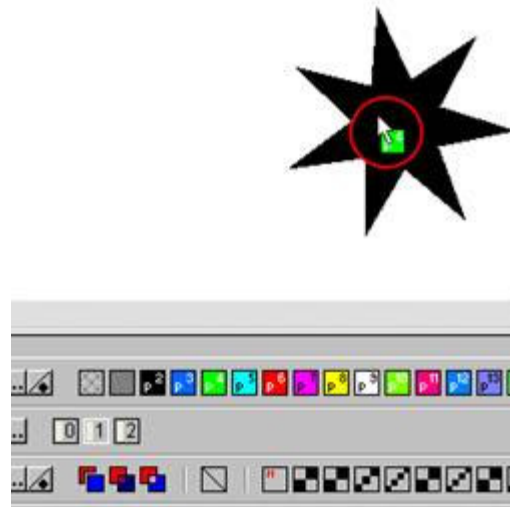
Left-clicking a color plate will set the default fill color for new shapes, as well as set the fill color of any currently selected shapes. To change a shape fill color without changing the default fill, color plates may be dragged-and-dropped onto a shape, as per the following steps:

1. Left-click and drag the color plate away from the shop palette.
2. As the cursor is moved, it will appear as if a small color plate were being dragged.
3. Hold the cursor over a workspace shape and release the mouse button.
4. The shape will now be assigned that color.

The following screenshots demonstrate this drag-and-drop operation:



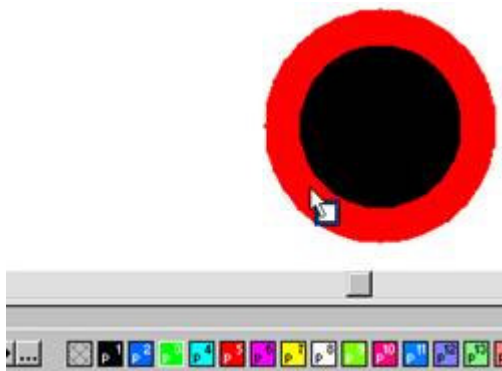
Click and drag the color



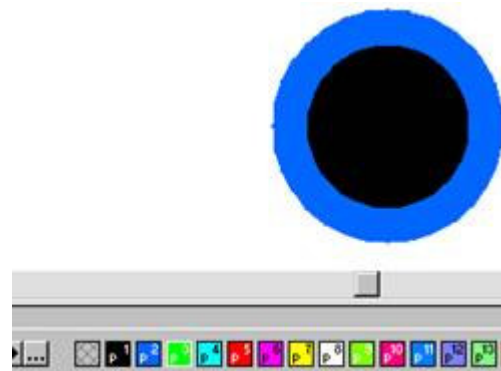
Release mouse button when cursor is over object

Changing the stroke color

Right-clicking a color plate will set the default line style color for new shapes, as well as set the line style color of any currently selected shapes. As with fill colors, color plates may be dragged-and-dropped onto the line style of a shape. When holding the color plate over the line style of a shape, the dragged color plate will appear to be hollow. This indicates that releasing the mouse button will change the line style color of the shape.



Dragging color plate. When over the shape line style, the plate appears hollow.

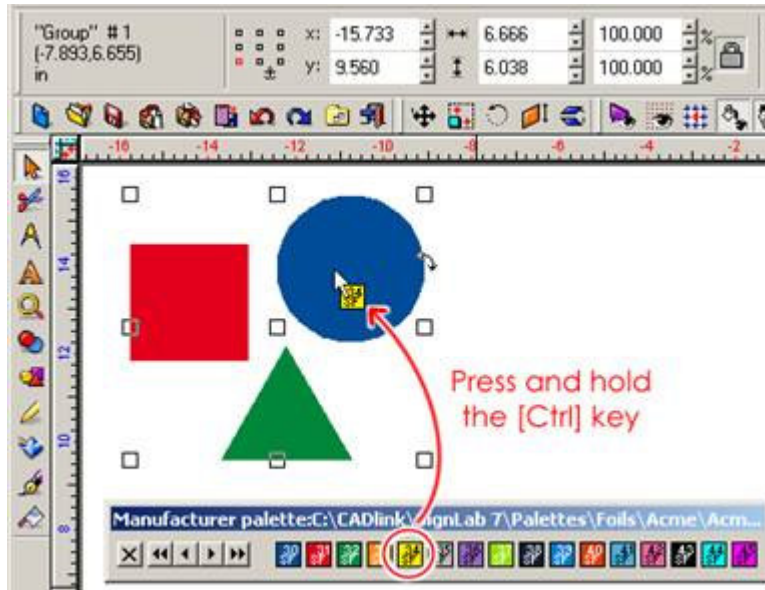


Release the mouse button, and the line style color is changed.

Note: By default, workspace shapes have no line style. For more information, please refer to the Line Style tool (later in this chapter).

Changing the fill color of grouped shapes

Dragging-and-dropping a color plate onto a collection of **grouped** shapes will set all of the shape fills to that color. However, pressing the **[Ctrl]** key will allow the color to be dropped onto a single shape within that group.



For the grouped shapes, press and hold the **[Ctrl]** key when dropping the color onto the circle, and only the circle fill will be changed.

Changing the order of color plates

To change the order of the color plates within the Shop palette, a given color may be dragged-and-dropped onto a different location of the palette. The color will be inserted at the new location, and colors to the right of that color will be shifted to the right.



Magenta plate is dragged-and-dropped into new location Magenta plate is inserted in new location

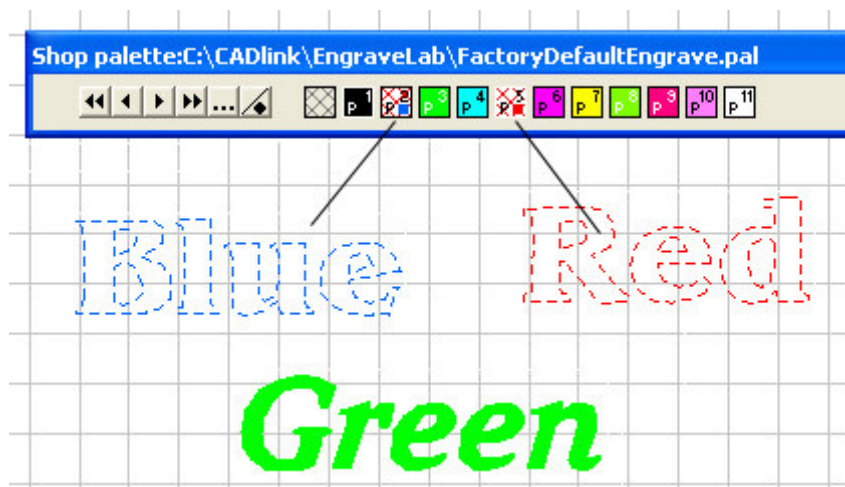
These basic rules for dragging-and-dropping plates also apply to the other color palettes. Special cases of this functionality will be discussed within the relevant sections.

Modifier Keys and Color Plates

When either left-clicking or right-clicking a color plate, additional functionality is available by holding the **[Shift]**, **[Control]**, or **[Alt]** keys. The following table summarizes these modifiers:

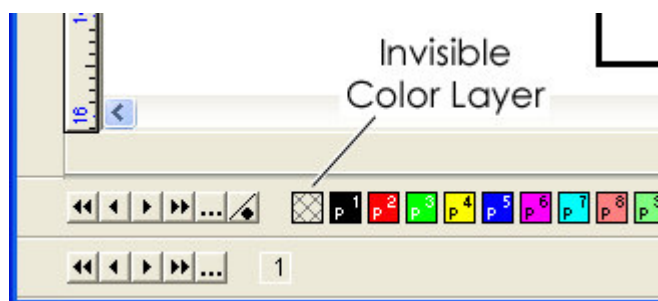
Action	Result
Left-click	Set fill color of current object
Right-click	Set line style color of current object
[Shift] + Left-click	Include all objects of that fill color in current selection
[Control] + Left-click	Disable the color plate. All objects with that fill color will appear as dashed outlines on the workspace.
[Alt] + Left-click	Disable all color plates, except for the plate that was clicked

For example, holding the **[Control]** key and clicking a palette color will toggle the "active" status of that color plate. Objects that have inactive colors will not be editable.



The Invisible Color Layer

At the far-left of the Shop palette is the **Invisible Color Layer**, which is used to indicate the absence of color for either an object fill or line style. The Invisible Color may be applied to objects like a regular palette color.



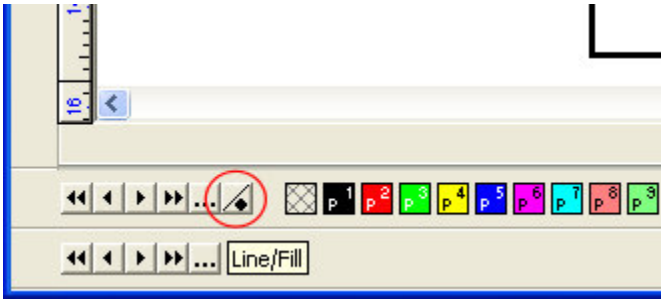
When applied as a fill color, the object will be reduced to the sum of its thick line attributes, which is useful for creating cutting paths.

Where applied as a line style color, the object will effectively have no thick line attribute.

The Line/Fill Selector Button

Vision-Pro 7 Doc Files



At the left of the Shop palette is the **Line/Fill Selector** button, which is used to toggle between **Fill** mode and **Line** mode.



If the **Fill** mode is selected, then left-clicking a color plate will set the fill color of a selected shape, whereas right-clicking will set the line style color.

If the **Line** mode is selected, then left-clicking a color plate will set the line style color of a selected shape, whereas right-clicking will set the fill color.

This behavior is summarized in the following table:

Button	Mode	Left-click	Right-click
	Fill	Set the fill color	Set the line style color
	Line	Set the line style color	Set the fill color

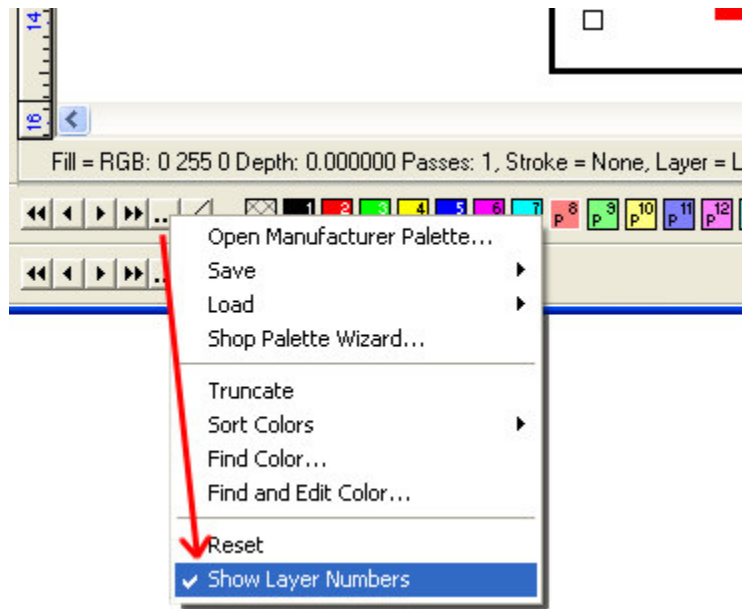
The Halftone palette also has a **Line/Fill Selector** button, which operates in similar fashion for Knock Out, Overprint, Overlap, Primers and Halftones.

Color plate labels

Each plate on the Shop palette is indexed according to the order of colors in the palette.

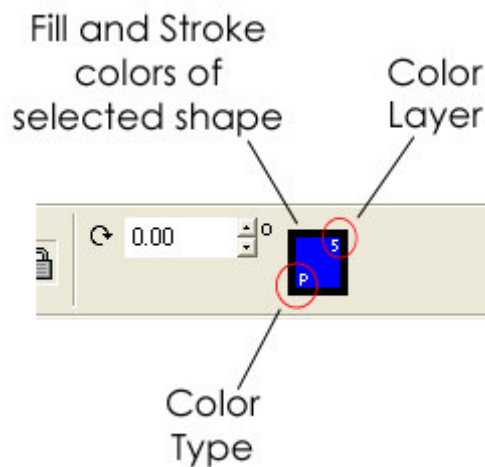


To hide these labels, uncheck the **Show Layer Numbers** item from the palette context menu.



Note: The display of color plate labels may also be toggled using the **Layers On / Off** option in the **General Preferences** dialog.

When an object is selected, its color plate is shown on the SmartBar, and the Color Layer is visible within the plate. In addition, each color has a letter that identifies its color type: Process (P), Spot Foils (SF), or Spot Color (SC).



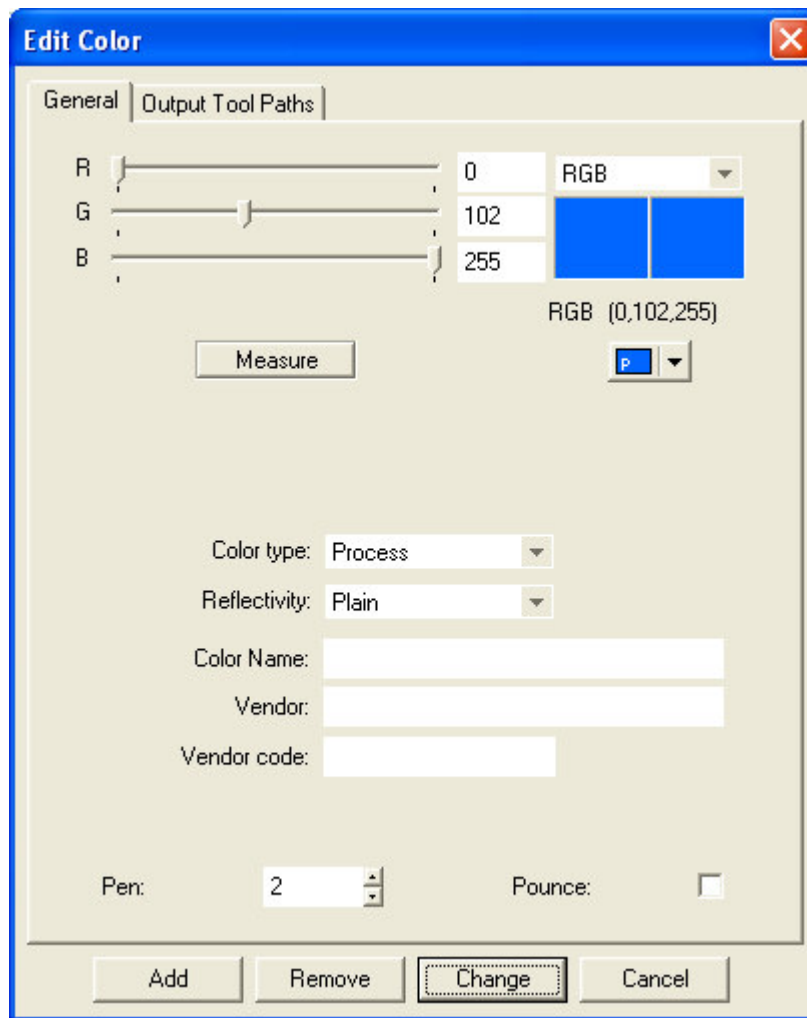
Note: When cutting objects, the cutting sequence is determined by the database order. Exceptions to this order may be made by using the **Sort** dialog, or the **Cut by Color** feature.

EDIT COLOR DIALOG

Edit Color Dialog

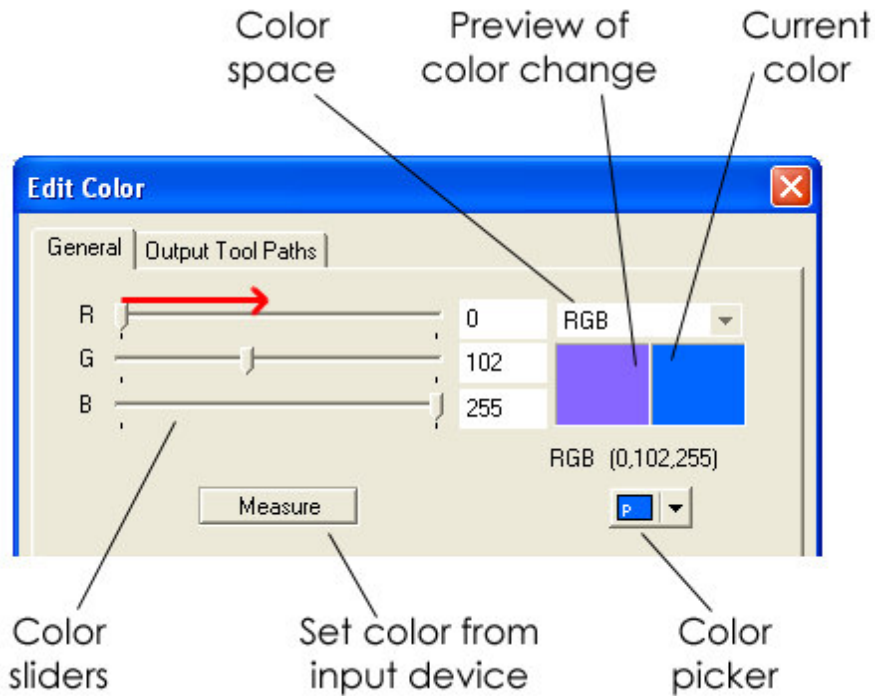
The **Edit Color** dialog is opened by double-clicking a color plate in the Shop Palette, and there are two tab pages of controls on this dialog: **General** and **Output Tool Paths**.

The main controls of the **Edit Color** dialog are within the top third of the dialog. These controls are used to indicate the specific color value, its color space (rgb, cmyk, etc.), and how the color should appear on the workspace. On the **General** tab, there are additional controls that are used to indicate the type of color (process, spot color, spot foil), and the manufacturer of this color. The **Output Tool Paths** tab has controls that allow each color to be associated with a specific cutting depth, which is used when outputting to a cutting device that supports depth.



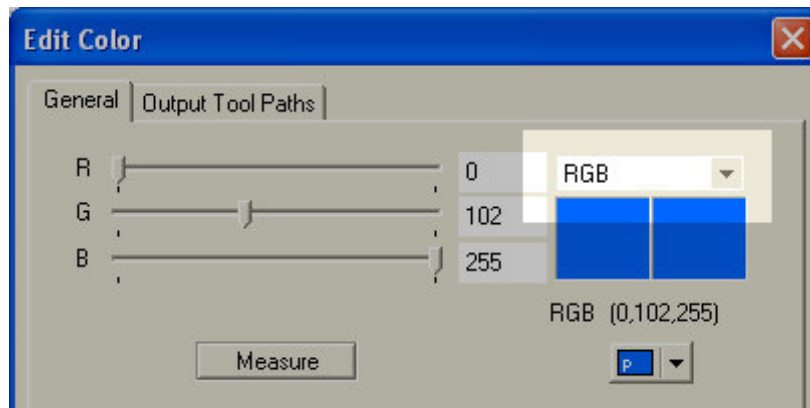
Setting the Color Value

The color sliders indicate the specific color value according to the **Color Space** setting (RGB, CMYK, etc.). There are three methods of changing the color value: 1) adjust the color sliders, 2) choose a color from the color picker, or 3) click the **Measure** button to read a color from a color measurement device. When the color value is adjusted, it will be previewed next to the current color. The RGB value of the new color is below the preview.



Color Space

The **Color Space** may be chosen from the drop-list at the top-right corner of the **Edit Color** dialog. The choice of **Color Space** will determine the colorants used to define the color.



RGB

Red, Green and Blue (RGB) is commonly used in additive color mixing. For example, a computer monitor is designed to emit red, green and blue (RGB) light, which combines to form the desired color.

CMY

Cyan, Magenta, and Yellow (CMY) is commonly used in subtractive color mixing. This sort of mixing works on the principle that an external light source will be required to view the image, such as an image on a white sheet of paper.

CMYK

Cyan, Magenta, Yellow, and Black (CMYK) is an extension of the CMY model, where it is observed that three equal portions of CMY colorants may be replaced with a single portion of **Black (K)** colorant.

HLS

The **Hue, Lightness and Saturation (HLS)** model identifies colors according to the following parameters:

- **Hue** is the visual perception of a specific color, such as red, yellow, violet, or yellow-brown.
- **Lightness** is the appearance of a color in terms of how white or black it appears.
- **Saturation** is the perceived richness of a color in consideration of its intensity. For example, as a color falls under increasing levels of shadow, the color appears darker, even though its saturation remains constant.

LAB

The **L*a*b*** color space, otherwise known as CIELAB, was promoted as a standard in 1976 by the International Commission on Illumination (CIE). The purpose of L*a*b* was to standardize the practice of predicting color differences, where previously there had been as least twenty alternative formulas in use to account for color differences in production workflows.

The L*a*b* color space is used to maintain color consistency between devices used in color reproduction workflows. As such, the L*a*b* color space is a superset of both RGB and CMYK color spaces. The “L*” component refers to the Lightness, the “a*” component varies from Green to Red, and the “b*” component varies from Blue to Yellow.

Color Type

The **Color Type** is set on the General tab. In order to use Color Types effectively, the following printing methods should be understood:

The most commonly understood printing method is the process color printing of CMYK inks, where the colors Cyan (C), Magenta (M), Yellow (Y), and Black (K) are combined in varying proportions to produce the hues of a graphic image. The number of inks actually depends upon the type of printer, but the methods are similar.

A second printing method is of thermal resin foils, where each hue is represented by a foil cartridge that is loaded into the printer as required. Each foil color is printed in separate passes over the media, and two foils can be combined to create duotones. Like printing with CMYK inks, a thermal printer can also combine CMYK foil cartridges (four separate passes) to produce the hues of a graphic image.

A third printing method is of color separations, where each color in the graphic image is printed separately. Typically, a color separation would be prepared for each of the CMYK components of a graphic image, and an additional color separation would be created for each Spot Color in the image. Once all of the color separations have been prepared, they are combined in an offset printing process to recreate the original image.

Having summarized the preceding printing methods, we can now explain how Color Types in the Shop Palette are used:

- **Process color (P):** A hue that is printed by combining CMYK inks. In addition, a Process color can be printed by a thermal printer using CMYK foils. When printing color separations, a Process color is included with the CMYK components of the graphic image.
- **Spot Foil (SF):** A Spot Foil represents a specific foil color cartridge that is printed using a thermal printing process. Each foil color cartridge is a distinct hue, such as Kelly Green or Sapphire Blue, which are physically loaded into the printer as required. In order to make greater use of a given foil, its Tint value can be varied to create different shades of the color.
- **Spot Color (SC):** A Spot Color represents a distinct hue that is used when printing color separations. Each Spot Color represents its own color separation that is defined by its LAB value. For process color printing, the Spot Color will be incorporated into the graphic image using CMYK inks. For thermal resin foils, the Spot Color will be incorporated into the graphic image using CMYK foils.

The main distinction between Process color and Spot Foil printing is that Process colors are created by combining inks, whereas each foil represents a physical cartridge that is loaded into the printer as required. As such, it should be noted that “process white” is the absence of CMYK inks, and “spot foil white” is an actual foil that is applied to the media.

Reflectivity

The **Reflectivity** can be described as being either Plain, Reflective, or Metallic. This setting is used to describe the type of vinyl that is being cut. Also, some spot colors may be described as being either reflective or metallic.

Color Name

When the cursor is above a Shop Palette color, the Color Name will appear within the tooltip.

With respect to Spot Foils, the Color Name is assigned by the manufacturer as a reminder of the hue that will be generated by the foil. In addition, the Vendor and Vendor Code are assigned by the manufacturer for reference purposes.

When creating a new spot foil, adding the Color Name is necessary because the name is used as a reference during the printing process. When a tint of a Spot Foil is created, the tint will inherit the Color Name, and the tint value will be appended to the name.

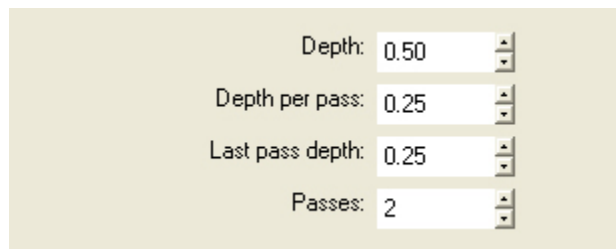
When creating a Spot Colors, the Color Name must be defined because the name is used as part of the lookup process for LAB values. Similarly, if a Process color is defined in terms of a LAB value, then its Color Name must also be defined for reference purposes.

Pen setting

Where multiple pens are available, the **Pen** field is used to indicate the index position that should be used with the given color.

Output Tool Paths

On the **Output Tool Paths** tab, a cutting depth can be assigned to each color. This allows the color of workspace objects to be a visual representation of their various cutting depths. In addition to the depth, setting the **Depth per pass** will calculate the number of passes that will be performed. Alternatively, set the number of **Passes**, and the **Depth per pass** will be calculated.



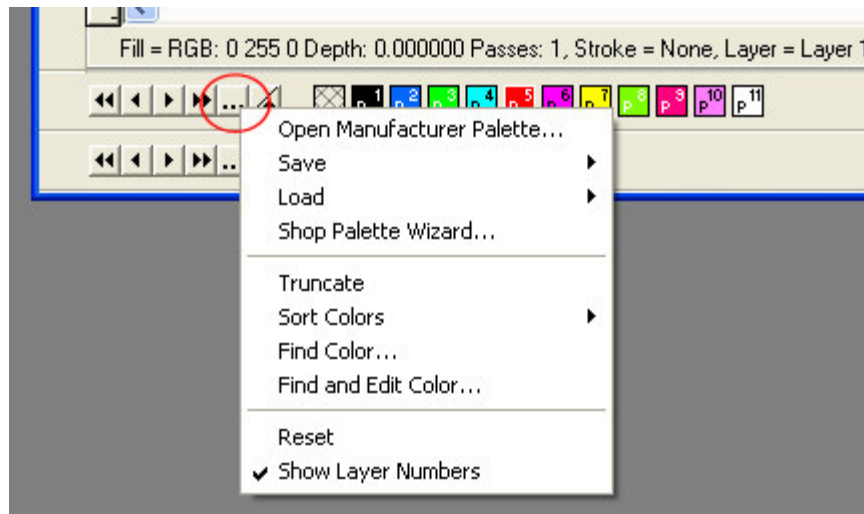
Depth:	0.50
Depth per pass:	0.25
Last pass depth:	0.25
Passes:	2

SHOP PALETTE CONTEXT MENU

Shop Palette Context Menu

With the exception of the Manufacturer palettes, all of the color palettes have context menus that are accessed by right-clicking within the bounds of the palette. The context menus may also be accessed by clicking the context menu buttons that are on each palette.

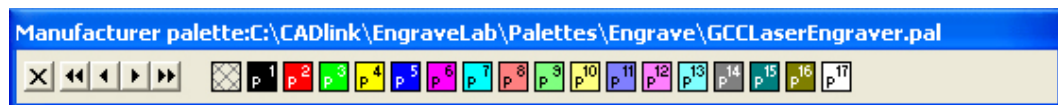
The context menu for the Shop palette appears as follows. The available menu items are described in the following sections.



Open Manufacturer Palette

Open Manufacturer Palette

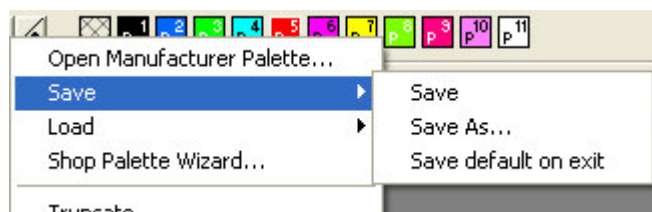
The manufacturer palettes are composed of commonly used color plates, which are stored in a Palette (.PAL) file format. More than one manufacturer palette may be open at once, and colors from different palettes may be applied to the workspace objects.



Color plates may be dragged from the manufacturer palette and "dropped" onto workspace objects. In so doing, the dragged color will be added as a new color plate at the far-right of the Shop palette. If the manufacturer palette is later closed, then the added color will remain as part of the Shop palette, which is then saved with the workspace file.

Color plates from a manufacturer palette may also be dropped onto the Shop palette, which will add a new color plate for that color at the far-right of the Shop palette.

Save



After a custom palette has been prepared with frequently used color plates, use the **Save As** item to save the palette for later use.

The **Save As** command is used to save the current Shop palette settings as a new Palette (.PAL) file. Typically, saving the Shop palette is desirable after it has been customized with commonly used color plates. The saved

palette may then be opened like a manufacturer palette, or it may be set as the default palette that is loaded with each new Vision-Pro workspace.

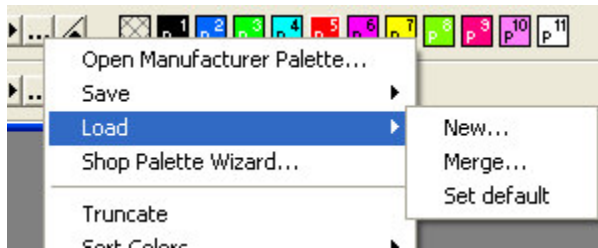
If the **Save default on exit** item is enabled (a checkmark should appear next to the item), then all changes to the Shop palette will be saved when Vision-Pro is shut down. For example, choosing Exit from the File menu will cause the palette settings to be saved.

Note: Creating a new Vision-Pro workspace will not cause the palette settings to be saved. Instead, use the **Save As** command to save such settings before creating a new workspace.

Load

During the installation of Vision-Pro, a “**Palettes**” directory was created within the Vision-Pro installation directory. The **Palettes** folder contains color palettes for a variety of manufacturers, and each palette can be identified by its *.PAL file extension.

To load a Vision-Pro color palette, choose **Load New** from the **Shop Palette** context menu. This will replace the current Shop palette configuration.



The **Merge** item is used to select an existing Palette (.PAL) file, which is then appended to the Shop palette. Use this command to combine the color plates of two-or-more commonly used palettes.

When Vision-Pro is launched, a standard palette is loaded that has a selection of commonly used process colors. Use the **Set default** item to specify an alternate palette that should be loaded instead of the standard palette. For example, the default may be set to a custom palette that was previously saved.

Note: After installation, Vision-Pro will use the "Factory Default.pal" file.

Shop Palette Wizard

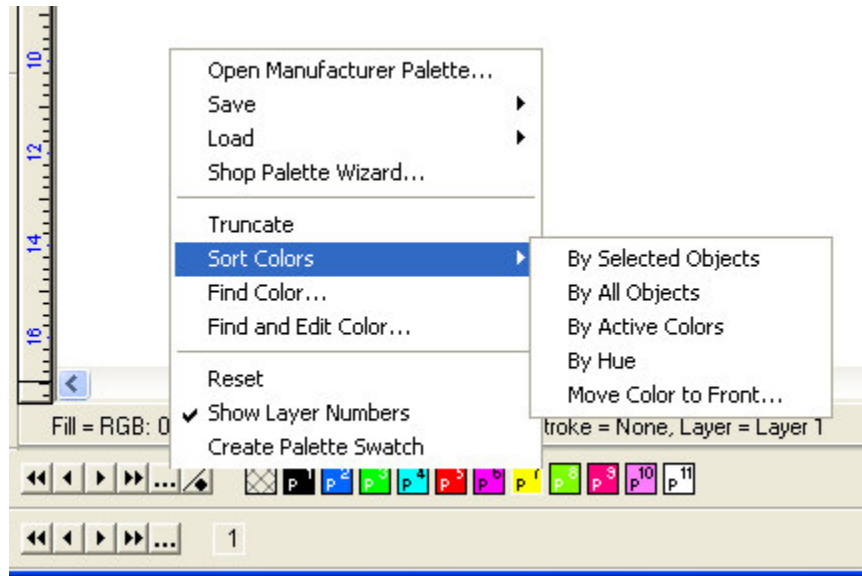
The Shop Palette Wizard is a visual browsing tool that is used to create a custom palette by browsing and selecting from the palettes that were installed with Vision-Pro. Colors from more than one palette may be combined, and there is no restriction on creating a palette that has colors from different manufacturers.

Truncate

The **Truncate** command will remove all color plates that are to the right of the currently selected color plate, with the exception of any colors that are currently being used on the workspace.

Sort Colors

The **Sort Colors** flyout is used to rearrange the Shop palette color plates. Sorted colors will be moved to the front, which is the far-left of the Shop Palette.



By selected objects	Sort the colors of the currently selected objects.
By all objects	Sort the colors of all objects on the workspace.
By active colors	Sort active colors to the front of the Shop Palette, and sort inactive colors to the end.
Move Color To Front	Select from an alphabetical list of colors and move that color to the front of the Shop Palette. Only Spot Color and Spot Foils are listed.

Find Color

The **Find Color** command is the same as the **Move Color To Front** command. The **Move Color To Front** dialog is used to select from an alphabetical list of colors and move that color to the front of the Shop Palette. Only Spot Colors and Spot Foils are listed.



Find and Edit Color

Select from an alphabetical list of colors and open that color in the **Edit Color** dialog. Only Spot Colors and Spot Foils are listed.

Reset

The **Reset** option will reload the Shop palette, discarding any changes that may have been made to the color plates. The standard Shop palette will be loaded, unless it has been specified that a default palette should be loaded (see **Load default at startup**, earlier in this section).

By using the **Reset** option, the original palette colors may be restored without deleting the objects that are currently on the workspace.

Show Layer Numbers

The **Layer Numbers** refer to the Shop palette color plates, where each color plate is assigned both an index number, as well as a letter designation that indicates the correction mode for that color. If the **Layer Numbers** option is set to **Off**, then the index numbers and letter designations are hidden.

SHEET LAYER PALETTE

Sheet Layer Palette

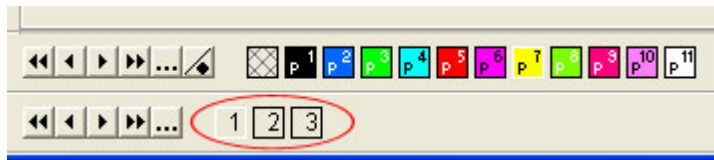
The workspace area is a visual display of the shapes and text that have been prepared for printing and/or cutting. A **Sheet Layer** is a subset of the workspace, where Vision-Pro can maintain multiple sheet layers within the same workspace. If only one layer exists, then all shapes and text will belong to that layer. Where more than one sheet layer is available, shapes and text may belong to different layers.

When sending output to a device, a given layer may be specified, such that only the objects on that layer are output.

Placing objects on layers

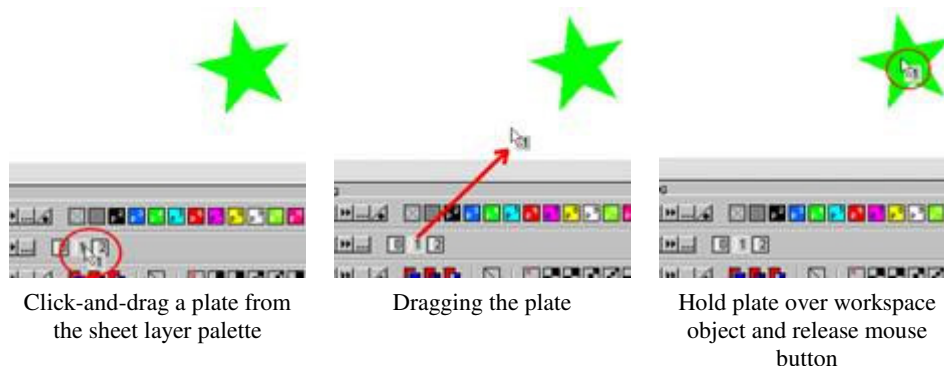
Placing objects on layers

By default, shapes are placed on sheet layer 0 (zero). The following screen shot shows a workspace where there are three layers present.



For selected objects, clicking a layer plate will place those objects on the layer. Alternatively, an object may be assigned to a layer as follows:

1. Left-click and drag the layer plate away from the Sheet layer palette
2. A small square will appear to be dragged by the cursor
3. Hold the dragged square over a workspace shape, and then release the mouse button
4. That shape will now belong to the given layer

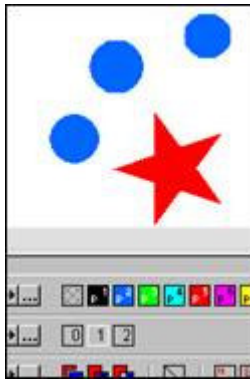


Selecting All Shapes on a Layer

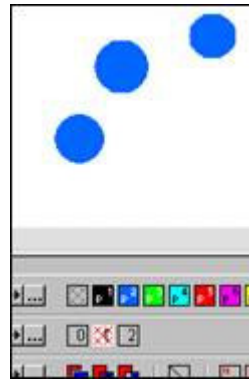
All shapes on a given sheet layer may be selected by holding the **[Shift]** key and left-clicking the layer plate. The shapes will be added to the current selection.

Disabling Sheet Layers

A sheet layer may be disabled by holding the **[Control]** key and left-clicking the layer. The layer plate will be superimposed with a hatch pattern, and all objects on that layer will become hidden on the workspace.



A star on layer 1, and three circles on layer 2.

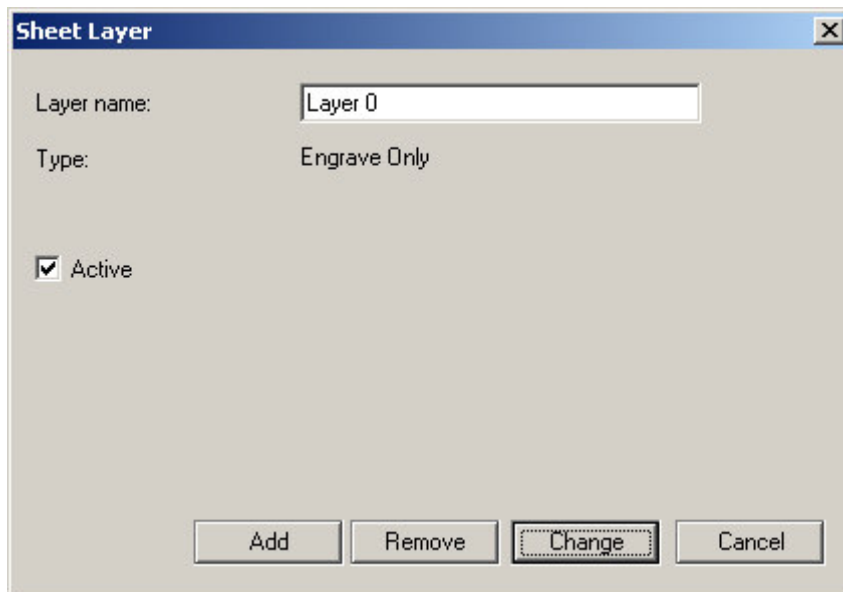


After Control-clicking the layer 1 plate, the layer becomes disabled. Notice that the star is no longer visible.

For a disabled sheet layer, holding the **[Control]** key and left-clicking that layer will enable it again.

Sheet Layer Properties

The properties for a sheet layer may be edited by double-clicking the sheet layer plate. The **Sheet Layer** dialog will open.



Active

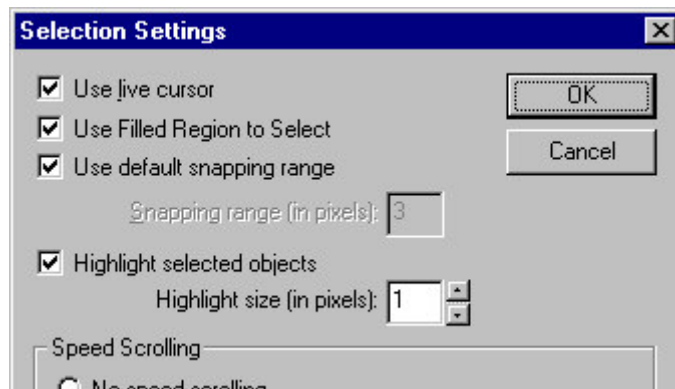
The **Active** option specifies whether this sheet layer is enabled or disabled. This option is an alternative to Control-clicking the layer, as described in the previous section.

Type

The Type of layer is “Engrave Only.”

Highlight selected objects

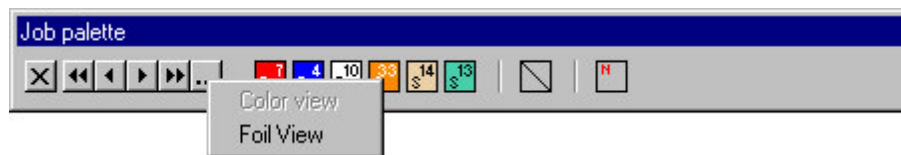
For shapes that are on a “Engrave Only” layer, those shapes will be given a **red** highlight. These highlights are intended as a quick visual cue to confirm the nature of a given shape. However, to enable or disable these highlights, use the “**Highlight selected objects**” option on the **Selection Settings** dialog.



JOB PALETTE

The **Job Palette** shows the colors that are currently being used on the workspace. This palette is also used to perform global color substitutions, such as instantly replacing all shapes of a given color with another color. For example, where different cutting depths have been assigned to a series of colors, performing a color substitution is a quick means of reassigning the cutting depth.

By default, the Job palette shows the **Color View**, which lists all the color plates, primer colors and halftones that are currently in use on the workspace.



The **Foil View** will cause the Job Palette to list only Spot Colors or Spot Foils, which serves as a quick summary of the spots that will be used when printing a job.

Performing a Global Color Substitution

The Job Palette can be used to substitute one color for another, and this substitution will take place throughout the entire workspace. For example, suppose that there are several **RED** shapes on the workspace, which need to be changed to **ORANGE**.

- 1) From the Shop Palette, left-click and drag the **ORANGE** color. The cursor will appear to be dragging the color plate.
- 2) Move the cursor to the Job Palette, and position the **TIP** of the cursor over the **RED** color.
- 3) Release the left mouse button, and all RED shapes will now be ORANGE.

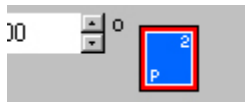
LINE STYLE TOOL

Line Style Tool



The **Line Style** tool is used to apply either a hairline stroke or “thick line” effect to workspace shapes.

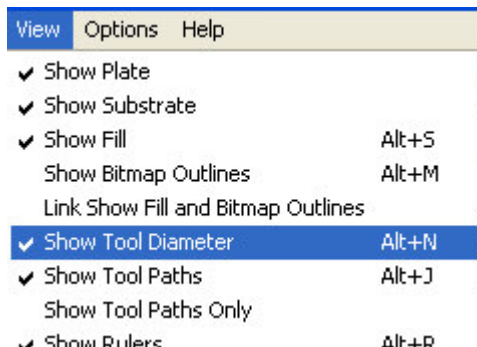
When a shape is selected, the colors of its fill and line style are visible from the SmartBar. For example, the following screenshot of the SmartBar shows that the current fill color is blue (process color plate 2). The red outline around the blue square indicates that the line style color is red.



To change the line style color for a shape, right-click a color plate in the Shop palette.

Note: For more information about changing colors, refer to the Shop palette, described earlier in this chapter.

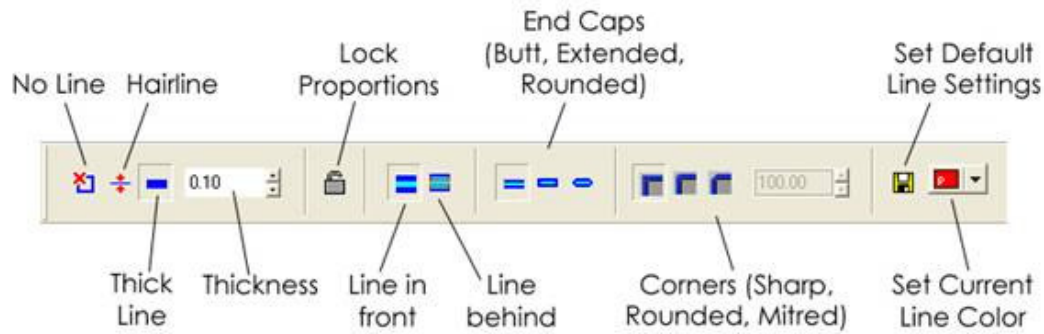
In cases where workspace shapes should have thick line styles, but none are visible, verify that the **Show Tool Diameter** option is active (under the **View** menu).






To add a line style to a selected shape, choose **Line Style** from the **Stroke and Fill Tools** flyout.



The SmartBar controls will appear similar to the following:



The line style is selected at the far-left of the SmartBar, as follows:

Button	Line Style	Comment
	No line	Removes any previously applied line style.
	Hairline	Creates a 1-pixel wide line. This line cannot be cut, but it may be applied as a line stroke.
	Thick Line	This is initially zero, so the line will not be visible until the Thickness field is incremented.

At the far-right of the SmartBar, the color picker may be used to select the line style color. In addition, left-clicking a Shop palette color will also change the line style color.



For the Thick Line attribute, parameters of the line may be set from the SmartBar.



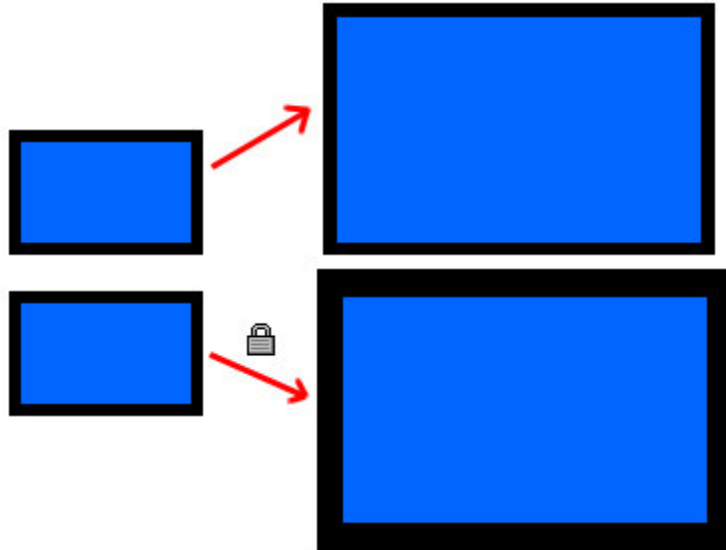
Click the “**Set Default Line Style**” button to store the current SmartBar settings for reuse. However, please note the line color will not be stored as part of this default.

Lock Proportions

If the **Lock Proportions** option is enabled, then scaling the shape will cause the stroke thickness to be scaled in proportion.



For example, the following two rectangles have been scaled by 200%. However, the yellow shape has a stroke with **Lock Proportions** enabled, such that its stroke has also been scaled by 200%.



Line Above

By default, a thick line will actually overlap the contour of the shape. If the **Line In Front** option is enabled, then the line style will partially obscure the shape. Alternatively, the **Line Behind** option will cause the line style to be partially obscured by the shape.



Line In Front

The line style will appear as if it were above the shape.



Line Behind

The line style will appear as if it were below the shape.



Star with line behind the shape.



Star with line in front. Note that the star shape is partially obscured by the line style.

End Styles

There are three different line styles, which are used to modify the termination of open paths:



Butt End cap

The line style will extend only to the end of the open path.



Extended End cap

Create square end caps as terminators for an open path.



Round End cap

Perform rounding of open paths.

Corner Styles

There are three corner styles:



Sharp corner

Corners retain sharp angles as per the base object.



Round corner

Corners are rounded.



Miter corner

For a sharp corner of the original object, the corner formed by the line style may be quite steep. Use the **Miter Amount** to clip the line style according to a percentage of the line thickness.



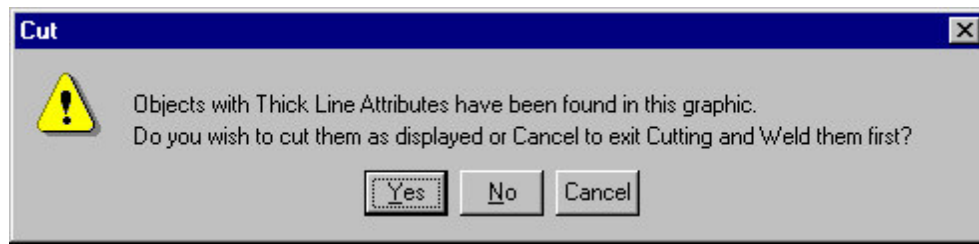
Star with line behind the shape. The Miter Amount has been set to 100% of the line thickness.

Cutting Thick Lines

When a shape with a thick line style is sent to be cut, the shape is effectively rendered as two objects (the shape as it is without a line style, and the line style itself). As such, there are two methods in which the shape and line style may be cut:

- Both the shape and its thick line style may be cut as separate objects, such that the original contour of the shape is not changed. This is useful because it helps to eliminate registration problems that might occur.
- Cut the thick line as shown, but only cut the shape where it is not obscured by the thick line. However, if the line style is "in front" of the shape, then there is a risk of a registration error (i.e. where the shape does not line up precisely with the line style).

When jobs are sent for cutting, the presence of thick lines will open the following prompt:



Select **Yes** to cut the thick lines without diminishing the size of the original contour.

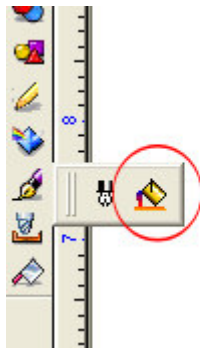
Select **No** to send the job, though thick lines will ignored.

If **Cancel** is selected, then Vision-Pro will return to the select state. At this point, it is possible to select the shape and perform a weld operation, which will convert the thick line style into a shape that is separate from the original shape.

GRADIENT AND PATTERN FILLS

Gradient and Pattern Fills

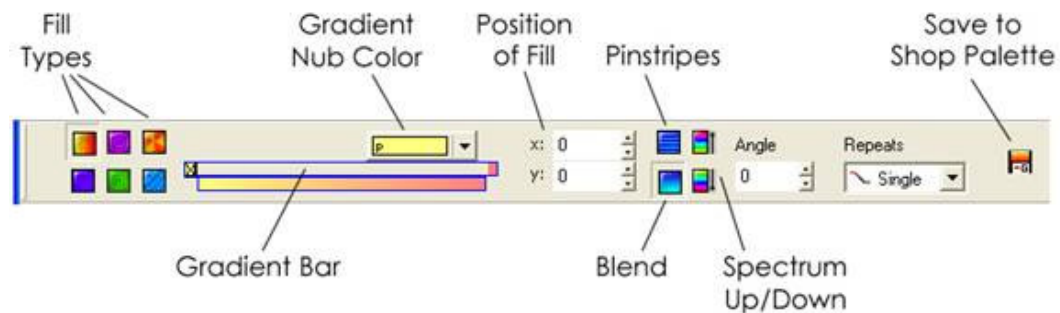
The Gradient Fill tool is available from the **Stroke and Fill Tools** flyout.



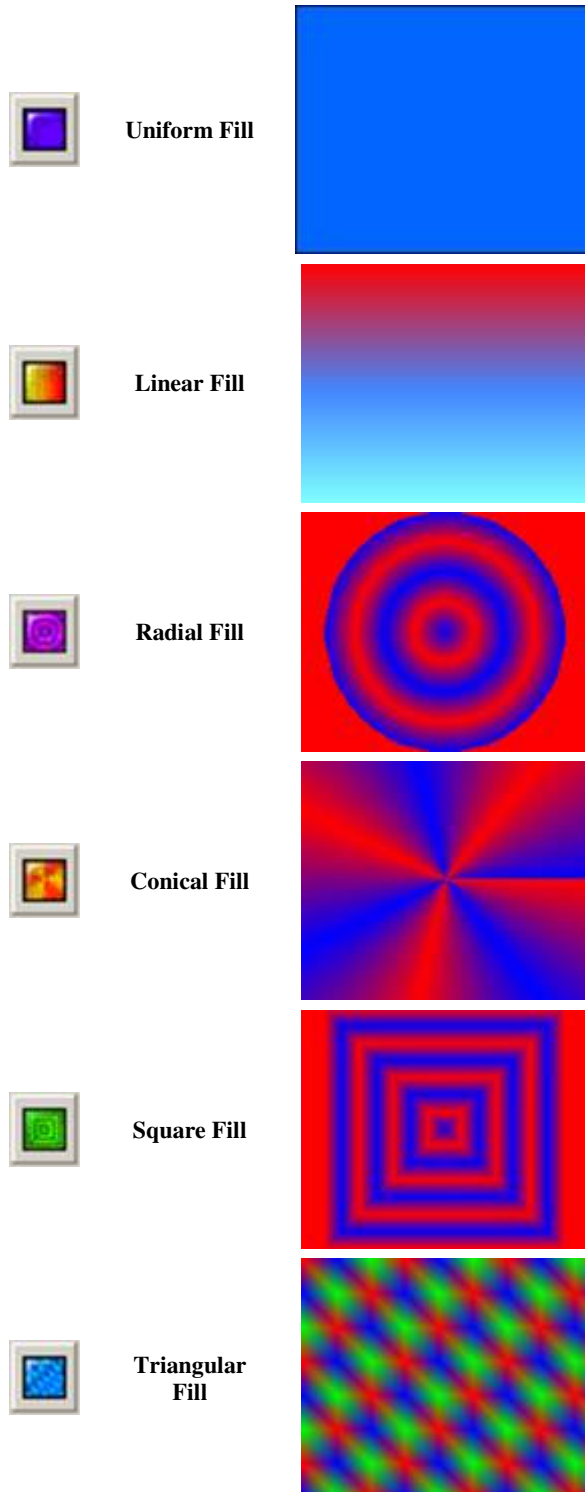
Gradient Fills

Gradient Fills

The gradient fill styles are selected at the far-left of the SmartBar.

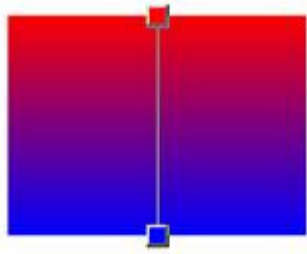


Examples of these fills are as follows:



Choosing a Fill Style

When a fill style is selected, color nubs will appear about the object on the workspace.



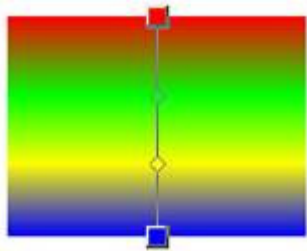
The placement of color nubs will depend on the given style. The initial color nubs will also be represented in the Gradient Bar.



The two end-nubs of the Gradient Bar are fixed, but double-clicking within the Gradient Bar will add a color nub.



The new nubs will also be shown on the workspace.



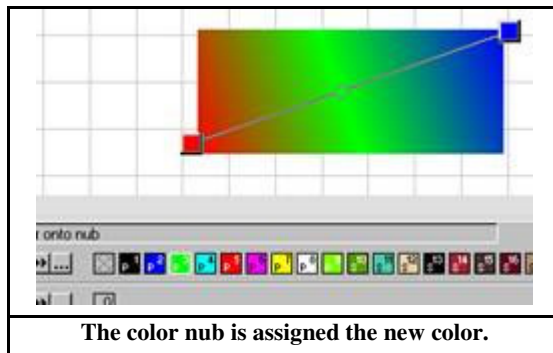
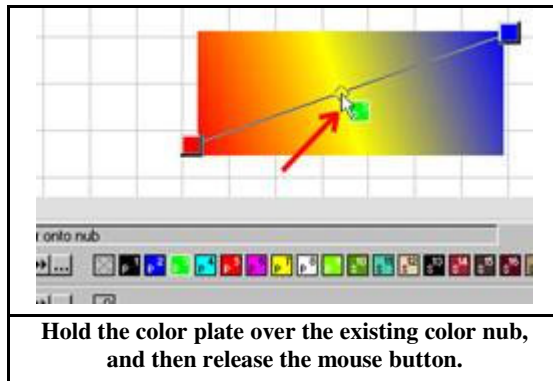
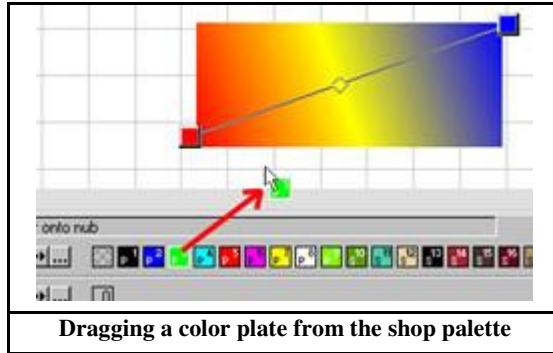
A line joins the two initial color nubs, which will indicate valid regions for creating color nubs. Double-clicking within this valid region will create a color nub.

Changing Nub Colors

On either the Gradient Bar or the workspace, a color nub may be clicked to give it the focus. Once given the focus, the nub color may be changed by clicking the color picker. The color picker is located above the Gradient Bar.

Dragging Color Plates

Color plates may be dragged from the shop palette and dropped onto a color nub. The color nub will be assigned the given color.



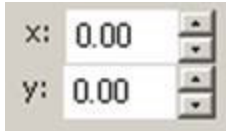
If a plate is dropped onto an area of the shape that does not already contain a color nub, then a new color nub will be created.

Deleting Color Nubs

On either the Gradient Bar or the workspace, control-clicking a color nub will delete that nub. To clear all color nubs, click the **Clear Nubs** button.

Horizontal and Vertical Position

By default, the Gradient Fill is placed at the center of the object. The **Horizontal** and **Vertical Position** fields may be used to place the gradient fill.






Gradient Angle

Dragging the color nubs may be used to adjust the angle of the fill. The Angle field on the dialog bar may also be used.





Repeats

The fill can be applied with either a Single, Sawtooth, or Wave repeat.

- | | | |
|---|-----------------|--|
|  | Single | Render the fill from the initial color through to the final color. |
|  | Sawtooth | Render the transition from the initial color through to the final color, which then repeat the specified number of times. For example, five colors with 4 repeats would display shades in the following order: 1-2-3-4-5, 1-2-3-4-5, 1-2-3-4-5, 1-2-3-4-5. |
|  | Wave | Render the transition from the initial color through to the final color, and then from the final color through (in reverse order) to the initial color. For example, five colors with 2 repeats would display shades in the following order: 1-2-3-4-5, 5-4-3-2-1. |

Pinstripe versus Blend



By default, fills have a **Blend** style.

- | | |
|---|--|
|  | The Pinstripe style will create an abrupt transition between each fill color. |
|  | Using a Blend style will create a gradual transition between each fill color. |

Spectrum Up and Down

By default, a gradient fill between two colors will only have progressive shades between those two colors. By doing so, the intervening colors of the spectrum are ignored. By clicking either the **Spectrum Up** or **Spectrum Down** buttons, the blend of colors will include these intervening spectrum colors.

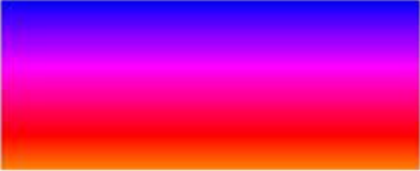
For example, consider the memory aid **ROYGBIV**, which is short for Red, Orange, Yellow, Green, Blue, Indigo, and Violet. If the gradient fill is initially between Orange and Blue, then the following is true:

Button	Button name	Resulting gradients
	Spectrum up	Orange, Red, Violet, Blue
	Spectrum down	Orange, Yellow, Green, Blue

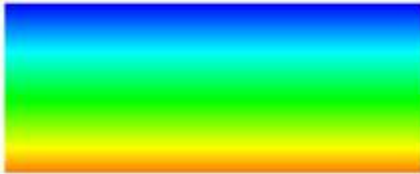
Linear gradient – Orange to Blue



Orange to Blue gradient – Clicked Spectrum Up



Orange to Blue gradient – Clicked Spectrum Down

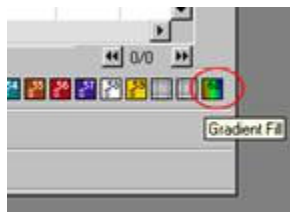


Save Fill

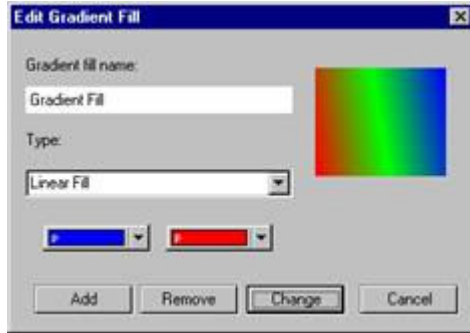
At the far-right of the SmartBar is the **Save Fill** button. When this button is clicked, the gradient fill will be saved as a new color plate and appended to the end of the Shop palette.



The gradient fill plate may then be applied like a regular palette color.



By default, the name of the plate will be "Gradient Fill." If the Gradient Fill plate is double-clicked, then the **Edit Gradient Fill** dialog will open.



The **Edit Gradient Fill** dialog may then be used to rename the fill, choose different colors for the fill, or change the type of fill.

Note: The Triangle Fill type is not available from the drop-list. The triangle gradient fill has a different Edit Gradient Fill dialog that is incompatible with the other gradient fills.

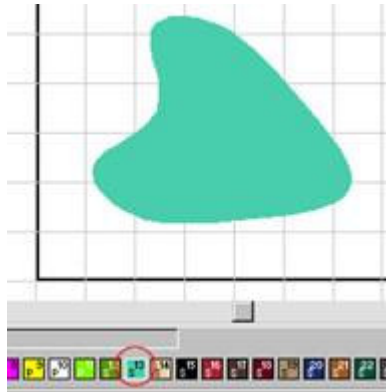
Editing a Triangle Gradient Fill

For a triangle gradient fill, the **Edit Gradient Fill** dialog behaves slightly differently than for the other fills. However, the only real difference is that there are three color pickers, which are used to select the triangle fill colors.

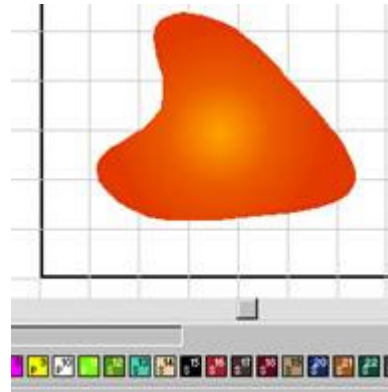


Gradient Fills and Color Layers

When a shape is applied with a gradient fill, that shape will be considered to remain on its original color plate layer, even though the shape will be rendered using the indicated fill.

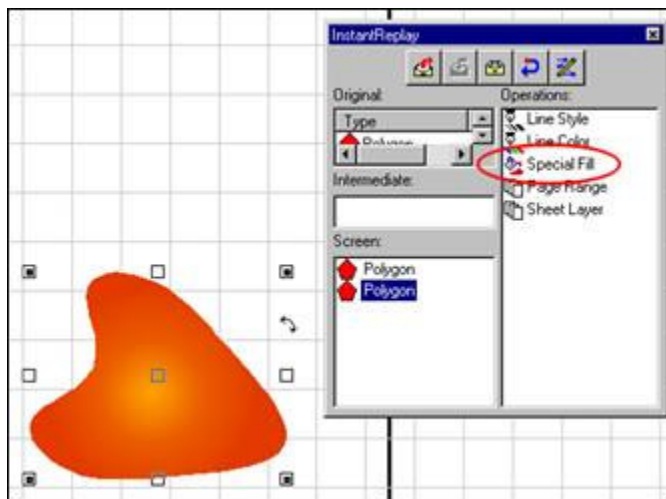


**Original shape with an aqua fill
(plate layer 13)**

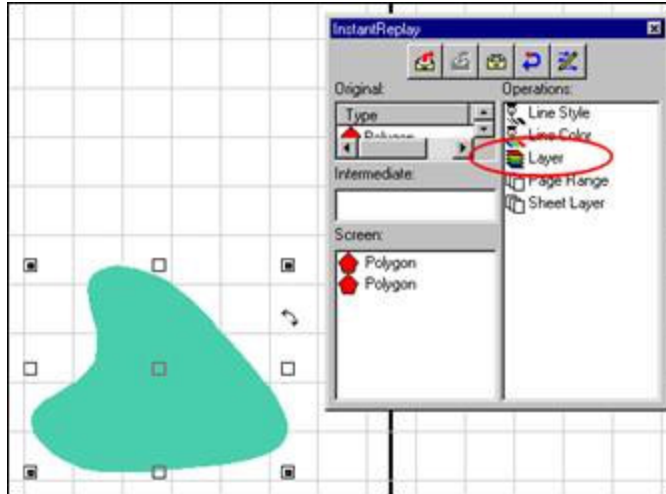


**The same shape with a spot gradient fill.
This shape is considered to be on layer 13.**

If the InstantReplay window is open, then the fill of the selected shape will be a "Special Fill" to indicate that it has a spot gradient fill.



