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Introduction

Welcome to Extensis DrawTools.™ You've just purchased a collection of plug-ins that enable you to work faster, easier, and more efficiently in Adobe Illustrator™ and Macromedia FreeHand.™

DrawTools provides fast, easy solutions for your everyday illustration needs. Whether you're designing a poster, creating technical illustrations, or working with full-color art, DrawTools increases your creative control and improves your efficiency by reducing desktop navigation time. DrawTools not only adds to the power of Illustrator and FreeHand, but improves their usability, thereby increasing your productivity.

Each plug-in in this collection contains a number of filters. The Filters share a consistent user interface with Illustrator and FreeHand and are designed and tested to work smoothly with them. We believe you'll find DrawTools a natural extension of Illustrator and FreeHand.

Installation

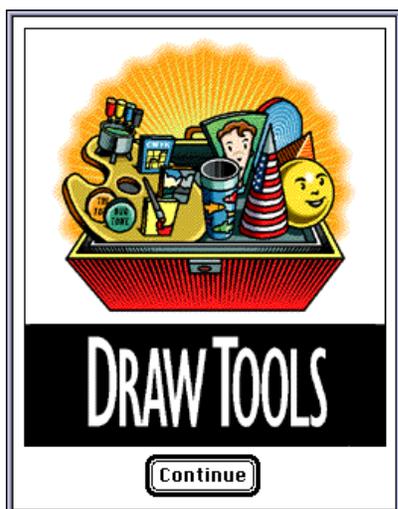
DrawTools works with any Macintosh® with a 68020, 68030, 68040, or PowerPC processor. Before installing DrawTools, you must have installed Mac™ OS version 7.1 or later. DrawTools is designed to work with Adobe Illustrator version 5.5, and with Macromedia FreeHand version 5.0. A minimum of 3MB of application memory (5MB recommended) is required to run DrawTools with Illustrator or FreeHand. DrawTools for Illustrator will occupy approximately 575K on your hard drive; DrawTools for FreeHand will occupy approximately 530K.

Before starting the installation, turn off any anti-virus software and restart your computer without extensions (by holding down the Shift key while the computer restarts).

To Install DrawTools

- 1. Insert the DrawTools disk into the disk drive.**
- 2. Double-click the DrawTools installation icon.**
The DrawTools introduction screen appears.
- 3. Click the Continue button.**

The Welcome to DrawTools dialog box appears. Release notes are displayed in this window. It is important that you read these release notes, since they contain information not included in the



manual. Before continuing installation, save or print these release notes for later reference.

4. Click the Continue button.

The Install DrawTools dialog box appears. You can choose to install DrawTools for Illustrator or FreeHand. If you have both Illustrator and FreeHand, you will need to install DrawTools for one, click the Continue button, and then install DrawTools for the other.

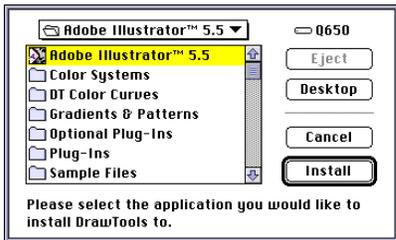
5. Click the Install button.

If you have more than one hard drive attached to your Macintosh, a dialog box will appear asking you to select the hard drive onto which DrawTools will be installed.

You will be asked to locate the Illustrator or FreeHand application with which DrawTools will be used. Select the appropriate application.

6. Click the Install button.

Once installation is complete, the successful installation dialog box appears. You can choose to quit the installer or continue with further installations if you have both Illustrator and FreeHand.

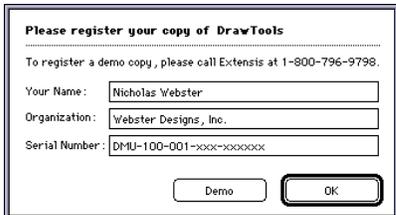
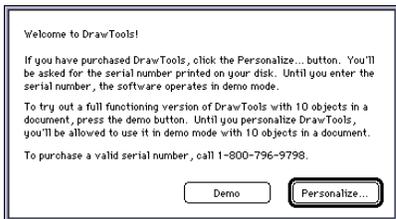


Personalization and Registration

It is important to register your copy of DrawTools so we can provide you with the best possible service. Registered users of DrawTools are eligible for technical support, information regarding new versions and products, and discounts and special offers on new products.

DrawTools includes electronic registration, so registering has never been easier! The first time you select a DrawTools filter, the DrawTools Personalization dialog box appears. To personalize DrawTools, type your name, company, and DrawTools registration number. Your product registration number is located on your DrawTools disk. If you choose not to personalize your copy, DrawTools will run in a demonstration mode. In demonstration mode, DrawTools filters can only be used in documents containing 10 or fewer objects.

Once you have personalized DrawTools, a dialog box appears, asking if you would like to register. To register DrawTools, click the Register Now button and an electronic registration screen appears. After you have completed the registration screen, Market



Electronic Registration

Please take a moment and register your copy of DrawTools. As a registered user you will receive:

- free technical support from our friendly experts,
- automatic notification of upgrades, and
- special discounts on other Extensis Corporation products.

For your convenience, you can register ELECTRONICALLY and FREE of charge.

Register Now

Register Later

Never Register

Electronic Registration Card

Please choose a method to register DrawTools™:

Click Send to transmit the registration information to us over the telephone lines using our toll-free number. Send

Click Print to print your registration and FAX or MAIL it to us using our postage pre-paid envelope. Print

Click Register Later and the information you have entered will be saved until then. Register Later

Tip

We can also be reached via fax at **(503) 274-0530**, or through the online services listed below.

CompuServe: 70242,33
America Online: EXTENSIS
Internet: support@extensis.com

Research and System Configuration screens will follow. The Market Research screen asks basic questions that enable us to better understand your needs. The System Configuration screen provides a “snapshot” of your system configuration, which enables Extensis to support you more effectively. Sending the Market Research and System Configuration information is optional. If you don’t want to send this information to Extensis, you may check the box at the bottom of these screens.

If you have a modem connected to your computer, you can use it to register toll-free. If you do not have a modem, you can print the registration sheet and register either by faxing it to (503) 274-0530 or by dropping it in the mail using the postage-paid envelope provided in the DrawTools box. If you don’t have access to a modem or printer, you can still register by filling out a registration sheet located at the end of this manual.

Technical Support

For questions regarding DrawTools, please refer to this manual, which describes the features and basic operations. If you have a question or a problem that is not addressed in the Troubleshooting section of the manual, technical support is available at **(503) 274-7030**, Monday through Friday, between the hours of 8:00 a.m. and 5:00 p.m. Pacific time.

When calling technical support, please be at your Macintosh and have the following information available: your DrawTools registration number, your Macintosh configuration and your question or a description of the difficulty you’re experiencing—what specifically occurs and when. Take note of any error messages, and any other information you think may be relevant.

Suggestions

We’d love to hear your comments about DrawTools, ideas for new plug-ins, or improvements on existing plug-ins. A suggestion sheet is included at the end of this manual. Please fax or mail your comments and suggestions to Extensis.

DrawTools Overview

This manual assumes a basic knowledge of the Macintosh operating system, Adobe Illustrator, and Macromedia FreeHand. If you don't feel comfortable with your knowledge level, please refer to the documentation that came with your Macintosh and the illustration software.

In Adobe Illustrator, you access DrawTools in the Filter menu. The DrawTools Filters are grouped in three menus: DrawTools Color, DrawTools Move, and DrawTools Shape.

In Macromedia FreeHand, you access DrawTools in the Xtras menu. The DrawTools Filters are grouped in the DrawTools Color and Distort menus.

DrawTools Color

DrawTools Color is a collection of five filters that extends your control of colors in your illustrations. With DrawTools Color, you can edit color ramps, mix and replace colors, convert objects to grayscale, and create duotones, tritones, and multitone.

DrawTools Move

DrawTools Move is a collection of five filters that extends your ability to control object positions within and between illustration layers. DrawTools Move allows you to precisely position and resize objects and extends your control over complex object structures within a single layer or between layers.

Note: DrawTools Move is not applicable to FreeHand, it will not be installed into FreeHand.

DrawTools Shape

DrawTools Shape is a collection of seven filters that allows you to apply three-dimensional effects to objects by projecting them onto geometric shapes. With DrawTools Shape, you can project objects onto a globe (sphere), cylinder, cone, or diamond. You can also project objects onto a wave form or perform "free projections," giving you complete control over the three-dimensional effect.

These sets of DrawTools filters are described in the next three chapters.

DrawTools Color

FreeHand User Note

DrawTools filters can be used with placed EPS graphics if the appropriate FreeHand preference is enabled. See the FreeHand User's Manual for additional information.

FreeHand User Note

You cannot enable gradient conversion in DrawTools Color for Freehand. DrawTools Color can affect ungrouped Blends in FreeHand.

Things to Remember

- **Types of Artwork:** DrawTools filters can only be used on artwork. You cannot use filters on placed EPS graphics or imported bit-mapped graphics.
- **Spot Colors:** Plug-ins and filters cannot create spot colors. DrawTools Color filters can assign and replace spot colors or convert them to process colors, but cannot create new spot colors. Spot colors edited by DrawTools Color filters are converted to process colors.

Color lists in DrawTools Color filters display all spot colors currently used in the document *and* spot colors that were once present in the document but are not currently used.

- **Color Models:** Color models define the way color is represented on the screen and the way colors are produced when printed. Illustrator works with CMYK (process colors), spot colors, and gray gradients. DrawTools supports RGB, CMY, and IHS color models in addition to CMYK and K.

When working in color models not supported by Illustrator or FreeHand, DrawTools converts the resulting colors to CMYK before applying them to the illustration. DrawTools provides settings for Under Color Removal (UCR) to allow more precise conversion. See the Additional Information section at the end of this manual for a brief discussion of color models and Under Color Removal.

- **Fill Patterns:** DrawTools Color filters are not able to access information on object fill patterns. Fill patterns will be omitted from all DrawTools Color operations.
- **Gradients:** Plug-ins and filters cannot normally alter gradients. DrawTools Color is able to work around this restriction by bypassing the normal Illustrator plug-in interface. While this provides powerful capabilities, it also has caveats and restrictions of which you should be aware. Be sure to read the Gradient Settings section in this chapter before editing gradients with DrawTools Color filters.

