Microspot MacDraft Personal Edition User Guide

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Chapter 1 - Introduction

◆ Welcome to Microspot MacDraft Personal Edition

This User Guide has information about the features and capabilities of Microspot MacDraft Personal Edition. It is laid out to let you refer directly to a particular feature and obtain detailed instructions about its use.

Before you proceed you should be comfortable with terms such as click, drag, select and choose. You should also be familiar with the general methods used in most Macintosh® applications such as moving, resizing and scrolling a window. If you are not, refer to your Macintosh owner's guide.

Hardware and software requirements

- Macintosh System Mac OS X (10.1 recommended)
- Any Macintosh computer (including iMacs and iBooks) with G3-233 MHz processor or faster
- 128 MB RAM
- CD-ROM (to install).

Installing Microspot MacDraft Personal Edition

You must run MacDraft from your hard disk.

To install Microspot MacDraft

1. Insert the MacDraft CD into the CD drive.
2. Double-click the MacDraft Installer.
3. Follow the instructions that appear.

   The MacDraft software and its supplemental files will be installed where you specify on your hard disk.

Starting Microspot MacDraft Personal Edition

The first time you launch MacDraft you must enter a name and valid serial number to enable the software.

To enable Microspot MacDraft

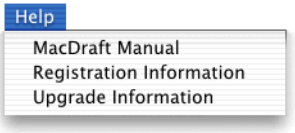
1. Double-click the MacDraft application icon to launch the software.
2. Enter a name and valid serial number (the organization name is optional) into the dialog that appears.

3. The serial number must be valid for the version you are using. This will be supplied with the program or upgrade when purchased.
4. Only when you have typed in your serial number, the **OK** button becomes available. Click it to open the application.

   If you click the **Cancel** button, the application will run in demo mode and some of the features and menu options will be dimmed.

The Help menu

The **Help** menu is used to open the MacDraft manual, product registration and upgrade information.



Microspot MacDraft manual

The MacDraft Manual in pdf format will be included on disk with the application and Adobe™ Acrobat™ Reader. The manual will be installed on your hard drive during the installation process.

Choose **MacDraft Manual** from the **Help** menu and Acrobat Reader will launch and open the manual. You can then navigate through and read the manual on screen or print sections for your reference.

Registration information

You can register MacDraft by filling in and returning the registration card included in the product box.

Alternatively you can register your product via the Internet.

To register via the Internet

1. Choose **Registration Information** from the **Help** menu.

   The following dialog appears.

2. Click the **Connect** button to direct your web browser to go to the Microspot product registration web page, then follow the registration instructions.

   Once you have registered MacDraft, Microspot will be able to send you information about upgrades and new products. Alternatively, contact Microspot via telephone, fax or email.

Upgrade information

You can also obtain information (if any) about upgrades from the **MacDraft web page** by choosing **Upgrade Information** from the **Help** menu.

◆ Document handling

MacDraft allows you to have up to 16 documents open at the same time. You can open documents from the desktop or from within the application. See *Appendix C - File formats on page C-1* for information about opening and saving documents in different formats.

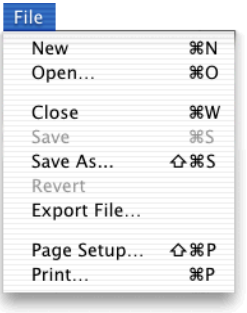
Creating a new document

To open a new document when launching Microspot MacDraft

- When you launch MacDraft, the application automatically opens with a new document.

To open a new document when Microspot MacDraft is already running

- Choose **Drawing** from the **New** submenu in the **File** menu.



NOTE: If the application is already running, but no documents are open, double-clicking the application icon opens a new document.

Opening an existing document

Existing documents can be opened from the Finder or from MacDraft's **File** menu.

Opening a document from the Finder

To open an existing document from the Finder

- In the Finder, locate the document you want to open and double-click it.

NOTE: If a document is already open, double-clicking its name in the Finder brings that document window to the front.

Opening a document from the File menu

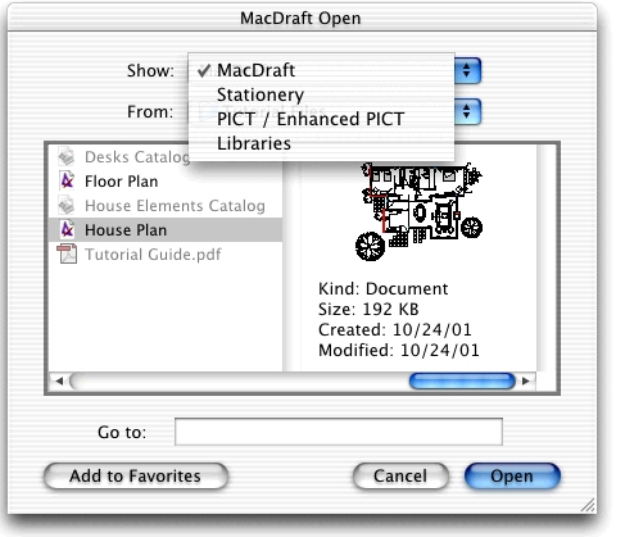
You can open a document from the **File** menu, even if you already have another document open.

To open a document from the File menu

1. Choose **Open** from the **File** menu.

   The standard open dialog appears. Locate the document you want to open and either double-click its name or click once its name and then click the **Open** button.

2. To show only files of a particular type, select the desired type from the **Show** pop-up menu.

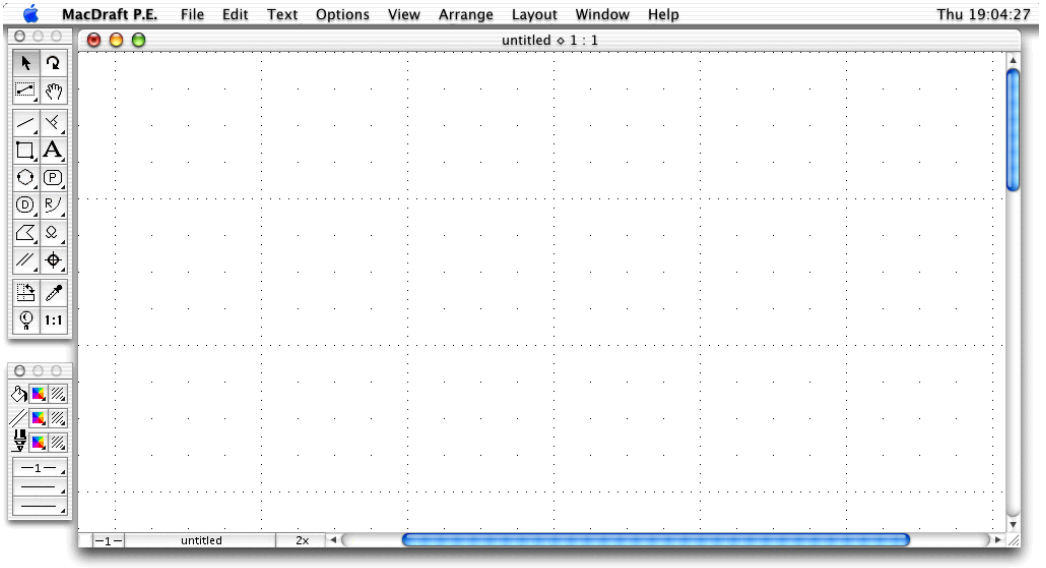


The Microspot MacDraft environment

The document window

The MacDraft document window allows you to access your document for viewing, creating and editing the drawing area. It is designed to offer you a drawing area with all of the essential features of MacDraft within easy reach of your mouse.

When you open the MacDraft application, the following screen appears.



Fill and line indicators

The two small boxes in the lower left corner of the window are the **Fill** and **Line Indicator** boxes.

- The **Fill Indicator** shows the color, shade of gray, or pattern that will be used to fill the objects you draw.
- The **Line Indicator** shows line weight that will be used to draw lines and object borders.

See *The fill and line indicator boxes on page 3-2* for more information.

The drawing area

The drawing area is the part of the window that shows dotted line divisions. These divisions are called grid lines. In English units, the distance between the grid lines represents one inch; in decimal feet, one tenth of a foot; and in metric units, two centimeters. You can use the grid lines as visual aids to assist you in your drawing *(see Grid lines on page 6-18)*.

When you create a new document, MacDraft shows a document based on a single sheet of paper for the current output device.

NOTE: As MacDraft Personal Edition has a limited drawing size, if you have a printer that can print to large paper sizes, the drawing size may not be as great as a single page.

You can change the size of your document at any time to include multiple pages (up to the drawing size limit), allowing you to create larger drawings *(see Changing the drawing size on page 1-22)*.

When you first open your document, you will see only the upper left corner of the total drawing area.

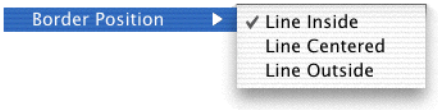
The menu bar

The menu bar across the top of the screen contains all the MacDraft pull-down menus available.

As with most Apple Macintosh applications, clicking a title in the menu bar gives a drop-down list of the options available *(see File menu on page A-1)*.

Using hierarchical menus

MacDraft uses hierarchical menus. These submenus list further options available. For example, the **Border Position** submenu in the **Options** menu lists the possible positions for object borders *(see Border positions on page 3-38)*.



A rightward pointing triangle beside a menu item indicates that more options relating to that menu item are available.

To choose an option from a submenu

1. Choose the menu item that contains the submenu you want to access.
2. Drag horizontally across and down the submenu until the item you want is highlighted, then click the desired item.

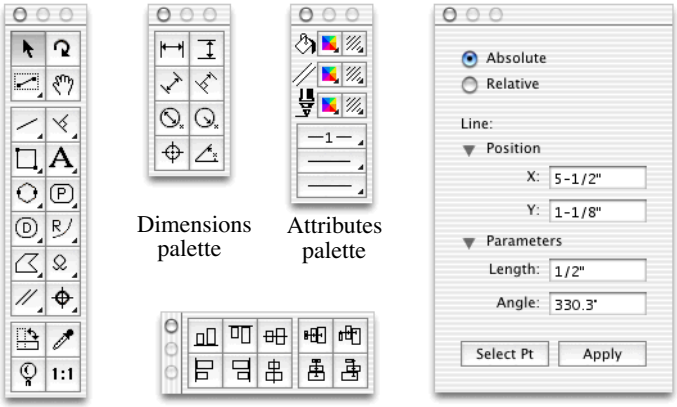
Using keyboard command equivalents

Certain menu items can be chosen directly from the keyboard. The **Command** key symbol and a keyboard character appear beside menu items that can be chosen from the keyboard.

Choose these menu items by holding down the **Command** key, then pressing the relevant character key on the keyboard. For example, to choose **Duplicate** (from the **Edit** menu), hold down the **Command** key and press D (uppercase or lowercase). The **Edit** menu is highlighted for a moment, and a duplicate of the selected object appears *(see Appendix B - Special usage of keys on page B-1)*.

The palettes

MacDraft's most important tools appear in three floating palettes: The **Tool Palette** and the **Dimension Palette**. The **Attribute**, **Resize** and **Alignment** palettes control various attributes of the objects created using the other palettes.



The palettes are called floating palettes because they can be moved around the screen, and they float above the drawing area, allowing you to draw beneath them.

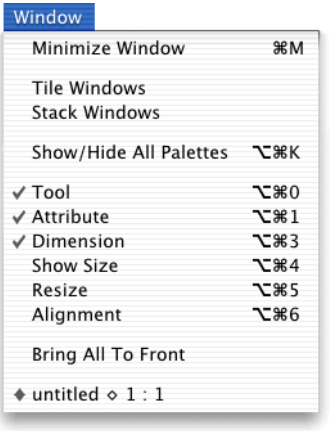
Using palettes

Displaying a palette

To display a palette

- Choose the palette's name from the **Window** menu, or
- Choose the palette's name from the pop-up menu at the bottom left of the document window.

  The palette appears, and a checkmark appears against its name in the list. Checkmarks appear beside the names of palettes that are currently displayed.



Hiding a palette

You can hide a palette when you no longer need it.

To hide a palette

- Click the palette's close box in the top left corner the palette window, or
- Choose the palette's name from the **Window** menu, or
- Choose the palette's name from the pop-up menu at the bottom left of the document window.

  The palette disappears, and the checkmark beside the palette's name in the list will be removed.

Moving a palette

You can move a palette around the screen to place it in a more convenient position.

To move a palette

1. Position the cursor on the top or left part of the palette, or any other part that doesn't hold an icon, and hold down the mouse button.

   The cursor will change into a four headed arrow, indicating that the palette can be moved in any direction.

2. Drag the palette to the desired location and release the mouse button.

Using the palette tools

The palettes function like boxes of tools that you can use to enter text, draw different objects and lines, and change objects. Each tool is represented by an icon in a palette. To use a tool, you activate, or select, the appropriate icon.

You can activate any tool in a palette by positioning the pointer on the icon and clicking it. As long as the icon is highlighted, you can draw the object or perform the action associated with the icon.

When you start to use MacDraft, each tool has the default current option shown in the palette. To change the current option for a tool, choose the desired option from a pop-up menu that shows the options available.

Pop-up menus

Each palette holds icons that represent certain tools or functions. Some tools and functions have more than one option associated with them. These options relate either to how the objects are created or to different characteristics of the objects. For example, in the **Tool** palette the square-corner rectangle options relate to how you create a rectangle; either from a corner or from its center. On the other hand, the rounded-corner rectangle options relate to the characteristics of the rectangles' corners; proportional, constant, or elliptical.

The options for each function and tool can be selected from pop-up menus.

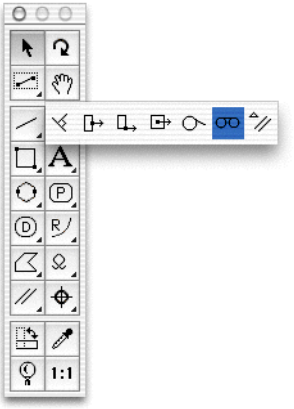
Icons used to open pop-up menus have clipped corners (which appear black). Unlike pull-down menus, which are opened by clicking a word in the menu bar, pop-up menus are opened by clicking an icon in the palette and holding down the mouse button.

To choose an option from a pop-up menu

1. Click the appropriate icon in the palette and hold down the mouse button.

   A pop-up menu appears.

2. Holding down the mouse button, drag to the menu item that represents the desired option.



As you drag, the menu items will be highlighted.

3. When the desired menu item is highlighted, release the mouse button.

The pop-up menu disappears and the tool icon will be changed to show you the currently selected option.

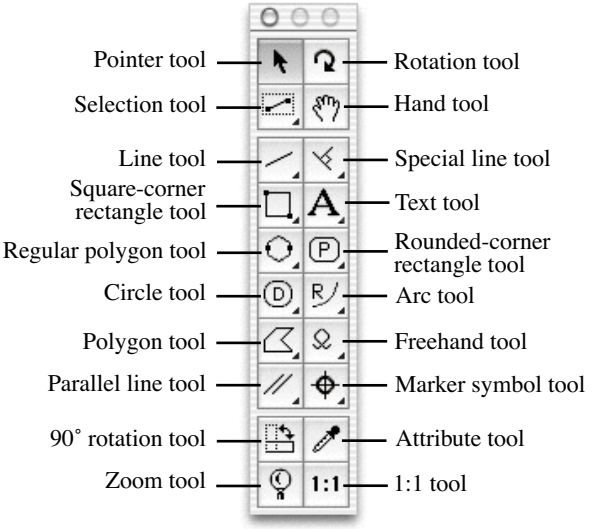
Tool options

Some tools have options associated with them. These can be displayed by holding down the **Option** key and clicking the tool icon, or by selecting the tool and choosing **Tool Options** from the **Options** menu. See details of individual tools for information about any options available.

The Microspot MacDraft palettes

Following are brief descriptions of the tools available on the **Tool**, **Accessory** and **Dimension** palettes.

Tool palette



Pointer tool

Use to move and change the shape of objects, make menu choices and activate palette functions.

Rotation tool

Use to rotate a selected object freely *(see Rotate tool and Rotate command on page 5-34)*.

Selection tool

Use to select objects by drawing a selection rectangle around them *(see Selecting multiple objects on page 1-27)*.

Hand tool

Use to change the position of a drawing as an alternative to using the scroll bars *(see Changing the position of the drawing in the document window on page 2-97)*.

Line tool

Use to draw straight lines at any angle (unconstrained lines) or lines that are restricted to a certain angle (constrained lines) *(see Drawing basic lines on page 2-4)*.

Special line tool

Use to draw lines that are perpendicular to, tangent to or offset from some other object, or lines that start at the mid, end or center point of an existing object *(see Drawing special lines on page 2-46)*.

Square-corner rectangle tool

Use to draw squares and rectangles with square corners *(see Square-corner rectangles on page 2-7)*.

Text tool

Use to add text to a drawing or edit existing text *(see Text on page 4-1).*

Regular polygon tool

Use to draw symmetrical objects with from 3 to 16 equal sides, such as triangles, hexagons, and octagons *(see Drawing regular polygons on page 2-13)*.

Rounded-corner rectangle tool

Use to draw rounded-corner rectangles or squares *(see Rounded-corner rectangles on page 2-9)*.

Circle tool

Use to draw circles by diameter (D), by radius (R) or by three (3) points; and concentric circles *(see Drawing circles on page 2-16)*.

Arc tool

Use to draw arcs by radius (R) or three points (3); elliptical arcs (E); and offset arcs *(see Drawing arcs on page 2-24)*.

Polygon tool

Use to draw objects with two or more sides *(see Drawing irregular polygons and polylines on page 2-33)*.

Freehand tool

Use to draw freehand lines and shapes, including Bezier and spline curves *(see Drawing freehand lines, shapes and curves on page 2-37)*.

Parallel line tool

Use to draw parallel line figures (both single segments and open or closed parallel polygon figures) and extrudes pairs of lines from straight edges *(see Drawing parallel line objects on page 2-55)*.

Marker symbol tool

Use to draw a standard marker symbol *(see The Marker Symbol on page 2-68)*.

90° rotation tool

Use to rotate selected objects by 90° *(see Rotate by 90° tool on page 5-32)*.

Attribute tool

Use to copy and assign object attributes *(see Copying attributes using the Attributes tool on page 3-41)*.

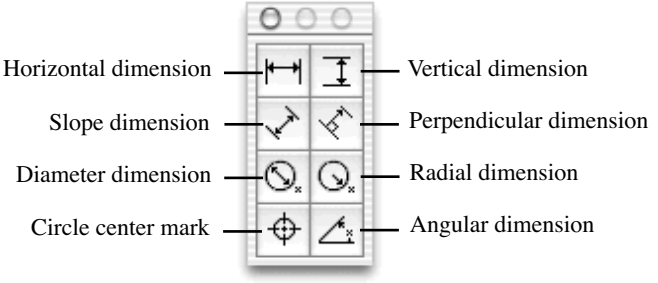
Zoom tool

Use to zoom in or out on areas of a drawing *(see Zooming in or out on a drawing on page 2-99)*.

1:1 tool

Select to return to a single magnification view of the current drawing area *(see 1:1 tool on page 2-106)*.

Dimension palette



Horizontal dimension tool

Use to draw horizontal dimension lines *(see Horizontal dimension objects on page 4-15)*.

Vertical dimension tool

Use to draw vertical dimension lines *(see Vertical dimension objects on page 4-16)*.

Slope dimension tool

Use to draw sloped dimension lines *(see Slope dimension objects on page 4-17)*.

Perpendicular dimension tool

Use to draw dimension lines perpendicular to straight lines and edges *(see Perpendicular dimension objects on page 4-18)*.

Diameter dimension tool

Use to draw diameter dimension objects *(see Diameter dimensions on page 4-20)*.

Radial dimension tool

Use to draw radial dimension objects *(see Radius dimensions on page 4-19)*.

Circle center mark tool

Use to draw center mark for circles, arcs and ellipses *(see Circle center marks on page 4-21)*.

Angular dimension tool

Use to draw angular dimension objects *(see Angular dimension objects on page 4-22)*.

The Window menu

You can have up to 16 document files open at one time in MacDraft. The **Window** menu provides you with options for displaying multiple document windows and for moving easily to a particular open drawing.

Displaying multiple document windows

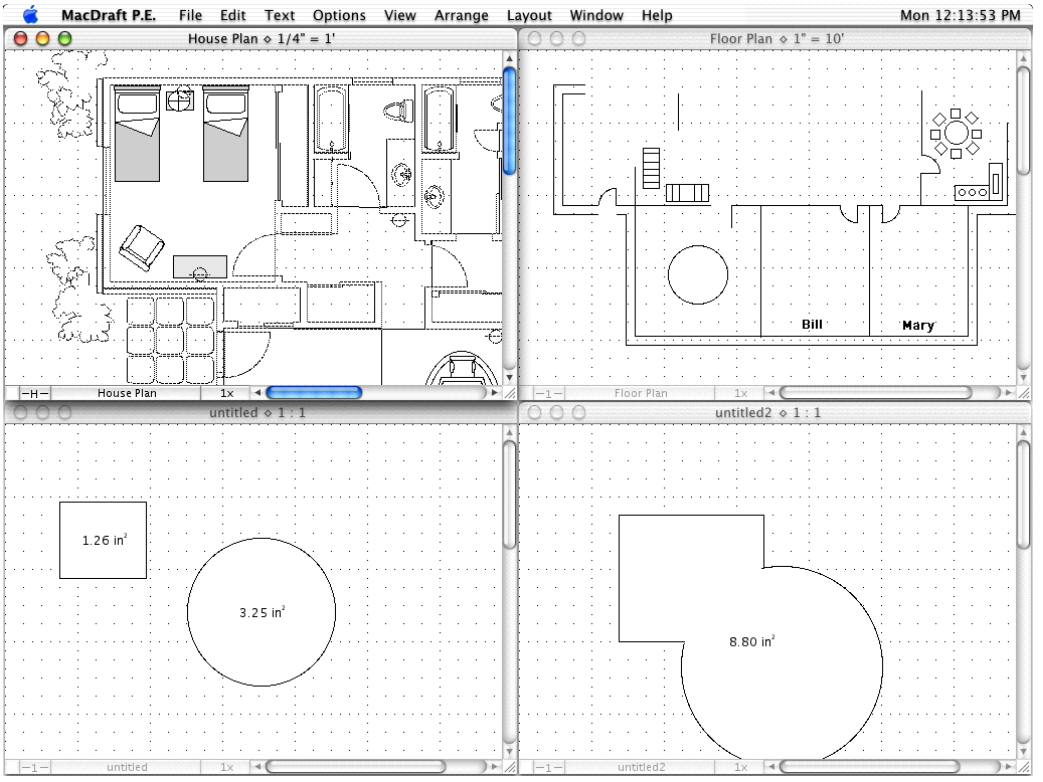
Tiling windows

If you want to see the contents of several document windows at the same time, you can choose to show all the windows on the screen at the same time by using the **Tile** command.

To tile windows

- Choose **Tile Windows** from the **Window** menu.

The open documents will be reduced in size, if necessary, and displayed next to each other across and down the screen.



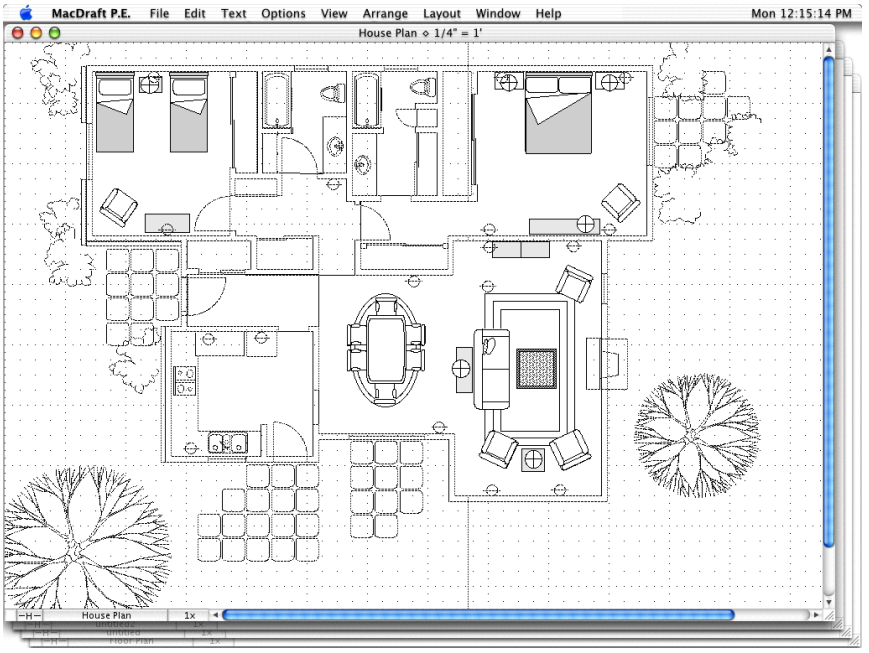
Stacking windows

If you want to keep the drawing windows open at a reasonable size, and be able to easily click a document to bring it to the front of the open documents, you can choose to stack the windows.

To stack windows

- Choose **Stack Windows** from the **Window** menu.

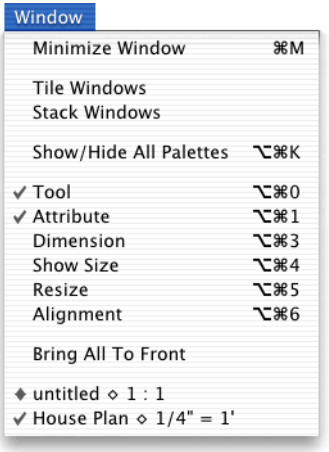
The open documents will be displayed one above the other, and slightly offset from each other.



Switching to a particular open drawing

To switch to a different drawing or symbol library

1. Open the **Window** menu.



At the bottom of the **Window** menu, all the open MacDraft documents will be shown, with the active (topmost) drawing indicated by a checkmark.

2. Select the name of the drawing you want to work on.

   The drawing you choose becomes active and will be shown in front of the other document windows.

◆ Getting started

MacDraft is a software tool that emulates a drafting board while giving you the advantages of creating and working with scaled images on a computer. You can easily make changes without physically erasing or discarding sheets of paper.

One of MacDraft's greatest strengths as a drafting and design tool is the way it allows you to define your drawing environment. Using simple menu commands and palette choices, you can specify the default scale, drawing units and page setup you need for the drawing.

The scaled environment automatically keeps track of the size and area of the objects you draw. You can display their dimensions using the **Show Size** feature *(see Show Size on page 6-1)*, the various dimension tools *(see Dimension objects on page 4-13)*, or the on-screen rulers *(see Rulers on page 6-8)*.

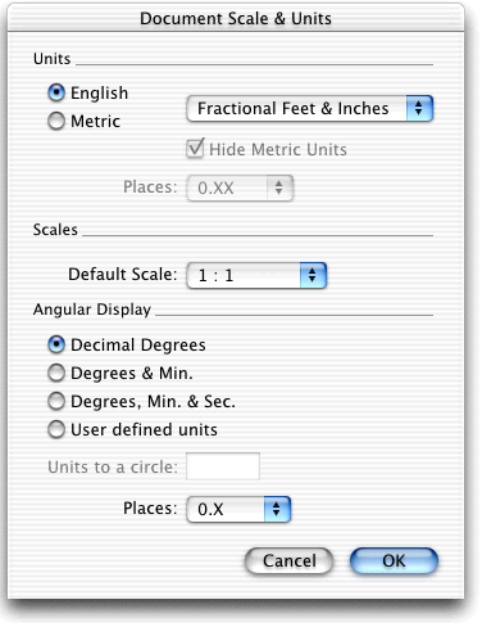
Setting the units

With MacDraft you can draw using either feet and inches (English) or metric units. MacDraft offers the most commonly used English and metric unit scales. Once you choose a unit system for your drawing you can define the scale you want to use.

To set the units for a drawing

1. Open the **Layout** menu and choose **Set Scale/Units**.

The **Document Scale & Units** dialog appears.



2. Click the button beside English or Metric, depending on the type of units you want to use in the document.

   Whether you use the English or Metric system, you can choose the basic units for the drawing: Decimal Inches, Decimal Feet & Inches, Decimal Feet, Fractional Inches or Fractional Feet & Inches in English drawings; Millimeters, Centimeters, Decimeters or Meters in metric drawings.

3. If necessary, change the units in the **Units** pop-up menu.

NOTES:
• In metric drawings, you can choose **Hide Metric Units**, which prevent the unit abbreviations (mm, cm and so on) from appearing when dimensions are displayed on the drawing.
• You can also control the number of places displayed behind the decimal point in both metric and English decimal drawings *(see Document units and scale on page 6-21)*.

Setting the scale

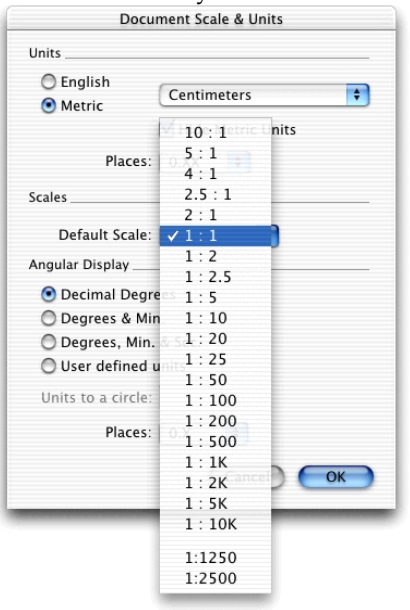
Before starting a drawing, you need to determine the sizes of the objects and the paper you are going to use. For large drawings it is impractical to draw objects at their actual sizes; it is necessary to reduce them, yet still maintain their proper proportions.

A scale, the ratio of the object's size on the drawing to its size in the real world, accomplishes this. For example, if you choose a scale ratio of one-quarter inch equals one foot (1/4" = 1'), a line drawn ten inches long on a drawing would represent a 40 foot line in the real world.

NOTE: When you paste an existing object into a drawing with a different scale, the size the object is drawn at will automatically adjust to conform to the scale of the new drawing.

To specify the default scale

1. Open the **Layout** menu and choose **Set Scale/Units**. The **Document Scale & Units** dialog appears.
2. Click the **Default Scale** pop-up menu. The **Default Scale** pop-up menu shows the scales available for the chosen unit system.



3. Select the scale you want.

   The new scale will be displayed.

4. Click the **OK** button to close the dialog and apply the changes.

Setting the drawing page size

You can set a drawing's page size, page orientation and total size depending on your needs.

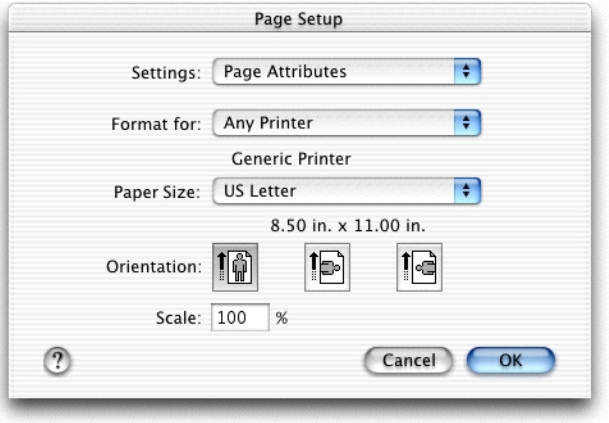
If necessary, you can create a drawing that will print over several sheets of paper, up to the drawing size limit of MacDraft Personal Edition.

The choice of page size is subject to the page sizes available with the currently active printer or printing device. For example, if the printer you've selected supports only letter-size and legal-size paper, you cannot print to larger or smaller sheets *(see Drawing layout on page 8-1)*.

To set your drawing's page size and orientation

1. Choose **Page Setup** from the **File** menu.

   The **Page Setup** dialog appears.



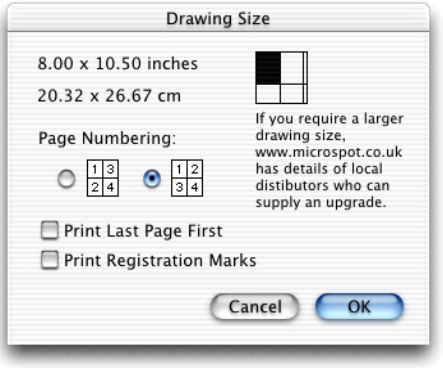
2. Select the paper size you want for printing your drawing.
3. Select the page orientation (horizontal or vertical) you want for printing your drawing.
4. Click the **OK** button to close the dialog.

   Your drawing will now have the desired page size and orientation assigned.

NOTE: As MacDraft Personal Edition has a limited drawing size, if your printer can print to large paper sizes, the drawing size may not be as great as a single page.

Changing the drawing size

Open the **Layout** menu and choose **Drawing Size**. A dialog appears displaying the current total drawing size in the form of a block diagram.



This diagram represents the maximum drawing size available; each block represents a single page. The blocks that are darkened indicate the current drawing size. You can control the overall size and shape of the drawing by clicking in the diagram.

To change the drawing size

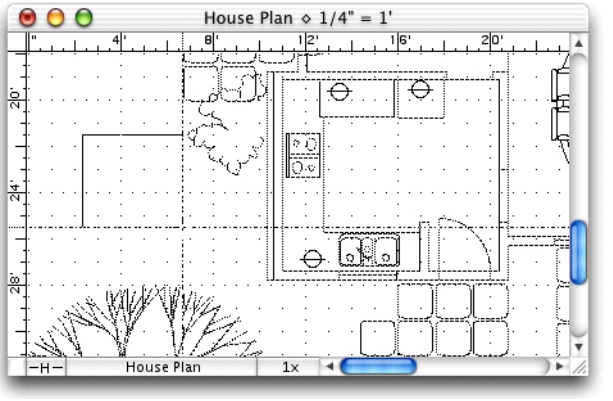
1. Click one of the page blocks and hold down the mouse button.
2. Drag until you have activated the number of page blocks required for the drawing size you want and release the mouse button.
3. Click the **OK** button to close the dialog.

The MacDraft drawing window generally shows only a portion of the overall drawing. Therefore, when you change the drawing size it might not be noticeable in the window until you zoom out or scroll to another area of the drawing *(see Zooming in or out on a drawing on page 2-99)*.

Rulers and cursors

MacDraft's on-screen rulers can help you draw and position objects in precise locations on your drawing. They appear along the top and left sides of the drawing window, and reflect the current position of the window during scrolling. At magnified views (zoomed in or out), they change size accordingly.

The rulers are especially useful in conjunction with MacDraft's crosshair drawing cursor. The crosshair cursor extends horizontally and vertically across the window, into the rulers, when a drawing tool is active.



Rulers

The rulers can show either on-screen sizes (standard rulers) or values that match the current scale and units. For example, on a 1/8" = 1' scale, the major scale ruler divisions will be in increments of eight (8 ft., 16 ft., and so on) *(see Rulers on page 6-8)*.

To display Microspot MacDraft's rulers

- Choose **Show Rulers** from the **Layout** menu.

  The rulers will be displayed and a checkmark appears by the **Show Rulers** command in the **Layout** menu.

To display scale rulers (if Show Rulers is on)

- Choose **Scale Rulers** from the **Layout** menu.

To display standard rulers (if Show Rulers is on)

- Choose **Standard Rulers** from the **Layout** menu.

Cursors

To activate the crosshair cursor

- Choose **Cross Cursor** from the **Options** menu.

  When a drawing tool is selected, the crosshair cursor appears. A checkmark appears by the **Cross Cursor** command in the **Options** menu.

To activate the small cursor

- Choose **Cross Cursor** from the **Options** menu again.

  The checkmark disappears from the **Cross Cursor** command in the **Options** menu. When a drawing tool is selected, the cursor appears as a small plus sign.

Starting a drawing

With these settings in place, you're ready to start drawing. The settings you defined: units, scale, page setup, drawing size, rulers and drawing cursor remain active until you change them.

(For details on using MacDraft's drawing tools *see Chapter 2 - Creating and editing objects on page 2-1*, *Chapter 3 - Changing the appearance of objects on page 3-1*, and *Chapter 4 - Annotating your drawing on page 4-1*.)

◆ Selecting objects

You must always select an object before you can make any changes to it. Two fundamental principles of using MacDraft are as follows:

1. You select an item.
2. You choose what to do to the item you have selected.

   For example, if you want to change the pattern of an object, you first select it, then choose a menu command to change it.

You can select a single object which you want to change or (for some operations) you can select multiple objects in order to make the same change to each selected object simultaneously.

Once you have selected an object, small black squares appear on its borders or at each end. These squares are called edit handles. For example, a selected rectangle will have eight edit handles; a selected line will have one handle at each end point. The following procedures will show you various ways of selecting objects on your drawing.

Activating the pointer mode

Before you can select an object on your drawing, you must first activate the pointer. The pointer is used to resize, edit and move objects on a drawing.

Choosing the pointer

To choose the pointer

Position the cursor on the **Pointer** icon in the **Tool** palette and click it.

NOTE: When you move the cursor over the **Tool** palette, the cursor will temporarily turn into the arrow pointer to allow you to select a tool.

NOTE: You can also return to the pointer mode by clicking an unused area of the drawing (except when the Text tool is active).

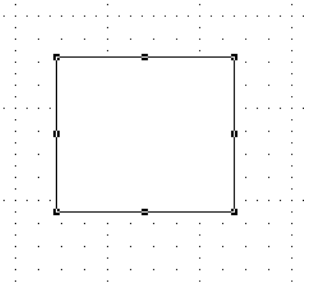
Selecting an object

An object is anything that you have created, including rectangles, circles, lines, arcs, freehand shapes and text.

To select an object

1. Return to the pointer mode by clicking the **Pointer** icon or by clicking a blank area of your drawing.
2. Position the tip of the pointer on the object and click.

3. The object is selected and selection handles appear.

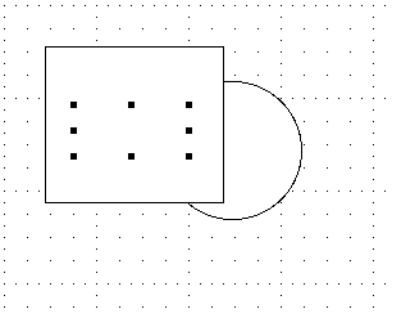


NOTE: To select a non-filled object, position the pointer exactly on the edge of the object.

Selecting hidden objects

To select an object hidden behind other objects

1. Position the pointer over the hidden object's estimated location.
2. Double-click this place (once to select the front object and then once again to select the object hidden behind it).
3. You should now see the handles of the hidden object showing through the visible object.



Once the hidden object is selected, you can move it or choose **Bring to Front** from the **Arrange** menu to move it in front of other objects *(see Moving objects backwards and forwards on page 5-21)*.

Selecting multiple objects

Select multiple objects to make the same change to all the selected objects at the same time.

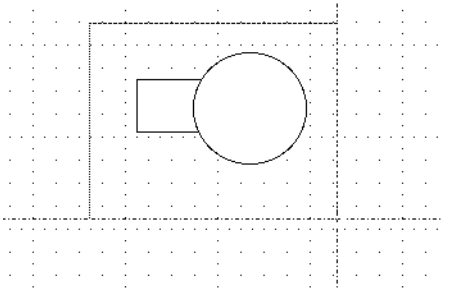
To select multiple objects using the Pointer

1. Select the first object by clicking it.
2. Press and hold down the **Shift** key.
3. Select additional objects by clicking them, then release the **Shift** key.

To select multiple objects using the Selection tools

1. Click the **Inclusive Selection** tool in the **Tool** palette.

2. Position the pointer above and to the left (for example) of the objects to be selected.
3. Holding down the mouse button, drag diagonally across until you have enclosed all the objects you want to select in a selection box and release the mouse button.



NOTE: If you choose the **Exclusive Selection** tool  and drag out a selection box to select multiple objects, all objects that the selection box touches will be selected, not just those that are completely enclosed.

Deselecting objects

You can use the Shift-click method to deselect selected objects. This capability allows you to exclude a specific object from a selection.

To deselect an object

1. Return to the pointer mode by clicking the **Pointer** tool.
2. Hold down the **Shift** key.
3. Click the object you want to deselect and release the **Shift** key.

   The edit handles will no longer appear on the deselected object.

Select none

To deselect all selected objects, use the **Select None** command.

To select none

1. Hold down the **Shift** key.

   The **Select All** command in the **Edit** menu will be changed to **Select None**.
2. Choose **Select None** from the **Edit** menu.

   All objects in the document will be deselected.

Selecting all objects in a document

To select all objects in the document

- Open the **Edit** menu and choose **Select All**.

  Notice that all objects and text in the document are selected. If you choose **Select All** while you are in the text mode and have an insertion point selected in a text block, the entire text block will be selected.

Selecting text on your drawing

The two techniques for selecting text are: using the I-beam pointer (the text cursor) to select all or part of a piece of text; and using the arrow pointer to select a whole text object. The steps for each are outlined below. For more details about selecting text, see *Selecting/editing text on page 4-4*.

Using the I-beam pointer to select text

1. Activate the **Text** tool in the **Tool** palette by clicking it.

2. Position the I-beam pointer on one side of the text you want to select.
3. Holding down the mouse button, drag the cursor through the character(s) until all the text you want to select is highlighted, and release the mouse button.

Using the arrow pointer to select text

- Click with the pointer on a text object.

  Notice that edit handles appear around the text.

◆ Saving and exporting

Saving documents

The **Save** function allows you to save a new document or any changes you have made to an existing document.

Saving a document in MacDraft format

Saving and naming an untitled document

When you first create a new document it will have the name untitled# (# indicates the number of your new document, for example untitled3).

To save and name the document

1. Choose **Save** or **Save As** from the **File** menu.

   The standard **Save** dialog appears.
2. Specify the location to save the document and enter a name for it.

You may use any character or symbol on the keyboard (except a colon {:} and {/}) You can also use uppercase or lowercase characters, with spaces between words.

NOTE: If you are running MacDraft under A/UX®, be sure to observe the standard Unix limitations on file names.

3. Click the **Save** button.

   The document will be saved at the location, and with the name, specified.

Saving changes made to a previously saved document

While working on your document, you should save it regularly to avoid possible losses.

To save changes made to a previously saved document

- Select **Save** from the **File** menu.

  The document on the disk will be updated to include the changes you have made.

Saving a copy of a document

By using the **Save As** command you can save an existing document using another name without altering your original document.

To save a copy of a document

1. Choose **Save As** from the **File** menu.

   The standard **Save** dialog appears.
2. Specify a location and enter a name for the new document.
3. Click the **Save** button.

   The document will be saved with the name and at the location specified.

Saving a document in another format

NOTE: See *Appendix C - File formats on page C-1* for information about opening and saving documents in different formats.

Saving a document as stationery

MacDraft allows you to save stationery files which can act as templates for new documents. For example, you can create a file containing certain images, text and settings, then save it as a stationery file. When you open that stationery file, MacDraft gives you a new untitled drawing containing the images, text and settings from the stationery file. You can then add to the drawing as required for a specific situation.

Using stationery files is similar to creating a pad of stationery, perhaps featuring a company logo at a particular scale, then tearing off sheets of paper to use as the basis for new drawings.

Settings that are saved in a stationery document include the scale, units, grid snap, fill patterns and colors in the document.

To save a document as stationery

1. Choose **Save As** from the **File** menu.
2. In the standard **Save** dialog that appears, choose **Stationery** from the **Format** pop-up menu.
3. Enter a name for the file.
4. Click the **Save** button.