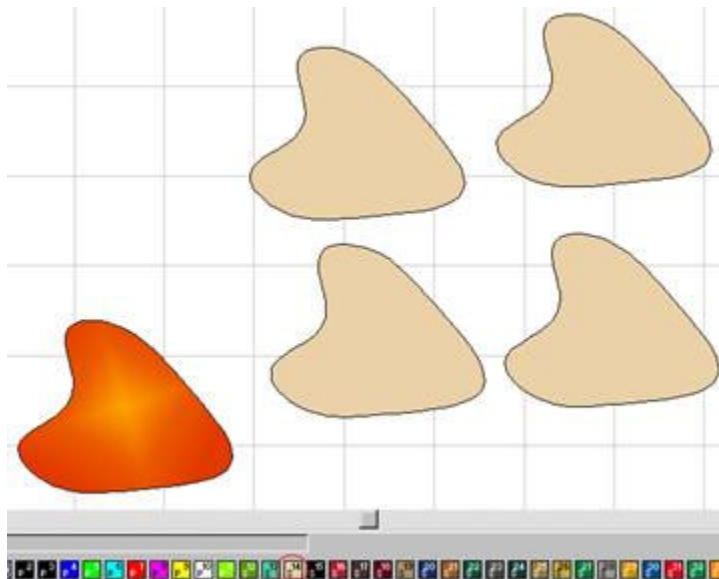
However, suppose that the "Special Fill" is selected, and then the Delete key is pressed. The gradient fill will be deleted, and the shape will have the fill of its original layer color (aqua).



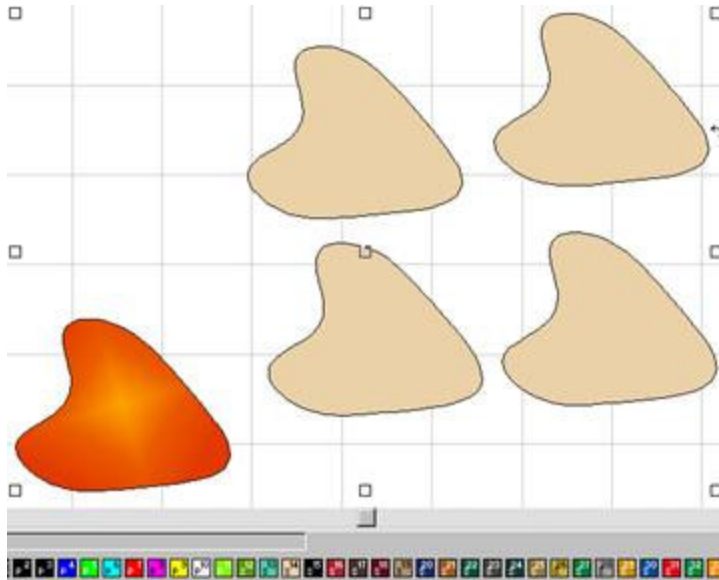
Selecting shapes by their color

As previously mentioned, Shift-clicking a color plate in the Shop palette will select all shapes that have that color fill. However, this also includes gradient fill shapes that originally had that color fill.

For example, consider five shapes that had been applied with a beige color, where one shape was then applied with a spot gradient fill.

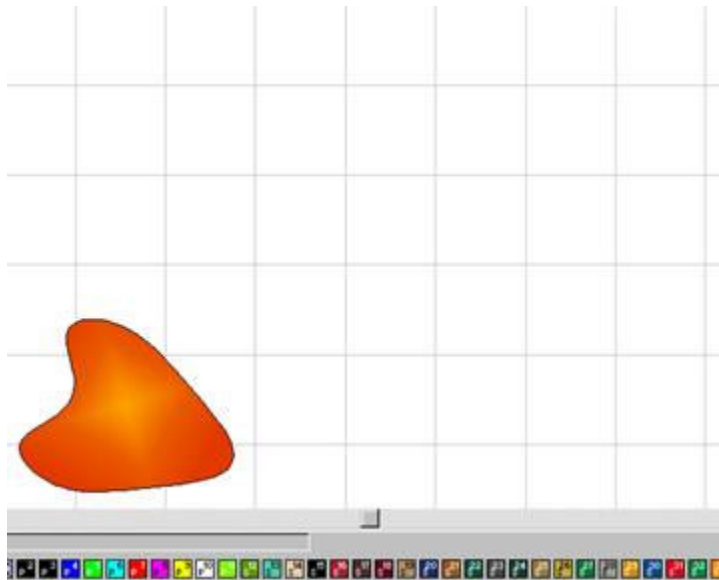


Later, it was decided that the beige colored shapes should be selected. From the Shop palette, the beige color plate was Shift-clicked, such that all of the beige shapes were selected. However, the gradient fill shape also became part of the selection, since it is considered to be on the beige color layer.

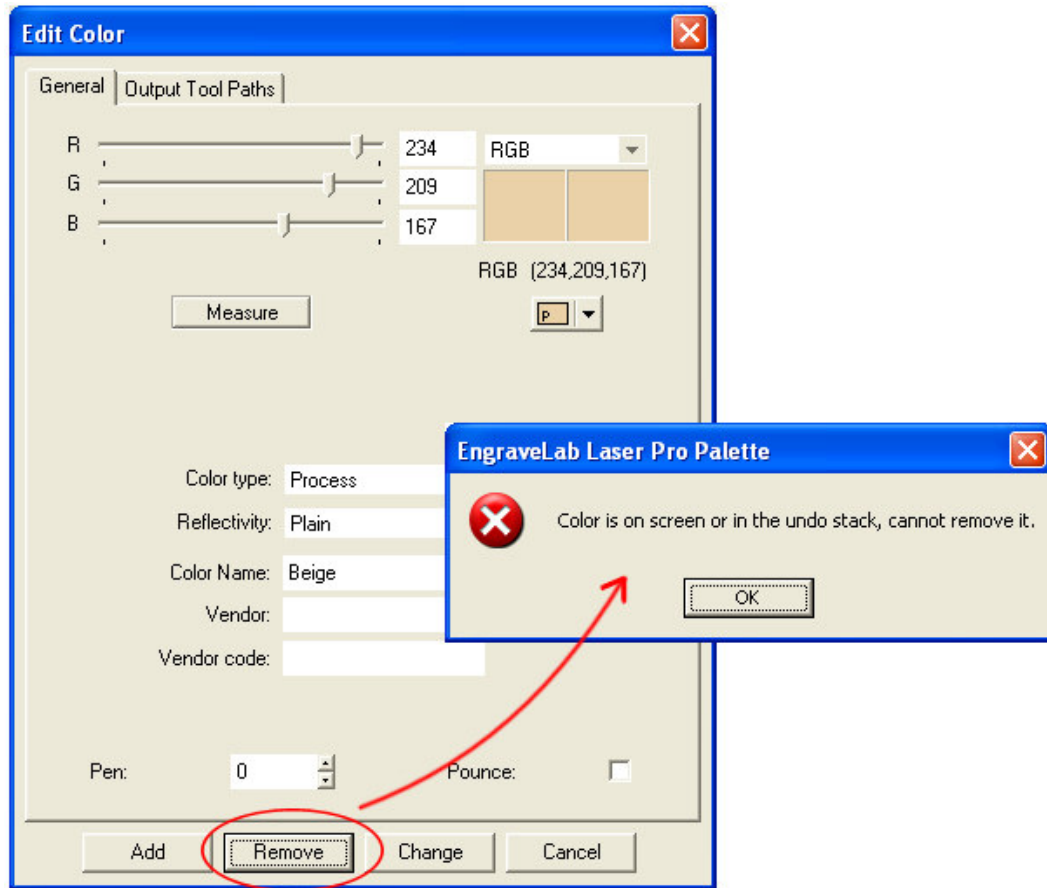


When deleting a color layer

In the previous example, suppose that the beige shapes have been deleted, and the gradient fill shape is the only remaining shape on the workspace.



By double-clicking the beige color plate, the **Edit Color** dialog will open. If the **Remove** button is now clicked, then a warning dialog will prevent the color plate from being removed.



The **Edit Color** dialog for beige. Clicking the **Remove** button would normally delete the beige color plate. However, a warning dialog indicates that the plate cannot be removed.

The beige color plate cannot be removed because the gradient fill shape uses beige as its original layer color. To delete the beige color plate, the gradient fill shape must be assigned a different (non-gradient) fill color from the Shop palette.












Gradient Fills and Welds

When creating a design that includes gradient fills, it is recommended that detailed editing of the gradient fills be postponed until after all welds have been completed. The problem is that when shapes are welded, their original color layers are reasserted, thereby losing any gradient fills. This is a common situation when working with foil colors, since the Inlay Weld is useful as a means of avoiding registration problems.

For each shape that will eventually be applied with a gradient fill, assign an unique layer color instead. This will allow such shapes to remain distinct from the other workspace shapes. After all welds have been completed, the gradient fills may then be applied to the unique color shapes. If necessary, the unique color shapes may be selected by Shift-clicking their color plate on the Job palette.

OPERATIONS ON SHAPES

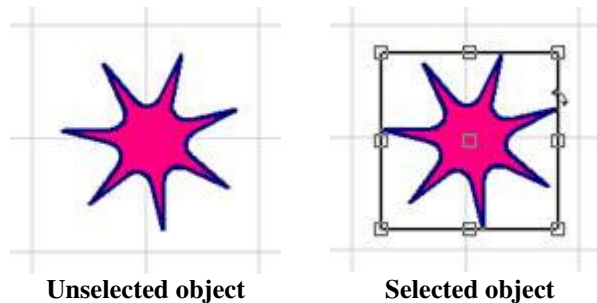
OPERATIONS ON SHAPES

-  [Selecting Shapes](#)
-  [Select By Size](#)
-  [General Nub Actions](#)
-  [Other Shape Commands](#)
-  [InstantReplay](#)
-  [Decorative Border](#)
-  [Stencil Tool](#)
-  [Array](#)
-  [Alignment and Align](#)
-  [Start Sequence](#)
-  [Stretch](#)

SELECTING SHAPES

Selecting Shapes

To select a shape, click within the fill area the shape. Selection handles will appear about the shape to indicate that it is selected.



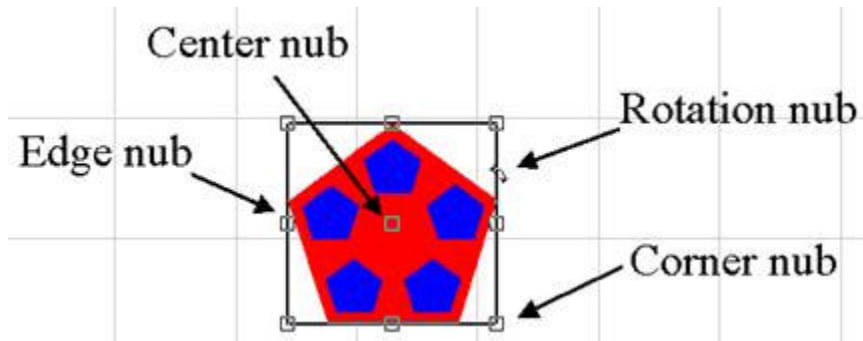
Note: If the [ALT] key is used as a modifier key, then a shape will only become selected by clicking along the shape contour. This is a useful means of differentiating from between several clustered shapes.

When a shape is selected, its properties may be edited from the SmartBar. By default, the contour of a selected shape will be highlighted, so as to improve the ease of working with small or complex objects. If the highlight border needs adjusting, then changes to the highlight appearance may be made in the **Selection Tool Settings** dialog.

Handles will appear about a selected shape, which may be used to adjust the shape by clicking and dragging a given handle. Handles are also known as Control Nubs, and the available nubs are:

- Center Nub
- Corner Nub
- Edge Nub
- Rotate Nub

The following diagram indicates where these nubs are typically placed about the boundary of a shape:



Center Nub

Center Nub

The **Center Nub** is used drag the position of a shape, which is equivalent to the **Move** command (**Layout** menu).

- Hold the cursor over the Center Nub until the cursor changes into a crosshair icon.
- With the crosshair icon, click and drag the shape.
- When the shape is in the correct position, release the mouse button.

When dragging a shape, the **[Control]** key may be held to constrain the shape either vertically or horizontally.

Also when dragging a shape, the **[Alt]** key may be pressed to create a duplicate of the shape.

Nudge comment: When selected, the cursor keys may be used to "nudge" the object. The object will nudges one-pixel in the given direction, though holding the **[Shift]** key will perform a five-pixel nudge.

Corner Nub

The **Corner Nub** is used to scale a shape, while also maintaining the aspect ratio of the original shape.

- Hold the cursor over a Corner Nub until the cursor changes into a bi-directional cursor.
- With the bi-directional cursor, click and drag to scale the shape.
- When the correct scaling is achieved, release the mouse button.

When scaling a shape, the **[Shift]** key may be held to prevent the aspect ratio from being maintained. Also, the **[Control]** key may be held to constrain the object to multiples of its original size (double-size, triple-size, etc.).

Edge Nub

The **Edge Nub** is used to resize a shape either horizontally or vertically.

- Hold the cursor over an Edge Nub until the cursor changes into a bi-directional cursor.
- With the bi-directional cursor, click and drag to resize the shape.
- When the correct size is achieved, release the mouse button.

When resizing a shape, the **[Shift]** key may be used as follows:

Shift + Left nub	Change width of object, though maintain constant vertical axis of object
-------------------------	--

Shift + Top nub	Change height of object, though maintain constant horizontal axis of object
Shift + Bottom nub	Maintain proportional width and height
Shift + Right nub	Maintain proportional width and height

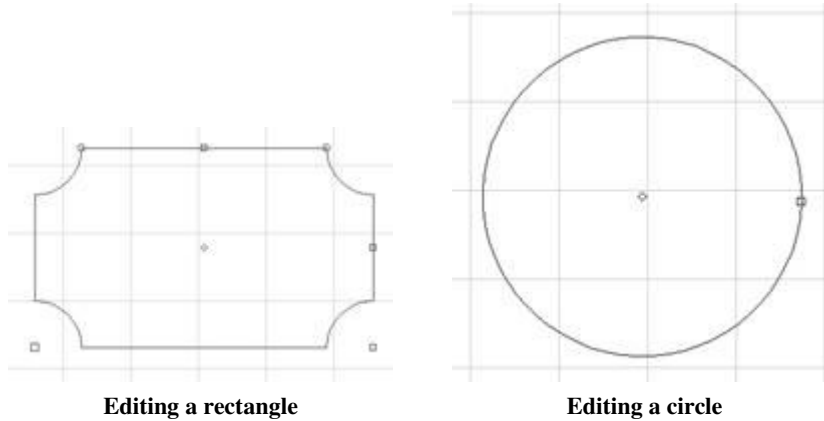
Rotate Nub

The **Rotate Nub** is used to adjust the orientation of the shape.

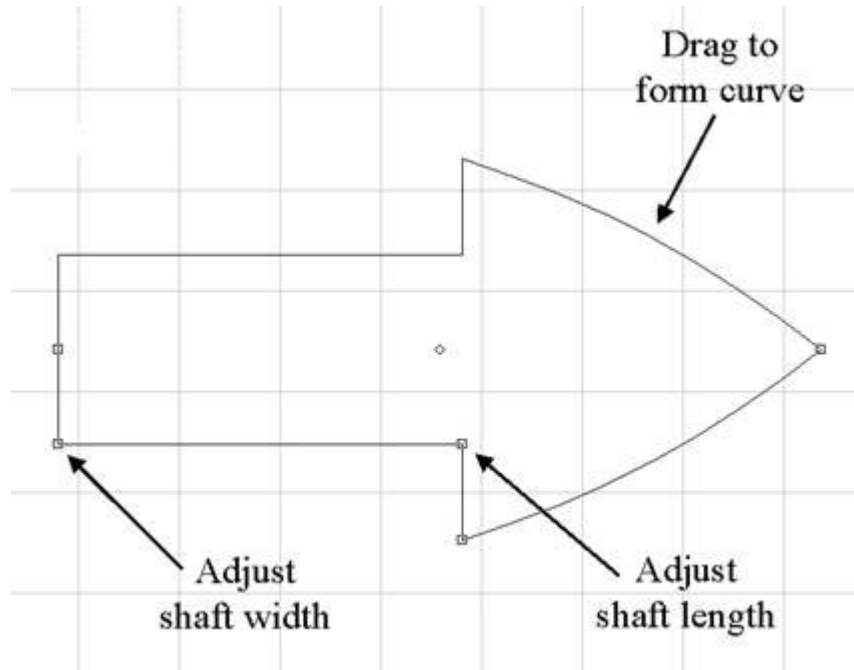
- Hold the cursor over the Rotate Nub.
- Click and drag the Rotate Nub. The bounding box of the shape will be rotated to match the mouse movements.
- When the correct rotation is achieved, release the mouse button.

EDIT MODE

Double-clicking a parametric object will enter a special editing mode. The contour of the object may then be modified by clicking and dragging the nubs of the object. In some cases, the editing nubs behave similarly to the nubs that appear on a selected object. However, the precise usage of nubs when editing will depend upon the type of object. For instance, compare double-clicking a rectangle shape with that of a circle shape.



When editing a rectangle, the available nubs are at the corner, edge and center of the shape outline. Notice that though no rotation nub is present, additional nubs exist for rounding the corners of the rectangle. When editing a circle, only a center nub and "radius" nub exist. These nub differences between rectangles and circles are typical, so as to improve the variety of shape combinations.



Editing an arrow

SWEEP SELECTING OBJECTS

A sweep select is simply a quick means of selecting several objects by surrounding the objects with a marquee. Modifier keys may also be used as follows:

Shift-sweep select

Add the objects to the current selection

Control-sweep select

All objects that fall within bounds of the marquee will become selected. The current editing operation (if any) will be applied to the objects.

Alt-sweep select

For small objects that are within the area of a larger object, use **[ALT]** + marquee to select the small objects without selecting the larger object.

SELECT BY SIZE

Select By Size

Workspace shapes may be selected according to their size. Under the **Edit** menu, choose **Select By Size** item, and the **Select by Size** controls will appear in the SmartBar.



At the far-left of the SmartBar are the **Width** and **Height** parameters, which are used for comparison with shape dimensions. If a shape had been selected when choosing the **Select By Size** item, then the **Width** and **Height** fields will be set according to that shape. If no shape had been selected, then the **Width** and **Height** fields will be set according to the sign plate.

Next to the **Width** and **Height** parameters are checkboxes, which are used as follows:

Width	Height	Behavior
enabled	enabled	Both Width and Height fields are used when making comparisons. For example, if the Smaller Than button is clicked, then shapes will be selected only if both their widths and heights are less than the indicated Width and Height .
enabled	disabled	Only Width is used when making comparisons.
disabled	enabled	Only Height is used when making comparisons.
disabled	disabled	Disables both the Smaller Than and Bigger Than buttons.

Comparison buttons

Comparison buttons

The following buttons are used to choose the manner of comparison. These buttons use the **Width** and **Height** values as the basis for comparison. However, please note that the checkboxes next to the **Width** and **Height** fields are used to limit the comparisons.



Reset

Click the **Reset** button to clear the current selection. The **Width** and **Height** fields will be set to the sign plate dimensions.

Inverse

Click the **Inverse** button to perform an inverse selection. All the currently selected shapes become deselected. The current selection will become all shapes that had not been selected.

SELECT BY OPEN

Select all shapes that are open paths. Use this tool to quickly select fragments after scanning images or importing vector files.

GENERAL NUB ACTIONS

General Nub Actions



Nudge

Nudge

Objects may be moved one pixel at a time, which is termed a "nudge." For a selection, pressing the cursor keys will move the selection by one pixel. Holding [**Shift**] will move the selection by 5 pixels.

Shortcut to the Layout Menu

If the mouse cursor is over an object nub, then the right-mouse button will open the **Layout** context menu.

Move

Objects may be moved with respect to either their previous workspace coordinates, or the origin of the sign plate.

Size

Drag the nubs of the shape to resize. When dragging, note that the fixed nub is indicated in the SmartBar (turns red).

Rotate

Using the **Rotate** feature, objects may be rotated by dragging their corner nubs. By default, the Center of Rotation is placed at the center of the object, but the Center of Rotation can be changed by dragging it with the mouse. When rotating, the **Rotation Amount** may also be entered in the SmartBar.

Mirror

The **Mirror** feature creates a mirror image of the selected object. Mirror images may be created in either the vertical or horizontal plane.

Dragging either the side- or corner-nubs of an object may also be used to create a mirror image. However, the [**Control**] key must be pressed in order to constrain the object to its original dimensions.

OTHER SHAPE COMMANDS

Other Shape Commands



[Slant](#)



[Measuring Objects](#)



[Basic Tools for Operations](#)

Slant

Slant

The **Slant** feature skews or slants selected objects either horizontally or vertically.

Grouping Objects

The **Group** and **Ungroup** commands may be used to organize collections of workspace objects.

Clear Transformations






The **Clear Transformations** feature removes all Move, Rotate, Size, and Slant transformations applied to workspace objects without reversing any edits made to the object. For example, a line of text can be rotated and then edited to include an extra letter. Clear Transformations will remove the rotation from the text while the extra letter remains a part.

MEASURING OBJECTS

The **Measure Tools** are used to label workspace dimensions, and to place notes about workspace objects.



The available tools are:

	Measurement	Measure the distance between two points by clicking on the workspace. The Desired Distance field may be set between these points, which causes the selected objects to be resized proportionally.
	Dimension	Create a measure of the distance between two workspace locations.
	Object Dimension	Create a measure of the height or width of the selected object.
	Arrow Draw	The Arrow Draw tool is used to annotate the workspace. For each arrow drawn, a note may be created. The arrow attributes (thickness, termination style) may be edited from the Dimensioning Setup dialog.
	Notes	Add descriptive notes to the workspace.

BASIC TOOLS FOR OPERATIONS

Cut and Paste

The basic **Copy** and **Paste** commands are typical of Windows applications:

Cut	[Ctrl + X]	Transfer the current object to the Windows clipboard.
Copy	[Ctrl + C]	Store the current object on the Windows clipboard.
Paste	[Ctrl + V]	Insert from the Windows clipboard to the Vision-Pro workspace.
Clear	[Del]	Remove the selected object from the workspace.
Duplicate	[Ctrl + D]	Create a copy of the selected object. The offset for duplicates is set from the General Preferences dialog.

Note: Copying and pasting a shape will automatically simplify the pasted shape.

Undo and Redo Navigation

In addition to **Undo** and **Redo** commands, there are navigator windows for browsing multiple operations.

Undo	[Ctrl + Z]	Reverse the previous operation. When node editing, only five levels of Undo is permitted.
Redo	[Ctrl + Y]	Reverse the previously performed Undo operation.
Undo Navigator		Open navigator dialog for choosing point after which all

		operations will be reversed.
Redo Navigator		Open navigator dialog to choose Undo operations to be reversed.
Purge Undo		Remove all Undo and Redo information from memory, thereby freeing that memory for other uses.
Repeat	[Ctrl + R]	Apply the previously performed operation to the currently selected object.

Note: For advanced operation manipulation, please refer to the Instant Replay feature, which is discussed in the following section.

Locking workspace objects

Property locks are used to limit the types of operations that may be performed on workspace objects. Two types of restriction may be applied. An operation may be "locked," which prevents that operation from being modified for a given object. An operation may also be "restricted," which prevents the locked-status from being modified without authorization.

Simplifying Objects

As operations are applied to a shape, those operations are stored as part of the shape history. The **InstantReplay** feature displays this history as a list, where individual operations may be double-clicked and edited.

For a shape composed of many different operations, the **Simplify** command will incorporate these operations into the shape. Simplified operations will not be displayed in the Instant Replay window, nor will they be editable. This feature is useful for aggregating a shape before applying new operations to it.

For a shape that have been applied with a tool path, node editing the shape will automatically update the tool path to correspond with the new shape contour. However, applying the **Simplify** command to the object will break the association between the object and tool path, which will allow the object nodes to be edited without changing the tool path contour.

To simplify a selected shape, choose **Simplify** from the **Arrange** menu.

Simplify and Tool Paths

After a tool path is applied to a shape, suppose that the shape is then node edited. When node editing is complete, the corresponding tool path will be updated to maintain consistency with the new shape contour. However, applying the **Simplify** command to the object will break the association between the object and tool path, which will allow the object nodes to be edited without changing the tool path contour.

Use InstantReplay

By default, the **Use InstantReplay** option is enabled, which causes operations to be updated when the base shape has been modified. To discard the association between operations and their base shape, disable the **Use InstantReplay** option. However, please note that the association between operations will be permanently lost.

As an alternative to disabling the **Use InstantReplay** option, use **Simplify** from the **Arrange** menu.

INSTANTREPLAY

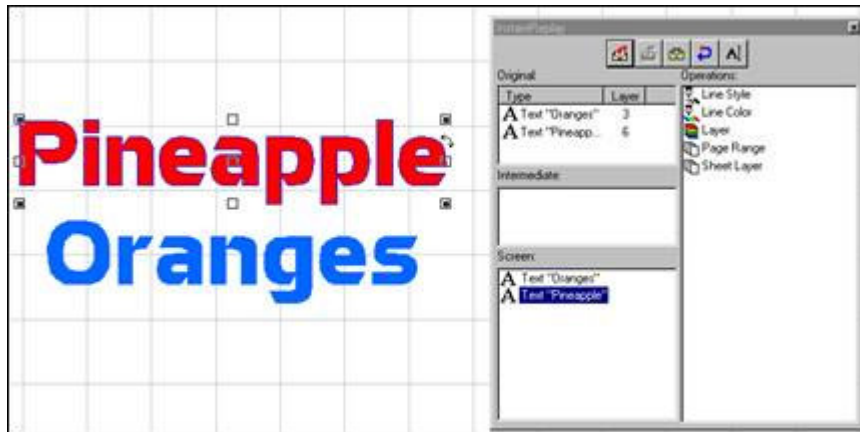
InstantReplay

The Instant Replay feature is a graphical interface for editing and reusing operations, where an operation is any transformation or special effect that can be applied to a Vision-Pro shape. Use InstantReplay to edit or remove the

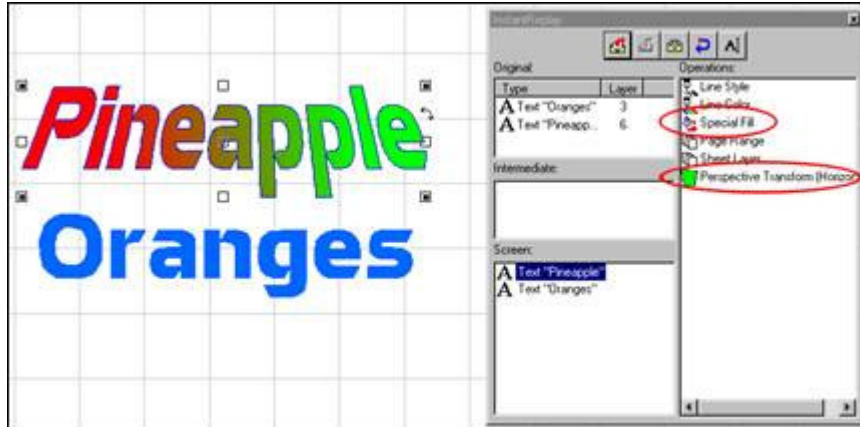
operations that have been applied to a shape. When a set of operations has successfully achieved a desired effect, those operations may be stored and applied to new shapes in future Vision-Pro sessions.

Using InstantReplay

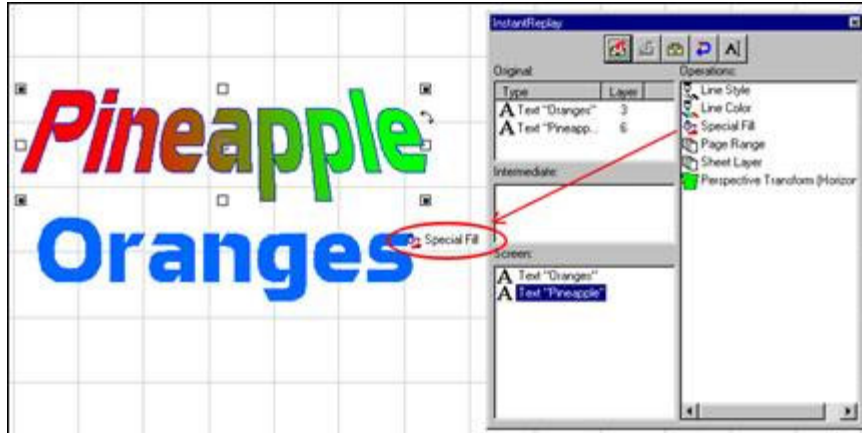
Suppose that a couple of text shapes have been created on the workspace. Initially, no operations have been applied to these text shapes, so the InstantReplay window will indicate the basic operations that exist for all newly created shapes.



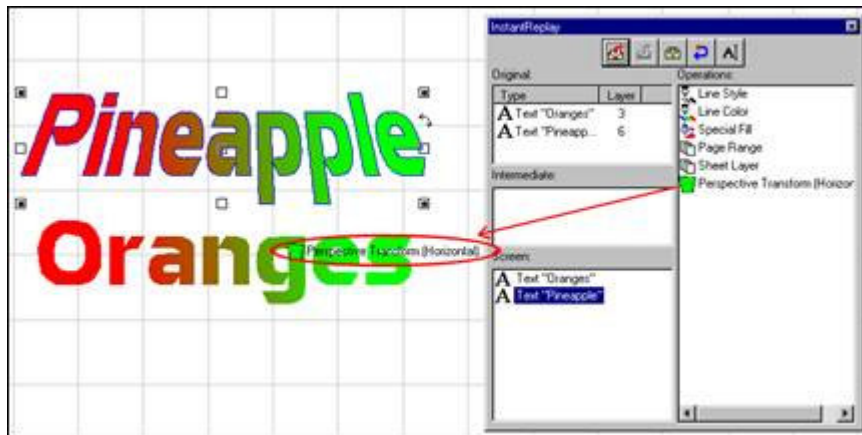
For the first text shapes, a transformation operation was performed, followed by a gradient fill. When the shape is selected, the InstantReplay window indicates that a "Special Fill" has been applied, as well as a Perspective Transformation.



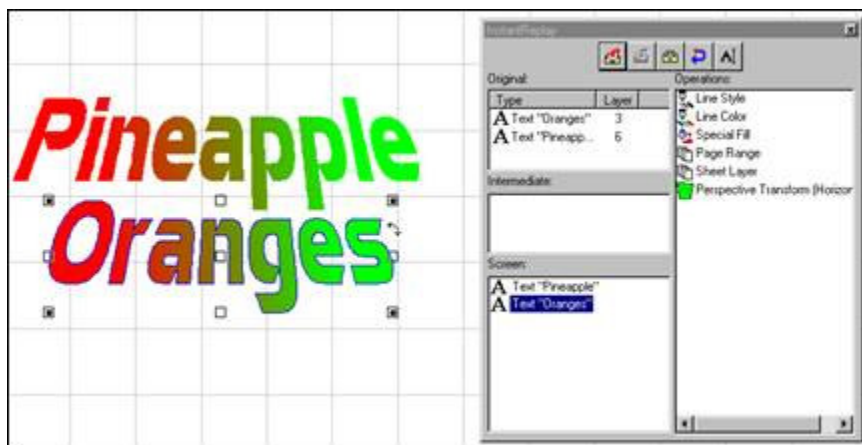
To use the same fill settings on the second text shape, click and drag the "Special Fill" from the InstantReplay window. Drag-and-drop the "Special Fill" onto the second text shape, and the fill will be applied.



Similarly, drag-and-drop the "Perspective Transform" onto the second text shape.

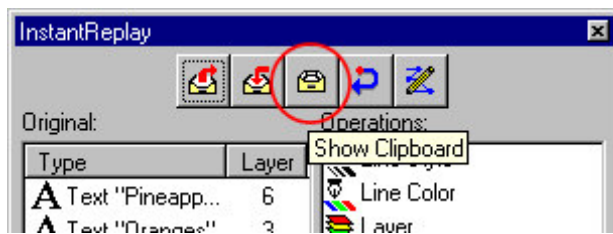


When the second text shape is selected, the InstantReplay window will show that both the Special Fill and Perspective Transform have been applied.

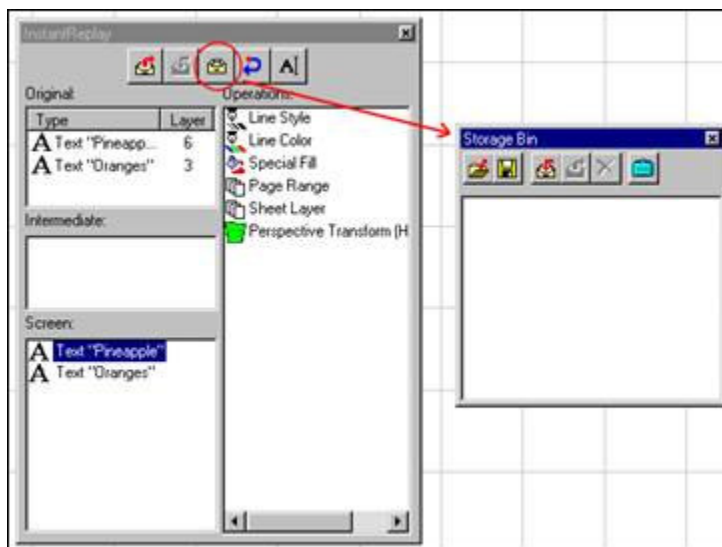


Using the Storage Bin

At the top of the InstantReplay window is the **Show Clipboard** button.

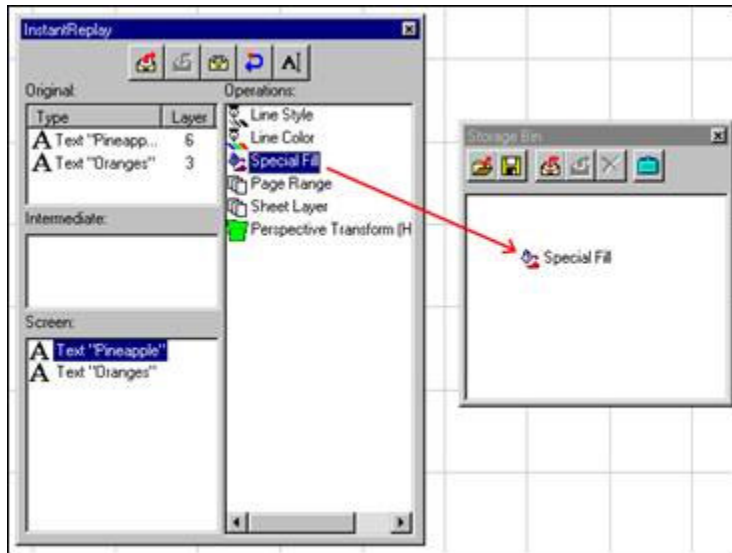


Clicking the **Show Clipboard** button will open the **Storage Bin** window. The Storage Bin is a convenient holding area for operations that you would like to reuse frequently.

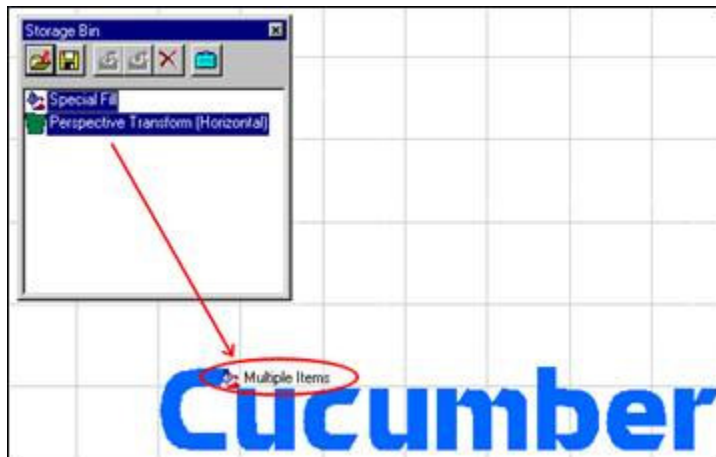


For a selected shape, operations may be dragged-and-dropped onto the **Storage Bin**. The operation will then be listed within the **Storage Bin**, regardless of the currently selected shape.

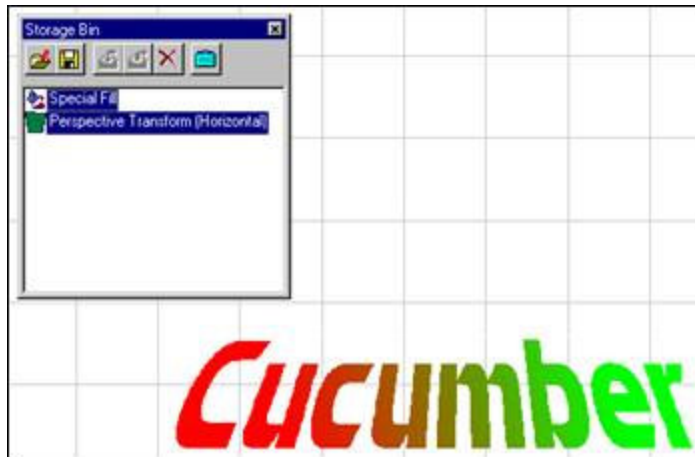
Vision-Pro 7 Doc Files



Suppose that the "Special Fill" and "Perspective Transform" operations from the previous section had been dragged into the **Storage Bin**. By then selecting both operations within the **Storage Bin**, those operations may be dragged-and-dropped onto another text shape.



The text shape will then be applied with both operations.

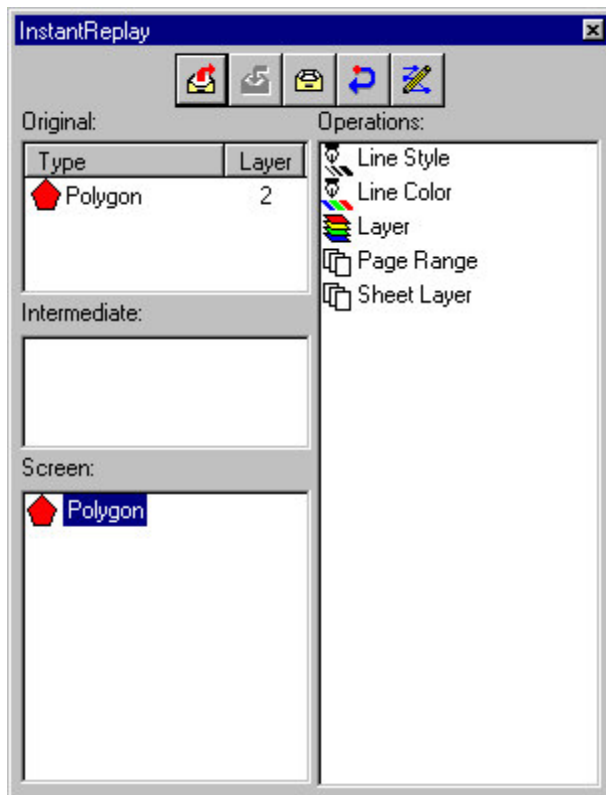


The Instant Replay Window

The Instant Replay Window

The **Instant Replay** window lists the operations that have been applied to the currently selected workspace shape. Individual operations may be edited, deleted, or copied to the **Storage Bin** for application to other shapes.

Dragging an operation within the list can change the order in which operations are calculated for a shape. Further, an operation can be dragged from either the **InstantReplay** or **Storage Bin** windows and dropped onto a workspace object.



The basic operations for any shape are the **Line Style**, **Line Color**, **Layer**, **Page Range**, and **Sheet Layer**. These operations are considered to be elemental to any shape. Though these basic operations may be edited, neither deleting them nor combining them with other operations is permitted.

Editing an operation will activate the editing controls for that given operation.



Copy to Clipboard

Use this button to copy the selected operations to the Clipboard. Note that the Storage Bin is used to display operations that have been copied to the Clipboard.



Paste from Clipboard

Use this button to apply the selected Clipboard operations to the current shape. The Storage Bin is used to pre-select the desired operations for pasting.



Show Clipboard

Use this button to show the Storage Bin, where all the operations from the Clipboard are listed. Pressing this button again will hide the Storage Bin.



Simplify

Clicking the Simplify button will perform the same operation as choosing **Simplify** under the **Arrange** menu. Please refer to *Simplifying Objects*, discussed earlier this chapter.



Edit

Edit the currently selected shape. If no objects are selected, then this button will not be visible.

Original List

The **Original List** contains references to the shapes prior to their operations being performed. The Type of each shape is displayed for reference, such as Text objects, Paths, Polygons, Polyarcs, Notes, Dimensions, and Bitmaps.

The **Layer** number indicates the color palette index that has been applied to the shape. By clicking the head of the Layer column, shapes may be ordered according to their palette number, which is a useful means of organizing related shapes.

Intermediate List

After applying certain operations, the original shape will no longer exist because it has been replaced by a new shape that represents the results of the operation. For example, applying an Outline will create a new shape that represents the outline, and unless the “Keep Original” option is used, the original shape will be deleted. The **Intermediate List** is used to store a reference to such original shapes, such that the operation may be edited.

Screen List

The **Screen List** displays all the screen shapes in terms of the types of objects that they represent. Click on a path type to isolate its shape from the surrounding graphics.

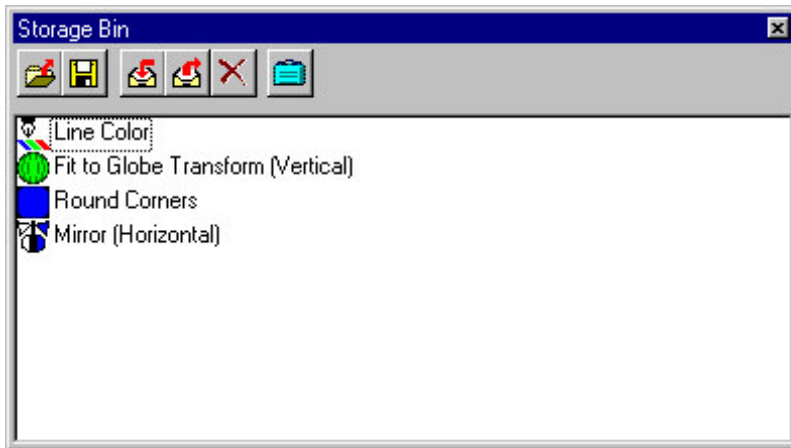
Operations List

For the selected shape, the operations that have been applied to this shape are listed here. The operations are listed in chronological order, though this order can be changed by dragging an operation with the mouse. To edit an operation, double-click the operation name.

Show Storage Bin

The **Storage Bin** is a convenient means of viewing and organizing the operations that have been copied to the **Clipboard**. With respect to Instant Replay, the Clipboard and the Storage Bin are synonymous.

Note: As well as using the Instant Replay buttons, drag-and-drop operations are permissible between the Instant Replay window and the Storage Bin.



Open File

Click this button to open a previously stored selection of operations.



Save File

To save operations for later use, select the desired operations and click the Save File button. Files are stored in an .SBN (Storage Bin) format.



**Copy to
Clipboard**

For the currently selected shape, clicking this button will copy all of the shape operations to the Storage Bin.



**Paste from
Clipboard**

Click this button to apply operations from the Storage Bin to the currently selected shape. If no operations are selected, then the entire list of operations in the Storage Bin will be applied. Otherwise, use the mouse in combination with shift and control keys to select the operations that should be applied.



**Clear
Clipboard**

Click this button to delete the contents of the Clipboard and the Storage Bin listings.



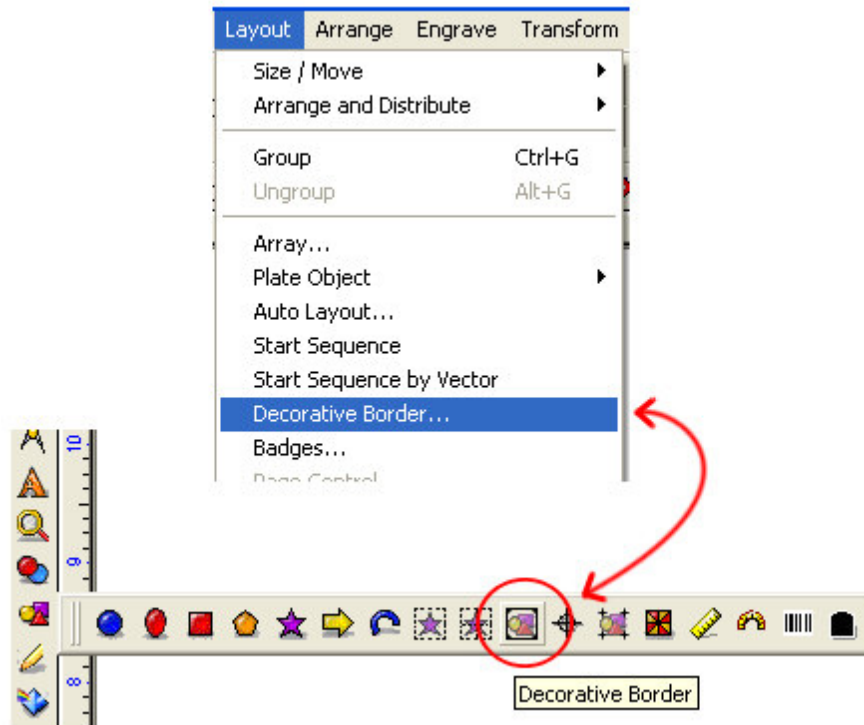
**Combine
Operations**

Click this button to combine a selection of operations into a single operation. The combined operations will be named "Combination," but this name may be changed by double-clicking the combined operation. Once operations are combined, they can be selected and applied in the same manner as discrete operations.

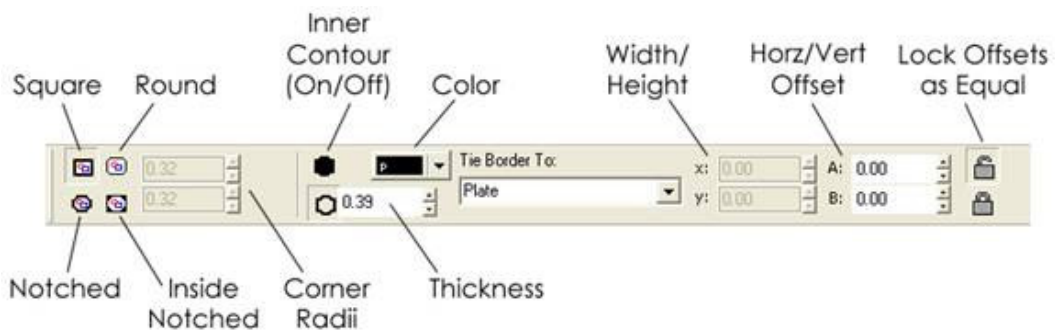
DECORATIVE BORDER

Decorative Border

The **Decorative Border** shape is used as a frame for the design. To create a **Decorative Border**, access this tool from either the **Layout** menu, or the **Shape Tools** flyout.

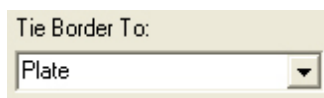


For a selection of one-or-more shapes, the **Decorative Border** will be centered on the shapes, and the inner contour of the border will be set equal to the bounding box of the selection. The outer contour of the border will then be set according to the **Thickness of Border** field.



Tie Border To

When no shapes are selected, the SmartBar provides a **Tie Border To** option that is set to "Plate" by default. In this case, the **Decorative Border** will be centered on the sign plate, and the outer contour will be set equal to the dimensions of the sign plate. The inner contour of the border will then be set according to the **Thickness of Border** field.

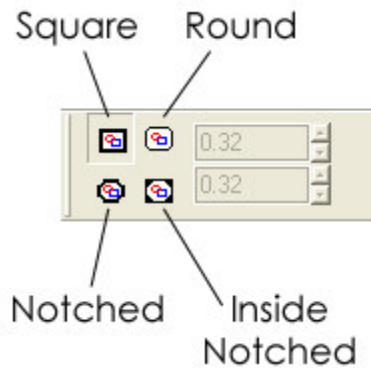


If the **Tie Border To** option is set as "None," then the center nub may be dragged to change the coordinates of the **Decorative Border**.

Border Styles

Border Styles

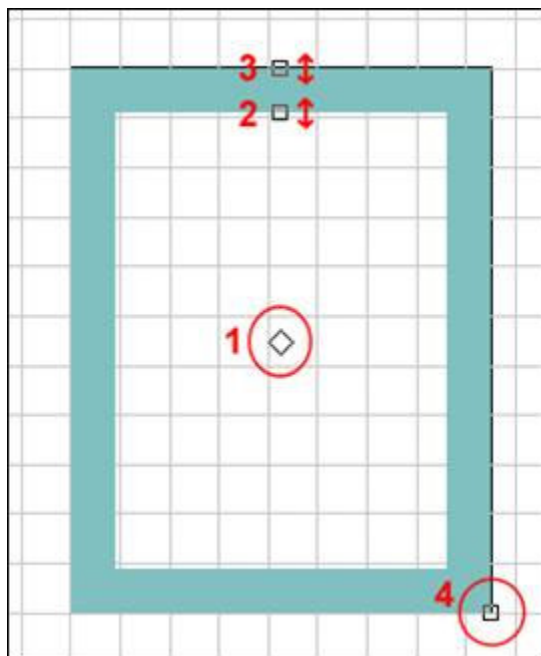
There are four pre-defined decorative border styles, which may be chosen at the far-left of the SmartBar.



The choice of style will determine the SmartBar controls that are available, as well as the nubs that appear about the decorative border shape.

Decorative Border Nubs

Editing nubs about the decorative border shape may be used to adjust the inner and outer contours of the border. When editing a "**Single Path Border**," nubs will only appear for the outer contour. When editing a "**Border with Thickness**," nubs will appear for both the outer and inner contours.



These editing nubs are summarized as follows:

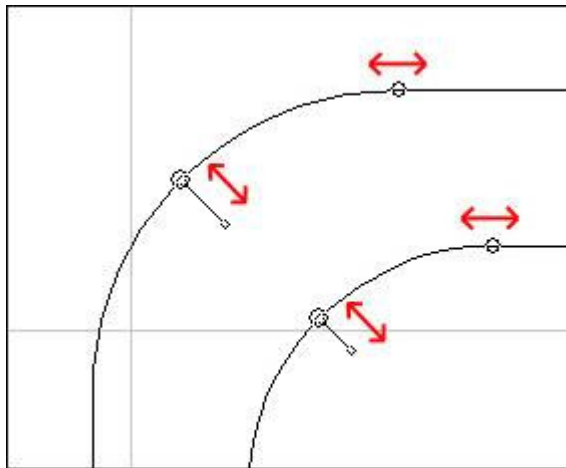
Nub	Function
1	Adjust the workspace coordinates of the border. These coordinates may only be changed when the Tie Border To setting is " None. "
2	Adjust the Thickness of Border value by varying the inner contour. Hold the [Control] key to maintain a constant thickness.
3	Adjust the Thickness of Border value by varying the outer contour.
4	Adjust the outer contour of the border, while maintaining a constant Thickness of Border value.

Corner Nubs

Except for the **Square Border** style, editing nubs are used to adjust the corners of the border. These nubs allow the outer corner radius to be adjusted independently of the inner corner radius.

Note: The **Inside Notched Border** style does not have corner nubs for the outer contour.

The following screenshot shows the editing nubs for the **Rounded Border** style. These nubs behave similarly for the **Notched Border** and **Inside Notched Border** styles.



The values for the corner radius may also be set at the far-left of the SmartBar.

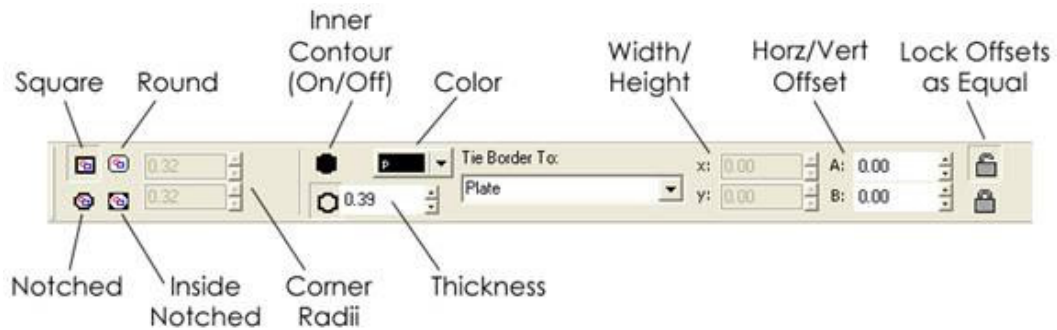


To the right of the corner radius fields, the **Radius Lock** and **Radius Unlock** buttons may be used to lock the outer radius to the inner radius. When locked, the **Outside corner radius** will be assigned the same value as the **Inside corner radius**.



SmartBar Controls

The available SmartBar controls will depend upon the style of border being edited. For a **Square Border** style placed upon the sign plate, the SmartBar controls will appear similar to the following:



Inner Contour Option

If the **Single Path Border** style is selected, then the border shape will be a filled object with no inner contour. If the **Border with Thickness** style is selected, then additional nubs are available for editing the inner contour of the border.



Single Path Border



Border with Thickness

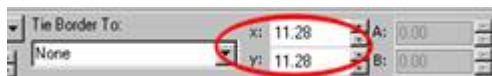
Thickness of Border

This field is only active when the **Border with Thickness** option has been selected.

For selected shapes, the **Thickness of Border** field is used to indicate the distance from the inner contour to the outer contour. If no shapes are selected, then the **Thickness of Border** field indicates the distance from the outer contour to the inner contour.

Width and Height

The **Width** and **Height** fields indicate the dimensions of the outer contour. If the **Tie Border To** setting is "None," then the Width and Height fields will be editable.



Horizontal and Vertical Offsets

For a border placed around one-or-more selected shapes, the inner contour of the border will be set equal to the bounding box of the shapes, and the outer contour will be set using the **Thickness of Border** field.

For a border placed with respect to the sign plate, the outer contour will be set equal to the dimensions of the sign plate. The inner contour is then set using the **Thickness of Border** field.

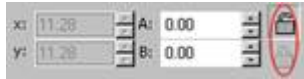
Vision-Pro 7 Doc Files

The **Horizontal and Vertical Offsets** are used to set the outer contour with respect to its initial dimensions. When adjusting these offsets, the **Thickness of Border** field will remain constant.



Lock Offset Values as Equal

At the far-right of the SmartBar, the **Horizontal and Vertical Offsets** may be locked as equal.



When locked, only one offset field will be active, and its value will be used for both offsets, as follows:



Unlock offset values



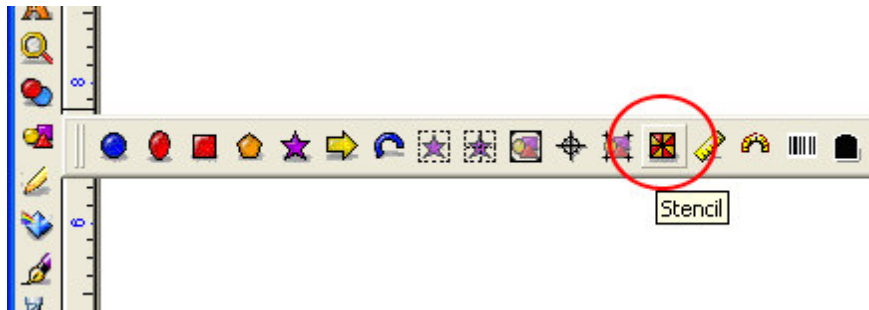
Lock offset values as equal

STENCIL TOOL

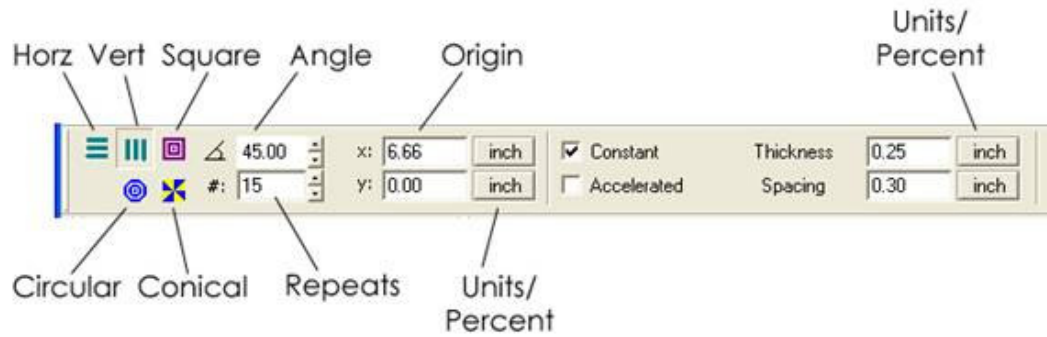
Stencil Tool

The **Stencil** tool is used to apply a clipping style to one-or-more selected shapes. The resulting stencil bands will be like "windows" through which the underlying shapes may be viewed.

For a given selection, choose **Stencil** from the **Shapes Tool** flyout.



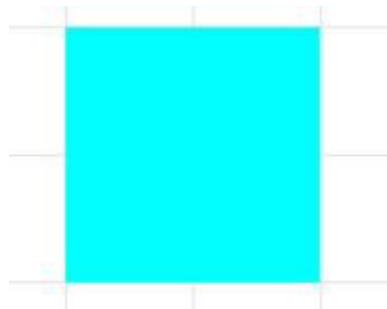
The **Stencil** tools will appear in the SmartBar.



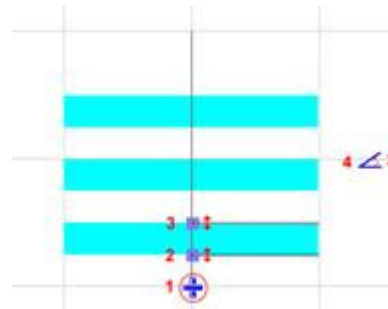
Stencil Handles

Stencil Handles

When editing the stencil, workspace handles will appear about the shape. The following screenshots show horizontal stencil bands that are being edited for a square shape. Similar handles will appear for other stencil styles.



Original object before applying stencil.



Editing horizontal stencil that has three repeats.

The function of each workspace handle is as follows:

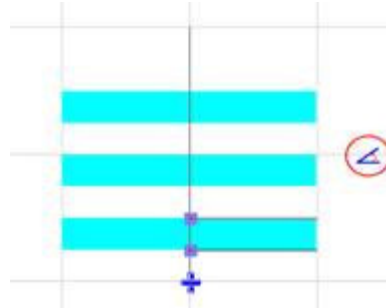
Handle	Function
1	Adjust coordinates of the stencil
2	Adjust Spacing between each stencil line
3	Adjust Thickness of each stencil line
4	Adjust Angle of stencil

Angle

The **Angle** may be set from either the SmartBar or the workspace.



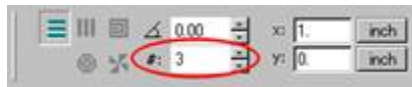
Angle field on SmartBar



Angle handle on workspace

Repeats

The **Repeats** are set from the SmartBar. The number of repeats indicates the number of stencil lines that will be created.



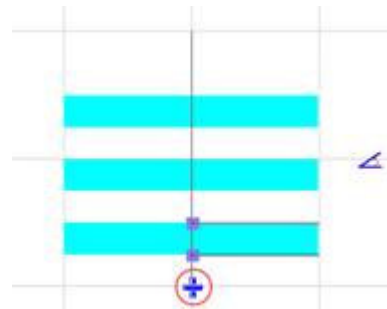
Note: If there appear to be fewer stencil lines than indicated by the **Repeats** field, then it may be the case that there is a large distance between each stencil line. In this case, try reducing the **Spacing** value, or increase the shape size.

Stencil Origin

The **X** and **Y** fields indicate the origin coordinates for the stencil. These coordinate may be set from either the SmartBar, or the workspace.



Coordinate fields on SmartBar

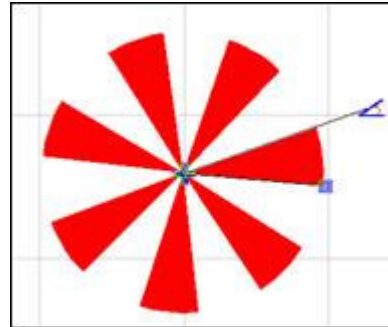


Coordinates handle on workspace

To the right of each **X** and **Y** field is a **Units** button that determines the units of the coordinates. By default, the current workspace units are used (in this example, inches are used). However, clicking either **Units** button will set the value as a percentage of the object size. For example, the following screenshot shows the stencil origin set at 50% of the width and height of a circle shape.



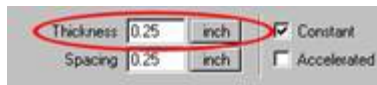
Radial stencil with seven repeats. The X and Y coordinate are set at 50% each, which centers the stencil on the shape.



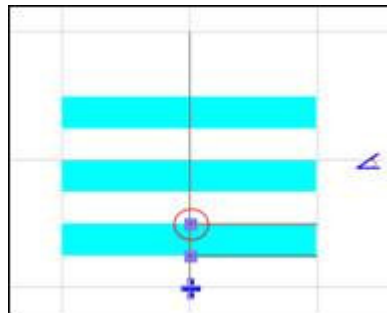
Circle with radial stencil preview. Note that the Coordinates handle is at center of the circle shape.

Thickness

The **Thickness** indicates the width of each stencil line. The **Thickness** may be set from either the SmartBar or the workspace.



Thickness field on SmartBar



Thickness handle on workspace

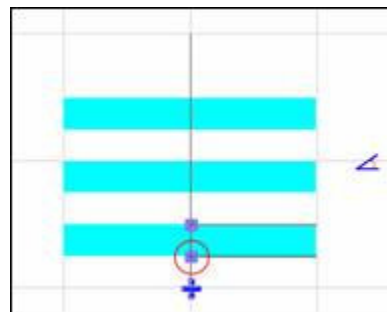
To the right of the **Thickness** field, the **Units** button may be clicked to express the thickness as a percentage of the object size.

Spacing

The **Spacing** indicates the distance between each stencil line. The **Spacing** may be set from either the SmartBar or the workspace.