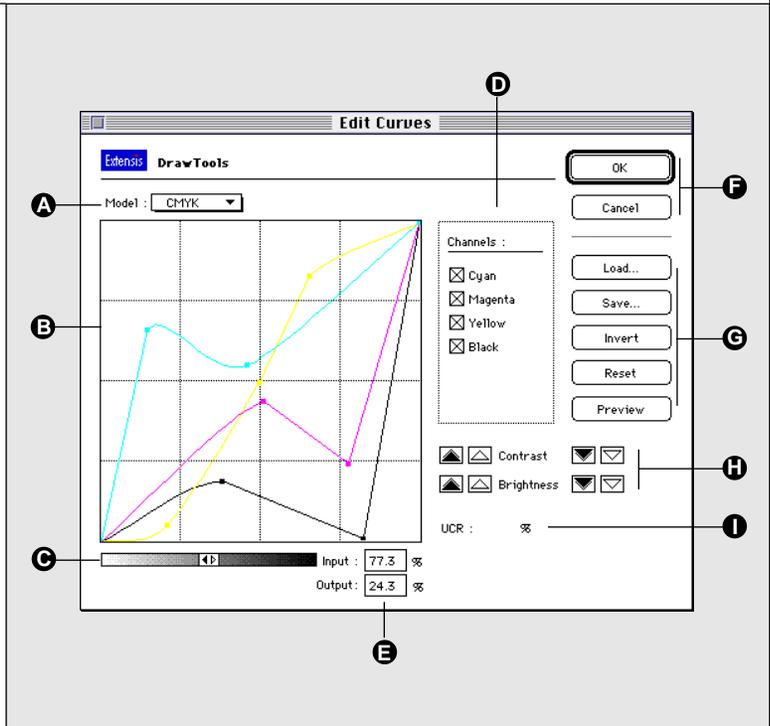
Important: *This manual assumes a basic knowledge of color models and the color printing process. The Illustrator and FreeHand packages contain additional information on color models and printing.*

Edit Curves

The Edit Curves filter extends your control of color in your illustrations. With Edit Curves, you can quickly and easily fine-tune colors, adjust density, alter saturation and highlight tones, and control brightness and contrast.

Edit Curves

- A The Model pop-up menu lists the supported color models. Selecting a color model changes the channel controls and resets all curves to a linear path.
- B The color curve or "ramp" is represented as lines on a graph; one line for each color channel. The graph is a representation of the relationship between the current color (input) and the desired color (output). The input is plotted on the horizontal (X) axis, the output on the vertical (Y) axis.
- C Clicking on the Density Bar switches the graph between relative percentages (0-100%) and absolute densities (0-255).
- D The Channels checkboxes control which graph lines are displayed. When a graph line is not displayed, it is not affected by changes to the graph. These controls let you edit specific graph lines while leaving others unaffected.
- E The Input and Output fields show the relative percentages or absolute densities for the current cursor position when it is over the graph. Typing values in the fields and pressing the Return key adds a graph point by positioning the cursor over the desired location and pressing the Return or Enter key.
- F Click the OK button to close the dialog box and apply the color graph changes to your illustration. Click the Cancel button or the close box to close the dialog box without making any changes to the color graph.
- G Click the Load button to load a saved graph. Before loading a graph, you must set the Model pop-up menu to the appropriate color model. Click Save to store color graph files for reuse. Click the Invert button to flip the graph along its horizontal axis. (Note: Inverting CMYK graphs without disabling the K channel can result in overly dark images.) Click the Reset button to set all currently active channels back to a linear graph line. Click the Preview button to temporarily apply the current color graph to the illustration.



- H Use the arrows to reshape the curve to affect brightness and/or contrast. The single arrows make adjustments of + or - 1/255. The double arrows make adjustments of + or - 5/255.
- I The UCR (Under Color Removal) field is enabled when the selected color model is CMY, RGB, or IHS. Under Color Removal lets you remove a portion of the non-black color channels and add it to the black channel. See the Additional Information section at the end of this manual for more UCR information.

Editing Color Curves

To Edit a Color Curve

1. Select one or more objects.

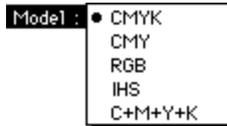
If you do not make a selection, the filter is applied to the entire page.

2. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Edit Curves.

The Edit Curves dialog box appears.

3. Select the desired color model in the Model pop-up menu.

The Model pop-up menu lists the supported color models. DrawTools also provides a C+M+Y+K option that allows the editing of all color channels with a single graph line.



4. Use the Channels checkboxes to select the channels to be edited.

The Channels checkboxes control which graph lines are displayed. When a graph line is not displayed, it is not affected by changes to the graph.



5. Edit the graph lines for each channel as desired.

You can edit the graph line for each color channel by clicking and dragging one of the graph points. Add graph points by holding down the Shift key and clicking on the graph line. Each graph line may have up to 32 graph points. Delete graph points by holding down the Option key and clicking on the graph point. The original mid- and end-points cannot be deleted. Holding down the Command key and clicking on a graph point switches the curve between the selected point and the next point to the right to a straight line and vice versa.

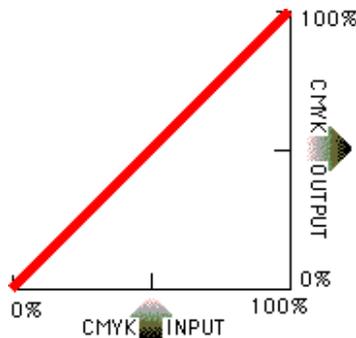
6. Click the OK button to apply the changes.

Tip

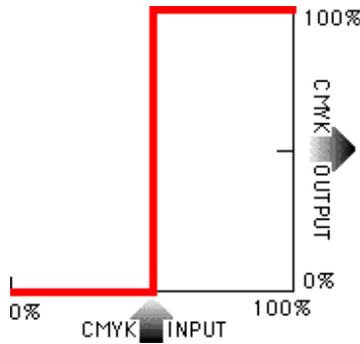
Sample CMYK and IHS Color Graph files are provided in the DrawTools Samples folder on the DrawTools disk.

Examples Using the CMYK Color Model

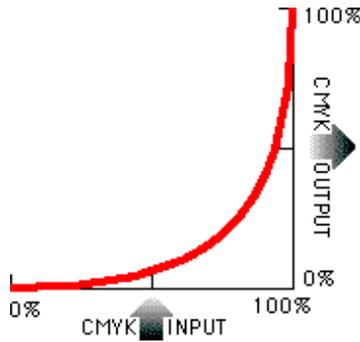
This example shows the default graph line where each input value (X-axis) remains unchanged at the output (Y-axis). This example is also shown in color on the inside front cover; see Series 1.



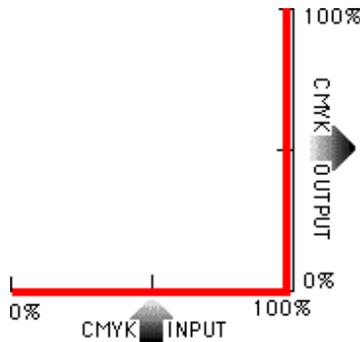
This example shows maximum contrast. All input color values from 0 to 50% result in 0% output color and all input color values from 51 to 100% result in 100% output color. This example is also shown in color on the inside front cover; see Series 2.



This example shows lightening of the mid-range values. Input values near the edges of the graph (0 and 100%) are changed very little. Values are increasingly lowered as they approach the middle of the curve. This example is also shown in color on the inside front cover; see Series 3.



This graph eliminates all but the highest densities. Output color is set to 0% until the input value reaches 99%. This type of graph is useful for distinguishing outlines in grayscale artwork. This example is also shown in color on the inside front cover; see Series 4.



Loading and Saving Graph Files

To Save a Graph File

1. **Edit the graph lines for each channel as desired.**
2. **Click the Save button.**
The Save dialog box appears.
3. **Enter a name for the graph file and select the storage location.**
4. **Click the Save button.**

Tip

For users with 14- or 15-inch monitors only capable of 640 by 480 resolution, viewing the illustration can be difficult when the Edit Curves dialog box is open. Using the Window Shade control panel in System 7.5 or later, you can temporarily collapse the dialog box so that only the title bar is shown. For more information, refer to Apple's System 7.5 documentation.

To Load a Graph File

1. **Select the appropriate color model in the Model pop-up menu.**
2. **Click the Load button.**
The Select File dialog box appears.
3. **Select the graph file to load.**
4. **Click the Open button.**

Color Mixer/Replace Colors

The Color Mixer filter extends your control over illustration colors by providing quick and easy mixing and color replacement tools. Color Mixer lets you modify or replace existing colors and also lets you mix new process colors.

Notes: 1) The Color Mixer filter will not affect color EPS objects or color in imported graphics objects. 2) In Illustrator, the editing of Gradients is enabled or disabled using the Gradient Settings filter; see the Gradient Settings section of this chapter for more information.

Mixing Colors

To Mix a New Color

1. **Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Color Mixer/Replace Colors.**
The Color Mixer/Replace Colors dialog box appears.
2. **Do one of the following:**
 - Click the Custom button to start with a spot color from the current document. (See the Things to Remember section for more information on Spot Colors.)
 - Click the New button to create a new color.
3. **Use the Color Mixing controls to create the desired color.**
The color sample below the mixing controls displays the edited color.
4. **Enter a name for the color in the Name field.**
5. **Click the Save button to save the Color Set file.**
6. **Click the OK button.**

Color Mixer/Replace Colors

A The list of colors used in the selected objects. If no objects are selected when the filter is invoked, the list will be empty. Colors in the list are named according to their usage in the selected objects: object fill, object outline, text fill, text outline, custom color, or gradient. If a color is used more than once, it is listed as "Multiple Use." The two color samples shown to the left of the color names show the original (left) and modified (right) colors.

B Click the Select All button to select all colors in the Selected list. Click the Add button to copy the selected colors to the Color List on the right.

C Click the Reset button to reverse any modifications made to the colors in the Selected list. Click the Change button to change all colors selected in the Selected list to the color selected in the Color List.

D Color Mixing controls. Use the sliders and fields to edit the individual color channels. The specific controls will vary depending on the color model selected.