To 'tear off' a piece of stationery to use it for a new document

- Double-click the stationery document's icon.

  A new untitled document appears. The new document will contain the settings and objects defined for the stationery document.

Saving a document in another format

See *Appendix C - File formats on page C-1* for information about opening and saving documents in different formats.

To save a document in another format:

To save a document in another format, choose **Save** from the **File** menu then select the desired format from the **Format** pop-up menu in the standard **Save** dialog that appears. If appropriate an extension will automatically be added to the file name and the file will be saved in the specified format.

To open a document in another format:

To open files in another format, launch MacDraft and choose **Open** from the **File** menu. In the standard **Open** dialog, select the desired file format from the **Format** pop-up menu, then choose the file to open.

Exporting a document

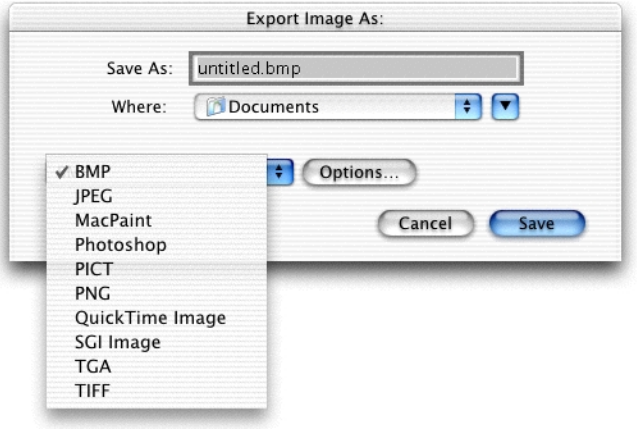
The **Export File** command in the **File** menu can be used to export files in any format supported by QuickTime Graphic Exporters, for example JPEG and BMP formats.

To export files

1. Choose **Export File** from the **File** menu.

   A standard dialog appears.

2. Select the appropriate file format from the pop-up menu at the bottom of the dialog.



   The relevant extension will be added to the file name and the file will be exported in that format. See your QuickTime documentation for further details.

◆ Closing documents

Closing MacDraft documents

To close the current document

1. Open the **File** menu and choose **Close**.

   If the document contains unsaved changes, a dialog appears asking if you want to save changes made to your document before closing it.

2. Click one of the following buttons:

- Click the **Save** button to close the document and save the changes.

- Click the **Don't Save** button to close the document without saving the changes.
- Click the **Cancel** button to return to the document.

To close all documents

1. Hold down the **Option** key.

   The **Close** command in the **File** menu will be changed to **Close All**.

2. Choose **Close All** from the **File** menu.

   If any documents contain unsaved changes, dialogs appear asking if you want to save changes made to your documents before closing them.

3. Click one of the following buttons:

- Click the **Save** button to close the document and save the changes.
- Click the **Don't Save** button to close the document without saving the changes.
- Click the **Cancel** button to return to the document.

  All the open documents will be closed.

◆ Quitting Microspot MacDraftPersonal Edition

When you are finished using MacDraft you can quit the application and return to the desktop.

To quit MacDraft

1. Open the **MacDraft application** menu and choose **Quit MacDraft**.

   If your open document contains unsaved changes, a dialog appears giving you the chance to save changes made to your document before quitting.

2. Click one of the following buttons:

- Click the **Save** button to save the changes before quitting.
- Click the **Don't Save** button to quit MacDraft without saving the changes.
- Click the **Cancel** button to avoid the **Quit** command and return to the document.

Chapter 2 - Creating and editing objects

◆ Getting started

The drawing environment

When you open a new document in MacDraft, the following conditions are preset unless you use stationery *(see Saving a document as stationery on page 1-31)*:

- Document size is (at most) a single sheet of paper.

  NOTE: As MacDraft Personal Edition has a limited drawing size, the drawing size may not be as great as a single sheet of paper if the paper size chosen is larger than the drawing size limit.

- Scale is set at 1:1 (one inch equals one inch).
- Grid lines are shown on the drawing area.
- Snap Grid is turned on.
- All lines and borders of objects will be drawn with an one-pixel, solid-black line.
- All closed rectangles, circles, arcs polygons and freehand objects will be shaded with a white fill. Open objects will have no fill.

The method of drawing most objects is very similar: choose the tool, decide on a starting point, press and hold down the mouse button, then drag to create the object. Drawing polygons, arcs and curves is a little different. Step-by-step instructions on how to draw and change the size of each type of object are in the following pages.

NOTES:
• See *Chapter 6 - Drawing aids on page 6-1* for details of several useful features that make your drawing tasks easier.
• See *Cursors on page 1-23* for details of the crosshair cursor which can be of use when drawing objects.

Cancelling actions

The current action can be cancelled (in most cases), while it is in progress.

To cancel the current action while it is in progress

- Hold down the **Command** key and press the period key (.), or

- Press the **Escape** key

For example, when drawing a rectangle using a rectangle drawing tool, press **Escape** or **Command-period** to cancel the entire drawing operation.

Choosing drawing tools

The tools used to create objects are located on the **Tool** palette.

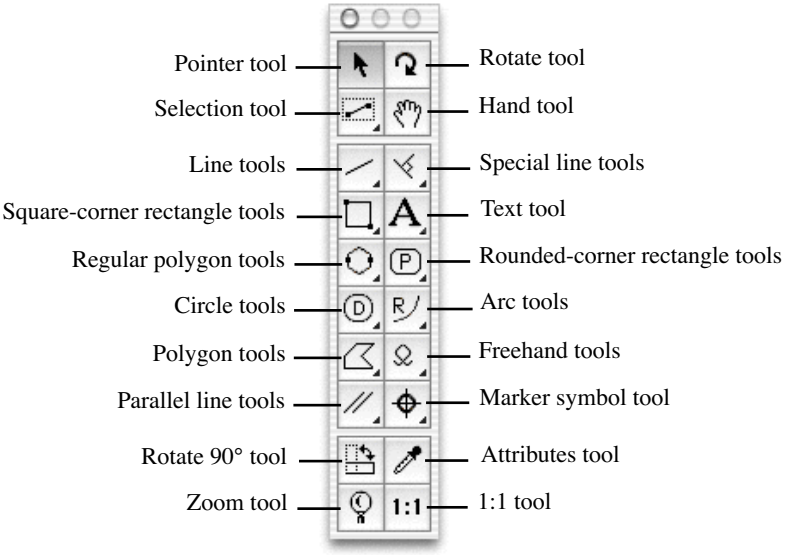
Displaying the Tool palette

If the **Tool** palette is not shown, you can open it in the following way.

To open the Tool palette

- Choose **Tool** from the **Window** menu, or
- Choose **Tool** from the pop-up menu at the bottom left of the document window.

The **Tool** palette appears



Selecting tools

The palette holds icons that represent certain tools. Some tools are stacked with related tools. These provide different ways of creating the same type of object, or create similar objects with slightly different characteristics. For example, the different square-corner

rectangle tools relate to how you create a rectangle; either from a corner or from its center. On the other hand, the rounded-corner rectangle tools relate to the characteristics of the rectangles' corners; proportional, constant, or elliptical.

When you start to use MacDraft, each tool has the default option shown on the palette.

To use a tool, you activate, or select, the appropriate icon. As long as the icon is highlighted, you can draw the object associated with the icon.

You can activate any visible tool in the **Tool** palette by positioning the pointer on the icon and clicking it. To change the current tool in a set, choose the desired item from a pop-up menu that shows the tools available.

To exit a drawing tool mode, click the **Pointer** icon in the **Tool** palette.

Pop-up menus

The tools in a tool set are accessed by pop-up menus.

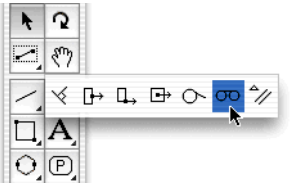
Icons used to access pop-up menus have clipped corners. Pop-up menus are opened by clicking an icon in the palette and holding down the mouse button.

To select an option from a pop-up menu

1. Click the appropriate icon in the **Tool** palette and hold down the mouse button.

   A pop-up menu appears.

2. Drag to the menu item that represents the desired tool.



   As you drag, the menu items will be highlighted.

3. When the desired menu item is highlighted, release the mouse button.

   The pop-up menu disappears and the tool icon will be changed to show you the currently selected tool.

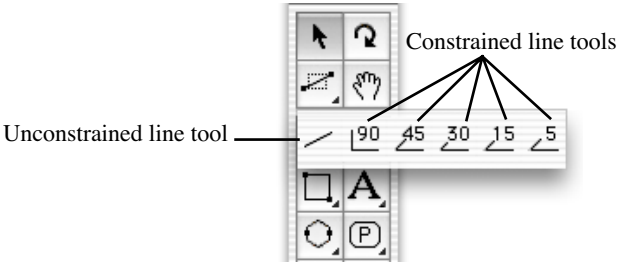
Tool options

Some tools have options associated with them. These can be displayed by holding down the **Option** key and clicking the tool icon, or by selecting the tool and choosing **Tool Options** from the **Options** menu. See details of individual tools for information about any options available.

◆ Drawing basic lines

MacDraft has two types of line tools: constrained and unconstrained. The constrained line tools are used to draw straight lines that snap to specified angle increments; the unconstrained line tool is used to draw straight lines at any angle.

Constrained lines can be drawn at increments of 5°, 15°, 30°, 45° and 90°.



NOTE: The final point of a line can be snapped to the mid point, end point or center point of some existing objects *(see Line snapping on page 6-20)*.

Choosing line tools

Line tools are chosen from the **Line tools** pop-up menu in the **Tool** palette.

To choose a line tool

1. Hold down the mouse button on the line icon on the **Tool** palette.

   The **Line tools** pop-up menu appears.

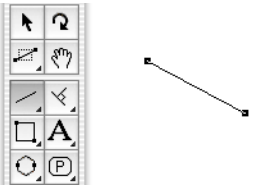
2. Drag until the type of line you want is highlighted, and release the mouse button.

   The tool you choose appears on the **Tool** palette.

Drawing unconstrained lines

To draw an unconstrained line

1. Click the **Unconstrained line** tool in the **Tool** palette. (If the **Unconstrained line** tool is not visible, select it from the **Line** pop-up menu.)
2. Position the cursor at the point on the drawing that you want the line to begin.
3. Holding down the mouse button, drag in any direction until the line is the length you want and release the mouse button.



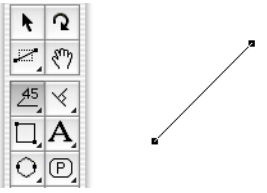
NOTE: If you hold down the **Shift** key while you draw using the **Unconstrained line** tool, the line will snap to 45˚ angles.

Drawing constrained lines

To draw a constrained line

1. Choose the line tool showing the desired angle of constraint from the **Line** pop-up menu in the **Tool** palette.
2. Position the cursor at the point on the drawing that you want the line to begin.
3. Holding down the mouse button, drag until the line is the length you want and release the mouse button.

   The line will be drawn at the angle specified. The diagram below shows a line constrained to 45˚.



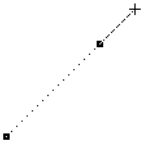
NOTE: If you hold down the **Shift** key while you draw using a constrained line tool, the line can be drawn at any angle.

Changing the length of a line

It is easy to edit a line to change its length.

To change the length of a line

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the line you want to change.
3. Position the tip of the pointer on one of the line's handles.
4. Holding down the mouse button, drag until the line is the length you want and release the mouse button.



Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or resize a line, the end of the line will snap to the nearest grid intersection point.

- Hold down the **Command** key when drawing or resizing a line to avoid the line snapping to the grid.
- Hold down the **Option** key when drawing a line and the line length will snap to the nearest grid increment.

If there is an angular snapping grid set for the document *(see Angle snap on page 6-16)*, when you draw an unconstrained line, it will snap to the angular grid.

- Hold down the **Shift** key when drawing an unconstrained line to avoid the line snapping to the angular grid.

NOTE: The **Constrained line** tools are not affected by the angular grid.

Drawing rectangles

Rectangles can be drawn with square or rounded corners.

Square-corner rectangles

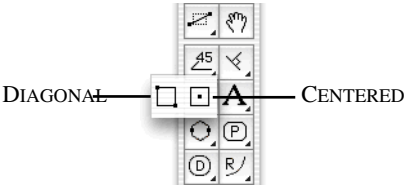
Square-corner rectangles can be drawn in two ways: from the corner (Diagonal) or from the center (Centered).

Choosing square-corner rectangle tools

To choose a square-corner rectangle tool

1. Hold down the mouse button on the Square-corner rectangle tool in the **Tool** palette.

   The Square-corner rectangle pop-up menu appears.



2. Choose either the **Diagonal** or the **Centered** tool and release the mouse button.

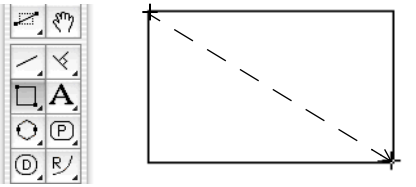
Drawing a square-corner rectangle from its corner

When you use the **Diagonal** tool for drawing a square-corner rectangle, you choose the position of one corner of the rectangle, then drag out the rest of the rectangle from that corner point.

To draw a rectangle from its corner

1. Choose the **Diagonal square-corner rectangle** tool from the **Square-corner rectangle** pop-up menu.
2. Position the cursor where you want one corner of the rectangle to appear on the drawing.
3. Press and hold down the mouse button.

4. Drag in any direction until the rectangle is the desired size, then release the mouse button.



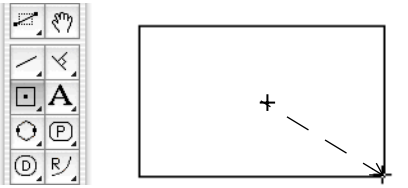
NOTE: Hold down the **Shift** key while drawing a rectangle and it will be restricted to a square.

Drawing a square-corner rectangle from its centre

When you use the **Centered** tool to draw a square-corner rectangle, you center the rectangle round a specified point on the drawing.

To draw a rectangle from its center

1. Choose the **Centered square-corner rectangle** tool from the **Square-corner rectangle** pop-up menu.
2. Position the cursor where you want the center of the rectangle to appear on the drawing.
3. Press and hold down the mouse button.
4. Drag in any direction until the rectangle is the desired size and release the mouse button.



NOTE: Hold down the **Shift** key while drawing a rectangle and it will be restricted to a square.

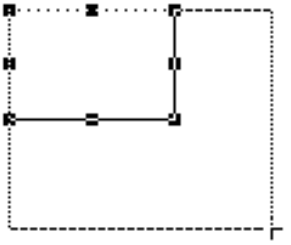
Changing the size of a square-corner rectangle

It is easy to edit a rectangle to change its size.

To change the size of a rectangle

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the rectangle to resize.
3. Position the tip of the pointer on one of the edit handles.
4. Holding down the mouse button, drag until the rectangle is the size you want and release the mouse button.

   The rectangle will be resized either diagonally or by its center, depending on the tool originally used to draw it.



NOTE: Hold down the **Shift** key and resize a rectangle using one of the corner edit handles and it will be restricted to its original proportions.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or resize a rectangle, the corners of the rectangle will snap to the nearest grid intersection points.

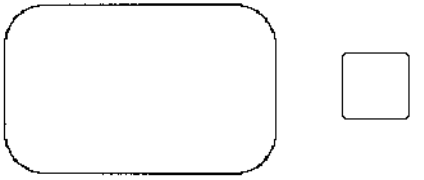
Hold down the **Command** key when drawing or resizing a rectangle to avoid the corners snapping to the grid.

Rounded-corner rectangles

Rounded-corner rectangles can be drawn with proportional (P), constant (C) or elliptical (E) corners. The type of rounded-corner rectangle you choose to draw will be determined by the way you wish the size and shape of the corners to change when you edit the rectangle.

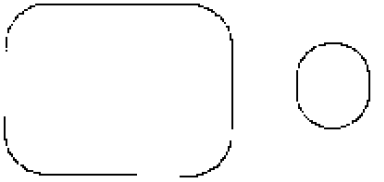
- Rounded-corner rectangles with proportional corners

When you resize a rounded-corner rectangle with proportional corners, the radius of the corners will remain proportional to the size of the rectangle as shown below.



- Rounded-corner rectangles with constant corners

  When you resize a rounded-corner rectangle with constant corners, the corners will always have the same radius regardless of the size of the rectangle.



- Rounded-corner rectangles with elliptical corners

  When you draw a rectangle with elliptical corners, the major and minor axes of the elliptical arcs that form the corners are determined by the size of the rectangle; the size of the elliptical arcs on the corners grows or shrinks in proportion to the rectangle's size.

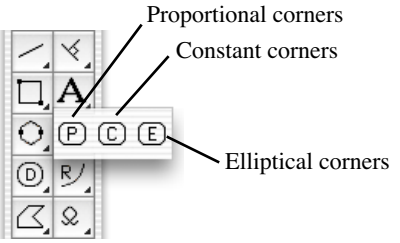
Choosing a rounded-corner rectangle tool

Choose the desired tool from the **Rounded-corner rectangle** pop-up menu.

To choose a rounded-corner rectangle tool

1. Click the **Rounded-corner rectangle** tool in the **Tool** palette and hold down the mouse button.

The **Rounded-corner rectangle** pop-up menu appears.



2. Holding down the mouse button, drag through the menu until the tool you want is highlighted, and release the mouse button.

   The icon representing the tool you selected (P for proportional, C for constant, or E for elliptical) appears on the palette.

Drawing a rounded-corner rectangle

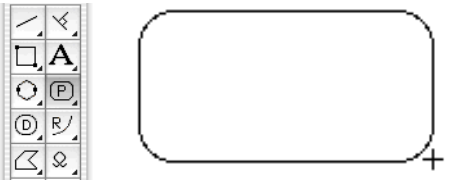
All the rounded-corner rectangles are drawn in the same way.

To draw a rectangle with the chosen corner style

1. Choose the desired tool from the **Rounded-corner rectangle** pop-up menu.
2. Position the cursor at the point you want one corner of the rectangle to appear on your drawing.

   NOTE: As the rectangle has rounded-corners this point will determine the corner position for the rectangle's bounding frame.

3. Press and hold down the mouse button.
4. Drag in any direction until the rectangle is the desired size and release the mouse button.



NOTE: Hold down the **Shift** key as you draw a rounded-corner rectangle and the shape of the rectangle will be restricted to a rounded-corner square.

Editing rounded-corner rectangles

Changing the size of rounded-corner rectangles

Rounded-corner rectangles can be resized in the same way as square-corner rectangles *(see Changing the size of a square-corner rectangle on page 2-8)*.

Changing the corner shape of rounded-corner rectangles

When you select a rounded-corner rectangle, an extra edit handle called the corner-edit handle appears, normally inside and near the upper left corner.

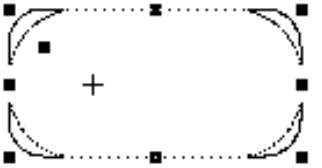
This edit handle is used to change the shape of the corners.

To change the corner shape of proportional and constant-corner rectangles

With proportional and constant-corner rectangles, you can drag the corner-edit handle in a diagonal direction to change the radius of the corner arc and reshape the rectangle.

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the rectangle you want to change.
3. Position the tip of the pointer on the corner-edit handle.
4. Hold down the mouse button and drag in one of the following directions:

- Drag downwards to the right to increase the radius of the corners.
- Drag upwards to the left to decrease the radius of the corners.



5. When the corners are the desired shape, release the mouse button.

To change the corner shape of elliptical-corner rectangles

When you draw a rectangle with elliptical corners, the elliptical arcs at the corners cover 90°. By dragging the corner-edit handle, you can change the radius of the arcs to change the shape of the corners. The arcs will still cover 90°.

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the elliptical-corner rectangle you want to change.
3. Position the tip of the pointer on the corner-edit handle.

4. Holding down the mouse button, drag until the corners are the shape you want and release the mouse button.

   Unlike other rectangles with rounded corners, you can drag the corner-edit handle on elliptical-corner rectangles in any direction. The direction in which you drag the handle determines the shape of the corners. The figure below shows how you can use the corner-edit handle to reshape the corners.

- If you drag the handle to the extreme upper left corner, the corners appear almost square.
- If you drag the handle to the center, the entire rectangle appears as an ellipse.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or resize a rectangle, the corners of the rectangle will snap to the nearest grid intersection points.

Hold down the **Command** key when drawing or editing a rectangle to avoid the edit handles snapping to the grid.

◆ Drawing regular polygons

A regular polygon is a closed object with equal sides and angles of equal length. The tools can be preset to draw shapes with from 3 to 16 sides.

Depending on which regular polygon tool you select, you can draw a regular polygon from edge to edge, center to edge, vertex to vertex, or center to vertex.

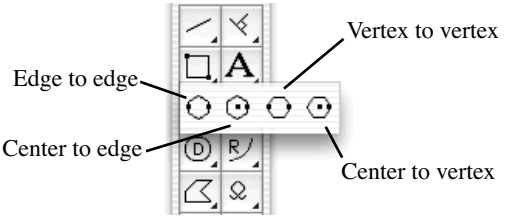
Choosing a regular polygon tool

Choose the desired tool from the **Regular polygon tool** pop-up menu.

To choose a regular polygon tool

1. Click the **Regular polygon tool** in the **Tool** palette and hold down the mouse button.

The **Regular polygon tool** pop-up menu appears.



2. Hold down the mouse button, drag through the menu until the tool you want is highlighted, and release the mouse button.

   The icon representing the tool you selected appears on the palette.

Setting the number of sides

The number of sides can be set before drawing the object.

To set the number of sides before drawing a regular polygon

1. Make sure that nothing is selected on the drawing.

- Press and hold down the **Option** key, then click the **Regular polygon** icon in the **Tool** palette, or
- Click the **Regular polygon** icon in the **Tool** palette and select **Tool Options** from the **Options** menu.

  The **Regular Polygon** dialog appears.

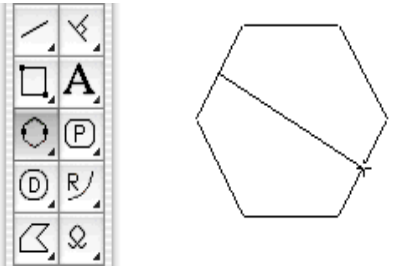
2. Enter the number of sides desired, then press the **OK** button.

Drawing a regular polygon

To draw a regular polygon

1. Choose the desired tool from the **Regular Polygon** pop-up menu.
2. According to the tool chosen, position the cursor at the point you want the center, edge or vertex of the polygon to appear on your drawing.

3. Holding down the mouse button, drag until the polygon is the desired size and release the mouse button.



NOTE: When you release the mouse button, the polygon is drawn as a single grouped object. If necessary, use the **Ungroup** command in the **Arrange** menu to ungroup the polygon for reshaping, breaking into separate items and so on *(see Grouping and ungrouping objects on page 5-26)*. Changing fills and line attributes *(see Chapter 3 - Changing the appearance of objects on page 3-1)*, and resizing can be performed while the object is still grouped.

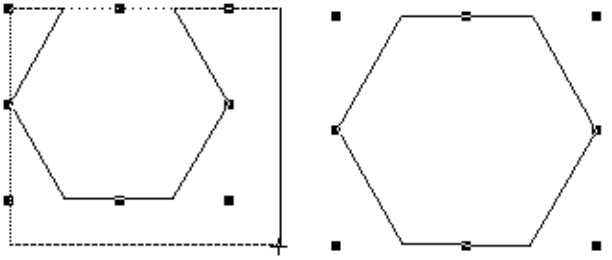
NOTE: Hold down the **Shift** key while drawing a regular polygon, and the angle of the diameter or radius of the polygon will snap to 45° increments.

Changing the size of a regular polygon

It is easy to edit a regular polygon to change its size.

To change the size of a regular polygon

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the regular polygon to resize.
3. Position the tip of the pointer on one of the edit handles.
4. Holding down the mouse button, drag until the regular polygon is the size you want and release the mouse button.



NOTE: Resize a regular polygon using one of the corner edit handles and it will be restricted to its original proportions.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or resize a regular polygon, the cursor will snap to the nearest grid intersection point.

- Hold down the **Command** key when drawing or editing a regular polygon to avoid the cursor snapping to the grid.

If there is an angular snapping grid set for the document *(see Angle snap on page 6-16)*, when you draw a regular polygon, its diameter or radius will snap to the angular grid.

- Hold down the **Shift** key when drawing a regular polygon to avoid its diameter or radius snapping to the angular grid.

◆ Drawing circles

You can draw a circle by its diameter (D), by its radius (R), by three points (3) or concentric to an existing circle.

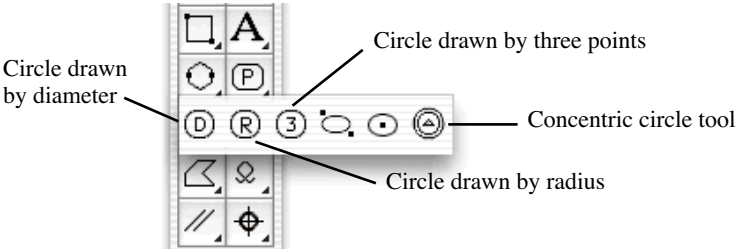
Choosing circle tools

Choose how you want to draw circles by selecting one of the tools in the **Circle** pop-up menu.

To choose a circle tool

1. Click the **Circle** icon in the **Tool** palette and hold down the mouse button.

   The **Circle** pop-up menu appears.



2. Holding down the mouse button, drag through the menu until the option you want is highlighted and release the mouse button.

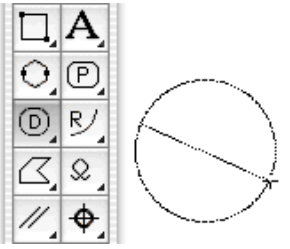
3. The tool you selected appears in the **Tool** palette.

NOTE: The other tools in this pop-up menu are used to draw ellipses *(see Drawing ellipses on page 2-21)*.

Drawing a circle by diameter

To draw a circle by diameter

1. Choose **Diameter** from the **Circle** pop-up menu.
2. Position the cursor at the point you want to begin drawing the circle.
3. Holding down the mouse button, drag until the circle is the size you want, and release the mouse button.



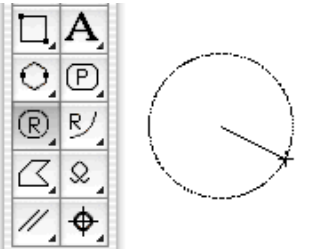
NOTE: Hold down the **Shift** key while drawing a circle by diameter and the diameter will be restricted to 45° increments.

Drawing a circle by radius

To draw a circle by radius

1. Choose **Radius** from the **Circle** pop-up menu.
2. Position the cursor at the point you want the center of the circle to be on your drawing.

3. Holding down the mouse button, drag until the circle is the desired size, and release the mouse button.



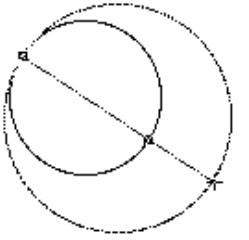
NOTE: Hold down the **Shift** key while drawing a circle by radius and the radius will be restricted to 45° increments.

Changing the size of a circle drawn by diameter or radius

After you have drawn a circle by diameter or radius, you can change its size by dragging one of its edit handles.

To change the size of a circle drawn by diameter or radius

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the circle you want to change.
3. Position the tip of the pointer on one of its handles.
4. Press and hold down the mouse button, drag the handle until the circle is the desired size, and release the mouse button.



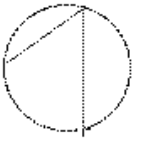
The circle will be resized either by diameter or by radius, depending on the tool originally used to draw it.

Drawing a circle by three points

Use the **Circle by three points** tool to draw a circle that passes through three specific points on your drawing.

To draw a circle by three points

1. Choose the **Circle by three points** tool from the **Circle** pop-up menu in the **Tool** palette.
2. Position the cursor on the first point through which you want the circle to pass.
3. Press and hold down the mouse button.
4. Drag to the second point through which you want the circle to pass and release the mouse button.
5. Without pressing down the mouse button, move the cursor to the third point through which you want the circle to pass and click this point.



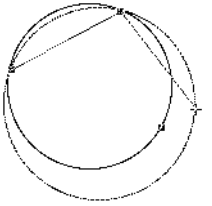
Three edit handles appear on the circle. The edit handles correspond to the three points used to define it.

Changing the size of a circle drawn by three points

You can change the size of a circle drawn by three points by moving its edit handles.

To change the size of a circle drawn by three points

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the circle you want to resize.
3. Position the cursor on one of the edit handles.
4. Press and hold down the mouse button.
5. Drag until the circle is the size you want and release the mouse button.



The circle will be redrawn to pass through the three points represented by the edit handles.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or resize a circle drawn by three points, the edit handles will snap to the nearest grid intersection point.

Hold down the **Command** key when drawing or editing a circle to avoid the edit handles snapping to the grid.

Drawing concentric circles

With MacDraft's **Concentric circle** tool, you can create new circles concentric to existing circles (sometimes called offset circles). The concentric circle will be of the same type and have the same line weight, line style and pen model as the original circle.

Concentric circles can be drawn in relation to any existing circle. Once drawn, a concentric circle is an independent circle that can be edited, moved or changed as required.

NOTE: The parent circle for the concentric circle must be in place before you choose the concentric circle tool.

To draw a concentric circle

Drawing a concentric circle from an existing circle takes two steps: Selecting the parent circle then clicking to specify the distance between the two.

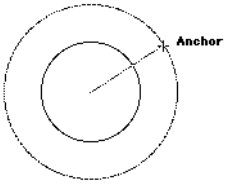
To draw a circle concentric to an existing circle

1. Choose the **Concentric circle** tool from the **Circle tools** pop-up menu in the **Tool** palette.

   The cursor will now read 'Click Circle', to let you know that you need to select a parent circle.

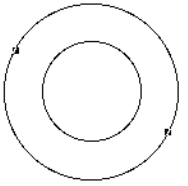
2. Click the parent circle.

The cursor will now read ‘Anchor’ and appears near a dotted copy of the parent circle to help you judge the distance between them.



3. Move the cursor until the concentric circle is the desired diameter, then click. As you move the cursor, the dotted sketching circle follows it.

   The concentric circle is drawn.



   The cursor returns to ‘Click Circle’, to let you draw more concentric circles.

4. To exit the offset cursor mode, click the **Pointer** icon on the **Tool** palette.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw a concentric circle, the radius of the concentric circle will snap to the nearest grid increment.

◆ Drawing ellipses

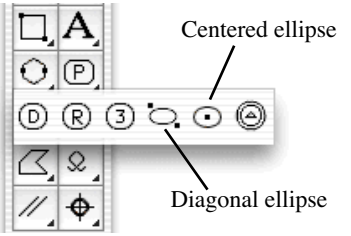
MacDraft provides two methods of drawing ellipses: diagonal and centered. The two types of ellipses differ in the way you draw and edit the ellipse. The ellipse tools are located in the **Circle** pop-up menu in the **Tool** palette. When drawn, an ellipse has eight edit handles, four on its circumference and four defining its bounding rectangle.

Choosing an ellipse tool

To choose an ellipse tool

1. Click the **Circle** tool in the **Tool** palette and hold down the mouse button.

The **Circle** pop-up menu appears.



2. Holding down the mouse button, drag until the ellipse tool you require is highlighted, and release the mouse button.

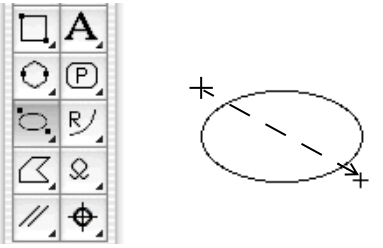
   The icon representing the tool selected appears in the **Tool** palette.

Drawing a diagonal ellipse

To draw a diagonal ellipse click a starting point and drag until the ellipse is the desired size and shape.

To draw a diagonal ellipse

1. Choose the **Diagonal ellipse** tool from the **Circle** pop-up menu.
2. Click the point you want a corner of the ellipse's bounding rectangle to appear on your drawing.
3. Holding down the mouse button, drag in a diagonal direction until the ellipse is the desired size, and release the mouse button.



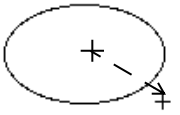
NOTE: Hold down the **Shift** key as you draw an ellipse and the shape of the ellipse will be restricted to a circle.

Drawing a centered ellipse

To draw an ellipse from its center, you first specify its center point, then drag to define its overall size and shape. The ellipse is projected from the specified center point.

To draw a centered ellipse

1. Choose the **Centered ellipse** tool from the **Circle** pop-up menu.
2. Click the point you want to be the ellipse's center.
3. Holding down the mouse button, drag until the ellipse is the desired size, and release the mouse button.



NOTE: Hold down the **Shift** key as you draw an ellipse and the shape of the ellipse will be restricted to a circle.

Changing the size of an ellipse

You change the size of an ellipse by dragging one of its eight edit handles.

To change the size of an ellipse

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the ellipse you want to resize.
3. Position the tip of the pointer on one of the edit handles, then press and hold down the mouse button.

4. Holding down the mouse button, drag the handle until the ellipse is the size you want, and release the mouse button.

NOTE: Hold down the **Shift** key and resize an ellipse using one of the corner edit handles and it will be restricted to its original proportions.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or resize an ellipse, the edit handles will snap to the nearest grid intersection point.

Hold down the **Command** key when drawing or editing an ellipse to avoid the edit handles snapping to the grid.

◆ Drawing arcs

You can draw circular and elliptical arcs; circular arcs can be drawn by radius or by three points. You can also draw arcs concentric to existing circular arcs.

NOTE: When an arc is drawn with a fill, it appears as an object shaped like a piece of pie. To draw only the arc line, make sure that no objects are selected, then choose "*" (for No fill) from the **Fill Color** submenu or "N" (for No fill) from the **Fill Pattern** submenu before you draw the arc. See *Object fill color on page 3-7* and *Object fill patterns on page 3-25* for more information.

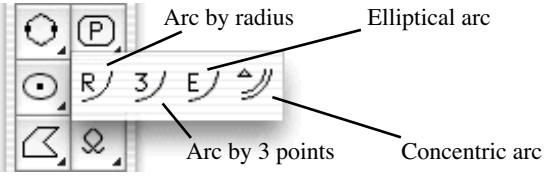
Choosing an arc tool

Choose the arc tool required from the **Arc** pop-up menu in the **Tool** palette.

To choose an arc tool

1. Click the **Arc** tool in the **Tool** palette and hold down the mouse button.

   The **Arc** pop-up menu appears.



2. Holding down the mouse button, drag through the menu until the desired tool is highlighted, and release the mouse button.

   The icon representing the tool chosen appears in the **Tool** palette.

Arc by radius

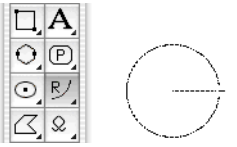
Drawing an arc by radius

To draw an arc by radius, first define a radius, then project the arc the desired number of degrees around a circle.

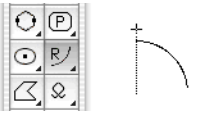
To draw an arc by its radius

1. Choose **Arc by radius** from the **Arc** pop-up menu in the **Tool** palette.
2. Position the cursor where you want to begin the radius of the arc, then press and hold down the mouse button.
3. Holding down the mouse button, drag in any direction to draw a line that represents the radius of the arc.
4. Release the mouse button.

   A dotted circle appears. This is the circle from which you will be able to define a segment for the arc.



5. Without pressing the mouse button, move the cursor away from the end of the radius line until you have created an arc of the desired number of degrees and click this place.



NOTE: If you drag outside the border of the arc, a line extending from the arc's border to the cursor will be drawn. This line allows you to align the ending point of the arc with other points on your drawing.

NOTE: Hold down the **Shift** key while defining the arc's radius to restrict the radius to an angle of increments of 45°.

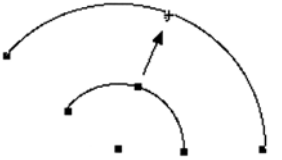
Changing the size of an arc drawn by radius

You can change the size of an arc drawn by radius either by changing the length of the radius or by changing the length of the arc. The following steps and diagrams will show you both methods, as well as their effect on the shape of the arc.

Changing the radius of an arc drawn by radius

To change the radius

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the arc you want to change.
3. Position the tip of the pointer on the edit handle in the middle of the arc's border, then press and hold down the mouse button.
4. Drag until the radius is the length you want and release the mouse button.



Changing the length of an arc drawn by radius

To change the length

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the arc you want to change.
3. Position the tip of the pointer on one of the handles at either end of the arc, then press and hold down the mouse button.
4. Drag until the arc is the length you want, then release the mouse button.

NOTE: You cannot create a complete circle using the arc tool. If you drag past the beginning of the arc, it will collapse back to a shorter length.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw an arc by radius, the cursor will snap to the nearest grid intersection point.

- Hold down the **Command** key when drawing or resizing an arc drawn by radius to avoid the cursor snapping to the grid.

If there is an angular snapping grid set for the document *(see Angle snap on page 6-16)*, when you draw or edit an arc by radius, the radius line will snap to the angular grid.

- Hold down the **Shift** key when drawing or editing an arc by radius to avoid the radius line snapping to the angular grid.

Arc by three points

Drawing an arc by three points

When drawing an arc by three points, you specify three points on the drawing through which you want the arc to pass. This tool is useful when you do not know the length of the radius of an arc, but do know that the arc should pass through three different points in a drawing.

To draw an arc by three points

1. Choose **Arc by 3 points** from the **Arc** pop-up menu in the **Tool** palette.
2. Position the cursor on the first point through which you want the arc to pass, then press and hold down the mouse button.
3. Drag to the second point through which you want the arc to pass.
4. Release the mouse button.
5. Without pressing the mouse button, move the cursor to the third point through which you want the arc to pass, and click this point.

NOTE: You cannot create a complete circle by using the arc tool. If you drag past the beginning of the arc, it will collapse back to a shorter length.

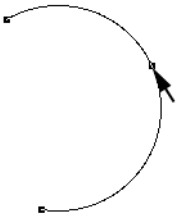
Changing the size of an arc drawn by three points

You can change the size of an arc drawn by three points by moving any one of the three handles that represent the three points originally used to define the arc.

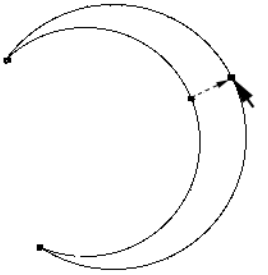
To change the size of an arc drawn by three points

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the arc you want to resize.

3. Position the tip of the pointer on the edit handle you want to move, then press and hold down the mouse button.



4. Drag the handle to a new location on the drawing.



5. Release the mouse button.

Elliptical arcs

Drawing an elliptical arc

You can use the **Elliptical Arc** tool to create elliptical arcs of a specific size and length. When you create an elliptical arc, you define an ellipse, then project an arc that is a portion of the ellipse. The actual size of the arc is determined by the size of the ellipse and the arc's length is determined by the number of degrees you project it during creation.

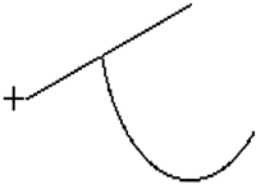
To draw an elliptical arc

1. Choose **Elliptical arc** from the **Arc** pop-up menu in the **Tool** palette.
2. Position the cursor on the point to be used as the center point for the ellipse that will be used to define the arc, then press and hold down the mouse button.

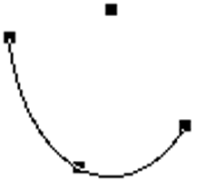
3. Drag until you have created an ellipse that is the size and shape you want, and release the mouse button.

4. Without pressing down the mouse button, move the cursor until you have projected an arc that is the length you want and click this point.

NOTE: A line will extend from the center of the ellipse to the cursor. This is used to define the ending angle of the arc. If you drag outside the ellipse, the line will extend past the ellipse's border; this allows you to align the ending angle of the arc with other points on your drawing.



The elliptical arc will be drawn.



Changing the starting angle of an elliptical arc

Part of the process of defining elliptical arcs involves defining the starting angle of the arc. The starting angle of the elliptical arc is determined by the position of the cursor when you release the mouse button after defining the initial ellipse, however, by using the **Shift** key to constrain the size of the ellipse, you can change the position of the starting angle without changing the size of the ellipse.

To change the starting angle of the arc

1. Choose **Elliptical arc** from the **Arc** pop-up menu in the **Tool** palette.
2. Position the cursor on the point to be used as the center point for the ellipse that will be used to define the arc, then press and hold down the mouse button.
3. Drag until you have created an ellipse that is the size and shape you want, then (without releasing the mouse button) hold down the **Shift** key.
4. Drag the line that marks the starting angle to a new position.

   The line marking the starting angle of the arc will follow the cursor's movement, but the ellipse will not be resized.
5. Release the mouse button and the **Shift** key when the line is in the desired position for the starting angle of the arc.
6. Without pressing down the mouse button, move the cursor until you have projected an arc that is the length you want, then click this place.

Editing an elliptical arc

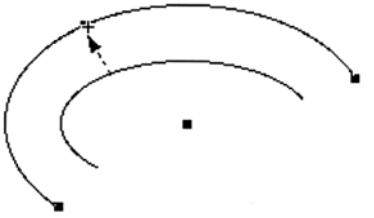
There are two ways you can edit an elliptical arc: you can change its shape and you can change its length. When you change its shape, you change the major and minor axes of the arc. When you change its length, you either increase or decrease the number of degrees the arc is projected.

Changing the shape of an elliptical arc

You can change the arc's shape, without moving its end points, by dragging the edit handle in the middle of the arc's border.

To change the shape of an elliptical arc

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the elliptical arc you want to change.
3. Position the tip of the pointer on the edit handle located in the center of the arc's border, then press and hold down the mouse button.
4. Drag until the elliptical arc is the shape you want, and release the mouse button.



Changing the length of an elliptical arc

You can use the edit handles on the end points of an elliptical arc to change its length.

To change the length of an elliptical arc:

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the arc you want to change.
3. Position the tip of the pointer on one of the handles at either end of the arc, then press and hold down the mouse button.
4. Drag until the arc is the length you want, and release the mouse button.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw an elliptical arc, the cursor will snap to the nearest grid intersection point.

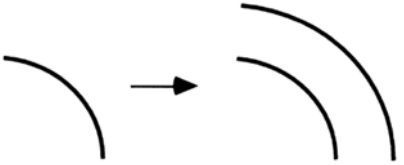
- Hold down the **Command** key when drawing or resizing an elliptical arc to avoid the cursor snapping to the grid.

If there is an angular snapping grid set for the document *(see Angle snap on page 6-16)*, when you draw or edit an elliptical arc, the line of the ending angle will snap to the angular grid.

- Hold down the **Shift** key when drawing or editing an elliptical arc to avoid the line of the ending angle snapping to the angular grid.

Concentric arcs

Using the **Concentric arc** tool you can create new arcs that are concentric to existing circular arcs. The concentric arc will be the same type (radial or three-point) and have the same line weight, line style and pen model as the original arc.



Concentric arcs can be created from any circular arc. Once drawn, a concentric arc is an independent object that can be edited, moved or otherwise manipulated as required.

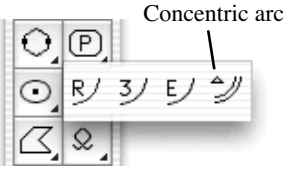
NOTE: The “parent” arc for the concentric arc must be in place before you choose the **Concentric arc** tool.