Spacing field on SmartBar



Spacing handle on workspace

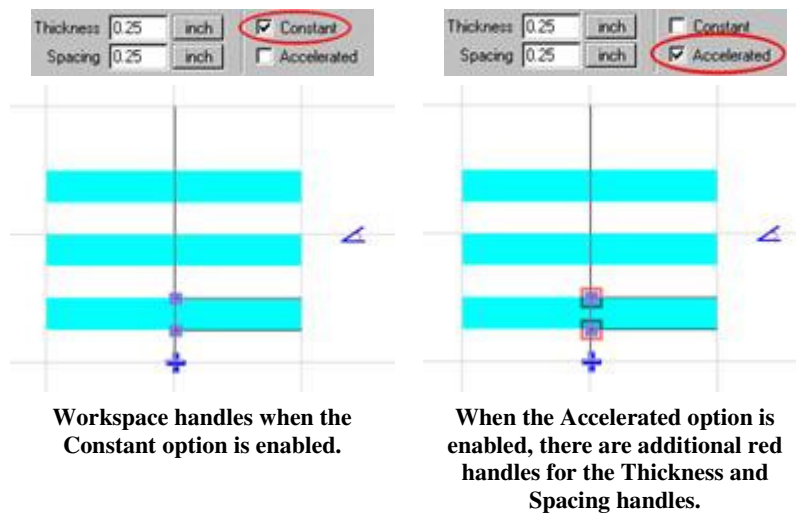
To the right of the **Spacing** field, the **Units** button may be clicked to express the spacing as a percentage of the object size.

Constant versus Accelerated Stencil

If the **Constant** option is selected, then there will be one handle each for Thickness and Spacing on the workspace.

If the **Accelerated** option is enabled, then additional red handles will appear over both the **Thickness** and **Spacing** handles. By adjusting these "acceleration" handles, the thickness and spacing of successive stencil bands may be made to "accelerate."

Note: The **Accelerated** option is not available for **Radial** nubs.



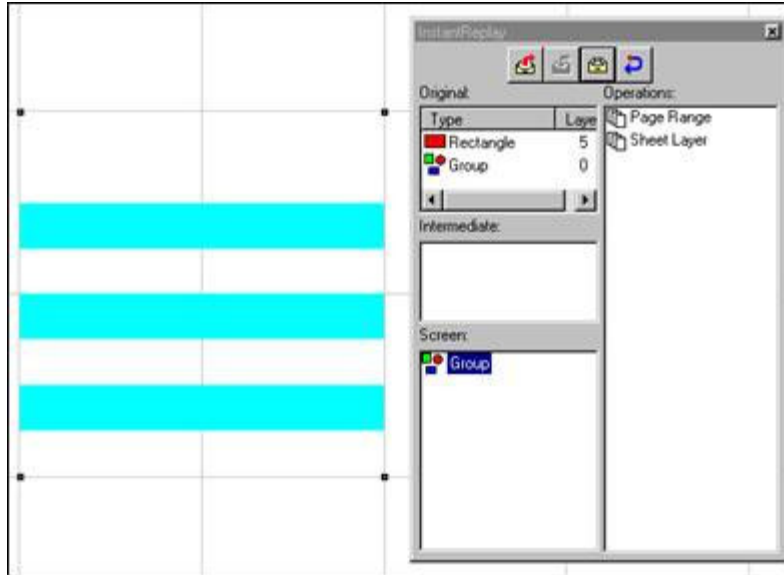
Editing a Stencil Using InstantReplay

Suppose that we have applied our horizontal stencil to a square shape, using three repeats. We later decide that a 25 degree angle should also be applied to the stencil. However, if we select the stencil object, we find that the original square shape and stencil are now part of a group, and that choosing the Stencil tool will merely attempt to apply a new stencil on top of the group.

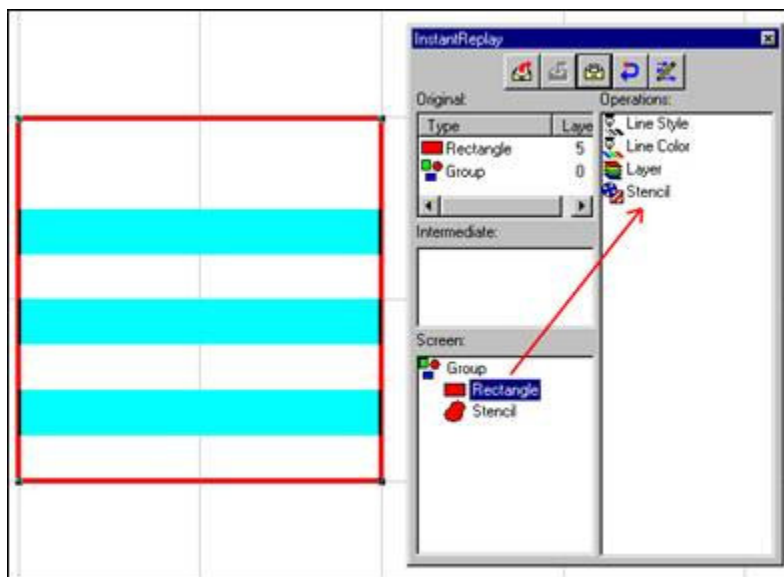
As a solution, the InstantReplay feature may be used to edit the Stencil.

First, verify that the InstantReplay window is open, by enabling the **Show InstantReplay** item under the **View** menu.

In the InstantReplay window, you may choose the **Group** object that is within the **Screen** list. However, the **Operations** list will not provide access to the **Stencil** operation.



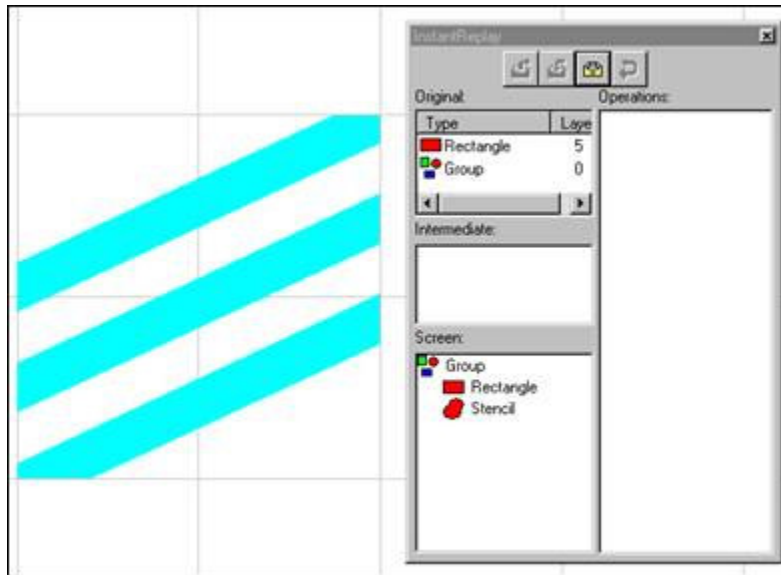
Instead, double-click the **Group** object that is within the **Screen** list. The **Group** object will be expanded to reveal that it is composed of a **Rectangle** shape and a **Stencil** shape. The **Rectangle** may then be selected to provide access to the **Stencil** operation.



Within the **Operations** list, the **Stencil** operation may now be double-clicked to begin editing. The **Stencil** controls will appear within the SmartBar, and the **Angle** may be changed to 25 degrees.



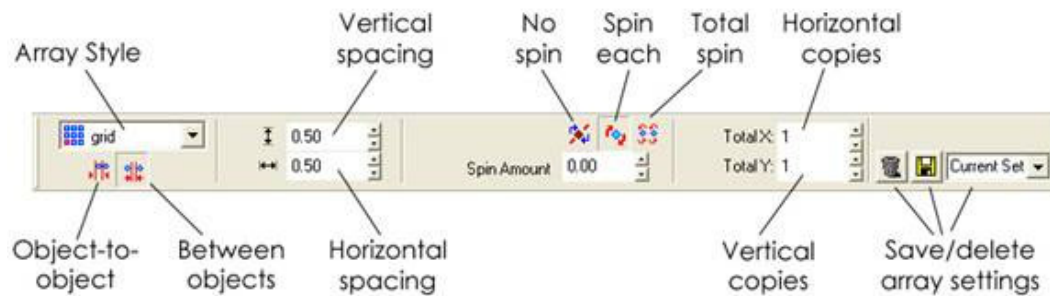
When finished editing the Stencil, click the **Accept** button to finish. The edited stencil will appear on the workspace.









ARRAY

Array

The **Array** feature is used to create patterns using selected shapes as a basis. Copies of the original shapes will be used to fill out the array.



The available **Array** styles are as follows. Please note that the SmartBar controls are slightly different when creating arrays “on an arc.”

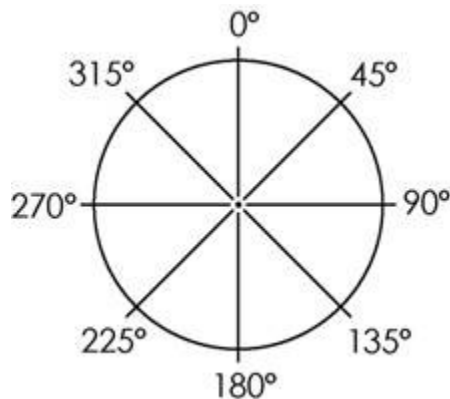
-  **Vertical**
-  **Staggered**
-  **Horizontal**
-  **Grid**
-  **On arc**
-  **On arc with rotate**

Spacing Method

When spacing the copies either horizontally or vertically, the copies may be spaced either **Object-to-Object**, or **Between Objects**. If spacing **Object-to-Object**, then the copies are spaced with respect to the lower-left corner of each shape. If spacing **Between Objects**, then copies are spaced from the trailing edge of each shape to the leading edge of the subsequent shape.

Spin Amount

The array copies can be rotated by adjusting the **Spin Amount**.

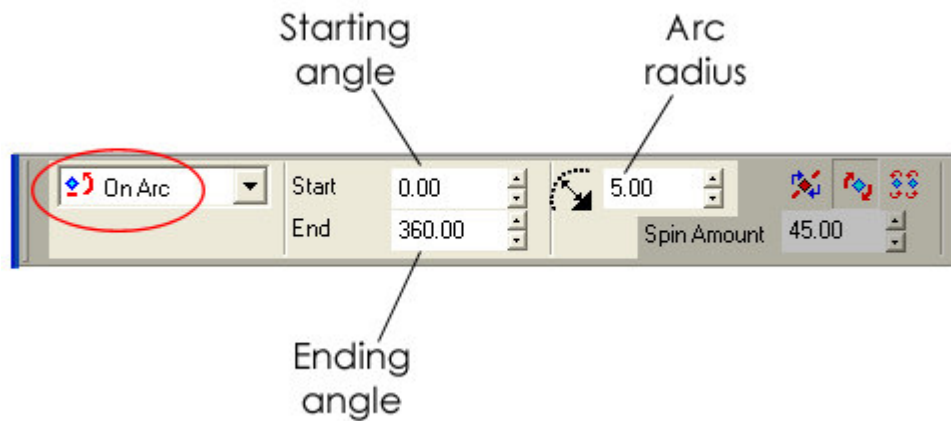


If the **Spin Each** option is enabled, then each subsequent shape will be rotated by the **Spin Amount**. For example, the first shape will not be rotated, the second shape will be rotated by the Spin Amount, the third shape will be rotated by a further Spin Amount, and so on.

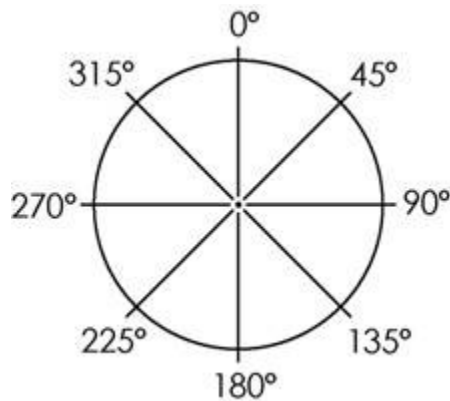
If the **Total Spin** option is enabled, then the last array shape will be rotated by the **Spin Amount**, and intermediate array shapes will be rotated evenly from

Arrays on an Arc

When the Array Style is set to either **On Arc** or **On Arc With Rotate**, then the Spacing Method (space between shapes) does not apply. Instead, the shapes are spaced evenly over an arc, and this arc can range from 0° to 360°.



The **Starting Angle** indicates the beginning of the arc, the **Ending Angle** indicates the end of the arc, and the **Arc Radius** is the size of the arc. For example, by setting the **Starting Angle** to 0 and the **Ending Angle** to 360 will cause the shapes to be spaced evenly along the arc of a full circle. By setting angles of 0 and 180, then the shapes will be spaced along a half-circle.



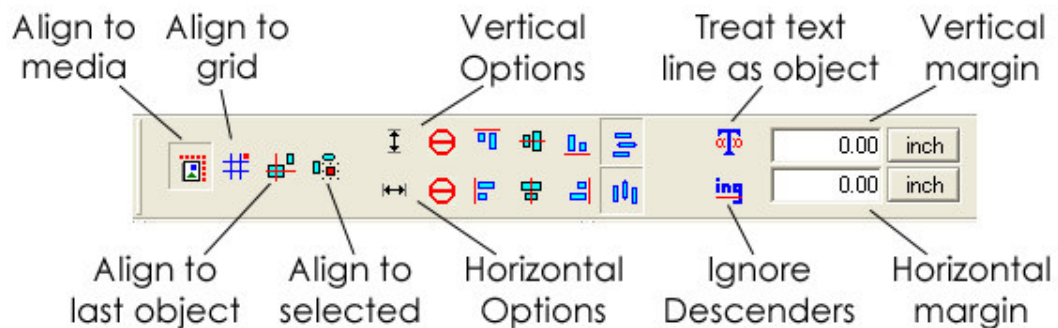
Arrays on Arc with Rotate

The **On Arc With Rotate** is similar to the **On Arc** option, except that there are no **Spin Amount** setting, and each array copy will be automatically rotated to point away from the center of the arc.

ALIGNMENT AND ALIGN

Alignment and Align

The **Alignment** command is used to access controls for precisely arrange the workspace objects, and the **Align** command is used to apply the most recent Alignment settings.



Alignment Mode

Alignment Mode

Selected objects may be arranged according to:



Align to sign plate

Objects are aligned relative to the sign plate.

Align to grid

Objects are aligned relative the grid lines.



Align to last object

For group selection, align the objects according to the last object in the group.



Align to selected

For a group selection, align the objects according to the bounding box that is around the selection.

Text Options

There are two additional tools for use when aligning text objects.



Treat Text Line as an Object



Ignore Descenders



Treat Text Line as an Object

This option only applies to vertical alignment. When enabled, each line within a text paragraph will be aligned like a separate object.



Three text objects, with the “**Treat Text Line as Object**” option **OFF**.



The same three text objects, with the “**Treat Text Line as Object**” option **ON**. Note that each line within the second text object is treated as a separate object for the purpose of alignment.

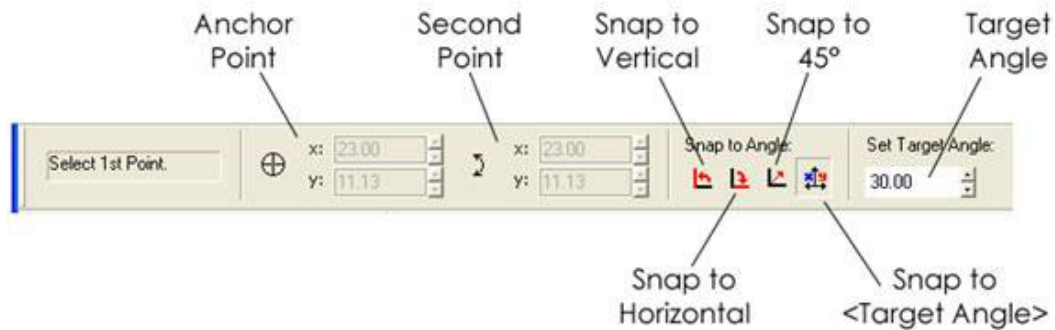


Ignore Descenders

This option only applies to vertical alignment. When enabled, the descenders of text will be ignored when applying alignment. Instead, text will be aligned according to its baseline.

ALIGN TO BASELINE

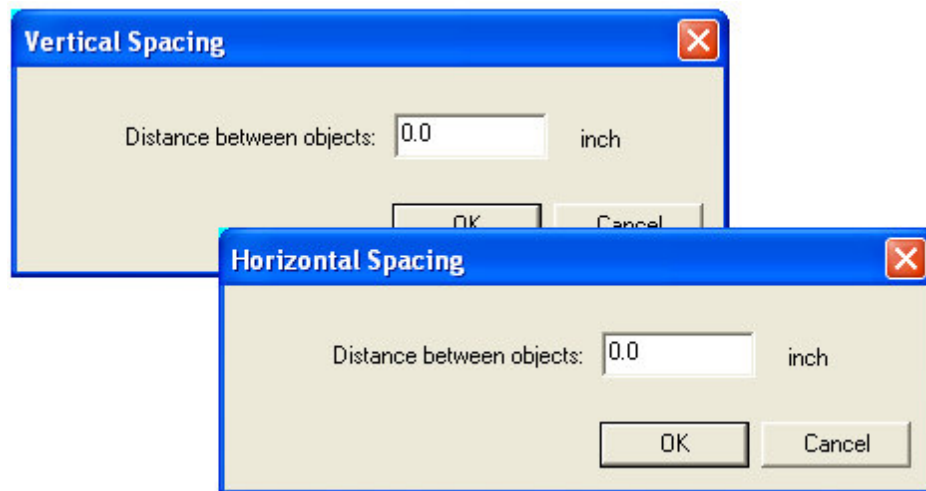
For images that are imported into Vision-Pro, it may be the case that the objects are slightly misaligned with the sign plate. The Align to Baseline feature allows these objects to be aligned to either the horizontal or vertical plane. In addition, image can be aligned to a 45 degree angle, or a custom angle may be set.



Before performing the alignment, a line must be defined along the edge the image. To define this line, two points must be set. Clicking within the workspace will set the **Anchor Point** (the point of rotation), and a clicking again will set the **Second Point** (the snap point). When a snap angle is applied, the line will be aligned to match the indicated angle, and the image will remain aligned with the line.

VERTICAL AND HORIZONTAL SPACING

The **Layout | Arrange and Distribute | Spacing** commands are used to space the selected objects out evenly. As an option, the amount of space to maintain between objects can be specified.



START SEQUENCE

Start Sequence

The Start Sequence command has two uses. The first use is to arrange the order in which objects are processed when drawing, cutting, plotting, routing, engraving, or printing. The second use is to arrange objects graphically on-screen. In either case, reordered objects will be placed with respect to the original layer of the first color selected (see **Order of workspace objects**).



[Creating a Sequence](#)

 [Creating a Sequence by Vector](#)

 [Creating a Sequence by List](#)

Creating a Sequence

Creating a sequence

To create a sequence for a collection of objects:

1. Select the first object of the collection.
2. From the **Layout** menu, choose **Sequence**, and **Start Sequence**.
3. Click each remaining object, one-by-one, until all the objects are included. As each object is included, a line is drawn from the previous object to the current object.
4. When finished selecting objects, click anywhere on the workspace that is empty of objects.

The objects will now be ordered according to the chosen sequence. Each successive object in the sequence will appear to be on top of the previous object in the sequence.

Alignment using start sequence

1. Select the first object of the collection.
2. From the **Layout** menu, choose **Sequence**, and **Start Sequence**.
3. Click each remaining object, one-by-one, until all the objects are included. As each object is included, a line is drawn from the previous object to the current object.
4. Right-click and drag over an area where the objects are to be arranged.

As the mouse is dragged across the workspace, an outline of the shapes will appear, and a thin line between the shapes will indicate center alignment of each object.

This alignment can be adjusted as follows:

- Holding the **[Shift]** key will align the shapes according to their lower-left bounding box corner.
- Holding the **[Control]** key will constrain the objects either vertically or horizontally.

Creating a Sequence by Vector

Creating a Sequence by Vector

The **Start Sequence by Vector** command is similar to the **Start Sequence** command, except that multiple shapes are added to the sequence by drawing a line.

1. Select the first shape.
2. From the **Layout** menu, choose **Sequence**, and **Start Sequence by Vector**.
3. Click and drag the cursor to form a line. All shapes that are intersected by this line will become part of the sequence.
4. Click on an empty portion of the workspace to finish editing.

Alignment Using start Sequence by Vector

1. Select the first object of the collection.
2. From the **Layout** menu, choose **Sequence**, and **Start Sequence by Vector**.
3. Click each remaining object, one-by-one, until all the objects are included. As each object is included, a line is drawn from the previous object to the current object.

4. right-click and drag over an area where the objects are to be arranged.

As the mouse is dragged across the workspace, an outline of the shapes will appear, and a thin line between the shapes will indicate center alignment of each object.

This alignment can be adjusted as follows:

- Holding the **[Shift]** key will align the shapes according to their lower-left bounding box corner.
- Holding the **[Control]** key will constrain the objects either vertically or horizontally.

Creating a Sequence by List

The **Start Sequence by List** command will open the **Sequence by List** dialog, which provides a visual list of all the shapes that are on the workspace. Shapes at the front of this list will appear above other shapes, and shapes at the back will appear below.

The mouse can be used to drag shapes within this list. Alternatively, select a shape and use the **To Front**, **To Back**, **Forward One**, and **Back One** buttons. To use the **Reverse Order** button, at least two shapes must be selected.

STRETCH

Stretch

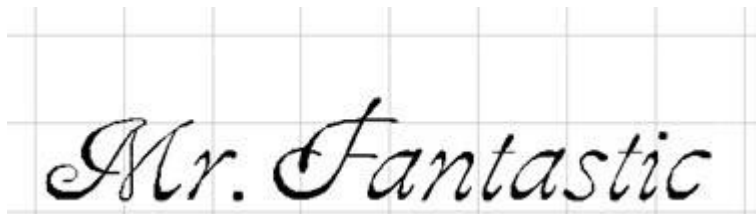
The **Stretch** feature is used to distort an object as if the object had elastic properties. Objects may be stretched in either an upward or rightward direction.



Note: Performing a stretch operation may not be initially successful for complex objects. To solve this, perform a series of smaller stretches until the amount of desired stretch is achieved.

Constant Stroke Stretching

For text objects, script fonts may be enhanced by stretching the text either horizontally or vertically, which will not distort the opposing strokes. For example, consider the follow text that uses an Ajax font:



Here is the same text after performing a 60% vertical stretch:

Mr. Fantastic

SPECIAL EFFECTS

SPECIAL EFFECTS

[Outlines and Inlines](#)

OUTLINES AND INLINES

Outlines and Inlines

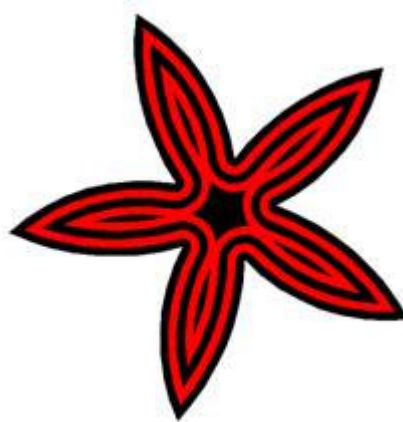
Outlines and **Inlines** are workspace objects that are calculated to follow the contour of a selected, base object, such as a star or rectangle. An Outline will typically be "outside" the base object, and an Inline will be "inside" the object.

Passes

Implement more than one Outline or Inline pass at a time to any selected objects by using this option. For example, use multiple passes to achieve special effects, such as ripples on a pond, by applying a multiple pass Outline to the selected object(s).



Star with five outline passes



Modified star with two inline passes

When a corner of an object is sharp, the resulting outline can extend well beyond the corner itself. Such corners may be clipped or rounded. The available options are as follows:



Point

Allow sharp corners



Clipped

Clip sharp corners as per the Miter Limit (see below)



Round

Round sharp corners

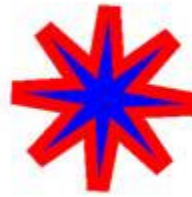
Miter Limit

The **Miter Limit** is a distance that is expressed as a percentage of the outline or inline thickness.

For a sharp corner of the original object, the resulting outline corner may be quite steep. If the **Clipped** button is enabled, then the outline corner will be clipped as per the **Miter Limit**.



Outline with Point corners



**Outline with Clipped corners, where
Miter Limit is 100%**

Only corners that are less than or equal to 90 degrees will be clipped.

Create Mask

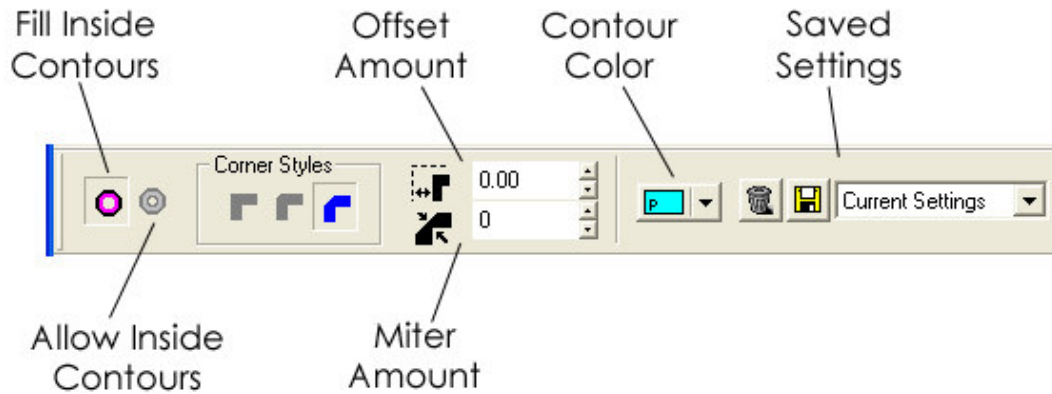
Where several objects are selected, outlines will be created for each individual object. The Create Mask option will weld all the outlines into a single object.

<p>Original two objects</p>	<p>Editing an outline for both objects</p>	<p>The resulting outlines have been welded</p>

This mask creation process is particularly useful when you are laying a light-colored vinyl over a dark sign substrate, as it allows you to cut a single-piece mask of white to reduce the effect of the dark material.

Contour Object

The Contour Object command is used to create a single shape that matches the contours of the selected shapes. The Contour Object can be set to retain the inner contours of the original shapes, or it can be set to be a solid shape with no inner contours.



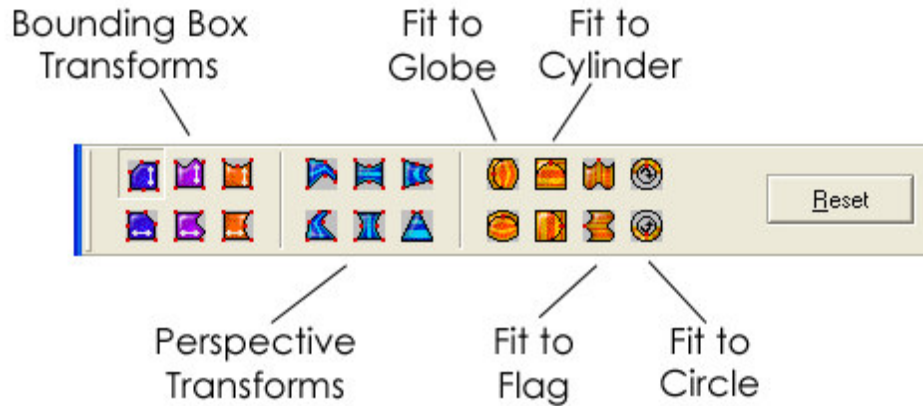
In the following example, the original shapes were composed of two lines of text and two clipart shapes. The resulting contour object (cyan) was set to fill the inside contours.



Transformation

Transformation

Transformations are used to apply special effects and distortions to selected objects and text.



Select the desired effect, and then drag the transformation handles to modify the effect. When adjustments are complete, click within an empty portion of the workspace to finish editing the transformation.

Adjusting the transformation handles

Prior to applying a transformation, the appearance of the distortion may be adjusted. Suppose that a **Fit to flag vertical distortion** is being applied to some text.



The placement of nodes varies according to the type of distortion that is being applied. In this **Fit to flag vertical** example, there is a single node that may be used to adjust the rise of the flag. As this node is adjusted, the outline of the distortion will show the final placement of the text.

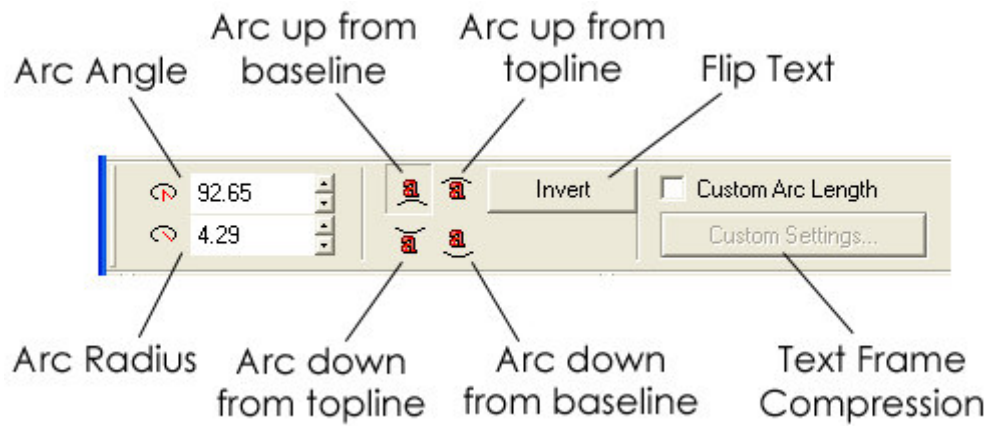


Other types of distortions are modified in a similar manner.

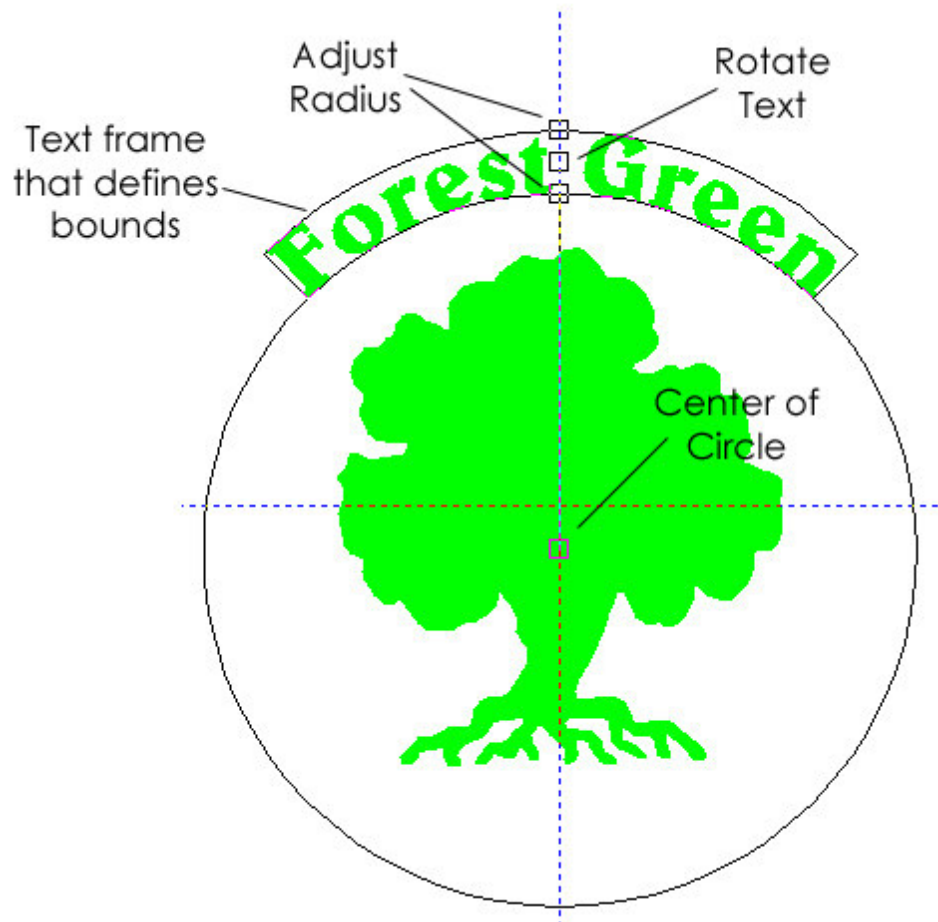
Fit Text to Arc

Fit Text to Arc

The **Fit Text to Arc** feature is used to position text as if its baseline or topline were being fit to a circle.



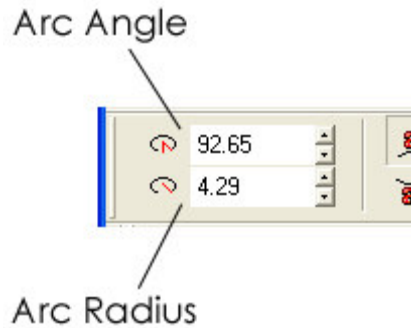
In addition to the SmartBar controls, editing handles will be available on the workspace.



Arc Angle and Arc Radius

The **Arc Angle** and **Arc Radius** fields are related controls, where adjusting one will affect the value of the other. The **Arc Angle** is the total arc through which the text is fit upon the circular path. The **Arc Radius** is the radius of

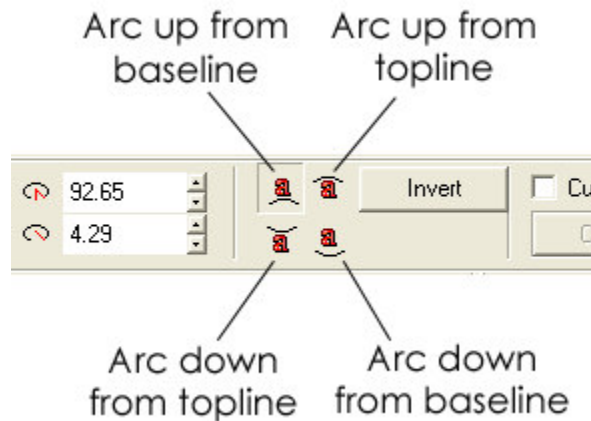
the circular path. So as can be observed, both the **Arc Angle** and **Arc Radius** fields affect the size of the circular path, and likewise they are dependent upon the size of this circular path.



Arcing the Text Up and Down

The text arc can be up or down from either the text baseline or topline. If arced from its baseline, then the text baseline will be flush with the circular path. Conversely, if arced from its topline, the text topline will be flush with the circular path.

If the **Invert** button is clicked, then the text will be arced as if its baseline and topline were swapped.

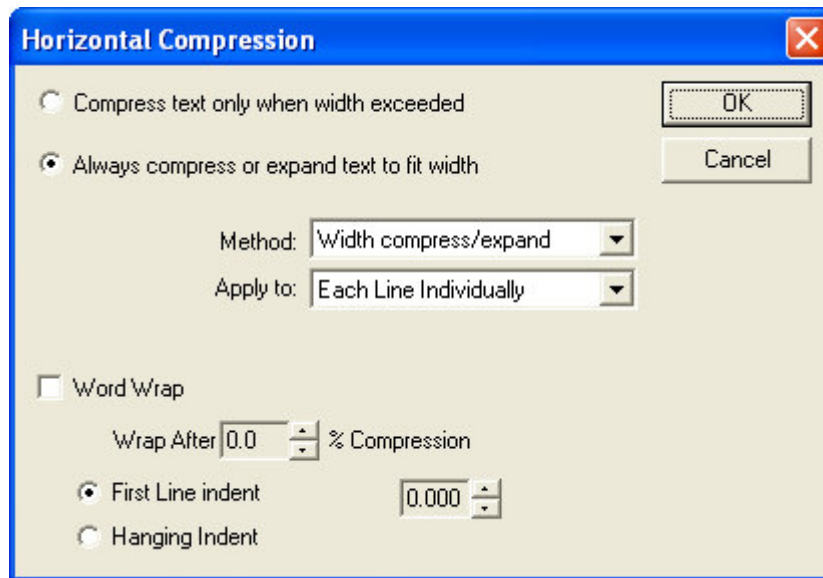


Setting the Custom Arc Length

If the **Custom Arc Length** option is checked, then additional compression/expansion handles will appear on the workspace preview. These handles may be used to either compress or expand the text frame, which is the bounds of the text shape.



To set the compression/expansion rules for the text frame, click the **Custom Settings** button to open the **Horizontal Compression** dialog. This dialog determines how the text will be fit to its text frame.



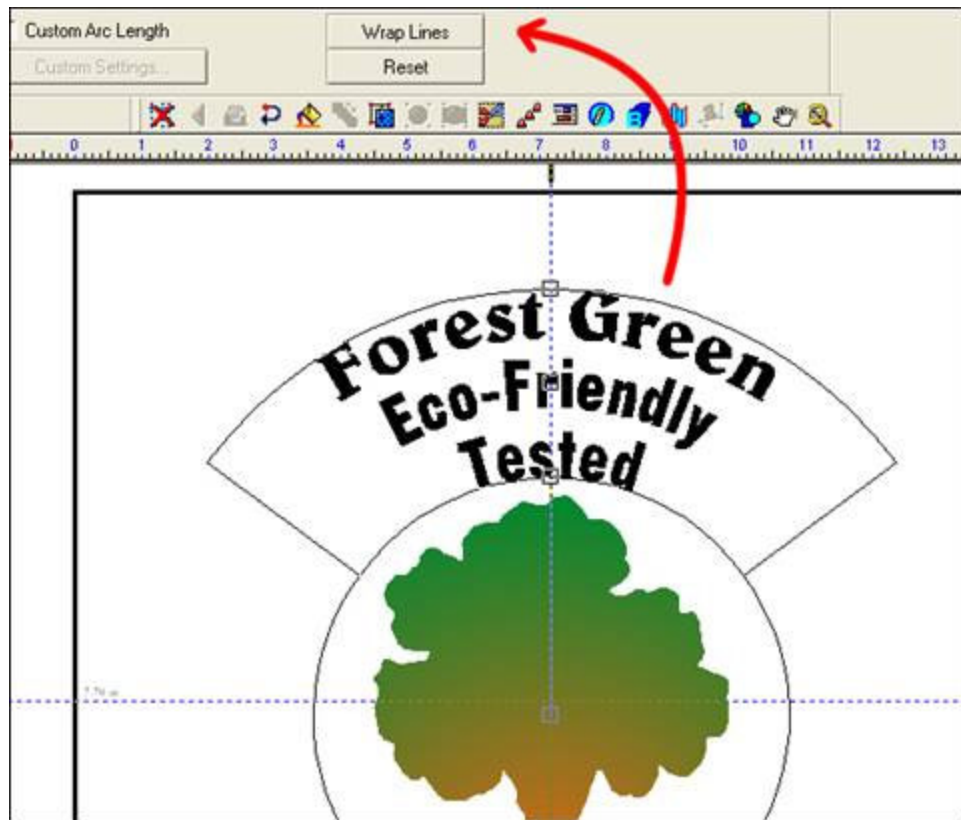
The four methods of compression/expansion are:

- **Width** – Constrain text by modifying the character width.
- **Height** – Constrain text by modifying the character height.
- **Kerning** – Constrain text by modifying the distance between characters.
- **Word Kerning** – Constrain text by modifying the distance between words.

If the Word Wrap option is **NOT** checked, then text will be fit within a single line. If the Word Wrap option **IS** checked, then text will be wrapped onto two-or-more lines when the indicated limit on compression has occurred.

Wrap Multiple Lines

If there are multiple lines of text when applying the **Fit Text To Arc** command, then the **Wrap Lines** button will be available from the SmartBar.



Clicking the **Wrap Lines** button will break each line into a separate text object, and the text objects will be spaced evenly around the circular path.

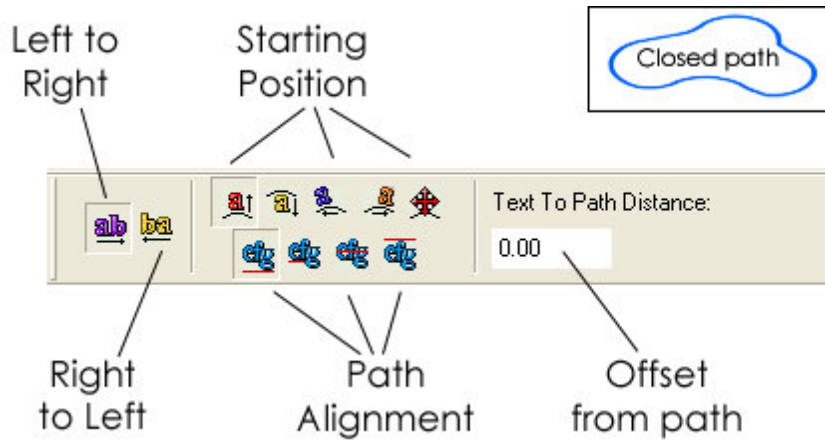


Fit Text To Path

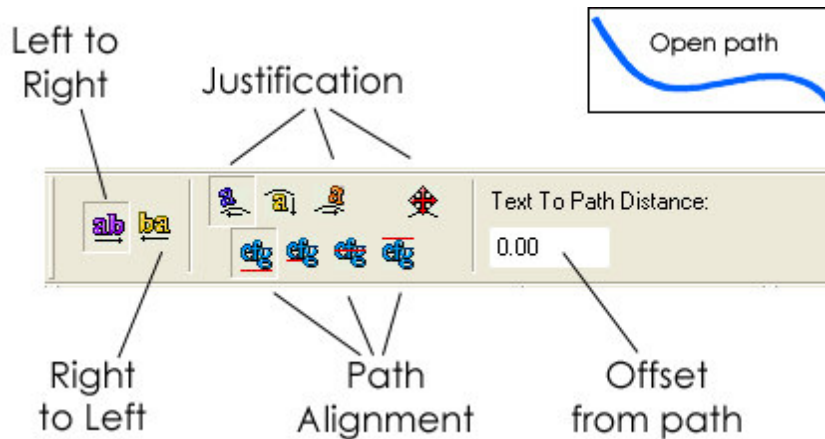
Fit Text To Path

The **Fit Text To Path** command is used to fit a text shape to a line art shape. Any line art shape is considered to be a “path,” where the line art can be either a “closed path” or an “open path.” A closed path is merely that has a contiguous, unbroken contour, such as a circle or a square shape. An open path is one that is not contiguous, such as a straight line or a drawn curve.

The SmartBar controls are slightly different according to whether text is being fit to a closed or open path. For an open path, there are “Starting Position” buttons that indicate whether the text should begin at the left, right, top, or bottom of the closed shape.

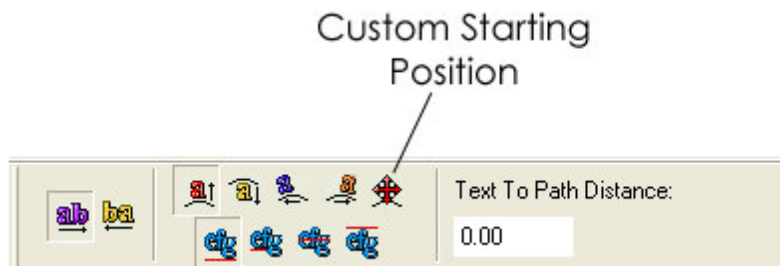


In comparison, the SmartBar controls for an open shape concern the justification of the text, being either left-, right-, or center-justified. For either case, there is a button to allow a custom starting position for the text.



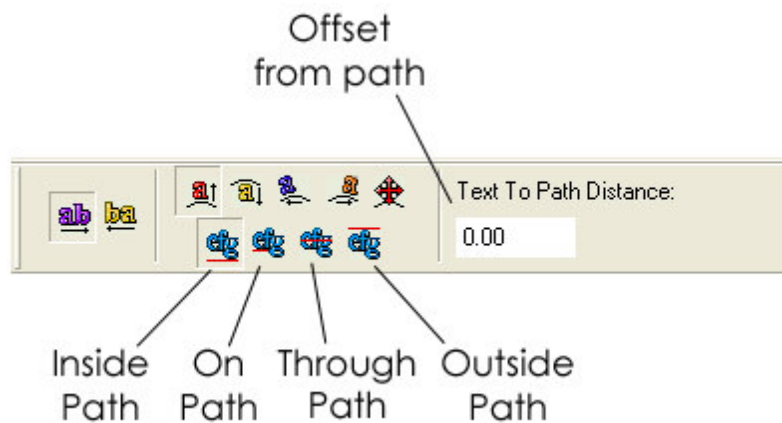
Fitting text to a custom position

For both open and closed paths, a custom starting position may be set along the object contour. To set a starting position, click the **Custom Starting Position** button in the SmartBar. At this point, clicking anywhere along the object contour will place a special start position handle, which appears as a tiny circle. Clicking the **Apply** button will show a preview of the text at that position.



Path Alignment

The **Path Alignment** determines how closely the text baseline is aligned with the path. This alignment is further modified by the **Text To Path Distance** field.



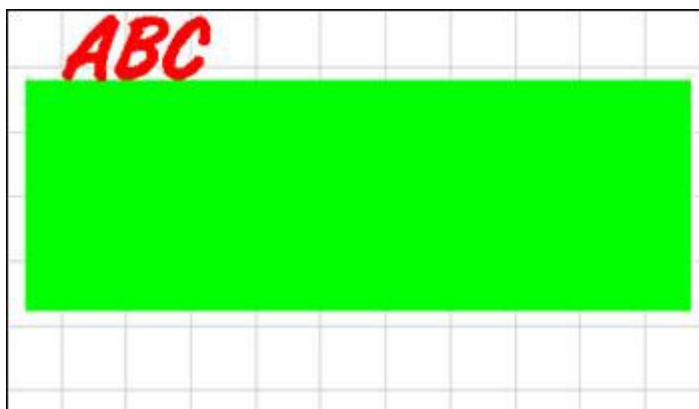
- **Text Inside Path** – The path will be aligned along the very bottom of the text, including descenders.
- **Text On Path** – The path will be aligned with the text baseline, which excludes descenders.
- **Text Through Path** – The path will cross directly through the middle of the text.
- **Text Outside Path** – The path will be aligned along the topline of the text.

Editing a previous Fit Text to Path operation

Suppose that a **Fit Text to Path** operation has been previously applied, where some text had been fit to a rectangle. Depending upon which shapes are selected, the **Fit Text to Path** operation may be used to either edit the existing operation, or to add more text shapes to the contour.

Case 1: Editing an existing Fit Text to Path operation

If both the text and rectangle shapes are selected, then choosing **Fit Text to Path** from the **Transform** menu will activate an editing mode for the existing **Fit Text to Path** operation. The SmartBar will have both **Apply** and **Accept** buttons. After editing the SmartBar settings, click the **Apply** button to update the workspace preview. However, when the SmartBar settings are correct, click the **Accept** button to save the settings. Otherwise, clicking the **Close** button will discard any edits.



Case 2: Adding a new text shape to the contour

If only the rectangle shape were selected, then choosing **Fit Text to Path** from the **Transform** menu will allow a new text shape to be added to the contour. The SmartBar controls will appear normal for a **Fit Text to Path** operation, except that the **Apply** button will have been replaced with an **Add Text** button. Once the SmartBar

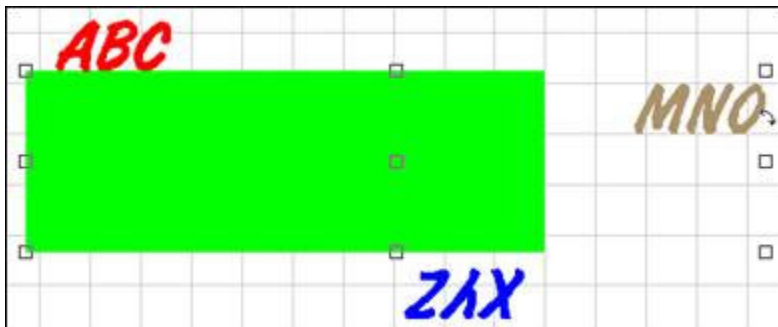
controls are set for the **Fit Text to Path** operation, click the **Add Text** button to activate text editing mode. The new text shape may then be edited, and the text will be added at the indicated location along the contour.



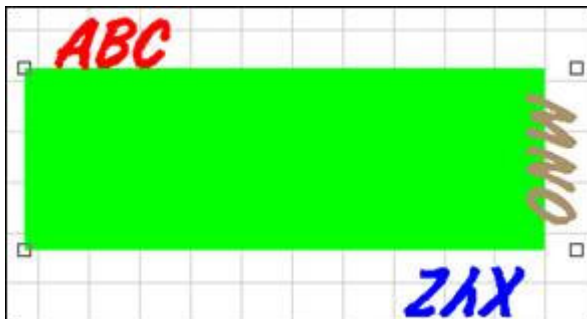
When the new text shape has been entered, click within an empty portion of the workspace to finish editing. The SmartBar will again display controls for the **Fit Text to Path** operation, and the location of the text along the contour may be edited. When editing is complete, either the **Apply** button may be clicked to begin editing a new text shape, or the **Close** button may be clicked to finish editing.

Case 3: Adding a separate text shape to the contour

Suppose there is an existing text shape that must be added to the rectangle contour.



With both the new text shape and the rectangle shape selected, the **Fit Text to Path** item may be chosen from the **Transform** menu. The SmartBar controls may then be edited to position the text shape along the rectangle contour.



Fit Object To Path

With two line art shapes selected, the **Fit Object To Path** command will fit multiple copies of the smaller shape to the larger shape. This is a common tool to use when creating a border decoration.

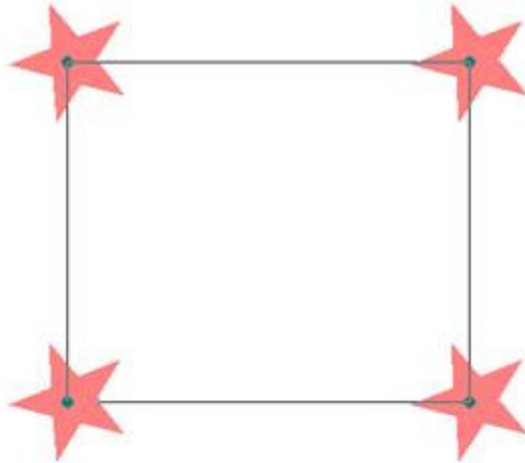


In the **Fit Object To Path** dialog, the **Object Placement** determines how many of the smaller shapes will be created.

The **Number** option indicates the total copies of the smaller shape that will be created. These copies will be evenly spaced around the larger shape.

The **Distance** option is a measure of how far along the larger shape contour before a copy of the smaller shape is created. Further copies will be created until the entire contour of the larger shape has been filled. The **Offset** indicates an initial distance within which objects will not be placed along the contour.

The **Nodes** option refers to the editing nodes that the larger shape is composed of. For example, double-clicking a polygon rectangle shape reveals that there is a node at each corner. If a star shape is fit to this rectangle using the **Nodes** option, then a star shape will be created at each corner.



Metamorphosis

Metamorphosis

For two selected shapes, the **Metamorphosis** tool is used to create multiple intervening shapes that represent the transformations from the first shape to the second. The transformation takes into account the shape of the two original objects, their colors, and the colors of any thick lines that might have been applied to the objects.



Two text shapes, each assigned a different spot color.

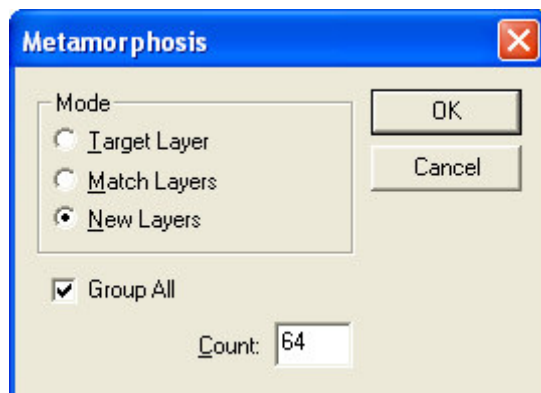


After applying a Metamorphosis operation.

The metamorphosis may then be combined with other shapes to enhance the effect:



The **Mode** options determine how colors will be assigned to the intervening shapes.



Target Layer

The **Target Layer** option causes intervening shapes to be assigned the currently selected color in the Shop Palette.

Match Layers

The **Match Layers** option causes the intervening shapes to be assigned transitional colors. These colors are selected according to the closest matches that are available in the Shop palette, regardless of the type of colors used for the original shapes. For example, even in cases where the original shape colors were spot colors, process colors may be assigned as transitional colors.

New Layers

The **New Layers** option causes the intervening shapes to be assigned transitional colors. These colors are selected according to the closest matches that are available in the Shop palette. If a given color does not exist within the Shop palette, then a new color plate will be created.

If the original two shapes had been assigned spot colors, then the transitional colors will be duotones of the original two spot colors.

Morphing to the Background Color

When morphing gradients from one color to the background substrate color, the target color should be neither process white, nor spot white. Process white will cause the intervening shapes to be assigned process colors, whereas spot white will cause duotones to be assigned.

To create gradients that will fade to the background color, the target color should be either Clear Color, or a 0% tint of the spot color.

Group All

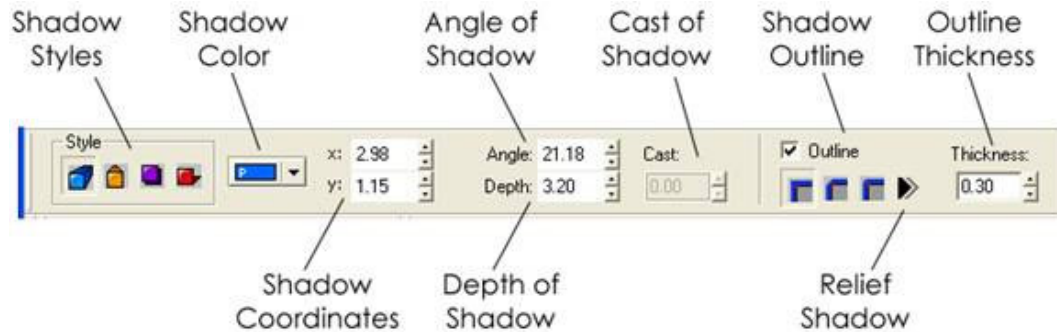
When using a high **Count** value to create multiple intervening shapes, enable the **Group All** option to group the resulting shapes. This aids the process of selecting and moving the shapes.

Shadow

Shadow

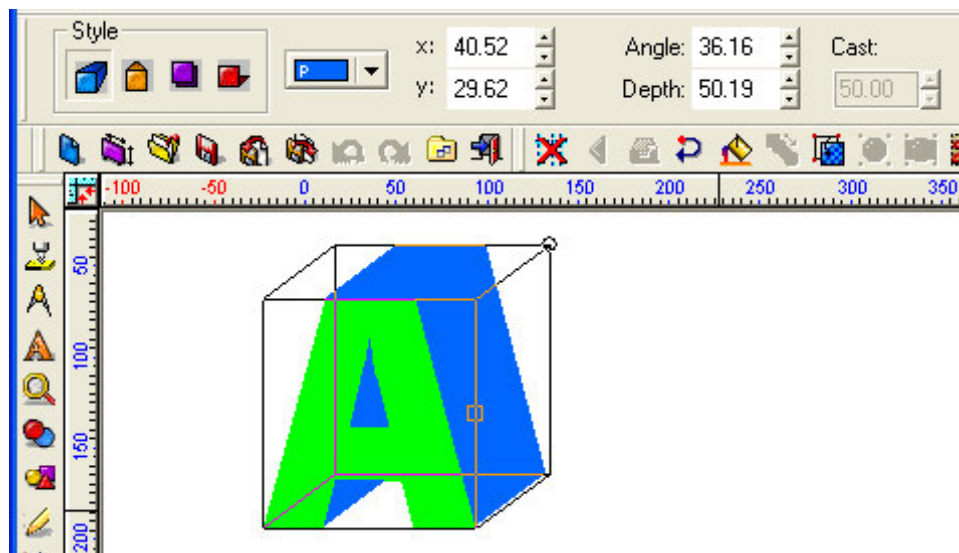
The **Shadow** option allows for creation of quick shadow effects to one-or-more shapes. Once the type of shadow has been selected, editing handles will appear about the shapes, and the shadow attributes can be edited from the SmartBar.

By default, the shadow is centered on the shape at coordinates (0,0). As an alternative to adjusting these coordinate values, the SmartBar also provides Angle and Depth attributes.



Block Shadow

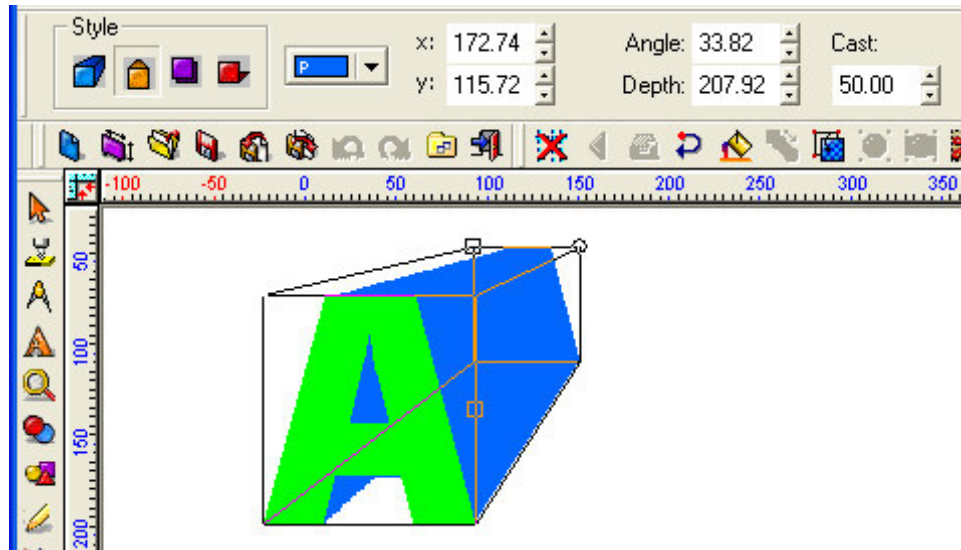
The **Block Shadow** is used to give objects the perception of depth.



Perspective Shadow

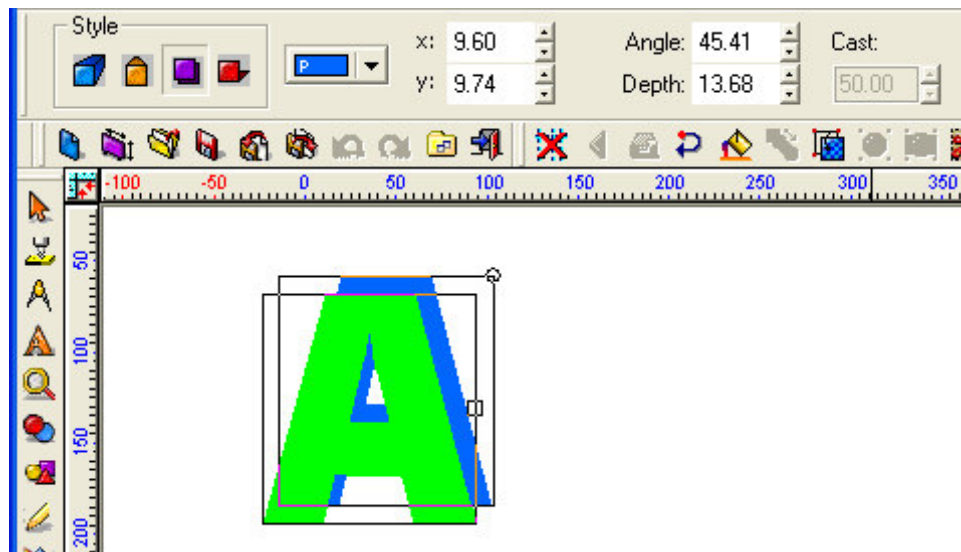
The **Perspective Shadow** is used to give objects the perception of distance.

The furthest portion of the shadow is a percentage of the shape size, as indicated by the **Cast** value. For example, if the **Cast** value is 50, then the furthest portion of the shadow will be 50% smaller than the shape size. To have the shadow extend to an infinite point, set the **Cast** value to 100 (i.e. 100% smaller than the shape size).



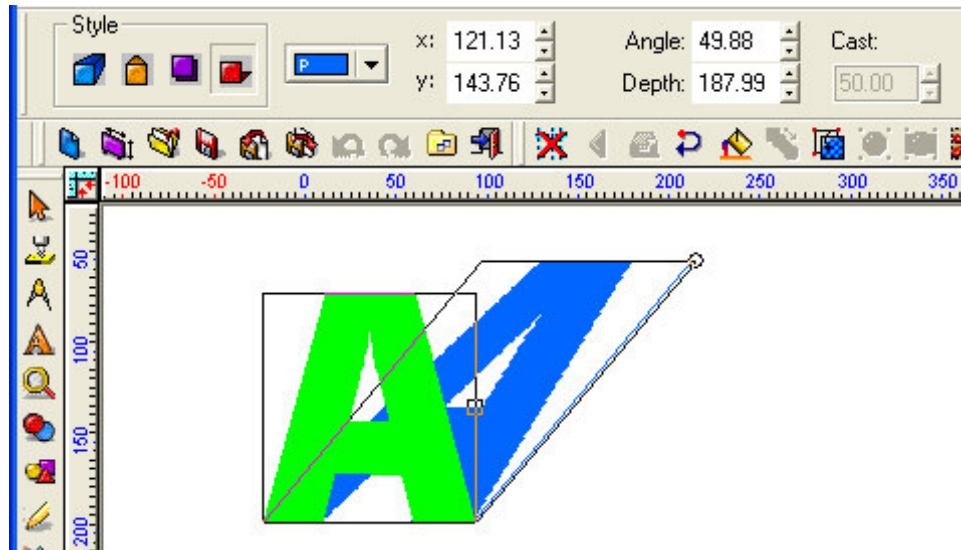
Drop Shadow

The **Drop Shadow** is similar to the Block Shadow, though the perceived space between the original shapes and their shadows is not filled.






Cast Shadow

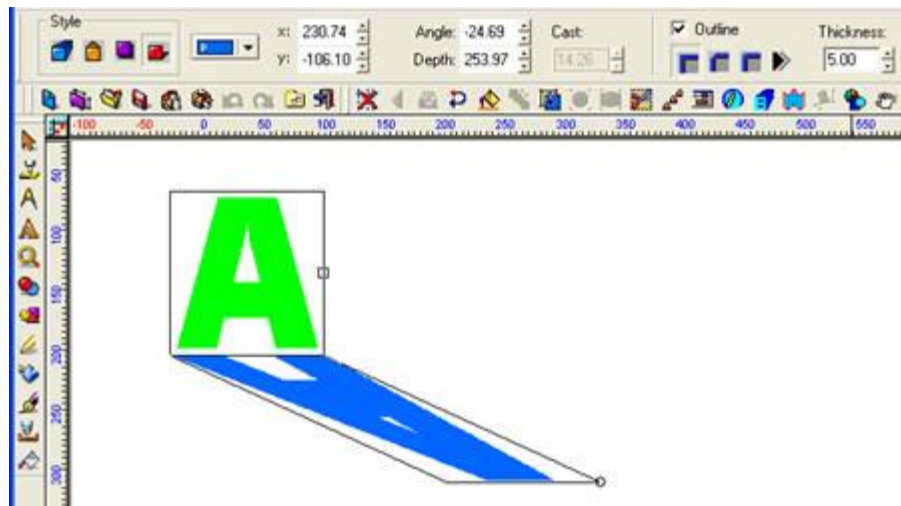
The **Cast Shadow** is used create the perception of a light source, such that the objects project a shadow as if onto a nearby surface.