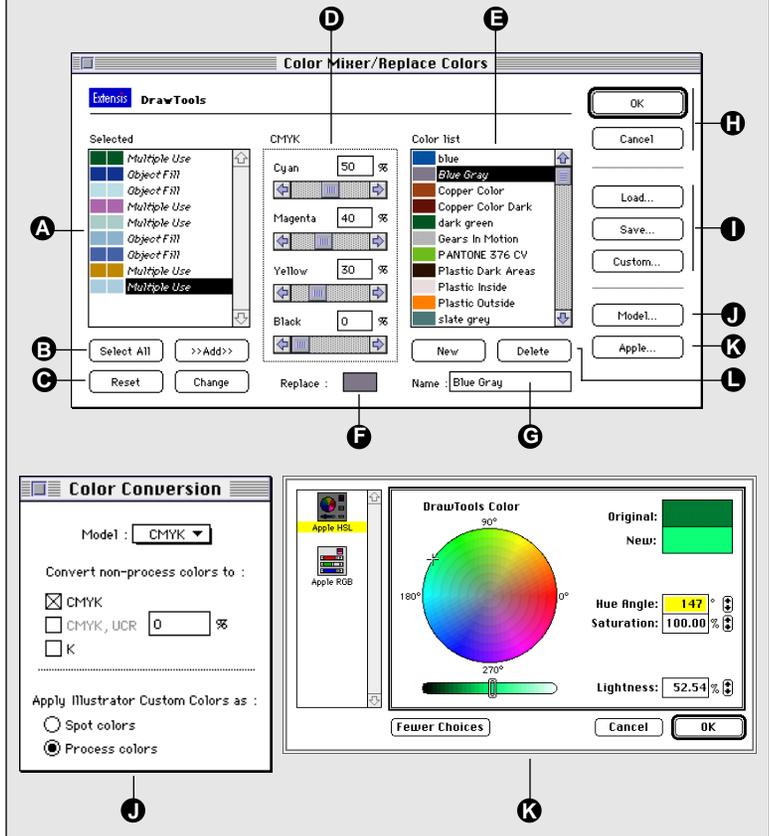
E The Color List. This list contains all colors added from the Selected list, loaded from a Color Set, or created in the Color Mixer. Spot colors from the document can be added by clicking the Custom button. A sample of each color is displayed in the list, along with the color name. Process colors appear in italicized text and custom colors appear in plain text. Names of Spot colors loaded from a FreeHand Color Set end in "FH Spot."

F The color currently being edited by the Color Mixing controls. If the color model is set to K, the gray value is displayed.

G The name of the color selected in the Color List. Use this field to name a new color or rename an existing color.

H Click the Cancel button or the close box to close the dialog box without making any changes to the selected objects. Click the OK button to close the dialog box and apply all changes to the selected objects.

I Use the Load button to load a previously saved Color Set file. Use the Save button to save a Color Set file. Click the Custom button to add all custom colors from the current document to the Color List.



J Click the Model button to display the Color Conversion dialog box. Use this dialog box to select the color model to be used to create or mix colors. Use the Convert Non-Process Colors controls to specify which color model will be used when converting RGB, IHS, or CMY colors. Use the Apply Illustrator Custom Colors controls to tell DrawTools how to apply custom colors. This setting applies to changed colors and Color Set files. See the Additional Information section at the end of this manual for more color information.

K Click the Apple button to display the Apple Color Picker dialog box, which may be used to select a specific color.

L Click the New button to create a new entry in the Color List matching the current settings of the Color Mixing controls. New colors are added to the bottom of the list. Click the Delete button to remove the selected color from the Color List.

Replacing Colors

To Replace Colors

1. Select one or more objects in your illustration that contain the colors you want to replace.
2. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Color Mixer/Replace Colors.

The Color Mixer/Replace Colors dialog box appears.

3. Do one of the following:

- Create a new color.
- Load a Color Set file.
- Move a color from the Selected list by selecting it and clicking the Add button. Modify the color using the Color Mixing controls.

4. Select the desired color in the Color list.

5. Select the color to be replaced in the Selected list. (Use Shift- or Command-Click to select multiple colors.)

6. Click the Change button.

7. Click the OK button.

Tip

DrawTools Color for Illustrator can save and load FreeHand v4- and v5-compatible color set files.

Tip

Sample Color Set files are provided in the DrawTools Samples folder. (This folder was placed on the top level of your hard drive during installation.)

Saving and Loading Color Set Files

To Save a Color Set File

1. Click the Save button.

The Save File dialog box appears.

2. Enter the name of the Color Set file.

3. Select the location to store the Color Set file.

4. Click the Save button.

To Load a Color Set File

1. Click the Load button.

The Select File dialog box appears.

2. Select the desired Color Set file.

3. Click the Open button.

The Color List dialog box appears.

4. Select the colors to be added to the Color list. (Use Shift- or Command-select for multiple colors.)

5. Click the close box.

If the Color list is empty, the selected colors will be added. If colors are currently in the list, a confirmation dialog box will appear. In the Confirmation dialog box, specify whether the current contents of the color list should be replaced or appended.



Grayscale Mode

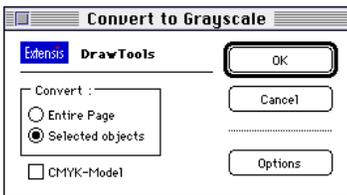
Grayscale Mode gives you the ability to quickly and easily convert full-color illustrations to grayscale. Without the Grayscale Mode filter, this is often a difficult, time-consuming task.

Converting Objects to Grayscale

To Convert One or More Objects to Grayscale

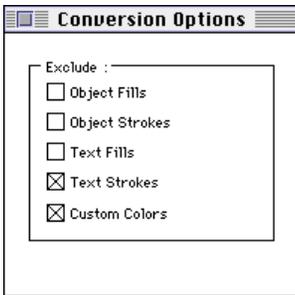
1. **Select the objects to be converted or, to convert the entire document, make no selection.**
2. **Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Grayscale Mode.**
3. **Use the Convert buttons in the Convert to Grayscale dialog box to specify the conversion of just the selected objects or of the entire document.**
4. **Click the Options button.**

The Convert to Grayscale dialog box appears.



3. **Use the Convert buttons in the Convert to Grayscale dialog box to specify the conversion of just the selected objects or of the entire document.**
4. **Click the Options button.**
5. **Click the close box in the Conversion Options dialog box.**
6. **Click the OK button in the Convert to Grayscale dialog box.**

The Conversion Options dialog box appears. This dialog box provides options for excluding certain object types from the conversion.



As part of the conversion process, the colors in the illustration are normally converted to a grayscale value in the K color model. To specify that the grayscale values be placed in the K channel of a CMYK color, click the CMYK-Model checkbox at the bottom of the dialog box. (The other channels will be set to 0.)

Notes: 1) The Grayscale Mode filter will not affect color EPS objects or color in imported graphics objects. 2) In Illustrator, the conversion of Gradients is enabled or disabled using the Gradient Settings filter; see the Gradient Settings section of this chapter for more information.

Tip

You can convert black and white clip art to grayscale quickly and easily by using the Random Color Replace filter and then the Grayscale Mode filter.

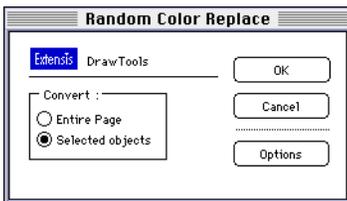
Random Color Replace

Random Color Replace provides the ability to randomly add or replace colors in an illustration. Random Color Replace randomly replaces existing object colors and adds colors to black and white objects.

Adding or Replacing Object Colors

To Add or Replace Colors in Objects

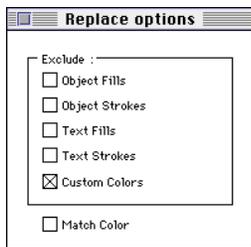
1. Select the objects to be converted, or, to convert the entire document, make no selection.
2. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Random Color Replace.



The Random Color Replace dialog box appears.

3. Use the Convert buttons in the Random Color Replace dialog box to specify the conversion of just the selected objects or of the entire document.
4. Click the Options button.

The Replace Options dialog box appears. This dialog box provides options for excluding certain object types from the conversion. Click the Match Color checkbox if you want previously identical colors to be replaced with the same new color.



5. Click the close box in the Replace Options dialog box.
6. Click the OK button in the Random Color Replace dialog box.

All colors added to objects using this filter are CMYK colors.

Notes: 1) The Random Color Replace filter will not affect color EPS objects or color in imported graphics objects. 2) In Illustrator, the conversion of Gradients is enabled or disabled using the Gradient Settings filter; see the Gradient Settings section of this chapter for more information.

Multitone

The Multitone filter provides Illustrator with capabilities that previously required a companion bitmap application such as Photoshop. With Multitone, you can easily create custom multitone and apply them to your illustrations. Applying multitone effects to a line-art illustration provides the advantages of Photoshop multitone without the resolution limitations.

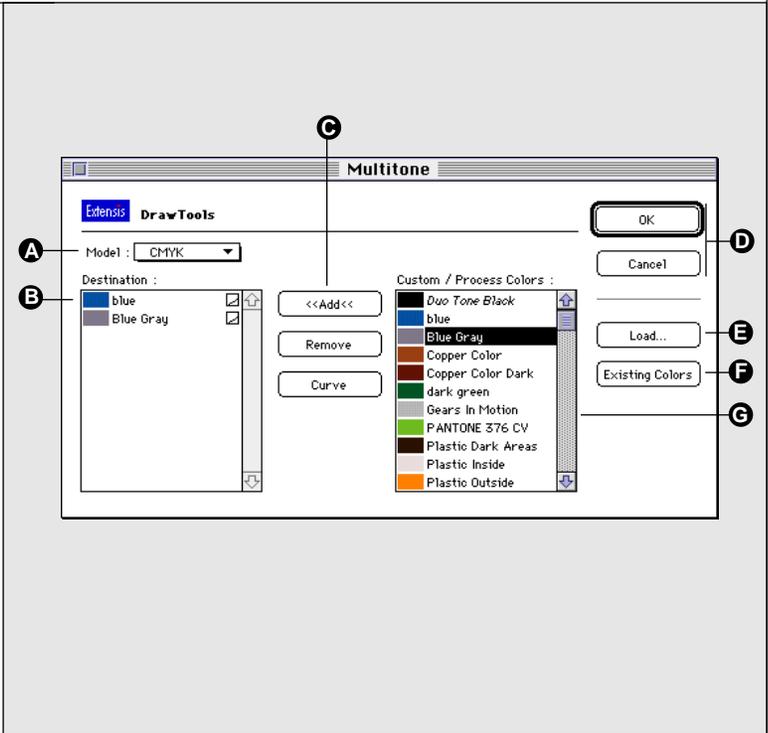
The Multitone filter affects the entire illustration. The Multitone filter can work with two color models: CMYK or Spot Color. CMYK multitone are approximated using the four process colors. Spot Color multitone are created by building multiple image layers, each of which is assigned the appropriate Spot Color. This allows true multitone to be printed using multiple Spot Color separations (two for duotones, three for tritone, etc.).

FreeHand User Note

FreeHand multitone are limited to CMYK colors.