Drawing a concentric arc

Drawing a concentric arc requires two steps: selecting the source arc and specifying the offset distance.

To draw an arc concentric to an existing arc

1. Choose the **Concentric arc** tool from the **Arc** pop-up menu.

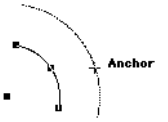


   The cursor now reads “Click Arc”, to let you know that you need to select an arc.

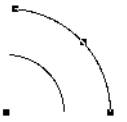
2. Click the source arc.

   The cursor now reads “Anchor” and appears near a dotted copy of the source arc, which helps you to position the concentric arc.

3. Move the cursor until the concentric arc is in the desired position.



   As you move the cursor, the ‘ghost’ arc gets larger or smaller.



   The concentric arc is drawn. The cursor returns to “Click Arc”, allowing you to create more concentric arcs if desired.

NOTE: To exit the **Concentric arc** tool, click the **Pointer** icon in the **Tool** palette.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw a concentric arc, the radius of the arc will snap to the nearest grid increment.

To change the increment, choose a different value from the **Layout** menu’s **Set Grid** submenu.

◆ Drawing irregular polygons and polylines

You can draw two types of multi sided irregular shapes: closed polygons and open polylines. Drawing irregular polygons and polylines is discussed in this section, information about drawing regular polygons can be found earlier in this chapter *(see Drawing regular polygons on page 2-13)*.

A polygon is a closed object made of three or more sides. It can be a complex, irregularly shaped object made up of many straight line segments. A polyline is an open object made of at least two straight line segments. The line segments used for either type of object can be of any length and drawn at any angle.

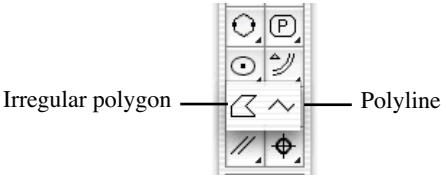
Choosing polygon tools

The type of multisided shape you can draw depends on the tool you choose from the **Polygon** pop-up menu in the **Tool** palette.

To choose a polygon tool

1. Click the **Polygon** tool in the **Tool** palette and hold down the mouse button.

   The **Polygon** pop-up menu appears.



2. Holding down the mouse button, drag until the **Irregular polygon** or **Polyline** tool is highlighted.
3. Release the mouse button.

Drawing an irregular polygon or polyline

To draw an irregular polygon or polyline, you position the cursor and click to define the end points of the lines that make up the shape.

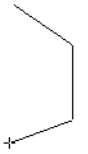
To draw an irregular polygon or a polyline

1. Choose the **Irregular polygon** or **Polyline** tool from the **Polygon** pop-up menu in the **Tool** palette.
2. Place the cursor at the point you want to begin drawing the object, then press and hold down the mouse button.

3. Drag until you have created a line that is the desired length and angle for the first side or line segment of the object.

4. Release the mouse button.
5. Without pressing down the mouse button, move the cursor to draw the second line segment.

6. When the second line is the desired length and angle, click this point.
7. Without pressing the mouse button, move the cursor to draw the next line segment.



8. When the line is the desired length and angle, click this place.

   You may decide that you want to change a line segment after you have drawn it. You can change the length and orientation of the last line segment drawn by using the Dynamic Editing feature.

9. To change the last line segment drawn, move the cursor back to the last defined point and click it.

   The previous line will reattach to the cursor, allowing you to move the end of the line to a new position on the drawing.

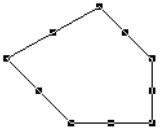
10. Move the cursor to a new position on the drawing and click it.

   The line will be drawn to the new position.

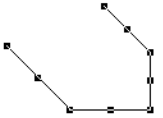
11. Continue to draw the rest of the object.
12. When you reach the last point to be placed, double-click the point.

This double-click action completes the object.

- If you are drawing an irregular polygon, the last point you clicked will be connected to the starting point of the shape by a straight line.



- If you are drawing a polyline, the object remains open.



NOTES:
• Hold down the **Shift** key while drawing an irregular polygon or polyline and the angle of the current line segment will snap to increments of 45°.
• The final point of a polyline can be snapped to the mid point, end point or center point of some existing objects *(see Line snapping on page 6-20)*.

Changing the shape of an irregular polygon or a polyline

Irregular polygons and polylines, like other objects, have handles when they are selected. Unlike most objects, they have two different kinds of handles: major (the handles on the vertex points or corners) and minor (the handles at the mid points of the line segments).

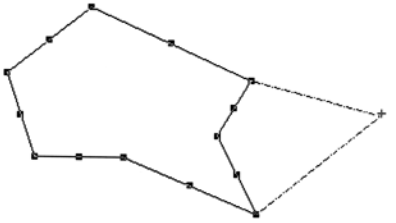
A major handle is used to move the end point of a line, which could change both the length and angle of the lines connected at that handle. A minor handle is used to move a line segment without changing its length or angle.

Changing the shape using the major handles

To change the shape using the major handles

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the irregular polygon or polyline you want to change.
3. Position the tip of the pointer on one of the major handles, then press and hold down the mouse button.
4. Drag the handle to a new location on the drawing, and release the mouse button.

When you move the handle, the connecting lines will follow. As soon as you release the mouse button, both lines will be redrawn according to the new handle location.



Changing the shape using the minor handles

To change the shape using the minor handles

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the irregular polygon or polyline you want to change.
3. Position the tip of the pointer on one of the minor handles, then press and hold down the mouse button.
4. Drag the line to a new location, and release the mouse button.

As you drag the minor handle, the line moves, but its length and angle remain the same.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or edit an irregular polygon or polyline, the ends of the line segments or the edit handles will snap to the nearest grid intersection points.

- Hold down the **Command** key when drawing or editing an irregular polygon or polyline to avoid the lines or edit handles snapping to the grid.
- Hold down the **Option** key when drawing an irregular polygon or polyline and the line lengths will snap to the nearest grid increment.

If there is an angular snapping grid set for the document *(see Angle snap on page 6-16)*, when you draw an irregular polygon or polyline, the line segments will snap to the angular grid.

- Hold down the **Shift** key when drawing an irregular polygon or polyline to avoid the line segments snapping to the angular grid.

◆ Drawing freehand lines, shapes and curves

At times you may want to draw an object that has a different shape to those provided for you in the **Tool** palette. For this reason, four freehand drawing tools are provided: **Freehand lines**, **Freehand shapes**, **Bezier curves** and **Spline curves**.

- The **Freehand lines** tool is used to draw open freehand objects.
- The **Freehand shape** tool is used to draw closed freehand objects.
- The **Bezier curve** tool is used to draw curves that are defined by four control points. The curve passes through only two of the control points, the other two control points are used to define the shape of the curve.
- The **Spline curve** tool is used to draw curves that are fitted to a series of defined points on your drawing. The curve passes through all the defined (or control) points.

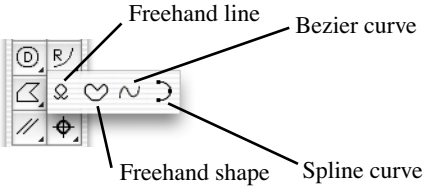
Choosing a freehand drawing tool

Draw either an open freehand line, a closed freehand shape, a Bezier curve or a spline curve by choosing the appropriate tool from the **Freehand drawing** tools pop-up menu in the **Tool** palette.

To choose a freehand drawing tool

1. Click the **Freehand drawing** tool in the **Tool** palette, then press and hold down the mouse button.

   The **Freehand drawing tools** pop-up menu appears.



2. Drag until the **Freehand line**, **Freehand shape**, **Bezier curve** or **Spline curve** tool is highlighted.
3. Release the mouse button.

   The icon representing the tool chosen appears in the palette.

Freehand lines or shapes

Drawing a freehand line or shape

To draw a freehand line or shape

1. Choose the **Freehand line** or **Freehand shape** tool from the **Freehand drawing tools** pop-up menu.
2. Position the cursor at the point you want to begin drawing, then press and hold down the mouse button.
3. Drag the cursor in any direction, creating a line just as you would with a pencil.
4. When you have completed the freehand line or shape, release the mouse button.

- If you are using the **Freehand line** tool the object remains open.
- If you are using the **Freehand shape** tool, the start and end points of your freehand line will be automatically joined by a straight line.

Open freehand shape

Closed freehand shape

Correcting a freehand line or shape while drawing

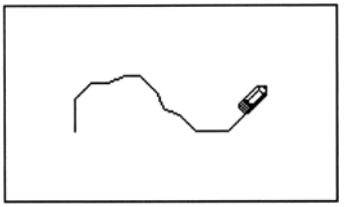
When you are using the **Freehand line** or the **Freehand shape** tool, you can erase portions of the line that you are drawing by using the **Shift** key.

To correct a freehand line

1. When you have made an error while drawing a freehand line, continue to hold down the mouse button, but stop drawing the line by ceasing to move the mouse.
2. Press and hold down the **Shift** key.

An icon of an inverted pencil with eraser appears at the end of your freehand line.

3. Using the mouse to move the eraser, retrace the portion of the line that you want to delete. The line will be erased.



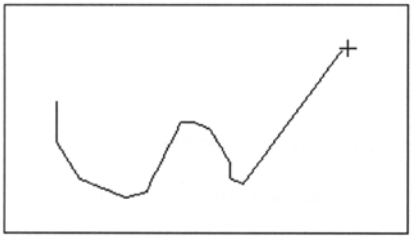
4. Release the **Shift** key to continue drawing the object.

Drawing a straight line as part of a freehand object

The constrained drawing mode for a freehand tool allows you to draw straight line segments as part of a freehand object.

To draw a straight line as part of a freehand object

1. Start drawing an object using the **Freehand line** or **Freehand shape** tool.
2. When you want to draw a straight line, hold down the **Option** key and drag the cursor in any direction until you have created a straight line that is the required length.



3. Release the **Option** key.

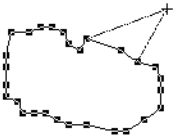
Changing the shape of a freehand object

You can drag the edit handles of a freehand object to change its shape.

To change the shape of a freehand object

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the freehand object you want to change by clicking it.
3. Position the tip of the pointer on one of its edit handles, then press and hold down the mouse button.

4. Drag the handle until you have created the shape you want, and release the mouse button.



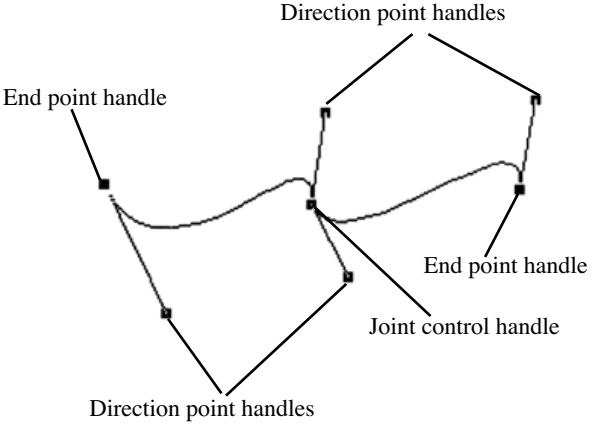
5. Continue to move other edit handles in the same way until you have obtained the shape you want.

Bezier curves

Drawing using the **Bezier curve** tool gives you a great deal of flexibility in creating original designs that feature elegant S shapes and loops.

A Bezier curve is a type of curve defined by four points, called "control points." Two control points define the end points of the curve, the others define the direction in which the curve is projected. When you select a **Bezier curve**, the four control points are represented by edit handles on the screen: two handles appear on the end points of the curve and two other handles appear on either side of the curve.

The two handles on the end points are called "end point handles," and the other two handles are called "direction point handles." You can move the handles to modify and change the size of the Bezier curve.



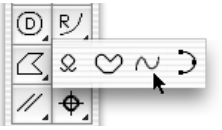
When you create a Bezier curve, direction lines are used to indicate the slope and direction of the curves you draw. A direction line is a line between two control points, and is tangent to an end point.

You can draw a series of Bezier curves using the **Bezier curve** tool. Each individual curve actually passes through only the two end control points. The direction lines define the overall shape of the curve. When you draw a series of curves, the curves are connected at "joints" or end control points that are shared by two curves.

Creating Bezier curves

To create a Bezier curve

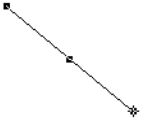
1. Choose the **Bezier curve** tool from the **Freehand drawing tools** pop-up menu in the **Tool** palette.



2. Position the cursor at the point you want the curve to begin, then press and hold down the mouse button.

   This defines the first end control point of the curve.

3. Drag in the direction you want to project the curve.



   A line with a handle at either end will be projected, the curve's start point being at the center of the line. This is a direction line. One of the handles will be attached to the cursor. By dragging the handle, you indicate the direction and slope of the curve. For example, if you drag the handle down all the way to the lower right corner of the screen, a curve sloping toward the lower right corner will result.

4. Release the mouse button.

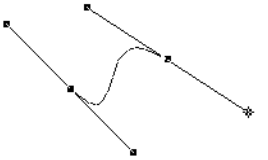
   The position of the cursor when you release the mouse button defines the first direction point.

5. Without pressing down the mouse button, move the cursor to the point you want the second end control point (the end point of the first curve and the start point for a next curve) to be, then press and hold down the mouse button. As you move the cursor the curve appears on the screen.

6. Holding down the mouse button, drag to define the curve's second direction point (this will also define the first direction point of the next curve).

The first direction point of the next curve is associated with the handle that is attached to the cursor. The second direction point of the first curve is associated with the handle at the opposite end of the direction line.

The curve's shape will change as you define the second direction point.



7. Release the mouse button.
8. To continue drawing curves, repeat steps six and seven above.
9. When you have defined the control handle for the curve's final point, double-click to complete the shape.

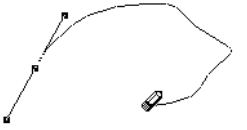
Correcting a Bezier curve while drawing

When you are using the **Bezier curve** tool, you can erase portions of the curve that you are drawing by using the **Shift** key.

To correct a Bezier curve

1. When you have made an error while drawing a Bezier curve, continue to hold down the mouse button, but stop drawing the curve by ceasing to move the mouse.
2. Press and hold down the **Shift** key.

   An icon of an inverted pencil with eraser appears at the end of your Bezier curve.
3. Using the mouse to move the eraser, retrace the portion of the curve that you want to delete. The curve will be erased.



4. Release the **Shift** key to continue drawing the object.

NOTE: You can also press the **Backspace** (**Delete**) key to delete the last point placed.

Drawing straight line segments

While drawing Bezier curves, you can draw straight line segments by clicking the mouse button instead of dragging the cursor with the mouse button held down.

To create a straight line segment

1. While drawing a Bezier curve, and after you have drawn at least one complete curve, move the cursor and click the new place.

   The resulting line will be curved, but the next line will be straight.

2. Without pressing and holding down the mouse button, move the cursor to where you want the end point of the line to be, then click this point.
3. Continue moving the cursor and clicking to create a series of straight line segments.

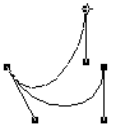
Modifying Bezier curves

You can modify a Bezier curve by dragging the edit handles. Edit handles appear on Bezier curves that are selected. When you move the end point handles, you move the end point of the curve; when you drag a direction handle, it exerts a "pull" on the curve closest to it and so changes its shape.

Moving the end point of a Bezier curve

To move the end point a Bezier curve

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the Bezier curve object you want to change by clicking it.



   Edit handles appear on the selected curve.

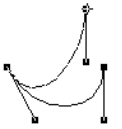
3. Position the tip of the pointer on one of the handles at either end of the curve, then press and hold down the mouse button.
4. Drag until the curve is the length you want, and release the mouse button.

Changing the shape of a Bezier curve

To change the shape of a Bezier curve

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.

2. Select the Bezier curve object you want to change by clicking it.

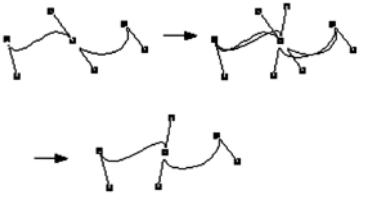


Edit handles appear on the selected curve.

3. Position the cursor on one of the direction handles, then press and hold down the mouse button.
4. Drag until the curve is the shape you want, and release the mouse button.

The curve will be reshaped to reflect the new position of the direction handle.

NOTE: Hold down the **Shift** key while selecting and moving the direction handle, and the direction handle and its opposite direction handle will pivot around the point on the curve. This will change the shape of the two curves controlled by those two direction control points, and will keep the curve smooth.



NOTES:
• If you drag a direction handle for the end point of a straight line segment, you reshape the straight line segment, causing it to become curved.
• You can create sharp corners on a Bezier curve by pulling both direction handles to one side or by dragging the direction handles of a direction line on top of an end control point.

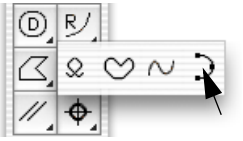
Spline curves

You can draw a type of curve that passes through a series of defined points on your drawing. This type of curve, called a spline curve, allows you to pick a series of points on a drawing and fit a curve to those points.

Drawing a spline curve

To draw a spline curve

1. Choose the **Spline curve** tool from the **Freehand drawing tools** pop-up menu in the **Tool** palette.



2. Position the cursor at the point you want the spline curve to start, then press and hold down the mouse button.
3. Drag until you reach one of the points through which you want the curve to pass.
4. Release the mouse button.

   A straight line appears between the starting point and the cursor to show you the slope of the curve segment.

5. Without pressing and holding down the mouse button, move the cursor to the next point you want the curve to pass through and click it.

   A curve will be drawn through the three points defined so far.

6. Continue moving the cursor and clicking the mouse button until you have defined all the points the curve is to pass through.

NOTE: Press the **Backspace** (**Delete**) key at any time to delete the last point placed.

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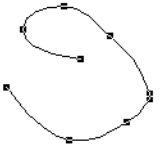
7. When you reach the last point, to complete the spline curve either

- Double-click this point or,
- Hold down the **Command** key and click this point.



The completed spline curve will be drawn. Edit handles appear on the control points used to define the curve.

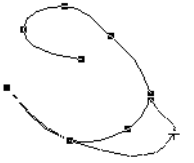
NOTE: To make the spline curve a closed object, finish the curve on the starting point.

Changing the shape of a spline curve

You can change the shape of a spline curve by dragging its control points.

To change the shape of a spline curve

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the spline curve object you want to change by clicking it.
3. Position the cursor on one of the edit handles (the edit handles represent the control points that were used to define the curve), then press and hold down the mouse button.
4. Drag to reposition the control point and modify the curve.



5. When the curve is the shape you want, release the mouse button.

◆ Drawing special lines

MacDraft provides a selection of special line tools to make it easy to draw lines in relation to existing objects. Lines can be drawn perpendicular to existing lines or edges; from the mid, end and center points of existing objects; at a tangent to, or at a tangent between, existing circles or arcs; offset from existing lines.

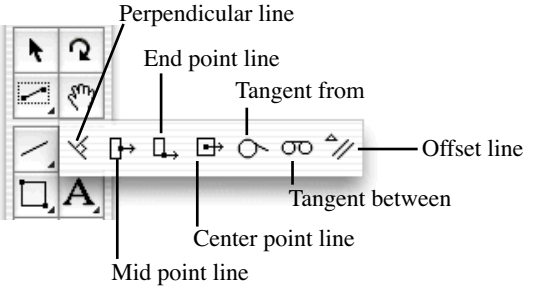
Choosing special line tools

To draw a perpendicular line; a mid point, end point, or center point line; a tangent line; or an offset line, choose the appropriate tool from the **Special line tools** pop-up menu in the **Tool** palette.

To choose a special line tool

1. Click the **Special line** tool in the **Tool** palette, then press and hold down the mouse button.

   The **Special line tools** pop-up menu appears.



2. Drag until the desired tool is highlighted.
3. Release the mouse button.

   The icon representing the tool chosen appears in the palette.

Perpendicular lines

The **Perpendicular line** tool is used for drawing lines perpendicular to existing lines, or perpendicular to the edges of polygons, circles, circular arcs or square-cornered rectangles.

Once a perpendicular line is drawn, it becomes a normal unconstrained line. You can edit it, resize it, or move it away from its original position.

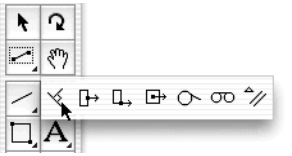
NOTE: The “anchoring” object for the perpendicular line must be in place before you choose the Perpendicular tool.

Drawing a line perpendicular to an existing object takes two steps: selecting the object to draw the line perpendicular to and specifying the end point.

Drawing perpendicular lines

To draw a line perpendicular to an existing object

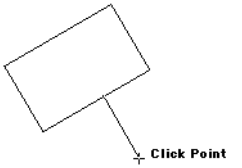
1. Choose the **Perpendicular line** tool from the **Special line tools** pop-up menu in the **Tool** palette.



   The cursor will now read "Click Line/Arc", to let you know that you need to select a line, circular arc or the edge of an object.

2. Click the line, arc or object edge that the line is to be drawn perpendicular to.

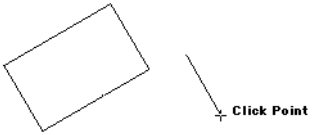
   The cursor will now read "Click Point", to let you know that you need to select an end point for the perpendicular line.



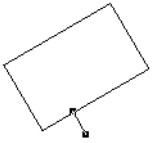
3. Move the cursor to the point where you want the perpendicular to end.

   The perpendicular line's starting point slides along the anchoring edge or line as you move the cursor.

NOTE: It is possible to draw a perpendicular line from a point not on the original shape, but on an invisible line or circle extended from it.



4. Click to specify the end point of the line.



The perpendicular line is drawn.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw a perpendicular line, the end of the line will snap to the nearest grid intersection point.

- Hold down the **Command** key when drawing a perpendicular line to avoid the line snapping to the grid.
- Hold down the **Option** key when drawing a perpendicular line and the line length will snap to the nearest grid increment.

Mid point, end point and center point lines

The **Mid point**, **End point** and **Center point line** tools are used to draw lines from the mid point, or end point of an existing straight edge or circular arc, or from the center of an existing object. These tools are found in the **Special line tools** pop-up menu in the **Tool** palette.

Once a line is drawn with a **Mid point**, **End point** or **Center point line** tool, it becomes a normal unconstrained line and can be edited, resized and moved.

The **Mid point** and **End point line** tools can be used with straight-edged objects (lines, polylines, polygons and square-corner rectangles) and circular arcs. Any of these objects can be part of a group. The **Center point line** tool can be used with any individual shape.

NOTE: The "anchoring" object for the line must be in place before you choose the **Mid point**, **End point** or **Center point line** tool.

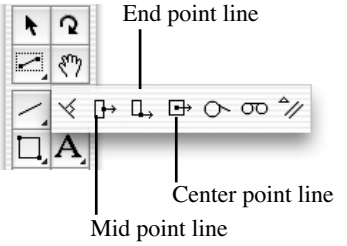
Drawing Mid point, End point and Center point lines

Drawing a line from the mid, end or center point of an existing object takes two steps: selecting the object to draw the line from and specifying the end point.

All of these lines are drawn in the same way.

To draw a line from the mid, end or center point of an existing object

1. Choose the **Mid**, **End** or **Center point line** tool from the **Special line tools** pop-up menu in the **Tool** palette.



   The cursor will now read “Click Line/Arc” or “Click Object”, to let you know that you need to select a line, edge, circular arc or object.

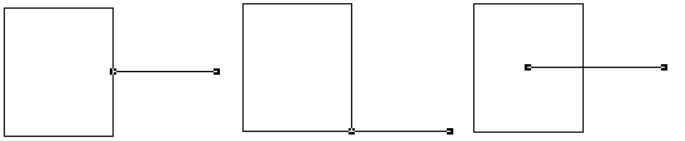
2. Click the line, edge arc or object that the line is to be drawn in relation to.

   The cursor will now read “Click Point”, to let you know that you need to select an end point for the line.

3. Move the cursor to the point where you want the line to end.

4. Click to specify the end point of the line.

   The line will be drawn.



NOTE: The final point of a mid point, end point or center point line can be snapped to the mid point, end point or center point of some existing object *(see Line snapping on page 6-20)*.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw a mid, end or center point line, the end of the line will snap to the nearest grid intersection point.

- Hold down the **Command** key when drawing a mid, end or center point line to avoid the line snapping to the grid.
- Hold down the **Option** key when drawing a mid point, end point or center point line and the line length will snap to the nearest grid increment.

Tangent lines

MacDraft provides two ways to draw tangent lines from circles and circular arcs. The **Tangent from** tool draws a tangent from a circle or arc to any point, and the **Tangent between** tool draws a tangent from one circle or arc to another. Both of these tools are located in the **Special line tools** pop-up menu in the **Tool** palette.

Once a tangent is drawn, it becomes a normal unconstrained line. You can edit and resize it or even move it away from its original position if necessary.

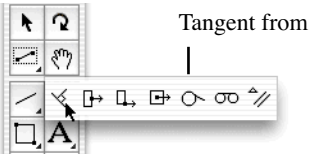
NOTE: The circles or arcs the tangent line is to be drawn in relation to must be in place before you choose a tangent line tool.

Drawing a tangent from a circle or arc to a point

Drawing a tangent from a circle or arc to a point involves two steps: selecting the object the line is to be drawn at a tangent to, then specifying the end point for the tangent line.

To draw a tangent from a circle or arc to a point

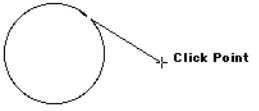
1. Select the **Tangent from** tool from the **Special line tools** pop-up menu in the **Tool** palette.



   The cursor now reads “Click Circle/Arc,” to let you know that you need to select a circle or arc.

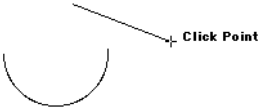
2. Click the circle or arc.

   The cursor now reads “Click Point,” to let you know that you need to select an end point for the tangent line.



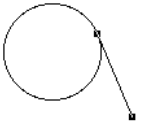
3. Move the cursor; the tangent's starting point slides around the circle or arc.

NOTE: When drawing a tangent line from an arc, it is possible to draw a tangent line from a point not on the visible arc, but on its "invisible circle."



4. Position the cursor on the point you want the tangent line to end and click it.

   The tangent line is drawn.



NOTE: Normally the tangent will be drawn clockwise away from the arc or circle. You can draw the tangent counterclockwise by holding down the **Option** key before selecting the circle or arc, and keeping the **Option** key held down until the end point is specified.

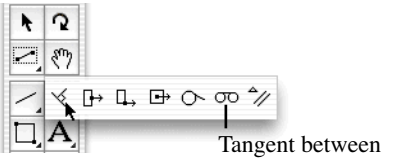
Drawing a tangent between circles or arcs

Drawing a tangent from a circle or arc to another circle or arc involves two steps: selecting the first object, then selecting the second object.

The tangent's final position depends on which half of each object you click.

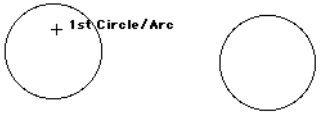
To draw a tangent from a circle or arc to another circle or arc

1. Choose the **Tangent between** tool from the **Special line tools** pop-up menu in the **Tool** palette.



   The cursor now reads "1st Circle/Arc", to let you know that you need to select a circle or an arc.

2. Click the circle or arc near the desired starting point for the tangent.

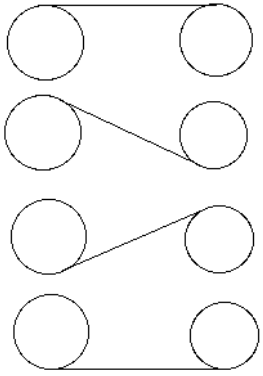


The cursor now reads “2nd Circle/Arc”, to let you know that you need to select another object.

3. Move the cursor to the other object the tangent is to be drawn to and click close to the point you want the tangent line to end.

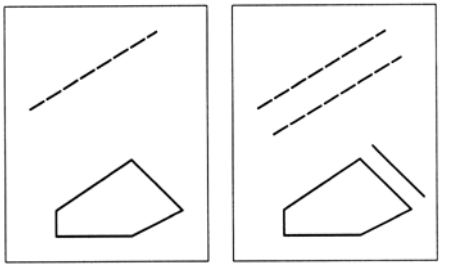
The tangent line is drawn.

NOTE: The final path of the tangent is determined by which half of each object you select. For any pair of circles or arcs, there are four possible tangent arrangements, as shown below.



Offset lines

MacDraft's **Offset line** tool is used to create single lines parallel to existing straight lines or edges. The offset line will have the same length, angle, line weight, line style and pen model as the original line or edge.



NOTE: Parallel line objects can be created using the **Parallel line** tools, *see Drawing parallel line objects on page 2-55*.

Offset lines can be created from any straight line or from any edge of a polygon, polyline or square-cornered rectangle. Once drawn, an offset line is an independent straight line object that can be edited, moved or otherwise manipulated as required.

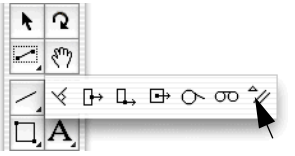
NOTE: The "parent" object for the offset line must be in place before you choose the offset line tool.

Drawing an offset line from an existing object

Drawing an offset line from an existing object involves two steps: selecting the source line or edge and specifying the offset distance.

To draw an offset line from an existing object

1. Select the **Offset line** tool from the **Special line tools** pop-up menu in the **Tool** palette.



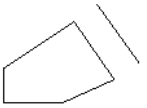
   The cursor now reads "Click Line/Edge", to let you know that you need to select a line or the straight edge of an object.

2. Click the line or edge.

The cursor now reads “Click Point” and appears near a dotted copy of the source line, helping you to determine the offset distance.

3. Move the cursor to the desired position for the offset line and click it.

The offset line is drawn.



The offset is a normal unconstrained line, which you can edit or alter as needed. You can also use it as the base for a new offset line.

4. To exit the **Offset line** tool, click the **Pointer** icon in the **Tool** palette.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw an offset line, the offset distance for the line will snap to the nearest active grid line.

- Hold down the **Command** key when drawing an offset line to avoid the offset distance for the line snapping to the grid.
- Hold down the **Option** key when drawing a line and the offset distance for the line will snap to the nearest grid increment.

◆ Drawing parallel line objects

MacDraft’s **Parallel line** tools are used to draw single sets of parallel lines or polygons and polylines with double lines. You can use parallel lines to create drawings of such things as walls, beams and frames. Various options can be set to specify how the parallel lines should be drawn.

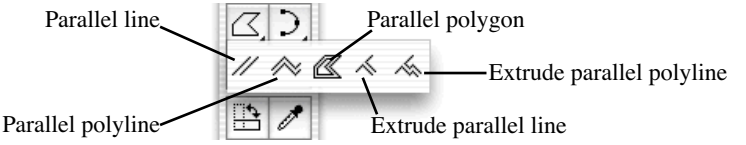
Choosing parallel line tools

You can use parallel line tools to draw a single set of straight lines, polylines or polygons, parallel line objects can also be extruded from existing straight edged objects. The appropriate parallel line tool is chosen from the **Parallel line tools** pop-up menu in the **Tool** palette.

To choose a parallel line tool

1. Press and hold down the mouse button on the **Parallel line** tool in the **Tool** palette.

   The **Parallel line** tools pop-up menu appears.

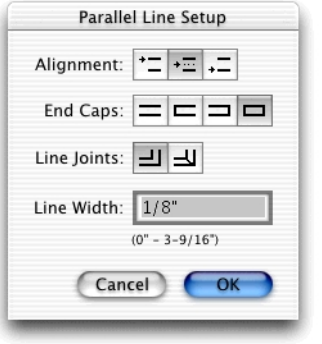


2. Holding down the mouse button, drag until the desired tool is highlighted, and release the mouse button.

   The tool chosen appears in the **Tool** palette.

Parallel line tool options

Various options (alignment, end caps, line joints and distance between lines) can be set for parallel line objects. These options are found in the **Parallel Line Setup** dialog.



The parallel line tool options can be set as defaults to be used for all parallel objects drawn, or can be changed for some individual existing objects.

NOTE: Parallel line options for extruded parallel line objects cannot be changed once they have been drawn.

Setting default parallel line tool options

To set parallel line tool options to be used for all parallel line objects drawn

1. Ensure that nothing is selected on the drawing.
2. Either:

- Press and hold down the **Option** key and click the **Parallel line** tools icon in the **Tool** palette, or
- Select a **Parallel line** tool in the **Tool** palette and choose **Tool Options** from the **Options** menu.

  The P**arallel Line Setup** dialog appears.

3. Set the various options as desired. A complete description of the options available and their effects on parallel line objects follows later in this section.
4. Click **OK** to close the dialog.

   The options set will be used for all parallel line objects drawn.

Setting parallel line tool options for selected objects

To set parallel line tool options for selected objects

1. Select the parallel line object you wish to change the attributes of.
2. Either:

- Press and hold down the **Option** key and click the **Parallel line** tools icon in the **Tool** palette, or
- Select a **Parallel line** tool in the **Tool** palette and choose **Tool Options** from the **Options** menu.

  The **Parallel Line Setup** dialog appears.

3. Set the various options as desired. A complete description of the options available and their effects on parallel line objects follows later in this section.
4. Click **OK** to close the dialog.

   The selected object will be changed to reflect your choices.

NOTE: Parallel line options for extruded parallel line objects cannot be changed once they have been drawn.

Alignment

There are three alignment choices for parallel line objects: left, center and right. The alignment options are represented by three icons at the top of the **Parallel Line Setup** dialog. The small arrow indicates what part of the line is active.

Select the desired option by clicking the appropriate icon in the **Alignment** section of the **Parallel Line Setup** dialog.

Alignment controls how parallel lines, polylines and polygons are drawn and how editing affects them. Specifically, the alignment options determine what is the leading edge of the parallel line object and what part of the shape is active. For example, when align left is the current option, the left parallel line will be drawn on the grid and edit handles appear on the left line when the parallel lines are selected.

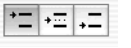
How the alignment options affect parallel lines

Align center

When **Align Center** is on, the cursor appears between the lines during drawing. The center of the two lines will lie on the grid. When the parallel lines are selected, the edit handles appear between the ends of the line segments.

Align left

The **Align Left** option is used to specify which of the parallel lines is active. The active line is the one that lies on the grid and is used to edit the parallel lines. If you draw parallel lines while the **Align Left** option is on, the active line is determined by the direction you first drag during the creation of the shape. In general, if you drag up, the left line is active. If you drag down, the right line is active.



Align right

As with **Align Left**, the **Align Right** option determines which of the two lines is active. When the **Align Right** option is on, the direction in which you first drag during creation determines which line is active. In general, if you drag up, the right line is active. If you drag down, the left line is active.

Alignment and parallel polylines

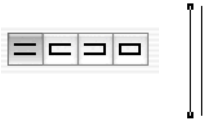
The active alignment option determines how the parallel lines pivot around each ending point. When you define the ending point for a side, the end point of the active line (or the center of the two lines in the case of center alignment) is used as the ending point of the side. The inactive line pivots around the ending point, following the movement of the mouse.

End caps

You can draw parallel lines and polylines with butt end caps, that is, with line segments that join the ends of parallel lines. You can choose to draw parallel lines and polylines with no end caps, with an end cap at either end or with end caps at both ends. Extruded parallel lines and polylines can be drawn with or without a final end cap.

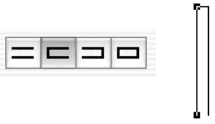
Select the appropriate icon from the **End Caps** section in the **Parallel Line Setup** dialog.

- Parallel lines drawn without end caps.

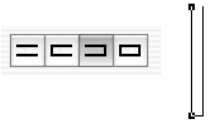


- End caps at the start of the parallel lines. (That is, the end at which you pressed and held down the mouse button and started to draw the lines.)

NOTE: Extruded parallel lines cannot have end caps at the start of the parallel line segment.

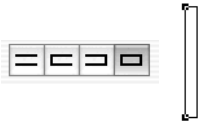


- End caps at the end of the parallel lines. (That is, the end at which you finished drawing the line or shape.)



- End caps at both ends of the parallel lines.

NOTE: Extruded parallel lines cannot have end caps at the start of the parallel line segment.

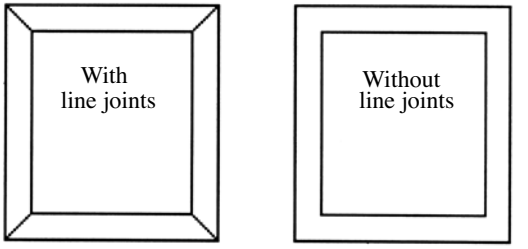


Line joints

You can choose to draw parallel polyline shapes and polygons with line joints at the corners. When you choose this option, a line is drawn between the inside and outside lines where the sides meet. (This feature can be used to indicate miter joints.)

Select the appropriate icon from the **Line Joints** section in the **Parallel Line Setup** dialog.

NOTE: Extruded parallel lines cannot be drawn with line joints



Line width

You can specify the distance between parallel lines by entering a value in the **Line Width** field in the **Parallel Line Setup** dialog. The values you enter for the distance are real-world values that reflect the current size units. For example, if you are working on a document in which Fractional Feet & Inches and the scale 1/4" = 1' were currently defined, if you entered "6" as the distance, the distance between the lines would represent 6 inches in the real world.

NOTE: You can use patterns and colors to fill the gap between parallel lines. See *Parallel fill pattern on page 3-27* and *Parallel fill color on page 3-9*.

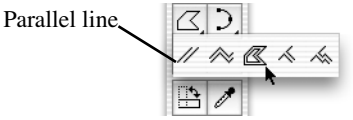
Parallel lines

You can set the options for parallel lines (alignment, end caps, line joints and distance between lines) in the **Parallel Line Setup** dialog *(see Parallel line tool options on page 2-56)*.

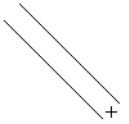
Drawing a single set of straight parallel lines

To draw a single set of parallel lines

1. Choose the **Parallel line** icon from the **Parallel line tools** pop-up menu in the **Tool** palette.



2. Position the cursor on the point you want the parallel lines to start, then press and hold down the mouse button.
3. Drag until the lines are the desired length, and release the mouse button.



When you release the mouse button, edit handles appear at the ends of the parallel line object. These can be used to change the length and orientation of the lines.

NOTES:
• Hold down the **Shift** key while drawing a single set of parallel lines and angle of the lines will snap to 45° increments.
• The final point of a parallel line can be snapped to the mid point, end point or center point of some existing objects *(see Line snapping on page 6-20)*.

Editing a pair of parallel lines

To edit a pair of parallel lines

1. Return to the pointer mode by clicking the **Pointer** tool in the **Tool** palette.
2. Select the parallel lines to be edited.
3. Position the cursor on one of the edit handles, then press and hold down the mouse button.
4. Drag in any direction until the lines are the desired length and orientation, and release the mouse button.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or resize a single parallel line, the end of the parallel line will snap to the nearest grid intersection point.

- Hold down the **Command** key when drawing or resizing a parallel line to avoid the line snapping to the grid.
- Hold down the **Option** key when drawing a parallel line and the line length will snap to the nearest grid increment.

If there is an angular snapping grid set for the document *(see Angle snap on page 6-16)*, when you draw a parallel line, it will snap to the angular grid.

- Hold down the **Shift** key when drawing a parallel line to avoid the line snapping to the angular grid.

Parallel polylines and parallel polygons

You can draw two types of multi sided irregular shapes using parallel lines: closed polygons and open polylines. A parallel polygon is a closed object made of three or more sides. It can be a complex, irregularly shaped object made up of many straight parallel line segments. A parallel polyline is an open object made of at least two straight parallel line segments. The line segments used for either type of object can be of any length and drawn at any angle.

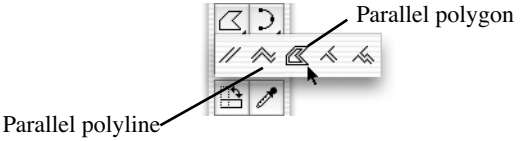
You can set the options for parallel polylines and polygons (alignment, end caps, line joints and distance between lines) in the **Parallel Line Setup** dialog *(see Parallel line tool options on page 2-56)*.

Drawing polygons and polylines with parallel lines

To draw an irregular polygon or polyline with parallel lines, you position the cursor and click to define the end points of the parallel lines that make up the shape.

To draw a polygon or a polyline with parallel lines

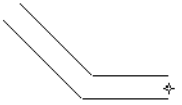
1. Choose the **Parallel polygon** or **Parallel polyline** tool from the **Parallel line tools** pop-up menu in the **Tool** palette.



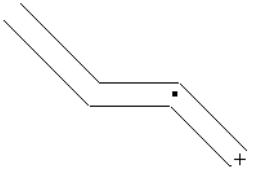
2. Place the cursor at the point you want to begin drawing the object, then press and hold down the mouse button.

3. Drag until you have created a parallel line that is the desired length and angle for the first side or line segment of the object.

4. Release the mouse button.
5. Without pressing and holding down the mouse button, move the cursor to draw the second parallel line segment.



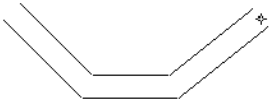
6. When the second parallel line is the desired length and angle, click this point.
7. Without pressing the mouse button, move the cursor to draw the next parallel line segment.



8. When the parallel line is the desired length and angle, click this point.

   You may decide that you want to change a parallel line segment after you have clicked to define its end point. You can change the length and orientation of the last parallel line segment drawn by using the **Dynamic Editing** feature.
9. To change the last parallel line segment drawn, move the cursor back to the last defined point and click it.

   The previous parallel line will reattach to the cursor, allowing you to move the end of the parallel line to a new position on the drawing.
10. Move the cursor to a new position on the drawing and click it.

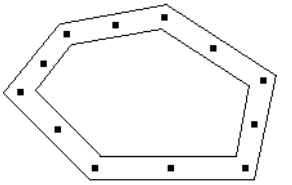


    The parallel line will be drawn to the new position.
11. Continue to draw the rest of the object.

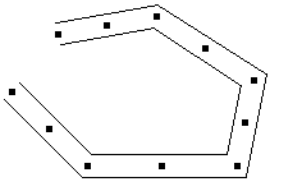
12. When you reach the last point to be placed, double-click this place.

    This double-click action completes the object.

- If you are drawing a parallel polygon, the last point you clicked will be connected to the starting point of the shape by a straight parallel line.



- If you are drawing a parallel polyline, the object will remain open.



NOTES:
• Hold down the **Shift** key while drawing a parallel polygon or polyline and the angle of the current parallel line segment will snap to increments of 45°.
• The final point of a parallel polyline can be snapped to the mid point, end point or center point of some existing objects *(see Line snapping on page 6-20)*.

Changing the shape of parallel polygons and polylines

You can edit parallel polygons and polylines in the same way as you would normal polygons and polylines, *see Changing the shape of an irregular polygon or a polyline on page 2-35* for details.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or edit a parallel polygon or polyline, the ends of the parallel line segments or the edit handles will snap to the nearest grid intersection points.

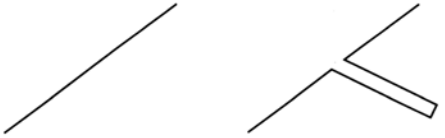
- Hold down the **Command** key when drawing or editing a parallel polygon or polyline to avoid the lines or edit handles snapping to the grid.
- Hold down the **Option** key when drawing a parallel polygon or polyline and the line lengths will snap to the nearest grid increment.