Shadow Outline

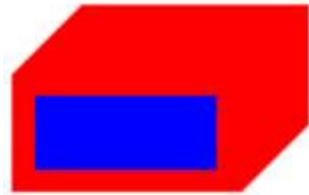
An outline amount can be applied to the shadow, so as to create a heavier shadow effect. The Thickness setting is used to adjust the outline amount.

-  **Point** Allow corners to remain sharp
-  **Miter** Clip sharp corners instead of rounding
-  **Round** Round sharp corners



Relief Shadow

As an alternative to applying an outline to the object, click the **Relief Shadow** button to create a gap between the shape and its shadow. The size of the gap is determined by the **Thickness** setting.



Shadow with outline



Using a relief shadow

About the Minimum Shadow Hole

When creating a shadow for small letter shapes, it may be the case that the inner contours of the letters are being filled when the shadow operation is applied. This occurs for inner contours that are approximately 0.1 inches in diameter, such that very small "slivers" do not occur in the finished work.

If it is desired that such inner contours be retained, then scale the text by 100% prior to applying the shadow operation. After applying the shadow operation, the text and shadow may then be reduced by 100% to obtain the desired size.

Round Corner

Either the inner or outer corners of objects may be rounded. **Inside** corners are corners which face back into the body of the object, while **Outside** corners are corners which face away from the body of the object. For example:



Original object

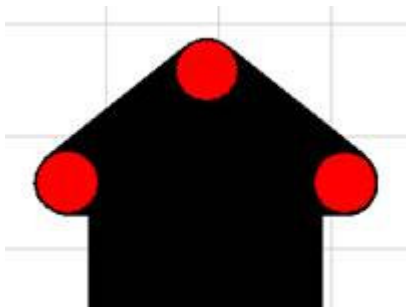


Rounded outside corners



Rounded inside corners

Using a circle as a model, rounding is performed by mapping each corner along the circumference of the circle. In this fashion, the amount of rounding is determined by the radius of the circle.



Rounding performed to an arrow shape. Note that the circles drawn here are for example only.

Fillet Round Corner

The **Fillet Round Corner** feature is similar to the **Round Corner** feature, except that rounding may be applied to individual corners.

Vision-Pro 7 Doc Files

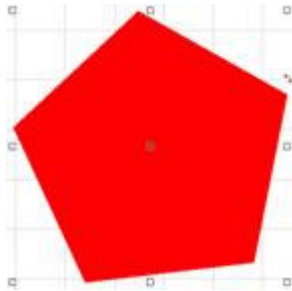
For a selected shape, choose **Fillet Round Corner** from the **Transform** menu. The **Fillet Round Corner** controls will appear in the SmartBar.



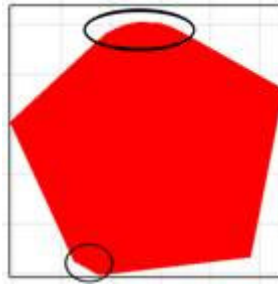
For the selected shape, click the corner that will be rounded. From the SmartBar, the **Corner Radius** field may be used to adjust the amount of rounding.

To apply rounding to a different corner, simply select another corner of the shape, and then adjust the **Corner Radius** amount.

For example, two corners of the following pentagram have been applied with different amounts of rounding:



Original pentagram. No corners are rounded.



After applying rounding to two corners. The lower-left corner has been clipped.

If the **Miter** option is enabled, then the corner will be clipped instead of rounded.

PRODUCTION TOOLS

PRODUCTION TOOLS

Introduction

The **Production Tools** are signmaker tools that help manage and improve the signmaking process. Detailed information can be organized about each work assignment, and initial designs can be quickly previewed by customers. Customers may also request changes or additional info, and confirmation may be obtained prior to initiating a job.

 [Job/Cost Notes](#)

 [TimeSign](#)

 [Templates](#)

 [Clip Art](#)

JOB/COST NOTES

Job/Cost Notes

The **Job Notes Summary** dialog is used to record the relevant information about a given job. This information is stored with the workspace, so that it is always available for review. In addition, contact information that is stored here can be used to fill out wizard information when using the Generate Quote, Generate Proof, or Generate Portfolio commands.

Individual company records may be stored for later use, such that this information need not be specified more than once. In addition, job information may be indexed on a per company basis.

Checkboxes

On the **Job Notes Summary** dialog, a checkbox is provided beside each field. If a given checkbox is disabled, then its field will not be included when printing the job/cost notes, nor when using the **E-Mail Preview** feature

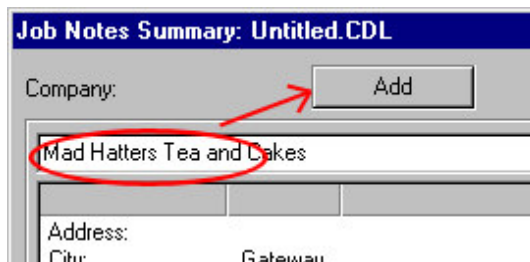
(**Web** menu). This is a useful means of preventing sensitive information from being included as part of the documentation.

Note: Changes to these checkbox settings will be stored as part of the general Vision-Pro settings, such that they will not be reset when a new Vision-Pro session is started.

Company

Company

The company for which the job is being designed. Either choose an existing company from the drop-list, or enter a new company name. If a new company name is entered, then the **Add** button must be clicked.

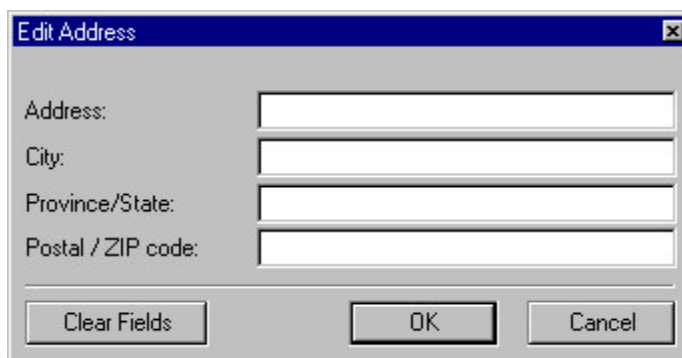


In some cases, a job request is made by an individual that does not belong to a company. This is not a problem, since their contact information may be entered as normal. However, enter their name as the "company" name as well, such that their record may be located in future jobs.

When a **Company** has been specified, then the **Job Ticket** field will become active.

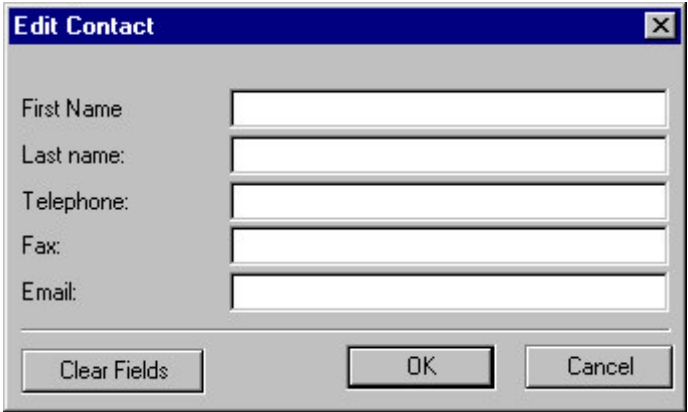
Edit Address

Click the **Edit Address** button to specify the address information for the company.



Edit Contact

Click the **Edit Contact** button to enter information about the company representative.



The 'Edit Contact' dialog box has a title bar with a close button. It contains five text input fields labeled 'First Name', 'Last name:', 'Telephone:', 'Fax:', and 'Email:'. At the bottom, there are three buttons: 'Clear Fields', 'OK', and 'Cancel'.

First and Last name

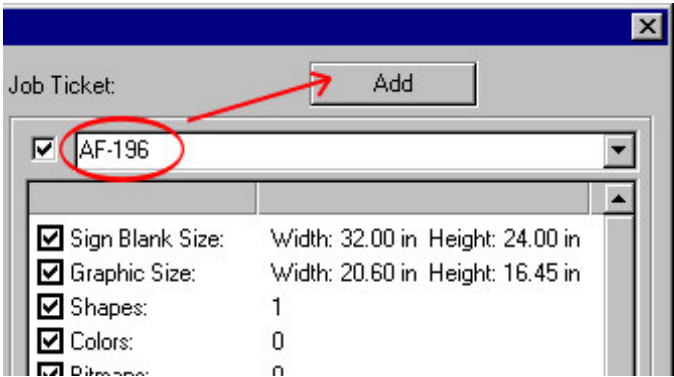
Enter the name of the person responsible for contracting and accepting the finished job.

Contact Information

Enter the Telephone number, Fax number and E-mail address for the contact person.

Job Ticket

The **Job Ticket** is the collection of design information about the current job. When a **Company** has been selected, the **Job #** field will become active. To maintain an inventory of jobs by number (or by any other alphanumeric code for filing purposes), enter the appropriate **Job #** code and then click the **Add** button.



The 'Job Ticket' dialog box has a title bar with a close button. It features a 'Job Ticket:' label, a text input field containing 'AF-196' (circled in red), and an 'Add' button (pointed to by a red arrow). Below these is a list of design parameters, each with a checked checkbox and a value:

<input checked="" type="checkbox"/> Sign Blank Size:	Width: 32.00 in Height: 24.00 in
<input checked="" type="checkbox"/> Graphic Size:	Width: 20.60 in Height: 16.45 in
<input checked="" type="checkbox"/> Shapes:	1
<input checked="" type="checkbox"/> Colors:	0
<input checked="" type="checkbox"/> Bitmaps:	n

The **Job #** will also displayed on the **Edit Job** dialog. If the Job # had not been entered on the **Job Notes Summary** dialog, then the **Job #** may be entered on the **Edit Job** dialog. In this case, the **Add** button must then be clicked on the **Job Notes Summary** dialog to confirm that the job is valid.

Edit Job

Click the **Edit Job** button to enter specific production information about for the **Job Ticket**.

Edit Job

Job #: _____ Deadline date: 4/11/02

Material Type: _____

Complexity: _____ Quantity: _____

Cutting Time: _____ Material Cost: 0.00

Production Time: _____ Labor Cost: 0.00

Weeding Time: _____

Travel Time: _____ Selling Price: 0.00

Computer Time: _____ Delivery Date: 4/11/02

Printing Time: _____

Clear Fields OK Cancel

Job #

The **Job #** field corresponds to the **Job Ticket** field on the **Job Notes Summary** dialog.

The **Job #** field only becomes active when a **Company** has been chosen. If an inventory number has already been entered in the **Job Ticket** field, then the **Job #** will be displayed as a static (non-editable) field.

Date

The **Date** field can be used to note the date the job was started or the order taken. Click the Date field to activate a calendar popup.

Deadline date: 4/11/02

April 2002

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Today: 4/11/02

Material Type

Enter the type of material and quality of material that will be used for rendering or cutting.

Complexity

Many designers use a complexity rating in order to help set pricing on certain types of work. Rate each job for complexity and enter the complexity value in this field.

For Example, consider letter welding in conjunction with intricate weeding. A graphic using script lettering would require significantly more time than had a sans serif font been used. Therefore, using the script lettering would be deemed a more complex job.

Cutting Time

This box may be used to track the amount of time required to cut a given job, which can aid in calculating job costs. This is particularly useful for routing and engraving, where machine time is a billable expense. Values are entered manually, since there is no automatic time calculation available for this function. However, use TimeSign to record the time required to complete the job.

Production Time

Enter the required production time in this field. It may reflect the estimated time required for pricing purposes, or actual time required for job costing. Values are entered manually, there is no automatic time calculation available for this function.

Weeding Time

This field is designed to reflect the amount of time required to weed the current job. It is typically used either to note the estimated weeding time (for pricing purposes) or the actual weeding time (for reference in pricing future jobs). Values are entered manually, there is no automatic time calculation available for this function, however, it can be used in combination with TimeSign to calculate bill-able time accurately.

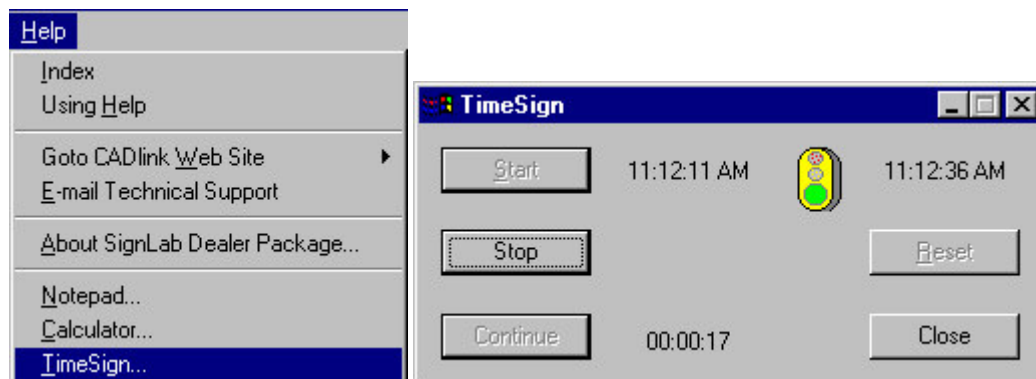
Travel Time

Enter the amount of time required to get to and from the current job site in this field. This feature can be particularly useful where travel time is a factor in the final cost of the sign.

Computer Time

Use this box to track the amount of computer time spent on a given job. This can be useful information when calculating the cost of a given job. Enter the value in this box manually, there is no automatic time calculation for this function.

Used in combination with TimeSign, available through the **Help** Menu, the **Computer Time** field can be a crucial aid in calculating bill-able time accurately.



The **TimeSign** feature is discussed in a later section.

Printing Time

Enter the amount of time required to print the current job. This field is primarily designed as an aid for estimating or costing jobs which specify large-format digital printing, but is also useful for those jobs which require printed previews. It may be used to note estimated printing time for pricing, or actual printing time for job costing. Values are entered manually, there is no automatic time calculation available for this function, however, it can be used in combination with TimeSign to calculate bill-able time accurately.

Material Cost

Enter the actual or estimated cost of materials for the current job.

Labor Cost

Enter the cost of labor for the current job.

Selling Price

For future reference, and as an aid to job pricing and accounting, include the selling price of the current job in this space in the Job/Cost Notes dialog.

Delivery Date

Enter the due date scheduled for the current job.

Order Number

If Purchase Orders are required prior to starting a job, then enter the **Job** or **Customer Order** number.

Order Taken By

Enter the name or employee number of the person who took the order for the job. With more than one salesperson, attribute each job to a specific employee. This provides the ability to clarify details with the appropriate person on staff, or to track sales by employees.

Job Notes

A brief description of the job should be entered into this field. This will help identify a given job quickly and easily.

Material, Vinyl, Color Notes

Enter any additional notes that pertain to the manufacturer, vinyl, grade of materials, etc. used in the job. This facilitates repairs to, or reproduction of, the job in the future.

Set Default Database

When Vision-Pro is installed, the **Job/Cost Notes** database is placed in the Vision-Pro install directory. If there is a common database that must be used on a network, then click the Set Default Database button. A browse dialog will open, which allows you to choose the database file that must be used.

Printing the Job Report

Click the **Print** button to create a **Job Report** printout. Much of the **Job Report** fields correspond to fields on the **Job Notes Summary** dialog, though the printout also provides additional statistical information about the job.

Graphic Size:	Width: 519
Counts:	
Bitmaps:	0
Shapes:	62
Characters:	0
Colors:	14

Each count is automatically calculated and updated each time that the **Job Notes Summary** dialog is opened. The counts are described as follows:

Graphics Size

The **Graphics Size** indicates the finished size of the current job, including all elements of the job, except the Sign Plate Size.

Bitmaps

The **Bitmaps** count indicates the number of bitmaps currently contained in the job.

Shapes

The **Shapes** count indicates the number of polygon, polyarc, parametric, and other non-text objects contained in the current job. This count includes all text objects that have been converted to graphics.

Characters

The **Characters** count indicates the number of text characters contained in the current job – excluding both text objects that have been converted to graphics, and characters that are generated by the Dimensioning feature.

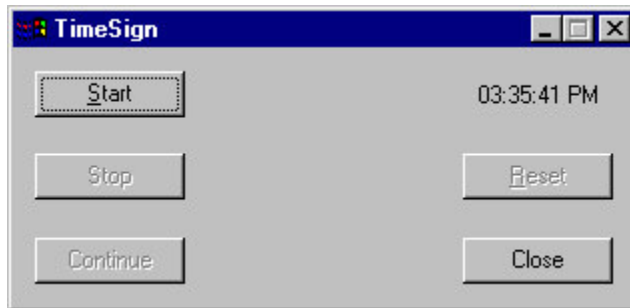
Note: Any text character converted to graphics will be recognized as graphic objects and included in the **Shapes** count. This includes all text that has been transformed, welded, converted to graphics, or has had the path broken or the corners rounded. In all cases, a warning dialog will appear before the text is converted, unless the warning dialog has been previously disabled (see **General Preferences** dialog).

Colors

The **Colors** count indicates the number of colors used in the current job.

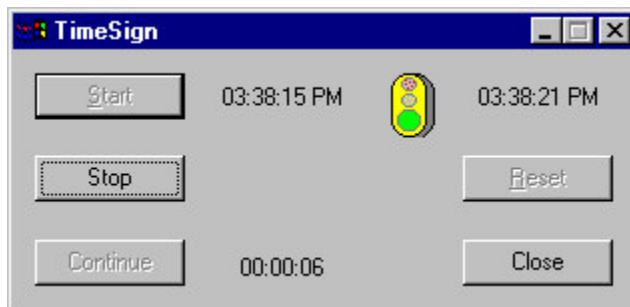
TIMESIGN

TimeSign is a timer application that tracks elapsed time during a job. The current system time is shown at the top-right of the dialog.



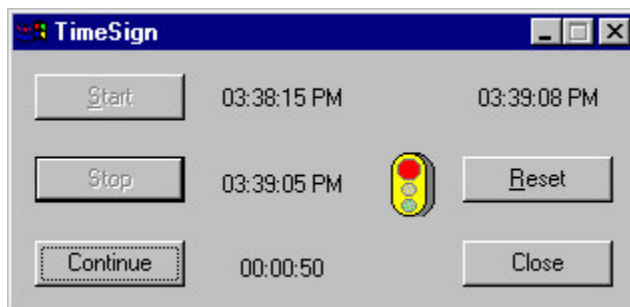
Start

Click the **Start** button to activate the stopwatch. Once activated, the Start time will appear beside the Start button. The traffic light icon will signal green to indicate that the timer is active.



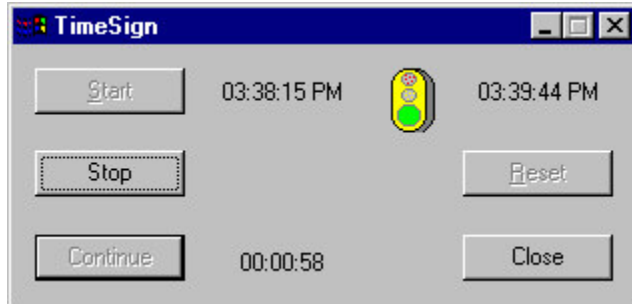
Stop

Click the **Stop** button to pause the timer. The time at which the Stop button was clicked will be displayed next to the Stop button. The traffic light icon will signal red to indicate that the timer has paused. The elapsed time is displayed at the bottom of the dialog box beside the Continue button.



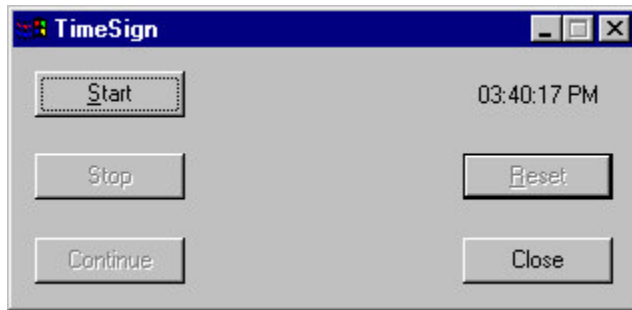
Continue

Elapsed time is displayed next to the **Continue** button. Click the **Continue** to recommence timing without resetting the elapsed time. For situations where the job is frequently interrupted, the Continue button is helpful for timing the total expended work.



Reset

Clicking the **Reset** button will set the elapsed time to zero.

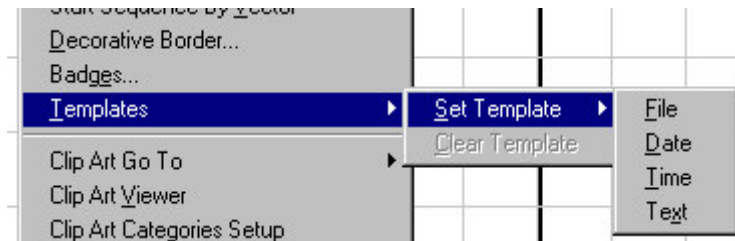


TEMPLATES

Templates

A **Template** operation is used to convert a **text object** into a variable workspace element, which is then saved with the workspace. Later, when the workspace is again loaded into Vision-Pro, the text object will be converted into the type designated by the **Template** operation. For example, a template may be set to display the current date when the workspace is loaded.

When a text shape is selected, the **Templates** flyout may be accessed under the **Layout** menu.

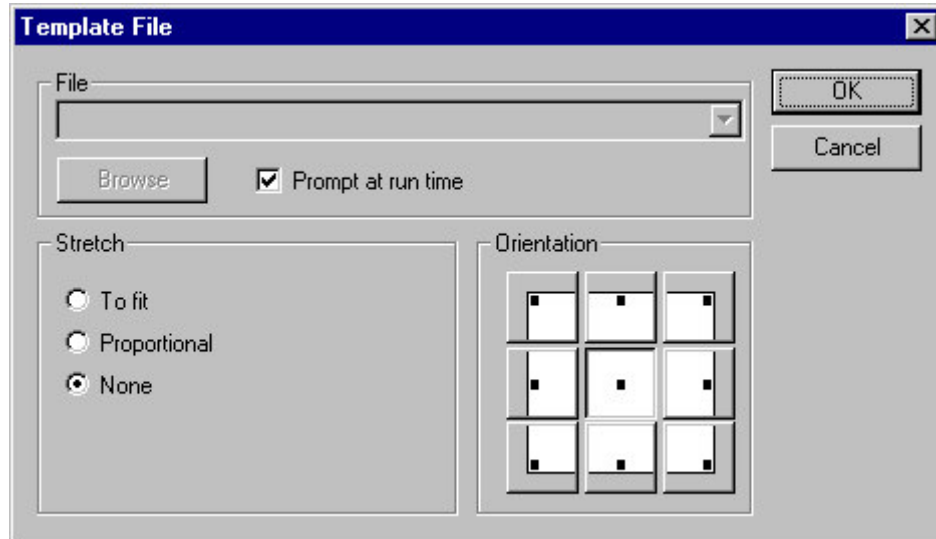


File

File

The **File Template** operation will cause the text object to be replaced with an imported data file, such as a company logo or other image. The original text object may be used to determine the size and placement of the imported file.

For a selected text object, choose **File** from the **Set Template** flyout. The **Template File** dialog will open.



File / Prompt at Run Time

The file to be imported may be selected before saving the workspace, or the file may be chosen by the user when the workspace is loaded.

If the "**Prompt at run time**" option is disabled, then click the **Browse** button to choose the file that will be loaded.

If the "**Prompt at run time**" option is enabled, then the user will be queried for a file when Vision-Pro workspace is opened.

Stretch

The **Stretch** options are used to determine the size and placement of the imported file.

The **To fit** option indicates that the width and height of the file will be set equal to the replaced text object, such that the entire text frame is filled. However, the aspect ratio of the imported file will not be maintained. This option assumes that the text object was originally set to the desired width and height of the anticipated file.

The **Proportional** option will scale the file to fill the text frame. Since the aspect ratio of the file is maintained, it is likely that not all of the text frame will be filled.

The **None** option will cause the file to be imported and placed at its full size. The file will be neither scaled nor resized.

Orientation

The **Orientation** is used to indicate where the file should be placed within the text frame. This option is relevant when the **Stretch** has been set to either **Proportional** or **None**.

Date

Create a text object and set it to the appropriate size for any artwork proofs. Select the text object and choose the **Date** option from the **Set Template** flyout. When the workspace is loaded, this text object will be replaced with the current date, as per the system clock of the workstation.

Time

Create a text object and set it to the appropriate size for any artwork proofs. Select the text object and choose the **Time** option from the **Set Template** flyout. When the workspace is loaded, this text object will be replaced with the current time, as per the system clock of the workstation.

Text

Create a text object and set it to the appropriate size for any artwork proofs. Select the text object and choose the **Text** option from the **Set Template** flyout. When the workspace is loaded, the user will be prompted for replacement text. The original text object will then be substituted with the replacement text.

Note: The original text object will be used as part of the prompt for replacement text. Creating a meaningful text object will help as a reminder when the workspace is opened.

Clear Template

For a selected text object that has been previously applied with a **Template** operation, use the **Clear Template** command to remove the **Template** operation. The **Clear Template** command may not be applied to a group selection.

Edit Template

The **Edit Template** command is available through the **File** menu. The **Edit Template** command is similar to the **File** menu >> **Open** command, except that any template objects within the file will not be automatically completed. This allows the template file to be modified without losing any of its previously set template operations.

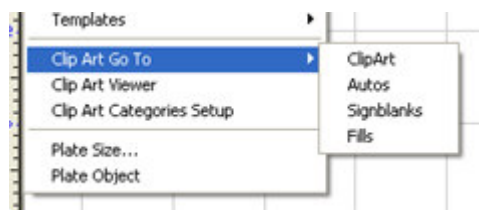
When changes to the template file are complete, use the **Save** or **Save As** commands to store the revised template file.

CLIP ART

Clip Art

Vision-Pro is provided with a **Clip Art** viewer that is a quick means of browsing and selecting clip art. Either bitmap (.BMP) or Vision Drawing files (.CDL) are valid formats that may be imported as clip art.

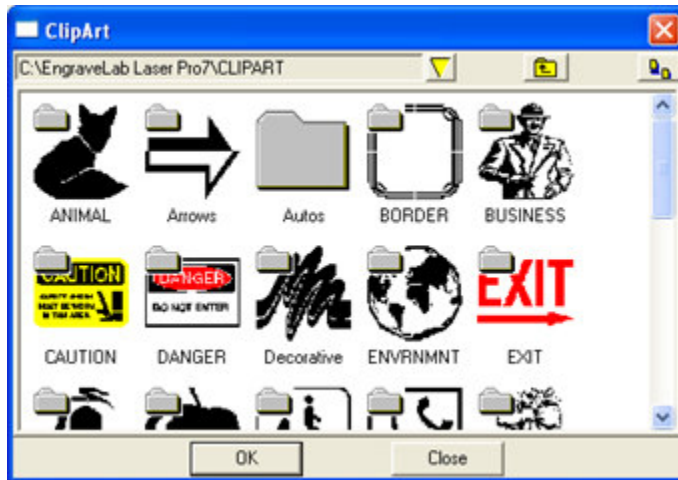
The **Clip Art** features are accessible under the **Layout** menu.



Clip Art Viewer

Clip Art Viewer

To browse for clip art, choose the **Clip Art Viewer** item under the **Layout** menu. The **ClipArt** dialog will open.




When Vision-Pro was installed, an option was provided to install several clip art folders within the Vision-Pro install directory. The **ClipArt** dialog may be used to navigate these clip art folders, as well as other clip art that are on the workstation.

Navigating the clip art folders

Double-clicking a folder will show the contents of that folder. To exit a folder, click the **Up One Level**

 button.

At the top-right of the dialog, the **View**  button may be used to toggle between small and large previews of the clip art.

Opening the clip art

To open a clip art object, double-click its preview in the **ClipArt** dialog. Alternatively, drag-and-drop the preview onto the Vision-Pro workspace. In either case, the Vision-Pro cursor will become an angle bracket, which is used to position the clip art on the workspace.

Clip Art Go To

As a shortcut, the **Clip Art Go To** flyout lists folders that contain clipart. When a folder is selected from the flyout, the **ClipArt** dialog will open, and the contents of the folder will be displayed.

To edit the folders that are listed in the flyout, choose the **Clip Art Categories Setup** item under the **Layout** menu.

Note: Vision-Pro is installed with default folders for Arrows and Automobiles clip art, as well as bitmap fill patterns. Additional clip art is available on the *Fonts and Sign Clip-art* CD.

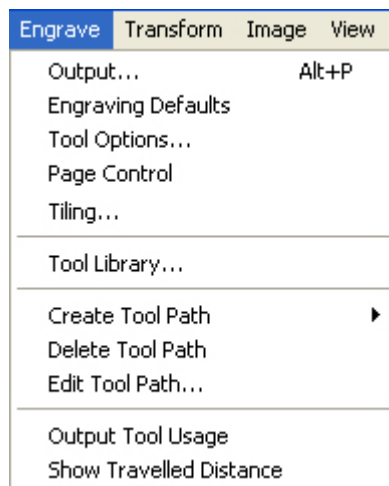
CUTTING AND PLOTTING

CUTTING AND PLOTTING

- [? Engraving workspace objects](#)
- [Creating Tool Paths](#)
- [Engrave Preview](#)
- [Engraving Defaults](#)
- [Plotter Setup](#)
- [Tool Library](#)
- [Output Tool Usage](#)
- [Output Spooler](#)
- [Output Spooler As A Stand Alone Application](#)
- [Remote Spooling](#)

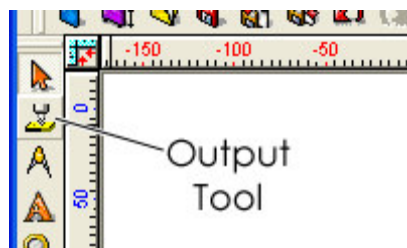
ENGRAVING WORKSPACE OBJECTS

This chapter discusses the **Engrave** menu commands, which includes controls for configuring most routers and engravers (**Engraving Defaults**).



Before beginning a job, please note that newly created shapes **do not** automatically have cutting paths applied to them. Instead, a selected shape may be applied with a tool path from the **Create Tool Path** flyout. The **Output** command may then be used to activate the Engrave Preview mode, whereupon cutting data may be output to the given device.

As an alternative to the **Output** command, the **Output Tool** on the **Tools** toolbar will also activate the Engrave Preview mode.



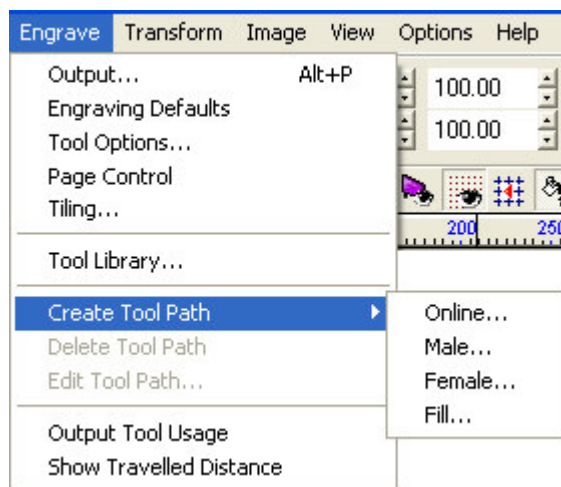
Note: Prior to generating output, the correct driver must be installed for the make and model of the device being used. See the **Install Drivers** command under the **File** menu to determine if the correct driver has been installed.

CREATING TOOL PATHS

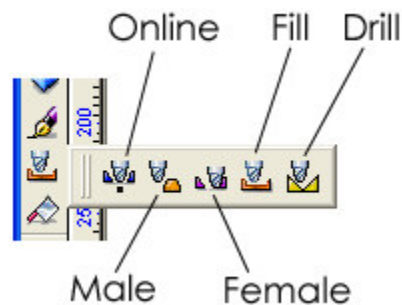
Creating Tool Paths

Tool paths are special cutting/engraving/plotting operations that are applied to workspace shapes. In addition to being a visual workspace description of the tool movements, each tool path contains specific information about its cutting parameters, such as cutting depth and bit type.

By default, newly created workspace shapes **do not** have cutting paths. Instead, apply a cutting path to a selected shape by choosing from the **Create Tool Path** flyout (**Engrave** menu).



These tool paths are arranged into the following classifications: Online, Male, Female, Fill, and Drill. Though these tools are accessible from the **Engrave** menu, and they are also accessible from the **Tool Path Tools** flyout. Please note that the **Drill** tool is only available from this flyout.



For the tools chosen from the **Engrave** menu, the setup dialog will always open. However, when choosing a tool from the **Tool Path Tools** flyout, right-clicking will always open its setup dialog, whereas left-clicking will assume that the previously used settings should be used. The exception to this interface behavior is the **Drill** tool, which is discussed later.

Delete Tool Path

Remove the tool path from the selected shape.

Edit Tool Path

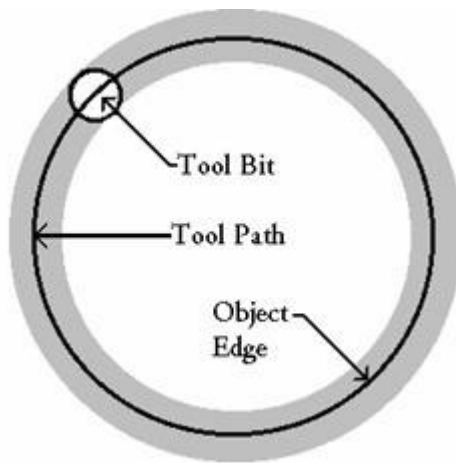
For a shape that has been applied with a tool path, open the editing dialog for that tool path.

Online

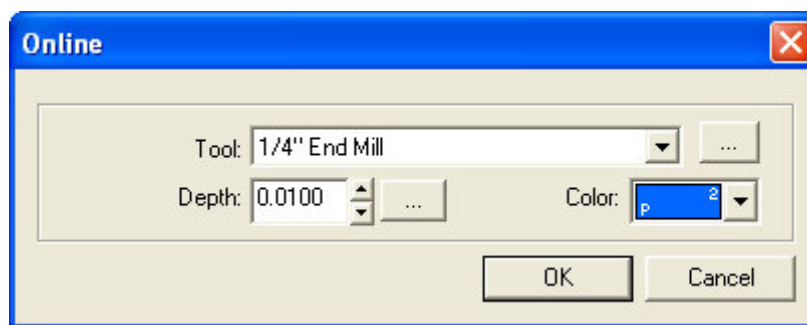
Online



Defines a basic cutting path for which the tool will follow the edge of a designated shape. The resulting cut will have an offset of zero. The **Online** tool path is often used to trace shapes in artwork without filling the shapes with an engrave pattern.



The **Online** setup dialog appears as follows:



Tool

Use the **Tool** drop-list to set the tool that will be used to cut the shape. To the right of the **Tool** drop-list, the ellipsis button is a shortcut to the **Tool Library** dialog, which was discussed earlier in this chapter.

Depth

Set the maximum cutting **Depth**. To the right of the **Depth** field, the ellipsis button may be clicked to open the **Engrave Parameters** dialog (discussed later in the **Drill** tool section).

Color

Specify the **Shop Palette** color layer to which this tool path will be assigned.

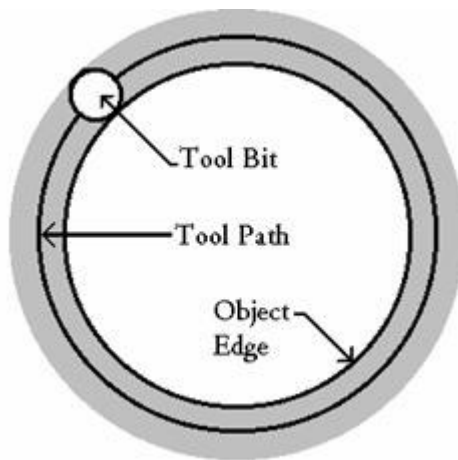
There is an Vision-Pro feature that allows all objects on a color layer to be disabled. For example, an organized design will have tool paths arranged on different color layers, which allows a specific group of tool paths to be hidden by disabling their color layer. For more information about disabling color layers, please refer to *Inactive Color Layers* in the index.

Male

Male

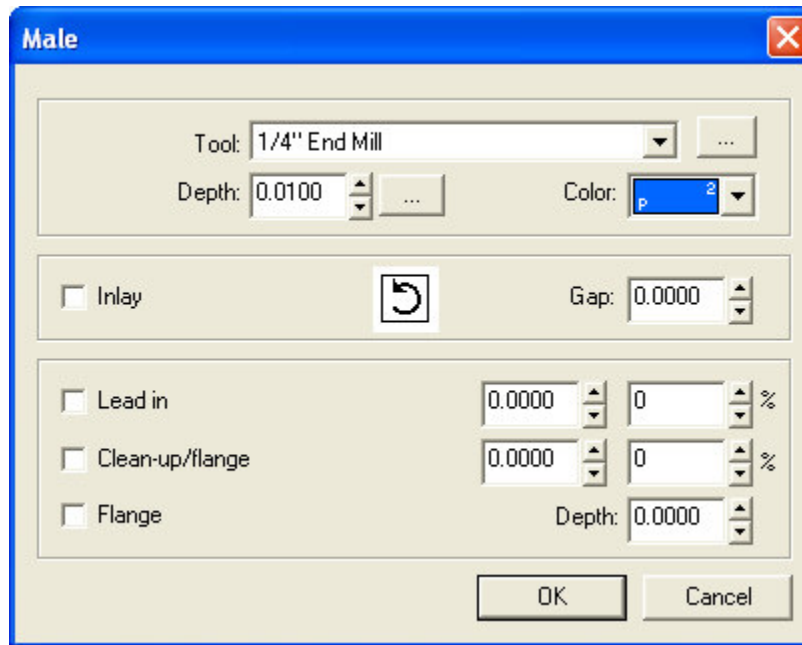


Defines a basic cutting path on a selected shape, such that the resulting cut shape will fit within a corresponding female shape. The tool path will fall to the outside of the shape contour, such that the offset equals one-half of the bit width. The **Male** tool path is typically used to cut shapes out of a material.



For example, consider a polygon shape that is cut using a **Male** tool path. Suppose that the same polygon shape is also used to a **Female** tool path within a larger, supporting piece. The male cut can then be fit within the inner contour of the female cut.

The **Male** setup dialog appears as follows:

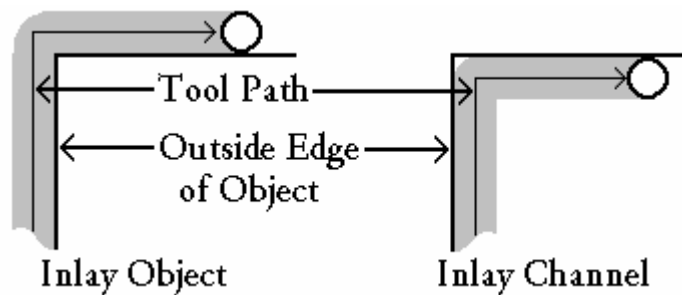


Tool, Depth, and Color

For a description of these fields, please refer to the **Online** tool path descriptions.

Inlay

Though a tool bit can cut an outer-corner effectively, the tool bit diameter can cause an inner-corner to be rounded. This is especially a problem when shapes are intended to be flush, such as when using a shape to produce both male and female cuts.



Compare how the path is cut for outer- and inner-corners. Due to the tool diameter, the inner-corner (Inlay Channel) will be rounded.

For two pieces that must be flush, enable the **Inlay** option to cause both the outer- and inner-corners to cut with rounded corners. The resulting pieces will then fit.



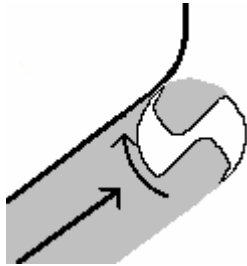
Gap

The **Gap** value is the size for the inlay.

Clockwise / Counter-Clockwise



The tool bit spins with a clockwise rotation. However, the cutting of the bit should always be in the direction that the tool is traveling, such that a smooth-edged cut is produced. In the following diagram, the tool bit is following the outer-contour of the shape in a clockwise direction. Notice how the spinning action of the tool is in the same direction as the tool direction.



As a specific rule, a **Female** tool path should cut the contour in a clockwise direction, and a **Male** tool path should cut the contour in a counter-clockwise direction. To toggle the direction, click the **Clockwise / Counter-Clockwise** button.

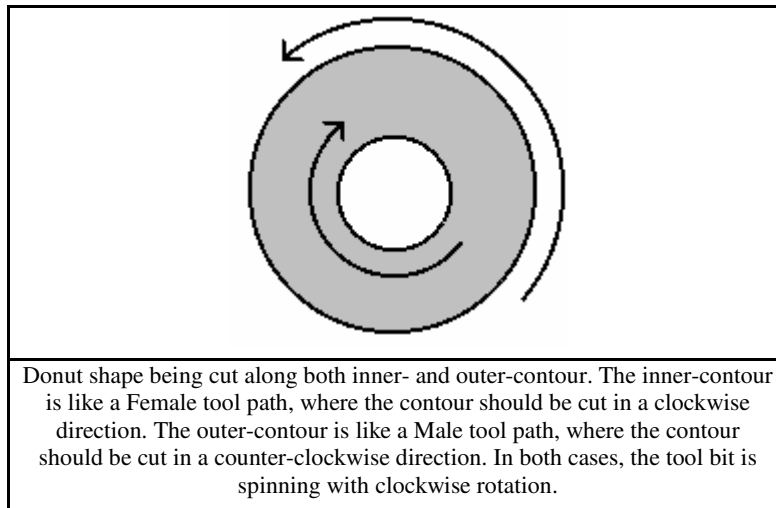


Cut the shape contour in a clockwise direction.



Cut the shape contour in a counter-clockwise direction.

As an example, inspect the following donut shape. The donut shape must be cut along both an inner- and outer-contour. Try to visualize the spinning tool as it follows the donut shape contours.



An **Online** tool path does not provide an option for setting the **Clockwise / Counter-Clockwise** direction. Instead, the **Online** tool path will simply use the most recent setting.

Lead In

A **Lead In** is an additional portion added to the start of the tool path before the shape contour is cut. In this fashion, the **Lead In** prevents distortions to the shape contour that could have been caused by the tool bit as it plunged into the material.

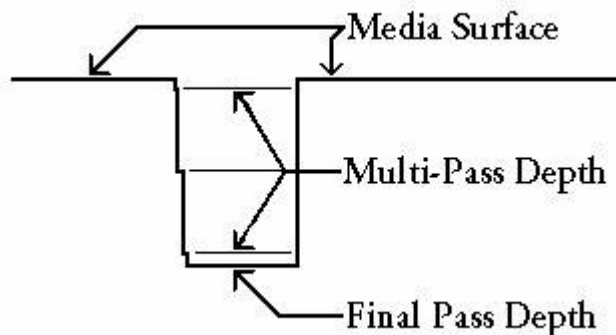
The shape and position of the **Lead In** are governed by the following rules:

- Lead Ins are only applied to paths that define the edge of the object being routed (i.e. they are not applied to fill strokes)
- When performing an outside rout, the Lead In will be added from the outside of the shape
- When performing an inside rout, the Lead In occurs from inside the shape
- If the first contour edge being cut is a straight line, then the Lead In will also be straight
- If the first contour being cut is a curve, then the lead in will be curved
- If a Lead In is specified but will not fit within a given shape, or will not fit without making contact with any other shape to be routed, then the Lead In will not occur

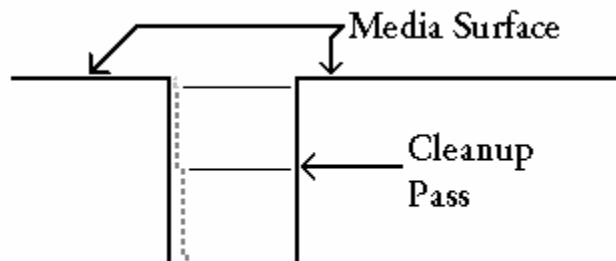
Note: When a **Lead In** is specified, the **Bridge** function is disabled.

Clean-Up/Flange

When cutting an object to a deep, final depth, there is an advantage to using several cut passes at progressively deeper cut settings. Multiple passes are used to avoid burning the material or stressing the bit, to ensure that the corners being cut are sharp, and to reduce the amount of time required to complete the cutting process. However, multiple passes often leave a “stepped” appearance to the finished object, usually because of a progressively worn bit, or minute shifts in the material.



A **Clean Up** pass is used to finish the job by tracing the edge of the object, such that a consistently smooth surface will result.



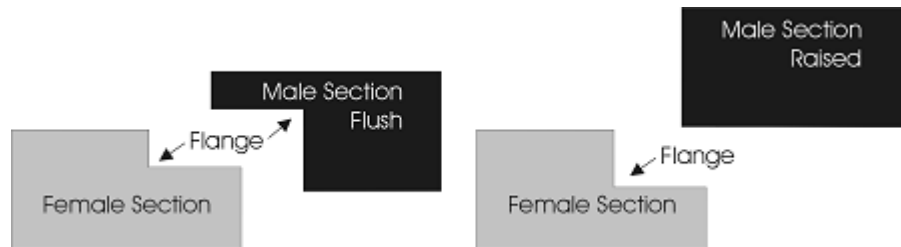
Specify the offset for the clean-up pass in the edit field. Specifying a positive value will cause the tool bit to cut along a path nearer to the object being cut than the regular tool path, while a negative offset will cause the tool bit to step away from the object (i.e., create a Flange).

Note: Under some circumstances, you may wish to specify an additional depth for your cleanup pass. This can be particularly useful for generating a glue channel underneath an inlaid object which is to be set flush with the surface of the sign substrate.

Flange

The **Flange** option only become active when the **Clean Up/Flange** option is enabled.

The **Flange** controls are used to define how a “tab” (also known as a “shoulder”) is applied to a piece that is being cut. The flange is added to either the male and/or the female fitted pieces to prevent the male piece from falling through its mating female piece as shown below.

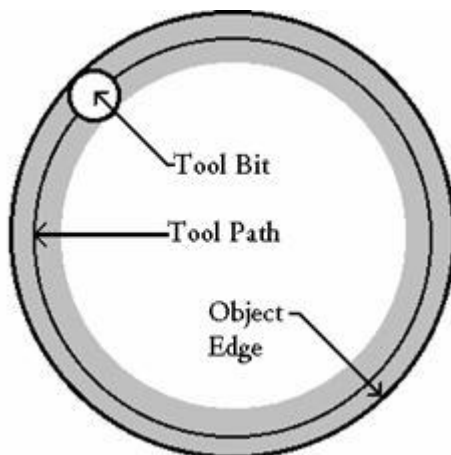


Female



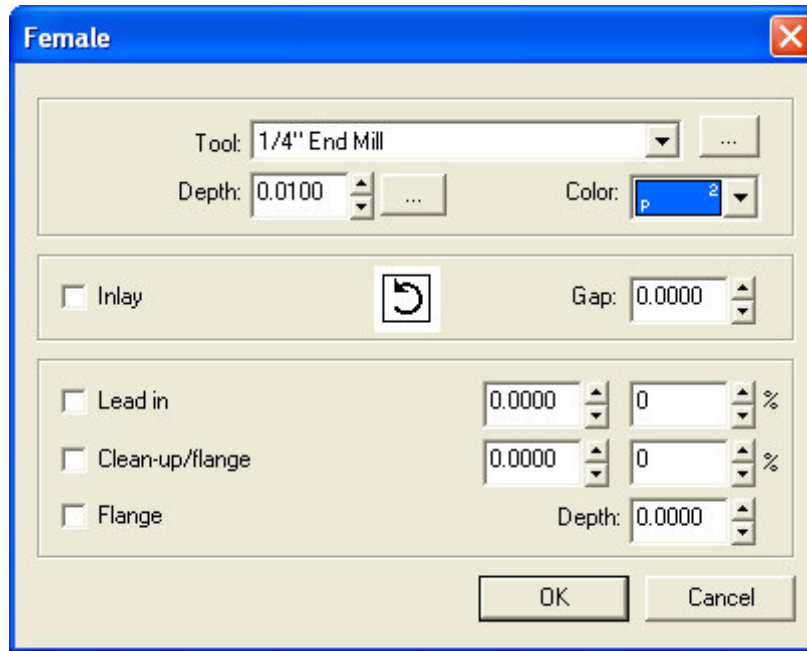
Defines a series of cutting paths on a designated shape, such that the resulting cut shape may contain a corresponding male shape.

For example, consider a polygon shape that is cut using a **Male** tool path, thereby producing a male cut. Suppose then that the same polygon shape is cut using a **Female** tool path, thereby producing a female cut. The male cut will then fit within the inner contour of the female cut.



The tool path will fall inside of the shape, with an offset equal to one-half the width of the tool bit. The Female tool path is typically used when filling or cutting out a shape.

The **Female** setup dialog is as follows. For an explanation of these controls, please refer to the **Male** tool path descriptions.



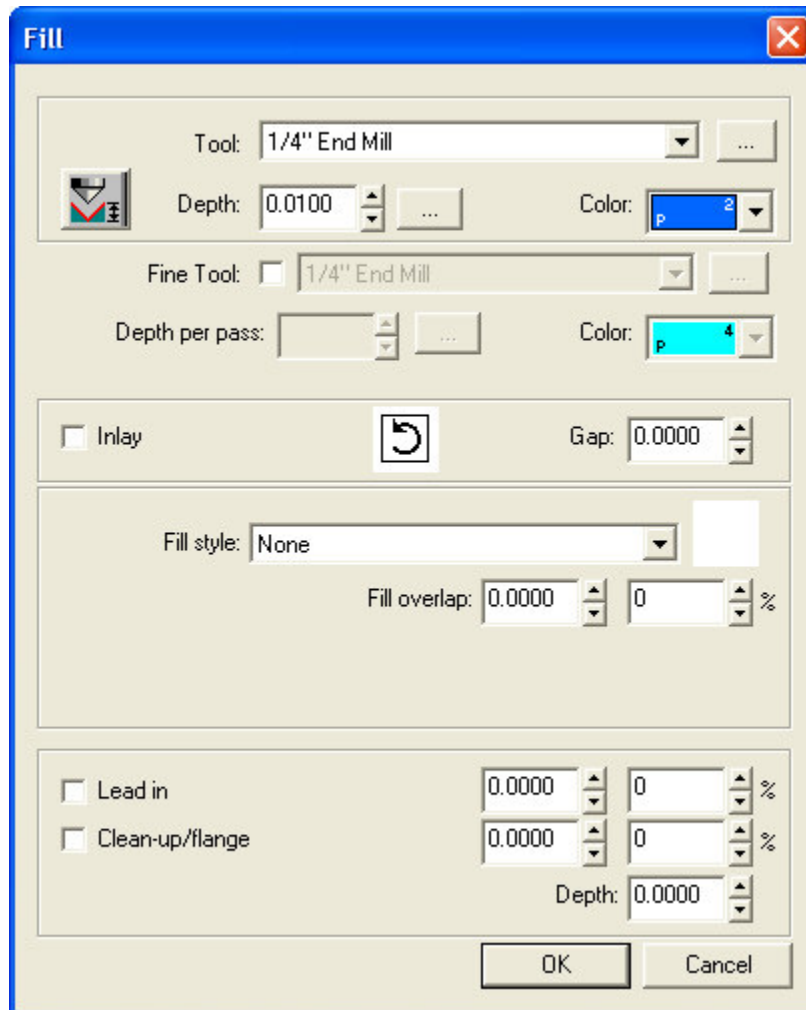
Fill

Fill



Defines a series of cutting paths designed to remove material from inside a selected shape.

For much of the **Fill** dialog controls, please refer to the **Male** tool path descriptions. The **Fill** setup dialog appears as follows.



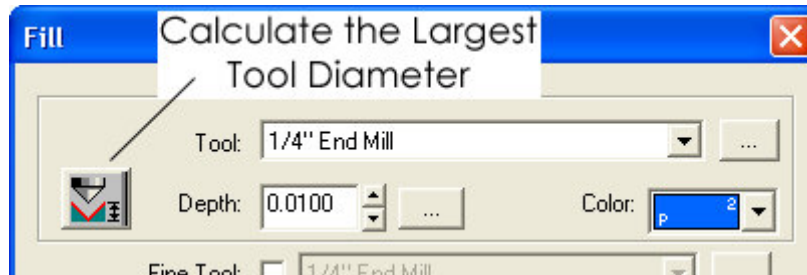
Filling a Nested Shape

Note that when simply placing one object within another, a fill operation will engrave the outer object without consideration of the inner object. The correct technique is to combine two such objects into a single path, and then the fill tool path operation may be applied. The following steps show how this is done:

- 1) Assume that a logo must be placed within a star shape, all of which must then be filled without losing the logo.
- 2) Create the text for the logo. With the text selected, choose **Text to Graphics** from the **Arrange** menu. This will convert the logo into a graphic that can be routed.
- 3) Create a star shape that is large enough to contain the logo, and then center the logo within the star.
- 4) Select both the star and the logo, and then choose **Make Path** from the **Arrange** menu. Both objects will now have been combined into a single object.
- 5) Apply a **Fill** operation to the combined object. The result will be a filled star shape that correctly retains the logo that was placed within it.

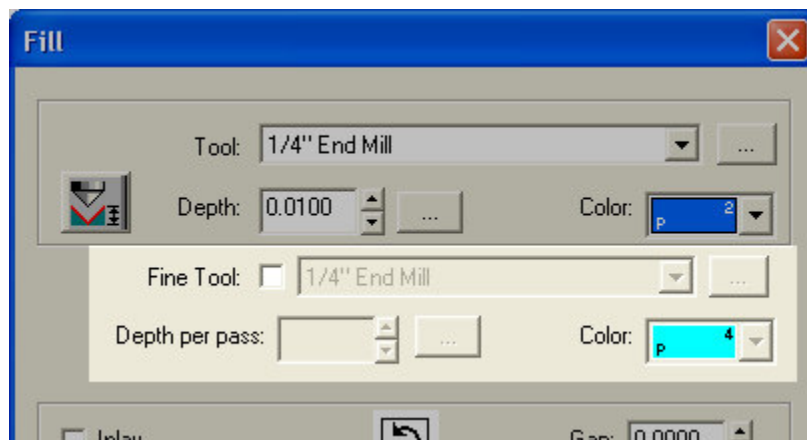
Calculate the Largest Tool Diameter

The **Fill** dialog has a button that will automatically calculate the largest tool diameter that should be used for the selected shapes. This tool diameter is for informational purposes only, but it is a good hint when choosing the tool size.



Using a Fine Tool

A concluding pass with a fine tool is a useful means of removing any rough or leftover material from the initial fill pass. Enable the Fine Tool option, and then choose the tool and depth that should be applied.



Fill Styles

The choices of **Fill style** are as follows:

None

None indicates that there is no fill style. The edges of objects will be traced, but no fill will occur.



S-Sweep

The **S-Sweep** style will generate a series of fill lines that are similar to the Line Sweep fill, except that the line paths are joined wherever possible. This is a relatively quick fill, since the number of lift and drop movements is minimized.

The S-Sweep (nose cone) is similar to S-Sweep, except that this option is more appropriate for machines that use a floating nose cone to control depth.



Line Sweep

The **Line Sweep** style will generate a series of separate and discrete fill lines. This fill pattern is designed for those machines that have a short maximum path length, which requires short fill paths. The disadvantage is that the cutting head lifts and drops for each fill path, which increases the amount of time required to fill the given object.



Spiral

The **Spiral** style will trace around the edge of a given object and then cut the fill area on the same pass. This is a fairly traditional style that reduces the lift and drop movements of the tool. However, this style may not be suitable for machines that either require a short tool path, or that use a floating nose cone to control depth.

The **Spiral (corner fill)** style is more thorough at hogging than the **Spiral** style, since **Spiral** passes are repeated for each corner of the object.



Reverse Spiral

The **Reverse Spiral** style will cut outward from the center of the object until the edge of the object is traced. Because cutting occurs from the center of the object outward, this style is well suited for machines that use a floating nose cone to control depth. Another benefit is that the edge of the object is cut last, which results in a cleaner edge cut.

The **Reverse Spiral (corner fill)** style is more thorough at hogging than the **Reverse Spiral** style, since **Reverse Spiral** passes are repeated for each corner of the object.



Island

The **Island** style is similar to the **Spiral** style, except in that discrete paths begin at the edge of the object and then work toward the center. Use this style to create a spiral-like fill when the machine does not support long tool paths. A tool lift and drop is generated for each pass, which implies that this style requires more time than an equivalent spiral style.



Reverse Island

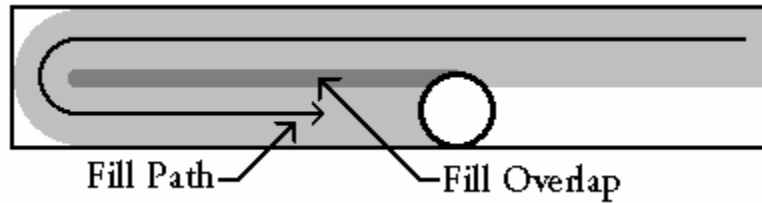
The **Reverse Island** style is similar in effect to **Reverse Spiral**, except that paths are cut from the center in progressively wider paths. This style is suited for a machine that requires short tool paths, and which is fitted with a floating nose cone. Another benefit is that the edges of the object is cut last, which results in a cleaner edge cut. A tool lift and drop is generated for each pass, which implies that this style requires more time than an equivalent **Reverse Spiral** style.

Fill Parameters

The fill parameters are described as follows. The available parameters will depend on the type of fill being routed.

Overlap %

Overlap % is the percentage amount that each successive hogging pass should overlap the previous pass. Overlap is used to ensure that all material is removed between contiguous passes of the tool. The overlap is expressed as a percentage of the tool diameter.

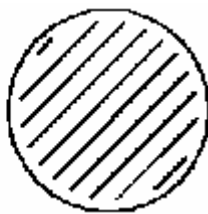


Angle

Angle is used to specify the angle of fill strokes when hogging out the material with parallel passes of the tool. The angle of zero degrees corresponds to the x-axis.

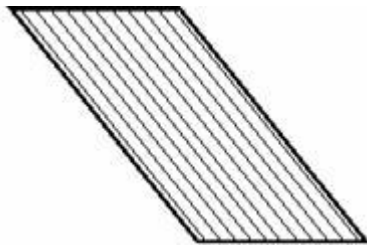


Fill Angle 0°



Fill Angle 45°

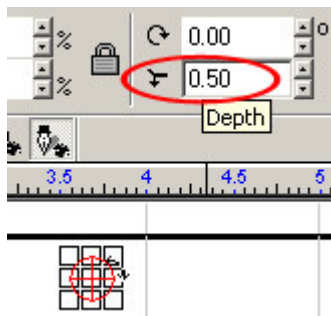
Specify an angle when cutting artwork that leans in a specific direction. Proper setting of the angle can result in significant reductions in production times.



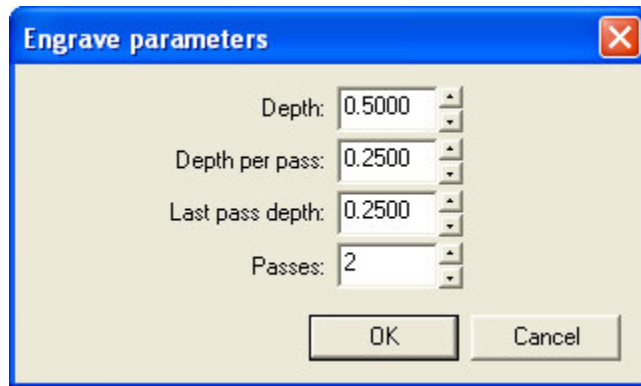
Drill



The **Drill** tool is used to place drill points upon the workspace. Simply left-click on the workspace to place a drill point. For a selected drill point, its **Depth** is editable from the SmartBar.



To specify multiple passes for a selected drill point, choose **Edit Tool Path** from the **Engrave** menu, and the **Engrave parameters** dialog will open. Set the desired **Depth per pass**, and Vision-Pro will calculate the number of passes that will be performed. Alternatively, set the number of **Passes**, and the **Depth per pass** will be calculated.

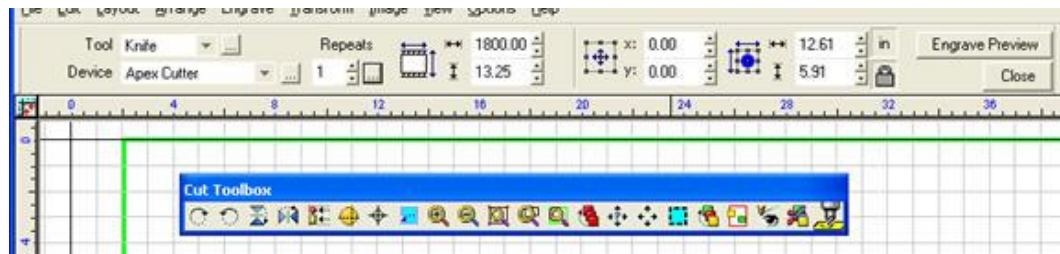


ENGRAVE PREVIEW

Engrave Preview

The Engrave Preview mode will display the workspace shapes as they will be cut upon the material. The SmartBar displays the current cut settings, as per the **Engraving Defaults** item under the **Engrave** menu. The **Engrave Manager** toolbar provides additional functions that can be applied to the job before cutting.

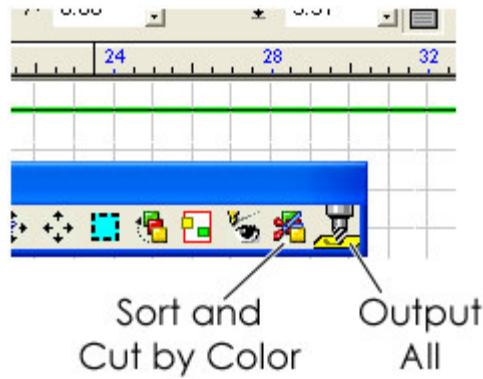
Except where noted, any settings made using the SmartBar controls or the **Engrave Manager** toolbar will not change the default values. Instead, such changes will only apply to the current job.



Note: In order to perform **Plotter Jog** operations, registration marks must be included as part of the job.

A convenient cutting feature is that only those objects with currently active colors will be cut. This allows for the cutting of specific workspace objects, while leaving other objects uncut. For more information about active and inactive colors, please refer to the Shop Palette descriptions.

Assuming that all the SmartBar and **Engrave Manager** settings are correct, the job may then be sent for cutting. The entire job can be sent by clicking **Output All**, or selected portions of the job can be sent by clicking the **Sort and Cut by Color** button.