Multitone

- A** Use the Model pop-up menu to select the desired color model (Illustrator only).
- B** Destination List. The colors that will be used to create the multitone. A color sample is displayed along with the color name.
- C** Click the Add button to add the selected color in the Custom/Process Colors list to the Destination list. To remove a color from the Destination list, select a color and click the Remove button. Use the Curve button to display the Multitone Curves dialog box, explained in the Multitone Curves section.
- D** Click the Cancel button to close the dialog box without creating the multitone. Click the OK button to close the dialog box and apply the multitone.
- E** Use the Load button to load a previously saved Color Set file.
- F** Use the Existing Colors button to add colors from the Color list in the Color Mixer/Replace Colors filter to the Custom/Process Colors list. If the Color list in the Color Mixer/Replace Colors filter is empty, this button is not displayed.
- G** Custom/Process Colors List. The process and spot colors from the current document. The name of each color and a sample are displayed. Process colors appear in italicized text and custom colors appear in plain text.



Creating Multitones

To Create a Multitone

- 1. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Multitone.**

The Multitone dialog box appears.



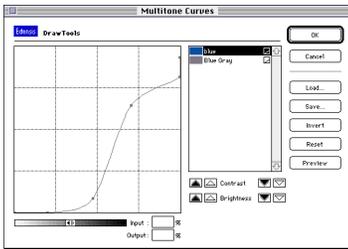
Tip

Sample Color Set files are provided in the DrawTools Samples folder on the DrawTools disk.

- 2. Select the desired color model in the Model pop-up menu (Illustrator only).**
- 3. Select the colors to be used in the multitone from the Custom/Process Colors list.**
- 4. Click the Add button to move the selected color to the Destination list.**

If you try to add a spot color to a process color multitone, a confirmation dialog box will appear, asking if you are sure you want the spot color converted to a process color.

- 5. Click the OK button.**



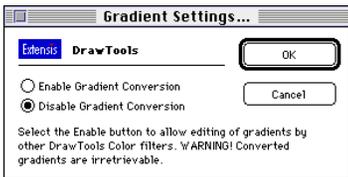
Multitone Curves

The Multitone Curves dialog box is similar to the Edit Curves dialog box, covered earlier in this section. The differences are:

- The horizontal (X) axis represents the input and the vertical (Y) axis determines the appropriate color replacement.
- The Preview button lets you temporarily preview the multitone on the current document.
- The Color list lets you specify which color curve is editable in the graph area.

Gradient Settings

The Gradient Settings filter is used solely to control whether or not the other DrawTools Color filters can be used to edit Illustrator gradients.



Use the two options in the Gradient Settings dialog box to enable or disable the editing of gradients by all other DrawTools Color filters.

The normal communication channels between Illustrator and plug-ins do not allow plug-ins to modify or edit a gradient. DrawTools Color offers gradient editing by directly modifying the document structure, bypassing the normal Illustrator to Plug-Ins communication channels.

While providing increased functionality, this method also has some caveats that you should take into consideration.

- Illustrator is not aware of any changes to the gradient.
- Undo is not possible. Once a gradient is altered, the original cannot be recovered except through the Revert to Saved item in the File menu. **Be sure to save your illustration just before modifying a gradient.**
- All objects using the editing gradient are updated, even if they are in a locked or protected layer.
- Gradient changes effect the current document *and* other open documents. Restarting Illustrator with a new document restores the default gradients.
- The original gradient is overwritten and the start, middle, and end colors modified; the old colors are gone.

FreeHand User Note

You cannot enable gradient conversion in DrawTools Color for Freehand.

- The name of the gradient remains the same regardless of the color changes you've made to it. After editing, you should rename the gradient via the Gradient item in the Object menu.

Note: If Gradients are excluded from conversion, both the gradient fill and the gradient outline are omitted.

DrawTools Color Examples

Grayscale Mode & Random Color Replace Example

This example uses the Random Color Replace and Grayscale Mode filters to convert black and white clipart to grayscale. Without DrawTools color, this is often a difficult and time-consuming task.

Converting Black & White Clip Art to Grayscale

- 1. Select the objects to be converted.**
- 2. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Random Color Replace.**

The Random Color Replace dialog box appears.

- 3. Click the OK button.**

The objects are filled with randomly selected CMYK colors.



Original



*Random Colors
(See Image 1a, inside back cover.)*

- 4. With the objects still selected, select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Grayscale Mode.**

The Grayscale Mode dialog box appears.

5. Click the OK button.

The colors in the objects are replaced by gray values. (See Image 1b, inside back cover.)



As part of the conversion process, the colors in the illustration are normally converted to a grayscale value in the K color model. To specify that the grayscale values be placed in the K channel of a CMYK color, click the CMYK-Model checkbox at the bottom of the dialog box. (The other channels will be set to 0.)

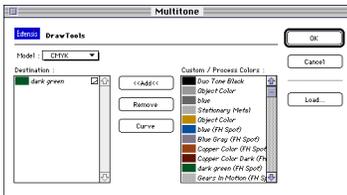
Multitone Example

This example uses the Multitone filter to produce single and duotone images.

Using Multitones in Illustrations

1. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Multitone.

The Multitone dialog box appears.



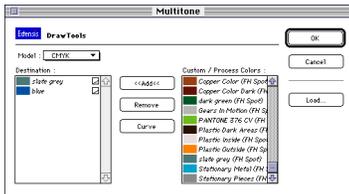
2. Select a color in the Custom/Process Color list and click the Add button.

The selected color is added to the Destination list. In our example, we selected a dark green color.

3. Click the OK button.

The single color tone is applied to the illustration. Image 2 on the inside back cover shows the green single tone example using CMYK colors.

4. Select Undo in the Edit menu to return the illustration to its original colors.



5. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Multitone.

The Multitone dialog box appears.

6. Select two colors in the Custom/Process Color list and click the Add button.

The selected colors are added to the Destination list. In our example, we selected slate gray and blue.

7. Click the OK button.

The duotone is applied to the illustration. Image 3 on the inside back cover shows the duotone example using CMYK colors.

Multitones can also be applied using spot colors. Select Spot Color in the Model pop-up menu to use spot colors instead of CMYK colors.

Color Mixer/Replace Color Example

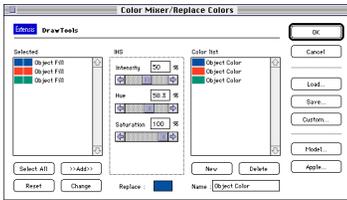
This example uses the Color Mixer/Replace Color filter, gradients, and the DrawTools Shape Cylinder and Globe filters to create a projected image with shadow and highlight effects. Using DrawTools in this way eliminates the need for a companion program, such as Dimensions, to achieve the effects. DrawTools also helps eliminate potential printing problems by providing IHS color model controls and not adding extraneous anchor points to the objects.

This example is described in four parts: Defining the Colors, Making the Gradients, Projecting the Artwork, and Applying the Gradients to the Projection.

Part 1: Defining the Colors

- 1. In a new Illustrator document, create three rectangle objects.**
- 2. Fill each object with a unique custom color.**
In our example, we used blue, orange, and green.
- 3. Select the three objects and duplicate them.**
You should now have three pairs of objects filled with the custom colors. (See Image 4 on the inside back cover.)
- 4. Select three objects, one of each color.**
- 5. Select DrawTools Color in the Filter menu. In the DrawTools Color menu, select Color Mixer/Replace Color.**

The Color Mixer/Replace Color dialog box appears.

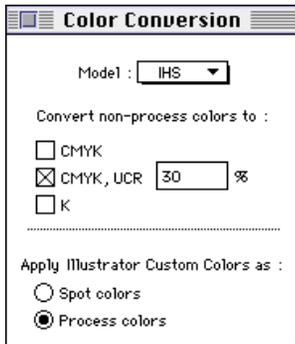


6. Select the three colors in the Selected list and click the Add button.

The colors are copied to the Color List.

7. Click the Model button.

The Color Conversion dialog box appears.



8. Select IHS in the Model pop-up menu.

9. Select the CMYK, UCR checkbox and enter 30 in the UCR percentage field.

This tells DrawTools to convert IHS colors to CMYK using 30% Under Color Removal when applying the colors to the illustration.

10. Click the close box in the Color Conversion dialog box.

11. Select one of the colors in the Color List.

12. Using the IHS controls, decrease the Intensity by 25 percentage points (for example, from 50% to 25%).

Reducing the intensity creates a “shadow” version of the color.

13. Repeat steps 11 and 12 for the other two colors.

14. Select an original color in the Selected list and the respective shadow version in the Color List. Click the Change button.

The shadow color replaces the original color.

15. Repeat step 14 for the other two colors.

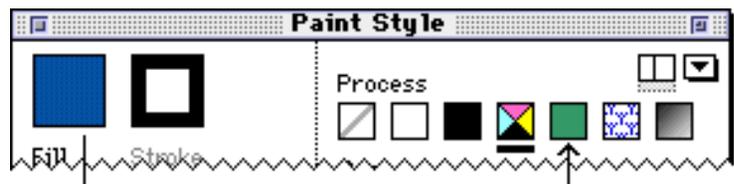
16. Click the OK button.

The three objects are now filled with the shadow colors. The shadow versions of the colors are less intense and have an added 30% black component. (See Image 5 on the inside back cover.)

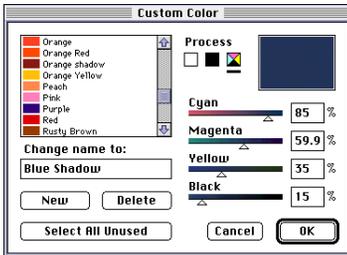
17. Select one of the objects filled with a shadow color and select Paint Style from the Object menu.

The Paint Style palette appears.

18. Click and drag the Fill square onto the green, Custom Color square to the right.



The Custom Color dialog box appears.



19. Enter a name for the color in the Change Name To field and click the OK button.

20. Repeat steps 17, 18, and 19 for the other two shadow colors.

You now have six custom colors and are ready for the next part, creating the gradients.

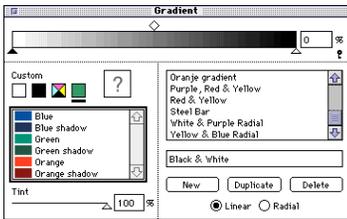
Part 2: Making the Gradients

1. Select Gradient in the Object menu.

The Gradient palette appears.

2. Click the New button to create a new gradient.

3. Click the green square near the top of the palette.



The Custom Colors list appears in the palette.

4. Click below the gradient bar to add two additional triangles (color points) to the bar.



5. Click on the first triangle on the left and use the Tint slider to define an 80% tint.

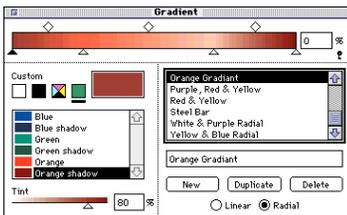
6. Repeat step 5 for the second triangle.