If there is an angular snapping grid set for the document *(see Angle snap on page 6-16)*, when you draw a parallel polygon or polyline, the line segments will snap to the angular grid.

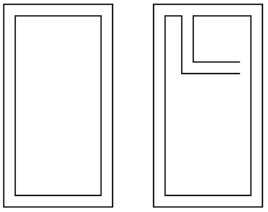
- Hold down the **Shift** key when drawing a parallel polygon or polyline to avoid the line segments snapping to the angular grid.

Extruding parallel lines and parallel polylines

MacDraft's **Extrude parallel line** and **Extrude parallel polyline** tools are used to draw parallel lines or parallel polylines from existing straight-edged objects, such as lines, rectangles or polygons. Although the extruded lines are actually separate line segments, they give the appearance of parallel lines.



Lines can also be extruded from parallel-line objects, although the parallel line object must be broken down into its individual line components first. This is useful in adding interior walls to a floor plan, for example.



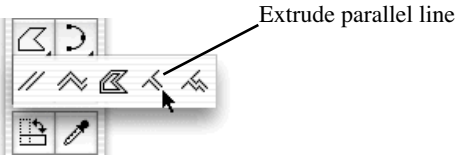
The **Extrude parallel line** and **Extrude parallel polyline** tools are located in the **Parallel line tools** pop-up menu in the **Tool** palette.

You can set the options for extruded parallel lines and polylines (alignment, end caps, line joints and distance between lines) in the **Parallel Line Setup** dialog *(see Parallel line tool options on page 2-56)*.

Extruding parallel lines from an edge or line

To extrude parallel lines from a straight-edged object or line

1. Choose the **Extrude parallel line** tool from the **Parallel line tools** pop-up menu in the **Tool** palette.



2. Position the cursor over the edge you wish to extrude the parallel lines from, then press and hold down the mouse button.
3. Drag until the extruded lines are the desired length and orientation, then release the mouse button.

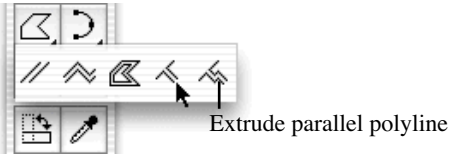
   The extruded parallel line segment appears on the drawing. It is added to the earlier object as a pair of line segments.

NOTE: Hold down the **Option** key to constrain the extruded parallel line to be perpendicular to the original edge and make its length snap to the currently active grid-snap distance.

Extruding parallel polylines from an edge or line

To extrude parallel polylines from a straight-edged object or line

1. Choose the **Extrude parallel polyline tool** from the **Parallel line tools** pop-up menu in the **Tool** palette.

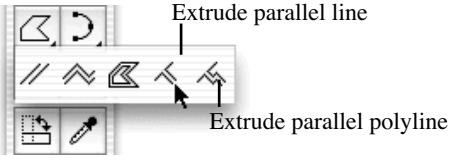


2. Position the cursor over the edge you wish to extrude the parallel polylines from, then press and hold down the mouse button.
3. Drag until you have created an extruded parallel line that is the desired length and angle for the first segment of the object.
4. Continue to draw the extruded parallel polylines as per the instructions for drawing parallel polylines *(see Drawing polygons and polylines with parallel lines on page 2-62)*.

Extruding parallel lines or polylines from a parallel object

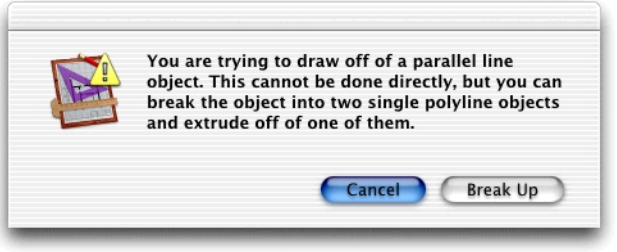
To extrude parallel lines or polylines from a parallel-line object

1. Choose the **Extrude parallel line** or **Extrude parallel polyline tool** from the **Parallel line tools** pop-up menu in the **Tool** palette.



2. Position the cursor over the parallel line object you wish to extrude the parallel lines or polylines from, then press and hold down the mouse button.

   An alert appears asking if you wish to break the parallel line object into individual lines.



3. Click the **Break Up** button to break up the parallel line object and continue drawing the extruded parallel line or polylines.

   The dialog will close and you will return to the drawing with the **Extrude parallel line** or **Extrude parallel polyline tool** still active.

4. Position the cursor over the line you wish to extrude the parallel lines or polylines from, then press and hold down the mouse button.

5. Continue drawing as for extruded lines, *see Extruding parallel lines from an edge or line on page 2-66*, or polylines, *see Extruding parallel polylines from an edge or line on page 2-66*.

Snap to grid

If there is a snapping grid set for the document *(see Grid snap on page 6-14)*, when you draw or edit an extruded parallel line or polyline, the ends of the parallel line segments or the edit handles will snap to the nearest grid intersection point.

- Hold down the **Command** key when drawing or editing an extruded parallel line or polyline to avoid the lines or edit handles snapping to the grid.

- Hold down the **Option** key when drawing an extruded parallel line or polyline and the initial parallel line segment will be constrained to be perpendicular to the original edge, and the line lengths will snap to the nearest grid increment.

◆ The Marker Symbol

The **Marker Symbol** tool is used to add a registration-type marker to a drawing in one simple step.

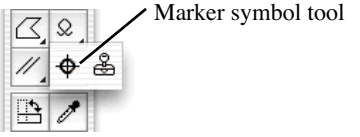
Select the **Marker** tool, then click the drawing one or more times to add as many markers as you need; each marker is centered on the point you click. Leave the **Marker Symbol** tool by holding down the **Command** key and clicking a blank area of the drawing or by clicking the **Pointer** tool in the **Tool** palette.

Once a marker symbol is drawn, it exists as a group. It can be ungrouped to a circle and two crossed lines *(see Grouping and ungrouping objects on page 5-26)*.

Adding marker symbols to a drawing

To add marker symbols to a drawing

1. Choose the **Marker symbol** tool from the **Miscellaneous tools** pop-up menu in the **Tool** palette.



2. Place the cursor where you want the marker symbol to appear on the drawing and click this place.

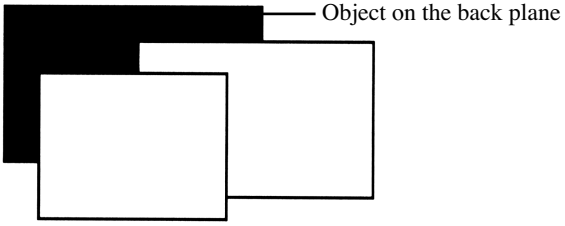
   The marker symbol appears on the drawing centered on the point specified.

3. To add more marker symbols, repeat steps 2 as many times as necessary.
4. When you have finished adding markers, click the **Pointer** tool in the **Tool** palette, or hold down the **Command** key and click a blank area of the drawing.

◆ Datum points

Each object in MacDraft has a datum point; this is a reference point used when you paste the object, rotate it, or manipulate it in other ways. For example, the datum point for a rectangle is the top left corner.

Grouped objects also have datum points. The default datum point for a grouped object is the default datum point of the item in the group that is farthest back on the drawing.



◆ Reshaping objects

There may be occasions when you want to reshape an object so that straight lines and sharp corners become curved lines and rounded corners; the irregular lines of an object to smooth lines. You can accomplish this conversion by using the **Reshape** submenu in the **Edit** menu.

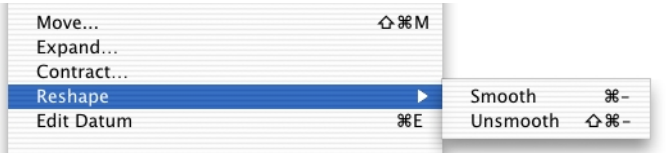
The objects that the **Reshape** command can modify are polygons (drawn with the irregular polygon tool), polylines, freehand lines and freehand shapes.

Reshaping an object

To reshape an object

1. Select the object you want to reshape by clicking it.
2. Open the **Edit** menu and drag down until **Reshape** is highlighted.

The **Reshape** submenu appears.



3. Choose **Smooth** or **Unsmooth** (detailed explanations of the choices follow) and release the mouse button.

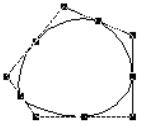
   The object will be reshaped as you requested.

Reshape options

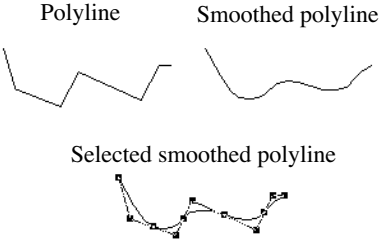
The **Smooth** and **Unsmooth** commands affect different shapes in different ways.

Reshaping polygons and polylines

A polygon can be smoothed to a curve that lies inside the original object (intersecting the midpoints of each line segment). When the smoothed polygon is selected, its original shape appears as a ghost outline.



A polyline can be smoothed to a curve that intersects the midpoints of each line segment of the original object, except for the segments closest to the ends. That is, the curve will skip over the first and last midpoints of the original polyline.



NOTE: A polygon or polyline can be smoothed only once.

If you select a polygon or polyline that has been smoothed using the **Smooth** command, and choose **Unsmooth**, the object will revert to its original shape.

Reshaping freehand lines and shapes

A freehand line or shape can be smoothed to a curve that lies close to the original object and passes near to the original vertices (the new edit handles appear at the old vertices). This new shape can be smoothed repeatedly until the desired effect is obtained.

Freehand shape Smoothed freehand shape

If you select a freehand line or shape that has been smoothed using the **Smooth** command, and choose **Unsmooth**, the last stage in the smooth process will be undone.

◆ Resizing objects

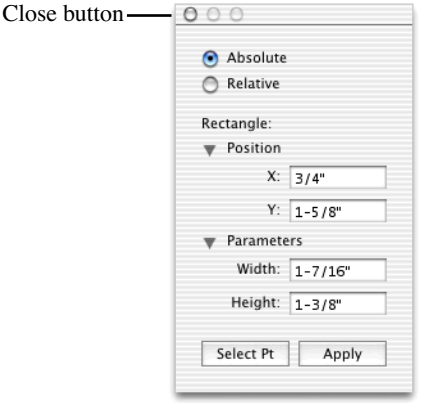
Objects can be resized manually by dragging their edit handles, as discussed in the sections about drawing the various types of objects. MacDraft also includes a **Resize** palette. This provides a method for resizing objects by typing exact size values and gives you more precise control over the size of objects on your drawing.

Displaying the Resize palette

To display the Resize palette

- Choose **Resize** from the **Palettes** submenu in the **View** menu, or
- Choose **Resize** from the pop-up menu at the bottom left of the document window.

The **Resize** palette appears.



The **Resize** palette shows the size values and position of the currently selected object, if nothing is selected, the palette will not show any values. The palette can be positioned anywhere on screen as needed.

Resizing objects

Different types of objects are resized in different ways. For example, you can resize a rectangle by specifying the exact height and width of the rectangle, whereas resizing an arc includes entering various angle values and a radius length. The individual sections following describe the resizing options for the different types of objects and the information you can enter to resize them.

You can resize objects by entering absolute or relative values for the whole object or, for some objects, a selected point on the object. Measurements are defined in the current layer's scale and units, and changes are applied relative to the object's datum point *(see Datum points on page 2-69)*, unless the **Select Point** button is used. When relative values are entered, positive values increase measurements, negative values decrease them.

NOTE: When objects are resized, any dimension objects linked to them will be automatically resized as well.

Absolute resize values

- For a whole object, enter the values for the desired dimensions for the object.
- For a point on the object, enter the values for the desired location of the point.

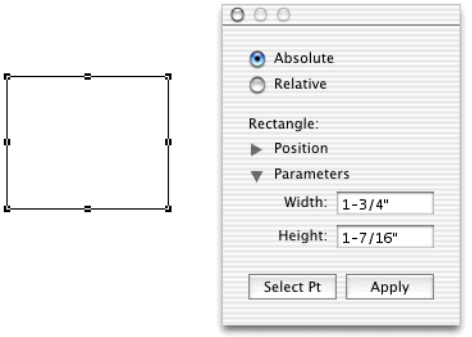
Relative resize values

- For a whole object, enter values to be added to the current dimensions of the object.
- For a point on the object, enter values to move the point by.

Resizing a whole object by absolute values

In general terms, to resize an object by changing its absolute size values

1. Select the object you want to resize.



2. Ensure the **Absolute** radio button is on.
3. Enter the new size values (such as **Width** and **Height**) that you want for the object.
4. Click the **Apply** button or press the **Return** or **Enter** key.

   The new size will be applied to the object.

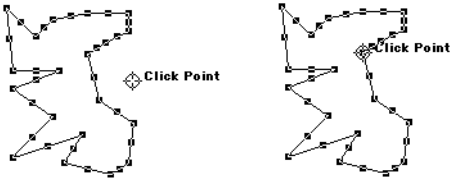
NOTE: If the resize operation requires the object to be enlarged beyond the drawing area, a system beep sounds.

Resizing an object by changing the absolute values of one point

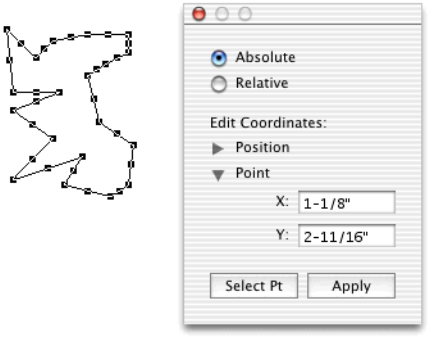
To resize an object by editing a single edit handle

1. Select the object you want to resize.
2. Ensure the **Absolute** radio button is on.
3. Click the **Select Pt** button on the **Resize** palette.

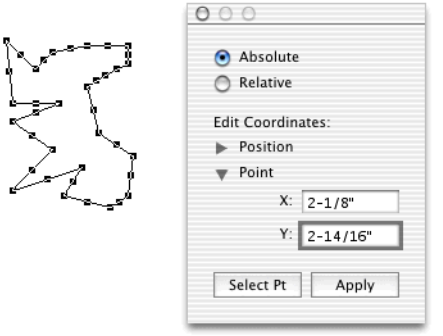
   A select point gun sight cursor appears on the drawing.
4. Position the cursor on the point (edit handle) you want to edit and click it.



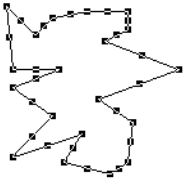
The **Resize** palette shows the location of the point.



5. Enter values for the new location for the edit handle and click the **Apply** button or press the **Return** or **Enter** key.



The new values will be applied to that edit handle, moving it and so resizing the object.

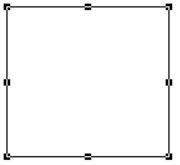


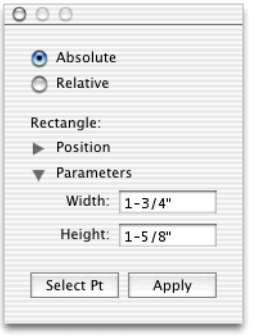
NOTE: If the resize operation requires the object to be enlarged beyond the drawing area, a system beep sounds.

Resizing a whole object by relative values

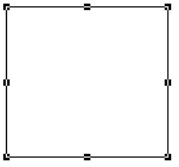
In general terms, to resize an object by changing its relative size values

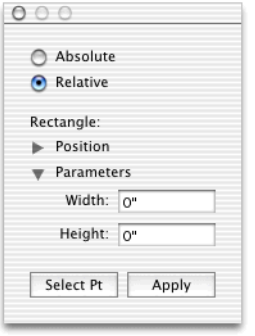
1. Select an object. Its current measurements are shown in the **Resize** palette.



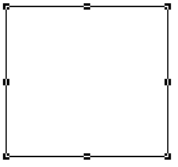


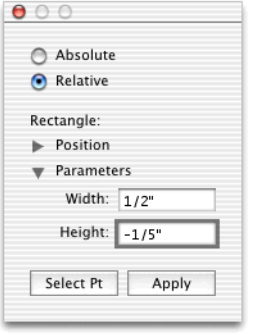
2. Click the **Relative** button in the **Resize** palette.





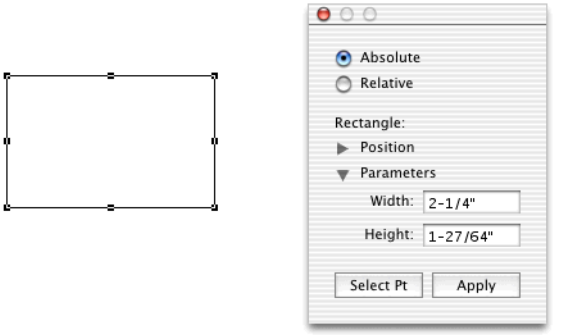
3. Enter values to increase (positive numbers) or decrease (negative numbers) the measurements to be changed.





4. Click the **Apply** button or press the **Return** or **Enter** key.

The measurement changes are applied to the object, making the appropriate dimensions larger or smaller.



NOTE: If the resize operation requires the object to be enlarged beyond the drawing area, a system beep sounds.

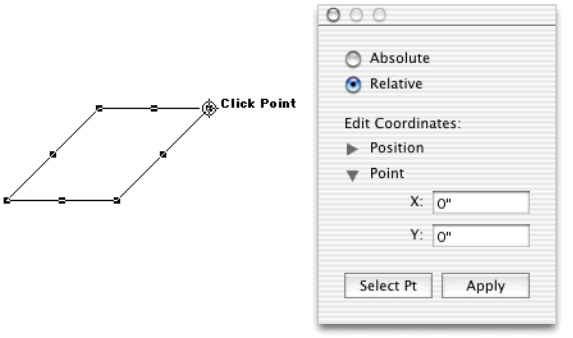
Resizing an object by changing the relative values of one point

To resize an object by editing a single edit handle

1. Select an object. Its current measurements are shown in the **Resize** palette.
2. Click the **Relative** radio button in the **Resize** palette.
3. Click the **Select Pt**. button in the **Resize** palette.

   The select point gun sight cursor appears on the drawing.
4. Position the cursor on the point (edit handle) you want to edit and click it.

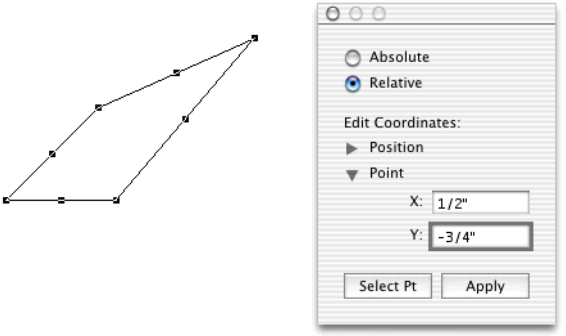
   Zeros are shown in the **Resize** palette for the horizontal and vertical changes, showing that no new values have been entered.



5. Enter values to increase (positive numbers) or decrease (negative numbers) the point's position.

6. Click **Apply** or press the **Return** or **Enter** key.

   The measurement changes are applied to the selected point, moving it and so resizing the object.



NOTE: If the resize operation requires the object to be enlarged beyond the drawing area, a system beep sounds.

Resize units

The **Resize** palette uses the scale and units of the current layer. When you select an object with the **Resize** palette visible, the values shown will reflect the scale. When you enter values to resize an object, you should use values appropriate to the current scale.

WARNING: If you enter unscaled units in a scaled drawing (for example, a width “4" ” in a 1/8”=1' drawing), you may get unexpected results (in that example, the four inches would appear in the drawing as 1/24 of an inch on screen and on paper).

If you don’t specify units with the values you enter, MacDraft will interpret the values according to the document’s current size units. The size units are set using the **Document Scale** and **Units** dialog *(see Document units and scale on page 6-21)*.

Below are some examples of valid size and coordinate entries for some of the available types of size units.

Decimal feet and inches

12.0'

110.3'

10'

10 in

12.3 is interpreted as 12.3'

Fractional feet and inches

23" = 1′11″

1 3/4″

1' 10-3/8″

Fractional inches

1"

123-3/4″

15 1/2

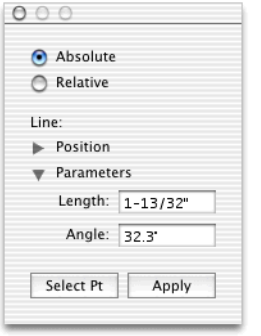
1/2

2-1/4

You can enter values greater than 12 inches if fractional inches are the current size units.

Resizing lines and parallel lines

Lines drawn with the unconstrained, constrained, parallel and special line tools can all be resized in the same way.



Length & angle

Changes the desired length and angle of the line. The specified angle is measured relative to the X-axis and the last point drawn on the line, this “finishing point”, will normally be the one that moves.

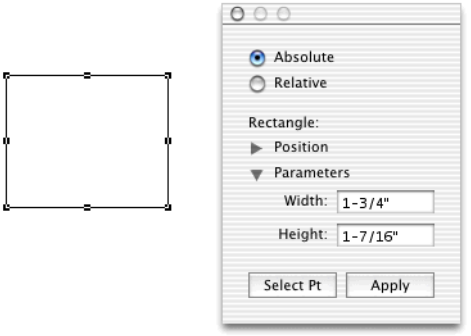
Select point

Allows you to select which end point of the line moves when you apply a new length or angle value.

NOTE: If you change the angle of a constrained line, it will become an unconstrained line, as constrained and special lines are only constrained when they are first entered.

Resizing rectangles

Square corner rectangles



Width and height

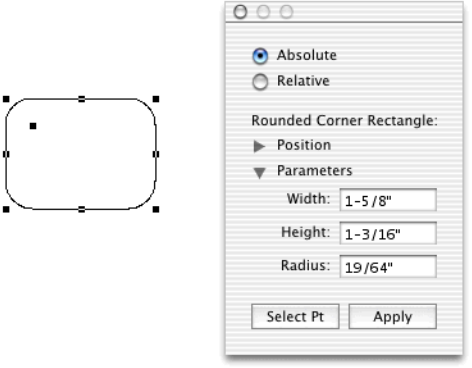
Changes the width and height of a rectangle. For example, to enlarge a 1" x 1" rectangle to 3" x 3", enter 3" in both fields. A diagonally drawn rectangle will be resized by shifting its bottom edge or right-hand edge (or both).

Select point

Allows you to select which edge or corner of the rectangle moves when you apply a new width or height (or both). For example, if you click **Select Pt** and select the rectangle's top middle handle, then enter a new height, the top edge moves up.

Rounded-corner rectangles

With proportional and constant corners



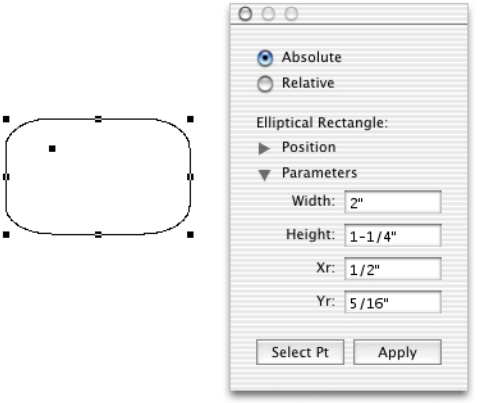
Width, height, and radius

Changes the width and height of a rectangle and the radius of the corner arc. Normally, the width and height values resize the rectangle by shifting its bottom edge or right-hand edge (or both).

Select point,

Allows you to select which edge or corner of the rectangle moves when you apply a new width or height (or both). For example, if you click **Select Pt** and select the rectangle's top middle handle, then enter a new height, the top edge moves up.

With elliptical corners



Width, height, X-radius and Y-radius

Changes the width and height of a rectangle, and the vertical and horizontal radii of the elliptical corner arc. Normally, the width and height values resize the rectangle by shifting its bottom edge or right-hand edge (or both).

Select point

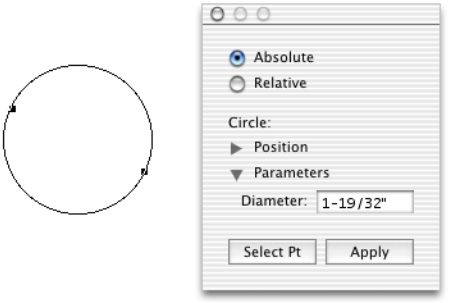
Allows you to select which edge or corner of the rectangle moves when you apply a new width or height (or both). For example, if you click **Select Pt** and select the rectangle's top middle handle, then enter a new height, the top edge moves up.

Resizing regular polygons

Regular polygons are resized in the same way as groups *(see Resizing groups on page 2-86)*.

Resizing circles

Drawn by diameter



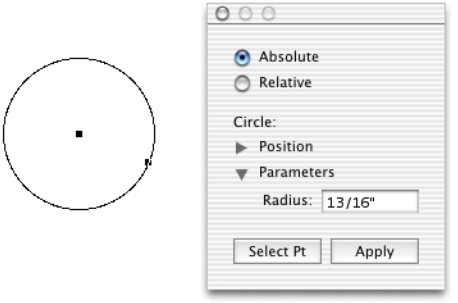
Diameter

Changes the diameter of the circle. The last point drawn normally moves as the circle is resized.

Select point

Allows you to select which end of the diameter line moves when you apply a new diameter value.

Drawn by radius



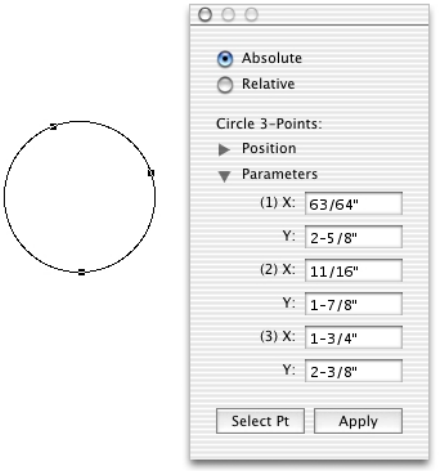
Radius

Changes the radius of the circle. The handle on the circle's circumference normally moves as the circle is resized.

Select point

Allows you to select which end of the radius line moves when you apply a new radius value. For example, if you click **Select Pt** and select a radial circle's center handle, then enter a new radius, the center handle moves as the circle is resized.

Drawn by three points



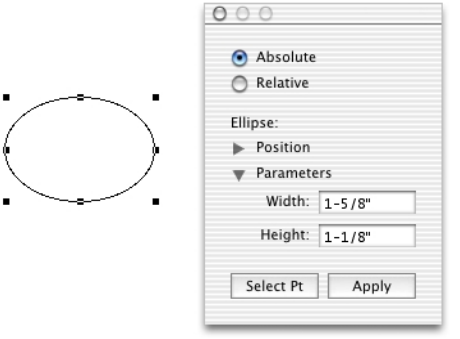
X and Y locations

Changes the X and Y coordinates for the circle's three edit handles. Absolute coordinates you specify are measured from the zero origins of the rulers.

Select point

Use of the **Select Pt** button has no additional effect on this object.

Resizing ellipses



Width and height

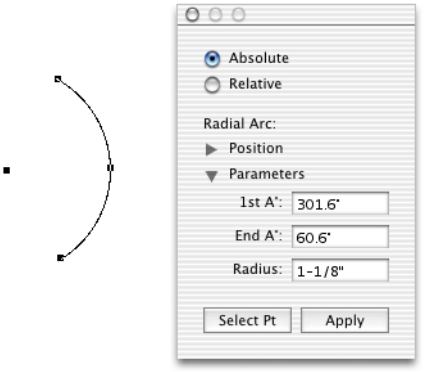
Changes the width and height of an ellipse. A diagonally drawn ellipse will normally be resized by shifting its bottom right edit handle, a centered ellipse will normally be resized without the center point moving.

Select point

Allows you to select what portion of the ellipse moves when you apply a new width or height (or both). For example, if you click **Select Pt** and select the ellipse's top middle handle, then enter a new height, the top moves up.

Resizing arcs

Drawn by radius



1st A°

Changes the angle of the arc's starting point, measured in relation to the X-axis.

End A°

Changes the angle of the arc's ending point, measured in relation to the X-axis.

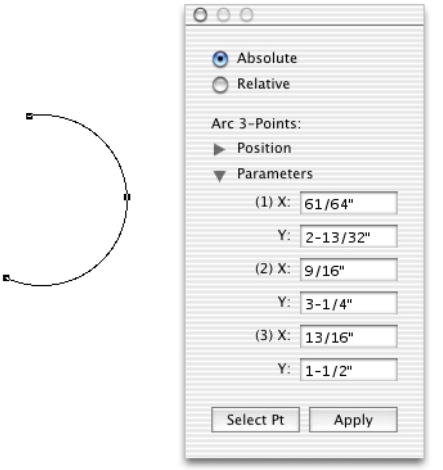
Radius

Changes the radius of the arc.

Select point

Use of the **Select Pt** button has no additional effect on this object.

Drawn by three points



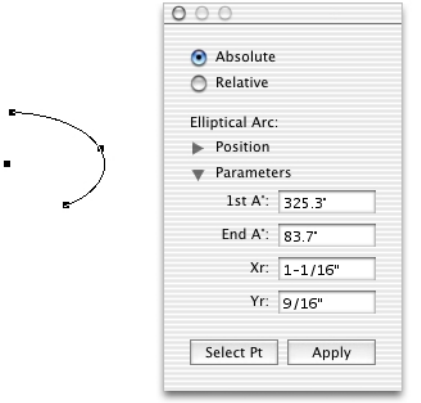
X & Y locations

Changes the X and Y coordinates for the arc's three edit handles. Absolute coordinates you specify are measured from the zero origins of the rulers.

Select point

Use of the **Select Pt** button has no additional effect on this object.

Elliptical arcs



1st A°

Changes the angle of the arc's starting point, measured in relation to the X-axis.

End A°

Changes the angle of the arc's ending point, measured in relation to the X-axis.

X-radius and Y-radius

Changes the horizontal and vertical radius of the arc.

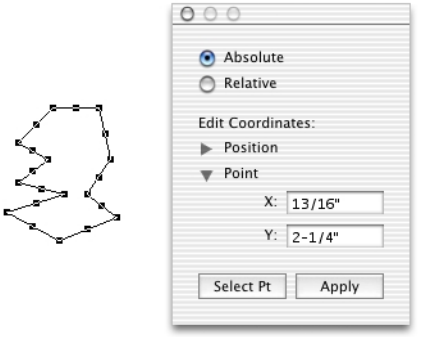
Select point

Use of the **Select Pt** button has no additional effect on this object.

Resizing polygons and polylines, (including parallel polylines and polygons) freehand shapes and curves

Because of the complexity of these objects, you can edit them only by using the **Select Point** cursor.

For example, if an object has several edit handles, each handle cannot be shown in the **Resize** palette. Instead, you use the **Select Point** button to select a single handle, then specify a new location for it on the drawing.



X and Y coordinates

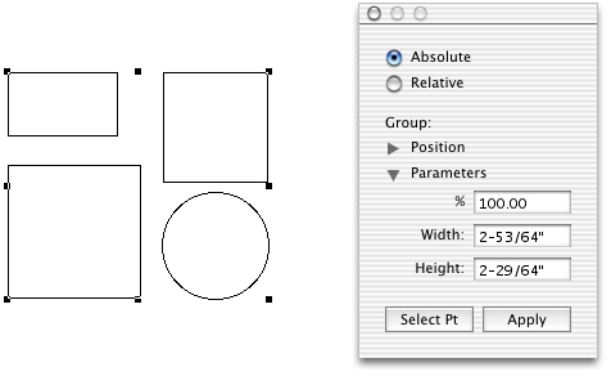
Changes the X and Y coordinates of a selected handle. Absolute values are measured from the zero origins of the rulers.

Select point

Allows you to select the handle to edit.

NOTE: The **Resize** palette treats the direction handles on Bezier curve objects like any other edit handles.

Resizing groups



Percent

Changes the size of the group proportionally by a percentage of its current size. Absolute values larger than 100% or positive relative values increase its size; absolute values smaller than 100% or negative relative values reduce it. Normally, the lower right corner moves as the group becomes larger or smaller.

Width and height

Changes the width and height of the group. A group will normally be resized by shifting its bottom edge or right-hand edge (or both).

Select point

Allows you to select which corner of the groups bounding frame moves when you resize it. For example, if you click **Select Pt** and select the top left handle of the groups bounding frame, then enter an absolute percentage value of 200%, the top edge moves up and the left edge moves left.

Resizing groups manually

There may be times when you would like to enlarge or reduce the size of a grouped object. MacDraft gives you the ability to change a group's size proportionally or non-proportionally (vertically or horizontally) by dragging the groups edit handles.

By changing the size of a group proportionally, you can maintain the original shapes of the individual objects within the group. Objects within the group become larger or smaller without becoming distorted.

To resize a group of objects proportionally

1. Select the group you want to resize.

2. Position the tip of the pointer on one of the edit handles on the corners of the group.
3. Press and hold down the mouse button.
4. Drag until the group is the size you want, and release the mouse button.
5. The grouped object will be changed in size proportionally to its original size.

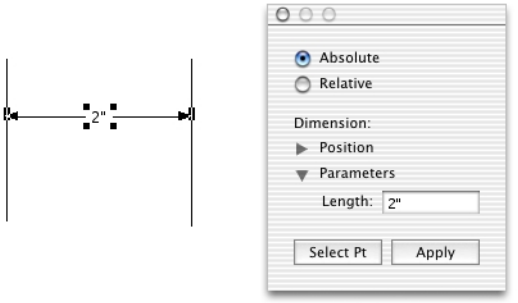
To resize a group of objects non-proportionally

1. Select the group you want to resize.
2. Position the tip of the pointer on one of the edit handles on the corners of the group.
3. Press and hold down the mouse button and press the **Option** key.
4. Holding down the mouse button and the **Option** key, drag until the group is the size you want, and release the mouse button and **Option** key.

Resizing dimension objects

When objects are resized, any dimension objects linked to them will be automatically resized as well. Also, when dimension objects are resized, if they are linked to an object, the object will also be resized.

Linear and radial dimensions



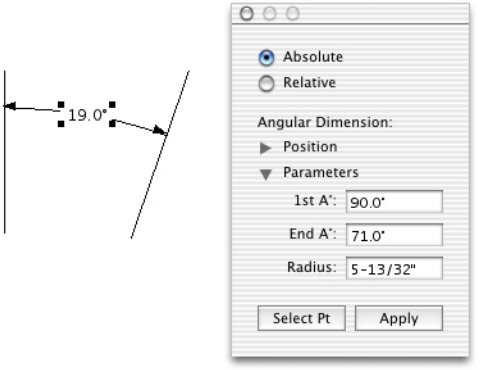
Length

Changes length of the dimension object. Normally, the first reference point (the left end of a diameter or the center of a radius) remains fixed.

Select point

Allows you to select which reference point moves when you apply a new length.

Angular dimensions



1st A°

Changes the angle of the dimension's starting point, measured in relation to the X-axis.

End A°

Changes the angle of the dimension's ending point, measured in relation to the X-axis.

Radius

Changes the radius of the dimension object.

Select point

Use of the Select Pt button has no additional effect on this object.

◆ Expand and contract objects

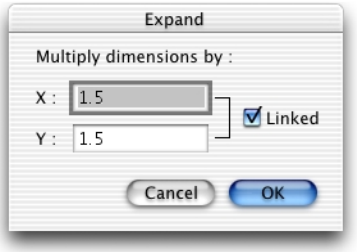
All MacDraft objects can be increased or reduced in size by multiplying or dividing the object's dimensions by specified values. You can choose whether or not to maintain the object's proportions. The **Expand** and **Contract** commands in the **Edit** menu are used to resize objects in this way.

Expand

To resize an object using the Expand command

1. Select the object to be expanded.
2. Choose **Expand** from the **Edit** menu.

The **Expand** dialog appears.

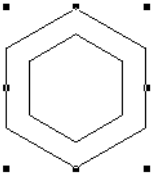


3. To maintain the object's proportions, ensure that the **Linked** checkbox is on.
4. To change the object's proportions, click the **Linked** checkbox to turn this option off.
5. Enter a value to multiply the X dimension of the object by.

NOTE: If the **Linked** checkbox is on, the same value will automatically be entered in the Y field.

6. Enter a different value to multiply the Y dimension of the object by, if necessary.
7. Click the **OK** button.
8. The dimensions of the object are multiplied by the specified values and the object is expanded around its center point.

NOTE: The screen shot below shows a copy of the original shape in front of the expanded shape.

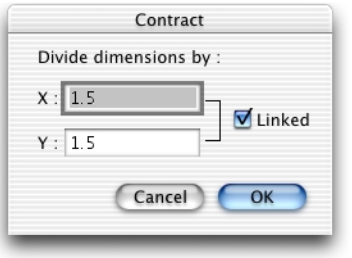


Contract

To resize an object using the Contract command

1. Select the object to be contracted.
2. Choose **Contract** from the **Edit** menu.

The **Contract** dialog appears.

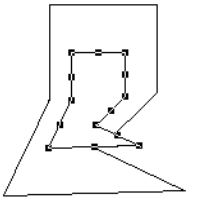


3. To maintain the object's proportions, ensure that the **Linked** checkbox is on.
4. To change the object's proportions, click the **Linked** checkbox to turn this option off.
5. Enter a value to divide the X dimension of the object by.

NOTE: If the **Linked** checkbox is on, the same value will automatically be entered in the Y field.

6. Enter a different value to divide the Y dimension of the object by, if necessary.
7. Click the **OK** button.
8. The dimensions of the object are divided by the specified values and the object contracts around its center point.

NOTE: The screen shot below shows a copy of the original shape behind the contracted shape.



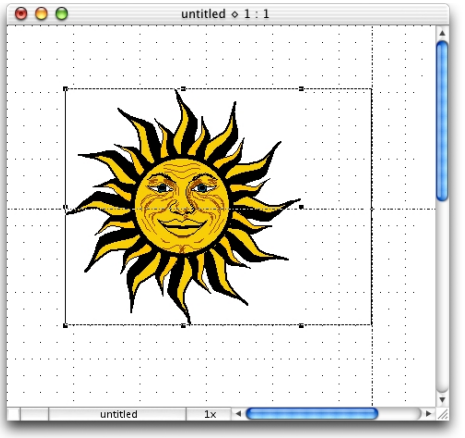
◆ Editing bitmap images

There may be occasions when you want to enlarge, reduce, distort or clip the shape of a bitmap image produced from a program such as MacPaint®. MacDraft allows you to enlarge or reduce the size of a bitmap image without distorting the image; to change the size of a bitmap image in one direction only; and to clip an image.

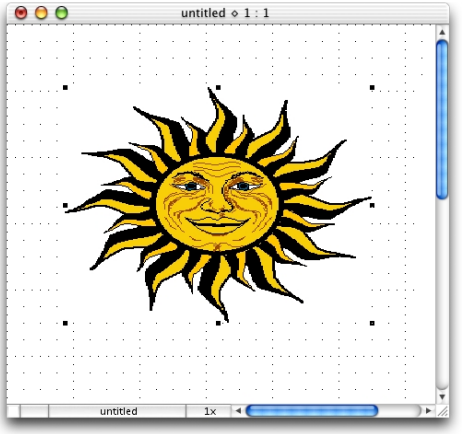
Resizing bitmap images

To resize a bitmap image in one direction only

1. Select the bitmap image you want to resize.
2. Position the cursor on one of the edit handles in the middle of the bitmap's bounding box, (that is, one of the handles on the top, bottom, left or right side).
3. Press and hold down the mouse button.
4. Drag until the bitmap image is the size you want.

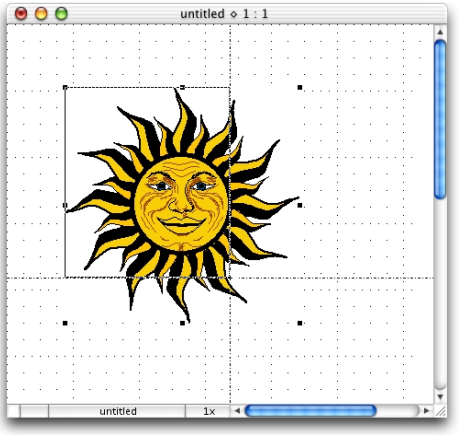


5. Release the mouse button. The image will be resized in the direction chosen.

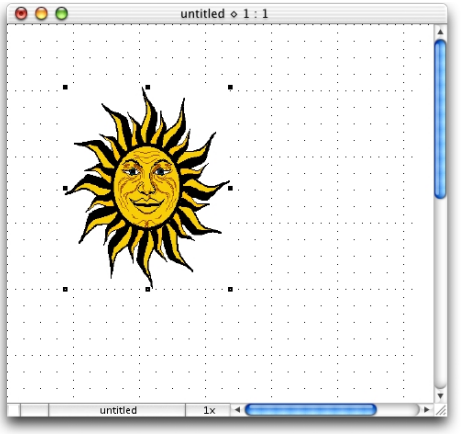


To resize a bitmap image in two directions without maintaining its proportions

1. Select the bitmap image you want to resize.
2. Position the cursor on one of the corner edit handles.
3. Press and hold down the mouse button.
4. Drag until the bitmap image is the size you want.



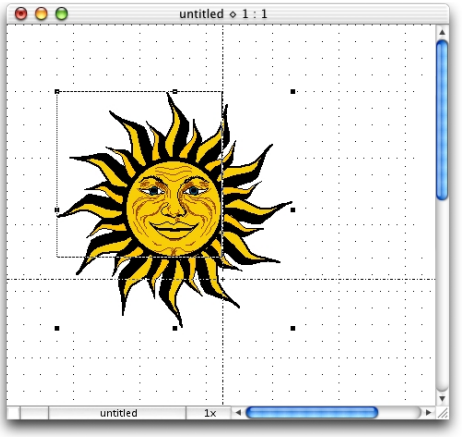
5. Release the mouse button. The image will be resized, in two directions, but it could be distorted.



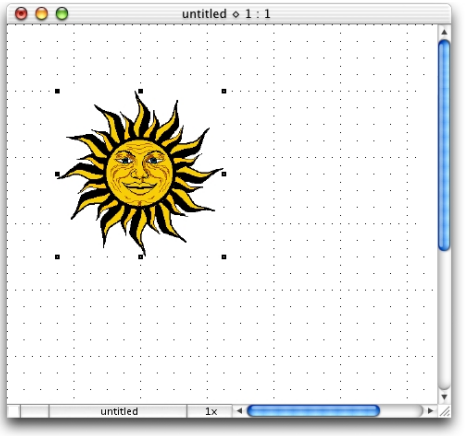
To resize a bitmap image while maintaining its proportions

1. Select the bitmap image you want to resize.
2. Position the cursor on one of the corner edit handles.

3. Hold down the **Shift** key, then press and hold down the mouse button.
4. Holding down the mouse button and the **Shift** key, drag until the bitmap image is the size you want.



5. Release the mouse button and the **Shift** key. The image will be resized, and its proportions maintained.

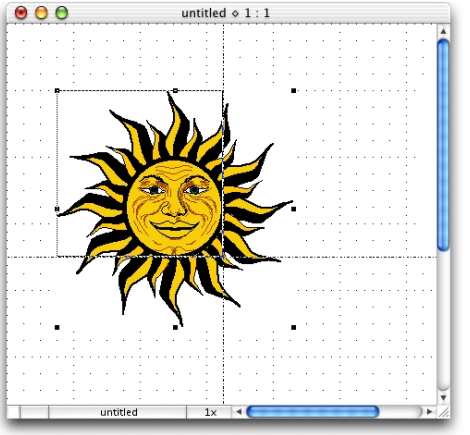


NOTE: Bitmap and pixel map objects can be made "palette resizable" by grouping them to themselves. For example, place a bitmap image into your drawing, select it, and choose **Group** from the **Arrange** menu *(see Grouping and ungrouping objects on page 5-26)*. You can now resize the group using the **Resize** palette *(see Resizing groups on page 2-86)*.