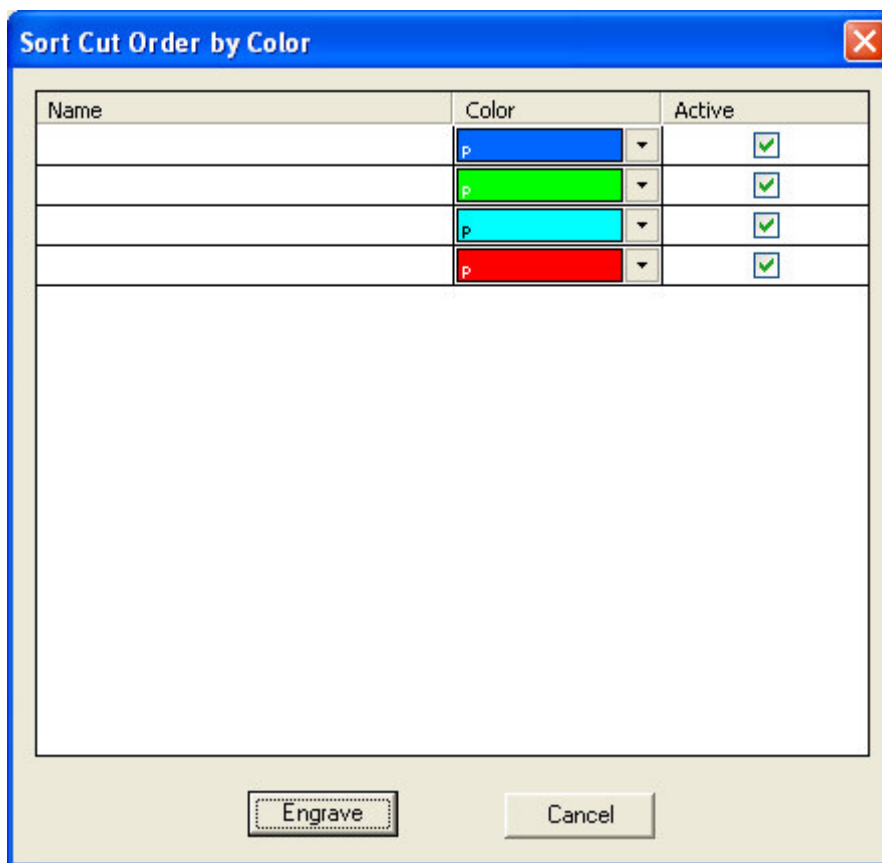
Sort Cut Order by Color

Sort Cut Order by Color

If only selected portions of the job are being output, then the **Sort Cut Order by Color** dialog will list the color layers that are available for output. If defined, then the name of the color will also be listed.

Next to each color is a checkbox that is used to indicate whether that color layer is output. In addition, the order of the jobs being output can be changed by dragging the color layers.

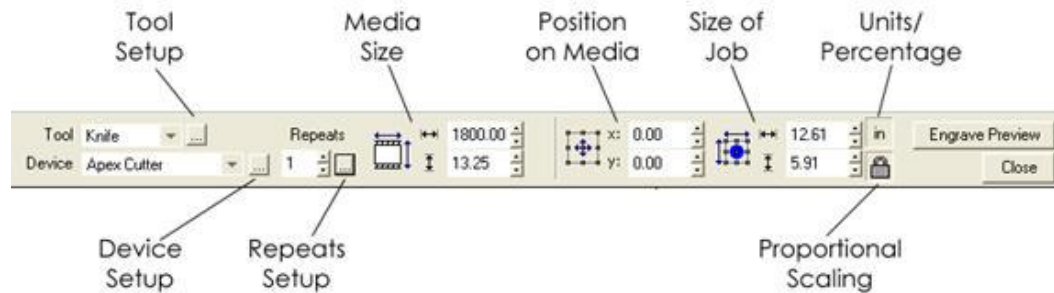
To output the active color layers, click the **Engrave** button. Each color layer will be sent as a separate job.



SmartBar Preview Controls

Vision-Pro 7 Doc Files

When first entering the Engrave Preview mode, the SmartBar settings will indicate the current default settings. Except where noted, changes to the SmartBar controls will apply to the current job, and leaving the Engrave Preview mode will cause such changes to be lost.



Device

The **Device** drop-list indicates where the cutting data will be sent.

To the right of the drop-list, clicking the **Device Setup** button will open the **Engraver Setup** dialog. Edits to the **Engraver Setup** dialog will be saved as changes to the default settings.

Note: The **Engraver Setup** dialog is discussed later in this chapter.

Tool

The **Tool** drop-list indicates the available tools for the currently selected device.

To the right of the drop-list, clicking the **Tool Setup** button will open the **Tool Options** dialog. The **Tool Options** dialog is used to adjust the driver options for the given cutter. Edits to the **Tool Options** dialog will be saved as changes to the default settings.

Note: The **Tool Options** dialog is discussed later under the *Engraving Defaults* section.

Repeats Setup

Indicates multiple copies of the current workspace shapes. Clicking the **Repeats Setup** button will open the **Repeats** dialog.

Media Size

The **Media Size** indicates the available cutting area of the machine. By default, these values are taken from the **Engraver Setup** dialog.

Position

The **Position** indicates the coordinates of the shapes on the media. Initially, the objects can only be moved as a group. However, if the shapes are nested, then individual shapes may be selected and moved.

Size

The **Size** indicates the width and height of the shapes on the media. Initially, the shapes are moved as a group. However, if the shapes are nested, then individual shapes may be selected, and the **Size** fields will apply to the currently selected object.

When scaling by a fixed percentage, the **Proportional Scaling** button may be clicked to lock the aspect ratio.

Engrave Preview

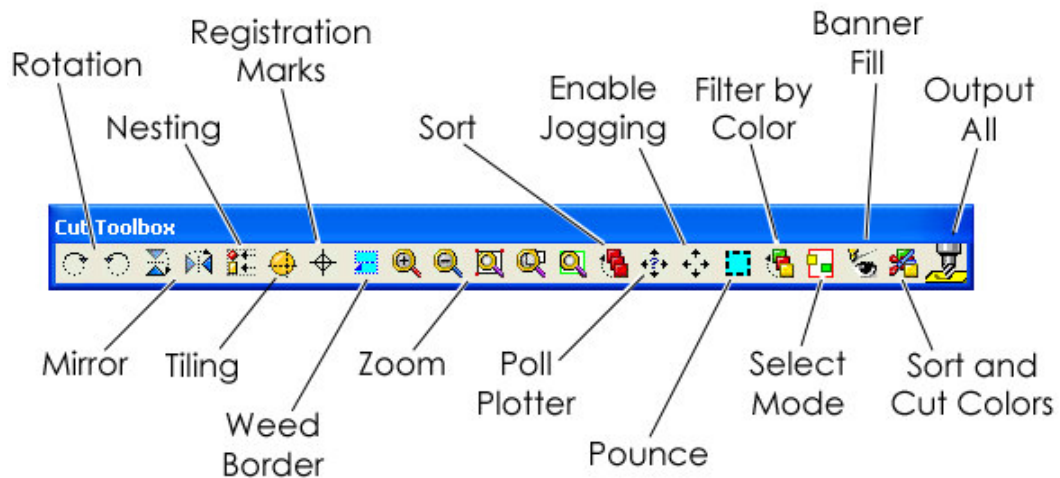
At the far-right of the SmartBar is the **Engrave Preview** button. Clicking the **Engrave Preview** button will toggle the **Tile Preview**, which shows how tiles will be rendered upon the media.

Tiles will be stacked in an attempt to reduce wasted media. However, individual tiles may be selected and moved. Clicking the **Engrave Now** button will send the job to the cutter.

Clicking the **Tile Preview** button will return to the **Engrave Preview** mode.

Cut Toolbox

The Cut Toolbox provides additional commands that may be applied to the job.

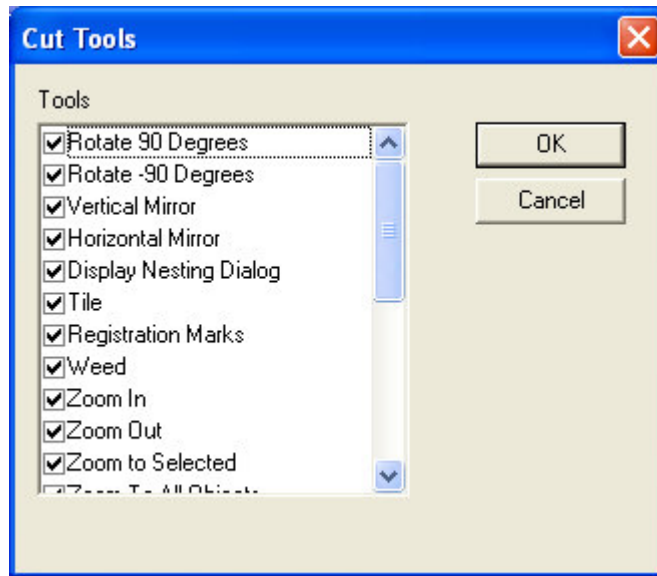


Customize the Toolbox

The toolbox buttons can be customized. This is done by right-clicking one of the buttons that does not have a setup dialog associated with it. For example, right-click a rotation button to open the **Cut Tools** dialog.

The Cut Tools dialog lists all of the available toolbox buttons, and only the checked buttons will be displayed.

Note: Changes to the toolbox will not take effect until the preview state is exited.



Rotation

Rotate the shapes by either 90 or –90 degrees. Perform a rotation to help minimize wasted material.

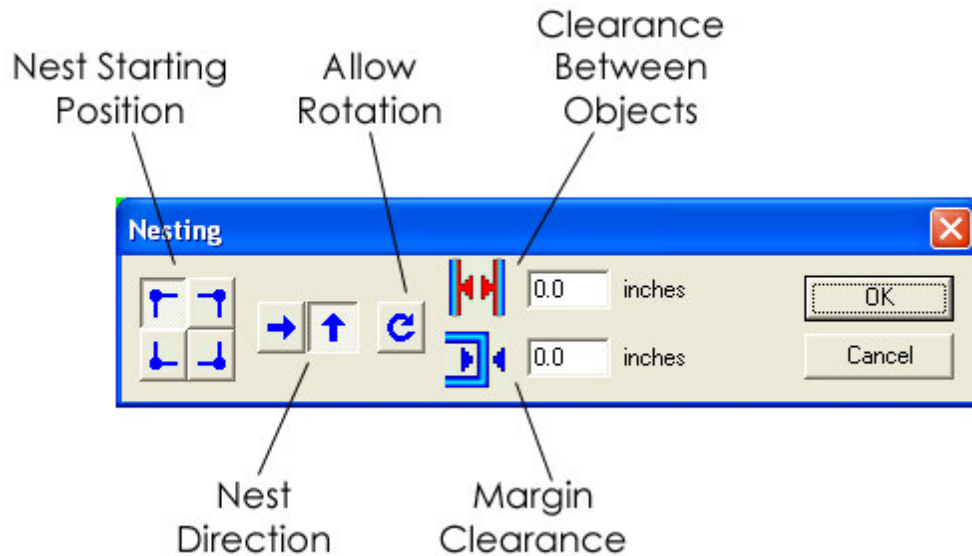
Mirror

Mirror the shapes either vertically or horizontally. Typically, mirror is used where the media is to be reverse-applied, such as the inside of a window pane.

Nesting

Opens the **Nesting** dialog. Nesting will rearrange the layout of shapes on the media, so as to minimize wasted material.

With respect to grouped objects, nesting can remove objects from their groups in order to nest individual objects. However, a query dialog will confirm whether grouped objects should be broken up.



Note: The Nesting controls are described under *Advanced Cutting and Plotting*.

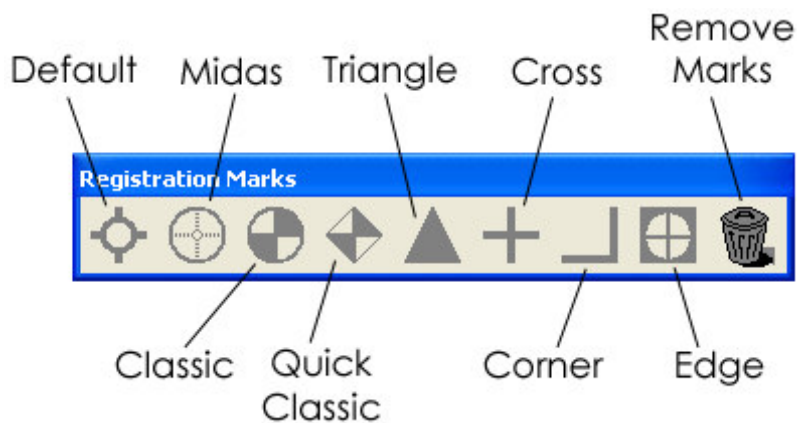
Tiling

Workspace shapes may be organized into tiles, which is a useful method of sub-dividing the job into manageable sections. In addition, the amount of wasted material may be reduced by "stacking" tiles on the media.

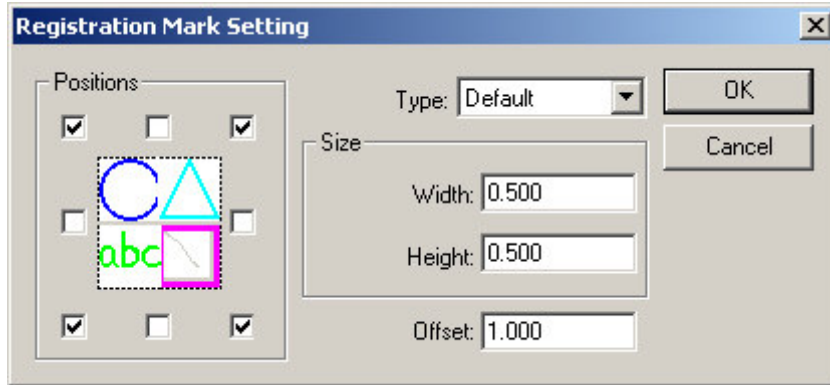
Note: For more information about tiling, please refer to the *Advanced Cutting and Plotting* chapter.

Registration Marks

On the **Engrave Manager** toolbar, left-clicking the **Registration Marks** button will open the **Registration Marks** popup. Click the style of registration marks that are required, and the registration marks will be placed about the workspace shapes.



To set the default locations of the registration marks, right-click the **Registration Marks** button. The **Registration Mark Setting** dialog will open, which may be used to indicate the default **Positions**, **Size** and **Offset** of the registration marks.

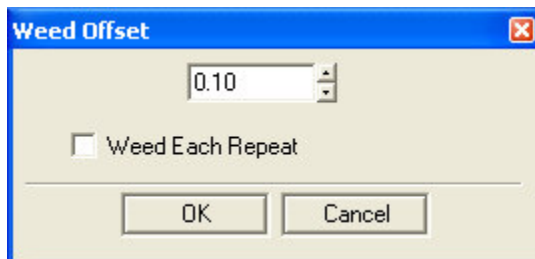


Note: For more information about registration marks, please refer to the *Advanced Cutting and Plotting* chapter.

Weed

Left-clicking the **Weed** button will activate the weed border, and the preview will show the border that is created around the shapes.

The **Weed offset** value from the **General Preferences** dialog will be used. To use a different **Weed offset** value, right-click the **Weed** button, and the **Weed Setup** dialog will open. Changing the **Weed offset** value will apply to the current job being cut, but the default value will not be changed.



Note: For more information about creating weed lines, please refer to the *Advanced Cutting and Plotting* chapter.

Zoom

The Zoom tools are used to change the perspective of the shapes being previewed. In addition to these buttons, the keyboard shortcuts may also be used.

Sort

Sort settings may be applied to any non-routing object. Clicking the **Sort** button will open the **Sort** dialog.

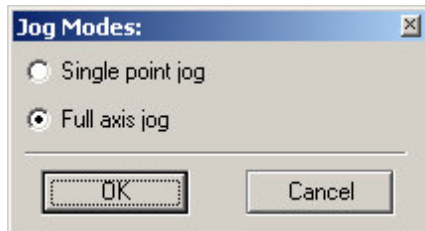
Note: The Sort dialog settings are described under the next section, Engraving Defaults.

Poll Plotter

Where supported, query the plotter for information about the dimensions (Width and Height) that are available for output.

Enable Jogging

Vision-Pro supports Plotter Jog functionality. When the **Enable Jogging** button is clicked, the **Jog Modes** dialog will query for the type of jogging that is required.



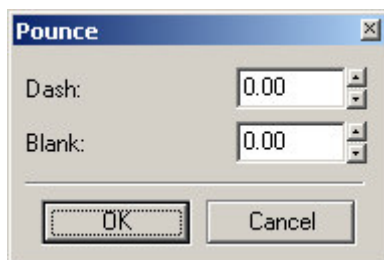
To use **Single point jog**, there must be one registration mark on the workspace. With the **Single point jog** option enabled, starting a job will position the tool at the registration mark, and the job will then proceed as if the registration mark were the origin. However, the **Single point jog** feature is supported by a relatively few number of cutters.

For most cutters, the **Full axis jog** will be used, which is discussed within the *Advanced Cutting and Plotting* chapter.

Pounce

During the cutting or plotting job, the **Pounce** setting may be used to create shapes that have either a perforated or broken line pattern. This pattern is created by lifting and lowering the tool during the job.

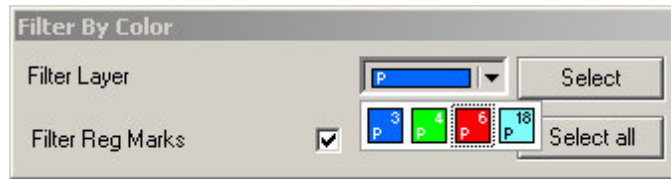
If the **Pounce** button is depressed, then pounce is enabled. Right-click the **Pounce** button to edit the pounce defaults.



The **Dash** field indicates the length of the perforation or drawn line. The **Blank** field indicates the spacing between each perforation or line.

Filter by color

Use the **Filter By Color** option to send only one color layer as output to the cutter. When enabled, the **Filter By Color** dialog will open.



Clicking the **Filter Layer** color picker will display all the color layers that have been assigned to shapes on the current workspace. Choose the color that will be output and click the **Select** button. The preview will display all shapes of the indicated color.

If the **Filter Registration Marks** option is enabled, then registration marks will be cut with all layers.

Note: If any thick lines are present in the drawing, then their colors will appear within the **Filter Layer** color picker.

Selection mode

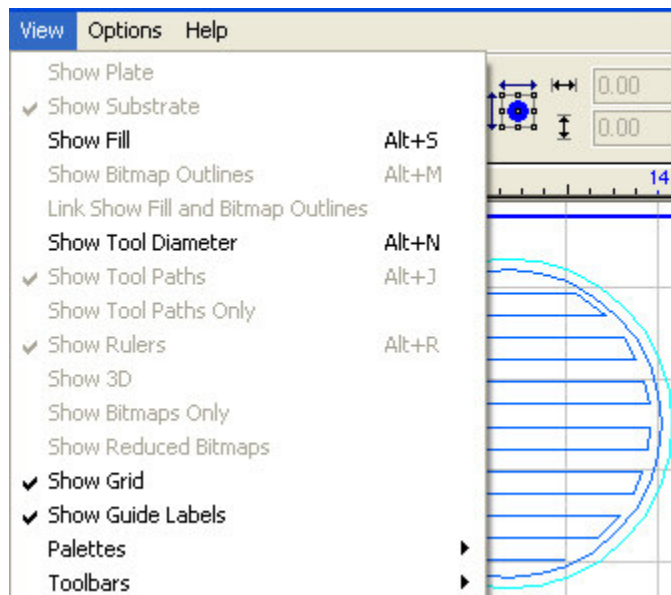
The **Selection mode** determines which parts of the workspace should be sent as output. If the Selection mode is **Page**, then all shapes on the given sheet layer will be valid for output. If then Selection mode is **Sign Plate**, then only shapes that are on the sign plate will be valid for output.

The engrave preview will only display shapes that are valid for output, as per the Selection mode.

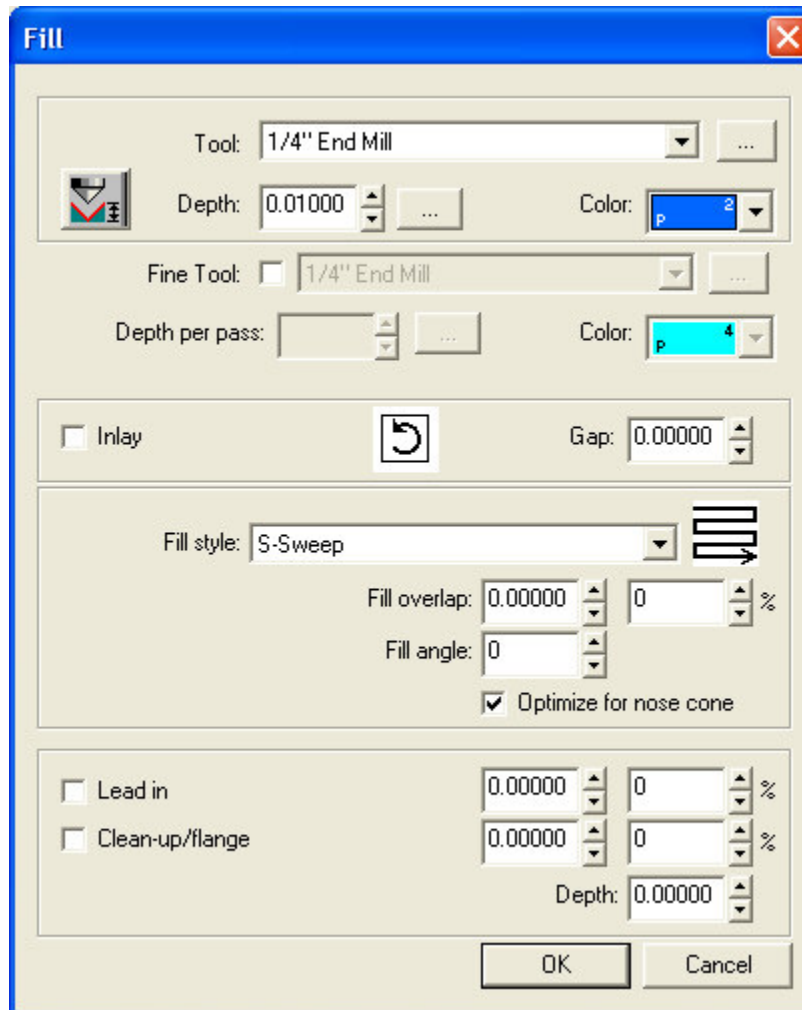
Banner Fill

Usually, tool paths will be applied to workspace shapes prior to entering the cut preview state. However, the **Banner Fill** button may be used to apply a default fill, such as a thick pen fill.

After a default fill has been applied, the cut preview will show the path that will be used to fill the shape. If the path is not visible, then verify that the **Show Tool Diameter** item (**View** menu) is unchecked.



Right-click the **Banner Fill** button to open the **Fill** dialog. These settings are used to customize the banner fill settings.



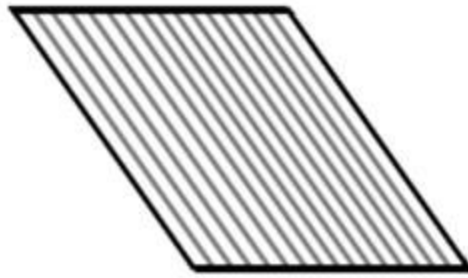
The **None** fill style indicates that there is no fill style. The edges of objects will be traced, but no fill will occur.

The **S-Sweep** fill style will generate a series of fill lines that are similar to the **Line Sweep** fill, except that the line paths are joined wherever possible. This is a relatively quick fill, since the number of lift and drop movements are minimized.

The **Line Sweep** fill style will generate a series of separate and discrete fill lines. This fill pattern is designed for those devices that have a short maximum path length, which requires short fill paths. The disadvantage is that the cutting head lifts and drops for each fill path, which increases the amount of time required to fill the given object.

The **Fill overlap** field indicates the amount that each successive pass should overlap the previous pass. This overlap is used to ensure that there are no gaps between contiguous passes of the pen. The overlap is expressed as either a fixed value (in the current workspace units), or a percentage of the **Pen diameter**.

The **Angle** field indicates the angle of pen strokes as objects are filled. An angle of zero degrees corresponds to the x-axis. When working with an object that "leans" in a given direction, proper setting of the **Angle** can result in significant reductions of production time.



Output

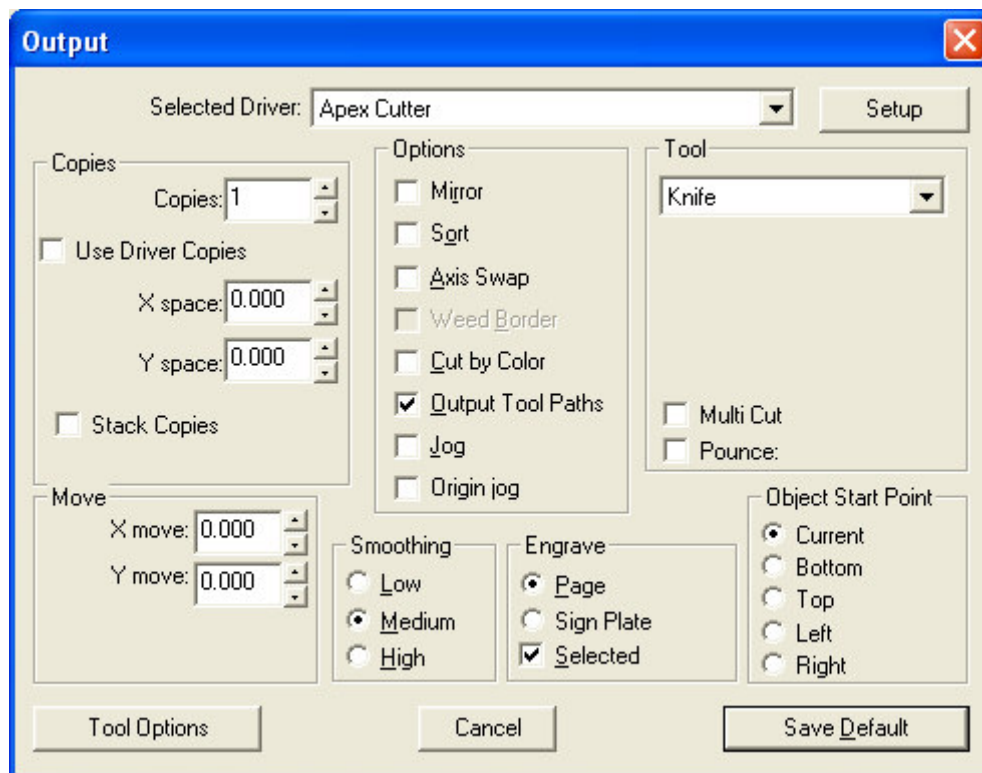
Begin sending the job to the plotter/cutter device.

ENGRAVING DEFAULTS

Engraving Defaults

The **Engraving Defaults** are used to configure the given device that will be used for cutting or plotting. These defaults will be used during the Engrave Preview mode, though most settings may be overridden on a per job basis.

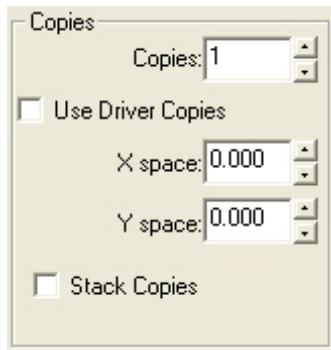
To edit the cutter defaults, choose **Engraving Defaults** under the **Engrave** menu. The **Output** dialog will open.



The **Output** dialog controls are described here. In some cases, it may be necessary to refer to the *Advanced Cutting and Plotting* chapter.

Copies

Where more than one copy is being cut, the distance between jobs may be specified. The **Xspace** represents the space between jobs cut side-by-side. If **Stack Copies** is enabled, then the **YSpace** represents the space between jobs above one-another. The distance is measured in current workspace units.

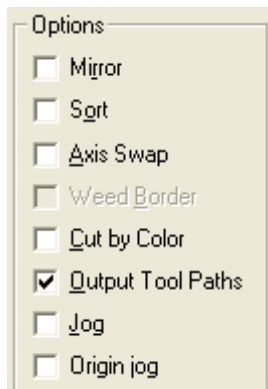


The “**Use Driver Copies**” option is an engraver-friendly copy command. As each engraver copy is completed, load the next sheet of material for the subsequent copy. Each copy will be engraved using the same series of tool movements.

Options

Options

This section is used to take advantage of some of the advanced features available with the Vision-Pro cutting routines.



Mirror

Plot a mirror image of the job. This is used for a graphic that is to be reverse-applied, such as cutting from the inside of glass.

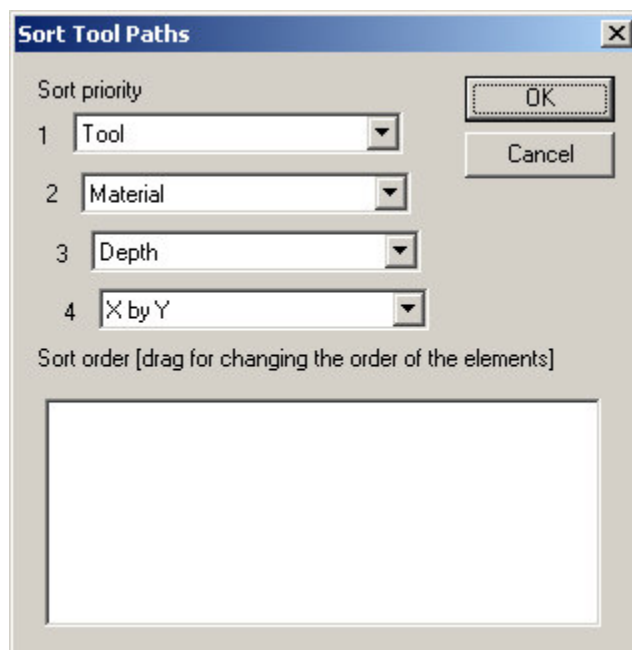
Sort

The Sort option is used to optimize cutting for a number of different situations, depending on the current needs and the modules installed with Vision-Pro. Depending on the type of work being done, there are two possible ways in which the Sort option will operate.

- **Case 1:** In the Output dialog, the Output Tool Paths option is active, and then the Sort option is activated. This will indicate that prior to beginning any engraving job that the Sort Tool Paths dialog will be used to customize the priority by which tool paths should be routed.
- **Case 2:** In the Output dialog, the Output Tool Paths option is inactive, and then the Sort option is activated. Immediately, the Sort dialog will open, so that non-routing objects may be cut in a specified order.

The Sort Tool Paths dialog

The settings of the Sort Tool Paths dialog apply to any routing or engraving object. This dialog will only open if the Output Tool Paths option (Output dialog) for the current driver is active, and the Sort option is also active. The dialog will appear prior to starting any routing or engraving job.



Sort priority is used to indicate an order in which tool paths will be routed. There are four drop-down fields, each of which may potentially be set to one of the following: Tool, Material, Depth, X by Y, Y by X, Nearest, and Current. The Sort priority fields are numbered, with field number one being of higher priority than number two, and so on. Depending on the selection within the currently active Sort priority field, the Sort order list will allow additional customization. List here are how the Sort order list is used with each type of sort priority.

- **Tool priority** will cause all the tools in the current job to be listed. The list of tools is itself ordered by the sequence in which the tools will be used. To adjust this order, use the mouse button to drag the tools within the list. A tool may also be deleted from this list by selecting it and pressing the Delete key, which prevents the tool from being used in the current job.

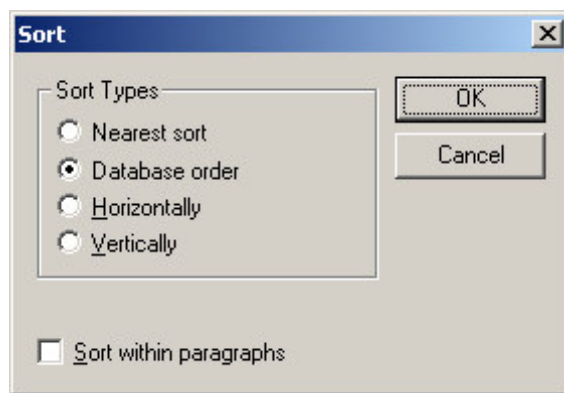
Note: When a tool is selected, the Turret field will become active, which is used to adjust the Turret Number that has been assigned to this tool.

- **Material priority** will cause all the different materials in the current job to be listed. The list of materials is itself ordered by the sequence in which the material will be routed. To adjust this order, use the mouse button to drag the tools within the list.

- **Depth priority** will cause two further options to be listed: “Cut The Deepest Last” and “Cut The Deepest First.” The first option will give priority to shallow cuts, after which the deeper cuts will be completed. To reverse this priority, use the mouse button to drag the “Cut The Deepest First” option to the top position.
- **X by Y priority** will cause objects to be routed according to their placements from left-to-right within the workspace.
- **Y by X priority** will cause objects to be routed according to their placements from bottom-to-top within the workspace.
- **Nearest priority** can be set to either “Cut in user selected order” or “Nearest to (X,Y)”, where X and Y represent a workspace location based on the existing objects.
- **Current priority** is used to that objects be cut according to their user defined order, as set by the Start Sequence command under the Layout menu.

The Sort dialog

The settings of this dialog apply to any non-engraving object. This dialog will only become active when the Output Tool Paths option (Output dialog) for the current driver is inactive, and the Sort option is then selected. In this case, the Sort dialog will appear immediately upon selecting the Sort option.



- **Nearest Sort** forces Vision-Pro to sort the objects that are closest to each other and cut them first. For example, two objects that are one inch apart will be cut in the same pass, whereas objects that are five inches apart will be cut separately.
- **Database Order** sort is the Vision-Pro default for cutting, which forces objects to be cut according to their layering order. Layering order indicates the ranking of screen objects as they overlap one another on-screen. For example, an object that has a high layering order will appear to be “on top” of other objects. To adjust the Database Order, refer to the “To Front” and “To Back” commands that are available under the **Arrange** menu.
- **Horizontally** sorting causes Vision-Pro to cut objects as they appear in the graphic from left to right. Vision-Pro will cut those objects whose extreme left edges are farthest right first, and then cut those whose left edges are farthest left last. This sort order is most useful when cutting a long file on a friction-fed plotter, as it reduces the required amount of travel back and forth along the length of the vinyl.
- **Vertically** sorting causes Vision-Pro to first cut objects whose extreme upper edges are lowest along the Y-axis. The higher on the Y-axis the object appears, the further in the order it will be cut.
- Normally, a paragraph of text will be considered as a single object that is assigned its own sort priority. The **Sort within paragraph** option will cause each distinct letter to be assigned its own position in the sort order. For example, if two paragraphs of text, one above the other, are then sorted horizontally, then the sort order will proceed with the first letters of each paragraph, followed by the second letters, and so on. This has the benefit of reducing the back-and-forth motion of the cutter.

Axis Swap

Enabling this option will rotate the axis by ninety degrees (90°) counter-clockwise (CCW). This is a convenient way to save vinyl, especially when cutting long strings of single line text.

Weed Border

If the **Weed Border** option is enabled, then the **Weed** button will be automatically enabled during the Cut Preview mode.

Engrave by Color

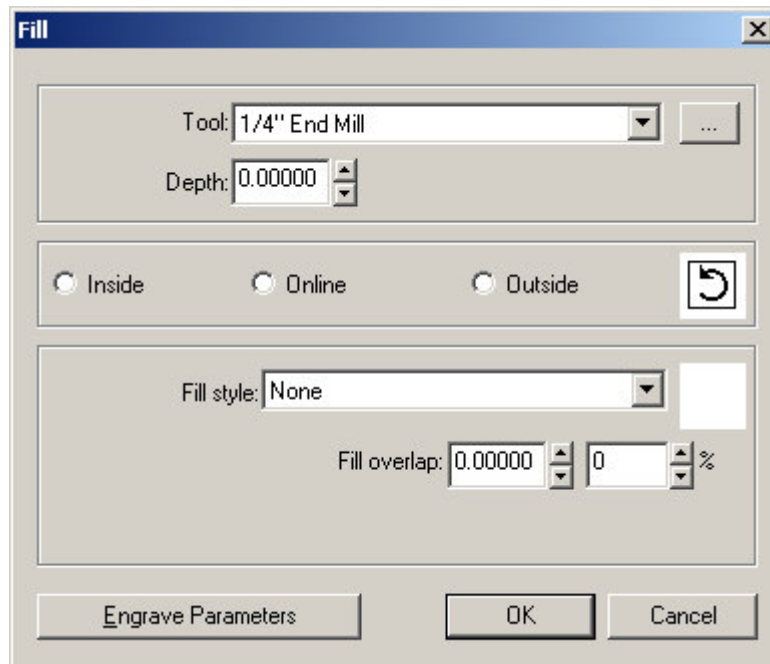
If this option is enabled, then entering the Cut Preview mode will automatically open the **Filter By Color** dialog.

Output Tool Paths

Enabling this option will open the **Tool Path Options** dialog. The **Output Tool Paths** option is used to output tool paths that have been applied to workspace shapes. The **Engrave Default Tool Path** option will create a default tool path for all workspace shapes.



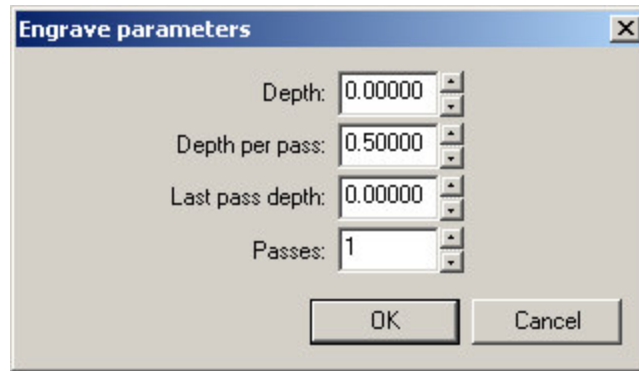
If the **Engrave Default Tool Path** option is enabled, then clicking the **Edit Default Tool Path** button will open the **Fill** dialog. The **Fill** dialog indicates the parameters of the default tool path.



- **Tool** lists all the available tools in the Tool Library, including the current selection. New tools may be added by clicking the ellipse button, which will open the **Tools Library** dialog.
- **Depth** indicates the overall vertical movement of the tool into the material in relation to the surface of the material.
- **Inside** indicates that the tool must cut the object along the interior of the object at a distance equal to one-half the tool diameter. This option is equivalent to cutting a Female tool path.
- **Online** indicates that the tool must cut along the object contour. There is no deviation of the tool from the object contour, and this option is equivalent to cutting an Online tool path.
- **Outside** indicates that the tool must cut the object along the exterior of the object at a distance equal to one-half the tool diameter. This option is equivalent to cutting a Male tool path.



- **Tool rotation** is counter-clockwise. Click this button to toggle tool rotation between clockwise and counter-clockwise rotation.
- **Fill style** allows the selection of a variety of style or patterns that the tool can follow during the hogging operation. The available styles are None, S-Sweep, Line Sweep, Spiral, Reverse Spiral, Island, and Reverse Island.
- **Fill overlap** indicates the amount by which each successive hogging pass should overlap the previous pass. Overlap is used to ensure that all material is removed between contiguous passes of the tool. The overlap is expressed as a percentage of the tool diameter.
- The **Engrave Parameters** button opens the **Engrave parameters** dialog, which is used to control the number of passes that must occur before the full depth is cut out.



Jog

If the **Jog** option is enabled, then the **Enable Jogging** button will be automatically enabled during the Engrave Preview mode.

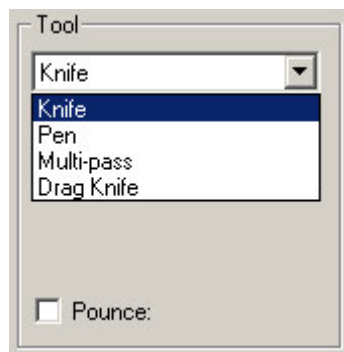
Origin Jog

The **Origin Jog** feature is supported by a relatively few number of cutters.

To use **Origin Jog**, there must be one registration mark on the workspace. When the **Origin Jog** option is enabled, starting a job will position the tool at the registration mark, and the job will then proceed as if the registration mark were the origin.

Tool

The **Tool** section is used to define the tool parameters for the present cut or plot.



This list box contains a complete list of all tools available for the specified driver. Examples of these tools include:

Air Brush	Both Spindles	Drill
Drag Knife	Knife	Engraver
Left Spindle	Manual depth	Multi-pass
Multi-pass depth	No depth	Pen
Pounce	Pounce Wheel	Racer Blade
Right Spindle	Router	Single-pass depth
Spindle off	Trailing Blade	

Depending on the currently installed driver, only a limited selection of these tools may be available in the list. For the cut or plot job, select the appropriate tool from the list.

Trailing or Drag Knife

Select the Trailing or Drag Knife tools if:

1. There is a CADlink Racer Blade tool in the Gerber tool holder.
2. The plotter is equipped with a Trailing Blade or Drag Knife.

Choosing this tool invokes a routine that allows for the movement of the knife-edge, which is offset from the center of the tool. Without this routine, the objects would not be cut properly, and corners would not be cut sharp. However, be aware that most cutters that support a Drag Knife also have their own routines that compensate. In light of this fact, never set Drag Knife mode for both the cutter and Vision-Pro, as this will result in a poor quality cut.

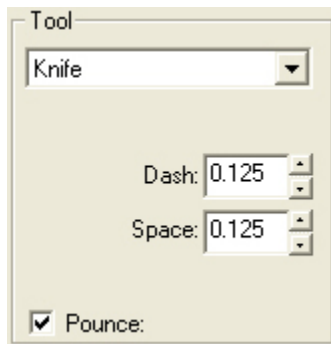
Multi Cut

Certain materials, such as sandblast film, require multiple passes of the vinyl cutting blade because the material is extraordinarily durable. Once the **Multi Cut** option is enabled, the **# Passes** field is used to specify the number of passes that should be performed.

Please note that the value set here is dependent upon the material in question, and that an experienced operator will know the correct number of passes.

Pounce

During the cutting or plotting job, the **Pounce** setting may be used to create objects with either a perforated or broken line pattern. This pattern is created by lifting and lowering the tool during the job.

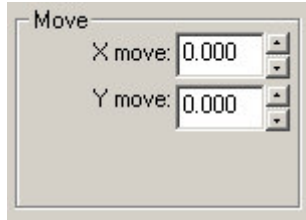


The image shows a software dialog box titled 'Tool'. It contains a dropdown menu with 'Knife' selected. Below the dropdown are two numeric input fields: 'Dash' with the value '0.125' and 'Space' with the value '0.125'. At the bottom, there is a checkbox labeled 'Pounce:' which is checked.

Select the **Pounce** option to activate the **Dash** and **Space** fields. The **Dash** field indicates the length of the perforation or drawn line, and the **Space** is the break in the perforation.

Move

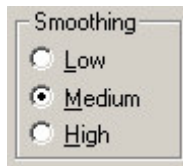
This section specifies where the cutter will begin to plot on the X- and Y-axis. By default, the plotter will normally begin cutting a graphic file at the lower left-hand corner of the vinyl. The current unit of measurement will be used when setting these fields.



- Xmove** Movement along the length of the vinyl (the X-axis).
- Ymove** Use this field to adjust the origin for plotting across the width of the vinyl (the Y-axis). This feature is particularly useful when cutting an “upper” section of some used vinyl.

Smoothing

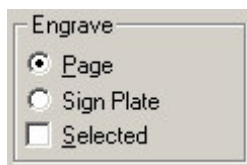
Smoothing refers to the number of vectors or arcs that are used to represent the actual curves when cutting. A higher smoothing setting will increase the number of vectors that represent a curve, thereby producing a smoother appearance to the finished work. The consequence of higher smoothing is that the greater amount of cutting data requires a corresponding amount of computation, which increases the time to complete a given job.



- Low** Results in a faster cut, though perhaps at the cost of some drawing resolution.
- Medium** Results in a marginally slower cut, but a reasonable amount of smoothing is applied. This is an optimal setting that is recommended for most cutting operations.
- High** Applies a maximum amount of smoothing to the original drawing. Cutting will be slow, but accurate.

Engrave

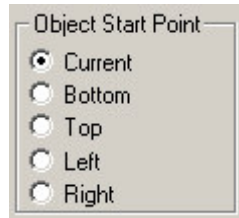
The **Engrave** section determines which parts of the workspace are going to be output.



- Page** Plot all objects on all active layers of the workspace. Objects will be shifted from the lower left of the page.
- Sign Plate** Cut only those objects that appear on the sign plate. Objects that are partially on the sign plate will be partially cut.
- Selected** Only selected objects will be cut. The Selected option is applied in addition to the other Machining settings.

Object Start Point

As each object is cut, the position at which cutting begins may be specified here. Setting this option is used to introduce consistency in tool movements as each shape is cut.



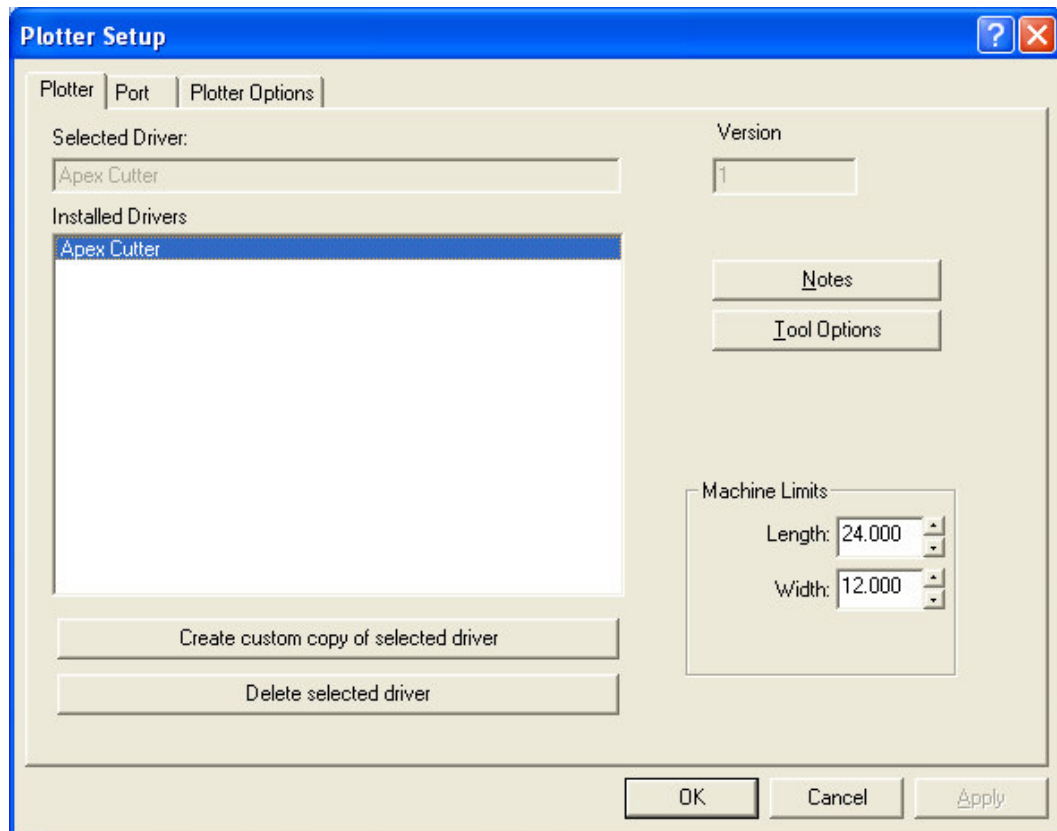
- | | |
|----------------|---|
| Current | This is the usual default, which uses the mouse click positions when the object was originally constructed. |
| Bottom | Use the lowest point on each object as a starting point. |
| Top | Use the highest point on each object as a starting point. |
| Left | Use the left-most point on each object as a starting point. |
| Right | Use the right-most point on each object as a starting point. |

PLOTTER SETUP

Plotter Setup

The **Plotter Setup** dialog is used to configure the plotter or cutter.

From the **Engrave** menu, choose **Engraving Defaults** to open the **Output** dialog. Then choose **Setup** to open the **Plotter Setup** dialog.



Plotter tab

Plotter tab

The **Plotter** tab lists the available drivers. A driver is a human-readable text file that Windows uses when communicating data to a connected device, which in this case is for a cutter or plotter. Each cutter or plotter has its own driver, which should have been installed during the Vision-Pro installation. More drivers can be installed from the **File** menu:

File | Install | Cutting Devices...

The version of the driver is listed at the top-right corner of the tab.

Custom Driver Copies

This is an advanced option for use in unusual device issues.

In most cases, there is no need to edit the driver file. However, if there is a need to edit the driver file, it is advisable to create a backup copy of the original driver file.

Machine Limits

These dimensions represent the range of motion over which the tool movements are restricted during the job. Set these values to correspond with the physical limits of the router, engraver or plotter that is being used. For example, a fifteen inch plotter cannot accommodate a thirty inch wide roll of vinyl. When setting these size options, consult your operator manual for any special setting requirements. When using plotters, be aware of two important facts:

- 1) The ability to accept a given width of vinyl does not imply that the device is capable of cutting across the full width. The effective width of plotters is typically at least one inch narrower than the vinyl width it can accommodate, and the plotter manual must be consulted for exact maximum-width dimensions.
- 2) Some plotters will reset or stall when the maximum length is exceeded during a job. To be cautious, the maximum length setting should always be at least one-half inch (12mm) less than the maximum settings that are suggested by the plotter manufacturer. Consult the plotter manual for exact maximum length dimensions.

The **Length** and **Width** dimensions set the default size of the tiling lines.

Get Page Size

Selecting the **Get Page Size** button causes Vision-Pro to communicate with the plotter and determine the page size set for the plotter. This option is not available with all plotters.

Plotter ID

Selecting the **Plotter ID** button causes Vision-Pro to communicate with the plotter and determines the identity set for the plotter. This option is not available with all plotters.

Notes

Clicking the **Notes** button will display device specific information. Important configuration information is displayed here.

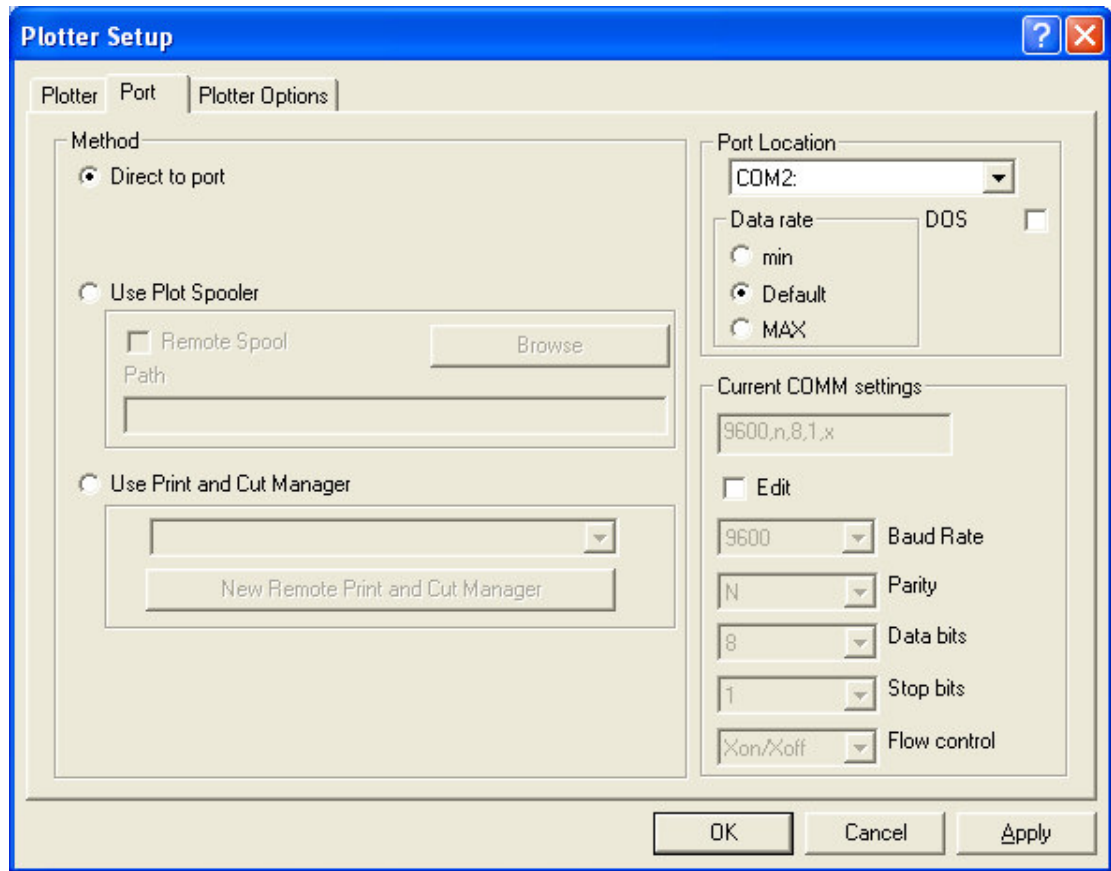
Port tab

Port tab

The **Port** tab is used to specify the method of sending the cut data to the cutter.

Method

- **Direct to port** – Send cut data directly to a device that is connected to this workstation
- **Plot Spooler** – Use the Output Spooler to manage cut jobs
- **Print and Cut Manager** – Use a cut-only version of the Print & Cut Manager to manage cut jobs



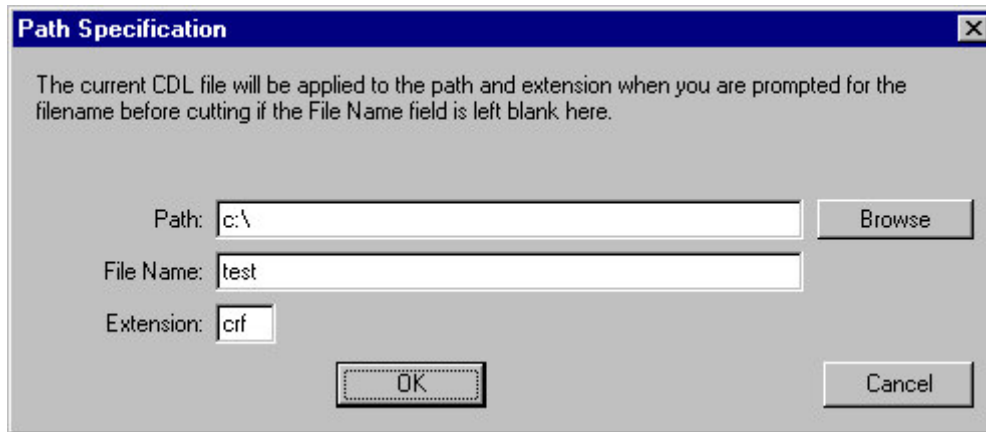
Port Location

This drop down menu is used to specify the port through which the plotter is connected. To select a port, click on the required choice. There are several types of port available:

- Serial ports are known as COMM Ports, and vice-versa. These are the recommended type of port to use. The serial port has several features which make it the best choice, including the fact that it is designed to handle bi-directional communications (i.e., it allows the computer to communicate with the device, while also allowing the device to communicate with the computer at the same time). To use the serial port to drive the plotter, set up the serial port properly from within Windows Control Panel. For more information, consult the plotter manual.
- LPT Ports, or parallel ports are essentially printer ports. They will often work with a given plotter or cutter, but, unless there is some compelling reason to use an LPT port, a serial port is always a better choice.
- File, redirects the plot data to a file on the hard disk.

Set Path

This option is only available when the **Port** selection is "File." Clicking the **Set Path** button is used to specify the path and filename to which output will saved.



Use a meaningful extension, such as PRN, PS, or PLT.

Data Rate

This is an advanced option for use in unusual device issues.

The **Default** data rate will be acceptable for most uses. However, adjusting the **Data Rate** can potentially improve the buffer efficiency when sending packets of cut data over a network. As a suggestion, consult your network administrator when trying to determine the impact of sending cut data over your network. If there are no issues, then the **Default** data rate is likely satisfactory.

DOS option

This is an advanced option for use in unusual device issues.

The **DOS** option is used to compensate for the high rate of data transmission that can occur through Windows to the cutter. A symptom of this is where the plotter moves in a series of small increments and pauses (alternating every half second). In a typical case, straight lines will be cut at a reasonable speed, but the cutting slows dramatically on curves.

By enabling the **DOS** option, the transmission rate will be slowed slightly, but this communication problem will be eliminated.

Note: Supporting comments can be found through the CADlink web site, Tech Note 1474 of the Knowledge Base.

Use Plot Spooler

This will cause all output, regardless of the port, to be processed by the Vision-Pro Output Spooler. The Output Spooler is optimized for transmitting data that matches the specific requirements of the given router, engraver, or plotter. Sending simultaneous jobs to multiple output devices is supported, and once a job is sent, Vision-Pro is free to continue editing other workspace projects.

Remote Spool

If the **Spool** option has been enabled, then the **Remote Spool** option will become available. The Remote Spool option is used to plot files across a network to a device that is attached on a different computer from the design station

Use Print & Cut Manager

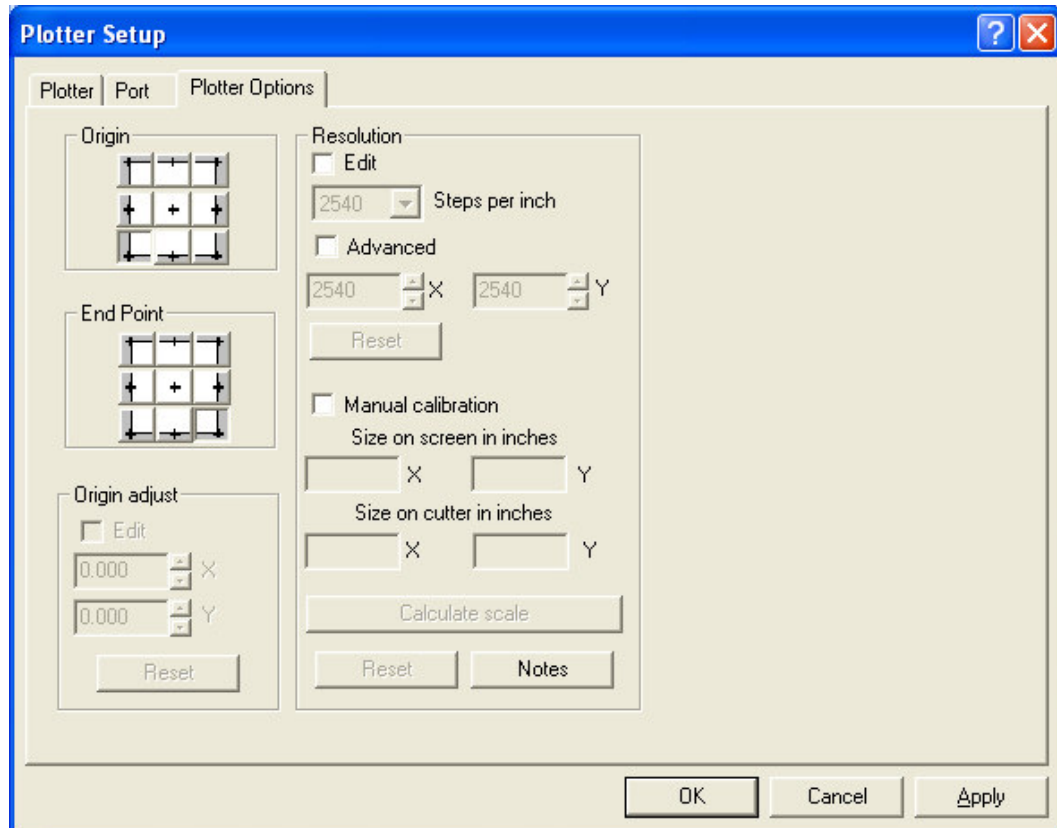
The Print & Cut Manager is a job management interface that allows print and/or cut jobs to be queued before being sent to the output device. The Print & Cut Manager is similar in purpose to the Plot Spooler, except that the Print & Cut Manager is designed with more functionality for archiving, previewing, and tracking jobs.

In a sense, the Print & Cut Manager can be thought of as an output destination that can be on another computer of the network. However, even when sending jobs to another network computer, please set the **Port Location** to indicate the port that the device is connected to on that computer.

At the time of writing, Vision is providing a cut-only version of the Print & Cut Manager that can be installed on network computers without the need for a supporting security dongle. Each installation of the Print & Cut Manager includes context-sensitive help that explains how the controls are used.

Plotter Options tab

Plotter Options tab



Origin

This option determines the location of the plotter **Origin**. Options include Upper Left, Center, or Lower Left.

End Point

This option determines the final resting position of the tool after drawing or cutting an image. It can be set to End or Origin. The End option causes the cutter, upon finishing a given cut, to come to rest at the origin of the next section of vinyl to be cut (the extreme lower right of the job just finished). Choose Origin to cause the cutting head to return to the origin of the cut just completed. An exception to this rule is when the plotting area is tiled, in which case the tool will return to the origin of the last tile cut.

Origin Adjust

This is an advanced option for use in unusual device issues.

These edit fields are used to change the coordinates of the plotter origin point. This is typically used where it is desirable to send a job with adjusted origin coordinates, without needing to manually change the origin from the plotter control panel.

Resolution

This is the factory-set resolution for the number of stepper-motions that constitute one inch. In the vast majority of cases, there is no need to adjust this value. Indeed, setting the wrong value here will cause jobs to be wildly inaccurate.

Manual Calibration

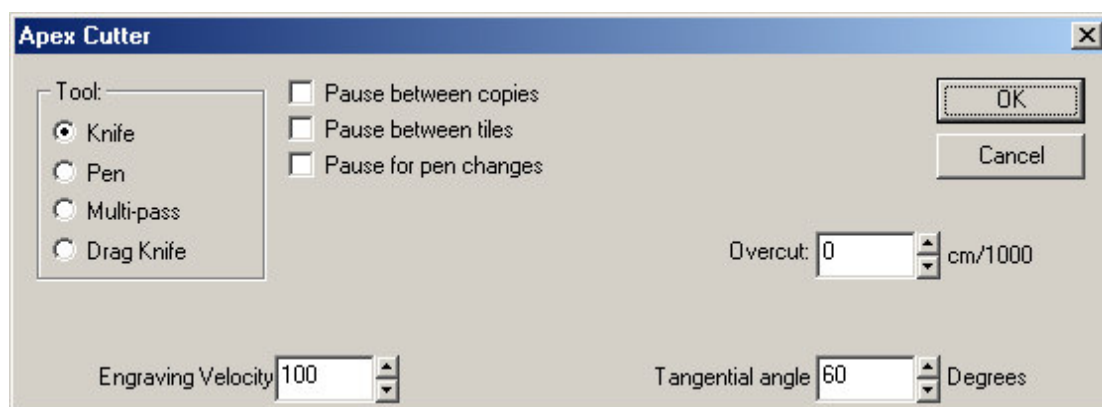
These manual calibration fields are provided as a means of compensating for a cutter that has undergone significant usage, such that the cutter movements have lost some precision. Calibration is simply done by outputting a square shape and then measuring the resulting output.

- 1) Draw a square of at least 10 inches (or 250 mm) per side, and send it as output through the cutter.
- 2) Measure the cut square as accurately as possible using a ruler or caliper.
- 3) In the **Manual Calibration** fields, indicate the original size of the square, and the size of the square as it was actually output.
- 4) Click the Calculate Scale button, and a new scale factor will be calculated to ensure that cut jobs are performed correctly.

At any time, the Reset button can be clicked to restore the original values.

Tool Options




Each engraver has driver options that control the movement of the tool head. The **Tool Options** dialog is used to adjust these options according to the currently active driver, and the dialog fields will change to represent the options that are actually available for the driver. As an example, the Apex Cutter driver will cause the **Tool Options** dialog to appear as follows:



The controls that appear on the **Tool Options** dialog are specific to the given cutter. For full details about these controls, consult the Operator Manual that was provided with the cutter.






CONTOUR CUT LINES

Contour Cut Lines

-  [Contour Cutting](#)
-  [Contour Cut On/Off](#)
-  [Die Cut](#)

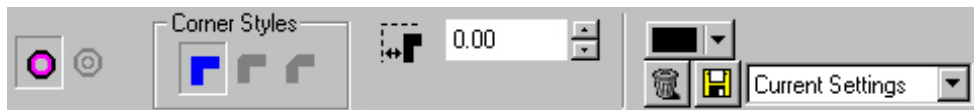
Contour Cutting

Contour Cutting

-  [Contour Cut](#)
-  [Contour Cutting a Vector Shape](#)
-  [Contour Cutting a Bitmap](#)
-  [Finding a Useful Threshold Value](#)
-  [Contour Cutting a Shape and Bitmap](#)

Contour Cut

The **Contour Cut** feature traces a hairline outline around a scanned image or graphic, which is used to indicate an engraving line. Both inner and outer contours can be traced.