7. Click on the third triangle and use the Tint slider to define a 30% tint.

8. Click on the fourth triangle and use the Tint slider to define a 100% tint.

9. Set the colors for each triangle.

The outside triangles should use the shadow color. The middle two triangles should use the original color.



10. Click the Radial radio button.

11. Enter a name for the gradient and press the Return key.

12. Click the Duplicate button twice to create two copies of the gradient.

These copies will be used to create gradients for the two other colors.

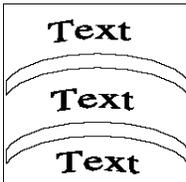
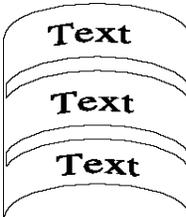
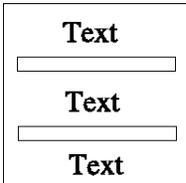
13. Create gradients for the two remaining colors by replacing the colors in the duplicate gradients created in step 12.

14. Rename the duplicate gradients.

Now that you've defined the gradients, you're ready to project the artwork.

Part 3: Projecting the Artwork

Note: For additional information on projections, see the DrawTools Shape chapter.



1. Place your artwork on top of a square.

In this example, we used text (converted to outlines) and two bars.

2. Select the artwork and the square. Select DrawTools Shape in the Filter menu. In the DrawTools Shape menu, select Cylinder.

The Cylinder dialog box appears.

3. Click the Use Defaults button. Click the OK button.

The artwork is projected onto the cylinder.

4. Using the Convert Direction Point tool, click on the four anchor points of the background shape.



The shape is converted back to a square.

5. Select the artwork and the square. Select DrawTools Shape in the Filter menu. In the DrawTools Shape menu, select Globe.

The Globe dialog box appears.

6. Click the Use Defaults button. Enter 20 in the Angle field. Click the OK button.

The artwork is projected onto the globe and rotated 20 degrees counter-clockwise. Now that the artwork has been projected, you're ready to apply the gradients to the objects.



Part 4: Applying the Gradients to the Projection

1. **Using the Paint Style palette, assign one gradient to the circle. Assign another gradient to the text. Assign the third gradient to the bars.**

Each object is now filled with a radial gradient.

2. **Select all objects in the artwork.**
3. **Use the Gradient Vector tool to set the start and end positions for the gradients.**

The highlight and shadow effects for each gradient are now aligned. (See Image 6 on the inside back cover.)

DrawTools Move

FreeHand User Note

DrawTools Move filters are not applicable to FreeHand.

Move Object(s)

Move Objects extends your control over object positioning by providing single-step front and back movement. Move Objects works with the current selection—either a single object, including grouped objects, or multiple objects selected by holding down the Shift key.

Note: DrawTools Filters are always applied to a complete object, even if you've only selected a single anchor point on the object.

Moving Object(s)

To Move an Object

1. Select an object (or Shift-select multiple objects).
2. Select DrawTools Move in the Filter menu. In the DrawTools Move menu, select Move Object(s).

The Move Object(s) dialog box appears.



3. Click the Forward or Backward button as many times as needed to position the objects.
4. Click the close box.



Example: Moving an object to the front.

Tip

Move Objects is a quick and easy way to move objects between layers while retaining the object coordinates.

Holding down the Command key while clicking the Forward or Backward button causes Move Objects to ignore Layer boundaries when moving objects. Locked layers are always skipped when moving objects.

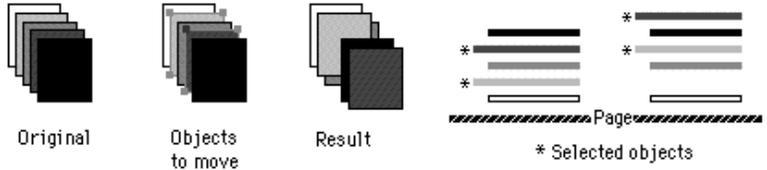
The Move Objects filter handles multiple selected objects differently than Illustrator. The following examples show the differences.



Moving objects using Illustrator

When moving objects, Illustrator handles multiple selected objects as if they were grouped. The selected objects are positioned on the level of the front-most selected object. However, their internal hierarchy of levels is retained. The objects are moved to the front or back as a group.

Moving objects using DrawTools



The Move Objects filter moves multiple selected objects as independent objects. Each object is moved one level forward or backward, independent of other selected objects.

Object Coordinates

Object Coordinates extends your control over object positioning and sizing. With Object Coordinates, you can move objects to a specific or relative location and resize objects to a specific or relative size.

Object Coordinates

A The X and Y fields specify the horizontal (X-axis) and vertical (Y-axis) coordinates of the upper-left corner of the selected objects. Use the pop-up menus to specify the unit of measurement for the fields. The field values are recalculated for the new unit.

B The ΔX and ΔY fields display the width and height of the selected objects. Use the pop-up menus to specify the unit of measurement for the fields. The field values are recalculated for the new unit.

C Select the Match Measurement Units checkbox to automatically convert the unit of measure for all X and Y fields when any one of them is changed. Use the Copy checkbox to create a duplicate of the selected objects with the new parameters applied; the original remains unchanged. Use the Constrain Proportions checkbox to hold the original proportions when resizing an object (in other words, changing the ΔX or ΔY fields).

D Click the OK button to move or resize the objects as specified.

E Click the Cancel button to close the dialog box, leaving the selected objects unchanged.

F Click the Reset button to return the X, Y, ΔX , and ΔY fields to their original values.

Moving Objects

To Move an Object

1. **Select an object (or Shift-select multiple objects).**
2. **Select DrawTools Move in the Filter menu. In the DrawTools Move menu, select Object Coordinates.**

The Object Coordinates dialog box appears.

3. **Enter the new object coordinates in the X and Y fields.**
4. **Click the OK button.**

Resizing Objects

To Resize an Object

1. **Select an object.**
2. **Select DrawTools Move in the Filter menu. In the DrawTools Move menu, select Object Coordinates.**

The Object Coordinates dialog box appears.

3. **Enter the new object size in the ΔX and ΔY fields.**
4. **Click the OK button.**

The Object Coordinates filter correctly resizes text objects on a straight-line path. The resizing is based on the text object's non-rotated position. Attempting to resize text objects on a non-straight-line path will result in the text objects being omitted and the path being resized. For full resizing capabilities, text objects should first be converted to outlines using the Create Outlines item in the Type menu.

Mathematic Operators: The X, Y, ΔX , and ΔY fields support mathematic operators for calculating positions and sizes. The following operators are supported: + (add), - (subtract), * (multiply), / (divide), % (percentage). Only one mathematic operator may be used in a field at one time. A negative number must be preceded by “-” to avoid confusion with the subtraction operator.

For example, *2 would double the current value and /2 would reduce the current value by one half. For another example, entering -2 in the X field moves the object 2 units to the left. Entering =-2 in the X field positions that object at -2 units on the X axis.

Tip

In Illustrator, unconverted text objects that have been assigned to a rotated, straight path will be scaled differently under DrawTools. Scaling using the Object Coordinates filter will maintain the original angle of the path.

Exchange

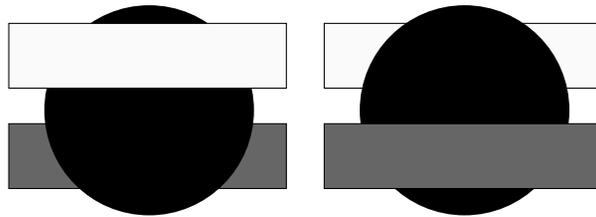
The Exchange filter extends your control of object pairs by allowing you to easily exchange the object levels within and between layers.

Exchanging Object Levels

To Exchange Two Objects

1. **Select two objects.**
2. **Select DrawTools Move in the Filter menu. In the DrawTools Move menu, select Exchange.**

The object levels are switched, but the coordinates remain unchanged.



Holding down the Command key while selecting Exchange causes layers to be ignored.

Back to Front and Front to Back

The Back to Front and Front to Back filters allow you to quickly position object pairs relative to each other without having to know the level or layer of either object.

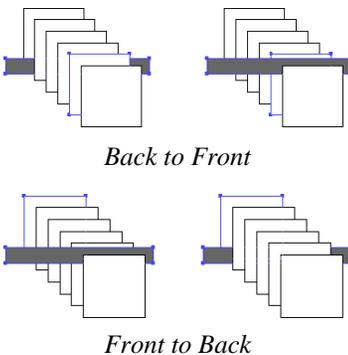
Positioning Objects

To Position Two Objects

1. **Select two objects.**
2. **Select DrawTools Move in the Filter menu. In the DrawTools Move menu, select Back to Front or Front to Back.**

Back to Front moves the back-most selected object one level in front of the front-most selected object. Front to Back moves the front-most selected object one level *in front* of the back-most selected object.

Holding down the Command key while selecting Back to Front or Front to Back causes layers to be ignored.



DrawTools Shape

DrawTools Shape is a collection of filters that allows you to create three-dimensional effects in your illustrations.

DrawTools Shape creates three-dimensional effects by projecting selected objects onto a spatial geometric object (globe, cone, cylinder, etc.). DrawTools Shape also includes a free projection filter, giving you complete control over the three-dimensional effect.

Elements common to the Shape filters are explained in the next section and in the “Globe” section, followed by a description of the other filters.

FreeHand User Note

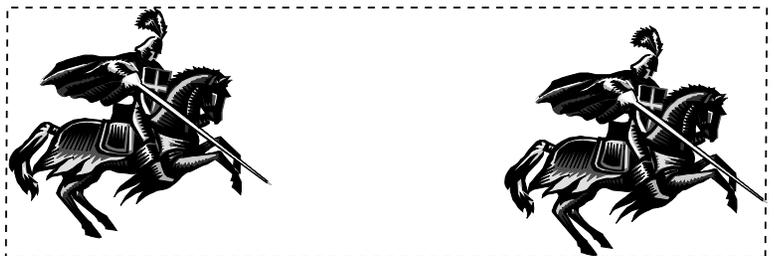
The DrawTools Shape interface described for Illustrator varies from the FreeHand implementation, however, the concepts and options are the same. At the end of this chapter is a section describing the FreeHand interface.

Tip

DrawTools Shape maintains all line object attributes, such as fill, when converting lines to Bézier curves. Lines with a fill specification may display unexpected results when converted to Bézier curves. For best results, make sure lines do not have a fill specification.