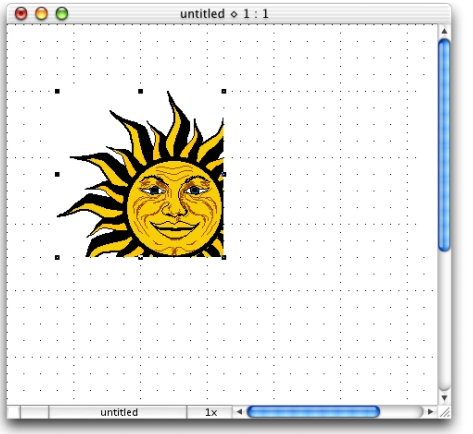
Clipping bitmap images

To clip a bitmap image

1. Select the bitmap image you want to clip.
2. Position the cursor on one of the edit handles.
3. Hold down the **Shift** and **Option** keys, then press and hold down the mouse button.
4. Holding down the mouse button and the **Shift** and **Option** keys, drag to select a portion of the bitmap.



5. Release the mouse button and the **Shift** and **Option** keys. The image will be clipped, and only the portion selected will be shown.



MacDraft doesn't normally discard the unseen part of a cropped image; you can move the edit handles back out any time to reveal the unclipped image.

However, if you save a drawing with a cropped image in the PICT or enhanced PICT formats *(see PICT or enhanced PICT documents on page C-2)* or use the **Copy** command to copy it to the **Clipboard** or another application *(see Cut/copy and paste on page 5-6)*, the part of an image outside the cropped edge will be lost.

On the other hand, cutting a cropped image from a drawing, pasting it to the **Clipboard**, then copying it back into MacDraft will reduce the document's size on disk, because the cropped data discarded during the cut/paste operation will no longer be stored.

NOTES:
• MacDraft does not allow cropping of grouped objects. You must ungroup any bitmap image you wish to crop *(see Grouping and ungrouping objects on page 5-26)*.
• Some pixel maps and bitmaps, when ungrouped, become a set of several objects that together form one image. Each of these objects can be cropped individually.
• If a bitmap has a very low resolution (for example, if it has been resized to be much larger than it was originally), it may resize itself slightly during cropping. This is because its own pixels may be larger than the standard screen pixels. The image will expand or shrink so that none of its own large pixels are split by the cropped edge.
• MacDraft stores each pixel map only once in each document file. This means that you can copy a pixel map within a MacDraft drawing without increasing the drawing's size on disk.

◆ Reversing changes

If you do something unintentionally or want to correct a mistake, MacDraft allows you to reverse certain actions. The Undo command reverses execution of the last action; the Redo command executes the previously reversed action; the Revert command returns you to the last saved version of the document.

NOTE: In most cases, in order to undo or redo a command, you must choose **Undo** or **Redo** before you perform any other action. However, there is an exception to this rule. You can switch back and forth between documents, performing actions on the various open documents and MacDraft will remember the last action performed in each document. This allows you to return to an open document and undo or redo the last action you performed in it.

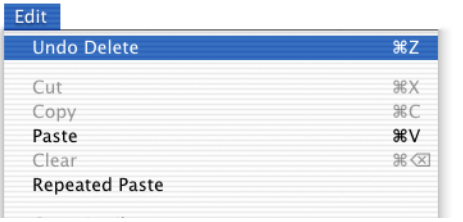
Undo

If you choose a command or perform an action and then wish that you had not done so, in most cases you can choose Undo to reverse the action or the effects of the command.

To undo an action or command

- Open the Edit menu and choose Undo.

  If the action or command can be undone, the command will be listed beside **Undo** at the top of the **Edit** menu (**Undo Delete** after a deletion, for example).



  If the action or command cannot be undone, **Undo** will be dimmed in the **Edit** menu.

Redo

You can use the **Redo** command to re-execute an action or command that you just reversed using the **Undo** command. By using **Undo** and **Redo** you can experiment with your drawing and MacDraft's features. For example, you could delete an object, observe the effect on your drawing, and choose **Undo** to reverse the deletion. If you then decided that the deletion produced the desired effect, you could choose **Redo** and the same object would be re-deleted.

To redo an action or command

- Open the **Edit** menu and choose **Redo**.

  The action or command you just reversed by choosing **Undo** will be listed beside **Redo** at the top of the **Edit** menu (**Redo Delete** after undoing a delete, for example).

Revert

If you execute a command that cannot be undone using the **Undo** command, or you make changes you are unable to delete but do not wish to save, you can eliminate any unsaved changes by reverting to the last saved version of your document.

To revert to a previously saved version of your document

1. Open the **File** menu and choose **Revert**.

   A dialog appears asking you to confirm that you want to proceed. The dialog will show you the date and time when the document was last saved.

2. Click one of the following buttons

- **Revert**: To revert to the last saved version of the document.
- **Cancel**: To return to the current version of your document.

WARNING: If you revert to a previously saved version of the document, all changes made since the last time it was saved will be deleted.

◆ Drawing views

MacDraft offers various features for changing the view of your drawing. Using these features you can move the drawing in the document window so that you view a different part of the drawing, or you can zoom in or out on a portion of the drawing to see it in more detail or to see an overall view. Any view can be saved.

Changing the position of the drawing in the document window

To change the position of the drawing within the document window, you can scroll the drawing, use the **Hand** tool or use the arrow keys on the keyboard.

NOTE: You can easily return to the top left corner of your drawing by using the **Home View** command *(see Home view on page 2-106)*.

Scrolling

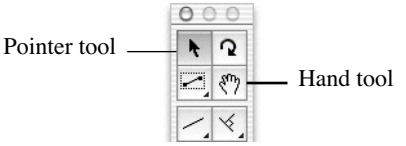
Scrolling in MacDraft drawings is accomplished just as it is in other Macintosh document windows by using the scroll bars at the edges of the windows. See your system documentation for details.

The Hand tool

The **Hand** tool provides an alternative method of moving the drawing within the document window.

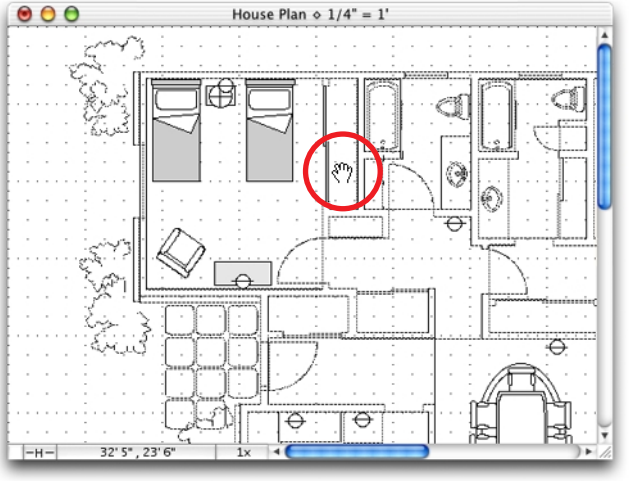
To use the Hand tool

1. Click the **Hand** tool in the **Tool** palette.



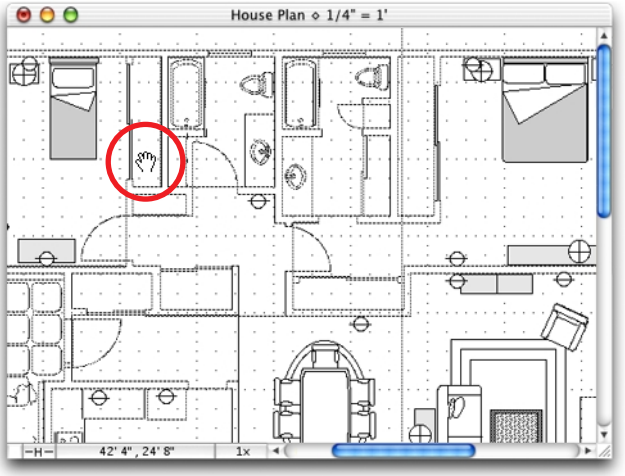
   The cursor turns into a hand.

2. Position the cursor over the drawing area, then press and hold down the mouse button.



3. Drag in any direction.

The view moves with the hand.



4. Release the mouse button when the desired section of the drawing is shown in the document window.

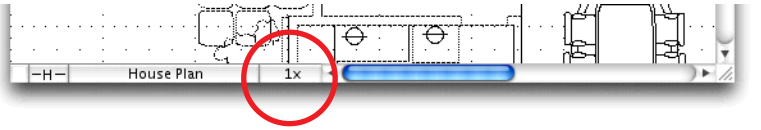
NOTE: You can also activate the Hand tool by pressing the space bar while the **Pointer** tool is on.

Zooming in or out on a drawing

When you work with a large document you may need to see the entire drawing at one time or you might need to obtain a close up view of a particular area so that you can add small details. MacDraft gives you the possibility to change the view of your drawing in either of these cases by providing features that allow you to zoom in or out on an area of the drawing. **Zoom** controls are provided via the **Zoom** tool in the **Tool** palette, by commands in the **View** menu and by a pop-up menu at the bottom of the document window. There are also features that allow you to easily return to a preset or saved view.

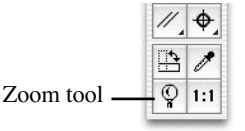
MacDraft usually allows you to magnify a drawing up to 32 times, or down to -8 times its normal size.

NOTE: The current magnification of the drawing view is shown at the bottom of the document window.



NOTE: If you zoom out several consecutive times, and have text on your drawing, the text becomes too small to be displayed and only its edit handles will be shown.

Using the Zoom tool



Click the **Zoom** tool in the **Tool** palette to select it.

NOTE: You can also activate the **Zoom** tool by holding down the **Shift** key and clicking the **Pointer** tool at any time.

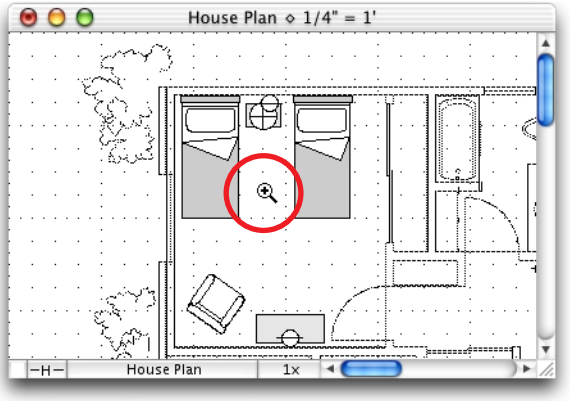
Zoom in

To use the Zoom tool to zoom in on an area of the drawing

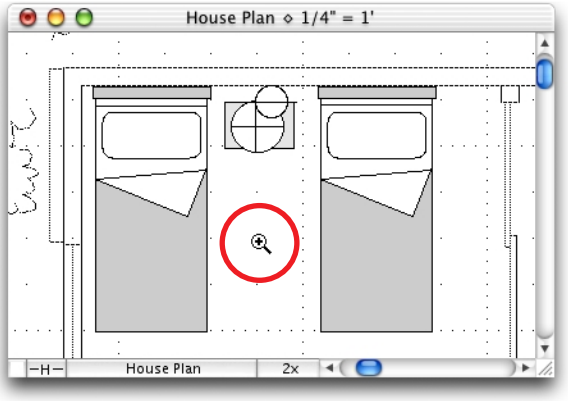
1. Select the **Zoom** tool.

   The cursor will change to a magnifying glass with a plus sign inside it to show that you are about to increase the magnification of the drawing.

2. Position the cursor over the area of the drawing you wish to zoom in on and click.



The magnification of the drawing view will be increased one level, and the view will be centered around the position of the cursor.



3. Continue clicking to zoom in further.

Zoom out

To use the Zoom tool to zoom out on an area of the drawing

1. Select the **Zoom** tool.
2. Press and hold down the **Option** key.

   The cursor will change to a magnifying glass with a minus sign inside it to show that you are about to decrease the magnification of the drawing.
3. Position the cursor over the area of the drawing you wish to zoom out on and click.

The magnification of the drawing view will be decreased one level, and the view will be centered around the position of the cursor.

4. Continue clicking to zoom out further.

Marquee zoom

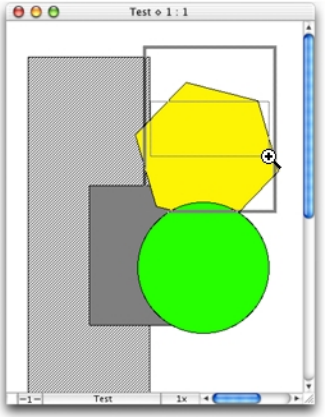
The **Zoom** tool can also be used to perform marquee zooms.

To use the Zoom tool to perform a marquee zoom

1. Select the **Zoom** tool.

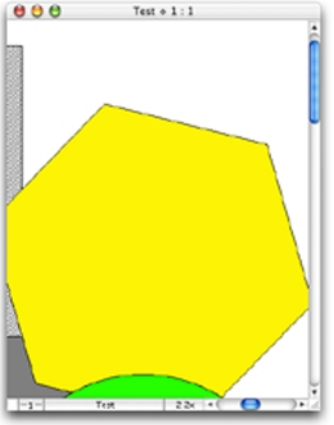
   The cursor will change to a magnifying glass with a plus sign inside it to show that you are about to increase the magnification of the drawing.

2. Position the cursor over the drawing.
3. Press and hold down the mouse button, and drag over the area you want to zoom in on.



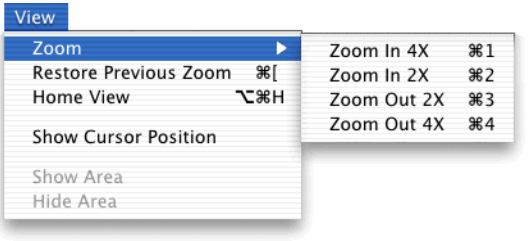
The inner rectangle shown in the screen shot above is the area selected with the **Zoom** tool. The outer rectangle represents the actual area that will be shown in the document window when the mouse button is released.

4. Release the mouse button to display the portion of the document selected.



Zoom commands

The Zoom commands are found in the **Zoom** submenu in the **View** menu.



NOTE: You can choose **Zoom** commands several consecutive times, each time further increasing or decreasing the level of magnification of your view.

Zoom out

To use the Zoom out commands

- Choose **Zoom Out 2X** or **Zoom Out 4X** from the **Zoom** submenu in the **View** menu.

  The magnification of the drawing view will be decreased by the specified amount.

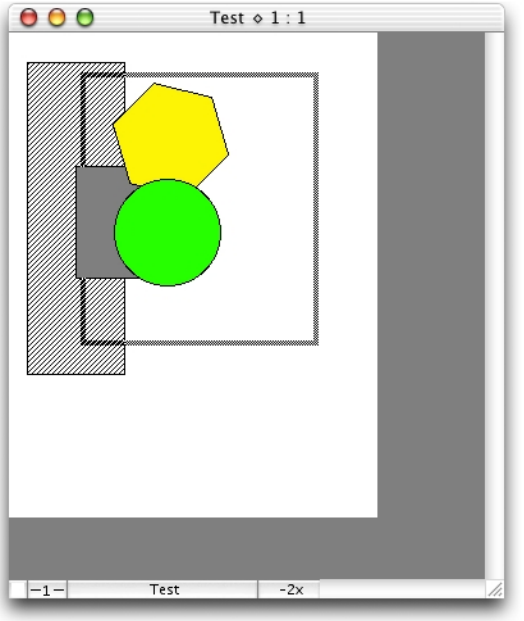
Zoom In

To use the Zoom in command

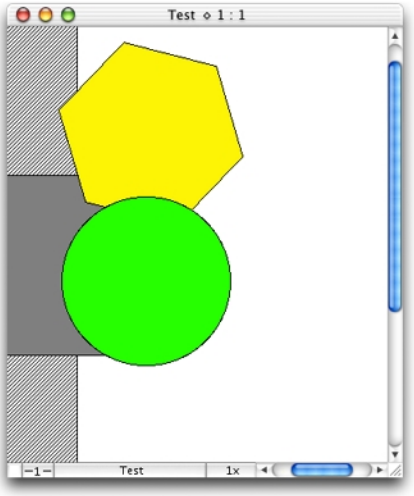
1. Choose **Zoom In 2X** or **Zoom In 4X** from the **Zoom** submenu in the **View** menu.

   The view finder box and a cross cursor appears on your drawing. This gives you a visual indication of the portion of your drawing that will be included in the magnified view.

2. Move the cursor to position the view finder over the area of the drawing you want to zoom in on and click.



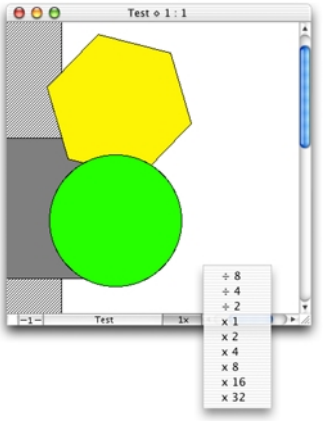
The magnification of the drawing view will be increased by the specified amount, and the selected portion will be shown in the document window.



NOTE: If the complete zoomed in view will fit in the document window, the view finder will not be displayed; the new view will be displayed immediately.

Magnification pop-up menu

The current magnification of the drawing view is shown at the bottom of the document window. If you click this area, a magnification pop-up menu appears.



- Choose a magnification value from this pop-up menu to zoom in or out on your drawing.

Restore previous zoom

The **Restore Previous Zoom** function allows you to return to the previous magnification of your drawing, regardless of the current magnification.

To return to the previous magnification

- Choose **Restore Previous Zoom** from the **View** menu.

  The view will zoom in or out to the previous magnification.

NOTE: You can use this command to alternate between two magnification levels. For example, you could do some detailed editing at high magnification, use **Restore Previous Zoom** to examine the whole image, then use **Restore Previous Zoom** again to zoom back in and continue the detailed work.

Home view

The view which appears on the screen when you first open a MacDraft document is called the **Home View**. This view shows the an unmagnified view of the upper left corner of the document.

To display the home view

- Choose **Home View** from the **View** menu.

  An unmagnified view of the upper left corner of the document is shown.

1:1 tool

You can easily return to an unmagnified view of the current area of the document by using the **1:1** tool in the **Tool** palette. This is useful if you have zoomed in on a detail and now want to see it at single magnification, but don't want to return to the upper left corner of the drawing as when using the **Home View** command *(see Home view on page 2-106)*.

To return to an unmagnified view of the current working area

- Click the **1:1** tool on the **Tool** palette.

  The view will be changed to an unmagnified view of the current area.

Interrupting the screen redraw

If you are working on a large, complicated drawing and you perform an action (such as zooming) that requires the screen to be redrawn, it may take some time for the screen redraw to be completed. If you decide that you want to interrupt the screen redraw before it is completed, you can do so.

To interrupt the screen redraw

1. Press and hold down the **Command** key.
2. While holding down the **Command** key, press and hold down the **period** key (.) on the keyboard.

To redo the screen redraw

1. Press and hold down the **Option** key.
2. Click the **Pointer** tool icon in the **Tool** palette.

Chapter 3 - Changing the appearance of objects

In many drawings, you may want to change the appearance of objects to help differentiate between them. You can change their appearance by filling objects with washes (solid fills) and patterns; by drawing lines and object borders with different colors, patterns, line weights, line styles and pen styles; by drawing lines with different end marks; and by choosing different positions for object borders.

You can define attributes for fills and lines that will be applied to all objects you draw or you can change the attributes of existing objects.

When the application is launched, the default values are white fill, black pen, no pattern, line weight 1 point, plain line style.

◆ Object attributes

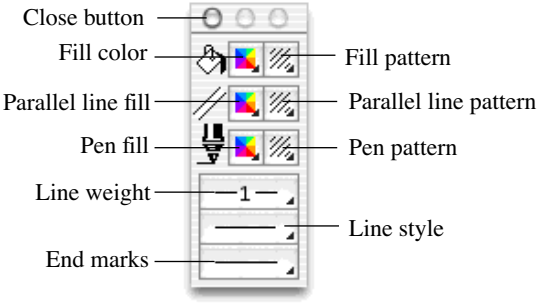
Most attributes are chosen from various pop-up menus on the **Attribute** palette or the indicator boxes at the bottom left of the document window. Others are chosen from the **Options** menu.

The Attributes palette

Displaying the Attribute palette

To open the Attribute palette

- Choose **Attribute** from the **Palettes** submenu in the **View** menu, or
- Choose **Attribute** from the pop-up menu at the bottom left of the document window.



Selecting attributes using the Attributes palette

Selecting attributes is discussed in detail in later sections of this chapter, but in general:

- Change the attributes of existing objects by selecting the object, opening the appropriate menu in the **Attribute** palette, then making your choice.
- Change the drawing's default attributes (the fill, line weight and so on that will be applied to all new objects you draw) by making sure nothing is selected, then opening the appropriate menu and choosing an attribute.

The fill and line indicator boxes offer an alternative method of selecting some attributes.

The fill and line indicator boxes

The default attributes for the fill color or pattern and the line weight are shown in the **Fill** and **Line indicator** boxes in the lower left corner of the document window.

Selecting attributes using the fill and line indicator boxes

The **Fill** and **Line indicator** boxes can be used to select attributes by accessing the appropriate pop-up menu and selecting the desired attribute.

Opening the attribute pop-up menus from the fill and line indicator boxes

To open the Fill color and pattern pop-up menus

- Click the **Fill color/pattern** box.
- Hold down the **Command** key and click the **Fill color/pattern** box to open the alternate pop-up menu.

To open the Parallel line fill color and pattern pop-up menus

- Hold down the **Option** key and click the **Fill color/pattern** box.
- Hold down the **Option** and **Command** keys and click the **Fill color/pattern** box to open the alternate pop-up menu.

To open the Pen color and pattern pop-up menus

- Hold down the **Control** key and click the **Fill color/pattern** box.
- Hold down the **Control** and **Command** keys and click the **Fill color/pattern** box to open the alternate pop-up menu.

To open the Line weight pop-up menu

- Click the **Line weight** box.

To open the Line style pop-up menu

- Hold down the **Option** key and click the **Line weight** box.

Default attributes

The attributes that you can select for objects before you draw them are Fill color and pattern, and Parallel line fill color and pattern. The pen attributes (that is, the attributes associated with lines and object borders) that you can define for objects before you draw them include pen style, color and pattern, line weight (thickness), line style (solid and dashed lines), end marks (symbols at the ends of lines), and border position. The option for each of these attributes that is currently active is called the 'default attribute'.

The current default fill and pen attributes appear on the lines and borders of the objects you draw.

NOTE: You cannot apply both a fill color and fill pattern to an object unless you define a colored fill pattern *(see Customizing patterns on page 3-13)*.

When nothing is selected on the drawing, the default attributes are shown on the **Attributes** palette. When an object is selected, the **Attributes** palette shows the attributes of that object.

Setting default attributes

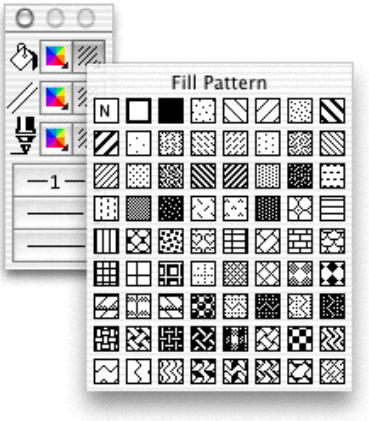
To change the current default attributes for fills and lines

1. Activate the **Pointer** tool on the **Tool** palette.

   NOTE: Make sure that nothing is selected on the drawing.

   ---

2. From the pop-up menus on the **Attribute** palette (or the fill and line indicator boxes), choose the fill and/or line attributes you want to apply to all objects you create.



The attributes you choose will automatically be applied to all objects until you make other choices for the default attributes.

Selecting attributes for specific objects

You can change the fill and line attributes for selected objects without affecting the default fill and line attributes.

To define the fill and/or line attributes for selected objects

1. Select the object or objects you want to change.
2. From the pop-up menus on the **Attribute** palette (or the fill and line indicator boxes), choose the fill and/or line attributes you want to apply to the selected objects.

   The chosen attributes will be applied only to the selected objects. The default attributes will not be changed.

◆ Using color

With MacDraft you can use color in a variety of ways: to fill objects with solid colors, to fill objects with color patterns, to draw the borders of objects and to color text. The use of solid colors is referred to as a "wash," and the use of colors to draw lines and object borders is referred to as the "pen color." The color you choose for the pen is applied to text as well. You can also use colors in fill patterns and to fill the gaps between parallel lines.

Choosing the number of colors to display

A color Macintosh system is capable of reproducing over 16 million colors, but the number of colors you can display depends on the amount of video RAM (Random Access Memory) in your computer, and on the specification of your monitor.

There are certain trade-offs to be aware of in choosing the number of colors to set your monitor to display. If you choose to display millions of colors, the rate at which the screen is redrawn will be slowed down. If you choose to display fewer colors, the screen redraw will be faster, but there will be fewer color choices available to you, and the system may not be able to display all of the colors used in an existing document. The system will attempt to display all the colors used in an existing document by using a process called 'dithering'. With dithering, the system clumps together pixels of different colors to simulate the specified color.

To set the number of colors to display

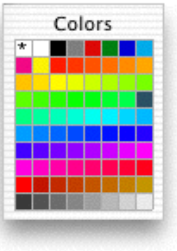
The display choices available to you will be determined by the specifications of your monitor and the system software you are running. Refer to the system software documentation for details of setting the number of colors to display on your monitor.

NOTE: If you want to use only grayscale, but you have a color or true monochrome monitor, you will still be able to access color items, such as **Edit Colors** *(see Editing colors on page 3-6)*, but in 256 shades of gray.

The color table

The color table contains the colors used in a document. Each new document contains a number of preset colors, which you can edit. The preset colors and the colors you edit or create are stored in the document's color table.

The color table is represented on your screen as a submenu that shows all the preset colors and all the colors that have been used in the document.



The colors in the color table can be chosen from the **Attribute** palette, the **Fill indicator** box and the **Edit Colors** command in the **Options** menu.

NOTE: When you paste objects from a different document that has colors that are not present in the target document's color table, the colors from the source document are preserved in the objects that are pasted, but are not added to the target document's color table.

Editing colors

You can edit the existing colors in the color table to add your own colors.

When you edit an existing color, the existing color is replaced with the new color in the color table.

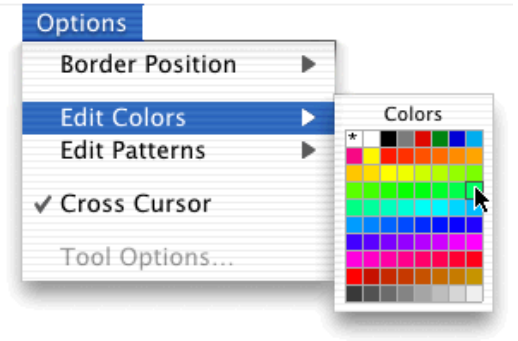
NOTE: If you edit a color that has been used in the document, the objects that contain the edited color will be updated with the new color.

To edit a color in the color table

1. Choose **Edit Color** from the **Options** menu.

   The color table appears.

2. Holding down the mouse button, drag through the table until the color you want to edit is highlighted.

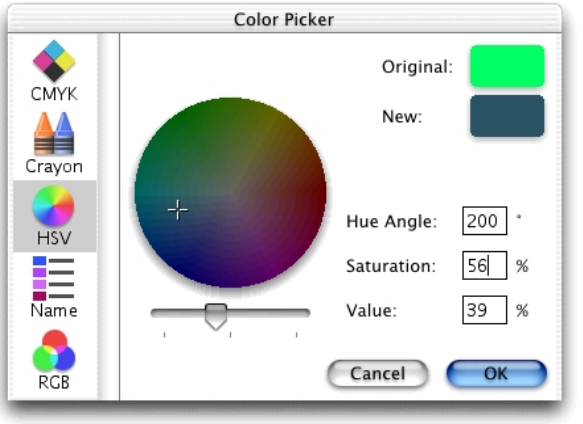


3. Release the mouse button.

   The **Color Picker** dialog appears.

   NOTE: You cannot edit the No fill (*), the solid white or the solid black colors. If you try to edit one of these colors, the **Color Picker** dialog will not open, and an alert will inform that you are unable to modify this fill.

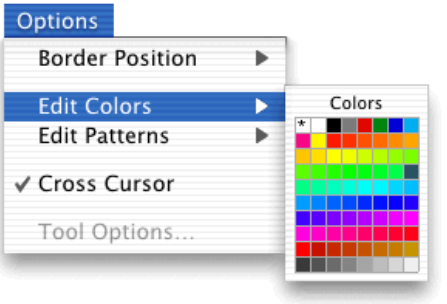
4. Use the controls in the **Color Picker** dialog to choose a new color.



NOTE: The **Color Picker** dialog is specific to the operating system. For full details on how to use it refer to the operating system documentation.

5. When you have chosen a new color, click the **OK** button to close the **Color Picker** and return to MacDraft.

   The new color you chose replaces the color you selected to edit.



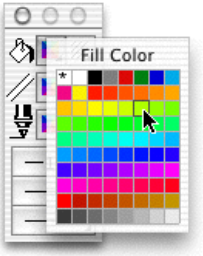
Object fill color

You can use a solid color to fill the interiors of objects. Filled objects are opaque and you can select them by clicking their borders or anywhere within them. If a filled object is on top of another object, it hides the object beneath it from view.

Selecting the fill color

To select the fill color

1. Open the **Fill Color** pop-up menu in the **Attribute** palette.
2. Drag until the fill color you want is highlighted.



3. Release the mouse button. The selected fill color will be shown on the **Attribute** palette.

NOTES:
• If you choose '* '(for No fill) from the **Fill Color** submenu as the current fill color, the objects you draw will be wire frame shapes.
• You must draw polylines, freehand lines and curves with No fill if you want end marks to appear on the lines *(see End marks on page 3-36)*.

You can change the fill color before or after you draw the object.

Drawing an object with a selected fill color

To draw an object with a selected fill color

1. Return to the pointer mode. (Make sure that nothing on the drawing is selected.)
2. Select the desired fill color from the **Fill Color** pop-up menu in the **Attribute** palette.
3. Draw an object.

   The object will be drawn with the specified fill color.

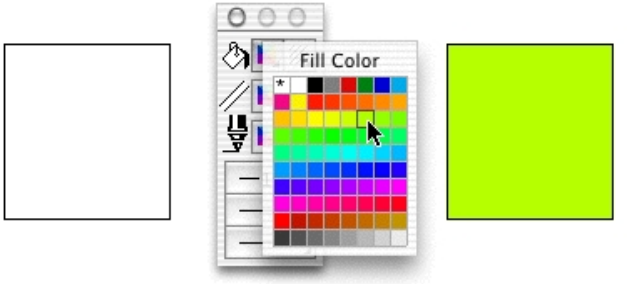
   The **Fill Color Indicator** box in the lower left corner of the window will change color to indicate the color you chose.

NOTE: The chosen fill color will be used for objects until you choose another fill color as the default.

Changing the fill color of an existing object

To change the fill color of an existing object

1. Select the object to change the fill color of.
2. Choose the desired fill color from the **Fill Color** pop-up menu in the **Attribute** palette.



The fill of the selected object will be changed to reflect the chosen fill color.

Parallel fill color

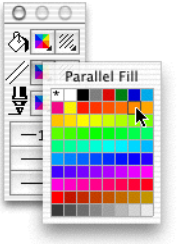
MacDraft's parallel-line objects (single parallel lines, open parallel polylines and closed parallel polygons) can include fill colors (including No Fill) between their component edges *(see Drawing parallel line objects on page 2-55)*.

NOTE: In addition to parallel fills, parallel objects can also have pen colors, patterns and object fills.

Selecting the parallel fill color

To select the parallel fill color

1. Open the **Parallel Fill color** pop-up menu in the **Attribute** palette.
2. Drag until the parallel fill color you want is highlighted.



3. Release the mouse button. The selected parallel fill color will be shown on the **Attribute** palette.

   You can change the parallel fill color before or after you draw the parallel line object.

Drawing a parallel line object with a selected fill color

To draw a parallel line object with a selected fill color

1. Return to the pointer mode. (Make sure that nothing on the drawing is selected.)
2. Select the desired parallel fill color from the **Parallel Fill color** pop-up menu in the **Attribute** palette.
3. Draw a parallel line object.

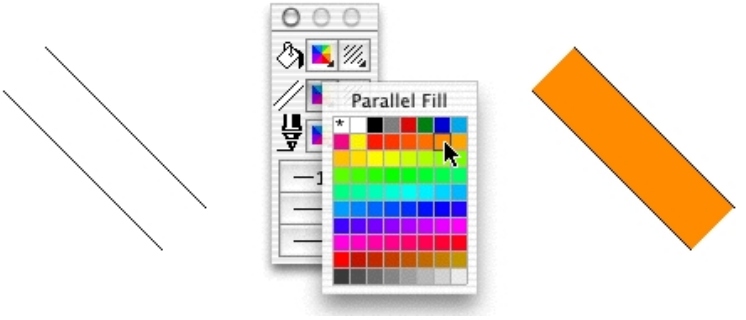
   The object will be drawn with the specified fill color.

NOTE: The chosen parallel fill color will be used for objects until you choose another parallel fill color as the default.

Changing the fill color of an existing parallel line object

To change the fill color of an existing parallel line object

1. Select the parallel line object to change the fill color of.
2. Select the desired parallel fill color from the **Parallel Fill color** pop-up menu in the **Attribute** palette.



   The fill of the selected parallel line object will be changed to reflect the chosen fill color.

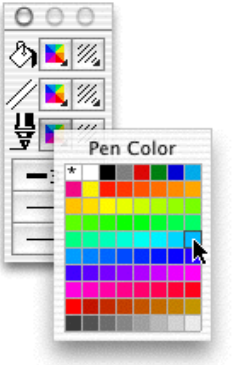
Pen color

This section describes how to use colors to draw lines, borders and text. You use the **Pen Color** pop-up menu in the **Attribute** palette to choose pen colors. You can use different pen colors to help distinguish between objects.

Selecting the pen color for lines, borders and text

To select the pen color

1. Open the **Pen Color** pop-up menu in the **Attribute** palette.
2. Drag until the pen color you want is highlighted.



3. Release the mouse button. The selected pen color will be shown on the **Attribute** palette.

NOTE: If you choose '* '(for No ink) from the **Pen Color** submenu as the current pen color, the lines, borders or text you draw will be invisible. Edit handles appear on selected objects drawn with no ink, but the lines, borders or text will not appear on the screen or on printed drawings.

You can change the pen color before or after you draw the object or enter the text.

Drawing a line or object, or entering text, with a selected pen color

To draw a line or object, or enter text, with a selected pen color

1. Return to the pointer mode. (Make sure that nothing on the drawing is selected.)
2. Select the desired pen color from the **Pen Color** pop-up menu in the **Attribute** palette.
3. Draw a line or object or enter the text.

The line, object or text will be drawn with the specified pen color.

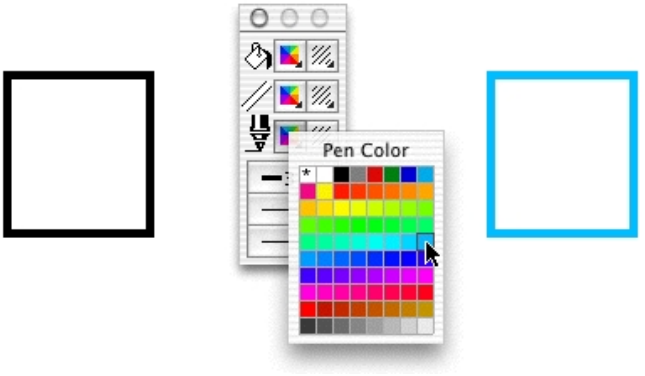
The Line Indicator box in the lower left corner of the window will change color to indicate the color you chose.

NOTE: The chosen pen color will be used for lines, borders and text until you choose another pen color as the default.

Changing the pen color of an existing line, object or piece of text

To change the pen color of an existing line, object or piece of text

1. Select the line, object or text to change the pen color of.
2. Choose the desired pen color from the **Pen Color** pop-up menu in the **Attribute** palette.



The line or border of the selected object, or the selected text, will be changed to reflect the chosen pen color.

Using patterns

Fill patterns provide an effective way to distinguish between objects. Two reasons you might want to use different fill patterns within a drawing would be to improve its esthetics or to add meaningful information to the drawing. In a technical drawing, an architect or engineer might use a variety of fill patterns and inks to differentiate between various object types or textures within the drawing. MacDraft offers a menu selection of standard fill patterns to complement your drawing. You can use the existing patterns, customize them or create your own. You can have up to 64 patterns in each MacDraft document.

Customizing patterns

The **Edit Patterns** feature allows you to change the patterns available in the pattern fill submenus from the **Attribute** palette. When a pattern is edited, the pattern fill submenus will be updated to show the new pattern, and the new pattern will be saved with the document. If a pattern that has been used to fill objects is edited, the objects will be changed to reflect the revised pattern.

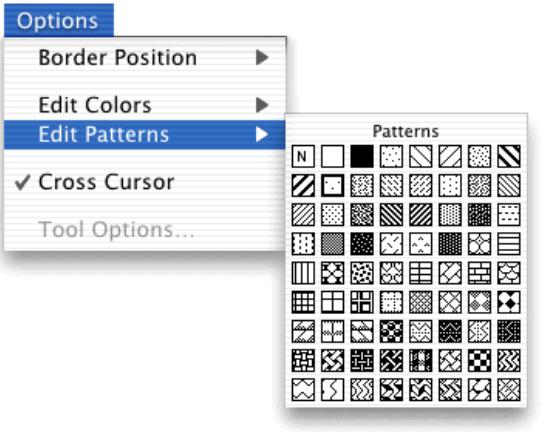
The Edit Pattern dialog

Opening the Edit pattern dialog

To open the Edit Pattern dialog

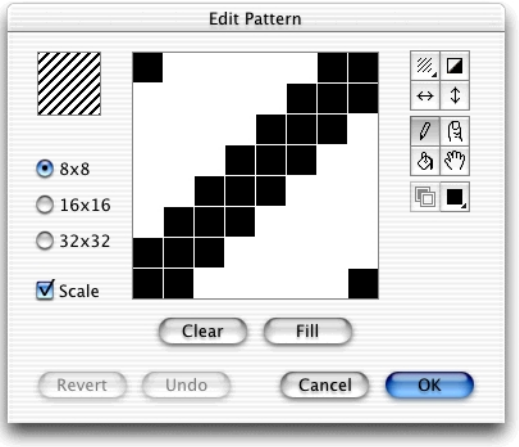
1. Open the **Options** menu and drag until **Edit Pattern** is highlighted.

   The **Edit Patterns** submenu appears.



2. Holding down the mouse button, drag until the pattern you want to edit is highlighted and release the mouse button.

The **Edit Pattern** dialog appears.



NOTE: You cannot edit the No fill (“N”), the solid white or solid black patterns. If you try to do so, the **Edit Pattern** dialog will not open, and an alert appears informing that the selected pattern may not be edited.

The edit pattern field

The large box in the center of the **Edit Patterns** dialog is the edit pattern field. It shows a magnified view of the bits that make up the pattern. The pattern is edited within this field.

Pattern preview

The box in the upper left corner of the **Edit Pattern** dialog shows a preview of the pattern as it appears on the drawing. It is updated as the pattern is edited in the **Edit Pattern** field.

The pattern grid

The pattern grid can be defined as 8 x 8, 16 x 16 or 32 x 32 grid squares.

To specify the pattern grid

- Click the 8 x 8, 16 x 16, or 32 x 32 buttons on the left of the **Edit Pattern** dialog.

NOTE: 16 x 16, or 32 x 32 patterns will not be printed on some printers or output devices.

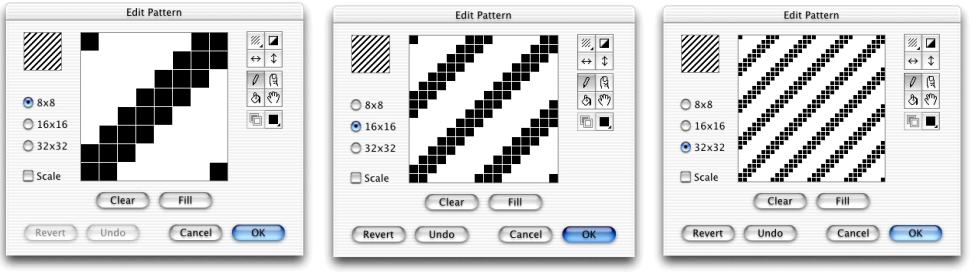
Scale

Scale turned off

Grid size increased

If the **Scale** box is turned off, as the grid size is increased, the pattern is replicated to fill the new area.

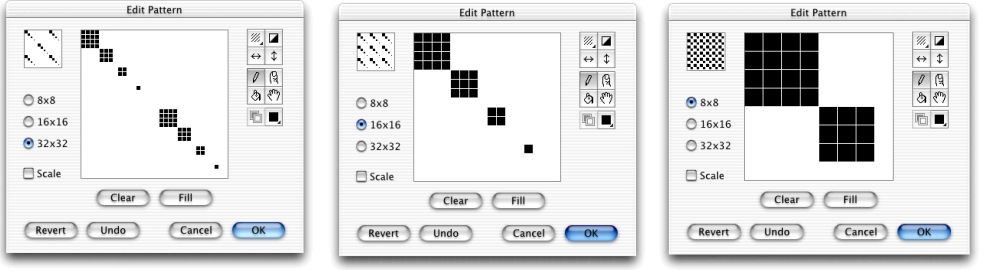
For example: In the dialogs below, the grid size is increased from 8 x 8 to 16 x 16, then to 32 x 32. At each stage, four copies of the contents of the **Edit Pattern** field are used to fill the new grid. Notice that although the contents of the **Edit Pattern** field change, the **Pattern Preview** field remains the same.



Grid size decreased

If the **Scale** box is turned off, as the grid size is decreased, the pattern is divided and applied to the new area.

For example: In the dialogs below, the grid size is decreased from 32 x 32 to 16 x 16, then to 8 x 8. At each stage, the contents of the top left quarter of the **Edit Pattern** field are used to fill the new grid.

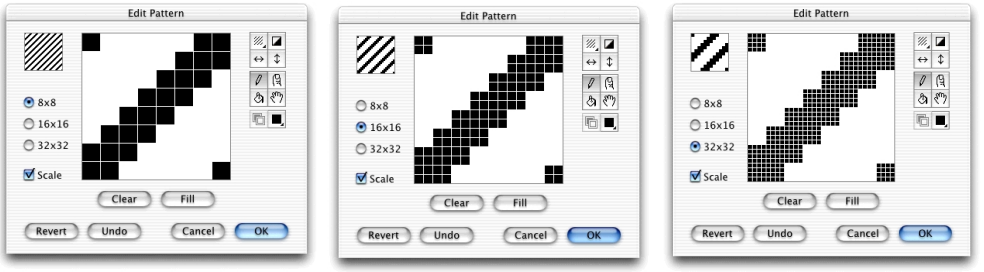


Scale on

Grid size increased

If the **Scale** box is on, as the grid size is increased, the pattern in the **Edit Pattern** field remains the same, but is divided up into more squares.