Corner

There are three styles available for tracing the corners of a selected object:

Style	Effect
Point	Trace all corners to a sharp point.
Round	Soften the corners to a rounded edge.
Miter	Crop or square the corners.



Pointed corners



Rounded corners



Mitered corners

Contour Style

There are two options for **Contour Style**:



Cut outer contours only.



Cut both inner and outer contours.

Offset

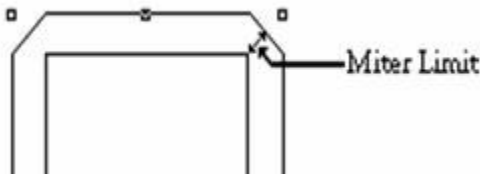
The **Offset** amount indicates the distance that is to be maintained between the object contour and the resulting contour cut. The current units of measurement will be applied (see General Preferences dialog).

Layer Color

When selecting the color that will represent the contour, use a color that is not otherwise being used in the graphic. In so doing, the contours and original objects may be easily discerned when using the **Cut by Color** option (Plot dialog).

Miter Limit

The **Miter Limit** is applied between the corners of the original object and the contour cut.



This limit is expressed as a percentage of the **Offset** amount.

Contour Cutting a Vector Shape

Suppose that contour lines must be created for a vector image that has inner contours. For example, consider the following shape:



Select the shape and then choose **Contour Cut** from the **Cut** menu. The contour cut controls will appear in the SmartBar.



The follows SmartBarsettings were used:

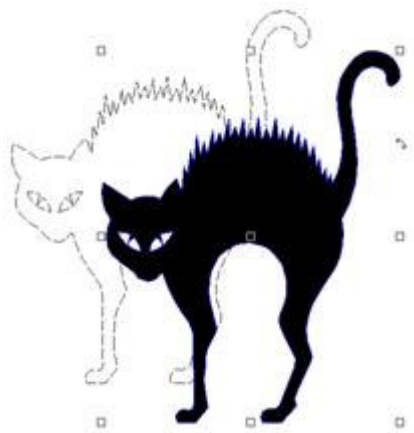
Type of Contour	Outside/Inside Contour Cut
------------------------	----------------------------

Vision-Pro 7 Doc Files

Contour Style	Round Corner
Offset	Zero
Color	Black

To finish editing the contour cut lines, click within an empty portion of the workspace.

By moving the original shape aside, the contour cut lines will be visible. Note that contour cut lines have been created for the inner contours as well.



Contour Cutting a Bitmap

To contour cut a bitmap, Vision-Pro will analyze a monochrome (i.e. black-and-white) version of the bitmap and determine the discrete boundaries of the bitmap. This is done by comparing each bitmap pixel with a threshold value. Pixel colors that fall below the threshold will become black, and those exceeding the threshold will become white. Contour lines are then created based on the boundaries between white and black sections of the bitmap.

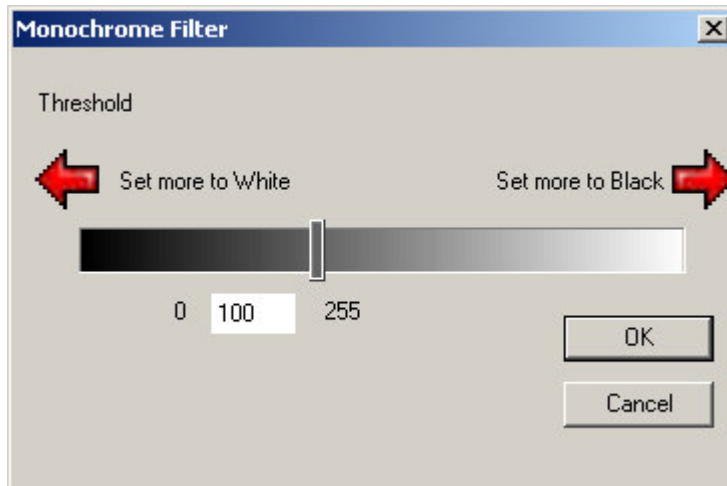
The contour lines that are created will vary according to the threshold value used. For example, select a bitmap and then choose **Contour Cut** from the **Cut** menu.



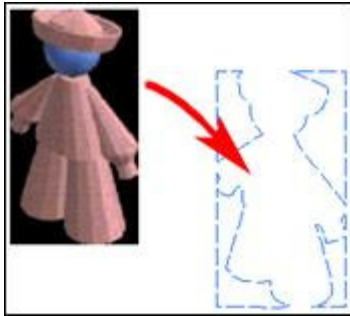
Using the SmartBar, set the contour cut settings as appropriate for the job. In this example, the following settings were used:

Type of Contour	Outside Contour Cut
Contour Style	Round Corner
Offset	Zero
Color	Blue

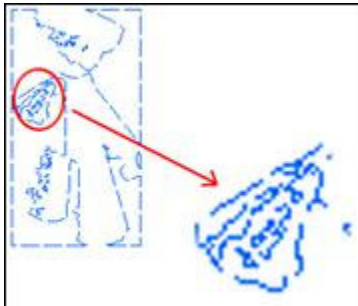
When the **Apply** button is clicked, the **Monochrome Filter** dialog will open.



For this example, we chose 50 as a **Threshold** value and then clicked the **OK** button. In this case, the results were quite good, as shown in the following screenshot:



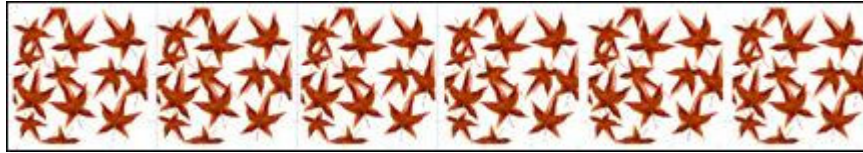
However, we had previously tried using a threshold value of 150, which produced the following results:



The problem is that the boundaries between light and dark areas of the bitmap was less well defined, so "artifacts" (small contour cut objects) were created in these boundary zones. Though such artifacts may be deleted, it is easier to choose a threshold value that minimizes the amount of artifacts.

Finding a Useful Threshold Value

To quickly find a useful Threshold value when contour cutting a bitmap, it is useful to create multiple copies of the bitmap. In this case, five duplicates of the original bitmap were created.



Select the first bitmap, and then choose **Contour Cut** from the **Cut** menu.

In the SmartBar, choose the SmartBar settings and then click the **Apply** button. The **Monochrome Filter** dialog will open.

Set the **Threshold** value to zero and click the **OK** button. The contour cut lines will be created for the first bitmap.

However, Vision-Pro is still in the contour cut mode for the first bitmap, and it is possible to select a different bitmap without leaving the contour cut mode.

Click on the edge of the second bitmap, and the **Monochrome Filter** dialog will open again.

This time, set the **Threshold** value to 50 and click the **OK** button. The contour cut lines will be created for the second bitmap.

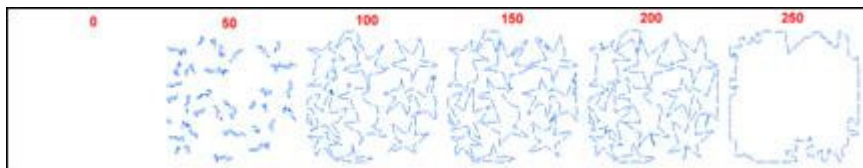
Continue to select each subsequent bitmap and apply a different **Threshold** value. For this example, the following **Threshold** values were used:

Bitmap	Threshold value
1	0
2	50
3	100
4	150
5	200
6	255

Once contour cut lines have been created for all of the bitmaps, click within an empty portion of the workspace to return to the Select state.

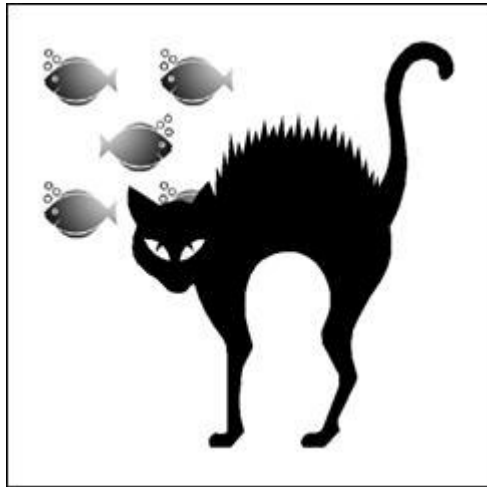
Select each bitmap and move it aside. However, take care not to move the cut lines.

Once the bitmaps have been moved, the remaining contour cut lines will indicate the best Threshold value for the bitmap. In this particular example, a Threshold of zero was too low and produced no cut lines, whereas a Threshold of 255 was too high and produced a vague outline around the bitmap perimeter. The most balanced result occurred when a Threshold of 150 was used.



Contour Cutting a Shape and Bitmap

More than one shape may be selected when using the **Contour Cut** tool. In addition, it is possible to mix vector shapes with bitmap images. For example, consider the following cat shape that is supplemented with a fish bitmap pattern.



Select both objects and then choose **Contour Cut** from the **Cut** menu. The contour cut controls will appear in the SmartBar.

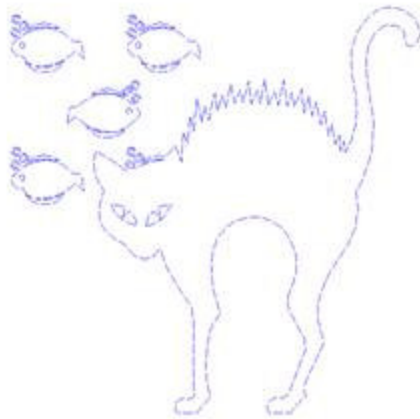


The follows SmartBar settings were used:

Type of Contour	Outside/Inside Contour Cut
Contour Style	Round Corner
Offset	Zero
Color	Blue

To finish editing the contour cut lines, click within an empty portion of the workspace.

By moving the original objects aside, the contour cut lines will be visible.



Contour Cut On/Off

This command will convert a line art shape into a contour cut line, and vice-versa. This command is typically used where the contour has been drawn freehand.

Die Cut

Use the Die Style drop-list to create a tool path based on preset shapes.



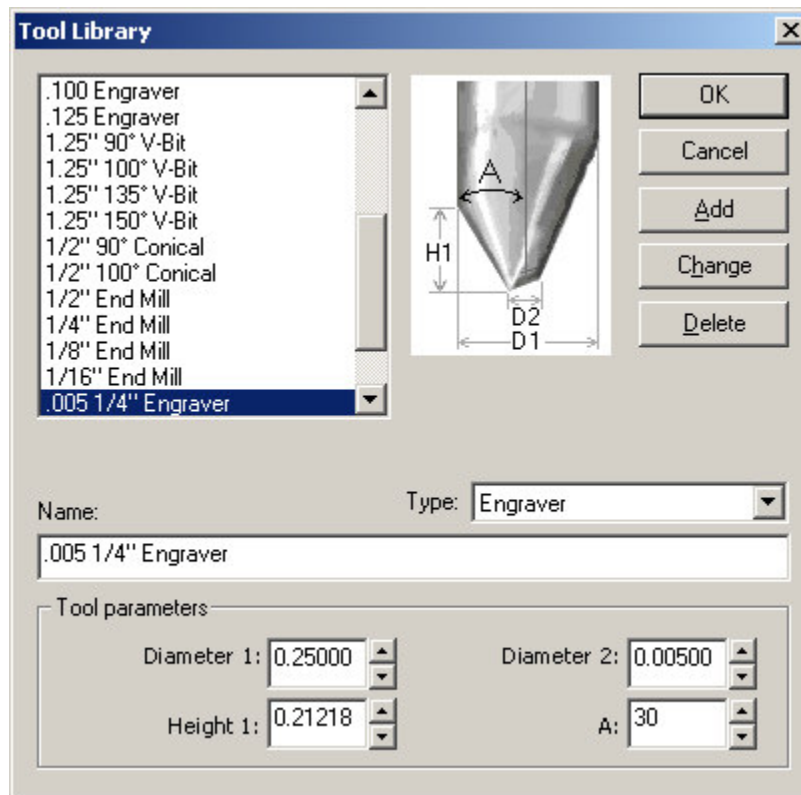
The available styles are:

- Square
- Rectangle
- Circle
- Oval
- Triangle
- Polygon
- Star
- Pointed Gear
- Blunt Gear

TOOL LIBRARY

Tool Library

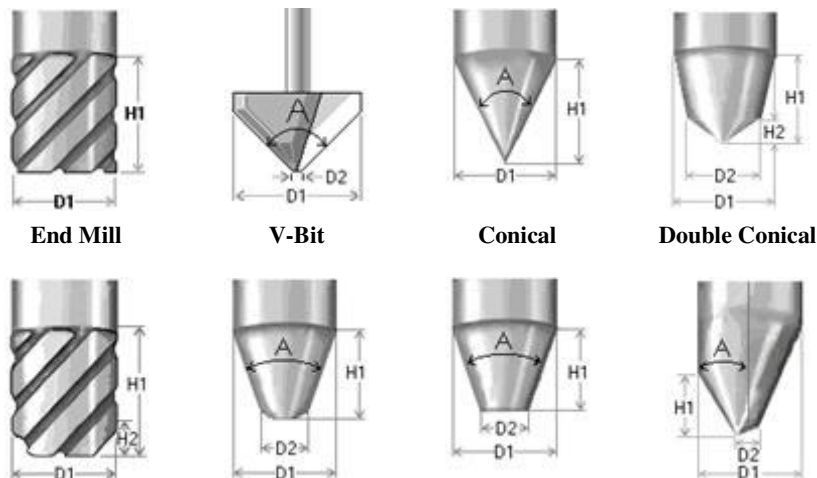
The **Tool Library** is used for organizing pre-defined sets of tools that will be used with the connected engraver. As new engraving paths are created, tools may be selected from the library instead of setting new tool parameters. The **Tool Library** dialog is opened from the **Engrave** menu.



The available tools will be listed at the top-left of the dialog. When a given tool is selected, a diagram that illustrates the tool type parameters will be displayed to the right of the list.

Type

This list box includes all of the available tool types. The **Types** of tools available for use with Vision-Pro are End Mill, V-bit, Conical, Double Conical, Round, Round bottom, Flat bottom, and Engraver. This list cannot be edited or added to. The following diagrams describe the relevant dimensions of the each tool type.



Round

Round Bottom

Flat Bottom

Engraver

Tool Parameters

Tool Parameters

At the bottom of the dialog, the **Tool parameter** values will be displayed for the selected tool. Some bits have irregular parameters, such that they have either two diameters and/or two height values.

Tool parameters

Diameter 1: 0.25000

Diameter 2: 0.00500

Height 1: 0.21218

A: 30

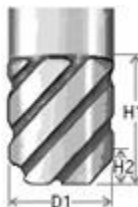
Diameter 1, Diameter 2

The **Diameter** settings can be edited to within 1/1000th of a measurement unit. **Diameter 1** is the total width value for any given bit, and if there are two width values, then **Diameter 1** will always be the greater value. **Diameter 2** is the end width value for any given bit.



Height 1, Height 2

The **Height** scroll boxes can be edited to within 1/1000th of a measurement unit. **Height 1** is the total height value for any given bit, and if there are two height values, then **Height 1** will always be the greater value. **Height 2** is the point height value for any given bit.



Add

To create a new tool, choose a similar tool from the list, and then set the parameters of the new tool. Type a unique **Name** for the new tool, and then click the **Add** button.

Change

To edit an existing tool, select that tool from the list, set the new parameters for that tool, and then click **Change** to accept the parameters.

Delete

To remove an existing tool, choose that tool from the list and click the **Delete** button.

OUTPUT TOOL USAGE

Output Tool Usage

Output Tool Usage is an estimation tool that collects statistical information about the performance of the tools being used in cutting or plotting. A variety of data is gathered about each tool, such as the overall distance traveled, the number of jobs completed, and the date of the last tool change. Using this data, comparisons between successive tools may be used to make an informative decision about when tools are likely to decline significantly in performance. Tools may then be replaced in advance of this decline, thereby preventing materials from being wasted by an old tool.

Under the **Engrave** menu, selecting the **Output Tool Usage** item will open the **Tool Tracking** dialog. Tracking will be set for the current device that is set in the **Engraving Defaults**, though other tools may be chosen.

Show Traveled Distance

Show Traveled Distance

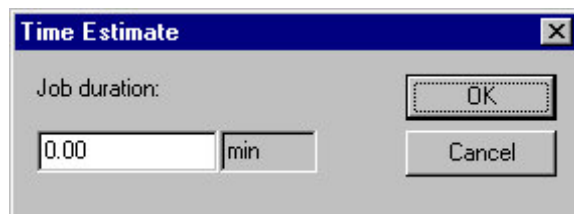
If the **Show Traveled Distance** option is enabled, then after each cut job, a dialog will state the total distance that the tool moved during the job.

Estimate time for current job

After this option is first enabled, the next job that you complete will require that you record the approximate time to complete the job. Before the job begins, the Estimated Time dialog will open. This is simply a reminder that you need to record the cutting time.



Once you click **OK**, the job will continue as expected. After the job is complete, you will be asked to enter the time that was expended in completing the job.



If the estimated time must be updated later, then return to the **Tool Tracking** dialog and click the **Setup Machine Time** button. For the next job that is performed, you will be asked to estimate the job time again.

Once a time estimate has been set, use the **Show Traveled Distance** item (**Engrave** menu) to display the time that will be required the current workspace design. By using this estimate, you can better manage your own time, since you will be able to work on other tasks and return when the current job is complete.

History of Tool Changes

Tools are indexed in sequence, from the first tool that statistics were ever gathered for, to the tool that is currently loaded into the machine.

Whenever a tool is changed, click the **Replace Tool** to indicate that statistics are being collected for a new tool. The **Replacement number** will automatically increment, and the statistics fields (Days used, Jobs done, etc.) will be reset.

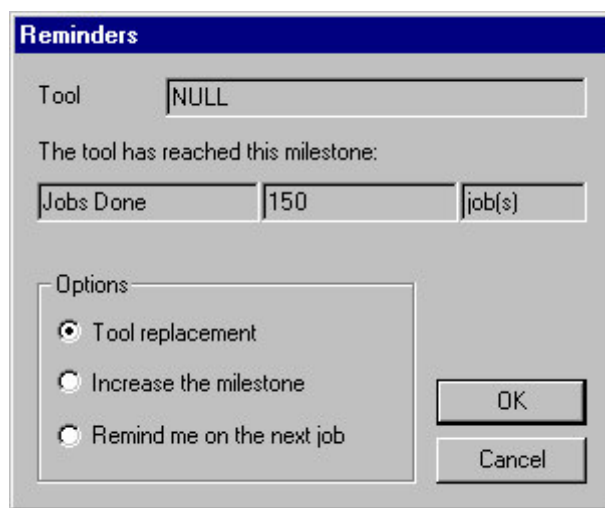
The replacement number indicates the tools for which statistics are available. The scroll arrows can be used to navigate through all the previously used tools.

Reminders

The **Reminders** are used to prompt when a tool should be changed. Reminders may be set to occur after the number of days used, the number of jobs done, the total distance traveled, as well as the total time expended as the tool was in use.

Click the **Set Milestones** button to specify the parameters for a given reminder.

During the regular process of cutting or plotting a job, if a milestone is encountered, then a warning dialog will prompt you before the job occurs.



In cases where the tool must be replaced:

- 1) Replace the tool
- 2) In the **Reminders** dialog, click the **Tool replacement** option
- 3) Click **OK** to close the Reminders dialog

By doing this, the **Replacement number** will be automatically incremented in the **Tool Tracking** dialog, and the job will proceed using the new tool. Statistics will be collected for this new tool.

OUTPUT SPOOLER

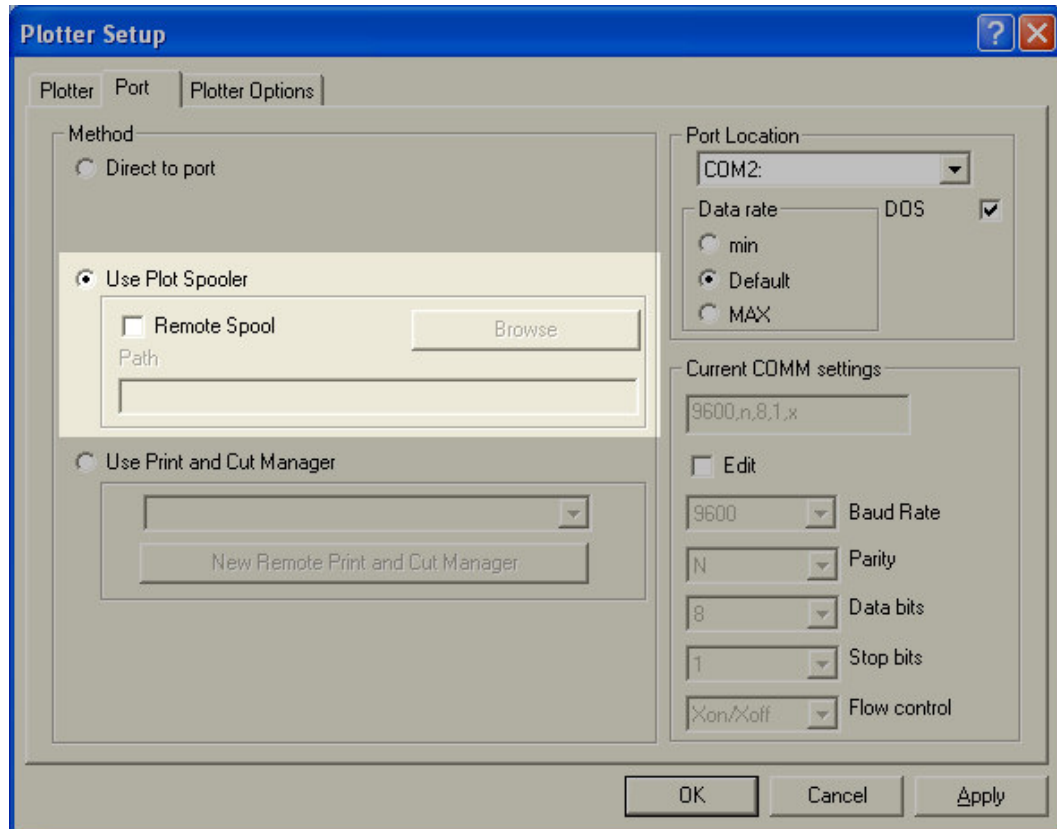
Output Spooler

The **Output Spooler** is a stand-alone application that is designed to make routing and engraving more efficient. The Output Spooler operates in the background independently of Vision-Pro, which allows new projects to be edited while waiting for the current job to finish. Additionally, Output Spooler allows cutting to machines on different ports simultaneously. Use the Output Spooler to send ASCII files from sources other than Vision-Pro.

If a device requires non-standard handshaking or data-encryption like those from Anagraph or Gerber, the Output Spooler is of particular value, since it will allow for spooling of jobs to these devices. The drivers for these devices do not support the use of third party plot caching programs such as the Windows Print Manager.

Using The Output Spooler In Vision-Pro

The Output Spooler is enabled from the **Port** tab of the **Plotter Setup** dialog. Enabling the “**Use Plot Spooler**” option will cause cut jobs to be sent to the Output Spooler on the local computer. If the **Remote Spool** option is enabled, then a directory on another network computer may be specified as the output destination.



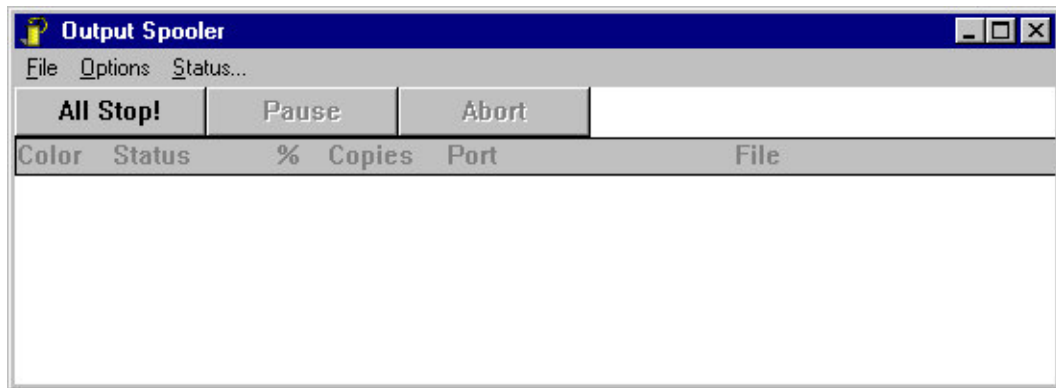
The Output Spooler can also be run by itself. For more information on this mode of operation, see the section entitled “The Output Spooler As A Stand Alone Program.”

Spooler Controls

Spooler Controls



When a job managed by the Output Spooler begins, the Output Spooler will appear as a minimized application. When maximized, the Output Spooler window appears as follows:



Job Queue

Within the Output Spooler window, the status of each job is displayed in a queue:

Color	Status	%	Copies	Port	File
-------	--------	---	--------	------	------

The order, from top to bottom, indicates the priority in which jobs will be completed. The order may be modified by dragging an inactive job to a different row in the queue.

The status fields are described as follows:

Color

Indicates the color currently being plotted if the Engrave by Color option is used. When cutting by color, each color corresponds to a separate job, which allows jobs to be sorted by color.

Status

This column indicates the current status of each print job. Possible types of status are:

Receiving: Indicates that the Output Spooler is currently receiving a new job from Vision-Pro

Ready: Indicates that the selected job has been completely received and is ready to be cut. To begin sending this job, select it and press the Start button. This status will only appear when "Auto Start" is not selected under the Options menu.

Pending: Indicates that the selected file has been added to the queue, but is not yet sending because the required port is busy. This is different from the Ready status, since a Pending file is automatically sent to the output device as soon as device becomes free, whereas a Ready job must be manually started.

Sending: Indicates that the job is being sent through the port to the device.

Paused: Indicates that the job has been paused either by pressing the Pause button, or from a pause command in the file (such as for a manual tool change).

Done: Indicates that the entire file has been sent to the device. The job may be either deleted, or saved for later spooling.

% -- Percent Complete

Indicates the percentage of job that has been completed.

Copies

Indicates the number of copies remaining to be sent to the device.

Port

Indicates the port through which data will be sent.

File

If Vision-Pro began the job, then this parameter indicates the name of the Vision-Pro CDL file associated with the job. Otherwise, this parameter will display the DOS filename that was manually opened for spooling.

Device

Displays the name of the output device as selected in the Engraver Setup dialog.

Job Control Buttons



Above the Job Queue are several context-sensitive buttons for controlling the spooling process. The possible button are described as follow:

All Stop	Stops all jobs. Data transfer from Output Spooler to the ports is halted, pending further instructions. Note that devices may appear to be continuing because they maintain a buffer of data.
Continue	Send output to ports that had been interrupted by the All Stop command.
Pause	Stop the selected job.
Resume	Send output to the port that had been interrupted by the Pause command.
Abort	Abort the selected job.
Delete	Remove the selected job from the queue.
Start	Send the selected job data to its designated port.

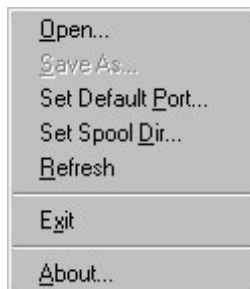
OUTPUT SPOOLER AS A STAND ALONE APPLICATION

Output Spooler As A Stand Alone Application

The **Output Spooler** can be launched independently of Vision-Pro and utilized to manage plotting, routing and engraving jobs. Jobs can be managed simultaneously between multiple devices on separate ports.

File Menu

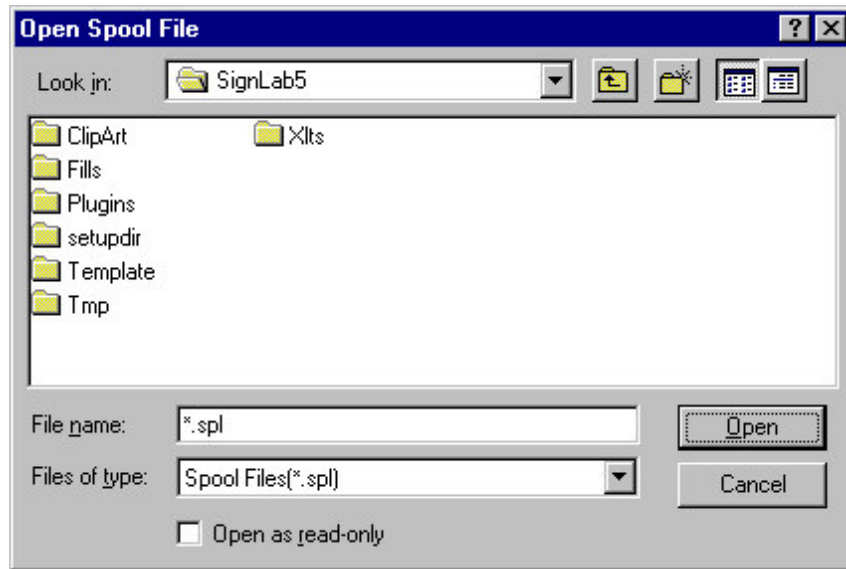
The **File** menu commands are used to open files and designate ports for sending output.



Open

Vision-Pro 7 Doc Files

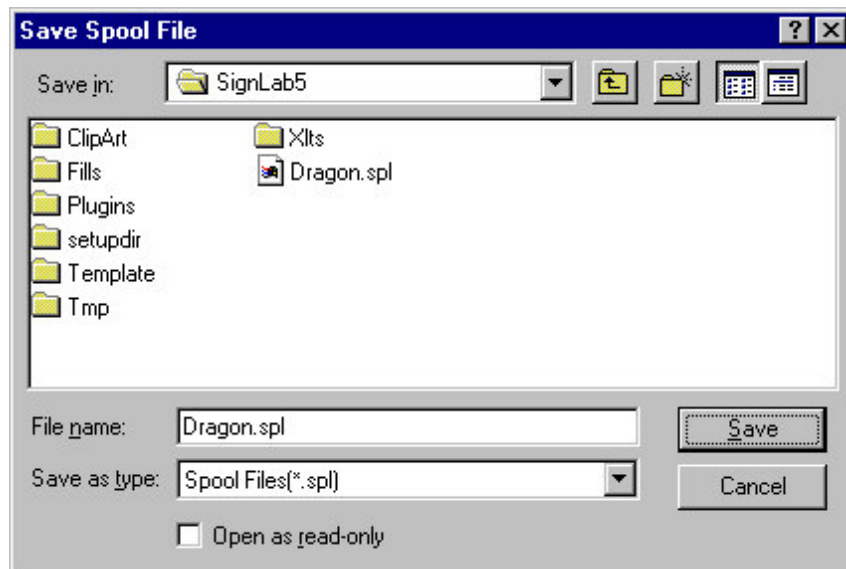
Selecting this option brings up the Open a Spool File dialog box.



Spool files (.SPL) are used to store Vision-Pro jobs. Choose the Vision-Pro file and click the Open button. If the opened file is not a Vision-Pro type, then the port for sending the file will need to be specified.

Save As

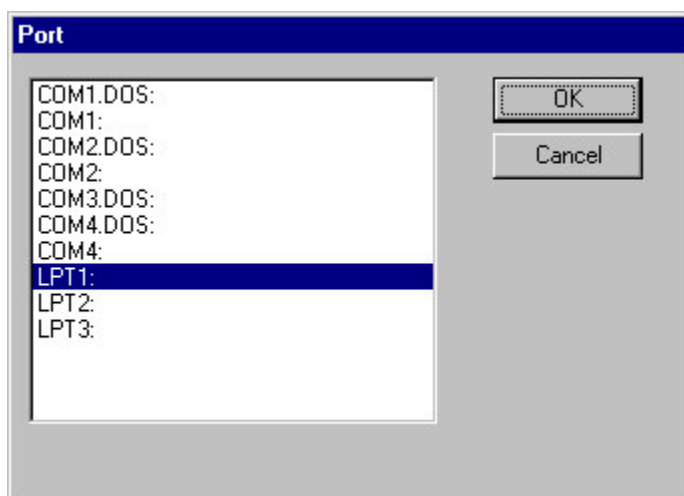
This option allows for saving the currently selected job as a spool (*.SPL) file through the following dialog box.



A spool file is a file containing the commands necessary to make the output device cut/rout/print an image or file. The Save Spool File is a standard Windows dialog box, with the ability to change drives, directories, and file types. When saving a file as a spool file, it should be noted that spool files often require more disk space than standard application files.

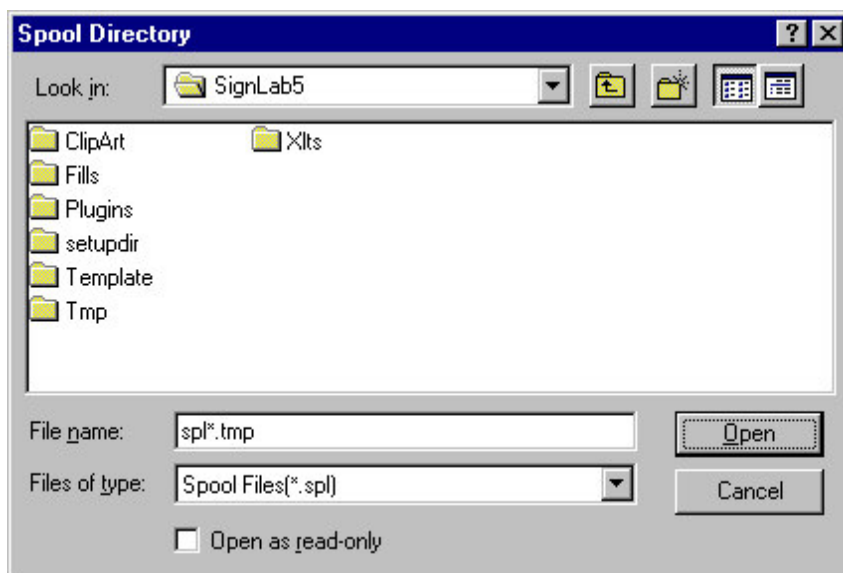
Set Default Port

Use the Port dialog to set the default port that jobs will be sent to.



Set Spool Directory

The data for jobs may be stored to file and then sent to the device at a later time. The Spool Directory dialog is used to set the default directory to which job files will be saved.

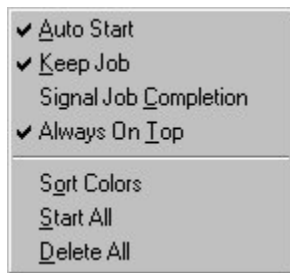


Refresh

The Refresh command forces the Output Spooler to update the status of all pending jobs.

Options Menu

The **Options** menu controls how jobs are processed.



Auto Start

If the **Auto Start** option is active, then jobs will commence as soon as they are received by the Output Spooler. Otherwise, jobs will be paused until they are started manually.

Keep Job

If the **Keep Job** option is active, then jobs will remain listed in the Output Spooler window after they have been completed. Depending on requirements, jobs may then be either saved or discarded.

Signal Job Completion

If the **Signal Job Completion** option is active, then a popup dialog will appear as each job is completed. This feature is most useful when cutting by colors.

Always On Top

If the **Always On Top** option is active, then the Output Spooler window will visible over all other windows. When this option is activated, the Output Spooler will be shifted to the lower-right of the screen by default.

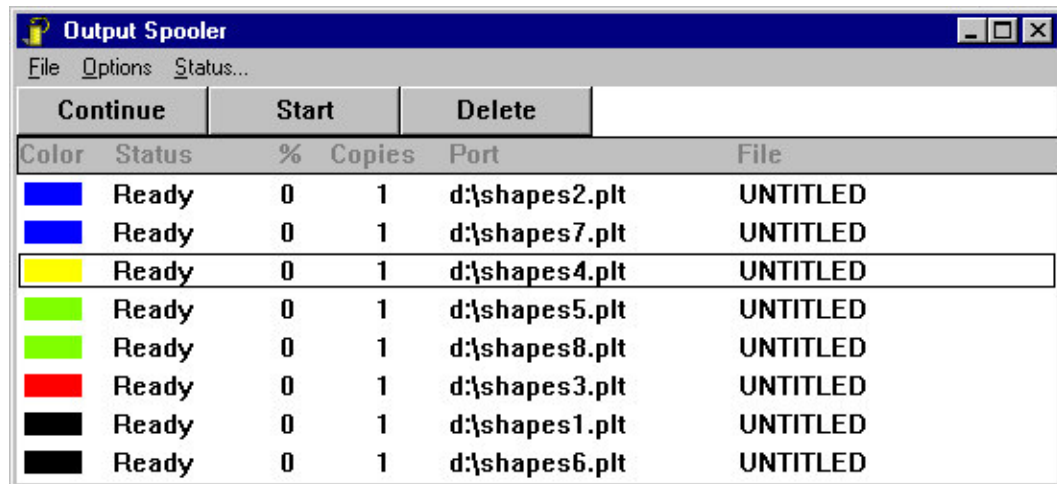
Sort Colors

When cutting by color on a plotter, the Sort Colors feature is used to group jobs according to the color of vinyl required. This minimizes the number of times that the plotter must be loaded with a different color of vinyl.

As an example, the following image of the Output Spooler shows several jobs that are differentiated by the color being used. But the jobs are ordered according to when they were received by the Output Spooler.

Output Spooler						
File Options Status...						
Continue		Start		Delete		
Color	Status	%	Copies	Port	File	
Black	Ready	0	1	d:\shapes1.plt	UNTITLED	
Blue	Ready	0	1	d:\shapes2.plt	UNTITLED	
Red	Ready	0	1	d:\shapes3.plt	UNTITLED	
Yellow	Ready	0	1	d:\shapes4.plt	UNTITLED	
Green	Ready	0	1	d:\shapes5.plt	UNTITLED	
Black	Ready	0	1	d:\shapes6.plt	UNTITLED	
Blue	Ready	0	1	d:\shapes7.plt	UNTITLED	
Green	Ready	0	1	d:\shapes8.plt	UNTITLED	

From the Options menu, the Sort Colors option was chosen. The jobs have now been sorted according to their individual colors, as the following screen shot shows:



Start All

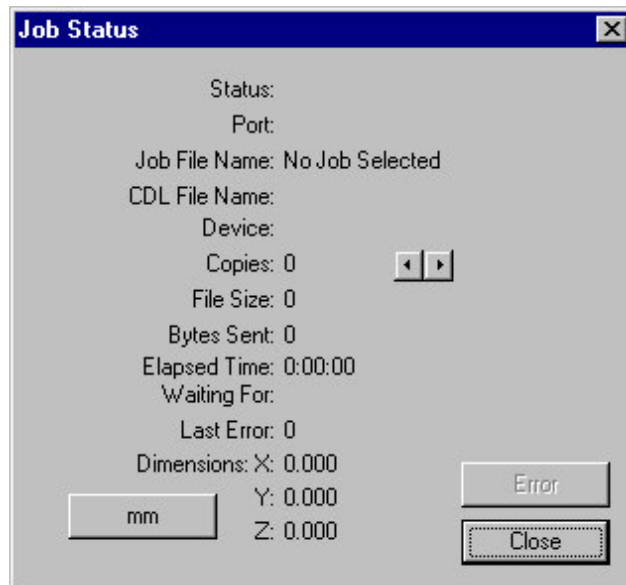
The Start All command will initiate all jobs, causing Output Spooler to begin sending each job to its indicated port.

Delete All

The Delete All command will clear all jobs from the Output Spooler queue.

Status Menu

The **Status** menu item opens the **Job Status** dialog:



This Job Status dialog provides the following information about the current job.

Status

Vision-Pro 7 Doc Files

This field displays the current status of the file. This status corresponds to the Status field on the Output Spooler queue.

Port

This field displays the port through which the file is being sent.

Job Filename

This field displays the name and path (drives and sub-directories) of the source spool file. This is the name of the file as it was generated on disk.


CDL Filename

This field displays the name of the CDL file from which the output file originated. If Vision-Pro did not generate the file, then this field will be blank.

Device

This field displays the name of the device to which the output file is being sent. This is the same as the Device field in the main Output Spooler window.

Copies

This field displays the number of copies of the file to be sent to the port. The arrow buttons  to the right of this field can be used to increase or decrease the number of copies.

File Size

This field displays the size of the file being sent.

Bytes Sent

This field displays the number of bytes sent to the port.

Elapsed Time

This field displays the amount of time that has elapsed since the Output Spooler began sending the job to the output device.

Waiting For

This field is used when Output Spooler is waiting for a of signal from the output device. If the spooler is waiting, then this field will display the anticipated signal.

Last Error

If Output Spooler receives an error message from the device, then the numeric code for this error will be displayed in the Last Error field. The term “error message” is a misnomer because it can also refer to messages that indicate that output is being processed normally.

To view a description of the error message, click the Error button.



Dimensions

This field displays the physical dimensions of the job.

Under the Dimensions field is a button that indicates the units of measurement. Clicking this button will toggle the units between inches, millimeters, and centimeters.

A Note About Multiple Copies

From the Output dialog in Vision-Pro, it is possible to set more than one copy to be sent to the Output Spooler. However, the job will arrive at the Output Spooler as a single job, but with instructions to cut the file multiple times. As a result, the Output Spooler must be told to repeat a job by pressing the Start button.

The exception to this is when the stack command is used in the Vision-Pro **Output** dialog. When specifying that multiple cuts are to be stacked, the entire file, including all copies and stack information will be sent as a single file. For example, a job with six copies stacked will always yield six copies stacked when the Start button is pressed in the Output Spooler.

REMOTE SPOOLING

Remote Spooling

Remote spooling is a process by which data is sent to a device that resides on a computer other than the one that is running Vision-Pro. The Spooler program resides on a remote computer connected to a network. Several remote machines may be addressed by having multiple device drivers installed and their remote spool file directory set to the same directory that the remote spooler is using to pick up spool files.

Using the Remote Spooling Feature

To use the Remote Spooling Feature, both the remote and local computers must be prepared. Each is discussed in the following sections.

The Remote Computer

The Remote Computer

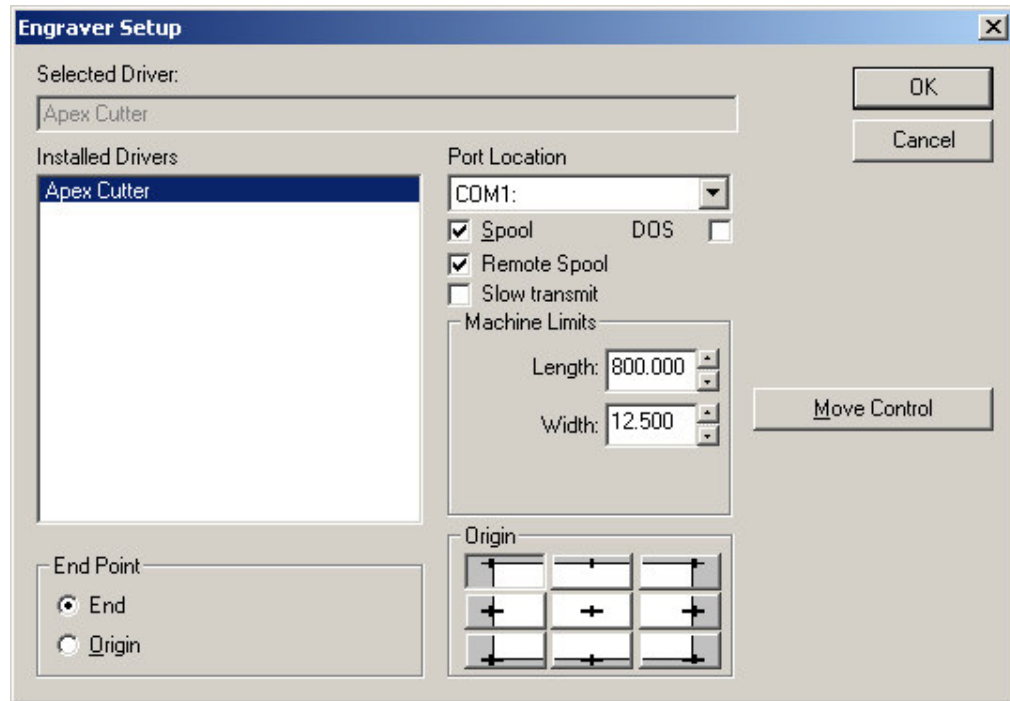
The Remote Computer will be the computer that receives the cutting data, and which has an attached device that will render the data. To prepare the Remote Computer for receiving cutting data, follow these steps:

- 1) On the Local Computer (the one which Vision-Pro has been installed), search the Vision-Pro directory for an executable file called "spooler.exe".
- 2) Copy this executable onto a floppy disk.
- 3) Using the floppy disk, copy the executable onto the Remote Computer.
- 4) From the **Start** menu on the Remote Computer, choose the **Run** command to execute "spooler.exe".
- 5) The **Output Spooler** application will open.
- 6) From the **File** menu, choose **Set Spool Dir** and set the common directory to which files will be stored for spooling.
- 7) From the **File** menu, choose **Set Default Port** and set the port to correspond to where the device is connected on the Remote Computer.
- 8) From the **Options** menu, verify that the **Auto Start** option is active.

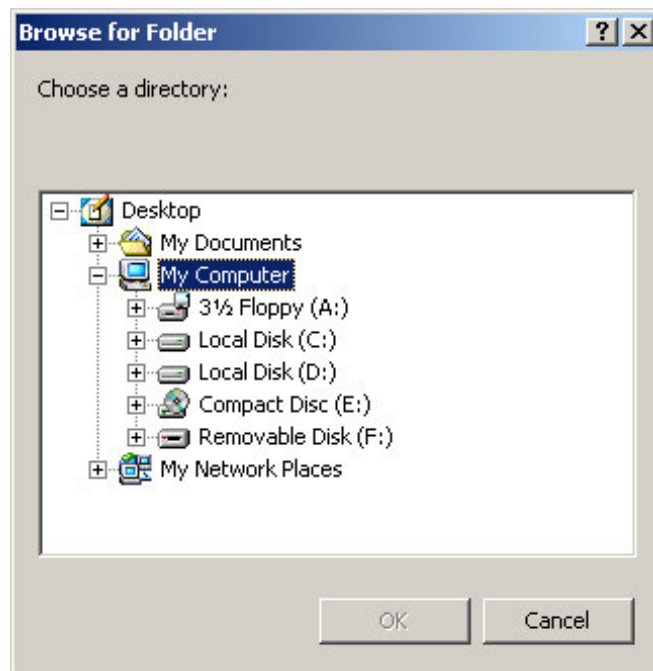
The Local Computer

The Local Computer will be the design computer that has been installed with Vision-Pro. In Vision-Pro, remote spooling is enabled from the **Engraver Setup** dialog.

- 1) Under the **Engrave** menu, choose **Engraver Setup**. The **Engraver Setup** dialog will open:



- 2) On the **Engraver Setup** dialog, select the **Remote Spool** option.
- 3) The **Browse for Folder** dialog will open.



- 4) Using the **Browse for Folder** dialog, locate the Remote Computer on the network. Then open the Spool Directory that was chosen in step (6) when setting up the Remote Computer.
- 5) Click **OK** to accept this spool directory.
- 6) In the **Engraver Setup** dialog, click **OK** to accept the remote spool.

At this point, both the Local and Remote computers are configured to funnel cutting data to the device that is connected to the Remote Computer.

Furthermore

With the Local and Remote computers connected over a network, the Spooling directory can actually be placed on either machine. Where the Spooling directory is placed has advantages and risks, which are summarized as follows:

- If the Spooling directory is on the Local Computer, then the cutting process will begin marginally faster over a network. However, a network failure would interrupt data being sent to the device.
- If the Spooling directory is on the Remote Computer, a network failure would not interfere with data being sent to the device. However, the Local Computer must have the proper read and write permissions for the Spooling directory.

SENDING PRINT JOBS

SENDING PRINTJOBS

 [The Print Command](#)

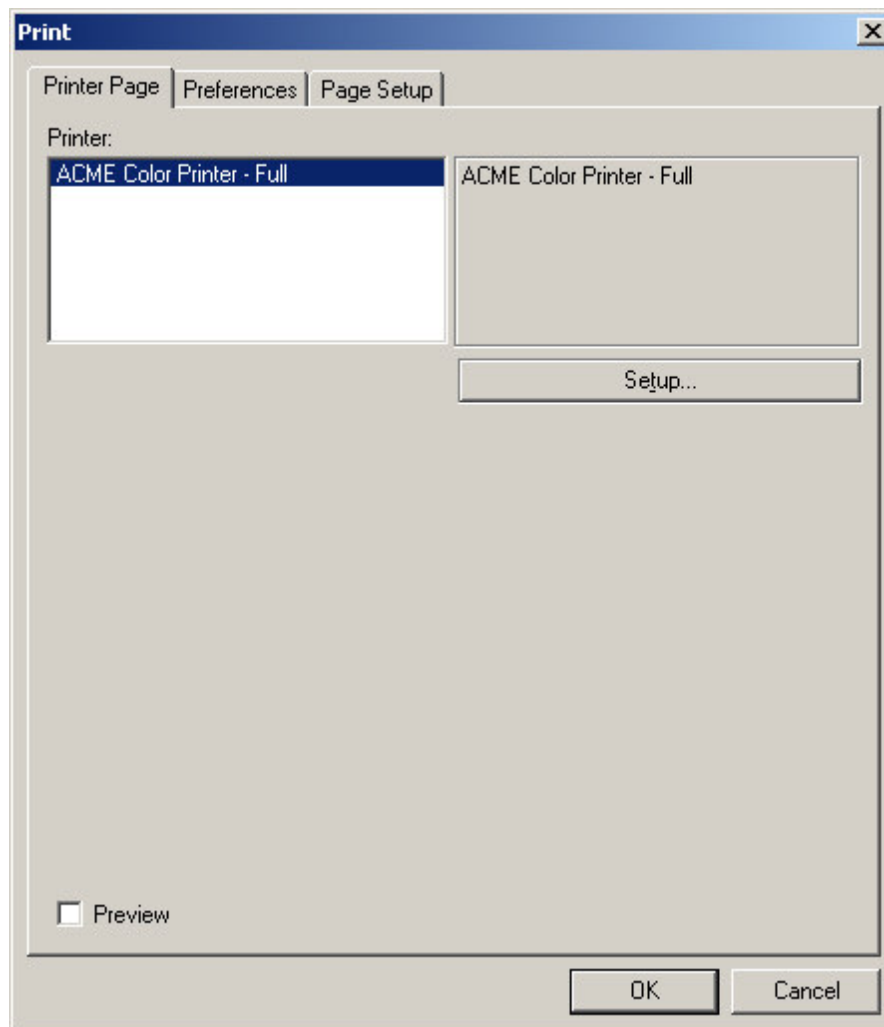
 [Printer Page tab](#)

 [Preferences tab](#)

 [Page Setup tab](#)

THE PRINT COMMAND

The **File | Print** option sends the current drawing on the screen to a Windows supported printer. In Vision-Pro, the **Print** command can be used to send raster fill and hairline cut data to a laser engraver. Click the **Print** command to open the **Print** dialog:



PRINTER PAGE TAB

Printer Page tab

Within the Printer Page tab are options to select the Printer, Preview, and Setup.

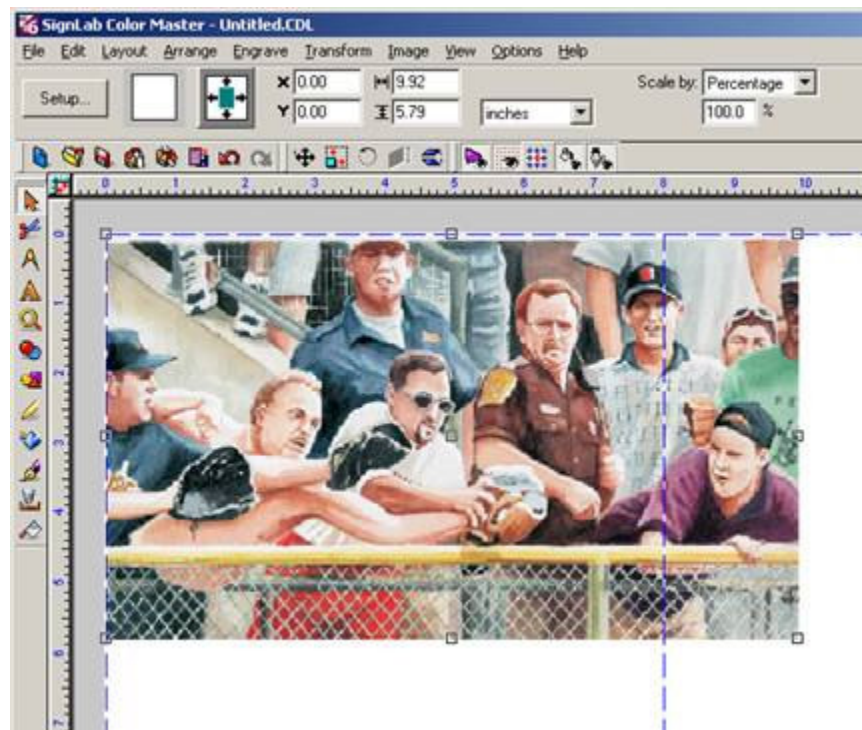
Printer

The current printer selected will be shown directly under the title of the **Select Printer Options** dialog. A list of available printers is shown inside the **Printer** list box, which correspond to the drivers that have been currently set up using the Control Panel. Click on the required printer to select it.

Note: If a printer is not displayed in the printer list, the printer driver must be loaded using the Windows Control Panel.

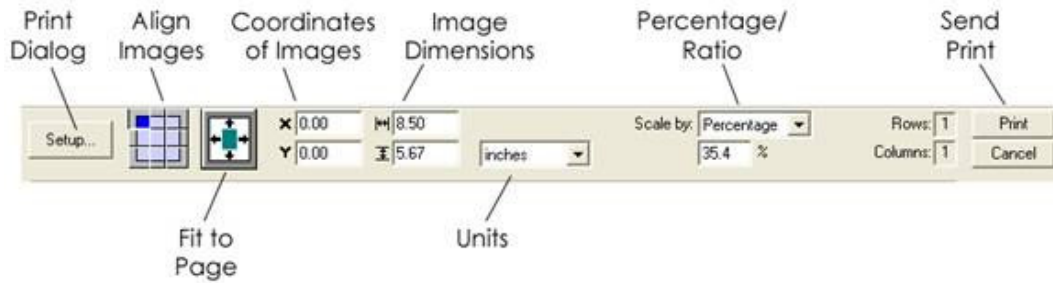
Preview

When the Preview option is checked and OK is selected from the Printer Page tab, the Print Preview screen appears. The objects to be printed are displayed on screen along with the default tiling lines in place. Adjust the tiles where necessary, and select Print to begin printing. Select Cancel to abort the print job



Note: On the Preferences tab of the Print dialog, if the print mode is set to Plate Size, then the preview will identify the sign plate as the object to be printed. This can be disconcerting when scaling because the nubs will be arranged about the sign plate instead of the image. To eliminate confusion, the *Include Edge of Sign Plate* (also available on the Preferences tab) can be activated to reveal the sign plate boundaries.

During print preview, the SmartBar is used to adjust the preview settings.



Clicking the Setup button will return to the Print dialog. In addition, information is displayed about the image and/or tiles of the image, including:

- the position of the object relative to the edge of the page
- the size of the selected objects to be printed
- the unit of measurement of scale for relative sizing on screen
- the percentage or ratio by which to scale the objects
- the number of tile rows and columns (for reference only)



Align Images tool

Use the Align Images tool to adjust the placement of the image upon the page, such as centering the image.



Fit To Page tool

The Fit To Page tool will recalculate the image size, so as to maximize the image upon the page. The aspect ratio of the image will be preserved.

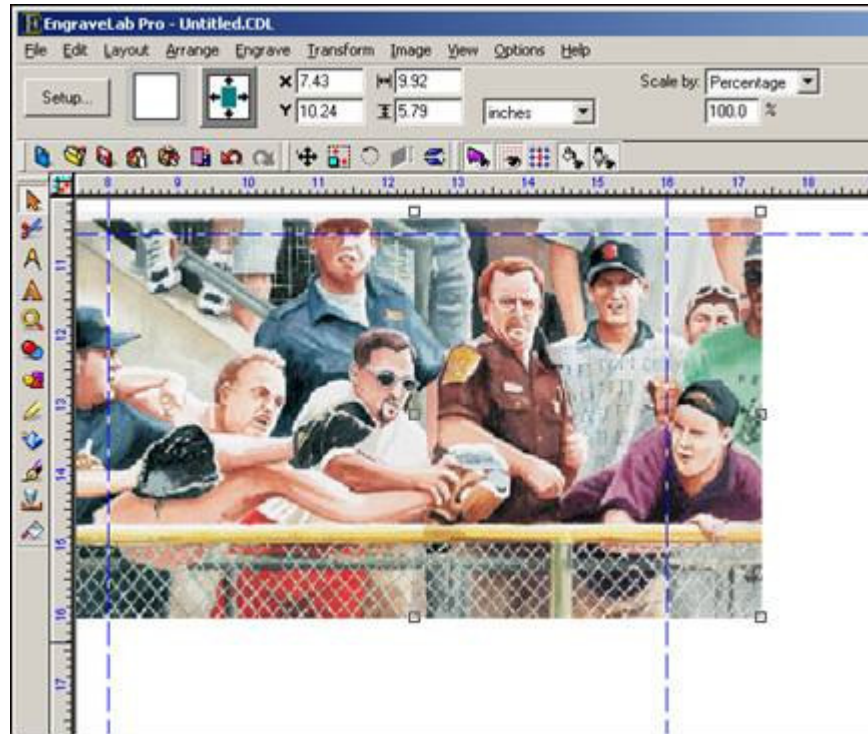
Zoom tools

The only other active tools available within the Print Preview window are the Zoom tools. They function in the same manner as upon the Vision-Pro workspace.



Moving Objects Within the Tiles

Objects can be moved to avoid breaking up intricate work (e.g., small text) by simply dragging the objects up or down with the cursor. However, there is a maximum tile size based on the paper size used by the printer. If the paper size is exceeded, a new tile automatically appears where required.

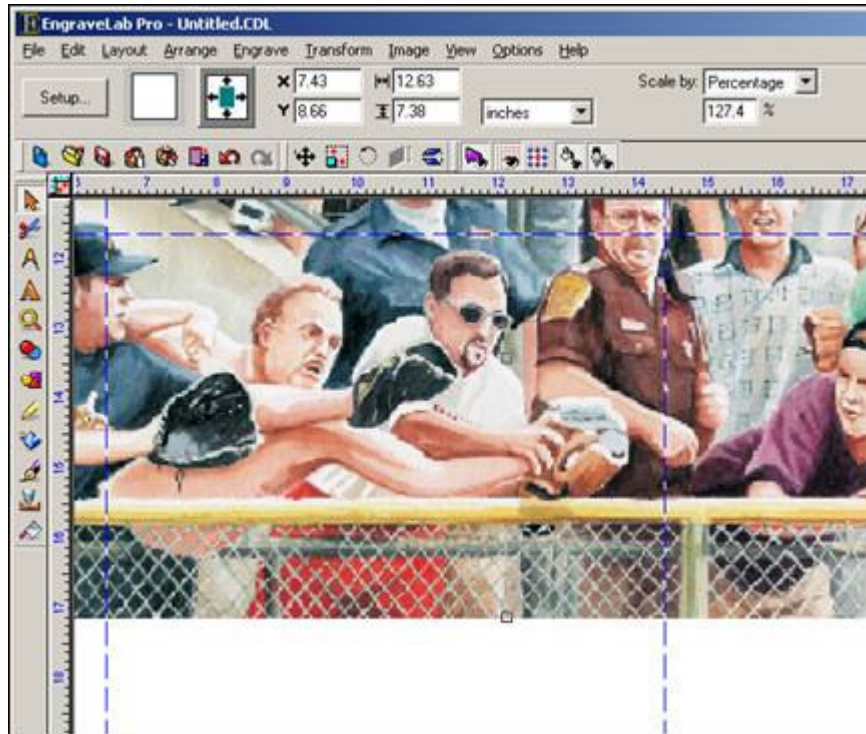


Scaling the Objects to be Printed

The objects in the Preview screen can be scaled up or down in size to adjust the number of tiles required to print the entire image. To resize the objects:

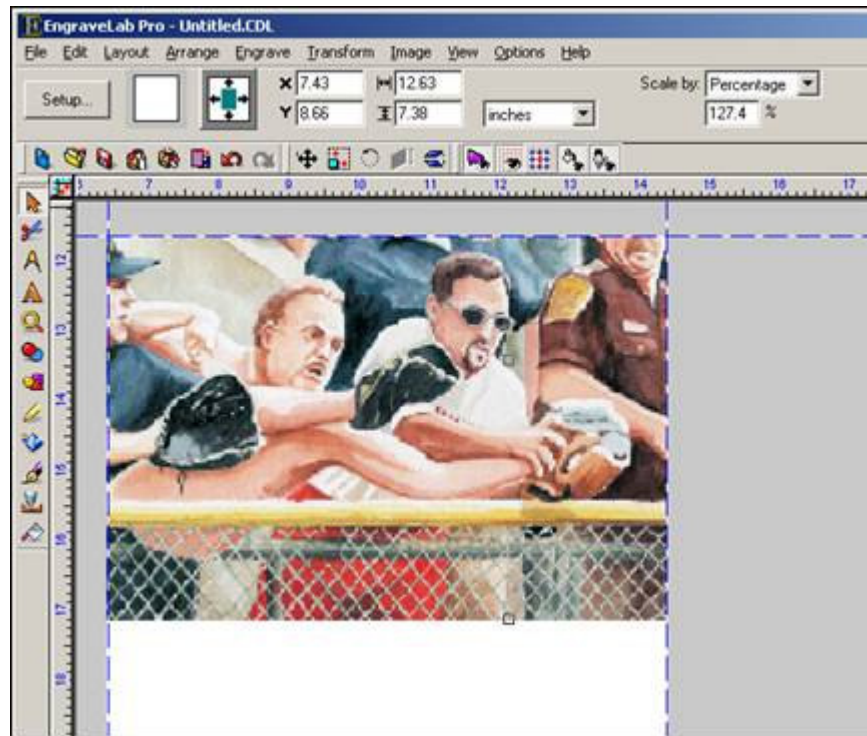
- Pass the cursor over one of the corner nubs
- When the cursor changes to a bi-directional arrow, click and drag the nub to either enlarge or reduce the size of the objects

When objects are resized in this manner, then all of the tiles are re-activated.



Activating and De-Activating Tiles

Once the objects have been positioned, any of the resulting tiles may be printed. Only activated tiles are printed. Tiles that are de-activated are set to gray, though a blue outline will remain to signify the inactive tile boundaries. Clicking within the tile boundary re-activates the tile.



Two comments about activating tiles are that:

- Overlapping sections are displayed, but cannot be selected.
- Right-clicking within a tile will display the outer region of the tile.