Things to Remember

- The DrawTools Shape filters work on single objects, grouped objects, or multiple selected objects. When transforming multiple objects, their hierarchical structure is retained. Gradients and fill pattern contents are not transformed by the DrawTools Shape filters. Gradients and fill pattern contents are reapplied to the object after transformation.
- In Illustrator, text objects cannot be altered with DrawTools Shape; you must first convert text to outlines using the Create Outlines item in the Type menu. Note that once converted to outlines, the text is no longer editable as text, only as outline objects.
- As part of the transformation process, all lines are converted to Splines and then to Bézier curves. This allows DrawTools Shape to make smooth, precise curves as it projects the object over the geometric shape.
- When discussing the objects selected for projection, we will sometimes refer to an imaginary rectangle that encloses the objects. If a single object is selected, the rectangle is the same size as the height and width of the object. If multiple objects are selected, the rectangle encloses all of the objects, as shown below.



Globe

The Globe filter lets you project an object over a geometric sphere or globe. Objects projected over the globe are shown on the front half of the globe.

Globe

A The Height field contains the height of the projection expressed as a percentage of the height of an imaginary rectangle containing the selected objects. If a height other than 100% is used, the centers of the objects and the projection will coincide.

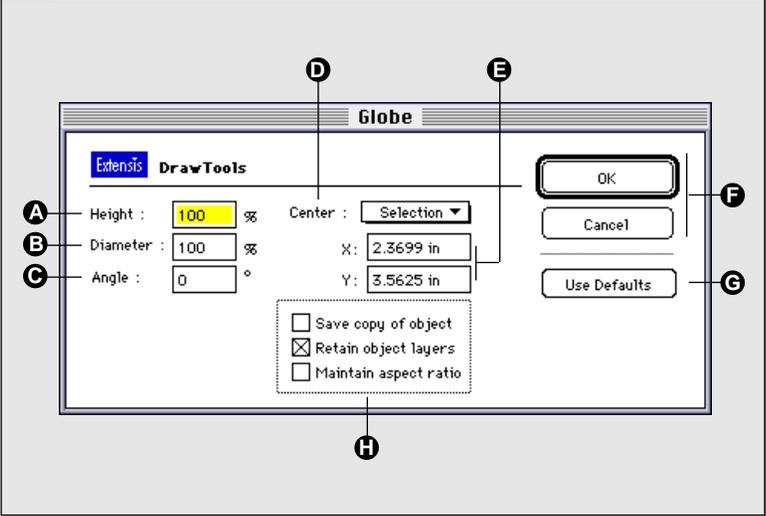
B The Diameter field contains the diameter of the projection expressed as a percentage of the width of an imaginary rectangle containing the selected objects. If a diameter other than 100% is used, the centers of the objects and the projection will coincide.

C The Angle field contains the angle of the projection shown in degrees. The angle adjustment turns the projection clockwise or counter-clockwise. An angle of 20 degrees produces a projection rotated 20 degrees counter-clockwise. An angle of 340 degrees produces a projection rotated 20 degrees clockwise.

D The Center pop-up menu allows you to specify the center of the projection as the center of the selected objects or as a point specified in the X and Y fields.

E The X and Y fields display the horizontal and vertical coordinates of the center of the projection. You may enter alternate coordinates in these fields.

F Click the OK button to close the dialog box and perform the projection as specified. Click the Cancel button to close the dialog box, leaving the selected objects unchanged.



The screenshot shows the 'Globe' dialog box with the following fields and controls:

- A**: Height field (100 %)
- B**: Diameter field (100 %)
- C**: Angle field (0 °)
- D**: Center pop-up menu (Selection)
- E**: X and Y coordinate fields (2.3699 in, 3.5625 in)
- F**: OK button
- G**: Use Defaults button
- H**: Checkboxes for 'Save copy of object', 'Retain object layers', and 'Maintain aspect ratio'.

G Click the Use Defaults button to reset all filter settings to their default values.

H Save a Copy of Object causes the projection to be performed on a copy of the selected objects.

When Retain Object Layers is enabled, object layers are maintained through the projection. If it is not enabled, all objects are placed in the current active layer.

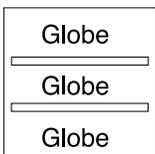
Maintain Aspect Ratio forces the aspect ratio to 1-to-1 (a square). This allows for projections onto a perfect globe or other shape.

Using Globe

To Project an Object onto a Globe

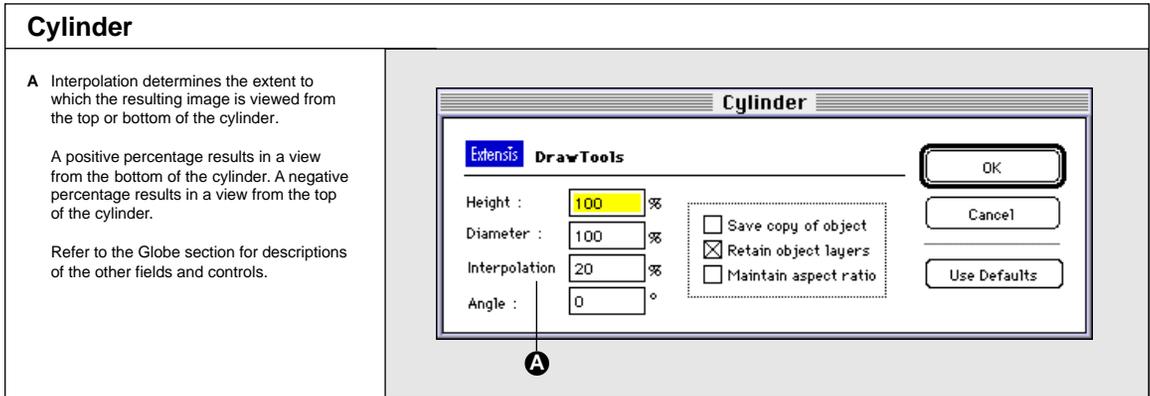
1. Select an object (or Shift-select multiple objects).
 2. Select **DrawTools Shape** in the Filter menu. In the **DrawTools Shape** menu, select **Globe**.
- The Globe dialog box appears.
3. Modify the settings in the **Globe** dialog box as desired.
 4. Click the **OK** button.

The before and after examples to the left show the projection results with the default settings.



Cylinder

The Cylinder filter lets you project an object over a geometric cylinder. Objects projected over the cylinder are shown on the front half of the cylinder.



Using Cylinder

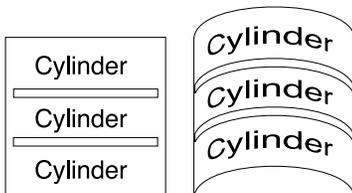
To Project an Object onto a Cylinder

1. Select an object (or Shift-select multiple objects).
2. Select **DrawTools Shape** in the Filter menu. In the **DrawTools Shape** menu, select **Cylinder**.

The Cylinder dialog box appears.

3. Modify the settings in the **Cylinder** dialog box as desired.
4. Click the **OK** button.

The before and after examples to the left show the projection results with the default settings.



Cone

The Cone filter is used to project an object over a geometric cone. Objects projected over the cone are shown on the front half of the cone.

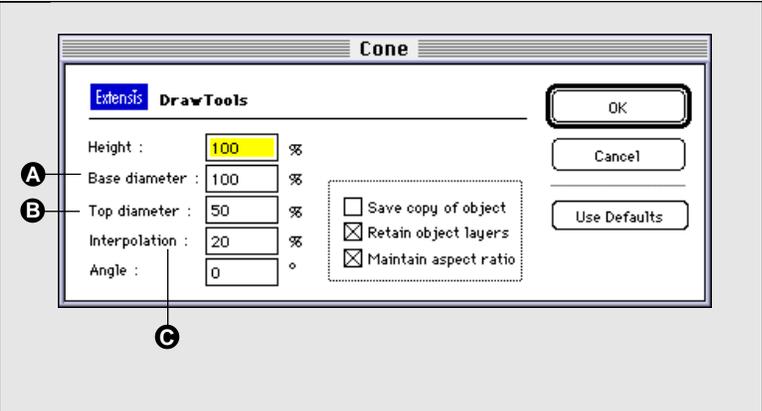
Cone

A The Base Diameter field contains the diameter of the base of the cone shown as a percentage of the width of an imaginary rectangle containing the selected objects.

B The Top Diameter field contains the diameter of the top of the cone shown as a percentage of the width of an imaginary rectangle containing the selected objects.

C Interpolation determines the extent to which the resulting image is viewed from the top or bottom of the cone. A positive percentage results in a view from the bottom of the cone. A negative percentage results in a view from the top of the cone.

Refer to the Globe section for descriptions of the other fields and controls.



Using Cone

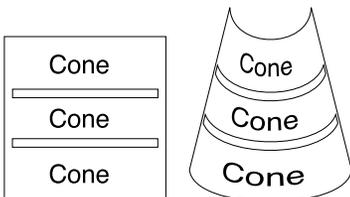
To Project an Object onto a Cone

1. Select an object (or Shift-select multiple objects).
2. Select **DrawTools Shape** in the Filter menu. In the **DrawTools Shape** menu, select **Cone**.

The Cone dialog box appears.

3. Modify the settings in the Cone dialog box as desired.
4. Click the **OK** button.

The before and after examples to the left show the projection results with the default settings.



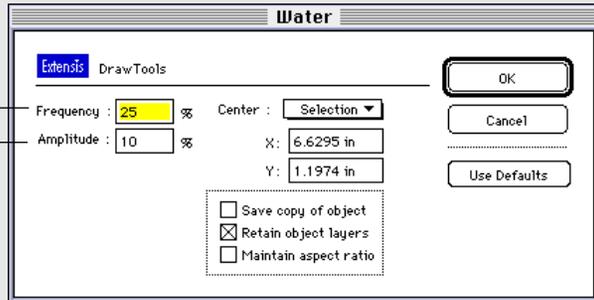
Water and Amplified Waves

The Water and Amplified Waves filters let you project an object over a wave form. Objects projected over the waves are shown from a top view.

Water

- A** The length of a complete wave expressed as a percentage of the width of an imaginary rectangle containing the selected objects.
- B** The maximum height that a wave diverges from its middle axis expressed as a percentage of the height of an imaginary rectangle containing the selected objects.

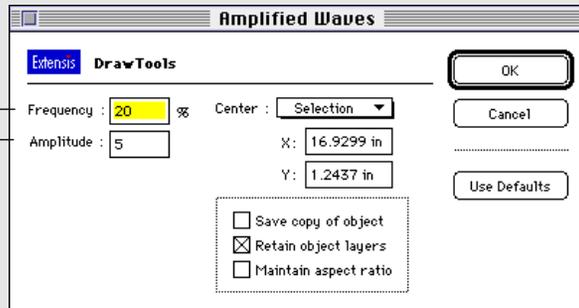
Refer to the Globe section for descriptions of the other fields and controls.