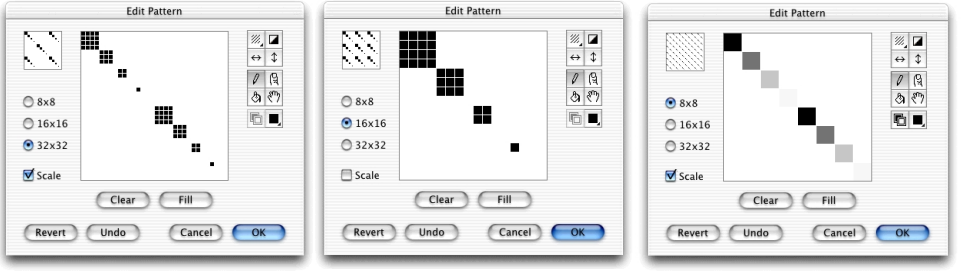
For example: In the dialogs below, the grid size is increased from 8 x 8 to 16 x 16, then to 32 x 32. At each stage, the contents of the **Edit Pattern** field remain the same, but the pattern is divided into more grid squares. Notice that the contents of the **Pattern Preview** field are scaled up at each stage.



Grid size decreased

If the **Scale** box is on, as the grid size is decreased, the pattern in the **Edit Pattern** field remains the same but is divided into less grid squares. Colors are averaged out in this process.

For example: In the dialogs below, the grid size is decreased from 32 x 32 to 16 x 16 then to 8 x 8. At each stage, as four grid squares are combined to make one new grid square, the average color of the four squares is used for the new square. Notice that the contents of the **Pattern Preview** box are scaled down at each stage.



Color mode

Patterns can be edited in two modes: black and white, and color/grayscale. If you have a monochrome system, color options will still be available in the **Edit Pattern** dialog, but as colors/grayscales cannot be seen, they cannot be used effectively. In this case, patterns will consist of black and white bits, the black bits representing the pattern design and the white bits the background. If you have a color system, you can edit patterns using an unlimited number of colors.

Pattern editing tools

The tools at the right of the pattern edit field are used to edit the current pattern.

The Overlay tool

The **Overlay** tool is used to apply a pattern over the one in the **Edit Pattern** field.

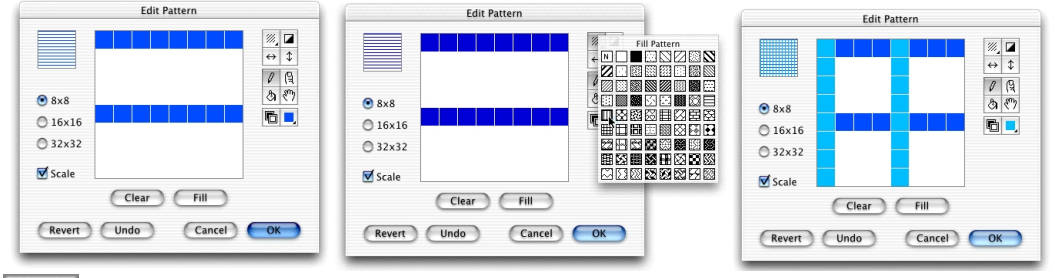
To apply a pattern over the one in the Edit Pattern field

1. Click the **Overlay** tool and hold down the mouse button.

   The **Fill Patterns** submenu appears.

2. Holding down the mouse button, drag the cursor over the pattern you wish to apply, and release the mouse button

   The selected pattern will be applied over the current contents of the **Edit Pattern** field using the current color.



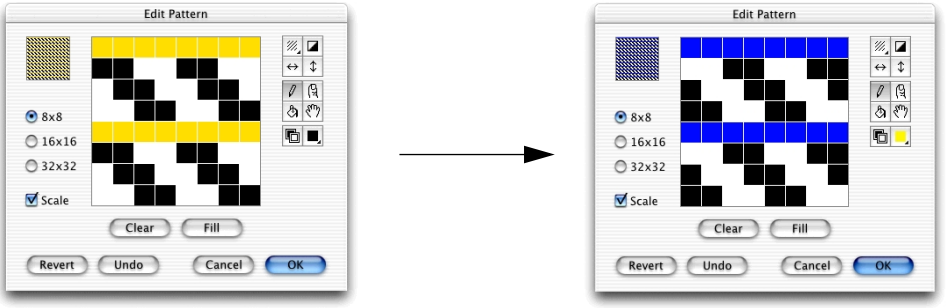
The Invert tool

The **Invert** tool is used to invert the color of the bits in the **Edit Pattern** field. In black and white mode, this action will change all the black bits to white and all the white bits to black. If color bits are included in the pattern, when the **Invert** tool is used, each bit will be changed to the color on the opposite side of the color wheel to the original color, and the brightness will also be inverted. For example, a light pink color will become a dark green/blue, while a dark red will become a light green/blue.

To invert the color of the bits in the Edit Pattern field

- Click the **Invert** tool.

The color of the bits in the **Edit Pattern** field will be inverted



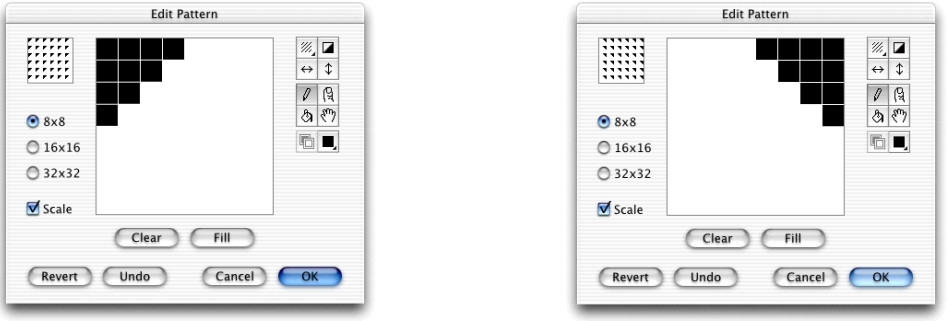
The Flip horizontal tool

The **Flip Horizontal** tool is used to flip the pattern in the **Edit Pattern** field around the vertical axis.

To flip the pattern in the Edit Pattern field around the vertical axis

- Click the **Flip Horizontal** tool.

  The pattern will be flipped.



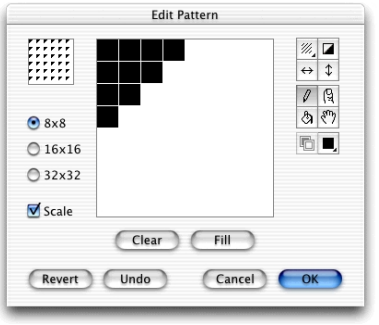
The Flip vertical tool

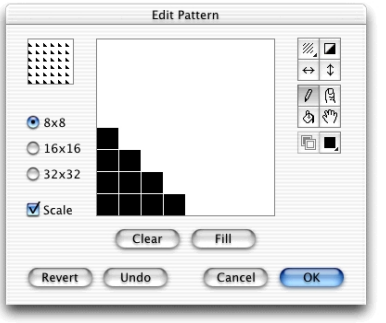
The **Flip Vertical** tool is used to flip the pattern in the **Edit Pattern** field around the horizontal axis.

To flip the pattern in the Edit Pattern field around the horizontal axis

- Click the **Flip Vertical** tool.

The pattern will be flipped.





The Pencil tool

The **Pencil** tool is used to add or delete individual bits or series of bits, or to draw lines in the **Edit Pattern** field.

To add bits to the Edit Pattern field one at a time

1. Click the **Pencil** tool and move the cursor over the **Edit Pattern** field.
2. Click the **Edit Pattern** field to add a square of the current color.

To add a series of bits

1. Click in the **Edit Pattern** field and drag, holding down the mouse button.
2. Bits showing the current color will be added to the pattern as you drag.
3. Release the mouse button when you are finished.

To draw lines

- Constrain the movement of the **Pencil** tool to a horizontal or vertical direction by holding down the **Shift** key while you drag.

To delete black bits in Black and White mode

- Select the **Pencil** tool and click the black bits you want to delete.

To delete color bits in the Color mode

- Hold down the **Command** key, then click the color bits to be deleted.

The Eye dropper tool

You can use the **Option** key to change the pencil tool to an eye dropper, and use this to choose the color of any bit in the **Edit Pattern** field as the current color.

1. Select the **Pencil** tool, hold down the **Option** key and move the pointer into the **Edit Pattern** field.

   The pointer will change to an **Eye Dropper** tool.

2. Click the **Eye Dropper** tool on the bit of the color you require to be the current color.

   The current color will be changed to reflect your choice.

The Finger tool

The **Finger** tool is used to blend together the current color and the color of any bit in the **Edit Pattern** field, or the colors of adjacent bits in the **Edit Pattern** field.

To blend the current color with the color of any bit in the Edit Pattern field

1. Select the **Finger** tool.

   The **Finger** cursor shows the current color, which is the first of the two colors to be used in the blending process.

2. Move the cursor over the **Edit Pattern** field and click the bit with which you want to blend the current color.

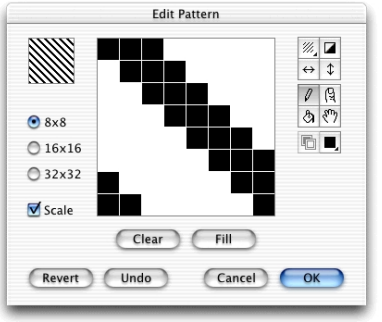
   The bit clicked will change to a new color that is the average of the **Finger** cursor color and the color of the bit clicked. The **Finger** cursor color will also be updated to show the new color.

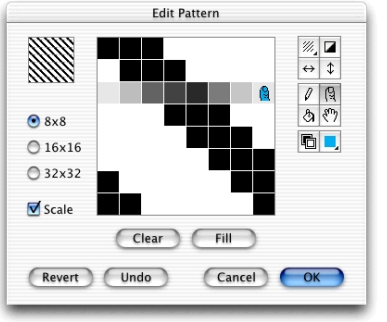
To blend the colors of a series of bits

1. Select the **Finger** tool.
2. Click in the **Edit Pattern** field and, holding down the mouse button, drag the **Finger** cursor across bits of varying colors.

   The average of the color values of the **Finger** cursor color and the bits dragged across will be calculated, and applied to the bit.

NOTE: If you hold down the **Shift** key while dragging, the movement of the **Finger** cursor will be constrained to a horizontal or vertical direction.





When you release the mouse button, the **Finger** cursor shows the color last applied to a bit. To reset the **Finger** cursor color to the current color, click the **Finger** tool icon again. To reset the **Finger** cursor color to a color in the pattern, hold down the **Option** key and click one of the colors in the pattern.

NOTE: The **Finger** tool can be selected in **Black and White** mode, but the mode is automatically changed to color.

The Paint bucket tool

The **Paint Bucket** tool is used to change bits in the **Edit Pattern** field to the current color.

To change bits in the Edit Pattern field to the current color

1. Click the **Current Color** button and choose the color from the **Pattern Color** pop-up menu.
2. Click the **Paint Bucket** icon and then click a bit in the **Edit Pattern** field.

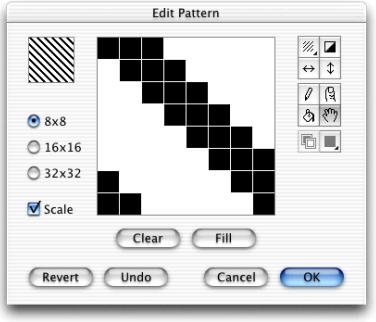
   The bit clicked and all bits of the same color connected to it, are changed to the current color.
3. If you hold down the **Option** key with the **Paint Bucket** tool selected, the tool will be changed to the **Eye Dropper** tool. Click a bit in the **Edit Pattern** field with the **Eye Dropper** tool to select the color of that bit as the current color.

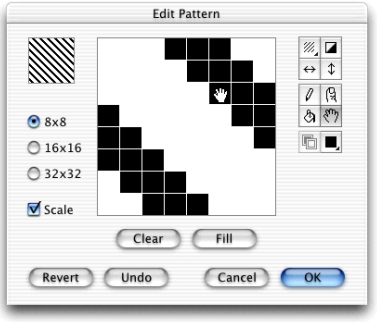
The Hand tool

The **Hand** tool is used to move the pattern within the **Edit Pattern** field.

To move the pattern within the Edit Pattern field

1. Click the **Hand** tool and move the cursor over the **Edit Pattern** field.
2. Holding down the mouse button, drag the pattern to reposition it within the **Edit Pattern** field, and release the mouse button.





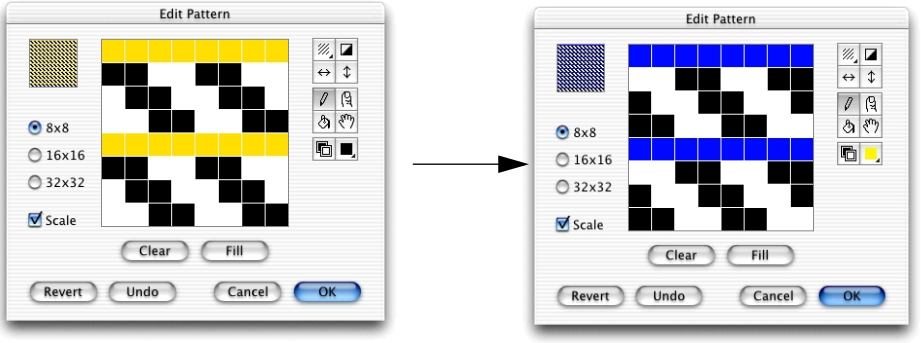
The Black and White tool

This tool is used to convert patterns to black and white.

To convert patterns to black and white

- Click the **Black and White** tool.

  Any bits used in the pattern that are more than 50% saturated will be changed to black. Bits that are less than 50% saturated will be changed to white.



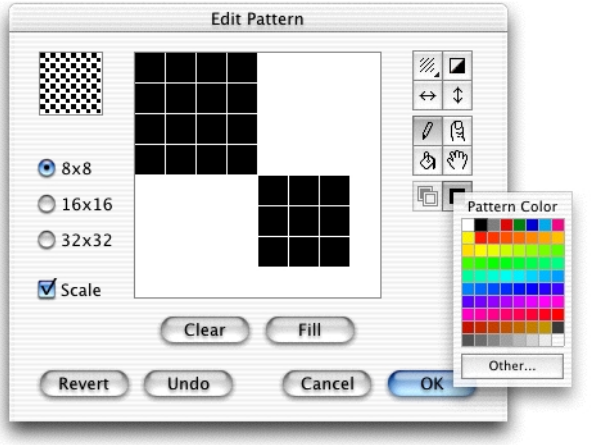
The Current color tool

You can work with only one color at a time while editing patterns. The selected color is called the current color and is shown in the tool palette of this dialog. With this tool you open the **Pattern Color** menu.

To change the current color

1. Click the **Current Color** button and hold down the mouse button.

   The **Pattern Color** pop-up menu appears



2. Holding down the mouse button, drag to select the color you want to use, and release the mouse button.

   The selected color will be shown on the **Current Color** tool. This color will be used for pattern editing until another color is chosen.

NOTE: The current color is always black when you operate in black and white mode.

Choosing a color which is not available in the Pattern Color menu

The **Other** button in the **Pattern Color** pop-up menu allows you to select colors that are not available in the **Pattern Color** menu.

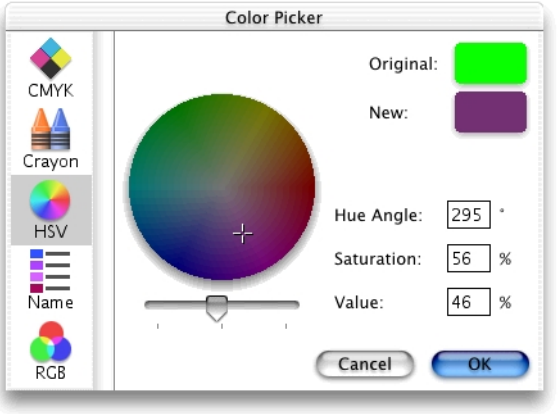
To choose a color which is not available in the Pattern Color menu

1. Click the **Current Color** button and hold down the mouse button.

   The **Pattern Color** pop-up menu appears

2. Click the **Other** button.

The **Color Picker** dialog appears.



3. Select a color from the **Color Picker**.
4. Click **OK** to close the **Color Picker** dialog and return to the **Edit Pattern** dialog.

   The color selected from will be shown on the **Current Color** button.

Clearing the current pattern

At times, you may want to clear all the bits from the **Edit Pattern** field and start afresh rather than alter an existing pattern.

To clear all the bits from the Edit Pattern field

- Click the **Clear** button

  The field will be cleared.

Filling the entire field

If you need to fill the entire field with the current color you can do this with one mouse click using the **Fill** button.

To fill the entire field

- Click the **Fill** button.

  The entire **Edit Pattern** field will be filled with the current color.

Revert

- Click the **Revert** button to return to the pattern you originally selected to edit. Any changes you have made will be lost.

Undo

- Click the **Undo** button to remove the effects of your last action only.

Cancel

- Click the **Cancel** button to close the **Edit Pattern** dialog and return to your MacDraft drawing without making any changes to the fill patterns.

OK

- Click the **OK** button to close the **Edit Pattern** dialog and return to your MacDraft drawing accepting the changes you have made to the selected fill pattern. The fill submenu will be updated to show the new pattern, and the new pattern will be saved with the document. If a pattern that has been used to fill objects is edited, the objects will be changed to reflect the revised pattern.

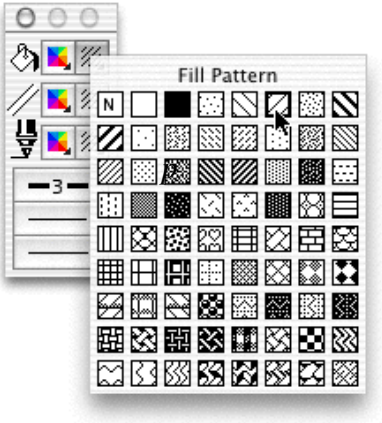
Object fill patterns

You can use a pattern to fill the interiors of objects. Filled objects are opaque and you can select them by clicking their borders or anywhere within them. If a filled object is on top of another object, it hides the object beneath it from view.

Selecting the fill pattern

To select the fill pattern

1. Open the **Fill Pattern** pop-up menu in the **Attribute** palette.
2. Drag until the fill pattern you want is highlighted.



3. Release the mouse button. The selected fill pattern will be shown on the **Attribute** palette.

NOTES:
• If you choose 'N '(for No fill) from the **Fill Pattern** submenu as the current fill pattern, the objects you draw will be wire frame shapes.
• You must draw polylines, freehand lines and curves with No fill if you want end marks to appear on the lines *(see End marks on page 3-36)*.

You can change the fill pattern before or after you draw the object.

Drawing an object with a selected fill pattern

To draw an object with a selected fill pattern

1. Return to the pointer mode. (Make sure that nothing on the drawing is selected.)
2. Select the desired fill pattern from the **Fill Pattern** pop-up menu in the **Attribute** palette.
3. Draw an object.

   The object will be drawn with the specified fill pattern.

   The **Fill Pattern** Indicator box in the lower left corner of the window will change to indicate the pattern you chose.

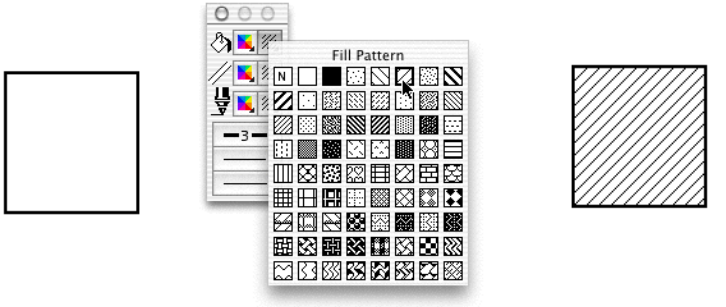
NOTE: The chosen fill pattern will be used for objects until you choose another fill pattern as the default.

Changing the fill pattern of an existing object

To change the fill pattern of an existing object

1. Select the object to change the fill pattern of.

2. Select the desired fill pattern from the **Fill Pattern** pop-up menu in the **Attribute** palette.



The fill of the selected object will be changed to reflect the chosen fill pattern.

Parallel fill pattern

MacDraft's parallel-line objects (single parallel lines, open parallel polylines and closed parallel polygons) can include fill patterns (including No Fill) between their component edges.

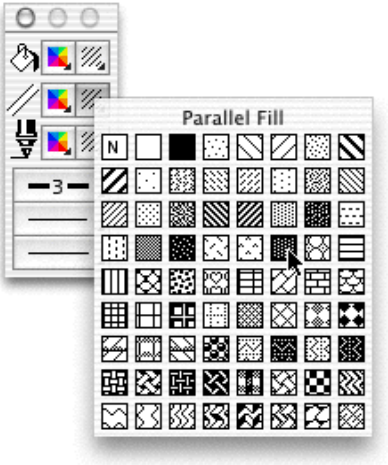
NOTE: In addition to parallel fills, parallel objects can also have pen colors and patterns, and object fills.

Selecting the parallel fill pattern

To select the parallel fill pattern

1. Open the **Parallel Fill Pattern** pop-up menu in the **Attribute** palette.

2. Drag until the parallel fill pattern you want is highlighted.



3. Release the mouse button. The selected parallel fill pattern will be shown on the **Attribute** palette.

   You can change the parallel fill pattern before or after you draw the parallel line object.

Drawing a parallel line object with a selected fill pattern

To draw a parallel line object with a selected fill pattern

1. Return to the pointer mode. (Make sure that nothing on the drawing is selected.)
2. Select the desired parallel fill pattern from the **Parallel Fill pattern** pop-up menu in the **Attribute** palette.
3. Draw a parallel line object.

   The object will be drawn with the specified fill pattern.

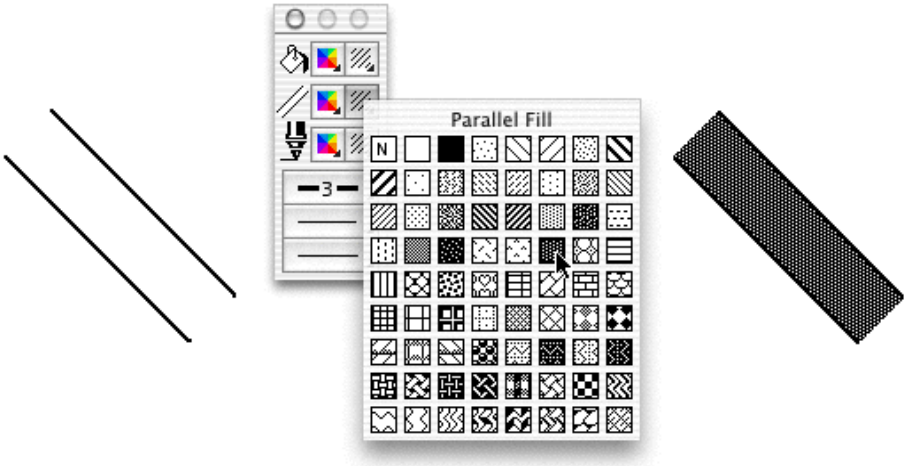
NOTE: The chosen parallel fill pattern will be used for objects until you choose another parallel fill pattern as the default.

Changing the fill pattern of an existing parallel line object

To change the fill pattern of an existing parallel line object

1. Select the parallel line object to change the fill pattern of.

2. Choose the desired parallel fill pattern from the **Parallel Fill pattern** pop-up menu in the **Attribute** palette.



The fill of the selected parallel line object will change to reflect the chosen fill pattern.

Pen pattern

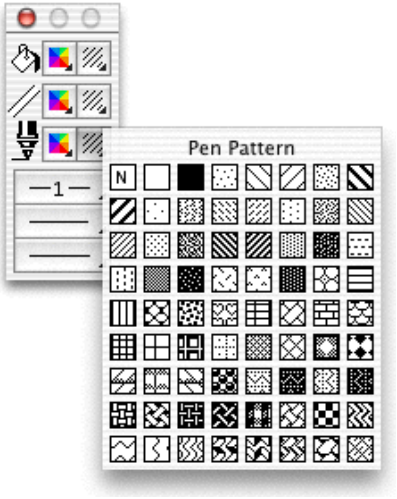
This section describes how to use patterns to draw lines and borders. Use the **Pen Pattern** pop-up menu in the **Attribute** palette to choose pen patterns. You can use different pen patterns to help distinguish between objects.

Selecting the pen pattern for lines and borders

To select the pen pattern

1. Open the **Pen Pattern** pop-up menu in the **Attribute** palette.

2. Drag until the pen pattern you want is highlighted.



3. Release the mouse button. The selected pen pattern will be shown on the **Attribute** palette.

NOTE: If you choose 'N '(for No ink) from the **Pen Pattern** submenu as the current pen pattern, the lines and borders you draw will be invisible. Edit handles appear on selected objects drawn with no ink, but the lines or borders will not appear on the screen or on printed drawings.

You can change the pen pattern before or after you draw the object.

Drawing a line or object with a selected pen pattern

To draw a line or object with a selected pen pattern

1. Return to the pointer mode. (Make sure that nothing on the drawing is selected.)
2. Choose the desired pen pattern from the **Pen Pattern** pop-up menu in the **Attribute** palette.
3. Draw a line or object.

   The line or object will be drawn with the specified pen pattern.

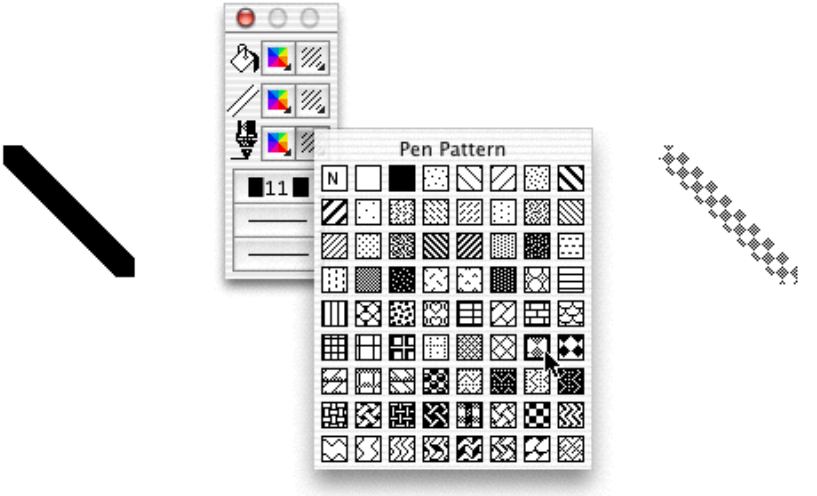
   The Line Indicator box in the lower left corner of the window will change pattern to indicate the pattern you chose.

NOTE: The chosen pen pattern will be used for lines and borders until you choose another pen pattern as the default.

Changing the pen pattern of an existing line or object

To change the pen pattern of an existing line or object

1. Select the line or object to change the pen pattern of.
2. Choose the desired pen pattern from the **Pen Pattern** pop-up menu in the **Attribute** palette.



The line or border of the selected object will be changed to reflect the chosen pen pattern.

◆ TLine and border attributes

The attributes that define the appearance of lines and borders are sometimes referred to as the 'pen model' or simply, the 'pen'. The attributes for the pen include pen style, line weight, line style and end marks. The border position of an object can also be specified. The various options for each attribute are selected using pop-up menus in the **Attribute** palette or, in the case of pen style and border position, from the **Options** menu.

Pen color or pattern are discussed in other sections of this chapter; see *Pen color on page 3-11* and *Pen pattern on page 3-29*.

NOTE: Many of the pen model attributes you choose do not affect only lines, they also affect the borders of objects. For example, when you select a certain line weight and color, these attributes will be applied to line segments used to draw rectangles, circles, polygons and so on.

Line weight

Line weight refers to the thickness of lines and borders. Line weight is measured in pixels (picture elements).

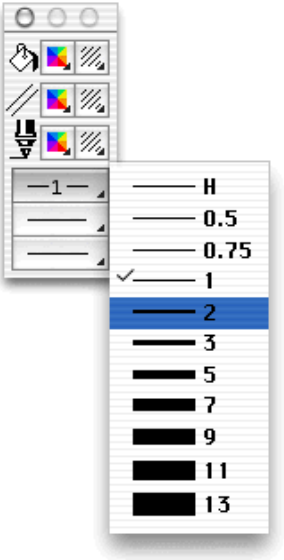
There are eleven different line weights. They vary in size from hairline to 13 pixels. The numbers beside the line weights indicate the number of pixels that make up the line weight.

NOTE: Although the hairline, 0.5 and 0.75 line weights appear as one point thick on the screen, they will print at their designated weights on any printer with a resolution of 300 dpi or more.

Selecting line weights

To select the line weight

1. Open the **Line Weight** pop-up menu in the **Attribute** palette.
2. Drag until the line weight you want is highlighted.



3. Release the mouse button. The selected line weight will be shown on the pop-up menu.

   You can change the line weight before or after you draw the line or object.

Drawing a line or object with a selected line weight

To draw a line or object with a selected line weight

1. Return to the pointer mode. (Make sure that no objects on the drawing are selected.)
2. Choose the desired line weight from the **Line Weight** pop-up menu in the **Attribute** palette.
3. Draw a line or object.

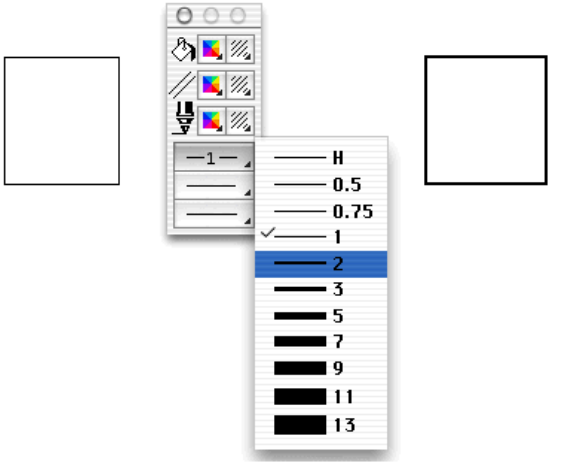
   The line or object will be drawn with the specified line weight.

NOTE: The chosen line weight will be used for lines and borders until you choose another line weight for the default line weight attribute.

Changing the line weight of an existing line or object

To change the line weight of an existing line or object

1. Select the line or object to change the line weight of.
2. Choose the desired line weight from the **Line Weight** pop-up menu in the **Attribute** palette.



The line or border of the selected object will be changed to reflect the chosen line weight.

NOTE: For information about how to make line weights appear either magnified or at their normal size while in a zoomed in view, see *Home view on page 2-106*.

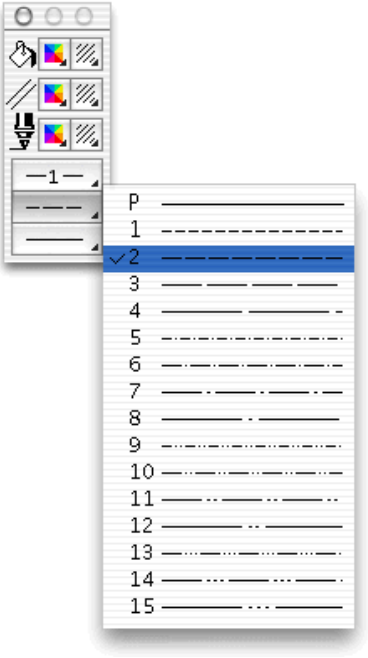
Line style

The term 'line style' refers to whether a line is solid or one of an assortment of dashed lines. You can use the preset line styles provided with MacDraft or customize them to make your own. You can use line styles in object borders and straight lines.

Selecting line styles

To select the line style

1. Open the **line style** pop-up menu in the **Attribute** palette.
2. Drag until the line style you want is highlighted.



3. Release the mouse button. The selected line style will be shown on the pop-up menu.

   You can change the line style before or after you draw the line or object.

Drawing a line or object with a selected line style

To draw a line or object with a selected line style

1. Return to the pointer mode. (Make sure that no objects on the drawing are selected.)
2. Choose the desired line style from the **line style** pop-up menu in the **Attribute** palette.
3. Draw a line or object.

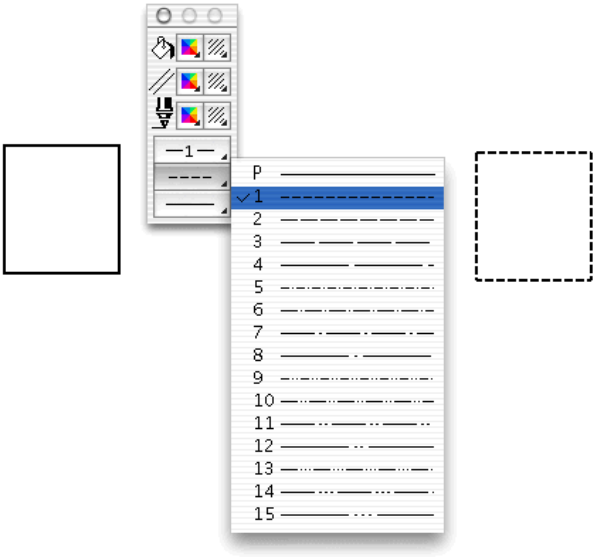
   The line or object will be drawn with the specified line style.

NOTE: The chosen line style will be used for lines and borders until you choose another line style for the default line-style attribute.

Changing the line style of an existing line or object

To change the line style of an existing line or object

1. Select the line or object to change the line style of.
2. Choose the desired line style from the line style pop-up menu in the **Attribute** palette.



   The line or border of the selected object will be changed to reflect the chosen line style.

End marks

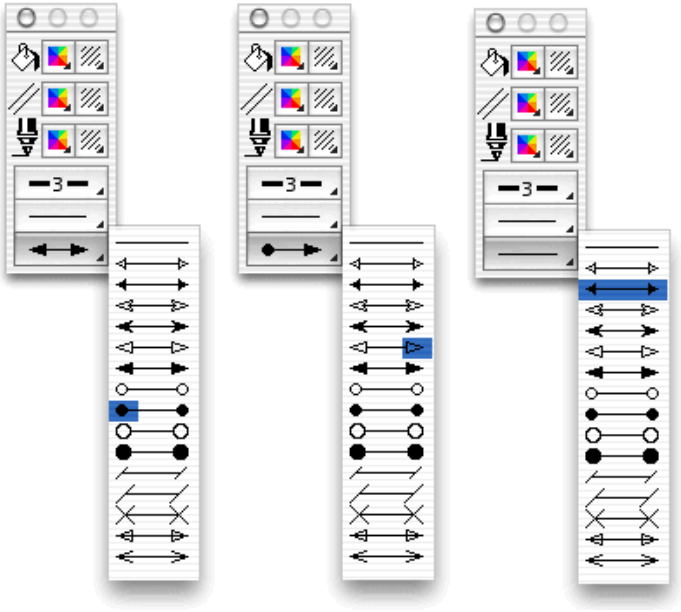
End marks are symbols on the ends of lines that are used for annotating drawings. You can make end marks appear on lines by using a set of end marks in combination with the **Line** tools, the **Polyline** tool, the **Freehand Line** tool, the **Bezier curve** tool or the **Spline** tool.

Selecting end marks

To select end marks

1. Open the **end marks** pop-up menu in the **Attribute** palette.
2. Drag until the desired end marks are highlighted.

- Drag down the left side of the pop-up menu to choose a left end mark; it appears at the beginning of a line.
- Drag down the right side of the pop-up menu to choose a right end mark; it appears at the end of a line.
- Drag down the centre of the pop-up menu to choose both left and right end marks; these appear at each end of a line.



3. Release the mouse button. The selected end marks will be shown on the pop-up menu.

   You can change the line style before or after you draw the line or object.

NOTE: Polylines, freehand lines, Bezier curves or splines must contain No Fill if you wish to add end marks to them. See *Drawing irregular polygons and polylines on page 2-33* and *Drawing freehand lines, shapes and curves on page 2-37* for details of drawing these objects.

Drawing a line or object with selected end marks

To draw a line or object with selected end marks

1. Return to the pointer mode. (Make sure that no objects on the drawing are selected.)
2. Choose the desired end marks from the **end marks** pop-up menu in the **Attribute** palette.
3. Draw a line or object.

   The line or object will be drawn with the specified end marks.

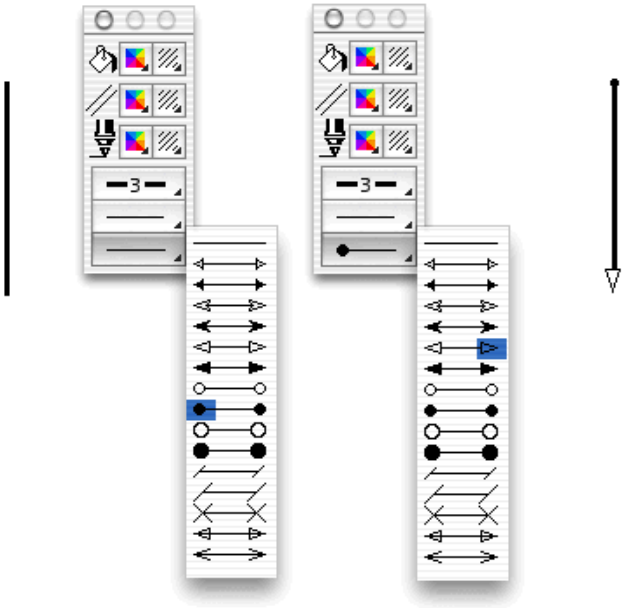
   NOTE: The chosen end marks will be used for lines and borders until you choose other end marks for the default end marks attribute.

Changing the end marks of an existing line or object

To change the end marks of an existing line or object

1. Select the line or object to change the end marks of.
2. Choose the desired end marks from the **end marks** pop-up menu in the **Attribute** palette.

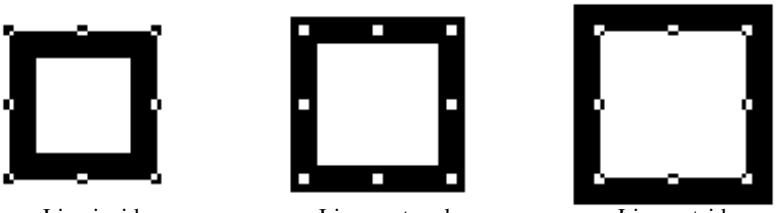
The line or border of the selected object will be changed to reflect the chosen line weight.



Border positions

There are three types of border position: **Line Inside**, **Line Centered** and **Line Outside**. The border position options apply to objects only, not to lines.

All three border positions affect objects differently, these differences are discussed later in this chapter. In general though, border position is important with regard to how objects are aligned. MacDraft uses the position of an object's edit handles to align objects. It is important to keep this in mind when you align objects, as border position controls the position of the edit handles relative to the width (that is the line weight) of the border *(see Aligning objects on page 5-27)*.



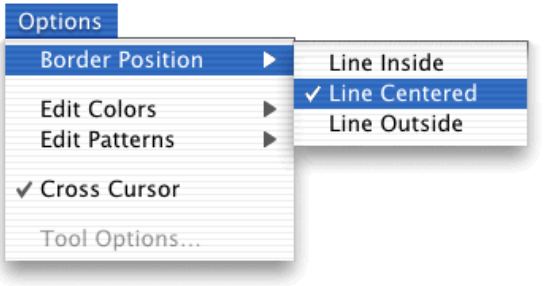
Line inside Line centered Line outside

Border position applies only to square-corner and rounded-corner rectangles, parallel line objects, circles and arcs. You can draw these objects with a certain border position or change the border position of selected objects.

Selecting border positions

To select a border position

1. Open the **Border Position** submenu in the **Options** menu.
2. Drag until the desired border position is highlighted.



3. Release the mouse button. A checkmark appears next to the selected border position on the submenu.

   You can change the border position before or after you draw the line or object.

Drawing an object with a selected border position

To draw an object with a selected border position

1. Return to the pointer mode. (Make sure that no objects on the drawing are selected.)
2. Choose the desired border position from the **Border Position** submenu in the **Options** menu.
3. Draw an object.

   The object will be drawn with the specified border position.

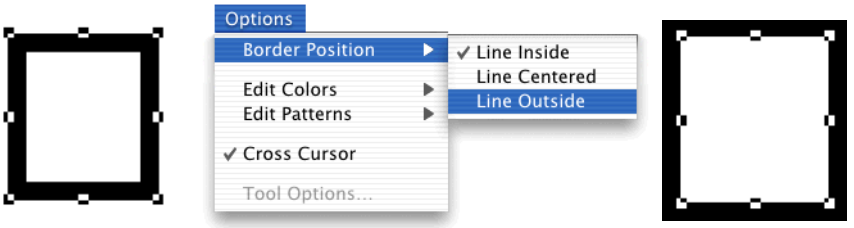
NOTE: The chosen border position will be used for objects until you choose another border position as the default.

Changing the border position of an existing object

To change the border position of an existing object

1. Select the object to change the border position of.
2. Choose the desired border position from the **Border Position** submenu in the **Options** menu.

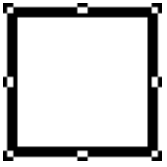
   The border of the selected object will be changed to reflect the chosen border position.



How border position affects objects

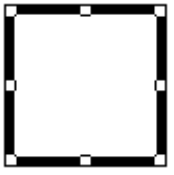
Border position determines the location of the edit handles on the border of an object, and as MacDraft uses the edit handles as reference points for alignment and size calculations, border position affects the alignment and size readings of objects. (See *Aligning objects on page 5-27* and *Show Size on page 6-1.*)

Line Inside



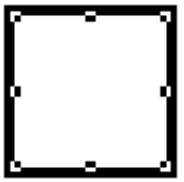
When you draw an object with the border position **Line Inside**, the border of the object appears between the cursor and the object during creation. When you select an object created with the border position **Line Inside**, the edit handles appear on the outside of the object. When **Show Size** is on, the size shown represents the entire object, including its borders.

Line Centered



When you draw an object with the border position **Line Centered**, the cursor appears centered within the object's borders during creation. When you select an object created with the border position **Line Centered**, the edit handles appear in the center of the object's borders. When **Show Size** is on, the size shown is the size of the object measured from the center of the object's borders.

Line Outside



When you draw an object with the border position **Line Outside**, the border of the object appears outside the cursor during creation. When you select an object created with the border position **Line Outside**, the edit handles appear on the inside of the object. When **Show Size** is on, the size shown is the size of the object's interior, excluding the object's borders.

◆ Copying attributes

An object's graphic attributes (fill, pen color or pattern, line weight and line style etc.) and object information can be copied and applied to another object using either the **Attributes** tool or the **Copy Attributes** and **Apply Attributes** commands in the **Edit** menu. The **Apply Attributes** command can be used to apply changes to all of the objects selected, while the **Attributes** tool applies changes only to the object clicked.

Any settings for applying attributes will be stored only while the application is running.