Setup

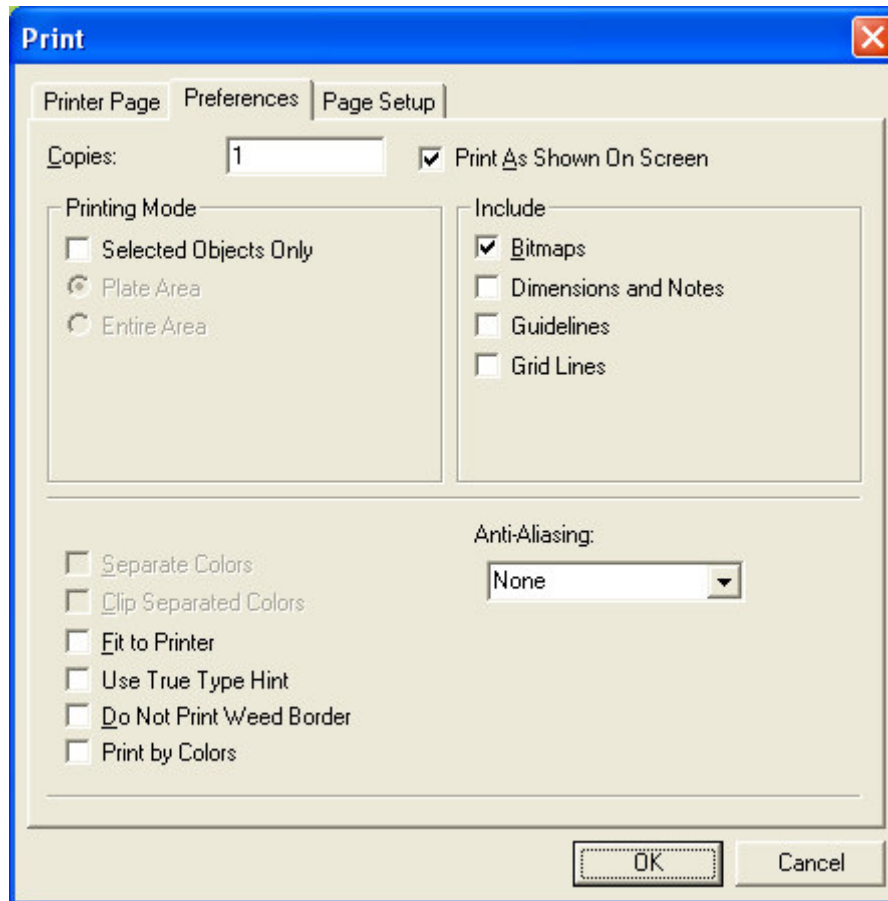
From the **Printer Page** tab, clicking the **Setup** button will open the **Properties** dialog for the selected printer. The layout of the **Properties** dialog will depend upon the version of Microsoft Windows being used.

Changes made to the **Properties** dialog, as well as all controls that are accessed through the **Properties** dialog, are system-wide. All changes will be applied to the Windows Print Driver for the selected printer. Therefore, changes made here will be in effect for other Windows applications.

PREFERENCES TAB

Preferences tab

Within the **Preferences** tab are options to select the number of Copies, as well as the option to Fit to Printer and to Print Badges.



Copies

This entry box is used to specify the number of copies to be printed. This box is edited by sweep-selecting the entry and typing in a new number. By default, the entry in this box is “1”.

Print As Shown On Screen

This option prints the image as it is shown on screen. Functionally, this option allows printing the image either:

- as wire frames (no fills) if Show Fill is turned off
- without thick lines if Show Line Style is turned off

Printing Mode

Specify the images to be printed according to the following options:

Selected Objects Only	Print only those objects that are currently selected.
Sign Plate Area	Print everything that is within the confines of the sign plate. Any objects outside the sign plate are not printed. Note that objects that are partially on the sign plate will be printed accordingly.
Entire Area	Print everything within the open workspace, which comprises all objects both inside and outside the confines of the sign plate.

Include Bitmaps

Select this option to print bitmap files from Vision-Pro (i.e., *.BMP, *.PCX, or *.TIF files).

Include Dimensions and Notes

This option prints any dimensions created in the file. Dimensions include any size notations or notes generated using the Dimensioning tools from the Measure tool in the tool bar.

Include Guidelines

With this option selected any Guides placed on screen will be printed along with the Guide Labels. The Guides must be set as visible in order to be printed.

Include Grid Lines

With this option selected, the Grid placed on screen will be printed. The Grid must be set as visible in order to be printed, and will be printed as set to view (i.e. the **Show Grid as Lines** option).

Separate Colors

Use this option to create color separations, where each color will be printed as a separate job (e.g. print red shapes as one job, blue shapes as the next job, and so on...).

Clip Separated Colors

For overlapped shapes, enabling this option will clip those shapes according to their overlying shapes.

Fit to Printer

This option will scale the image to the media that is currently loaded into the printer.

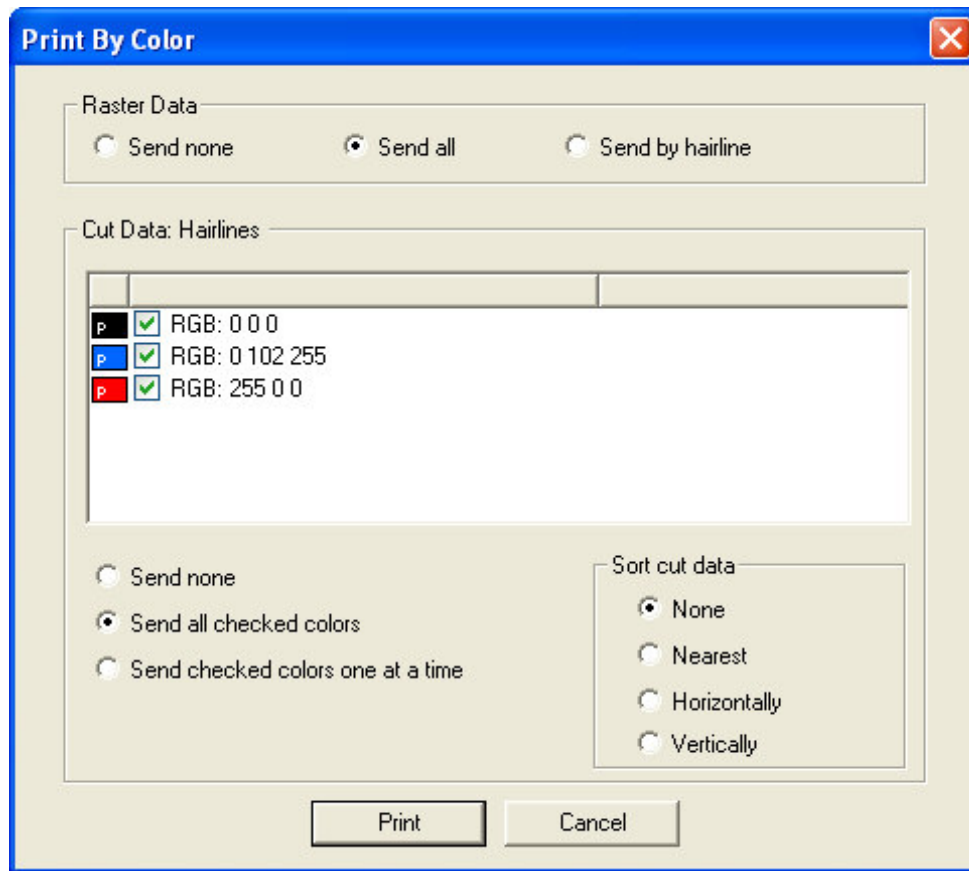
TrueType Hinting

TrueType hinting is a font technology that allows small text sizes to be legible on low resolution devices. In addition, TrueType hinting improves the results from scaling and rotating the text.

Print By Color

Print By Color

The **Print By Color** option is used to activate the **Print By Color** dialog, which contains specialized controls for sending print jobs to a laser engraver. From the **Print** dialog, clicking **OK** will open the **Print By Color** dialog.



Using the **Print By Color** dialog, the laser engraver will interpret grayscale gradients as speed and power settings, such that blacker portions of the gradient will cut deeper than the lighter portions. For shapes that have been applied with a hairline stroke, these hairlines can be interpreted as cutting lines. Hairline colors can be set to different colors (red, green, yellow, etc.) to correspond with the specific speed and power settings within the laser engraver driver.

Shape fills, including their grayscale gradients, are interpreted by the laser engraver as raster fills. Some general tips when creating grayscale gradients for line art and bitmaps are:

For Line Art:

- The **Gradient Fill** tool can create grayscale blends by using black and white as the gradient colors.
- The **Metamorphosis** tool can create grayscale blends between black and white shapes.
- Line art can be converted into a grayscale bitmap using the **Render Contour Bitmap** command. If the original line art is retained, then it can be used as a **Clipping Path** on the bitmap.

For Bitmaps:

- An imported image can be converted into a grayscale by applying the **Image menu | Mode | Grayscale** command.
- To invert the white and black portions of a grayscale image, use **Image menu | Color Adjustments | Invert** command.
- To adjust the tonal range of the grayscale image, use the **Image menu | Color Adjustments | Curves** command.
- Under the **Image** menu are collections of **Color Adjustment** and **Filters** that can be applied to grayscale images.

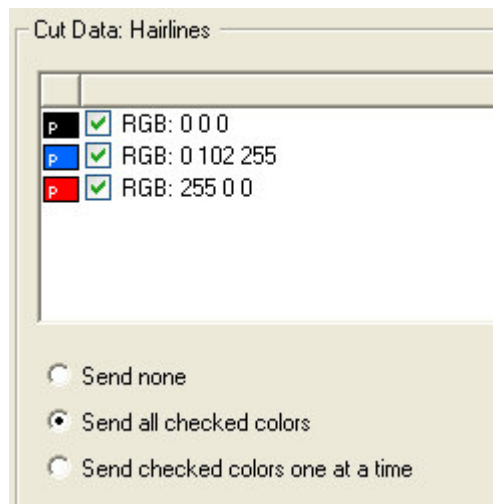
Raster Data

The raster data is the fill (including grayscale gradient) of each shape, whereas hairlines are interpreted as cutting lines. The **Raster Data** options are used to specify how raster data will be sent.

- The **Send None** option indicates that only hairline data will be sent, and no raster fill data will be sent.
- The **Send All** option will send the raster fill data, followed by the hairline cutting data.
- The **Send By Hairline** option is used to group raster data according to each hairline color. For all the objects that have the same hairline color, the fills of those objects will be sent as a single raster data fill, which is then followed by the given hairline color. For each subsequent hairline color, the raster data will be similarly grouped.

Cut Data: Hairlines

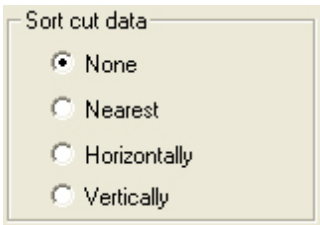
This list shows the hairline colors that are present, and their order within this list represents the cutting priority. Note that these priorities can be changed by dragging each hairline to a new position within the list.



- The **Send None** option indicates that no hairline cutting data will be sent. Only raster fill data will be sent.
- The **Send All Checked Colors** option will only send fill and/or cutting data according to the hairline colors that have been checked.
- The “**Send Checked Colors One At A Time**” option will cause each hairline color to be sent as a separate cutting pass.

Sort Cut Data

Each hairline color represents a cutting path, and the Sort Cut Data options are used to specify the order in which each hairline will be cut. The best sorting method will depend upon the job in question. If the sort order is **None**, then hairlines will be cut according to the order in which the shapes had been drawn on the workspace.

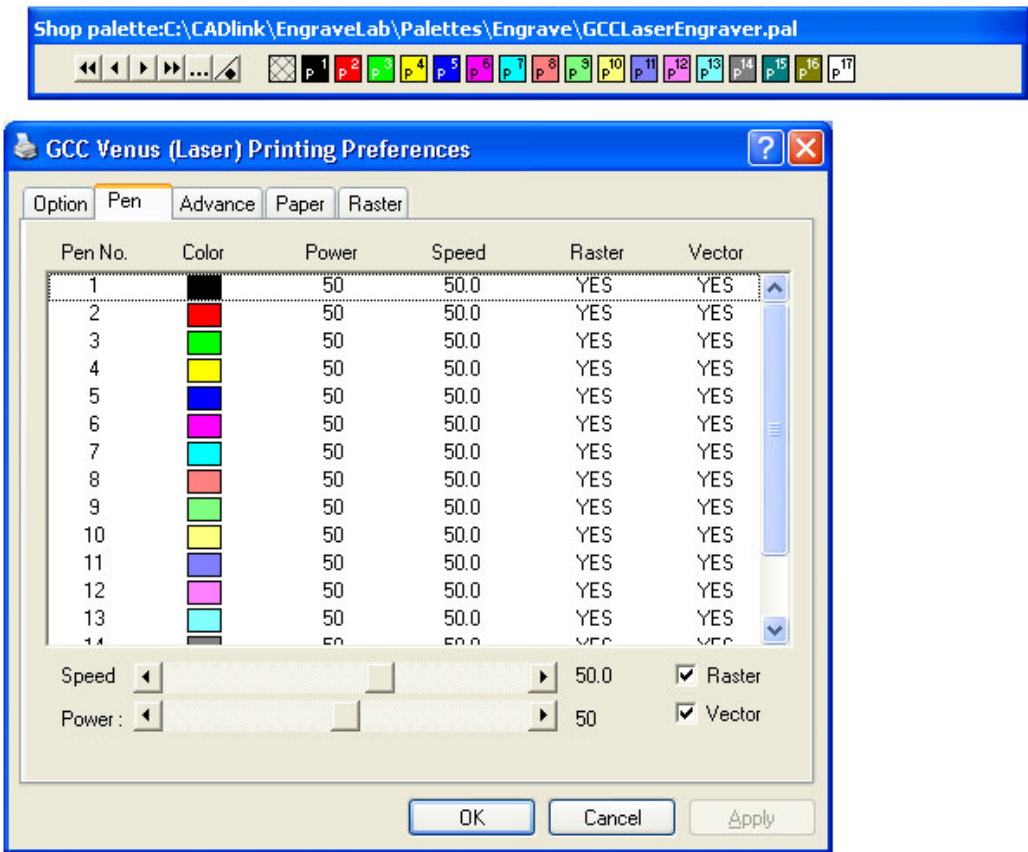


The sorting methods are summarized as follows:

- **Nearest** – Calculate the objects that are closest to each other and cut them first. For example, two objects that are one inch apart will be cut in the same pass, whereas objects that are five inches apart will be cut separately.
- **Horizontally** – Shapes will be sorted according to how they are arranged within the horizontal (x-axis) plane.
- **Vertically** – Shapes will be sorted according to how they are arranged within the vertical (y-axis) plane.

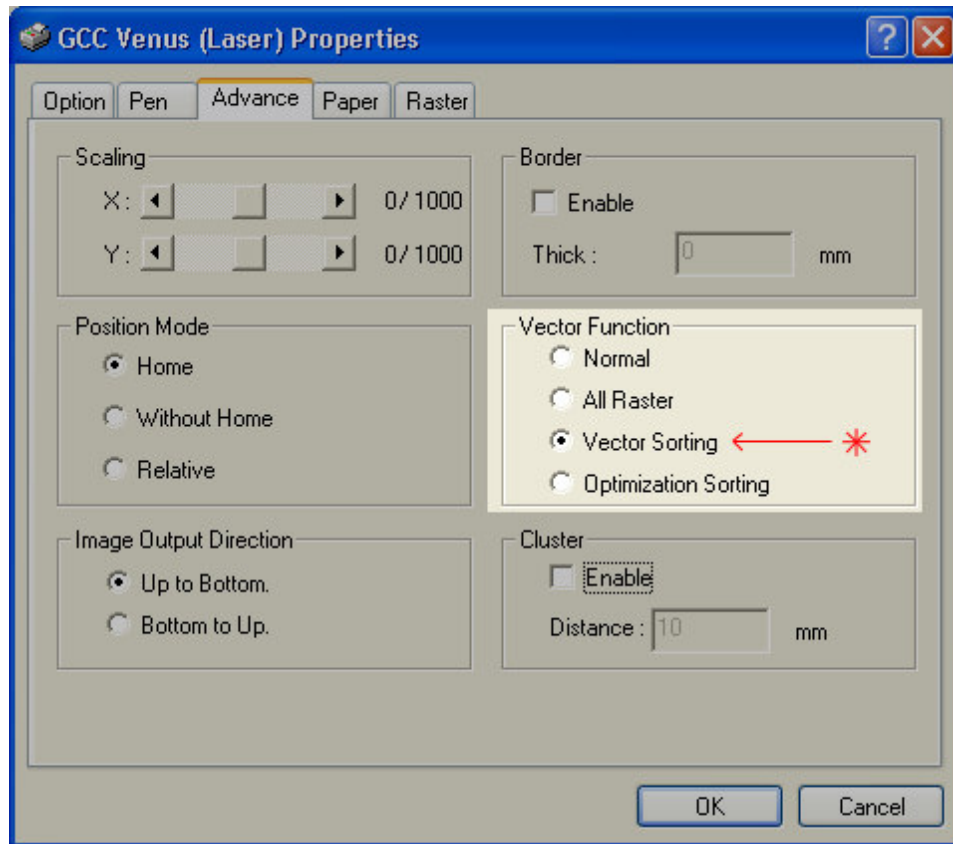
Driver Settings – Color, Power and Speed

From the **Printer** tab of the **Print** dialog, click **Setup** to access the driver settings for the laser engraver. The following screenshot is typical of the **Power** and **Speed** settings that can be set for the hairline colors. In this particular example, note that the GCC color palette (provided with Vision-Pro) has been created to correspond with the driver settings of the GCC laser engraver.



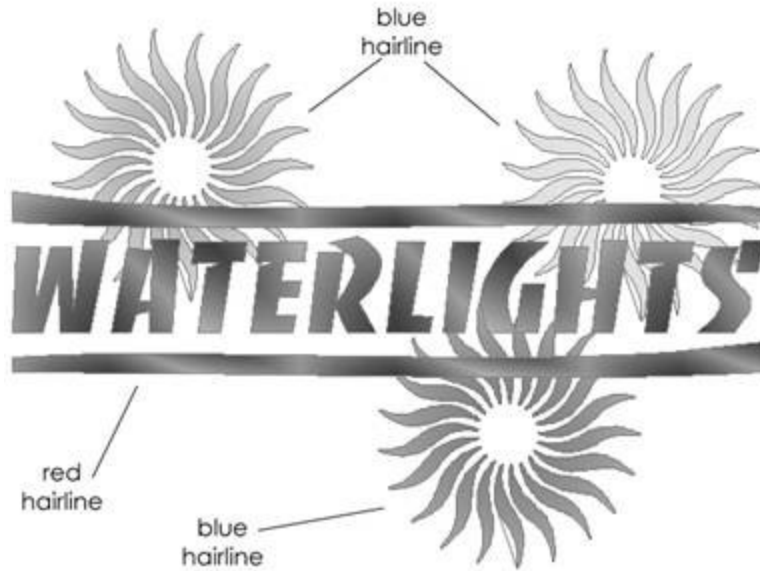
Driver Settings – Vector Sorting Option

In order to sort the job by hairline color (see **Cut Data: Hairlines** option), there is a critical setting in the device driver. On the **Advanced** tab, set the **Vector Function** to **Vector Sorting**. If this option is not set, then it will not be possible to prioritize the job by color.



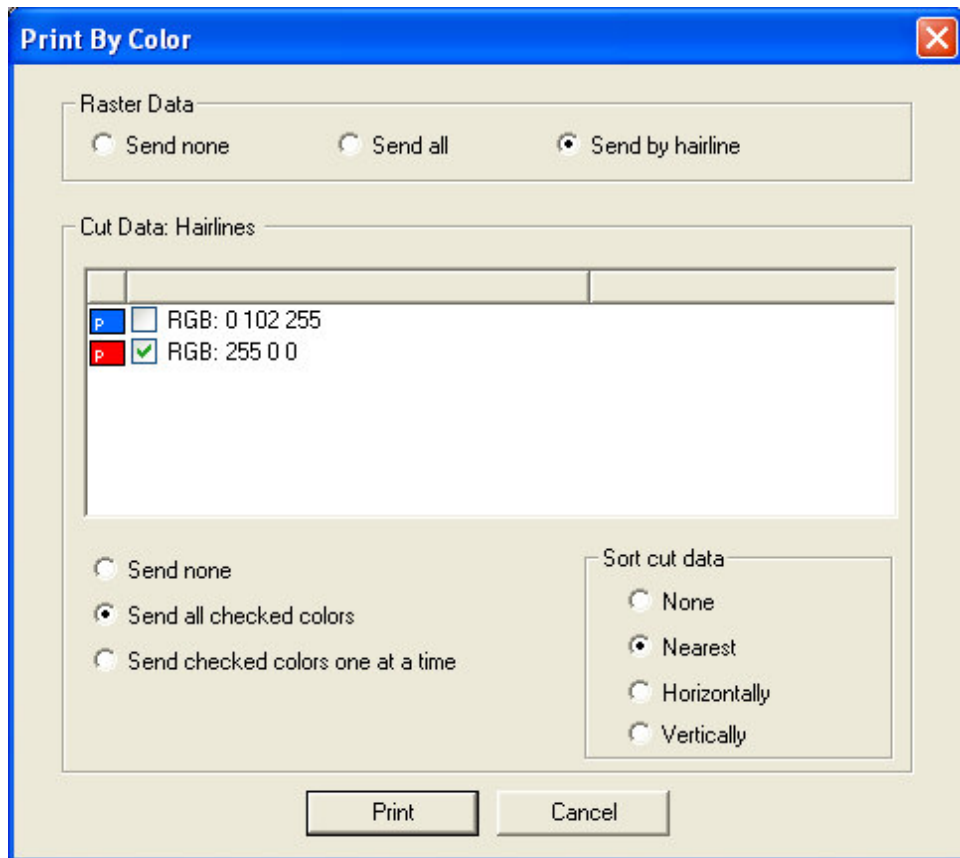
Example of Printing By Color – Gradient Fills

The following example has three stars, some text, and a warped border that is above and below the text. Each of these shapes has a grayscale pattern that was applied using the Gradient Fill tool (by creating gradients from black to white). In addition, the stars have been given a blue hairline stroke, and a red hairline stroke has been given to the text and border.



When printing this job to a laser engraver, we want the raster fill data to be grouped according to the hairline cut color, and we want shapes with a blue stroke to have the higher priority. We also want the red hairlines to be interpreted as cutting lines, but we do not want to cut the blue hairlines. In the **Print By Color** dialog, we used the following settings:

- A) We clicked the **“Send By Hairline”** option, which will cause the raster fills to be grouped according to their hairlines colors.
- B) In the **“Cut Data: Hairlines”** list, we used the cursor to drag the blue hairline higher in the list, such that the blue hairline shapes will have the higher priority.
- C) The **“Send all checked colors”** was clicked, and we then unchecked the blue hairline color. The checkbox for red is still checked, so only the red hairlines will be interpreted as cutting lines.
- D) And before sending the job, we set the **Sort Cut Data** to **Nearest**, so that the shapes will be cut in the order of their relative proximity to one another.



Anti-Aliasing

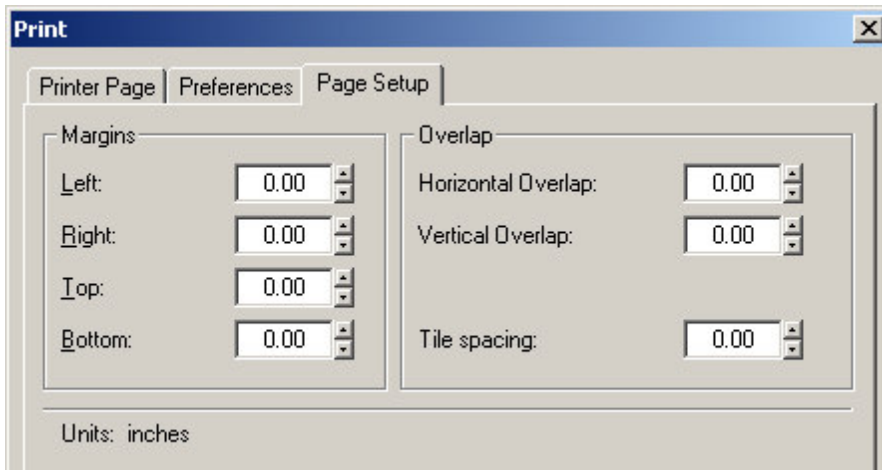
Anti-Aliasing is the smoothing of the jagged, "stair stepping" appearance that can appear in low-resolution drafts. Anti-aliasing is achieved by blurring the color of adjoining pixels to improve the transition between light and dark pixels.

The available Anti-Aliasing options are None, Coarse, Medium, and Fine. A setting of Fine will produce the highest quality smoothing, though this will incur slower printing.

Note: Anti-Aliasing should be used for dye-sublimation printing only – NOT wax, resin, or wax/resin.

PAGE SETUP TAB

Page Setup tab



Margins

Some printer drivers do not account for the non-printable areas, or margins of the page. In those cases, Vision-Pro provides for the margin settings, by accessing the Margins tab. Enter margin specifications in the entry boxes in this dialog box as required.

Overlap

Overlap

The Overlap options permit establishing settings for tiling large printed images. If the file to be printed is too large for the printable area, use the Overlap options to set the Horizontal and Vertical Tile Overlaps as well as the Tile spacing.

Horizontal and Vertical Overlap

These options specify the amount of overprint each tile will contain. Each tile actually ends with the beginning portion of the next tile. For example, if an overlap of a half-inch is set the last half-inch of a given tile will be identical to the first half inch of the proceeding tile. This function is useful for particularly intricate graphics, as it provides a guide for laying the pieces of the printed file together. Each of the Horizontal and Vertical options can be set individually.

Spacing

The Spacing setting is used to specify the amount of material to be left blank between tiles when printing a job.

Units

The Units of measurement are displayed for reference only, the unit of measurement cannot be changed from the Print window.

ADVANCED CUTTING AND PLOTTING

ADVANCED CUTTING AND PLOTTING

[!\[\]\(2e897e890e69d81eae4503a8342c36b0_img.jpg\) ClippingShapes](#)

[!\[\]\(bd1a142de767a21e5362c595f844a4ff_img.jpg\) Rubber Stamp](#)

[!\[\]\(e2376d476d06eb31946dc01a69a4403a_img.jpg\) Nesting](#)

[!\[\]\(74d4806277d7e73349d8e8c0897931e9_img.jpg\) Badges](#)

[!\[\]\(0aff635c4179ba9e710b00f4b01d3b20_img.jpg\) Creating Plate Objects](#)

[!\[\]\(830769b31eeeaca920791081939ff8ba_img.jpg\) PhotoLaser](#)

[!\[\]\(0b5e7e25e8775f7e7e80906ada4f0021_img.jpg\) Weed and Power Weed](#)

[!\[\]\(8bba887393ca45b761e5cb49e755e762_img.jpg\) Registration Marks](#)

[!\[\]\(6bb0e4f14c4133b37d2887cb37e67ddd_img.jpg\) Plotter Jog](#)

[!\[\]\(47734e4656765d20df4fdbd5b7aff048_img.jpg\) Tiling](#)

CLIPPING SHAPES

A line art shape can be used as a clipping path for images and other line art shapes. Position the line art shape above the shapes that are to be clipped, select all of the shapes, and then choose **Arrange menu | Clipping**. The shapes will then be grouped as a “clip group.”

To reverse a clipping operation, select the clip group and choose **Arrange menu | Clipping Clear**.

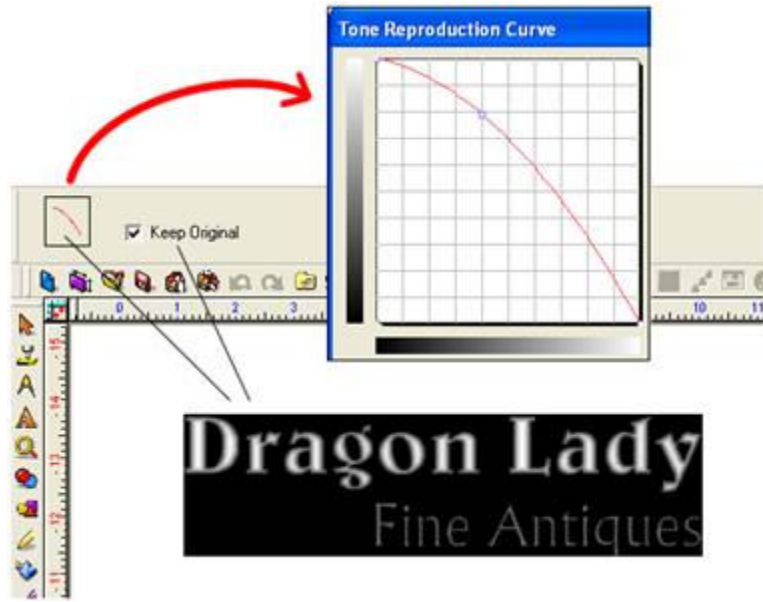
When clipping shapes, a common design technique is to convert text into a bitmap, and then use the original text as a clipping path on the bitmap. For example, here is a blue text shape the we want to convert into a nice grayscale image:

Dragon Lady
Fine Antiques

Selecting the text, we then applied the **Transform menu | Render Contour Bitmap** tool. For our initial settings, we chose **Constant Slope** with a screen resolution of 100 dpi:



When editing the SmartBar settings for the **Render Contour Bitmap** tool, we enabled the Keep Original option, so that the original text shape will be retained after creating the bitmap. We also clicked the curve to open the Tone Reproduction Curve dialog. The curve was adjusted to produce darker shades along the edges of the text.



After applying the **Render Contour Bitmap** operation, the image will be the selected object, but our original text is below the image. With the image still selected, we can apply the **Arrange menu | Order To Back** command, which will place the image behind the original text shape.

If we then marquee select both the image and text, the **Arrange menu | Clipping** command can be applied to create the final grayscale image.

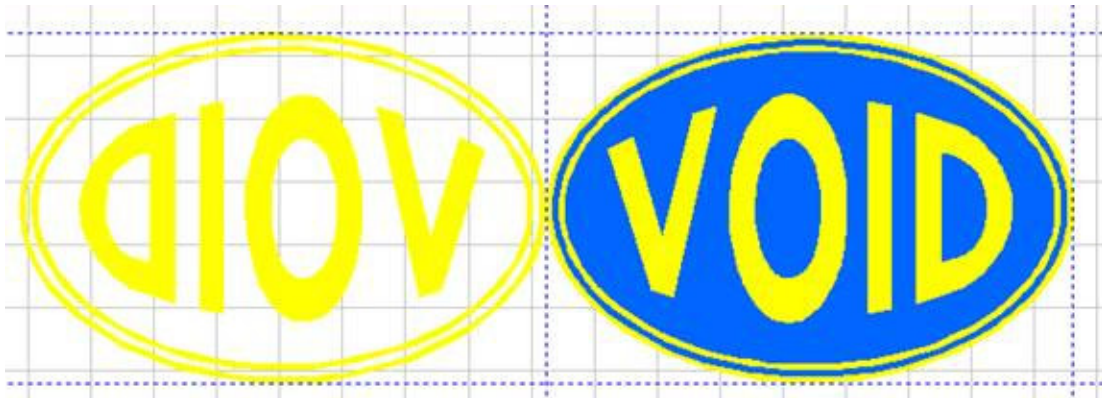


RUBBER STAMP

This tool is used to layout a rubber stamp design, as follows:

- 1) Create a shape that represents the border of the rubber stamp.
- 2) Add shapes and text to fit within the border, such as the design should appear when a stamp impression is made by the customer.
- 3) If necessary, apply a Make Path operation to the shapes that are arranged within the border.
- 3) Select all, and choose the Rubber Stamp tool.

The resulting shape will be flipped in the horizontal plane.



On the right is the design that should appear when a customer applies the stamp. Applying the **Rubber Stamp** command will create the design that is on the left, which will be used when cutting the stamp design.

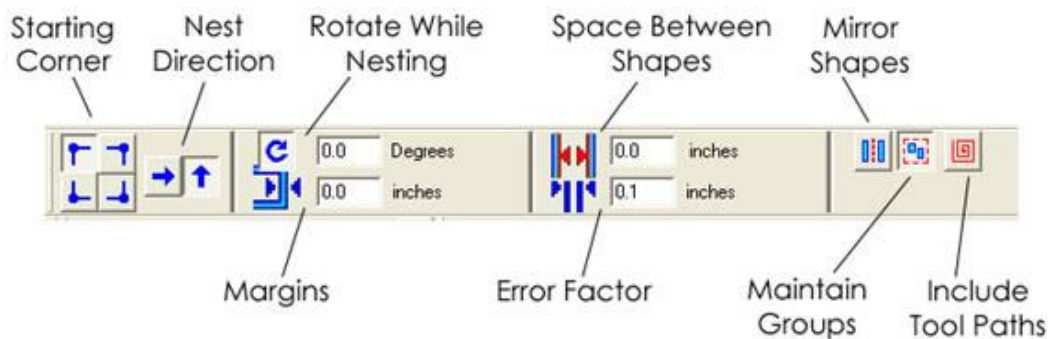
NESTING

Nesting

The **Nesting** feature rearranges objects on the cutting material with the purpose of minimizing wasted material. Objects can be flipped and grouped on the Plate Size, as well as rotated to achieve an optimum usage of the cutting material.

To nest the individual letters of a sentence, the **Text to Graphics** command must first be used. Otherwise, the sentence as a whole will be nested without rearranging the individual letters.

To use nesting, select the objects that will be cut, and then choose **Nesting** from the **Arrange** menu. The **Nesting** dialog will open.



If **Nesting** is activated during the Cut Preview mode, then an abridged version of the **Nesting** dialog will be available. However, the available controls are used in the same fashion as on the full Nesting dialog.

 [Starting Corner](#)

Starting Corner

Starting Corner

Choose the corner from which rearranged objects will be placed. Nesting will begin in that corner and expand across the sign plate.

Direction

Choose the direction in which rearranged objects will be spread across the sign plate. The available choices are horizontally and vertically.

Rotate While Nesting

Objects may be rotated as well as rearranged. Select the **Allow Increment Rotation** button to activate the rotation capability. Objects will then be stepped through 360 degrees of rotation in order to find the optimum rotation. The **Increment Angle** field will indicate the amount of rotation that will occur for each step. For example, if the Increment Angle were 20 degrees, then objects will be rotated as many as 18 times in an attempt to find the optimum rotation for each object.

Margins

By default, objects will be nested to the very edge of the Plate Size. Use the **Nesting Border** field to indicate a minimum distance that must be maintained between nested objects and the edge of the Plate Size.

Space Between Shapes

By default, nested objects will be placed in tight proximity to one-another. Use the **Clearance Between Objects** field to specify a minimum distance that must be maintained between objects.

Error Factor of Clearance

During the nesting process, approximations are made that are based partly on the magnitude of the objects being nested. Setting a small Error Factor will produce more consistent spacing between the objects, but at a cost of more processing time. The following chart provides suggested Error Factor values, which are qualified by the broad categories of Fine, Medium, and Coarse. The table is based on the average dimension of the objects that are being nested.

Average Object Dimension	Fine	Medium	Coarse
0 < Dimension < 100	0.1	0.2	0.5
100 < Dimension < 1000	0.2	0.5	1.0
1000 < Dimension < 3000	0.5	1.0	2.0
Dimension > 3000	1.0	2.0	5.0

Allow Mirrored Parts

In addition to rearranging and rotating objects, the Nesting feature can also flip objects to improve the final placement of objects. Select the **Allow Mirrored Parts** button to allow objects to be flipped.

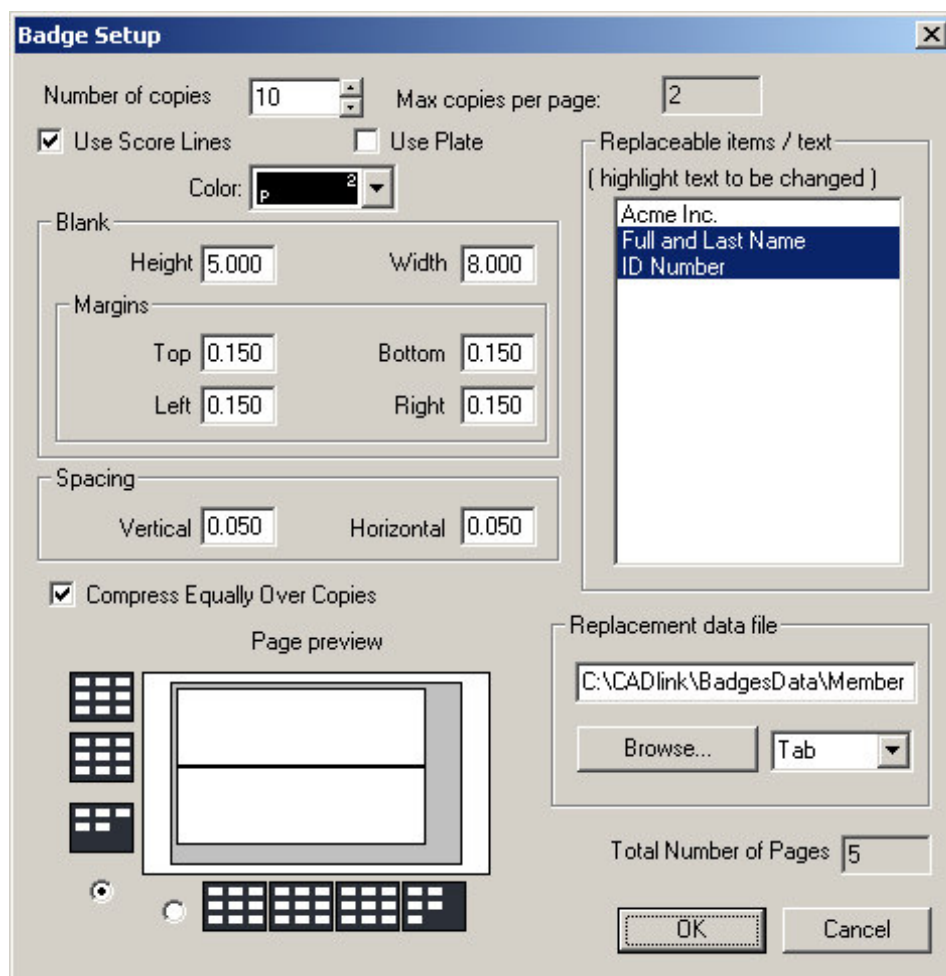
Keep Groups Intact

Unless this option is active, then grouped objects will be separated during the nesting process. Allowing objects to be separated is useful when the final arrangement of cut shapes is unimportant, though the configuration of objects is somewhat awkward for ungrouping.

BADGES

Badges

The **Badges** feature creates a series of workspace objects based upon a basic design and data file. For each badge that is produced, the data file contains one set of text data that is applied to the template. For example, badges may be used to create nameplates for doors, identification cards for employees, or adhesive labels for schematics.



Setting the Number of Badges

Setting the Number of Badges

The **Number Of Copies** is used to specify the total number of badges that will be created. Taking the badge sizes into account, the **Max Copies Per Page** field will indicate the maximum number of badges that can be fit onto a single piece of material.

If there are more badges than will fit on a single piece of material, then additional pages of material will be created, which can be viewed using the **Paging Tool**. On the **Badge Setup** dialog, the **Total Number of Pages** field indicates the number of these pages that will be created.

Using Score Lines

Score lines are inserted between each badge, so as to improve the ease of separating the badges after production. Use the **Color** field to set the score line color.

Use Plate

By default, badges are distributed to maximize usage of the plate size area. Activating the **Use Plate** option will force each badge to a single sign plate. Individual badges may then be printing according to their given page number.

Note: For the **Use Plate** option to work, the **Margins** must all be cleared to zero.

Plate size and margins

Vision-Pro 7 Doc Files

Specify the Plate Size and its margins. If the Plate Size is equal to the badge size, then a single badge can be printed per plate.



The image shows a dialog box titled "Plate" with a sub-section "Margins". Under "Plate", there are two input fields: "Height" with the value "5.000" and "Width" with the value "8.000". Under "Margins", there are four input fields: "Top" with "0.150", "Bottom" with "0.150", "Left" with "0.150", and "Right" with "0.150".

Routing Or Engraving...

It is recommended that the **Height** and **Width** be set to the exact dimensions of the plate.

Rendering A Sign In Vinyl...

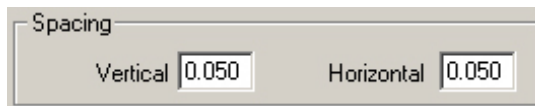
Set **Height** and **Width** to match the page size set for the plotter.

Margins

These margins are applied to the cuttable area of material, not necessarily the actual size. As mentioned previously, these margins must be cleared to zero when the **Use Plate** option is active.

Spacing

When spacing multiple badges per plate, the distance between each badge is indicated by the **Vertical** and **Horizontal** fields.



The image shows a dialog box titled "Spacing". It contains two input fields: "Vertical" with the value "0.050" and "Horizontal" with the value "0.050".

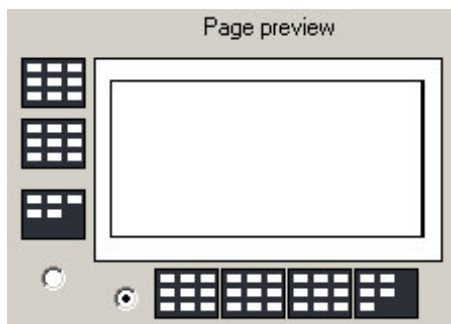
Compress Equally Over Copies

For the text frame that is being used as a badge template, suppose that compression rules have been applied to the text frame. When replacement text is inserted during the badge creation process, the indicated compression rules will be applied to any badge text that exceeds the text frame. Since it is good practice to set the text frame equal in size to the badge, the text compression will consequently prevent the text from exceeding the badge dimensions.

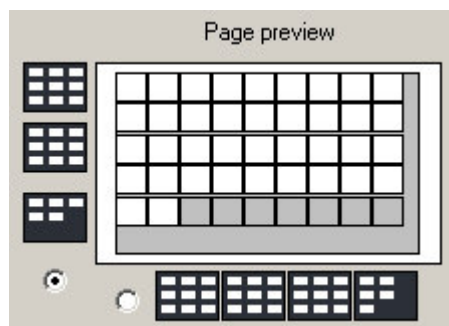
If the **Compress Equally Over Copies** option is enabled, then all badges will be evaluated to determine the badge that requires the most text compression. All badges will then be applied with the same amount of text compression. Naturally, if no given badge had required text compression, then none of the badges text would be compressed.

Page Preview

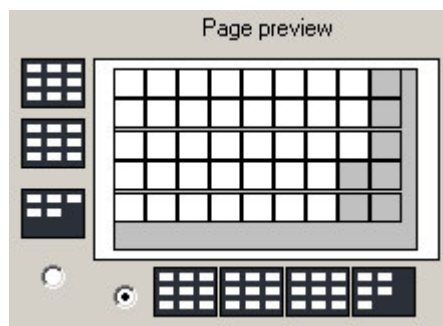
The **Page Preview** controls are used to specify how multiple badges will be arranged upon the Sign Plate. If the **Use Plate** option is checked, then the badge dimensions will be set equal to the Sign Plate, and the preview will indicate that each badge fills the entire plate.



If the **Use Plate** option is unchecked, then multiple badges will be arranged either **Vertically** or **Horizontally**, depending on the chosen **Page preview** setting. For example, consider six-dozen badges that are arranged on a 6" by 10" plate. In this case, an entire plate was filled with badges, so the **Page preview** displays badges on the second plate. Notice that where the plate is not full, a grayed-out badge will be drawn to indicate that additional badges will fit on the plate.



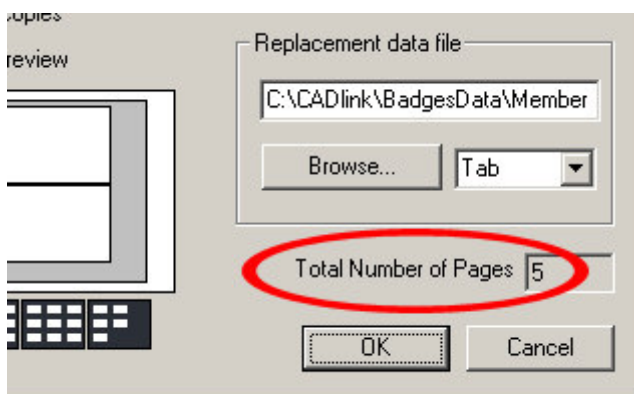
Badges arranged Vertically, from top-to-bottom.



Badges arranged Horizontally, from left-to-right.

Total Number of Pages

Once the number of badges have been set, and the **Plate size and margins** have been specified, then the **Total Number of Pages** field will indicate how many "pages" will be filled with the resulting badges.

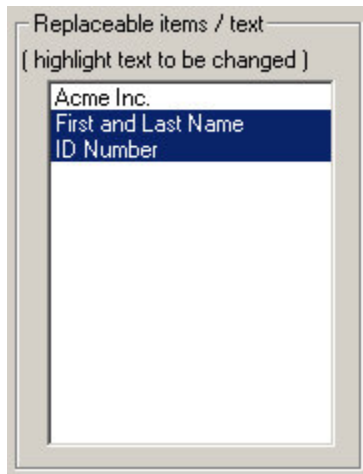


Replaceable Items

The **Replaceable Items** list displays all valid text objects for substitution. The text of each item will correspond to the text that had been entered on the workspace. Select the text objects that will undergo substitution.

Vision-Pro 7 Doc Files

Note: The order of fields in the Replacement Data File should correspond to the order of text shapes on the Vision-Pro workspace. This will allow the **Badge Setup** dialog to substitute text in the correct order.



For text objects that are not selected, no substitution will take place.

Replacement Data File

The **Replacement Data File** contains the text that will be substituted for each badge.



Any text editor may be used to create this file. Within the text file, each line represents a set of data for one badge. If the badge has multiple fields, then each field must be separated by a delimiting character, such as a comma, a space, or a tab character. For example, tab-delimited data might appear as the following:

Text Field 1 <press Tab> *Text Field 2* <press Tab> *Text Field 3*

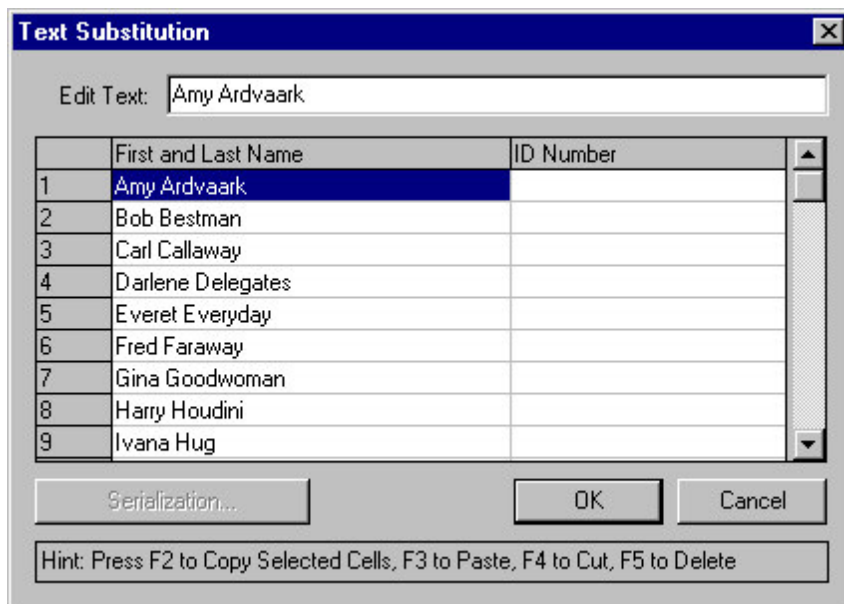
Next to the **Browse** button, the drop-down list may be used to choose the delimiting character that is used in the text file.

Note: If there are more badges being created than there are sets of data, then the extra badges will be filled with empty data.

Text Substitution

Text Substitution

From the **Badge Setup** dialog, press the **OK** button to continue. If one-or-more text fields were selected within the **Replaceable Items** list, then the **Text Substitution** dialog will open:



Text Substitution

Edit Text:

	First and Last Name	ID Number
1	Amy Ardvaark	
2	Bob Bestman	
3	Carl Callaway	
4	Darlene Delegates	
5	Everet Everyday	
6	Fred Faraway	
7	Gina Goodwoman	
8	Harry Houdini	
9	Ivana Hug	

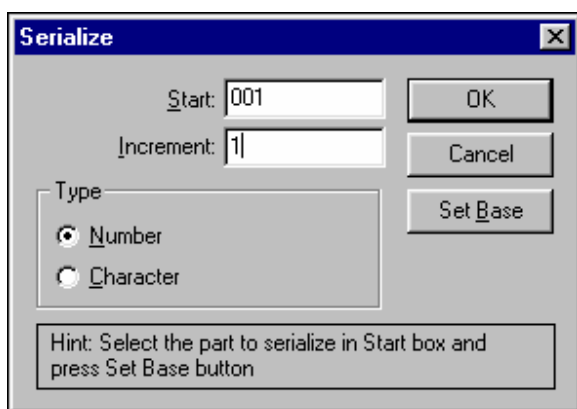
Hint: Press F2 to Copy Selected Cells, F3 to Paste, F4 to Cut, F5 to Delete

Each column represents one of the elements that was previously selected within the **Replaceable Items** list. If a **Replacement Data File** had been specified, then the column entries will be completed using the data from that file. For empty cells, select the given cell and type data within the **Edit Text** field.

Serialization

Badges may be indexed using the **Serialize** dialog. From the **Text Substitution** dialog, select the range of fields for which indexing will be set, and the **Serialization** button will become active. Only contiguous cells may be selected, and all selected cells must be within the same column. Note that an entire column may be selected by clicking the column header.

When the given cells are selected, click the **Serialization** button to open the **Serialize** dialog:



Serialize

Start:

Increment:

Type

☒ Number

☐ Character

Hint: Select the part to serialize in Start box and press Set Base button

Start

The initial text data from which serialization will build an index for the badges. The value here may be either numeric, alphabetic, or alphanumeric.

Vision-Pro 7 Doc Files

Increment

This is the numeric value that must be added to the value used on the previous badge. In most cases, set this value to one.

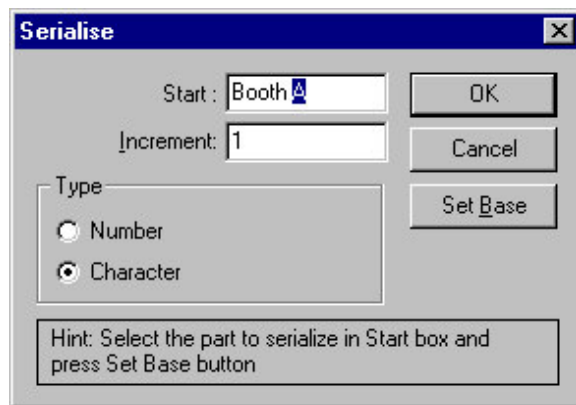
Note: For alphabetic series, the ASCII character set is used. If the badges have incremented through the entire ASCII character set, then subsequent badges will continue from the beginning of the set.

Type

Use the radio buttons to indicate whether the series is composed of numeric or alphabetic data.

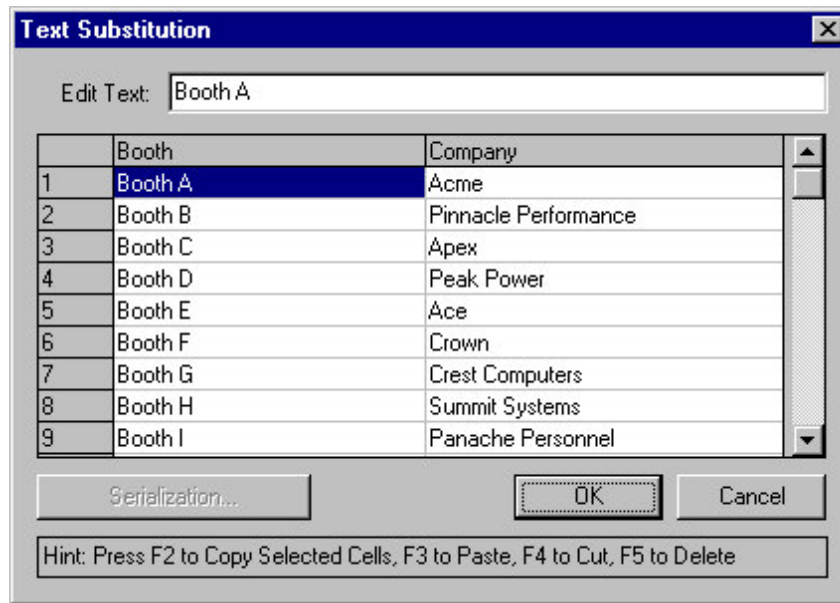
Set Base

When serializing badge data, the value in the **Start** field is used as the base, to which the **Increment** is added for each subsequent badge. However, by using the mouse to select only part of the **Start** field data, then only the selection will be incremented. In this case, unselected portions remain constant. For example, suppose a series of booth labels must be created for a trade show.



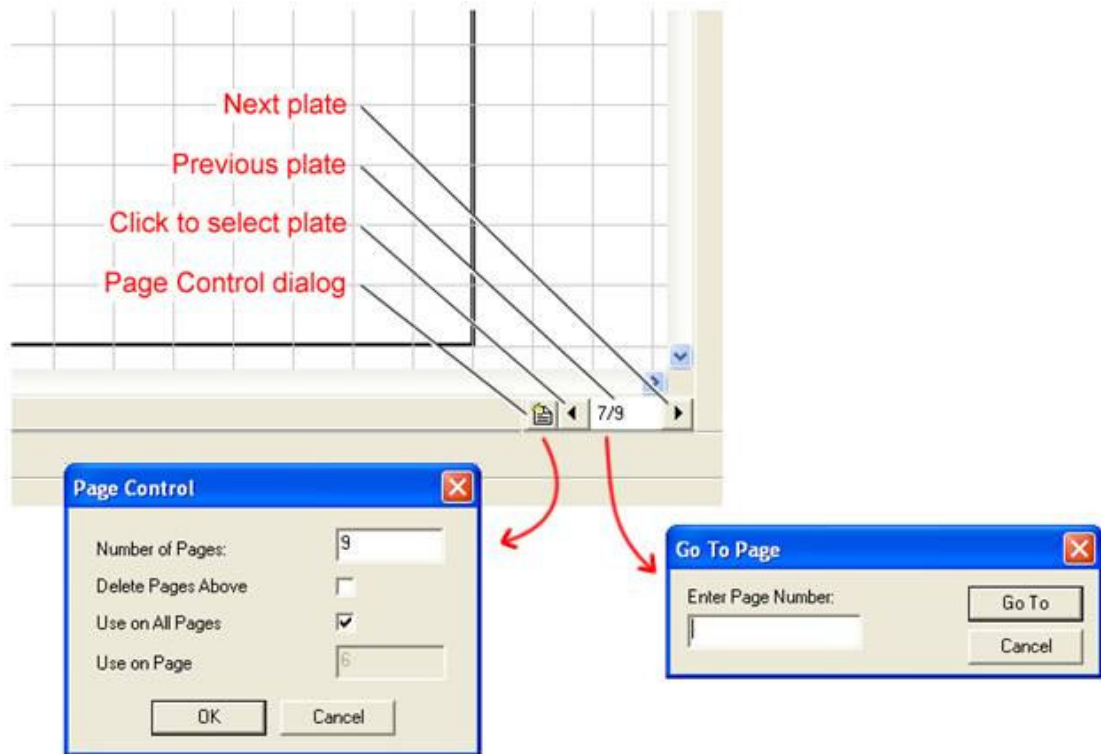
As in the screen shot, the value “Booth A” is entered. Using the mouse, only the “A” was highlighted, and then the **Set Base** button was clicked. This indicates that the word “Booth” will remain constant, while the highlighted portion will be incremented for each badge.

Click **OK** to close the **Serialize** dialog, and the **Text Substitution** dialog will be updated as follows:



Paging Tool and Page Control

When badges are created, Vision-Pro will attempt to fit each badge within the bounds of the sign plate (the dimensions of the sign plate are set using the **Layout | Plate Size** command). If there are more badges than will fit on the sign plate, then additional pages of the Vision-Pro workspace will be created, each with its own sign plate. These additional pages may be viewed using the **Paging Tool**, which is at the bottom-right corner of the Vision-Pro workspace.



After additional pages have been created, the objects on each page may still be edited individually, and the basic Copy & Paste commands may be used to move selected objects between pages. The **Page Control** dialog provides further editing functionality for deleting pages, or moving objects between pages.

To access the **Page Control** dialog, at least one object must be selected on the current page. The **Page Control** dialog options are described as follows:

Number of Pages

The “**Number of Pages**” field indicates the total number of pages that have been created.

Delete Pages Above

If the “**Delete Pages Above**” option is checked, then clicking **OK** will delete any pages after the “**Number of Pages**” field.

For example, suppose that there are initially nine pages created. In the **Page Control** dialog, set the “**Number of Pages**” field to 7, and then click **OK**. The 8th and 9th pages will be deleted.

Use on All Pages

For a selected object, the “**Use on All Pages**” option is used to make duplicates of that object on all of the pages.

For example, suppose that several pages have been created, and that a bitmap is then added to one of the badge pages. The placement of the bitmap looks good, and it is desirable to have that bitmap on all of the pages. This is done as follows:

- Select the bitmap
- Open the **Page Control** dialog
- In the **Page Control** dialog, note that the “**Use on All Pages**” option is automatically checked
- Click **OK**, and a duplicate of the bitmap will be placed on all of the pages

Use on Page

The “**Use on Page**” field is used to move the selected object to another page. However, the “**Use on All Pages**” option must first be unchecked, which will allow the “**Use on Page**” field to be editable.

For example, suppose that some new text was created on page 6, but the text was meant to be on page 5.

- a) On page 6, select the text object
- b) Open the **Page Control** dialog
- c) Uncheck the “**Use on All Pages**” option
- d) Set the “**Use on Page**” field to 5
- e) Click **OK** to move the text object to page 5, and the current view will automatically shift to page 5

CREATING PLATE OBJECTS

Creating Plate Objects

The **Plate Objects** feature is used to create individual text engraving plates for short production runs. These plate objects are similar to what can be produced using the Badges serialization feature, and plate objects will be automatically fit within the available space of the sign plate. As such, plate objects can be created in addition to a larger job, making use of material that would otherwise be wasted.

Where a large number of plate objects are being created, it is possible that the entire sign plate becomes filled. Any excess plate objects will be automatically arranged onto additional sign plates, which can be viewed using the **Paging Tool**.

Create a set of plate objects

Create a set of plate objects

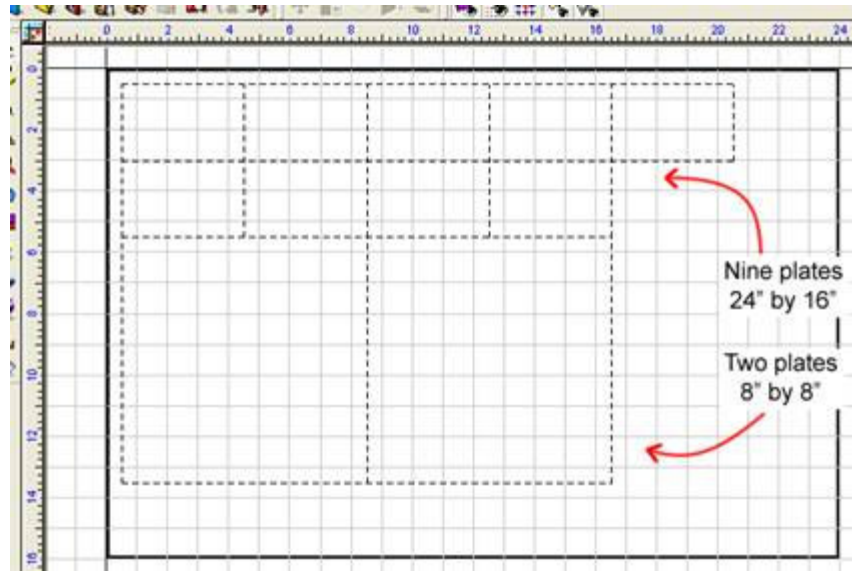
From the **Layout** menu, choose **Plate Object | Create Plate** to display the SmartBar controls for customizing the plate objects. The key settings are the Width and Height of each plate, and the text margins (left, right, top and bottom) that will be applied. These margins will be used when adding text to the plate.

Secondary settings are the initial number of plates (more can be added later), and the color of the score lines.

For example, suppose that the following settings are used:

- Plate size = 24” width by 16”, portrait, top-left origin
- Plates = 9 total, 4” width, 2.5” height, black score lines, ¼” margins
- Plates = 3 total, 8” width, 8” height, black score lines, ½” margins

The Vision-Pro workspace would appear similar to the following, where nine small plate objects would populate the top



Nine small plates, and two large. Though we created three large plates, the third plate was placed on a new sheet, which can be viewed using the **Paging Tool**. Also note that the initial ¼" margins have been replaced with the ½" margins used when creating the large plates.

Adding Text to a Plate

To add text to a plate, first choose the text compose tool, and then click within the plate. The text frame will match the plate dimensions.

Creating More Plates

After creating a set of plates, there are two methods of adding more plates.

- 1) Select the set of plates, and then choose **Layout | Plate Object | Add Another Plate**
- 2) Select the set of plates, and then press the **[Page Down]** key

Conversely, plate objects can be removed by using either the **Remove Last Plate** command, or by pressing the **[Page Up]** key.

PHOTOLASER

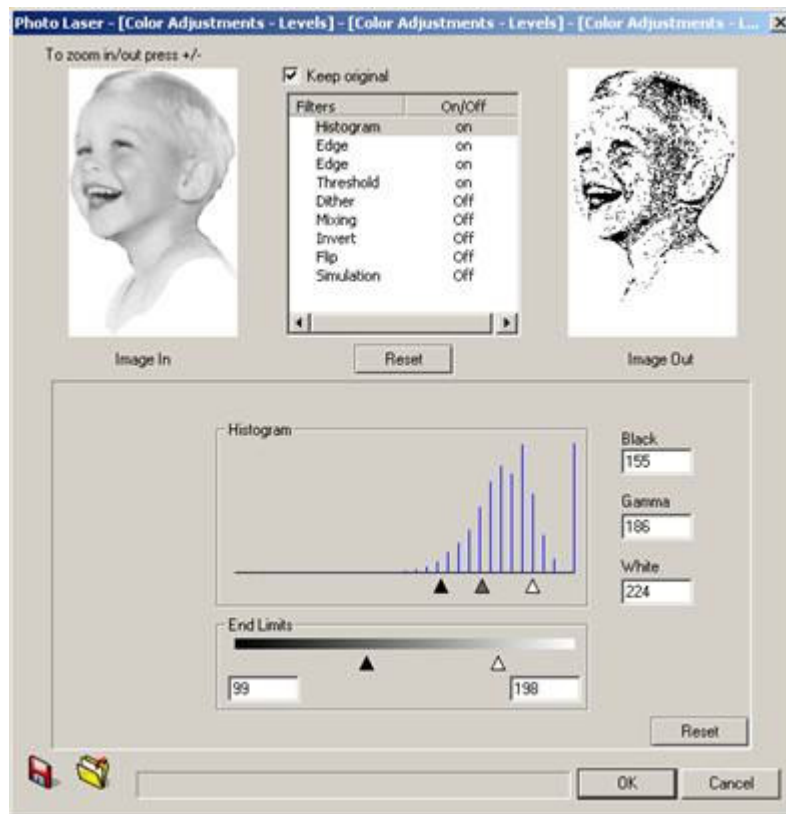
PhotoLaser

The PhotoLaser feature is used to convert an image into a laser-ready monochrome image. A laser engraver is essentially a monochrome device (laser on or laser off), so any color information retained in the image is not usable. As such, before using PhotoLaser, we recommend that the **Image menu > Mode > Grayscale** tool be used to convert the image to a grayscale.