Amplified Waves

- A** The Frequency field contains the length of a complete wave expressed as a percentage of the width of an imaginary rectangle containing the selected objects.
- B** The Amplitude field contains the amplification of the wave height expressed as a multiplication factor of the previous wave height. A value of 1 provides the same result as the Water filter. A value of 2 doubles the wave height with each successive wave.

Refer to the Globe section for descriptions of the other fields and controls.

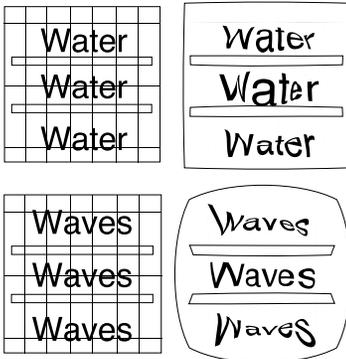


Using Water and Amplified Waves

To Project an Object onto a Wave Form

1. Select an object (or Shift-select multiple objects).
2. Select DrawTools Shape in the Filter menu. In the DrawTools Shape menu, select Water or Amplified Waves.
The Water or Amplified Waves dialog box appears.
3. Modify the settings in the dialog box as desired.
4. Click the OK button.

The before and after examples to the left show the projection results with the displayed settings. The top example is from the Water filter. The lower example is from the Amplified Waves filter.



Diamond

The Diamond filter lets you project an object over a diamond shaped parallelogram. (Think of a sheet of paper with the corners folded in toward the center.) Objects projected over the diamond are shown from a top view.

Using Diamond

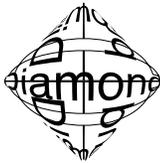
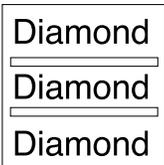
To Project an Object onto a Diamond

1. **Select an object (or Shift-select multiple objects).**
2. **Select DrawTools Shape in the Filter menu. In the DrawTools Shape menu, select Diamond.**

The Diamond dialog box appears. Refer to the Globe section for descriptions of the fields and controls.

3. **Modify the settings in the dialog box as desired.**
4. **Click the OK button.**

The before and after examples to the left show the projection results with the displayed settings.



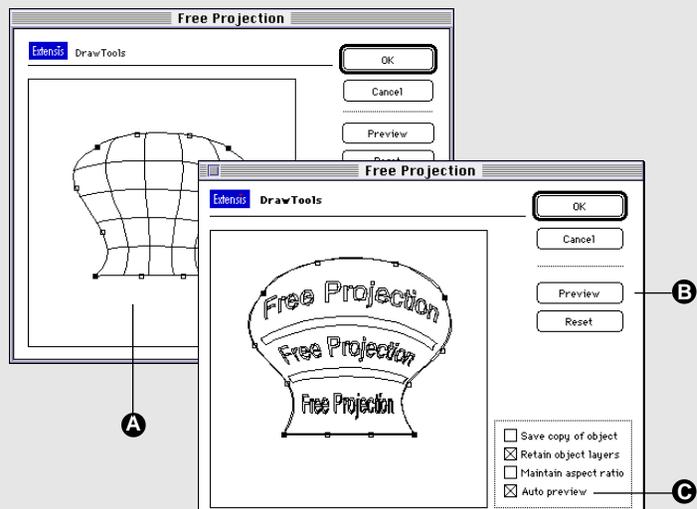
Free Projection

The Free Projection filter lets you project an object over a flexible “mesh.” You control the shape of the mesh using anchor points.

Free Projection

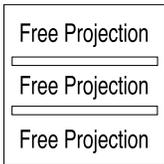
- A** Move the corner (black) and spline (white) points by clicking and dragging.
- B** Preview provides an on-demand preview of the selected objects. This option is most useful with complex objects that take a while to preview.
- C** Auto Preview provides a real-time preview of the selected objects as you manipulate the mesh.

Refer to the Globe section for descriptions of the other fields and controls.



Tip

Using Free Projection, you can easily transform straight lines into Bézier curves without changing their shape. Simply select the lines and open the filter. Click the Reset button, disable the Maintain Aspect Ratio option, and enable the Retain Object Layers option. When you click OK, the lines are transformed into Bézier curves.



Using Free Projection

To Project an Object

1. **Select an object (or Shift-select multiple objects).**
2. **Select DrawTools Shape in the Filter menu. In the DrawTools Shape menu, select Free Projection.**
The Free Projection dialog box appears.
3. **Modify the settings in the dialog box as desired.**
4. **Manipulate the corner (black) and spline (white) points to the desired shape.**
5. **Click the OK button.**

The before and after examples to the left show the projection results with the displayed settings.

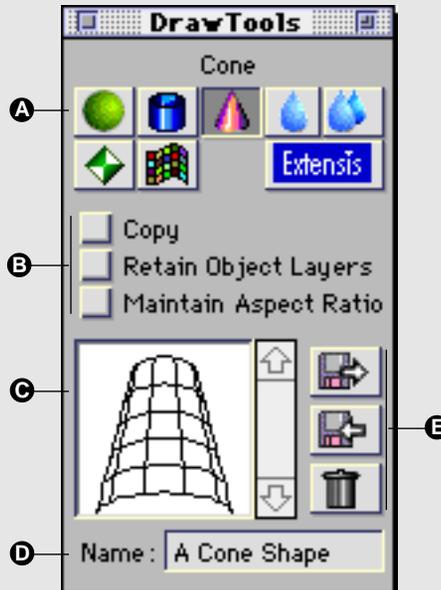
Note: Free Projection uses splines instead of Bézier curves. Splines allow easier manipulation of the mesh and greater precision in calculating the projection. The objects are converted back to Bézier curves when the projection is completed.

Using DrawTools Shape in FreeHand

DrawTools Shape provides a somewhat different set of controls for use within FreeHand. The DrawTools Shape for FreeHand interface provides FreeHand style drag and drop, interactive previews, and floating palettes.

DrawTools Shape for FreeHand

- A** Shape Tools. Click and drag the desired shape to the Projection Preview area (C) to display the Shape Preview dialog box or drag it directly onto the selected objects. Click the Extensis button to see the DrawTools About box.
- B** Projection Options.
 - Copy causes the project to be performed on a duplicate of the selected objects. The originals will not be changed.
 - Retain Object Layers preserves the object layers throughout the projection. Otherwise, all objects are placed in the current active layer.
 - Maintain Aspect Ratio forces the aspect ratio to 1-to-1 (a square). This allows for projections onto a perfect globe or other shape.
- C** The Projection Preview area provides a view of the geometric shape over which the selected objects will be projected. Use the scroll bar to view other shapes of the selected type in the current Shape Library. Double-click on a shape to display the Shape Preview dialog box for that shape. Dragging a shape from the Preview area onto the document applies the projection to the selected objects.
- D** The name of a Shape in the Shape Library. You may enter names for new Shapes in this field. You may also change existing shape names in this field. Press Return to enter the name.
- E** Buttons for Loading and Saving Shape Library files. Dragging a Shape from the Projection Preview area to the Trash icon removes the Shape from the Shape Library. Clicking the Trash icon removes all Shapes from the Shape Library.



Shape Preview Dialog Boxes

A The Projection Preview area displays the geometric shape onto which the objects will be projected. The preview is updated as the Projection Controls are manipulated. Clicking and dragging in the Preview area will adjust the Angle control.

B Projection Controls. Use the sliders and fields to modify the geometric shape. Refer to the Globe filter section of this chapter for additional information.

C Click the Apply button to project the selected objects onto the geometric shape.

Click the Cancel button to close the Shape Preview dialog box.

Click the Add button to add the specified shape to the Shape Library and close the Shape Preview dialog box.

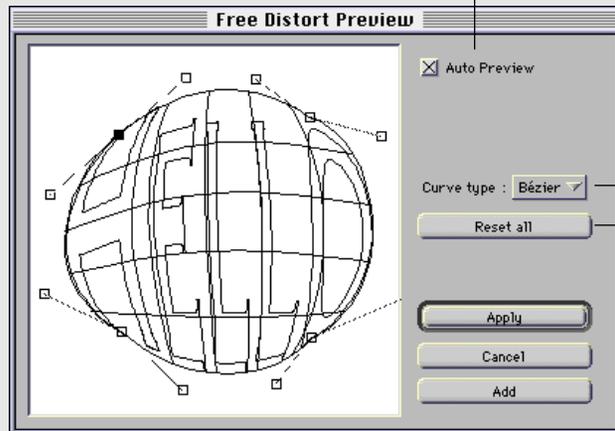
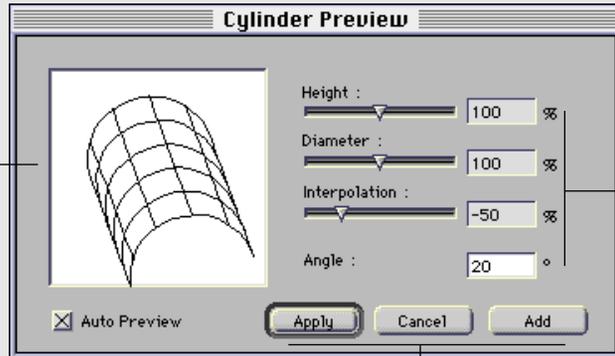
D Auto Preview lets you see outlines of the selected objects projected onto the shape. The preview is updated as you manipulate the Projection controls.

E The Curve Type pop-up menu lets you control the type of curve used to control the "mesh" in the Free Distort filter. The Curve Type options are Bézier and Spline. Spline curves differ from Bézier in that all anchor points are located on the curve. You may switch between curve types at any time. You may select multiple anchor points by holding down the Shift key while clicking on the points. These controls apply only to the Free Distort filter.

F The Reset All button returns all settings to their original values.

G Use the Center button to reset the center of the projection to the center of the imaginary rectangle enclosing the selected objects. This control applies only to the Water and Amplified Wave filters.

H Click and drag the Center control to adjust the center of the projection. This control applies only to the Water and Amplified Wave filters.



Tip

Once you have shapes stored in a Shape Library, you can drag and drop a shape from the Projection Preview area onto the page. The stored projection will be applied to the selected objects.