Copying attributes using the Attributes tool

To copy attributes using the Attributes tool

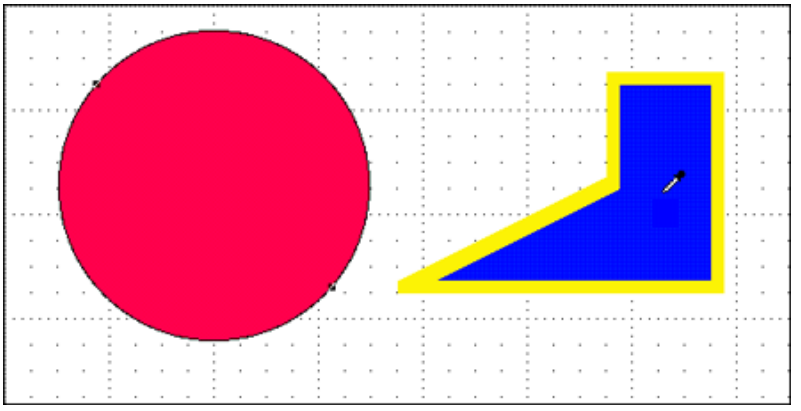
1. Click the **Attributes** tool in the **Tool** palette

2. Click an object.

   The default attributes will be applied to the object.

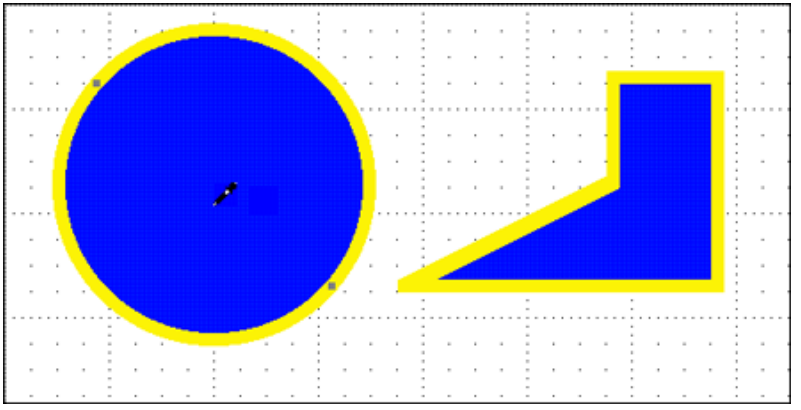
3. With the **Attributes** tool still selected, hold down the **Option** key and click an object.

The cursor turns into an empty eye dropper.



The object's pen and fill attributes will be copied

4. Release the **Option** key, the cursor turns into a full eye dropper.
5. Click another object to apply the copied pen and fill attributes to it.



NOTES:
• Attributes will be applied only to the object clicked, even if that object is part of a group.
• The apply action can be undone by selecting **Undo Eye Dropper** from the **Edit** menu immediately after the apply action.
• Hold down the **Command** key and click in the drawing window with the **Attributes** tool, and the tool reverts to the **Arrow** tool.

Checking and changing attributes before applying them

You can check and, if necessary, change copied attributes before applying them. There are two ways of doing this when you use the **Attributes** tool. The first is to use the **Apply Attributes** dialog, in which case any changes will be applied to that action only. The second is to use the **Attributes Options** dialog, in which case the settings remain as specified until changed or until the application is closed.

Using the Apply Attributes dialog

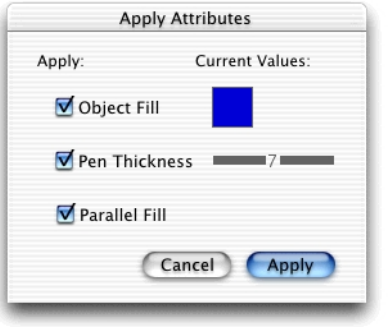
To open the Apply Attributes dialog before applying attributes to an object

1. Select the **Attributes** tool and hold down the **Shift** key.

   The full eye dropper icon is followed by three dots to show that the **Apply Attributes** dialog will appear when an object is clicked.

2. Click an object.

   The **Apply Attributes** dialog appears.



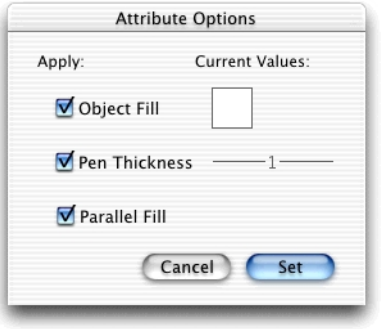
3. Click the **Object Fill**, **Pen Model, Object Information** and **Parallel Fill** boxes to specify that these attributes should be applied to the object you have clicked. Any changes made to the **Apply Attributes** dialog relate to this apply action only.

Using the Attributes Options dialog

To open the Attributes Options dialog

1. Hold down the **Option** key and click the **Attribute** tool, or select the **Attribute** tool and choose **Tool Options** from the **Options** menu.

The **Attribute Options** dialog appears.

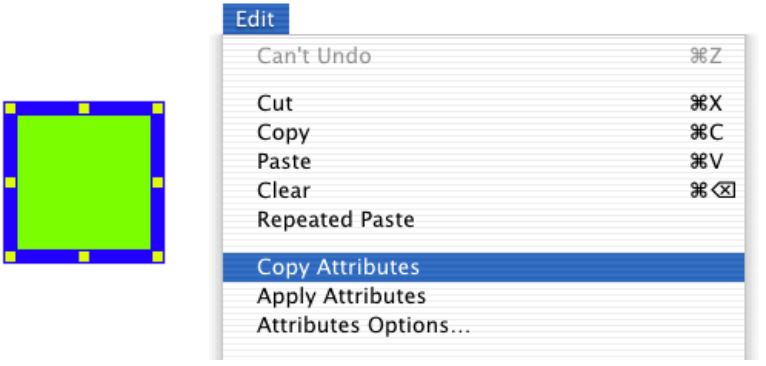


2. Click the **Object Fill**, **Pen Model, Object Information** and **Parallel Fill** boxes to specify that these attributes should be applied to objects. Settings remain as specified until changed or until the application is closed, rather than just for the next use of the tool.

Copying attributes using the Edit menu

To copy attributes using the Edit menu

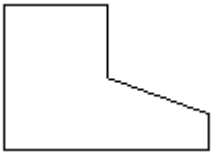
1. Select the object from which you want to copy attributes.
2. Open the **Edit** menu and choose **Copy Attributes**.

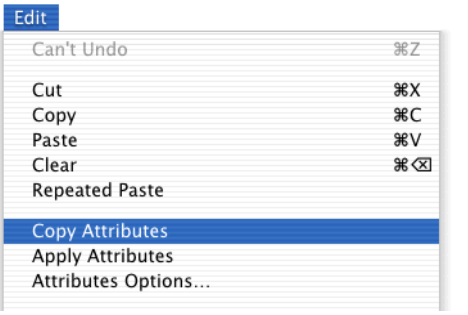


The object's graphical attributes and object information will be stored.

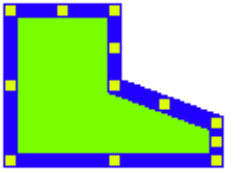
3. Select the object or objects to which you want to apply these attributes.

4. Open the **Edit** menu and choose **Apply Attributes**.





The copied attributes will be applied to the selected object or objects.



NOTE: The apply action can be undone by choosing **Undo Apply Attributes** from the **Edit** menu immediately after the apply action.

Checking and changing the attributes before applying them

As when using the **Attributes** tool, there are two ways of checking and changing the attributes before applying them when you use the **Edit** menu. You can use the **Apply Attributes** dialog, or use the **Attributes Options** dialog.

Using the Apply Attributes dialog

To open the Apply Attributes dialog before applying attributes to an object

1. Hold down the **Shift** key when you choose the **Apply Attributes** command in the **Edit** menu.

   The **Apply Attributes** dialog appears.

2. Click the **Object Fill**, **Pen** Thickness and **Parallel Fill** boxes to specify that these attributes should be applied to the selected object or objects. Any changes made to the **Apply Attributes** dialog relate to this apply action only.

Using the Attributes Options dialog

To open the Attributes Options dialog

1. Choose **Attributes Options** from the **Edit** menu.

   The **Attributes Options** dialog appears.

2. Click the **Object Fill**, **Pen Model, Object Information** and **Parallel Fill** boxes to specify that these attributes should be applied to objects. The settings remain as specified until changed or until the application is closed, rather than just for the next use of the **Apply Attributes** command.

◆ Picture backgrounds

Transparent picture backgrounds

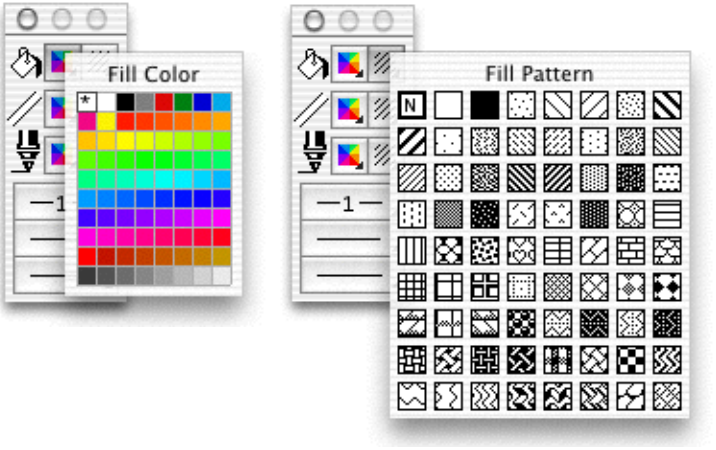
There may be occasions when you position a picture object on top of another object, and want the lower object to show through the background of the foremost object. MacDraft allows you to do this using the **Fill Pattern** pop-up menu in the **Attributes** palette.

To make the background of a superimposed picture transparent

1. Select a superimposed picture.

   In the example below, a stylized picture of the sun has been placed on top of a picture of the world map. Note that the opaque white background of the sun picture is obscuring part of the map.

2. Choose '*' (for 'No Fill') from the **Fill Color** pop-up menu, or 'N' (for 'No Fill') from the **Fill Pattern** pop-up menu in the **Attributes** palette.



The background of the foremost picture becomes transparent, allowing the picture beneath to be shown through.

Opaque picture backgrounds

The background of a picture can be given a colored or patterned fill in the same way as other objects. Select the picture and choose a color from the **Fill Color** submenu or a pattern from the **Fill pattern** submenu in the **Attributes** palette. See *Object fill color on page 3-7* and *Object fill patterns on page 3-25* for details.

Chapter 4 - Annotating your drawing

Annotation describes or gives information about an object in a drawing. In MacDraft, annotation is of three kinds: text, dimension objects and area calculation.

◆ Text

Text, in a MacDraft document, consists of all letters, punctuation and numbers. Once text is created, it is recognized as a single object and you can then use most functions with it, such as moving and duplicating.

The **Text** function allows you to use a variety of fonts, styles, and character sizes. You can arrange text lines with single spacing, one and a half spacing, or double spacing. Text can also be justified within each individual text block and all text can be hidden or displayed.

Entering text

You can enter text in two ways: using the regular text mode or the paragraph text mode.

In the paragraph text mode, you drag to define a text rectangle of a certain size (either with the Text tool or another drawing tool), and the text you enter into the rectangle automatically "wraps" when it reaches the side of the rectangle.

Regular text

In the regular text mode, you click the drawing to define an insertion point, then type in the text. You define the end of a line of text by pressing the **Return** key.

To enter regular text (i.e. text that does not automatically "wrap")

1. Activate the **Text** icon in the **Tool** palette by clicking it.

Notice that when you activate the text icon and then move the cursor onto the drawing area, the cursor turns into an I-beam pointer. The I-beam pointer indicates that you are in the text insertion mode.

2. Position the I-beam pointer where you want to begin inserting text and click.

   A flashing vertical bar appears at the point where you clicked to show that you can now begin typing.

3. Enter the text by typing on the keyboard.

   You can continue to enter text in various places on your drawing by moving the I-beam pointer to the desired place, clicking it, and typing.

NOTES:
• If you make a typing mistake as you are entering text, simply use the **Delete** key to remove the error and then type the correct character.
• To start a new line in the same text block, just press the **Return** key and continue to type.

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4. After you have finished entering text, click the **Pointer** tool.

Paragraph text

On many occasions, you may wish to enter a paragraph of text and restrict it to a certain rectangular shape, such as a column. MacDraft's paragraph text feature allows you to define a rectangle of any size, then type text into it. As you enter the text into the rectangle, the words will automatically wrap around to the next line when the letters reach the edge of the rectangle. If you type to the bottom of the rectangle, the text will be scrolled within the rectangle to keep the line you are typing visible. Paragraph text cannot extend beyond the drawing edge.

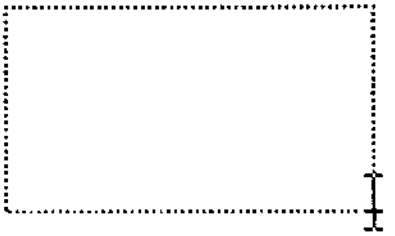
Entering paragraph text

You can define the paragraph text rectangle by drawing a rectangle with the **Text** tool, by drawing a rectangle or other shape, or by selecting an existing rectangle or other shape. (If you draw or select a non-rectangular object and start typing, the text appears in a rectangle superimposed over the object.)

NOTES:
• If you draw or select a rectangle and enter text, the text and the rectangle are automatically linked.
• Non rectangular objects remain separate objects from the text object; you can move and reshape them separately.

To enter paragraph text with the Text tool

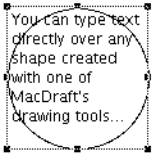
1. Activate the **Text** tool.
2. Position the I-beam pointer where you want to begin entering text.
3. Press and hold down the mouse button.
4. Drag in a diagonal direction until you have defined a rectangle that is the size you want, and release the mouse button.



5. Start entering text from the keyboard.
6. When you are finished, click the **Pointer** tool to end the text entry.

To enter paragraph text with the Circle (or other drawing) tool

1. Activate the **Circle** tool (or other drawing tool).
2. Position the pointer where you want to begin entering text.
3. Press and hold down the mouse button.
4. Drag in a diagonal direction until you have defined an object that is the size you want, and release the mouse button.
5. Start entering text from the keyboard.



6. When you have finished, click the **Pointer** tool to end the text entry.

To enter paragraph text feature into an existing rectangle or other shape

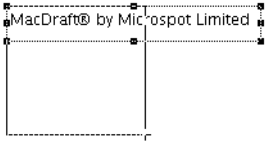
1. Select the object.
2. Start entering text from the keyboard.
3. When you are done, click the **Pointer** tool to end the text entry.

Reshaping a block of paragraph text

To reshape a block of paragraph text

Once the paragraph of text is entered, you can reshape the paragraph using the edit handles.

1. Return to the pointer mode.
2. Select the paragraph of text by clicking it.
3. Edit handles appear on the text block.
4. Position the tip of the pointer on one of the edit handles.
5. Press and hold down the mouse button.
6. Drag until the paragraph is the shape you want.



7. Release the mouse button.

NOTE: If you select regular text (entered using the **Text** tool) and try to reshape the paragraph using the edit handles, you will actually resize the font rather than the paragraph.

Selecting/editing text

Sometimes you need to edit text you have previously entered on your drawing. MacDraft gives you various ways to edit text: replacing an existing word or line of text by selecting it and retyping in its place; inserting characters or words at the end of existing text or at any selected point in the text; and backspacing to delete text.

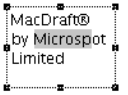
Before you can edit a piece of text, you must select it. You can select text by using the pointer while in the pointer mode, or by using the I-beam pointer. (When you select text using the pointer mode, any changes you make will affect the entire text block.)

Selecting text

Using the I-beam pointer

To select text

1. Click the **Text** tool icon in the palette.
2. Position the I-beam pointer to either side of the text you want to change.
3. Press and hold down the mouse button.
4. Drag through all the text you want to edit, and release the mouse button.



Notice that the text becomes highlighted as you drag through it. Using this method of selecting allows you to select a single character or an entire block of text.

To select a word:

- Position the I-beam pointer on the word you want to select and double-click.

To extend the selection of text

1. Position the I-beam pointer on the first word you want to select.
2. Double-click and, after the second click, hold down the mouse button.
3. Drag through the text until all the words you want to select are highlighted, then release the mouse button.

To select a range of text

1. Position the I-beam pointer at the starting point for the range and click.
2. Press down the **Shift** key.
3. Position the I-beam pointer on the ending point for the range.
4. Still holding down the **Shift** key, click this point.
5. Release the mouse button and the **Shift** key.

The text between the specified starting and ending points will be selected.

Using the Arrow tool

To select text

1. Position the pointer tip on the block of text that you want to select and click it.

   Notice that a rectangle and/or a set of edit handles appears around the text, indicating that it is selected. This method of selecting text allows you to change the text attributes (including the font, size, and style) of the selected text block *(see Formatting text on page 4-8)*.

   If you select text in this way and immediately start typing, the new text is automatically added to the end of the existing text.

Selecting rotated text for editing

To select rotated text

1. Activate the **Text** tool in the palette.
2. Click the block of rotated text you want to edit.

   The text will temporarily be rotated to zero degrees (horizontal orientation) allowing you to edit it.
3. When you are through editing the text, click the **Pointer** tool.

   Once you click the **Pointer** tool, the text returns to its rotated position.

NOTE: If you print rotated text on a printer that is not PostScript®-compatible, the text will print out at the resolution of the printer hardware.

Selecting all text

You can select all the text in the active document if you want to make a global change to text attributes.

To select all text in the active document

1. Return to the pointer mode.
2. Open the **Text** menu, from the menu bar or the **Text** tool, and choose **Select All Text**.

Editing text

Replacing existing text

Once you have selected any portion of text, you can immediately replace it by simply typing in the new text. As soon as you begin typing, the old text disappears. As you enter the new text, all of the non-selected text in the line will automatically adjust to make room for the text you are entering.

Inserting text into existing text

On many occasions you may need to insert a single character, word or sentence into an existing piece of text.

To insert text

1. Activate the **Text** tool in the palette by clicking it.
2. Position the I-beam pointer on the desired insertion point and click it.
3. Type in the character or words that you wish to insert. (Keep in mind that you can press the **Delete** key to delete characters or words.)

   In this mode, you can continue to pick insertion points in other pieces of text on your drawing and edit them as well.
4. Once you have completed all the editing that you want to do, click the **Pointer** icon in the palette.

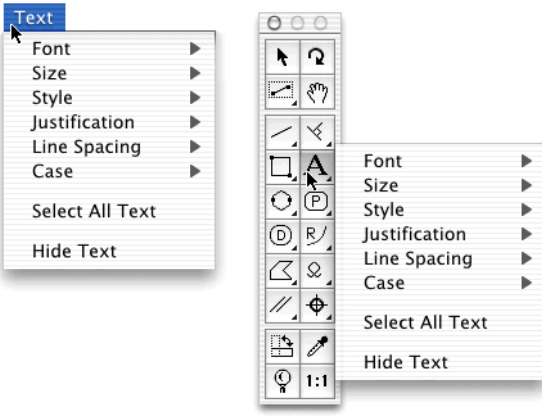
Deleting selected text

There are two simple ways to delete text that you have selected. Either:

- Open the **Edit** menu and choose **Cut** or **Clear**, or
- Press the **Delete** key.

Formatting text

You can choose the way you want to present text either before entering the text, or by changing the text after it has been entered. There are many options to choose from to obtain the effect that you desire. MacDraft allows you to use many different font types, sizes and styles for text. You can format text by choosing options from the **Text** menu in the menu bar or the **Text** tool in the **Tool** palette.



Formatting text before entering it

To format text before entry

1. Make sure that no text is selected on the drawing before you make each choice.
2. Choose the text attributes you want from the **Text** menu's submenus.

   The current attributes for text, such as font, size, and style are marked with checkmarks in the appropriate menus. These checkmarks show you what attributes will be applied to the text you enter.

Formatting existing text

You can change the font, size and style of any existing text. You can change the text attributes for a given piece of text by selecting the text and then opening the submenu associated with the attribute you want to change.

To format existing text

1. Select the text you wish to change *(see Selecting text on page 4-5)*.
2. Choose the text attributes you want from the **Text** menu's submenus.

Each time you make a choice from the **Text** menu, the selected text will change to reflect that choice.

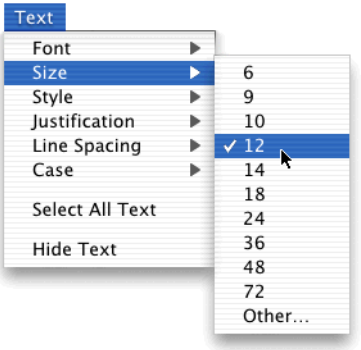
Define attributes for text

To define the font

1. Open the **Font** submenu from the **Text** menu.
2. Holding down the mouse button, drag until the font you want is highlighted, and release the mouse button.

To define the point size for text

1. Open the **Text** menu's **Size** submenu.

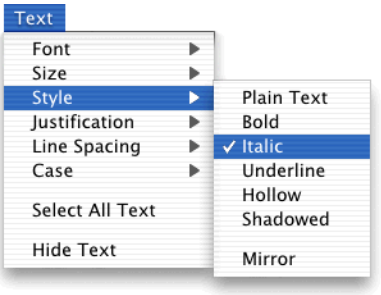


2. Holding down the mouse button, drag until the size you want (measured in points) is highlighted, and release the mouse button; or choose **Other**… to enter a point size (up to 1024 point) that is not listed in the submenu.

NOTE: The font size of regular text can also be adjusted by clicking the text and dragging one of its edit handles to resize the text.

To define the type style:

1. Open the **Text** menu's **Style** submenu.



2. Holding down the mouse button, drag until the style you want is highlighted, and release the mouse button.

You can make several different choices from the **Style** submenu. Each choice has an additive effect on the appearance of text. For example, you could choose **Bold** and then **Italic** to create Bold/Italic text.

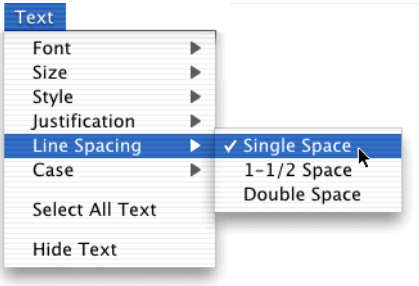
To justify text

1. Open the **Text** menu's **Justification** submenu.
2. Holding down the mouse button, drag until the type of horizontal justification you want (**Left**, **Center**, or **Right**) is highlighted, and release the mouse button.
3. Repeat steps 1 and 2 to choose the desired vertical justification (**Top**, **Middle** or **Bottom**).

To set the line spacing

MacDraft offers you flexibility in choosing line spacing (also known as "leading") options to suit your needs. You can have one, one and a half, or two spaces between lines of text.

1. Choose **Line Spacing** from the **Text** menu.
2. The **Line Spacing** submenu appears



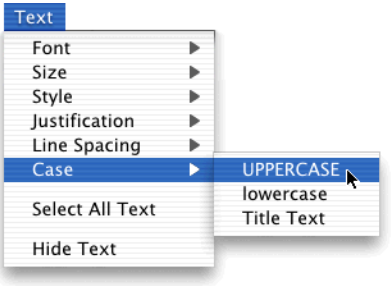
3. Holding down the mouse button, drag until the line spacing you want is highlighted, and release the mouse button.

Changing the case of text

On some occasions you may enter a piece of text in one case, such as lowercase, and then decide that you want it in uppercase or in title format. You could clear the text and reenter it; however, MacDraft allows you to change the case of existing text.

To change the case of existing text

1. Select the text that you want to change by clicking it.
2. Open the **Text** menu's **Case** submenu.



3. Holding down the mouse button, drag until the case option you want is highlighted.

The results of each choice are as follows:

- **UPPERCASE**: Converts all selected text to uppercase.
- **lowercase**: Converts all selected text to lowercase.
- **Title Text**: Capitalizes the first character of each word in selected text.

Positioning text

Moving text

Once you have created a block of text, you can move it to a different location on your drawing if necessary. Notice that when you create a line of text and then click anywhere else, the text becomes surrounded by a box or edit handles. This indicates that MacDraft recognizes the piece of text as an object. You can move the text just as you would move any other object.

NOTE: Text can also be rotated and flipped. See *Rotating objects on page 5-32* and *Flipping objects on page 5-41*.

To move a piece of text

1. Position the cursor over the text block.
2. Press and hold down the mouse button until the white arrow pointer appears.
3. Drag the text to its new position, and release the mouse button.

Aligning Text

There are two ways to align text. Justifying text within the text block *(see To justify text on page 4-10)*, and aligning text with an object or another piece of text that is treated as an object*(see Aligning objects on page 5-27)*.

Hiding/displaying all text

Hiding text

At times, you may want to temporarily hide all of the text on a document. If you choose to hide all the text, and then print the document, the text will not appear on the output. You might use this feature to hide all the text before you produce a test print of a drawing to shorten the printing time. If you are working on a complex drawing with many elements, you could use this feature to minimize the amount of time it takes to redraw the screen after you scroll or zoom.

To hide all text

- Open the **Text** menu and choose **Hide Text**.

  All the text on the drawing will be temporarily removed from the screen and from any printed output until you choose to redisplay the text. A checkmark appears beside **Hide Text** in the **Text** menu.

Redisplaying text

When you want to make the text visible again on the screen and on your output, you can choose the **Hide Text** command again.

To redisplay all text:

- Open the **Text** menu and choose **Hide Text** again.

  The checkmark disappears from beside **Hide Text** in the **Text** menu, and the text in the drawing will be visible again.

◆ Dimension objects

About dimension objects

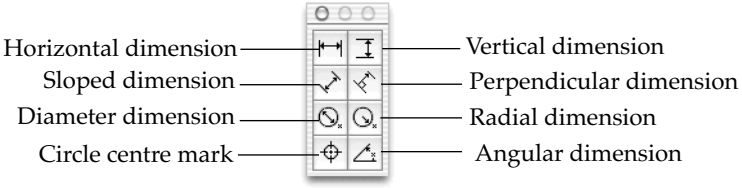
MacDraft's **Dimension** tools allow you to add dimension lines to your drawing so that you can display and print the sizes of (or distances between) various lines and objects. Dimensions show sizes and distances in real-world units according to the scale of the drawing. In addition, MacDraft can show and print the size of an angle. Angular dimensions appear in degrees of arc, regardless of the scale of a drawing.

The Dimension palette

The dimension objects are created and controlled using the tools and pop-up menus of the **Dimension Palette**.

To display the Dimension palette

- Choose **Dimension** from the **Window** menu, or
- Choose **Dimension** from the pop-up menu at the bottom left of the document window.



To close the Dimension palette

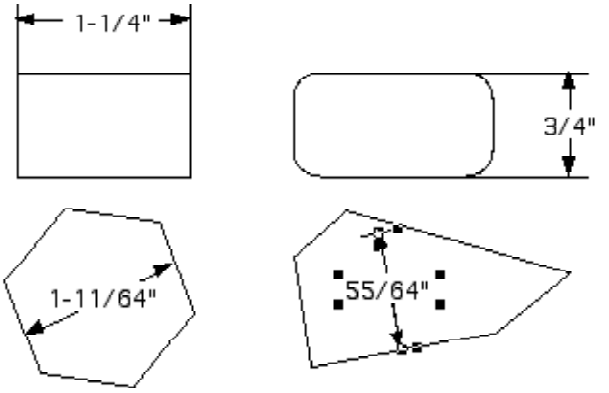
- Click the palette's close button.

Types of dimension objects

The dimension tools can create linear (horizontal, vertical, sloped, or perpendicular), radial (radius or diameter), and angular dimensions. In addition the **Dimension** palette includes a **Circle center mark** tool, for marking the center of a circle, arc, or ellipse.

Linear dimensions

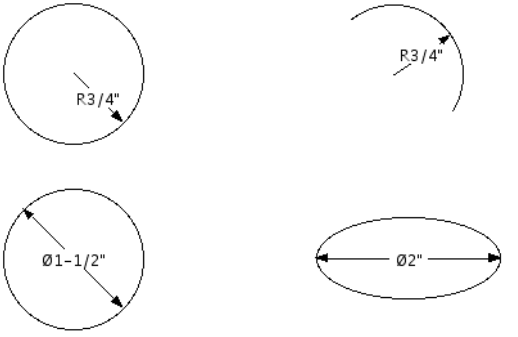
Linear (horizontal, vertical, sloped, or perpendicular) dimensions can consist of a single dimension span.



Linear dimensions can use existing vertices, corners, and so on as their points of reference. If the **Snap to Object** feature is active, the dimension tools will snap the reference points to existing corners and handles *(see Snap to object on page 6-19)*.

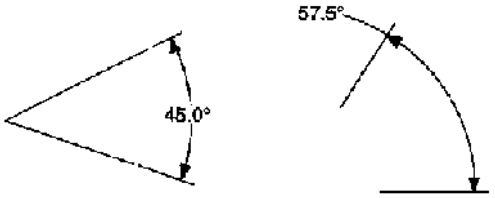
Radial dimensions

Radial dimensions appear as straight lines (like linear dimensions), but measure the radius or diameter of an existing circle, ellipse, or arc.



Angular dimensions

Angular dimensions measure the angle of arc between any two straight lines or edges of square-cornered rectangles, polygons, or polylines (single-line or parallel). The lines or edges need not intersect.



Drawing dimension objects

MacDraft's dimension objects include linear (horizontal, vertical, sloped, or perpendicular), radial (radius or diameter), and angular dimensions.

Once created, dimension object's attributes, such as color, line style, text font, and so on can be controlled in the standard fashions *(see Chapter 3 - Changing the appearance of objects on page 3-1)*.

NOTE: Dimension objects are drawn using the current default pen model. Hold down the **Control** key when drawing dimension objects to draw the lines using 'hairline' weight.

A dimension object can be independently resized and edited much like other MacDraft shapes.

Linear dimensions

Reference points

The user-defined reference points for linear dimensions can be either part of existing objects (on corners or edges) or independent points on the drawing.

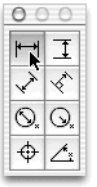
To show an object's size precisely, it is usually necessary to put the dimension's reference points on the object's corner points (or other edit handles).

Horizontal dimension objects

The horizontal dimension tool creates dimension lines that are constrained to horizontal orientation. When edited, moved, or resized, horizontal dimension objects retain their original angle of orientation.

To draw a single horizontal dimension line

1. Choose the **Horizontal dimension** tool from the **Dimension** palette.



   The cursor will now read “1st point.”

2. Click the first point for the dimension line (an object's corner, if desired).

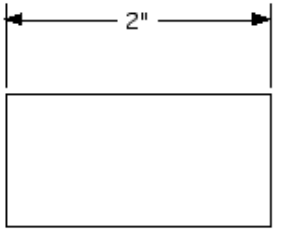
   The cursor will now read “2nd Point.”

3. Click the second point for the dimension line.

   The cursor will now read “Anchor,” and include an outline of the dimension’s text box.

4. Click the place in the drawing area where you want the text value to appear.

   The dimension object will be complete, with the horizontal distance between the two points displayed where you specified.



5. Click the **Arrow** tool to leave dimension mode.

Vertical dimension objects

The vertical dimension tool creates dimension lines that are constrained to vertical orientation. When edited, moved, or resized, vertical dimension objects retain their original angle of orientation.

To draw a single vertical dimension line

1. Select the **Vertical dimension** tool from the **Dimension** palette.

   The cursor will now read “1st point.”

2. Click the first point for the dimension line.

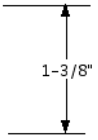
   The cursor will now read “2nd Point.”

3. Click the second point for the dimension line.

   The cursor will now read “Anchor,” and include an outline of the dimension’s text box.

4. Click the drawing where you want the text value to appear.

   The dimension object will be complete, with the vertical distance between the two points displayed where you specified.



5. Click the **Arrow** tool to exit dimension mode.

Slope dimension objects

The slope dimension tool is used to create dimension lines running in any direction on a drawing. Slope dimensions can be edited, moved, or resized, and the angle changed.

To draw a single slope dimension line

1. Select the **Slope dimension** tool from the **Dimension** palette.

   The cursor will now read “1st point”.

2. Click the first point for the dimension line.

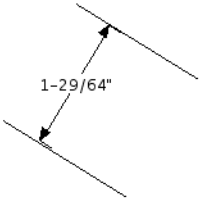
   The cursor will now read “2nd Point”.

3. Click the second point for the dimension line.

   The cursor will now read “Anchor”, and include an outline of the dimension’s text box.

4. Click the place in the drawing area where you want the text box to appear.

   The dimension object will be complete, with the distance between the two points displayed where specified along the slope.



5. Click the **Arrow** tool to exit dimension mode.

Perpendicular dimension objects

The perpendicular dimension tool creates dimensions perpendicular to lines or to the edges of square-cornered rectangles, polygons, and polylines (single-line or parallel-line). When edited, moved, or resized, perpendicular dimension objects retain their original angles of orientation.

To create a perpendicular dimension line

1. Select the **Perpendicular dimension** tool from the **Dimension** palette.

   The cursor will now read “Click Line/Edge.”

2. Click the line or edge for the first point of the dimension line.

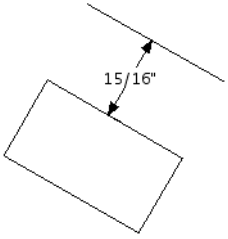
   The cursor will now read “2nd Point.”

3. Click the second point for the dimension line.

   The cursor will now read “Anchor,” and include an outline of the dimension’s text box.

4. Click the place in the drawing area where you want the text box to appear.

   The dimension object will be complete, with the perpendicular distance from the edge of the object to the point you chose.



5. Click the **Arrow** tool to exit dimension mode.

NOTE: If you hold down the **Option** key while drawing a perpendicular dimension line, its length will be constrained to increments of the current snap-grid distance.

Radial dimension objects

MacDraft's radial dimension tools let you display and print the radius or diameter of a circle, arc, or ellipse.

NOTES:
• Radial dimensions are not rotated together with the ellipses and elliptical arcs after dimensions are applied.
• Also, ellipses or elliptical arcs can display a radius or diameter only along their major and minor axes.

Radius dimensions

To apply a radius dimension to an object

1. Select the **Radius dimension** tool from the **Dimension** palette.

   The cursor will now read "Click Circle/Arc".

2. Click the circle, arc, or ellipse.

   The cursor will now read "Anchor," and include an outline of the dimension's text box.

NOTE: To constrain the angle of the dimension line to 45° increments, after selecting the circle, hold down the **Shift** key while clicking the anchor point where the dimension text is to appear. This option does not work with ellipses and elliptical arcs.

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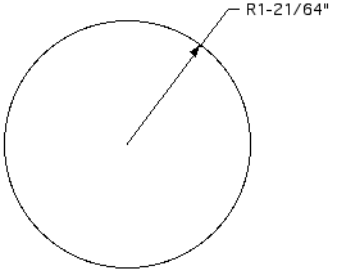
3. Click the place in the drawing area where you want the text value to appear.

   The dimension object will be complete, with the radial distance shown where you specified.



4. Click the **Arrow** tool to exit dimension mode.

Diameter dimensions

To draw a diameter dimension

1. Select the **Diameter dimension** tool from the **Dimension** palette.

   The cursor will now read "Click Circle/Arc."

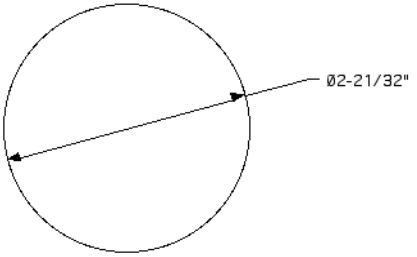
2. Click the circle, arc, or ellipse.

   The cursor will now read "Anchor," and include an outline of the dimension's text box.

NOTE: To constrain the angle of the dimension line to 45° increments, after selecting the circle, hold down the **Shift** key while clicking the anchor point where the dimension text is to appear.

3. Click the place in the drawing area where you want the text box to appear.

   The dimension object will be complete, with the diameter distance appearing where you specified.



4. Click the **Arrow** tool to exit dimension mode.

Circle center marks

MacDraft's **Dimension** palette includes a special tool for indicating the center of circles, ellipses, and arcs.

NOTE: Circle center marks cannot be applied to ellipses and elliptical arcs that have been rotated.

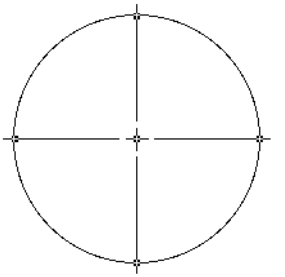
To apply a Circle center mark

1. Choose the **Circle center mark** tool in the **Dimension** palette.

   The cursor will read "Click Circle/Arc".

2. Click the circle, arc, or ellipse.

The **Circle Center mark** appears over the object



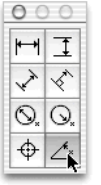
3. Click the **Arrow** tool to exit dimension mode.

Angular dimension objects

MacDraft's **Angular dimension** tool lets you display and print the angles between different lines or edges, whether they intersect or not. You can apply an angular dimension object to any pair of straight lines or edges of square-cornered rectangles, or to polygons or polylines (single-line or parallel-line).

To apply an angular dimension

1. Decide which two lines or edges you want to apply the dimension object to.
2. Select the **Angular dimension** tool from the **Dimension** palette.

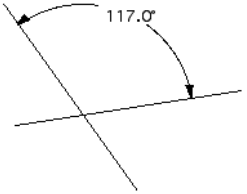


   The cursor will now read "Click 1st Line".
3. Click the first line or edge.

   The cursor will now read "Click 2nd Line".
4. Click the second line or edge.

   The cursor will now read "Anchor", and include an outline of the dimension's text box.
5. Click the drawing where you want the text value to appear.

The dimension object will be complete, with the angle between the two edges displayed where you specified.



6. Click the **Arrow** tool to exit dimension mode.

NOTE: To display the obtuse rather than acute angle between two lines or edges, hold down the **Option** key after selecting the second edge, while clicking the point where the dimension text is to appear.

◆ Area calculation

MacDraft's automatic **Area Calculation** feature can determine and show the area of a selected object for you. If you later change the size of the object, the size shown changes automatically.

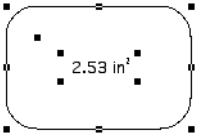
This feature can calculate the areas of simple objects, like rectangles and circles, or complex objects, such as complex polygons and freehand shapes. When the area of an object is calculated, it always reflects the current scale and units of the drawing.

Show Area

To calculate the area of an object

1. Select the object whose area you want to determine.
2. Open the **View** menu and choose **Show Area**.

   The result of the area calculation will be shown in approximately the center of the object.



Modifying area calculation values

MacDraft allows you to change the appearance and/or positioning of area calculation values. The current font attributes, including font type and size, are used for these values. MacDraft uses the Macintosh system font (usually 13-point Lucida Grande) as the preset font and size when you create a new document. There may be times when this font size is inconvenient, such as when area values are shown on small objects, and the size of the text value overwhelms the size of the object.

MacDraft gives you the flexibility to change the value's font type and size. In addition, it allows you to separate the values from their related objects and move them to any location on your drawing. In the case of small objects with area values, you can move the area values away from the object. If you want to tidy up your drawing, you can move these values into an information table. If you change the size of an object, the calculated value in the table will be updated automatically to reflect the object's or line's new size.

Changing font attributes

To change the font attributes before you use show area

1. Return to the pointer mode and make sure that no objects on the drawing are selected.
2. Open the **Text** menu's **Font** submenu and choose the font you want.
3. Open the **Text** menu's **Size** submenu and choose the text size you want.
4. Implement the area calculation feature.

   The area calculation value text (and any subsequent text entered) will be shown in the font and at the text size specified *(see Define attributes for text on page 4-9)*.

To change the font attributes for existing area calculation values

1. Select the area calculation value you want to change.
2. Open the **Text** menu's **Font** submenu and choose the font you want.
3. Open the **Text** menu's **Size** submenu and choose the text size you want.

   The area calculation value text selected will be shown in the font and at the text size specified *(see Define attributes for text on page 4-9)*.

NOTE: If you are printing to a PostScript printer, choose a laser printer font to obtain a high-quality output.

Moving area calculation values

Area calculation text can be moved away from an object, but if the object is subsequently moved, the area calculation text maintains its position relative to the object. For example: If you moved the area calculation text from the center of a rectangle, repositioned the text above the rectangle, then moved the rectangle, the text would follow the movement of the rectangle and remain above it.

Alternatively, the area calculation text can be detached from an object and placed in a fixed location. If the object is moved the area calculation text remains in its specified position. This unique feature offers an extreme level of flexibility, especially if you want to place the values into an information table.

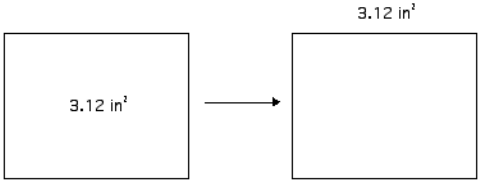
In both cases, the area calculation value remains associated with the object, and will be updated if the object is edited.

Moving attached area calculation values

Use this method if you want the area calculation text to remain attached to the object it is associated with. The text maintains its position relative to the object.

To move an attached area value

1. Position the cursor on the area value.
2. Press and hold down the **Shift** key.
3. Press and hold down the mouse button.
4. Release the **Shift** key.
5. Holding down the mouse button, drag the value to the desired location, then release the mouse button.
6. The area value text will be shown at the specified location, but maintains its position relative to the object if the object is moved.



NOTE: To constrain the movement of the value to a horizontal or vertical direction, keep holding the **Shift** key down as you drag the value to its new location.

Detaching and moving area calculation values

Use this method if you want the area calculation text to be detached from the object it is associated with. The text remains in the fixed position even if the object is moved. The value remains associated with the object and will be updated if the object is edited.

To detach and move area calculation values

1. Select the area value you want to detach and move.
2. Open the **Arrange** menu and choose **Ungroup**.
3. Click a blank part of the drawing to deselect the object and value.
4. Position the cursor on the text value.
5. Press and hold down the mouse button.
6. Holding down the mouse button, drag the text to the desired location (into an information table, for example), and release the mouse button.
7. The text remains in the position specified even if the object is moved.

Hide Area

If a selected object shows an area calculation, the **View** menu command **Hide Area** will be available.

To hide the area calculation display

1. Select the object with the area you wish to hide.
2. Open the **View** menu and choose **Hide Area**.

   The area calculation for the selected object will be no longer shown.

Chapter 5 - Transforming and arranging objects

Once created, objects in your MacDraft drawing can be moved, duplicated, transformed, and arranged in many different ways. To avoid objects being altered in error, items can be locked. These features are discussed in this chapter.

MacDraft offers several useful drawing aids that help you to position objects easily *(see Chapter 6 - Drawing aids on page 6-1)*.

◆ Moving objects

You may create an object, then decide you want to move it to a new location on your drawing or into a different drawing. MacDraft provides several different methods of moving objects: drag and drop; cut/copy and paste; the **Move** command; the **Resize** palette; the arrow keys. Objects can also be removed permanently from the drawing using the **Clear** function.

Drag and drop

Drag and drop can be used to move objects to/from a MacDraft document to/from a variety of locations.

Drag and drop an object or group of objects from a MacDraft document to:

- The same document window (to move or copy the object or group).
- Another MacDraft document window.
- A Media Assistant Lite catalog. See *Chapter 7 - Symbol libraries on page 7-1* for more information about using symbol libraries and Media Assistant Lite.
- The desktop to create a picture clipping.
- Any application that accepts PICT data by drag and drop.