When the grayscale image is selected, choose PhotoLaser from the **Transform** menu. The **Interactive** tool is used to adjust the PhotoLaser settings, whereas the **Automatic** tool will apply the previously used settings.

The **PhotoLaser** dialog displays the original image on the left, and the resulting monochrome image is on the right.

Between the original and monochrome images are the different filters that can be applied to refine the monochrome image. Any of these filters can be toggled **ON/OFF** by right-clicking the filter name. Below the list of filters are the controls for the currently selected filter.



At the bottom-left of the PhotoLaser dialog are buttons for saving and loading preset PhotoLaser settings. There are several suggested preset settings available, which are named according to the type of material that is being engraved.

Histogram

A histogram is a chart consisting of horizontal or vertical bars, the widths or heights of which represent the values of certain data (in this case, the data represents pixel brightness across the bitmap).

Using the histogram, adjust the distribution of color intensities throughout the bitmap, either to correct a scanned image, or to create an artistic effect. Increasing the **Black** level will equate the darkest portions to black, whereas decreasing the **White** level will equate the lightest portions to white. Increasing or decreasing the **Gamma** will modify the overall intensity of the bitmap.

The **End Limits** are used to adjust the White and Black values, which is an effective means of removing speckles from a scanned image.

Edge Enhance

Edge Enhance

An “edge” refers to portions of an image where there is a transition between light and dark pixels. These edges can be enhanced by applying emboss, blur, or sharpen filters.

Two Edge Enhance filters can be applied. The possible filters are:

Emboss

Applies an emboss effect to the image, per the specified depth and direction of the effect. The **Depth** indicates the apparent depth of the emboss 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.

Sharpen

Increase or decrease the sharpness of the bitmap.

Unsharp Mask

The Unsharp Mask feature is actually considered to be 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. The software accomplishes this as follows:

- 1) A blurred copy of the bitmap is created, where the amount of blurring depends upon the **Radius** setting
- 2) The blurred copy is then subtracted from the original (the resulting difference bitmap is referred to as the “mask”)
- 3) The **Threshold** setting is then evaluated. The **Threshold** setting varies from 0 to 255, which corresponds to the range of possible brightness levels of each pixel within the mask.
- 4) Pixel-by-pixel, where the difference from step (2) exceeds the **Threshold** setting, the difference is multiplied by **Amount** and then added to the original bitmap
- 5) Where the difference does not exceed the **Threshold** setting, the original pixel value remains unchanged

Threshold

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.

Dither

Dither

Dithering methods create the appearance of more subtle shades by mixing in pixels of different colors. This is similar to the way newspaper pictures produce the appearance of shades of gray, even though the only actual colors are black and white.

Error Diffusion

Except for **Ordered dithering**, all of these dithering methods use error-diffusion algorithms. In error diffusion, the error is the difference between the original pixel color and the nearest match, and diffusion of this error is what the algorithm accomplishes. For example, **Floyd-Steinberg** is a fast, high-quality error-diffusion method.

All of the alternative error-diffusion methods are slower than Floyd-Steinberg, and the quality may or may not be better, depending on the original image. Choosing an alternative dithering method is a subjective, trial-and-error decision. **Stevenson and Arce** dithering, the slowest of the alternatives, is most likely to produce a higher quality result.

Ordered dithering is not an error-diffusion algorithm, but rather it is a method used when painting to a display device that is 256 colors or less. Ordered dithering is a fast method that takes advantage of the fact that the colors in most palettes are ordered so that similar shades are next to each other in the palette. This method avoids blotches of color by adding to or subtracting from the nearest-color value of each pixel to ensure that adjacent

pixels do not have exactly the same color. However, if the colors in the palette are not ordered, then the results of this algorithm are poor.

Halftone

Convert the bitmap to a halftone bitmap, which is useful for creating an artistic effect. The **Angle** setting is used to rotate the halftone pattern.

Intensity Detect

Pixel intensities within the bitmap range from 0 to 255 for each color plane (red, green, and blue). The **Intensity Detect** filter compares each pixel intensity with the **Low** and **High** values, and the pixel intensity is set as follows:

Pixel Intensity	Result
Between Low and High	Increase intensity to 255
Less than Low	Clear intensity to zero
Above High Setting	Clear intensity to zero

Mixing

To use this feature, both the **Dither** and **Mixing** filters must be **ON**.

For the image that results from the **Dither** setting, the **Mixing** filter is used to apply the resulting image as an additive mask to the original image. The **Blend** setting is used to adjust the percent intensity of the additive mask (i.e. 0% will be the original image, whereas 100% is the full intensity).

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.

Flip

Flip the image horizontally. This feature is typically used when the image is to be reverse-applied to transparent media, such as a clear acrylic.

Simulation

Simulate the image as it would appear when laser engraved into the given material. Set the "Burnt Color" to represent the absolute darkest portion of the expected output.

From the drop-list, the available materials correspond to bitmap BMP files that are within the Vision-Pro \ PhotoLaser directory. If additional bitmap files are placed within this directory, then they will be available for selection from the drop-list (i.e. bitmaps created by color scanning the material that will be etched).

WEED AND POWER WEED

Weed and Power Weed

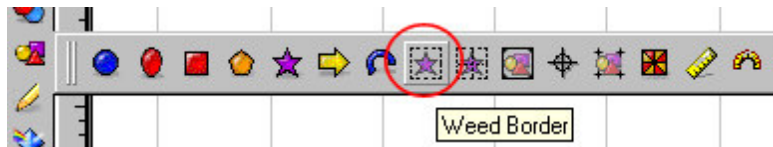
After cutting a vinyl shape, the shape must be peeled away from its backing. However, problems may occur when the shape doesn't pull away easily from the surrounding vinyl, in which case stretching of the vinyl may occur. To avoid stretched vinyl, a weed border may be created, which is essentially an extra rectangular cut around the shape. Once cutting is done, the rectangular cut may be peeled away first, followed by the inner shape.

Weed Border

Weed Border



To create a rectangular cut around the selected shapes, choose **Weed Border** from the **Shape Tools** flyout.



In the SmartBar, the **Border Offset** value indicates the distance that will be maintained between the shapes and the weed border.

Note: The default **Weed Offset** value is set on the **General Preferences** dialog. The terms Weed Offset and Border Offset are used interchangeably.

Power Weed



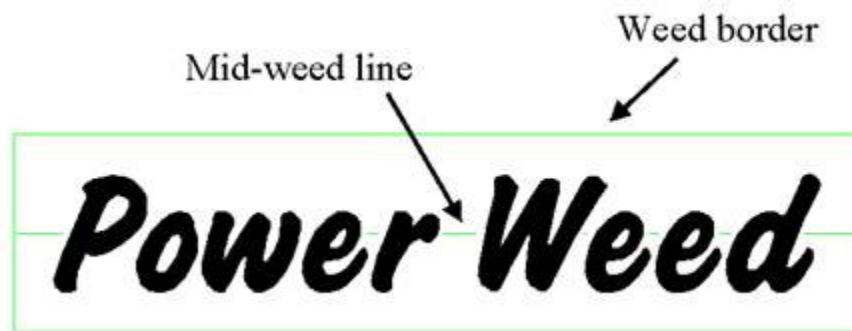
A power weed is like a weed border, except that mid-weed lines (horizontal and vertical) may also be created. These mid-weed lines will improve the ease of pulling the finished vinyl from its backing, especially where text shapes are being cut.

To apply a power weed to selected shapes, choose **Power Weed** from the **Shape Tools** flyout.



As with the weed border, the **Border Offset** value indicates the distance that will be maintained between the shapes and the border.

To create a horizontal mid-weed line, hold the cursor over the bottom edge of the weed border. When the cursor appears as an up/down bi-directional arrow, left-click and drag to form the weed line. Similarly, a vertical mid-weed line is created by dragging from the left edge of the weed border.



In the SmartBar, the **Line Overlap** indicates how close the mid-weed lines will cut towards the shapes. A **Line Overlap** of zero will cause the weed lines to cut flush with the shapes, whereas a negative value will leave a gap between the weed lines and the shapes.

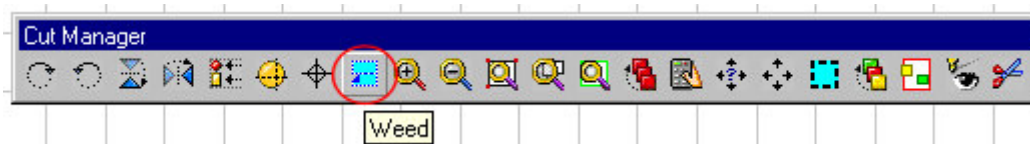
Note: Any part of the design that is bisected by the weed is left uncut.

Weed Border in Cut Preview



If weed lines have been applied on the workspace, then they will be indicated as cut lines during the Cut Preview or Print and Cut Preview modes. However, a weed border may also be added during the Cut Preview mode.

During the Cut Preview mode, the **Weed** button is available on the **Cut Manager** toolbar.



Left-clicking the **Weed** button will activate the weed border, and the preview will show the border that is created around the shapes.

The **Weed offset** value from the **General Preferences** dialog will be used. To use a different **Weed offset** value, right-click the **Weed** button, and the **Weed Setup** dialog will open. Changing the **Weed offset** value will apply to the current job being cut, but the default value will not be changed.



REGISTRATION MARKS

Registration Marks

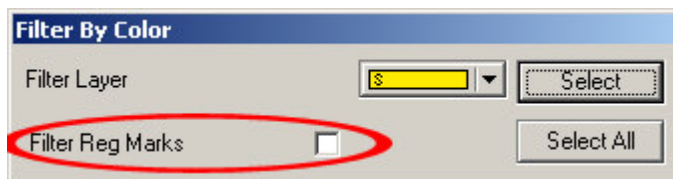
Registration marks are placed on the workspace to aid in arranging color layers, such as when producing a full color lay up. Registration marks can be cut or printed as part of the overall graphic. However, operations like scaling may not be applied to registration marks.

Where a graphic is to be printed and then cut on a stand-alone cutting device, registration marks are needed to ensure that the media is correctly aligned. For more information about the usage of registration marks, please refer to **Plotter Jog** in the following section.

Filtering Registration Marks

Filtering Registration Marks

There may be situations wherein it is not desirable to print or cut registration marks for all color layers. Whenever the **Filter by Color** dialog is used, disabling the **Filter Registration Marks** option will cause current registration marks to **not** be included with the output.



To later include existing registration marks again, open the **Filter By Color** dialog and enable the **Filter Registration Marks** option.

Registration Mark tool

To create a single registration mark on the workspace, choose **Registration Mark** from the **Shape Tools** flyout.



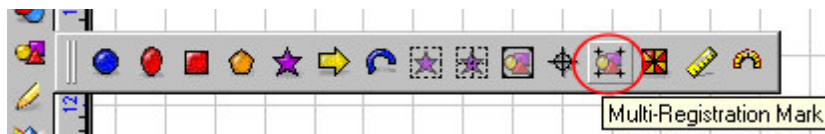
Different registration marks styles may be chosen from the SmartBar. At the far-right of the SmartBar, the dimensions of the registration marks may be set.



Create registration marks by clicking on the workspace. When finished creating registration marks, pressing Spacebar will return Vision-Pro to the Select mode. Individual registration marks may then be selected, and their positions may be precisely set using the horizontal and vertical position fields in the SmartBar.

Multi-Registration Marks

To create a set of registration marks for the currently selected shapes, choose **Multi-Registration Marks** from the **Shape Tools** flyout.

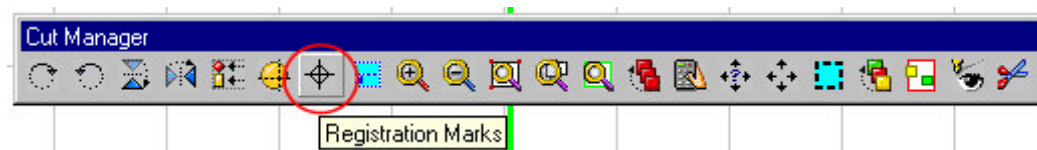


As when creating a single registration mark, the style may be chosen from the SmartBar. The **Offset** amount indicates a rectangular distance about the shapes, along which the registration marks will be placed. Up to eight registration marks may be placed, as indicated by the **Positions** checkboxes.

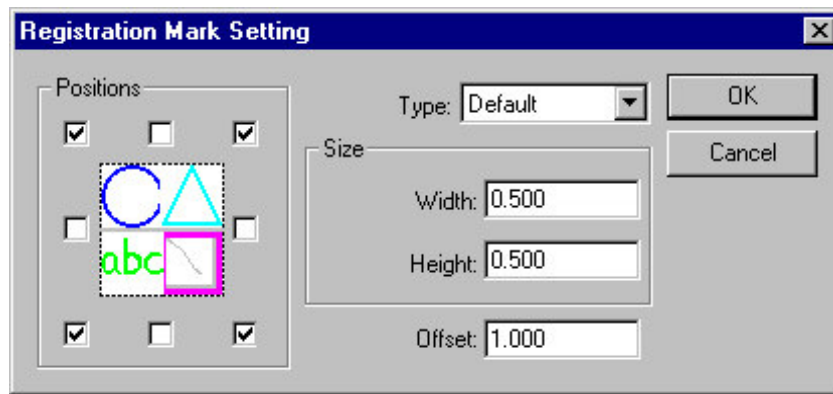


Adding Registration Marks during Cut Preview

During the Cut Preview mode, registration marks may be added using the **Registration Marks** button on the **Cut Manager**.



When the **Registration Marks** button is right-clicked, the **Registration Mark Setting** dialog will open. This dialog may be used to set the positions, size and offset of the registration marks, as described in the previous section under **Multi-Registration Marks**.



Click **OK** to save the settings, and the **Registration Mark Setting** dialog will be closed. On the **Cut Manager** toolbar, the **Registration Marks** button may be left-clicked, which will cause the **Registration Marks** popup will appear. The popup may be used to select the style of registration marks.



When the style is selected, the registration marks will be placed about the workspace shapes.



PLOTTER JOG

Plotter Jog

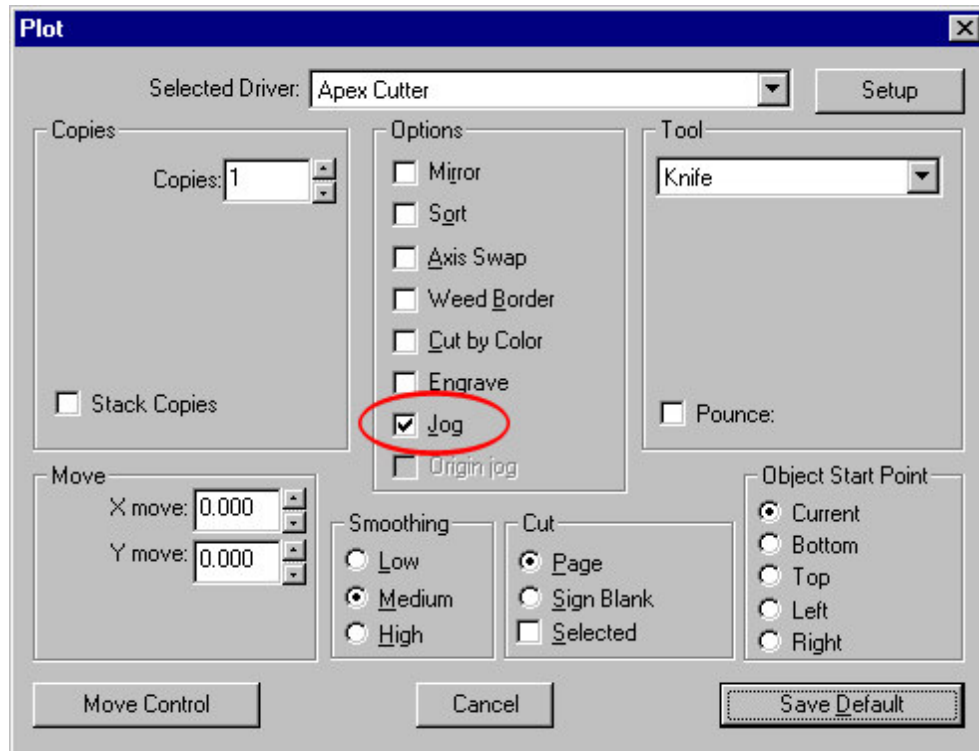
Vision-Pro supports Plotter Jog. This feature is designed to reduce wasted material by cutting new objects in unused sections of a vinyl sheet. Objects may be placed precisely into areas of vinyl that were left unused by a

previous job. Additionally, elements of a current job can be placed into different sections of the same vinyl for optimum use of space.

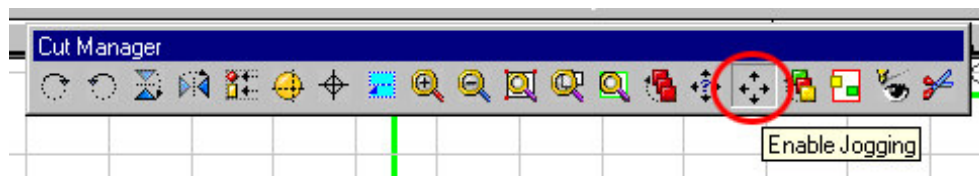
In order to perform Plotter Jog, it is necessary that **Registration Marks** be included as part of the job. Registration marks are discussed in the previous section.

Enabling Plotter Jog

To enable jogging by default, choose **Plotting Defaults** under the **Cut** menu. The **Plot** dialog will open, and the **Jog** option may be enabled for the given device.



If jogging is not enabled by default, then it may be activated during either the Cut Preview, or Print and Cut Preview modes by clicking the **Enable Jogging** button.

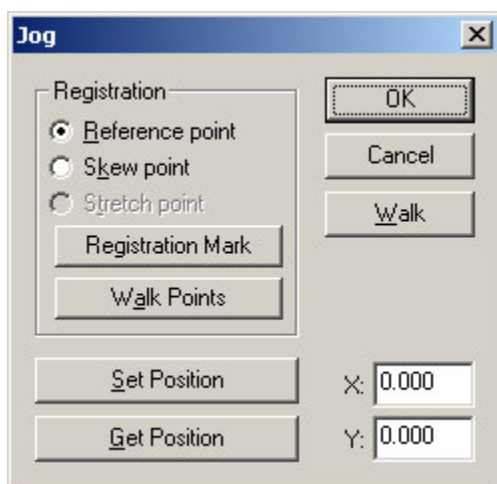


Note: If jogging has been enabled by default, then the preview modes will show the **Enable Jogging** button as depressed.

Jogging Controls

Jogging Controls

When a job is sent for plotting, the **Jog** dialog will open.



When using vinyl scraps from a previous job, move the artwork origin to fit into the specific area. For example, if the leftover vinyl is oddly shaped...



...then shift the artwork origin to fit the remaining vinyl.



While this task can be accomplished by setting an X- and Y-move from within the Jog dialog box, jogging the plotter head offers a more precise setting. This is because the head of the cutter can be physically moved to the desired position before committing to the cut. Also, use the Jog option to change the angle of the baseline for a given cut.

Registration

The Registration options are used to set the Reference Point, Skew Point, and Stretch Point. Click the Walk Points button to alternate the plotter position between the different points.

If Registration Marks exist on the artwork, the Reference Points (described below) will be set to the Registration Marks.

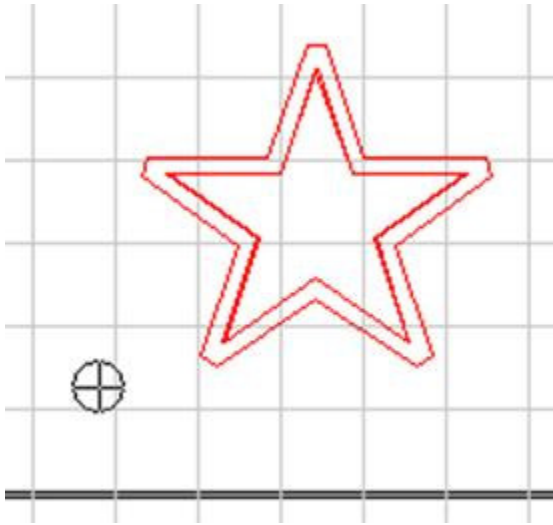


Reference Point

The first step in jogging the plotter head is to set the Reference Point. This includes both defining a target point for the group of objects to be cut, and defining where on the material that point is to be placed.

To set the Reference Point, click Reference Point in the Registration area of the Jog dialog box. This setting enables of the Reference Point's target to be defined, as well as its actual position on the vinyl.

The next step in setting the Reference Point is to define the Reference Point's target on the graphic on screen. The default Reference Point is the origin of the artwork (i.e., lower left point). This point can be moved graphically on screen to suit specific needs. Move this Reference Point to anywhere on the artwork by clicking with the left mouse button at the desired position.



Once the Reference Point is set on the artwork, set the actual position on the vinyl for the Reference Point for cutting. This involves moving the head of the plotter to the point where the target should be placed. The plotter head may be moved in five ways:

- 1) Holding the right mouse button while moving the mouse.
- 2) Positioning the mouse and pressing the right mouse button.
- 3) Pressing the cursor keys (hold the Shift key to move the plotter head in larger increments).
- 4) Entering the coordinates manually.
- 5) Moving the plotter head with the plotter controls.

Skew Point

If there is only a Reference Point set, Vision-Pro will cut the graphic with a horizontal baseline. Use a Skew Point to either cut a pre-printed piece of material accurately, or improve usage of the available vinyl by changing the angle of the baseline.

- The procedure for setting the Skew Point is identical to setting the Reference Point. Click on Skew Point in the Registration section of the Jog dialog box to begin.

Stretch Point

The Stretch Point is used to adjust the horizontal and/or vertical perspective of the graphic. This tool is used with printers that may resize the image during the print process, in which case a Stretch Point is required to cut a pre-printed piece of material accurately.

- The procedure for setting the Stretch Point is identical to setting the Reference and Skew Points. Click on Stretch Point in the Registration section of the Jog dialog box to begin.

Registration Mark

Pressing the Registration Mark button causes the plotter to move around to the next registration mark location on the vinyl, which is useful when Contour Cutting print jobs. The plotter head will remain in the up position during this movement. This feature is particularly useful to ensure that registration is accurate for contour cutting pre-printed graphics.

When the Registration Mark button is clicked, this will also change the currently selected registration mark on the workspace, which allows the registration mark to then be defined as either the origin, skew, or slant mark.

Walk Points

Pressing the Walk Points button causes the plotter to move through the Reference, Skew, and Stretch Points on the vinyl. The plotter head will remain in the up position during this movement. This feature is particularly useful to ensure that registration is accurate for contour cutting pre-printed graphics.

Set Position

The Set Position button (computer jogging) is used to define the origin coordinates.

Get Position

The Get Position button (machine jogging) is used to poll the plotter for the current coordinates of the tool.

Move The Cutting Head With The Mouse

To move the cutting head with the mouse, simply drag the target to the appropriate position using the right mouse button. Note that as the mouse moves, the cutting head of the plotter mimics the movements.

Guide the cutter to the position for the first reference point, and release the right mouse button when the plotter head is in position. The cutting head can also be moved by [Shift] clicking the right mouse button at the first reference point position.

To check the exact position of the pen or knife, the cutting head of the plotter can be dropped to the surface of the vinyl by pressing the [Page Down] key on the keyboard. To return the head to the up position, press the [Page Up] key.

Move The Cutting Head With The Keyboard

Moving the cutting head with the mouse is generally a coarse adjustment. To supplement this type of movement with a finer control, choose to direct the cutting head to the required position from the keyboard using the Left, Right, Up, and Down arrow keys. Click in the main Vision-Pro view screen before using the cursor keys in order to activate this function. To increase the speed at which the cutting head is traveling, press and hold the [Shift] key while moving the head.

To check the exact position of the pen or knife, the cutting head of the plotter can be dropped to the surface of the vinyl by pressing the [Page Down] key on the keyboard. To return the head to the up position, press the [Page Up] key.

Note: The arrow keys on the keyboard can only be used to move the cutting head to the position of the Target. The Target itself can only be moved using the mouse.

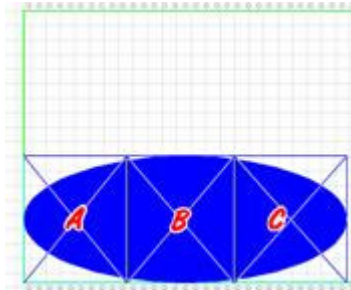
Move The Cutting Head To An Absolute Position

To move the cutting head with a very high degree of precision to an absolute position on the vinyl, type the required X-axis and Y-axis coordinates in the X and Y entry boxes to set the target position. Once the first target point is specified, press the **Set Position** button to lock in the coordinates. This button, available only in Remote Jog mode, will immediately move the plotter head to the position set in the X and Y boxes.

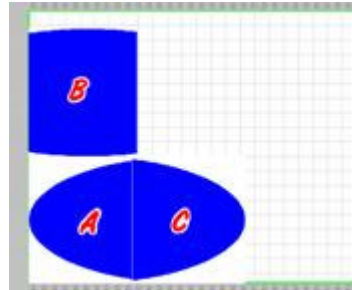
TILING

Tiling

Workspace shapes may be organized into tiles, which is a useful method of sub-dividing the job into manageable sections. In addition, the amount of wasted material may be reduced by "stacking" tiles on the media.



Large shape organized into three tiles.
When printed from left-to-right,
notice that half the material is wasted.

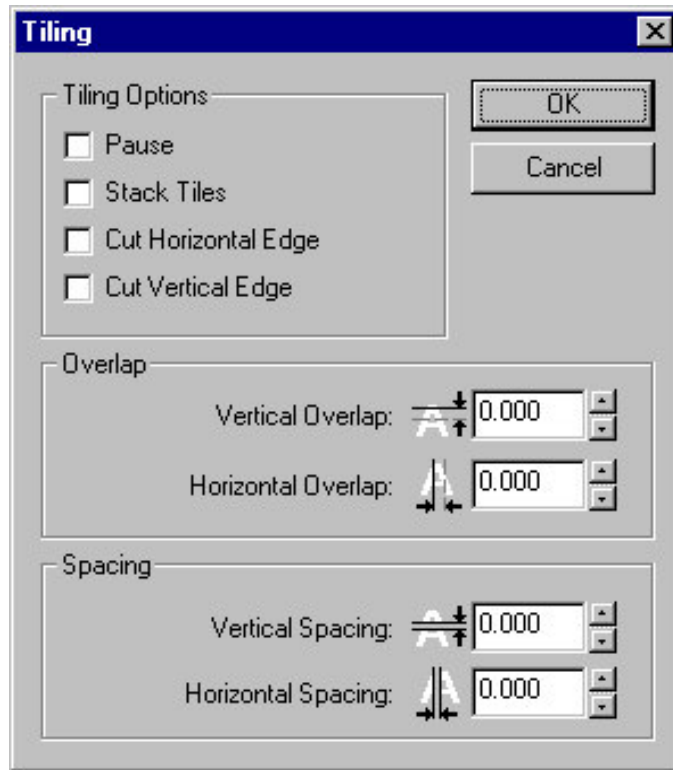


By stacking the tiles, wasted material
may be reduced.

Default Tile Settings

Default Tile Settings

The placement of tiles is performed during either the **Cut Preview** or **Print and Cut Preview** modes. Default tile settings are accessible through the **Tiling** dialog (**Cut** menu).



The **Tiling** dialog settings are described as follows:

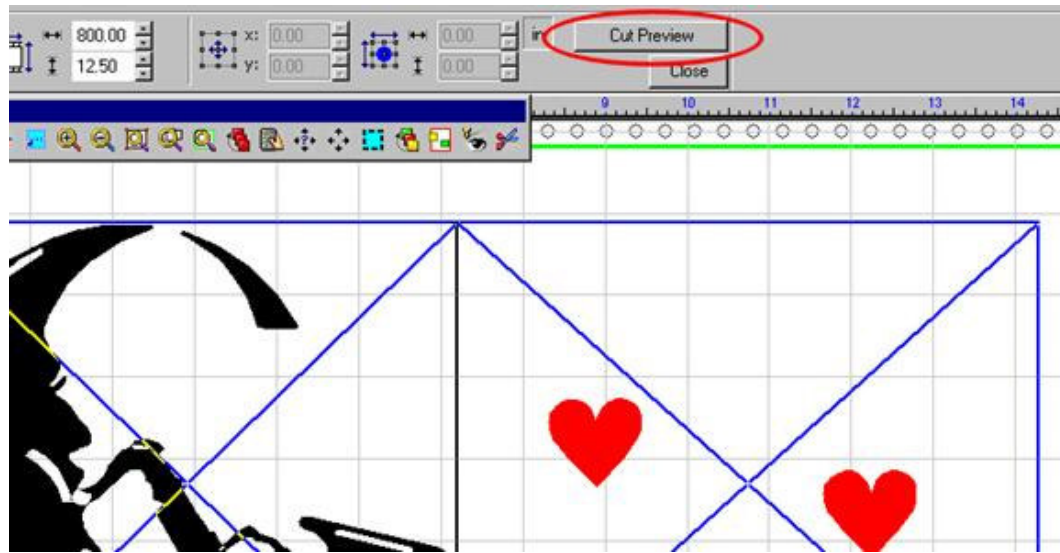
Pause

This option stops the plotter between each tile. However, not all plotters can be paused between page boundaries. Page boundaries are set in the **Plotter Setup** dialog.

Stack Tiles

Tiles are created during the either the Cut Preview, or Print and Cut Preview modes. Enabling the **Stack Tiles** options will cause tiles to be automatically rearranged prior to output, such that material waste is reduced.

During the Cut Preview mode, the arrangement of tiles may be previewed by clicking the **Tile Preview** button on the SmartBar. The button may be clicked again to return to the Cut Preview mode.



Cut Horizontal and Vertical Edges

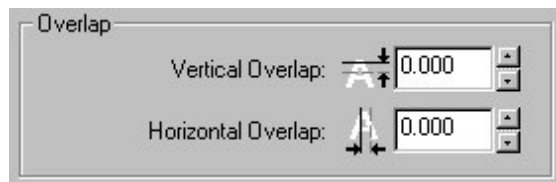
These options are used to cut the edge between adjacent tiles, which is useful when overlapping adjacent tiles.

If the **Cut Vertical Edge** option is not used, then the plotter will automatically index past the page boundary without breaking the continuity of the cut.

Note: If the **Horizontal Spacing** is zero, then do not use the **Cut Vertical Edge** option. By doing so, this will allow effective cutting of objects that are much larger than the maximum plotter page size.

Overlap

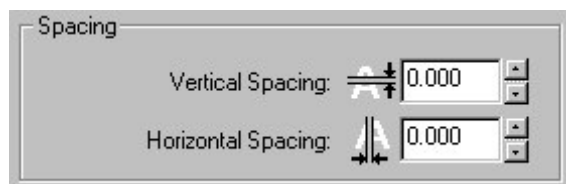
The **Overlap** specifies the amount of over-cut that each tile will contain, such that the end of each tile will include a portion of the adjacent tile. For example, consider a $\frac{1}{2}$ inch overlap, where two tiles are being cut in sequence. In this case, the trailing $\frac{1}{2}$ inch of the first tile will be identical to the leading $\frac{1}{2}$ inch of the second tile.



Overlapping adjacent tiles is beneficial when preventing gaps that may appear between panels due to material shrinkage.

Spacing

Spacing indicates the amount of material left uncut between tiles during the cutting job. Vertical spacing refers to tiles that are side-by-side. Horizontal spacing refers to tiles that are above one another on the sheet.



Note: This Tiling box is the same box as where the tiling parameters for printing are specified. Therefore, the rules that are set regarding Tiling in this dialog box will also be applied to the Tiles generated when printing a file.

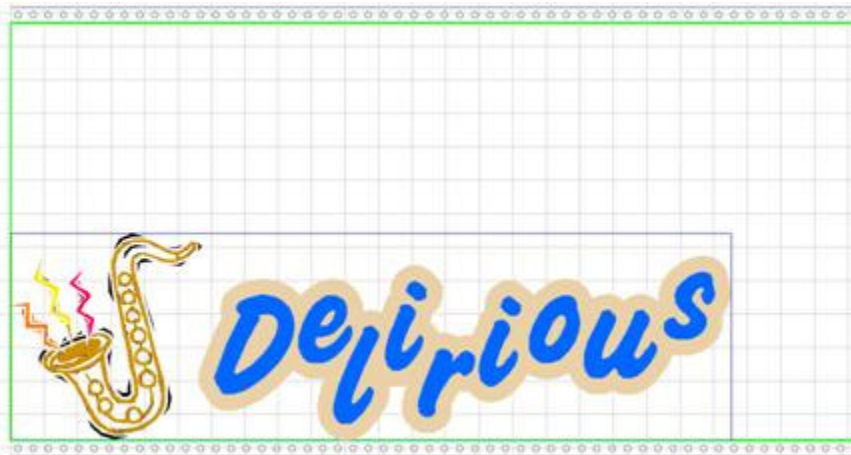
Creating tiles

Creating tiles

Tiles can be created during either the **Cut Preview** or **Print and Cut Preview** modes. In either preview mode, tile editing is begun by clicking the **Tile** button.

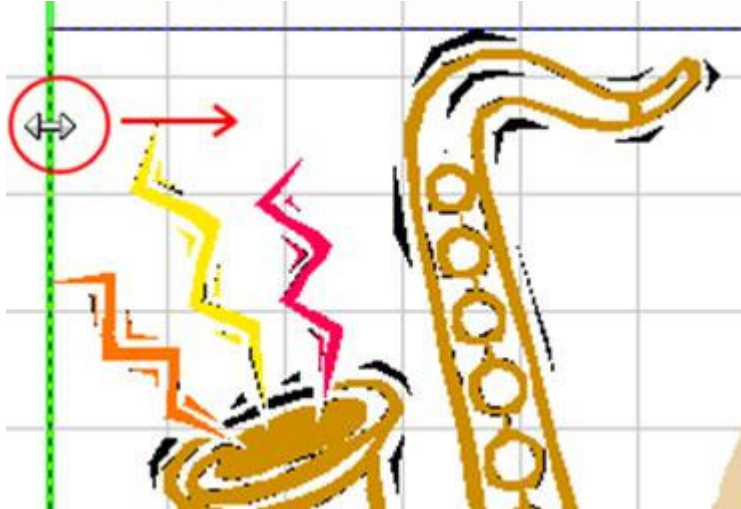


By default, shapes will be placed upon a single, main tile. For example, consider the following screenshot of some shapes and text.



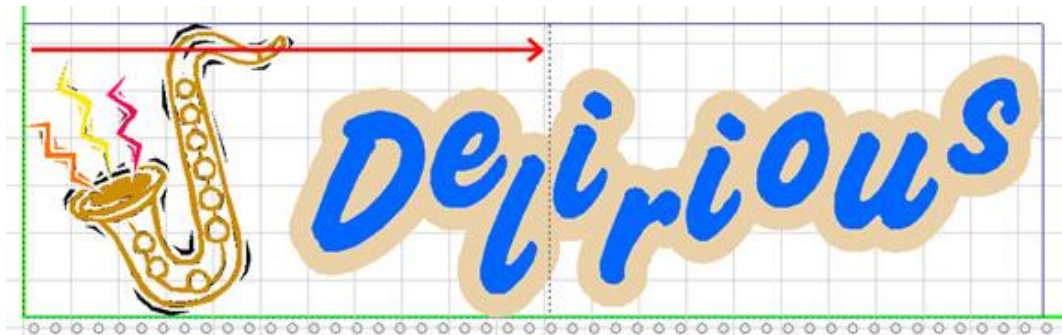
Horizontal Tiles

To create tiles horizontally, hold the cursor over the left edge of the main tile, such that a left/right bi-directional cursor appears.

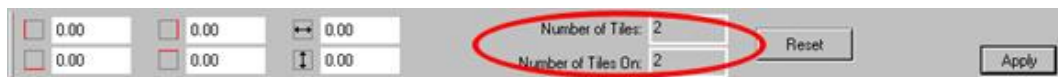


When the bi-directional cursor appears, left-click and drag the tile line, such that it subdivides the main tile. There will now be two tiles, which may be further subdivided to create more tiles. However, avoid dragging a tile line over a previously created tile line, since this will delete the previous tile line.

If a **Horizontal Overlap** amount has been set on the **Tiling** dialog, then the tiling line will be drawn "thick" indicate the overlap. Similarly, a **Vertical Overlap** amount will be shown when creating vertical tiles.

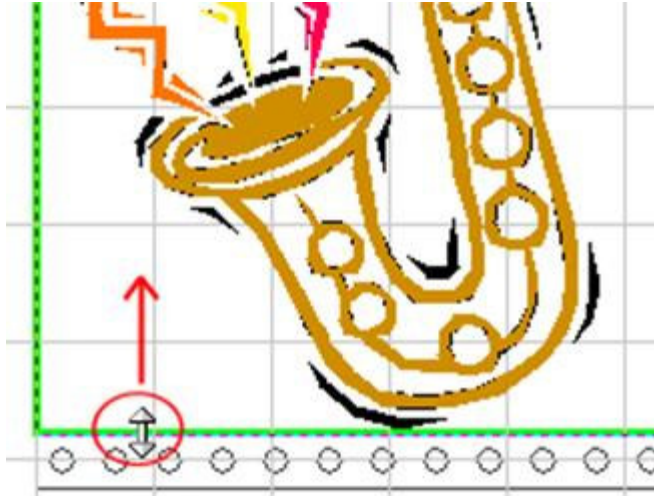


In the above screenshot, a tiling line has subdivided the main tile into two horizontal tiles. The SmartBar indicates that the "Number of tiles" is two. In addition, the "Number of tiles on" field indicates that both tiles are active.



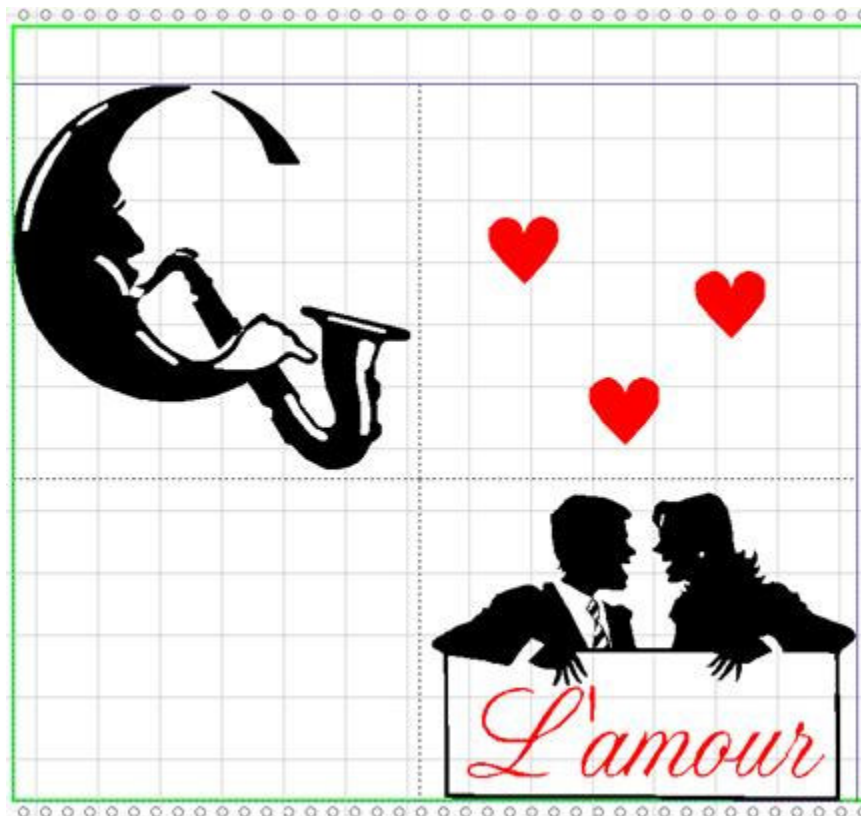
Vertical Tiles

To create vertical tiles, hold the cursor over the bottom edge of the main tile. An up/down bi-directional cursor will appear, which may be dragged to form a tile line.

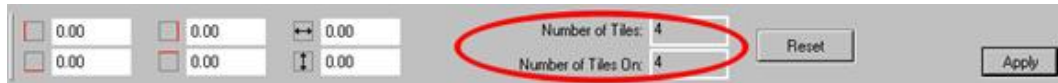


Selecting Tiles

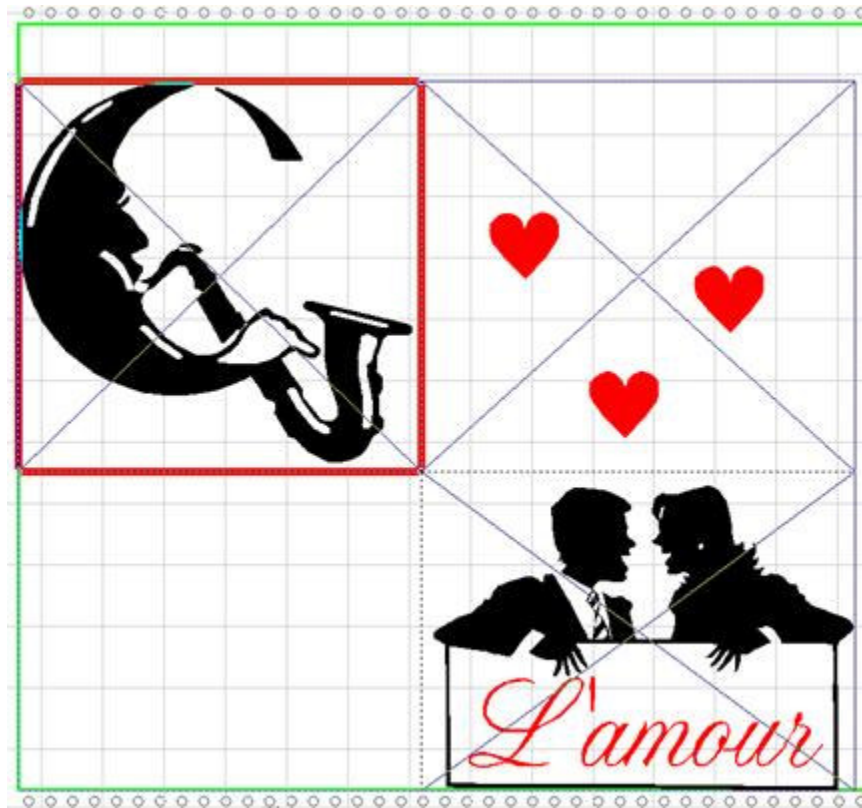
By default, all tiles will be sent as output to the given device. However, if one-or-more tiles are selected, then only the selected tiles will be sent as output. For example, consider a design that has been arranged into four tiles.



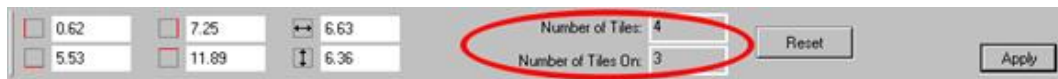
Clicking one of the tiles will cause it to be "crossed out." In the above screenshot, no tiles have been "crossed out," so it is assumed that all tiles should be sent as output. This is verified in the SmartBar, where the "**Number of tiles**" is four, and the "**Number of tiles on**" is also four.



Now suppose that three of the tiles are clicked, such that they are crossed out. The tiles would appear as follows:



The bottom-left tile is not crossed out, so it will not be sent as output. As confirmation, the SmartBar indicates that the "Number of tiles on" is three.



For the most recent tile that was clicked, the SmartBar displays the coordinates and dimensions of the tile. This information is displayed at the far-left of the SmartBar.

HOT KEYS

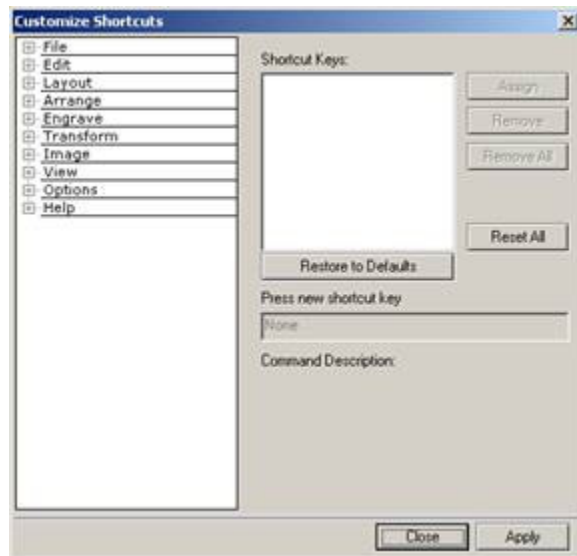
HOT KEYS

[? Hot Key Summary](#)

[? Functions Keys](#)

HOT KEY SUMMARY

The following is a summary of the hot keys that are available within Vision-Pro. These shortcuts can be modified by choosing **Customize Shortcuts** from the **Options** menu.



Generic Hot Keys

These Hot Keys have general application within Vision-Pro:

- | | |
|--------------------|---|
| [Arrow key] | Nudge selected object by one pixel |
| [Shift+arrow key] | Nudge selected object by five pixels |
| [Tab] | Change current focus to next object in sequence |
| [Shift+Tab] | Change current focus to previous object in sequence |
| [Ctrl+Select tool] | Move/Draw/Edit/Select with horizontal and vertical constraint |

Alignment Hot Keys

These Hot Keys apply alignment to the currently selected objects:

- | | |
|---------|---|
| [Alt+1] | Horizontally align objects along left-edge of bounds |
| [Alt+2] | Horizontally center objects within bounds |
| [Alt+3] | Horizontally align objects along right-edge of bounds |

Vision-Pro 7 Doc Files

- [Alt+4] Vertically align objects along top-edge of bounds
- [Alt+5] Vertically center objects within bounds
- [Alt+6] Vertically align objects along bottom-edge of bounds
- [Alt+7] Center objects both horizontally and vertically

Note: The bounds refer to the rectangular outline of each object.

File Menu Hot Keys

These Hot Keys enable access to the various File menu options:

- [Ctrl+N] New workspace
- [Ctrl+O] Open workspace
- [Ctrl+S] Save workspace
- [Ctrl+P] Print workspace objects

Edit Menu Hot Keys

These Hot Keys enable access to the various Edit menu options:

- [Ctrl+Z] Undo last command
- [Ctrl+Y] Redo last command
- [Ctrl+R] Repeat last command
- [Ctrl+X] Cut selected object
- [Ctrl+C] Copy selected object
- [Ctrl+V] Paste object
- [Del] Delete selected object
- [Ctrl+D] Duplicate selected object
- [Ctrl+T] Edit selected text
- [Ctrl+E] Edit selected object
- [Ctrl+I] Edit font of selected text
- [F3] or [Ctrl+A] Select all objects on workspace
- [Shift+F3] Deselect all objects
- [Alt+F3] Inverse the selection of objects
- [F4] Refresh the workspace display

Layout Menu Hot Keys

These Hot Keys enable quick access to the Layout menu options:

- [Alt+K] Activate the Alignment feature
- [Ctrl+K] Apply the current Alignment dialog settings
- [Ctrl+G] Group the selected objects

[Alt+G] Ungroup the selected objects

Arrange Menu Hot Keys

These Hot Keys enable quick access to the Arrange menu options:

[Ctrl+F]	Move the selected object to the top layer
[Ctrl+B]	Move the selected object to bottom-most layer
[Ctrl+U]	Move the selected object up by one layer
[Ctrl+L]	Move the selected object down by one layer
[Ctrl+M]	Reverse the layer order of the selected objects
[Ctrl+H]	Create a common path from the selected objects
[Ctrl+J]	Reverse the common path that had been applied to a group of selected objects
[Alt+B]	Convert the selected text to graphic objects
[Shift+F2]	Simplify the selected object

Engrave Menu Hot Keys

The Engrave menu has a single Hot Key:

[Alt+P] Open the Engrave Preview plotting controls

View Menu Hot Keys

These Hot Keys enable quick access to the View menu options:

[Alt+S]	Toggle the display of object fills
[Alt+N]	Toggle the display of the tool diameter
[Alt+R]	Toggle the display of the ruler
[Alt+M]	Toggle the display of bitmaps
[Alt+I]	Toggle the display of the InstantReplay window

Options Menu Hot Keys

These Hot Keys enable quick access to the Options menu options:

[Ctrl+W]	Snap to grid
[Alt+W]	Use guides

FUNCTIONS KEYS

The function keys in Vision-Pro operate as follows:

Vision-Pro 7 Doc Files

[F1]	Help
[F2]	Disable all Shop Palette color layers except the current target layer
[F3]	Select all objects
[F4]	Refresh the workspace
[F5]	Activate the Zoom In tool
[F6]	Zoom out
[Shift+F6]	Zoom in
[F7]	Zoom to selected object
[F8]	Zoom to Sign Plate
[F9]	Toggle between current and previous zoom levels
[F10]	Select the menu bar
[F11]	Pan workspace toward current mouse position

INDEX

AccuScan	96	Break Path	38
Acquire Image.....	165	Buffering cut data over a network	303
Acquire Vector.....	165	Bullets	126
Align	228	Calculate the Largest Tool Diameter	276
Align Palette.....	18	Case Control.....	124
Align to Baseline.....	229	Cast Shadow.....	251
Alignment	228	CDL Files.....	155
Alignment Using Start Sequence	231	Center Line Manipulation Tools	110
Alignment Using Start Sequence by Vector.....	231	Center Nub	202
Anchor Nub.....	15	CenterLine Tracing	109
AND Weld	52	CenterLine Tracing Settings	110
Anti-Aliasing.....	342	Character Placement	125
Arabic Text	124	character sets	121
Arc Edit Flyout Tool.....	43	Character Width.....	129
Array	226	Choosing the Font	119
Arrays on an Arc.....	227	Circle Tool	31
Arrow Draw	206	Clean-Up/Flange	273
Arrow Tool.....	35	Clear Transformations	206
Aspect Ratio.....	17	Clip Art	265
Auto Kern.....	130	Clip Region	97
Auto Layout	132	Clipping Shapes	345
Automatic Saves	27	Clock	262
Axis Swap	294	Close Graphics	38
Backward	12	CMYK Color	177
Badges		Color Adjustments	82
Replacement Data File.....	352	Color Cutting Depth.....	179
Badges.....	348	Color Mode	79
Badges.....	348	Color Name	179
Barcode (parametric)	69, 70	Color palette.....	169
Barcode Symbolologies	73, 74	color resolution	97
bit depth (color).....	97	Color Separations.....	336
Bit types	313	Color Space.....	177
Bitmap Palette.....	98	Color Type	178
Block Shadow	250	Color Weld.....	51
Braille.....	136	Conical bit.....	313
Braille (comment)	127	Conical fill	190
Braille Engrave	140	Connect Path	38
Braille Photo-Resist	142	Contact Info	3
Braille Punch.....	141	Contour Cut.....	306
		Contour Cut On/Off	312
		Contour Object.....	236
		Convert to Curves	38

Convert to EngraveLab Object	164	Drop Shadow	251
Convert to Polyarc	38	Duplicate placement.....	21
Convert to Polygon	38	Edge Enhance.....	359
Coordinates	16	Edge Nub	202
Copy Tool	100	Edit Color Dialog.....	175
Copying Text Styles.....	128	Edit Mode.....	203
Copyright Notice.....	3	Edit Ticket.....	257
CorelDRAW files (importing)	159	Edit Tool Path	269
CorelDraw Palettes (exporting)	157	Editing Fonts	143
Corner nodes	39	Editing Linked Objects	164
Corner Nub.....	202	Editing Text	115
Corner Sensitivity	112	Ellipse Tool.....	32
Creating text frames.....	132	Embedded CDL Files.....	161
Creating Tool Paths.....	268	End Mill bit.....	313
Crop Tool	100	End Point.....	304
Current Nub	15	Engrave Braille	140
Cursor Coordinates	16	Engrave by Color	294
Curve node behavior	25	Engrave Preview	280
Curve nodes	39	EngraveLab Workspace	5
Custom Driver Copies.....	300	Engraver bit.....	313
Custom toolbars	13	Engraver Copies.....	291
Cut and Paste Tools	207	Engraving Defaults	290
Cut by Color.....	294	Engraving objects.....	267
Cut Manager.....	303	Export Error Tolerance	22
Cut Toolbox	283	Export Palette.....	157
cutting objects	267	Exporting and Importing.....	155
Cutting Thick Lines	189	Exporting images	156
Data Rate.....	303	Extended Information	101
Date Template.....	264	Fan Tool	36, 37
Decorative Border		Female tool path.....	274
SmartBar Controls	219	File Template	264
Decorative Border	215	Fill Parameters	278
Decorative Border	215	Fill Region Tool.....	100
Delete Tool Path	269, 268	Fill tool path.....	275
Dial Shape (parametric)	59, 60	Fillet Round Corner	253
Dialog Box Font Setup.....	22	Filling a Nested Shape	276
Die Cut.....	312	Fills	190
Digitizing Tablet Setup	166	Filters	89
Dimensions	206	Find and Edit Color.....	182
Display Units	26	Find Color	182
Displaying an entire character set	121	Fine Fill Tool	277
Dither	360	Fit Object To Path.....	247
DOS option	303	Fit Text to Arc.....	238
Double Conical bit	313	Fit Text To Path	243
Drill tool path.....	279	Flange.....	274
Driver Copies	300	Flat Bottom bit	313

- Font Editing 143
- Font Picture Guide 121
- Font Selection 119
- Forward 12
- Frame Properties 118
- Free Edit Flyout Tool..... 43
- Fuse Weld 50
- General Preferences 19
- Get Page Size 301
- Ginsu Knife 30
- Gradient Fills 190
- Gradient Fills and Color Layers..... 196
- Gradient Fills and Welds 200
- Grayscale..... 79
- Grid Size 21
- Grouping Objects 206
- Guidelines 17
- Hairline 186
- Handles 201
- height..... 16
- Hiding shapes by color..... 172
- Histogram..... 359
- HLS Color 177
- Horizontal Compression .. 116, 124, 116, 124
- How To
 - Applying Plug-ins to sections of a bitmap 94
 - Arranging tiles 372, 373
 - Changing an object fill color..... 170
 - Clipping the edges of text that has been converted to a bitmap 81
 - Contour Cutting a Bitmap..... 308
 - Contour Cutting a Shape and Bitmap 310
 - Contour Cutting a Vector Shape ... 307
 - Finding a Useful Threshold Value when Contour Cutting a Bitmap 309
 - Gradient Fills and Welds 200
 - Is there a way to create fancy bitmap effects using the Ginsu Tool? 81
 - Jogging the plotter head..... 366
 - Loading a new shop palette..... 181
 - Saving changes to the palette..... 180
 - The color plates are not numbered 174
 - The Shadow tool is filling the very small inner contours of my text 253
 - Using InstantReplay 209
 - Using InstantReplay and the Storage Bin..... 211
 - What are the color palettes? 169
 - What color layer does a gradient fill belong to? 196
 - What do the Decorative Border handles do?..... 217
 - What do the Stencil tool handles do? 221
 - Why are the strokes not visible on the workspace shapes? 186
- Illustrator Palettes (exporting) 157
- Image Menu
 - Color Adjustments 82
 - Filters 89
 - Image Size..... 79
- Import Bitmap Setup..... 26
- Importing and Exporting Files 155
- Importing DWG Files 156
- Importing EPS Files..... 156
- Importing Files..... 156
- Inactive colors..... 169
- Indexed Color..... 79
- Inline 235
- Insert New Object 163
- Installing New Fonts 122
- InstantReplay 208
- Invisible Color Layer 173
- Italics..... 123
- Job Control Buttons 319
- Job Palette
 - Introduction..... 185
- Job Queue..... 318
- Job Status 323
- Job Ticket..... 257
- Job/Cost Notes 255
- Jog 296
- Jogging..... 365
- Kerning (On-Screen)..... 131
- LAB Color 177
- Label Format Rules..... 65
- Label Formatting Rules..... 65

Laser Engraving (using the Print By	
Color dialog	336
Layer order	12
Layout Menu Shortcut	206
Lead In	272
Levels	359
Limited Warranty	3
Line Properties	117
Line style color	169
Line Style Tool	186
Line/Fill Selector Button	173
Linear fill	190
Linking Text and Images	161
Links	162
Load	
Shop palette settings	181
Locking the Guidelines	18
Machine Limits	300
Magic Wand	97
Make Contour Cut Object	312
Make Path	38
Male tool path	270
Manual Calibration	305
Manufacturer Palettes	180
Margins	343
Measuring Objects	206
Merge Colors	101
Metamorphosis	248
Method of Output	301
Minimum Shadow Hole	253
Mirror	206
Mixing	361
Modifier Keys	
AccuScan	98
Align Palette	18
And sweep-selecting objects	204
Clicking color plates	172
Monochrome	79
Monument Tool	37, 38
Move	206
Move Colors	181
Move Control dialog	305
Move Region	100
Multiple Document Windows	7
Nesting	347
Node Editing	39
Node Types	39
Notes	206, 301, 206, 301
Nubs	201
Nudge	202, 206, 202, 206
Object Color	17
Object Coordinates	16
Object Scale	16
Object Selection	201
Object Start Point	299
Object Width and Height	16
OLE support	161
On Arc array	227
Online tool path	269
On-Screen Kerning	131
Order of Workspace Objects	12
Origin	304
Origin Adjust	305, 304
Outline	235
Output by Color	294
Output dialog	290
Output Preview	280
Output Spooler	
File Menu	319
Options Menu	321
Status Menu	323
Output Spooler	303, 316
Output Spooler	303
Output Spooler	316
Output Spooler (stand-alone application)	
.....	319
Output Tool Paths	179
Output Tool Usage	315
Overlap	343
Page Control	355
Page Setup Tab	342
Paging Tool	355
Paintbrush Tool	100
Pan View	11
Parametric Barcode	69, 70
Parametric Dial Shape	59, 60
Parametric objects	39
Parametric Ruler Shape	54, 55
Path Editing	38
Path Specification	302
Pen setting	179
Percent Zoom	11

Perspective Shadow	250	Remote Spooling.....	325
PhotoLaser	358	Render Contour Bitmap	80
PhotoMachine	105	Render to Bitmap	79
Photo-Resist Braille	142	Reset Shop Palette.....	182
Picture Guide	121	Resolution	111
Plate Object.....	11	Restoring Printer Info	155
Plate Size.....	8	Reverse.....	12
Plotter ID.....	301	RGB	79
Plotter Jog	296, 365, 296, 365	RGB Color	177
Plotter Options tab	304	Rotate	206
Plotter Setup.....	299	Rotate Nub	203
Plotter tab.....	300	Rotation.....	17
plotting objects.....	267	Round bit.....	313
Plugins		Round Bottom bit.....	313
Example	94	Round Corner.....	253
Plug-ins	93	Rubber Stamp.....	346
Plug-ins	93	Ruler Shape (parametric)	54, 55
Polyarc / Polygon (default)	21	Save	
Polyarc editing	43	Shop palette settings	180
Polyarc objects.....	39	Save Fill	195
Polygon editing	39	Saving Embedded CDL Files.....	161
Polygon objects.....	39	scale.....	16
Polygon Tool.....	33	Scan and Trace Wizard	165
Port Location.....	302	Scanner Setup.....	165
Port tab.....	301	Select by color.....	172
Posterize Region	101	Select By Open	205
Power Weed.....	361	Select By Size	204
Print & Cut Manager.....	303	Selection Tool Settings	23
Print By Color	336	Selection Tools	
Print Command	329	AccuScan	97
Print Preview.....	330	Separate Colors	336
Printer Page Tab.....	329, 330	Sequence	230
Printer Preferences Tab.....	334	Serialization	348
Printer Setup.....	334	Set Path	302
Process Colors.....	178	Shadow.....	249
Publish to PDF	157	Shadow Outline.....	252
Punch Braille.....	141	Shape Anchor.....	15
Quarter Bitmap.....	100	Shape Attributes.....	15
Radial fill	190	Shape Creation	29
Rectangle Tool	32	Shape Selection	201
Reduce Nodes	38	Shape Types	31, 39, 31, 39
Reflectivity.....	179	Sheet Layer Palette	183
Registration Marks.....	363	Shop palette.....	169
Registration marks (setting).....	367	Shop Palette Wizard.....	181
Relief Shadow	252	Show	
Remote Spool.....	303	Layer Numbers.....	183

Show InstantReplay	208	Font Selection	119
Show Storage Bin	214	Frame Properties	118
Show Traveled Distance	315	Horizontal Compression	116
Showing workspace elements	5	Line Properties	117
Size.....	206	Vertical Compression.....	117
Sketching Tool Settings	25	Text Editing	115
Slant	123	Text Editing	115
SmartBar	15	Text Frames	115, 132, 115, 132
Smoothing	298	Text Orientation	124
Snap To Sign Plate.....	28	Text Template	265
Snapping Setup	48	Text to Graphics.....	38
Solarize	360	Thick lines.....	186
Sort (objects for cutting)	291	Thick Lines (cutting).....	189
Sort Colors	181	Tiles	
Sort Cut Order by Color.....	281	Creating tiles	372, 373
Spacing Method	227	Cut Horizontal and Vertical Edges	372
Speckle.....	111	Default Settings.....	370
Spell Check	126	Overlap.....	372
Spin Amount	227	Pause	371
Spool	303	Spacing.....	372
Spooler Controls	317	Stack Tiles.....	371
Spot Colors.....	178	Tiles.....	370
Spot Foil Name	179	Tiles.....	370
Spot Foils	178	Tiles (activating)	333
Square fill.....	190	Time Template	265
Star Tool.....	34	Timer.....	262
Start Sequence.....	230	TimeSign.....	262
Start Sequence by List	232	To Back.....	12
Start Sequence by Vector.....	231	To Front	12
Stencil Tool	220	Tolerance.....	111
Storage Bin.....	214	Tool Library	312
Stretch	232	Tool Options	305
Stroke	186	tool paths (creating)	268
Stroke color.....	186	Tool rotation.....	272
Style Painter	127	Tool Tracking.....	315
Subscript	125	Tool types.....	313
Superscript	125	Toolbars	13
Sweep Selecting Objects.....	204	Trace Setup	102
Tangent nodes	39	Transformation.....	237
Templates	263	Triangle fill	190
Text Editing		TrueType Hinting.....	336
Auto Kern.....	130	Truncate Endpoints	112
Auto Layout	132	Truncate the shop palette	181
Braille.....	136	Typeface.....	119
Fit Text to Arc.....	238	Typeface display	121
Fit Text To Path	243	Types of Shapes	31

Underline Text	125	Basic Weld	50
Undo Setup.....	22	Fuse / Color Weld	50
Undo Tools.....	207	XOR Weld	53, 54
Use Driver Copies.....	291	Weld Tools.....	49
V-bit	313	Weld Tools.....	49
Vectorization.....	102	white process versus white spot foil .	178
Vendor.....	179	width	16
Vendor Code	179	Workspace Colors	7
Vertical and Horizontal Spacing	230	Workspace Options	19
Vertical Compression 117, 124, 117, 124		Wrap Multiple Lines	241
Warning Dialogs (resetting).....	21	XOR Weld	53, 54
Weed Borders.....	361	Zoom Open	156
Weld Tools		Zoom Tools	11
AND Weld	52		