Using DrawTools Shape in FreeHand

To Project an Object

1. **Select an object (or Shift-select multiple objects).**
2. **Select Distort in the Xtras menu. In the Distort menu, select DrawTools.**

The DrawTools Shape palette appears.
3. **In the DrawTools Palette, click the desired Shape Tool and drag it to the Projection Preview area.**

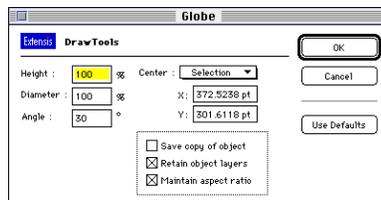
The Shape Preview dialog box appears.
4. **Make the desired adjustments in the Shape Preview dialog box.**
5. **Click the Apply button.**

If you wish to add the projection to the Shape Library, click the Add button in the Shape Preview dialog box. Enter a name for the projection in the Name field. Press the Return key to enter the name.

DrawTools Shape Examples

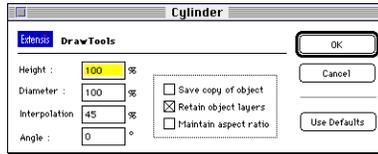
The examples in this section show various projections created with DrawTools Shape. Each example shows before and after images with the projection settings between them.

Globe Example



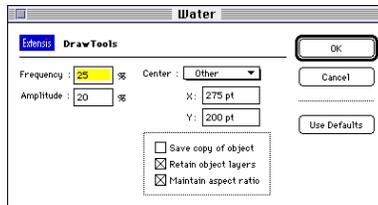
The rotation of the image is controlled by the setting in the Angle field.

Cylinder Example



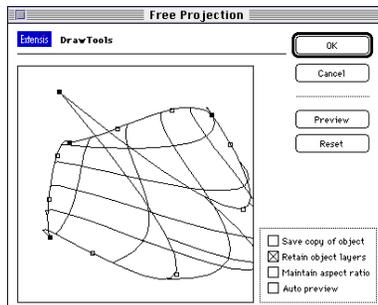
The 45% setting in the Interpolation field creates a perspective from below the cylinder.

Water Example



The custom Center setting places the center of the wave form on the horse's tail.

Free Projection Example



The radical shape provides increased distortion on the right side of the image and very little on the left side.

Additional Information

Color Models

A number of color models have been developed to provide control, certainty, and predictability of color in design, illustration, and printing. These models provide different ways of identifying, manipulating, and producing colors.

Traditionally, the CMYK, K, and Spot color models have been used for printing. RGB and RGB variants, such as CMY and IHS, have been used for projected or on-screen display.

Adobe Illustrator supports CMYK, K, and Spot color. Macromedia FreeHand supports CMYK, K, Spot color, RGB, IHS (also called HLS), and the Apple Color Picker. DrawTools supports CMYK, K, Spot color, RGB, CMY, IHS, and the Apple Color Picker.

Because human perception (and therefore artistic expression) is based on additive color mixing (RGB), rather than printing inks, Illustrator and FreeHand users may choose to work in non-CMYK color models.

A brief description of each color model is included here. For additional information, there are many reference books available covering color models and printing.

CMYK

The CMYK model combines the ink colors cyan, magenta, yellow, and black to create all printed colors. CMYK colors are often referred to as process colors.

CMYK colors are ideal for printing since almost all colors can be printed with just four inks. When printing CMYK colors, each color of ink is added in a separate process during the print run. Specific colors are built up as the four ink colors are applied.

K

The K model uses a single color of ink, usually black, and displays all colors as shades of that color, usually grays. Colors are converted to gray based on a fixed formula. During the conversion, a gray equivalent is generated for every shade of color. Using the K model, it is possible that a certain shade of green becomes the same shade of gray as a completely different shade of blue.

RGB

The RGB model is based on the colors red, green, and blue and is the closest approximation to the perception of the human eye. By mixing red, green, and blue light, we can achieve every shade of color, including black, the absence of all three. The RGB model is easy to work with and provides easily understood and predictable results when increasing or decreasing one of the colors.

While the RGB model has many advantages for color displayed on a computer monitor, it is not suitable for printed color. When red, green, and blue *inks* are mixed together, dark brown is produced; almost the exact opposite of the white that is produced when Red, Green, and Blue *light* is mixed. Also, a yellow color cannot be achieved by mixing red, green and blue ink. Because of this, RGB colors must be separated to CMYK prior to printing.

CMY

The CMY model is a variant of the RGB model. CMY uses the following principle:

Red = Yellow + Magenta

Green = Cyan + Yellow

Blue = Cyan + Magenta

CMY is not suitable for printing as it cannot yield a true black color. Because of this, CMY colors must be separated to CMYK prior to printing.

Note: CMY is not the CMYK model minus the black (K) channel.

IHS

The IHS model is another variant of the RGB model. With IHS, Intensity, color (Hue), and Saturation are manipulated.

Imagine two cones on top of each other connected at their respective bases, one point/tip is white, the other black. “I” is the position between black and white, “S” the distance to the edge of the cone and “H” is the angle around the circumference of the cone. IHS colors must also be separated to CMYK prior to printing.

DrawTools and Color Model Conversions

Although DrawTools uses several color models, Illustrator uses only the CMYK and K models. DrawTools will convert all colors that have been defined using other systems to CMYK or K.

Under Color Removal

When converting from non-CMYK color models to CMYK, special attention must be given to the black (K) channel. This is because 100% C + 100% M + 100% Y does not yield full black. Black must be added to achieve the correct printed colors. Under Color Removal, sometimes referred to as Gray Component Replacement, is the process used to adjust the C, M, and Y channels and add the appropriate amount of black. UCR is used to subtract the shared black element from the colors cyan, magenta, and yellow and add it to the black channel.

When printing black text or line art, UCR shifts all color to the K channel. This prevents a heavy buildup of ink (100% C + 100% M + 100% Y + 100% K) during the printing process and results in clearer print.

Partial UCR can be applied as well. If 20% UCR is selected, then 20% is taken off each color and 80% remains. The reduced percentage is added to the black component.

<u>Original</u>	<u>100% UCR</u>	<u>20% UCR</u>
100% C	0% C	80% C
100% M	0% M	80% M
100% Y	0% Y	80% Y
0% K	100% K	20% K

When the ratio between cyan, magenta, and yellow is different, a 100% UCR gives a complete reduction of the smallest element, like this:

<u>Original</u>	<u>100% UCR</u>	<u>20% UCR</u>
80% C	40% C	80-8% C
60% M	20% M	60-8% M
40% Y	0% Y	40-8% Y
20% K	60% K	20+8% K

As shown above, the UCR percentage is taken from the largest shared contribution to the black component. In this case it is the 40% of yellow. 20% of 40 is 8%, therefore 8% is subtracted from the first three colors and 8% is added to black.

Converting CMYK colors to RGB

The black component of CMYK colors is an important factor in determining their final color. Converting CMYK colors to RGB or RGB variants is accomplished by adding the black channel to the R, G, and B channels linearly.

<u>CMYK</u>	<u>CMY</u>	<u>RGB</u>
20% C	20+20=40% C	60% R
20% M	20+20=40% M	60% G
20% Y	20+20=40% Y	60% B
20% K		

As shown above, the black component is added linearly to the other colors. Significant deviations can occur during this process when a very saturated black color is converted:

<u>CMYK</u>	<u>CMY</u>	<u>RGB</u>
20% C	100% C	0% R
40% M	100% M	0% G
60% Y	100% Y	0% B
100% K		

The original color is more than black: 100% K plus 20% Cyan, 40% Magenta, and 60% Yellow. This is CMYK black, but the converted CMY color can never be black. The important lesson here is to use the different color systems with caution.

Spot colors

Spot colors can be process colors and also colors that cannot be obtained through process colors, such as certain PMS colors, metallic inks, and varnishes.

For example, when full color printing needs to be embellished with gold, a spot color printing plate using gold colored ink is added after the plates for the four process colors. In the same way, a specific color can be added to single-color print jobs. Using spot color in this way is often less expensive and yields sharper, more accurate results than process color.

Within Illustrator, spot colors may be built up from process colors, but they are not included in the four color separations. An additional separation is created for each spot color. Plug-Ins and filters can access spot colors in a document, but cannot create new spot colors. Editing a spot color with a DrawTools filter converts it to a process color.

Troubleshooting

General

Although I installed DrawTools successfully, the filters don't appear under my Illustrator Filter / FreeHand Xtras menu.

Filters should be stored in a folder called "Plug-Ins" or "Xtras." It is possible that you installed DrawTools into another folder. Check to see that the DrawTools files are installed in the Plug-Ins or Xtras folder.

If you are using FreeHand 5.0 on a Power Macintosh, you will need to upgrade to v5.0.2 to correct a FreeHand problem in loading all Xtras files.

I have copied my entire Illustrator/FreeHand folder onto my other computer, but now DrawTools runs in demo-mode only.

You have purchased a license for one user only. Please call Extensis for additional licenses.

Color

I'm trying to mix colors with DrawTools Color using a color model other than CMYK, but all I get is gray.

You have set "Convert non-CMYK colors" to K under the "Model" button. Open the "Color Mixer/Replace Colors" filter; click the "Model" button, select CMYK, and try again.

Although my color list marks certain colors as "FreeHand Spot", they still behave like process colors in Illustrator. I have set "Apply Illustrator custom colors" to spot colors. It's a bit confusing.

It is confusing. This option concerns Illustrator spot colors only. Currently it is not possible for a Plug-In filter to generate spot colors under Illustrator, so FreeHand spot colors are automatically converted to process colors. However, Illustrator spot colors which are saved in a color set will be automatically set to spot colors under FreeHand.

I can't edit or modify gradients.

There is a separate filter called Gradient Settings. Open this filter and enable the gradient conversion option. Make sure you have read the Gradient Settings section of the DrawTools Color chapter.

I'm trying to invert my artwork with the Edit Curves filter. But what I get is apparently not inverted—it's almost all black.

Deselect the K-channel checkbox and try it again.

I'm trying to alter a part of my artwork with the Edit Curves filter. But reviewing it is very hard because of the colored selection outlines around all objects.

Pressing <Command-Shift-H> makes your selection outlines invisible.

If I click on the “Custom” button in the Color Mixer/Replace Colors filter, a number of colors appear in the list which are not in my document. Where do they come from?

This filter asks Illustrator for all used custom colors. However, Illustrator returns all custom colors, including all colors that were previously used on the page.

Shape

I'm projecting my artwork onto a globe sphere, but the horizontal axis does not appear to be three-dimensional.

To add perspective to a globe sphere, first project onto a Cylinder and then onto a globe. The globe will contain the interpolation from the cylinder.

None of my gradients are altered when projected. However, the outlines are projected properly.

DrawTools Shape cannot affect the contents of a gradient.

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