Drag and drop an object or group of objects into a MacDraft document:

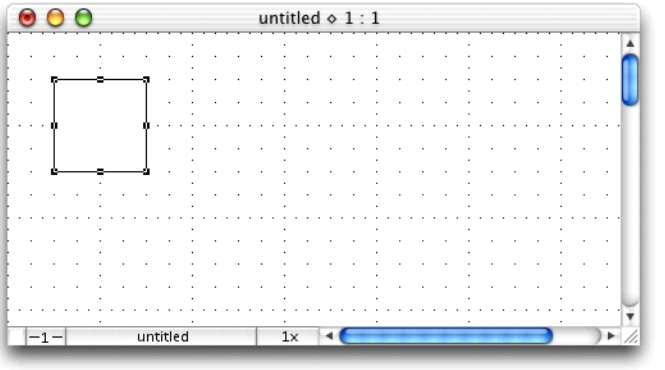
- Any PICT file can be dragged directly into a MacDraft document window.
- Items in other image and graphics file formats, such as JPEG and GIF files, can be dragged into MacDraft from a Media Assistant Lite catalog.

The drag and drop process

In its simplest form, drag and drop can be used to move an object or group of objects within a MacDraft document. To perform other drag and drop actions, you must press additional "modifier" keys. The modifier keys required to perform specific actions are described later in this chapter.

To use drag and drop

1. Select the object you want to move by clicking it.



2. Position the cursor over the object.
3. Press down a modifier key if required (see next section).
4. Press and hold down the mouse button until the white arrow pointer appears.

NOTE: Be careful not to position the pointer on an edit handle when you move an object. Edit handles are for changing the size and shape of an object *(see Chapter 2 - Creating and editing objects on page 2-1)*.

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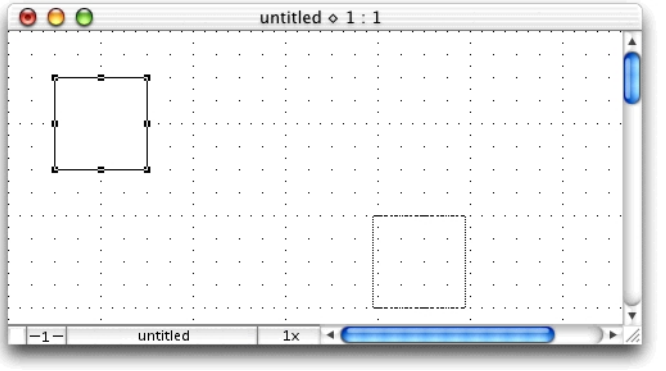
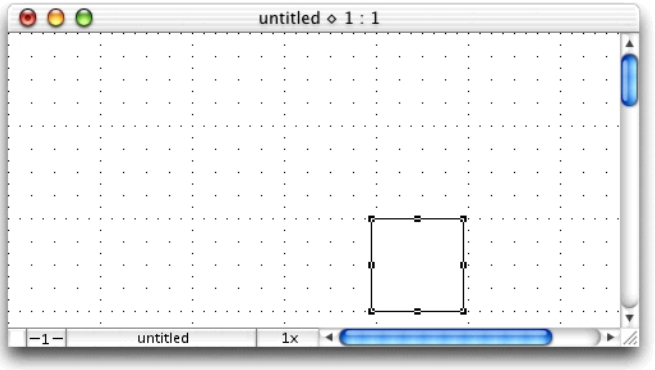
5. Holding down the mouse button, drag the object to its new location.



6. Press down a modifier key if required (see next section).
7. Release the mouse button.



When you drag objects, “ghost” images of the objects will be visible as you drag them. The original stays in place until you release the mouse button.

Drag and drop modifier keys

Various keys perform a special function when used during the process of clicking the object(s) to be dragged. Once the drag action is started, these modifier keys have no effect and can be released. The same modifier keys may perform other functions when used during the process of releasing the mouse button to drop the dragged object(s).

Using drag and drop within a MacDraft document

To move an object within a MacDraft document using drag and drop

- No modifier key is required.

To copy an object within a MacDraft document using drag and drop

- Hold down both the **Option** and the **Command** keys at any time.

  The original object selected remains in place, and a copy of it will be placed at the new location.

To constrain the movement of an object

- Hold down the **Shift** key while dragging an object to constrain the object's movement to either a horizontal or vertical direction.

NOTE: If you drag an object beyond the borders of the drawing area, the drawing automatically scrolls.

Using drag and drop to copy an object out of a MacDraft document

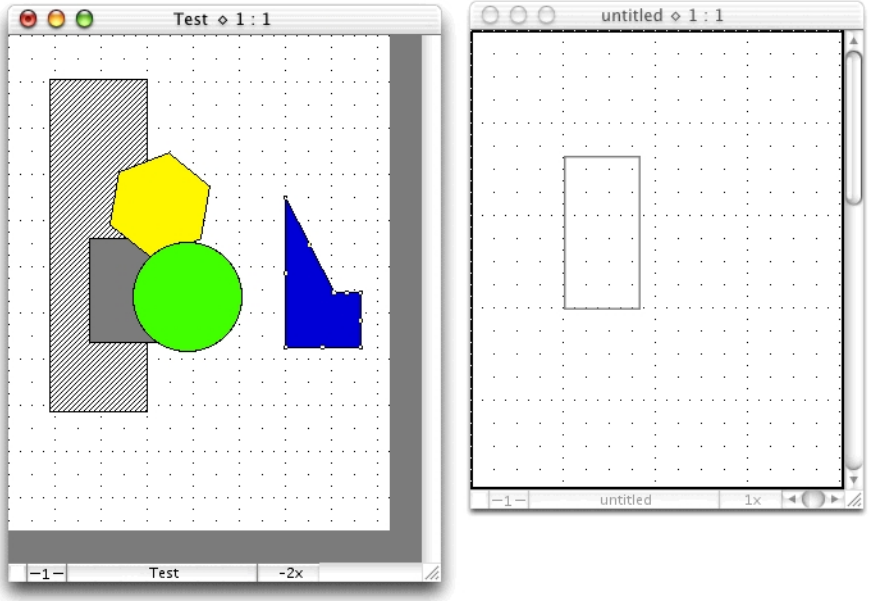
- Hold down the **Command** key to turn **Autoscroll** off and allow an object to be dragged out of the active MacDraft document.

  The object can then be dropped into another MacDraft document window, a Media Assistant Lite catalog, onto the desktop (to create a picture clipping), or into any other application that accepts PICT data by drag and drop.

To drag an object from the active MacDraft document to another document

1. Select the **Arrow** tool.
2. Hold down the **Command** key, click the object and, holding down the mouse button, drag the cursor over the destination document window.

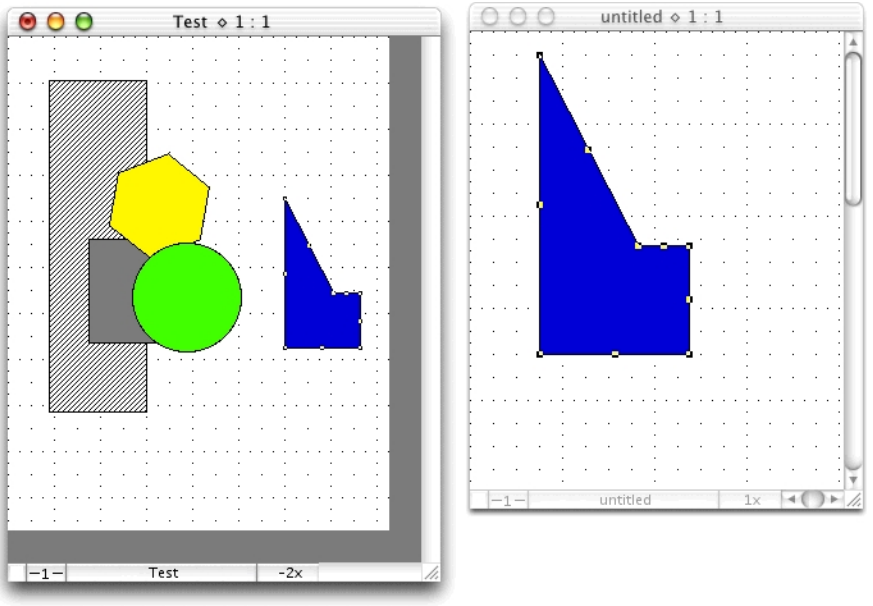
   A gray rectangle appears, showing the bounding frame of the object being dragged. If more than one object is dragged, a second rectangle, encompassing all the objects being dragged, is also shown. The maximum size of these rectangles is the size of the source document window.



3. Release the mouse button to drop a copy of the object into the second document.

   The object remains the same size when placed in the new document, but may be displayed at a different scale according to the current view scale set for each document.

NOTE: Press and hold down the **Shift** key and then release the mouse button to drop the dragged object(s) unscaled if the current scale of the destination MacDraft document differs from the scale of the object.



NOTE: It may be difficult to accurately place an object when using drag and drop to copy an object into a document with a different view scale. Objects dropped will always be aligned to the active grid, and MacDraft places the part of the object that was clicked in the original document, at the point that the mouse button is released in the new document, or as close to it as grid constraints allow *(see Positioning objects on page 6-14)*.

PICT format

When dragging an object out of MacDraft to the desktop or to another application, the object is in PICT format, with extra MacDraft information held in special PICT comments within the PICT data. Objects can be dragged between MacDraft and the **Clipboard** (for example) without loosing any data, but applications are not required to preserve the extra data and may choose to remove it, especially if the object is edited. This means that an object brought back into MacDraft may not be as expected.

Using drag and drop with multiple objects

To move multiple objects or grouped objects, simply select the objects or group you want to move, then drag the objects or group to a new position.

Alternatively, hold down the **Shift** key to drag only the object or group clicked, rather than all of the selected objects.

Cut/copy and paste

By using the **Cut**, **Copy** and **Paste** functions, you can remove or copy objects from one location on your drawing, then paste them into another location in the same drawing, a different drawing, or a different application.

The **Cut** function deletes selected objects from the drawing and places them on the **Clipboard**.

The **Copy** function makes a copy of selected objects and places the copy on the **Clipboard**, while leaving the original objects in place.

You can place several objects on the **Clipboard** as long as they are selected and cut or copied at the same time. The objects are stored on the **Clipboard** until you are ready to paste them onto the drawing, or until you use **Cut** or **Copy** function again.

NOTE: If you hold down the **Option** key, the **Cut** and **Copy** commands change to **Cut Special** and **Copy Special**. These commands can be used to place objects on the **Clipboard** as enhanced PICT images, allowing high quality PostScript® printing from other applications *(see Enhanced PICT on page 5-10)*.

Using cut/copy and paste within a single MacDraft document

Cut and paste

To cut and paste an object

1. Select the object you want to move.
2. Open the **Edit** menu and choose **Cut**.

   The selected object is removed from the drawing.
3. Click the place where you want to paste the cut object.
4. Open the **Edit** menu again and choose **Paste**.

   The object reappears at the location where you clicked.

You can continue to paste objects that have been cut into as many areas on your drawing as you like by simply selecting the insertion point and choosing **Paste** from the **Edit** menu. The objects remain on the **Clipboard** until you cut or copy a different object on your drawing, then the first object will be replaced with the new object on the **Clipboard**.

Copy and paste

The **Copy** and **Paste** functions allow you to make a copy of an object and paste the copy into another area of the drawing without affecting the status of the original.

To copy an object and paste the copy into a different location

1. Select the object you want to copy.
2. Open the **Edit** menu and choose **Copy**.

   A copy of the object will be stored on the **Clipboard** for your use.
3. Click the place where you want to paste the copy.
4. Open the **Edit** menu again and choose **Paste**.

   The object will be pasted in at the new location.

   You can continue to paste objects that have been copied into as many areas on your drawing as you like by simply selecting the insertion point and choosing **Paste** from the **Edit** menu. The objects remain on the **Clipboard** until you cut or copy a different object on your drawing, at that time the first object will be replaced with the new object on the **Clipboard**.

Using cut/copy and paste to transfer items from one MacDraft document to another

MacDraft allows you to cut/copy and then paste all or part of a drawing into another MacDraft document.

To cut or copy part of a drawing

1. Select all or the part of the drawing you wish to place in another document.
2. Open the **Edit** menu and choose **Cut** or **Copy**.

   The selected objects will be stored on the **Clipboard**.

To paste objects into a different MacDraft document

1. Open the document into which you wish to paste the objects stored on the **Clipboard**.
2. Click the place where you want to paste the objects into the drawing.

3. Open the **Edit** menu and choose **Paste**.

   The objects that you cut or copied will be pasted into the specified location.

NOTE: When you cut or copy objects from one drawing and paste them into another drawing, the objects that you pasted take on the scale of the new drawing. For example, if you copy an object from a drawing with a scale of 1" = 20', then paste it into a drawing with a scale of 1" = 10', the object would appear twice as large as it did on the original drawing. In reality, the object is still the same size, but it is represented at the new scale. To avoid this use the **Paste Unscaled** feature *(see Paste unscaled on page 5-8)*.

Paste unscaled

If you hold down the **Shift** key, the **Paste** command in the **Edit** menu changes to **Paste Unscaled**. Use the **Paste Unscaled** command to paste an object into a document and have it appear at its original size, regardless of any differences in view scale between the object and the destination document window.

Repeated paste

You may often want to use an object on your drawing in more than one location. To accomplish this you can use either the **Copy** and **Paste** functions, as described above, the **Duplicate** function *(see Duplicating objects on page 5-17)* or the **Repeated Paste** function. These functions save you the time of redrawing the object again and again.

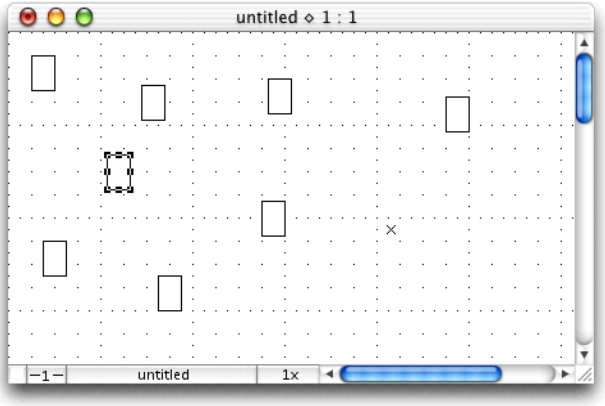
The **Repeated Paste** function is used to paste multiple copies of the same object into various locations on a drawing. When using **Repeated Paste**, any object on the **Clipboard** is pasted into the drawing at each point you click. While in this mode, you can scroll the window and continue to paste in objects.

To use the repeated paste function

1. Cut or copy the object you want to paste.
2. Select the **Repeated Paste** tool in the **Tool** palette or open the **Edit** menu and choose **Repeated Paste**.

   The cursor changes to an “X”.
3. Click the point you want to paste the object.

4. Continue to move the cursor and click the areas on the drawing until you've pasted as many copies of the object as you want into your document.



A copy of the object appears at each point you click the drawing. The object's datum point will be used as the reference point for the paste operation *(see Datum points on page 2-69)*.

5. Click the **Pointer** tool when you have finished pasting.

Viewing the Clipboard

You may sometimes want to see exactly what information, if any, is stored on the **Clipboard**.

To view the Clipboard

1. Open the **Edit** menu and choose **Show Clipboard**.

   The **Clipboard** appears.

Using cut/copy and paste to transfer items from MacDraft to other applications

At times you may want to use MacDraft in conjunction with other applications, such as a word processor or a chart program. For example, you may want to paste a chart into MacDraft to enhance its graphics appearance, then paste it into a page layout document.

Images can be pasted into another application's document then printed, at the same sharp PostScript resolution available within MacDraft, using the enhanced PICT format.

Enhanced PICT

An enhancement of the standard PICT image format allows high-resolution printing of PICT images in other applications. Enhanced PICT files combine PICT information with the PostScript® code that produces high-quality laser output.

With a color PostScript printer, an enhanced PICT image can be printed in color, even in an otherwise black-and-white word processing document.

Fills and lines in enhanced PICT images can be in any of the RGB color combinations possible with the **Macintosh Color Picker** and can be printed to a color PostScript printer.

NOTE: Enhanced PICT objects can only be printed reliably using Apple Computer's LaserWriter printer driver, version 6.0 or later

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Transferring objects from Microspot MacDraft

To transfer objects to other applications using PICT

1. Select the object or objects you want to move.
2. Open the **Edit** menu and choose **Cut** or **Copy**.

   The selected objects will be placed on the **Clipboard**.
3. Switch to another application.

   Once you leave MacDraft, all objects on the **Clipboard** will be converted to the PICT format.
4. In the new application, open the **Edit** menu and choose **Paste**.

   The cut or copied objects appear as a PICT image in the new application's document window.

To transfer objects to other applications using enhanced PICT

1. Select the object or objects you want to move.
2. Hold down the **Option** key.
3. Open the **Edit** menu and choose **Cut Special** or **Copy Special**.

   A message reading **Creating Enhanced PICT Clipboard...** appears.

   The selected objects will be placed on the **Clipboard** both as an image and as PostScript® code.
4. Switch to another application.

Once you leave MacDraft, all graphic objects on the **Clipboard** will be converted to the PICT format, with the PostScript code for the original MacDraft image attached.

5. In the new application, open the **Edit** menu and choose **Paste**.

   The cut or copied objects appear as a PICT image in the new application's document window. When you print the document to a PostScript-compatible printer however, the printed output has the same high resolution as MacDraft printing.

The Move command

With the **Edit** menu's **Move** command, you can move objects or groups with great precision by entering values from the keyboard.

Objects can either be moved to a specific location (absolute move), or moved by a specified amount (relative move). The setting for **Absolute** or **Relative** mode in the **Move** dialog will be stored for subsequent openings of the dialog, until the application is closed.

The coordinates or distances are shown in the current layer's scale and units.

The **Move a Copy** option places a copy of the selection in a specified location while leaving the original in place.

The datum point of the selected object or group *(see Datum points on page 2-69)* is used as the reference for moving. Therefore, to move an object, you specify the desired location (the X and Y coordinates) of the object's datum point. If you select multiple objects or groups, MacDraft uses the datum point of the top left item as the reference.

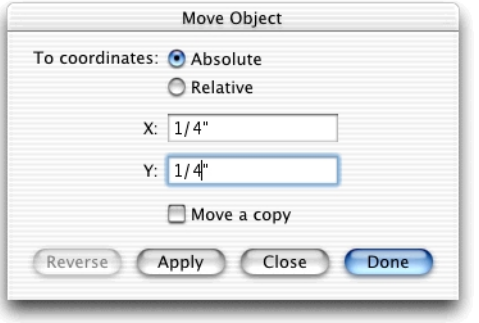
Absolute move

To move objects or groups to a particular location on the drawing

1. Select the objects or groups you want to move.
2. Open the **Edit** menu and choose **Move**.

   The **Move** dialog appears.

3. Click the **Absolute** radio button if necessary. The current location of the selection will be shown.



4. Type in the X and Y coordinate values for the new location.
5. To leave the original in place, moving only a copy, click the **Move a Copy** checkbox.
6. Click one of the following buttons:

- **Apply**: To apply the changes and leave the dialog open.
- **Close**: To close the dialog without applying the changes.
- **Done**: To apply the changes and close the dialog.

The selection (or a copy of it) is moved to the new location.

The default zero origin for both rulers (the point where X=0 and Y=0) of the coordinate system is the upper left corner of the window. The rulers along the top and left sides of the window are used to control the zero origins. In this default coordinate system, X values increase from left to right and Y values increase from top to bottom.

You can change the zero origins of the rulers *(see Rulers on page 6-8)*.

NOTE: If the move operation requires the object to be moved beyond the edge of the drawing, an alert appears.

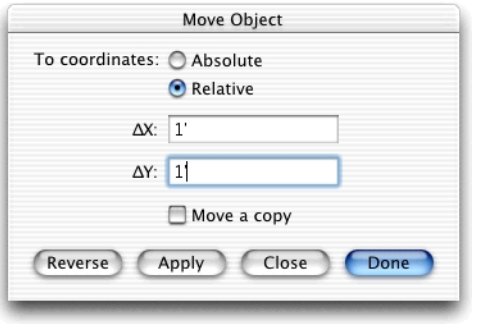
Relative move

In relative movement, positive values for distance move items to the right (in the ΔX field) or downward (in the ΔY field). Negative values move items to the left or upwards.

To move items relative to their original position

1. Select the objects or groups you want to move.
2. Open the **Edit** menu and choose **Move**. The **Move** dialog appears.

3. Click the **Relative** radio button if necessary. The starting position will be shown as zeroes in the ΔX (horizontal change) and ΔY (vertical change) fields.
4. Enter values to move the selection by into the ΔX and ΔY fields.



5. To leave the original in place, moving only a copy, click the **Move a Copy** checkbox.
6. Click one of the following buttons:

- **Reverse**: To apply the entered values as though they were negative amounts.
- **Apply**: To apply the changes and leave the dialog open.
- **Close**: To close the dialog without applying the changes.
- **Done**: To apply the changes and close the dialog.

The selection (or a copy of it) is moved to the new location.

NOTE: If the move operation requires the object to be moved beyond the edge of the drawing, an alert appears.

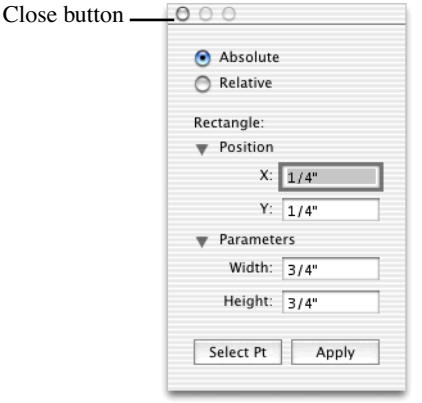
The Resize palette

Most of the controls on the **Resize Palette** are discussed in Chapter 2 *(see Resizing objects on page 2-71)*. However the **Resize** palette can also be used to move a single object or group, and these controls are discussed in this section.

To display the Resize palette

- Choose **Resize** from the **Window** menu, or

- Choose **Resize** from the pop-up menu at the bottom left of the document window.



NOTE: The **Select Pt** button is not relevant to the move operation.

Moving objects using the Resize palette

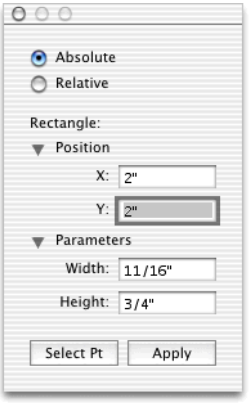
The **Resize** palette's Position X and Y fields can be used to move a selected object or group to an absolute position on the drawing or by relative horizontal and vertical distances. All movement is defined in the units and scale of the document.

Absolute move

To move objects or groups to a particular location on the drawing

1. Select the objects or groups you want to move.
2. Open the **Resize** palette
3. Click the **Absolute** radio button if necessary. The current location of the selection appears.

4. Type in the X and Y position values for the new location.



5. Click the **Apply** button.

   The selection is moved to the new location.

The default zero origin for both rulers (the point where X=0 and Y=0) of the coordinate system is the upper left corner of the window. The rulers along the top and left sides of the window are used to control the zero origins. In this default coordinate system, X values increase from left to right and Y values increase from top to bottom.

You can change the zero origins of the rulers *(see Rulers on page 6-8)*.

NOTE: If the move operation requires the object to be moved beyond the edge of the drawing, an alert appears.

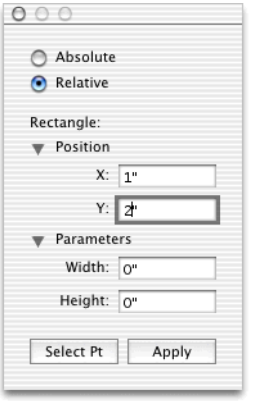
Relative move

In relative movement, positive values for distance move items to the right (in the X field) or downward (in the Y field). Negative values move items to the left or upwards.

To move items relative to their original position

1. Select the objects or groups you want to move.
2. Open the **Resize** palette.
3. Click the **Relative** radio button if necessary. The starting position will be shown as zeroes in the X (horizontal change) and Y (vertical change) fields.

4. Enter values to move the selection by into the X and Y fields.



5. Click the **Apply** button.

   The selection is moved to the new location.

NOTE: If the move operation requires the object to be moved beyond the edge of the drawing, an alert appears.

Moving using the arrow keys

Selected objects and groups can be moved using the arrow keys on the keyboard.

When a grid is on *(see Grid snap on page 6-14)*, each press of an arrow key moves (or "nudges") the current selection one grid increment in the appropriate direction: left, right, up, or down. If no grid is on, the selection moves one screen pixel (1/72 of an inch) for each keystroke.

Press and hold down the **Command** key and press an arrow key to release the selection from an active grid and allow the selection to be moved one pixel at a time.

The Clear function

Objects can be removed permanently from the drawing using the **Clear** function. The object can only be recalled by using **Undo** before you perform any other action.

NOTE: You can also press the **Delete** key to delete selections.

Using the Clear function

To clear a single object

1. Select the object to be deleted from the drawing by clicking it.
2. Open the **Edit** menu and choose **Clear**.

   The selected object will be removed from the drawing.

To clear multiple objects

1. Select the objects to be deleted from the drawing by **Shift**-clicking them, or by using the selection rectangle *(see Selecting objects on page 1-24)*.
2. Open the **Edit** menu and choose **Clear**.

   The selected objects will be removed from the drawing.

To clear the entire contents of a document

There may be times when you want to throw away all the contents of the drawing and start over again. To accomplish this:

1. Open the **Edit** menu and choose **Select All**.

   All the objects on the drawing will be selected.
2. Open the **Edit** menu again and choose **Clear**.

   All the objects on the drawing will be removed.

◆ Duplicating objects

Objects can be duplicated by using the **Duplicate** command.

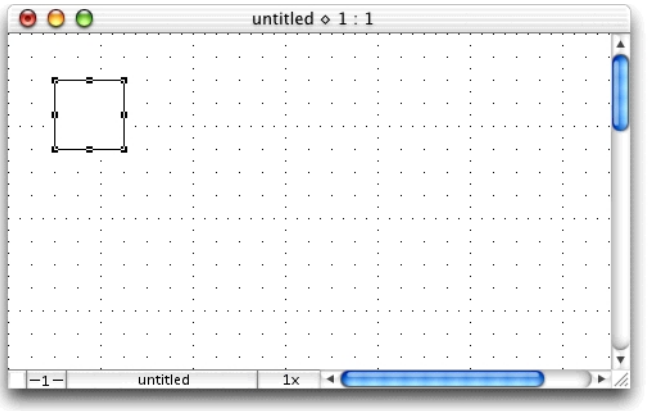
The Duplicate command

The **Duplicate** command is used to make an exact copy of any object or line on the drawing. The duplicate object is placed in front of the original in a slightly offset position, and is selected. You can then drag the duplicate into the desired position on your drawing.

Using the Duplicate command

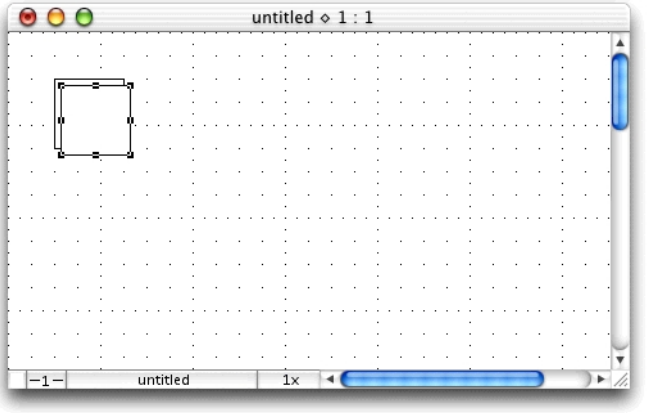
To duplicate an object

1. Select the object you want to duplicate.

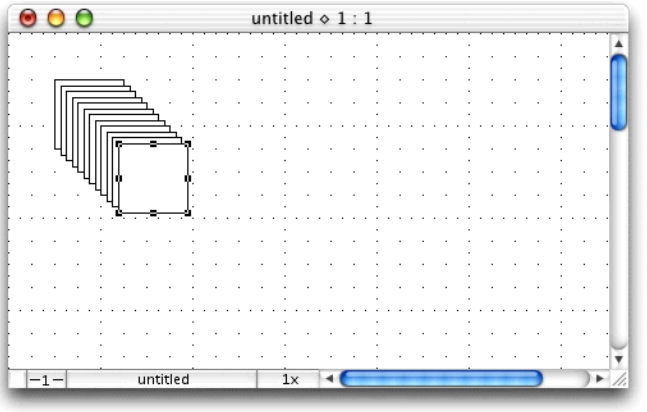


2. Open the **Edit** menu and choose **Duplicate**.

   The object is duplicated. The duplicate object is placed in front of the original in a slightly offset position and is selected.



3. To make a second or third duplicate, simply choose the **Duplicate** command again, and again. Each new duplicate appears in front of the previous one in a slightly offset position.



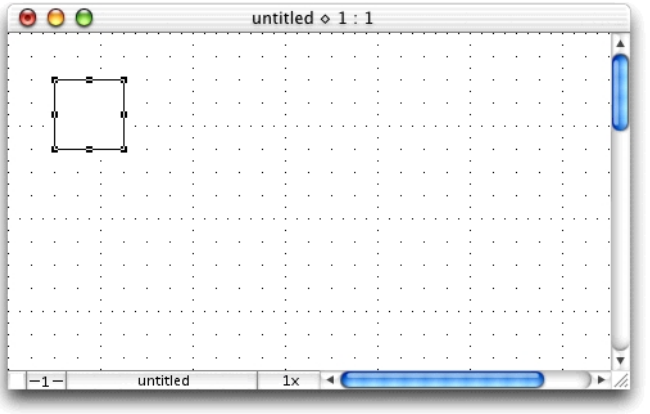
NOTES:
• Hold down the **Shift** key and the **Duplicate** command changes to **Duplicate without offset**. Use this option to create a duplicate that is placed directly on top of the original.
• Hold down the **Control** key to avoid duplicating locked objects. All other objects in the selection will be duplicated.

Auto-spacing of duplicate objects

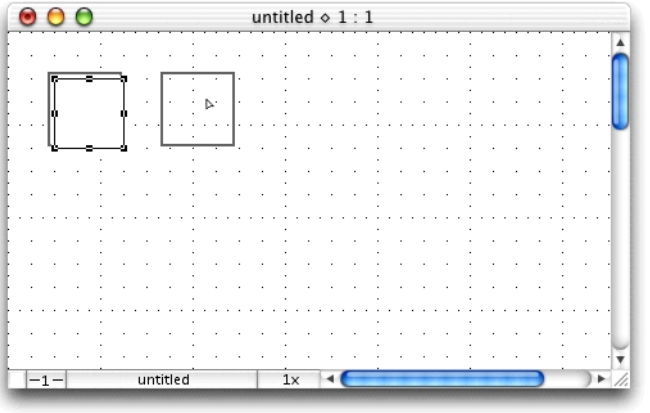
If you want to create a row or column of identical, evenly spaced objects, the **Duplicate** function incorporates an auto-spacing feature that allows you to determine the distance and angle you want between objects. You can then make new duplicates that will be automatically placed at that distance and angle.

To use auto-spacing during creation

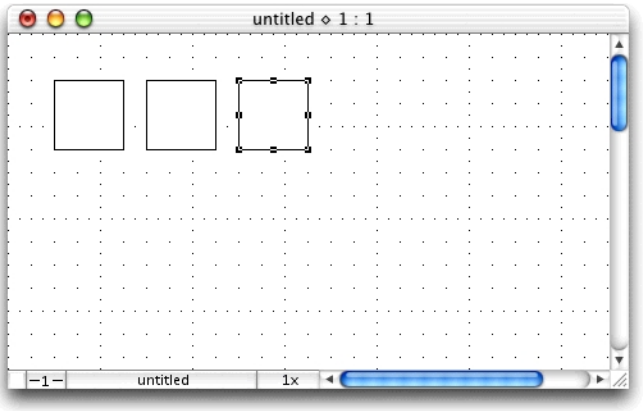
1. Select the object to be duplicated.



2. Open the **Edit** menu and choose **Duplicate**.
3. Position the cursor over the selected duplicate, hold down the mouse button, drag the duplicated object to the desired position relative to the original, and release the mouse button. (Alternatively move the duplicate using the arrow keys.)



4. Open the **Edit** menu and choose **Duplicate** again.



Notice that the second duplicate is automatically placed in the same position relative to the first duplicate as the first duplicate is to the original.

5. Keep choosing **Duplicate** to produce as many duplicates as you need.

◆ Arranging objects

You can use some of the commands in the **Arrange** menu to manipulate the positions of objects. You can perform the following actions using these commands: move objects backwards and forwards; group and ungroup objects; distribute objects. The tools in the **Alignment** palette can be used also to distribute and align objects.

Moving objects backwards and forwards

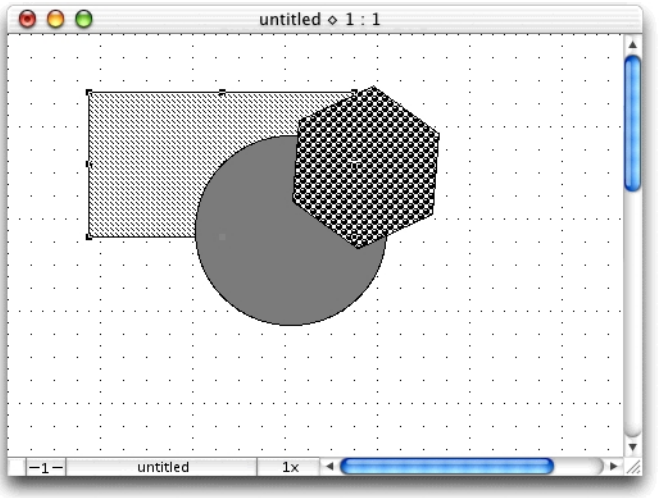
When you create multiple objects in a document, the newest object created appears on the top plane, while the oldest object appears on the bottom plane, that is, each new object appears on the plane above the previous object. At times, you might want to move an object in front of or behind other objects in the document. The functions that allow you to do this are **Bring to Front**, **Send to Back**, **Move Forward One**, and **Move Back One**.

Bring to front

If an object is currently behind other objects, you can move it in front of the other objects on the layer by using the **Bring to Front** function.

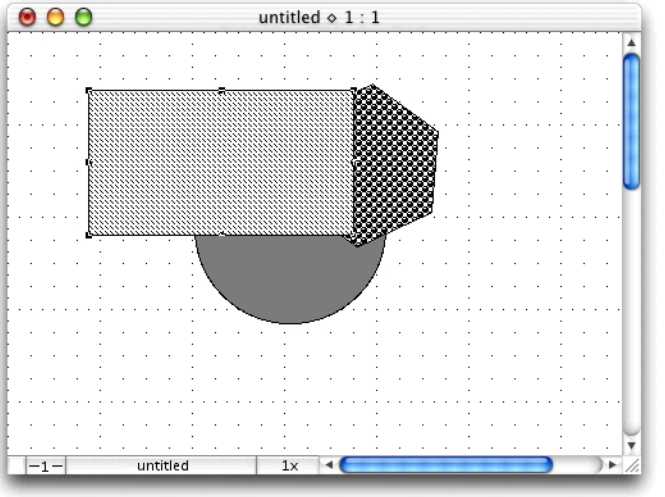
To bring an object to the front

1. Select the object you want to move to the foreground.



2. Open the **Arrange** menu and choose **Bring to Front**.

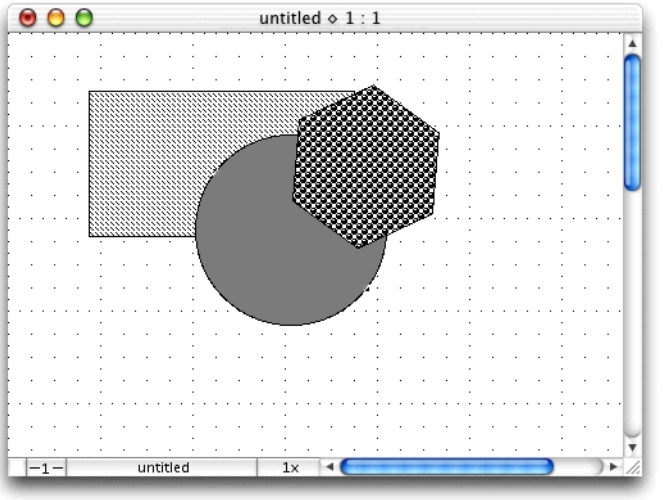
   The selected object will be moved in front of the other objects.



Send to back

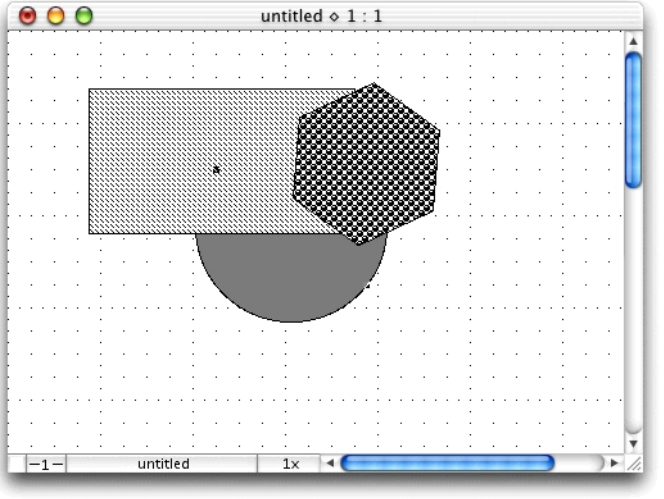
To reposition an object behind all other objects on the layer

1. Select the object you want to move to the background.



2. Open the **Arrange** menu and choose **Send to Back**.

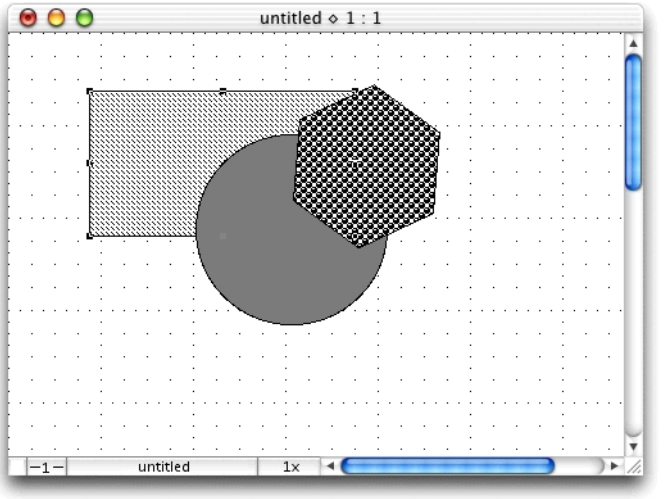
   The selected object will be moved behind the other objects.



Move forward one

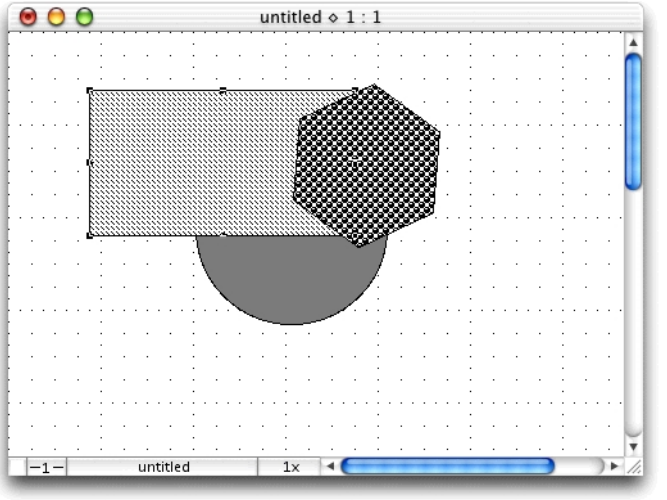
To move an object forward one level

1. Select the object you want to move forward.



2. Open the **Arrange** menu and choose **Move Forward One**.

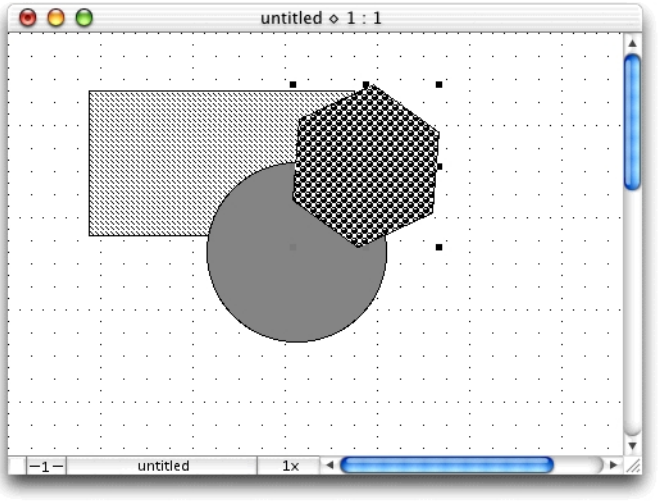
   The selected object will be moved forward one level.



Move back one

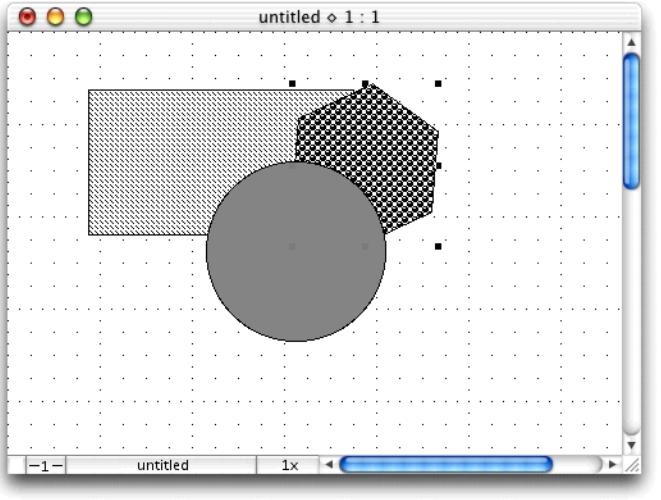
To move an object back one level

1. Select the object you want to move back one level.



2. Open the **Arrange** menu and choose **Move Back One**.

   The selected object will be moved back one level.



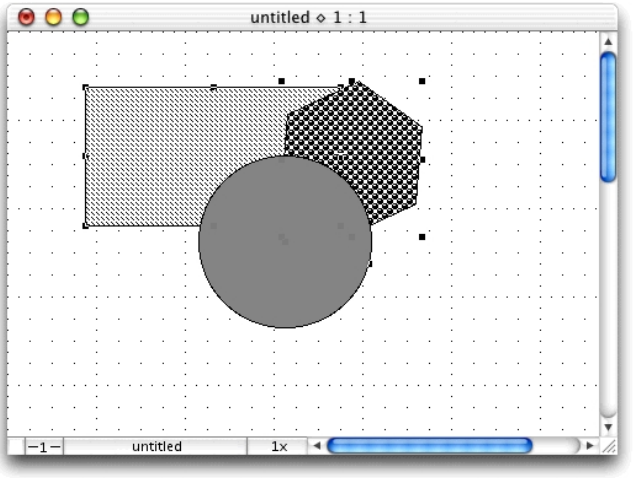
Grouping and ungrouping objects

Grouping objects

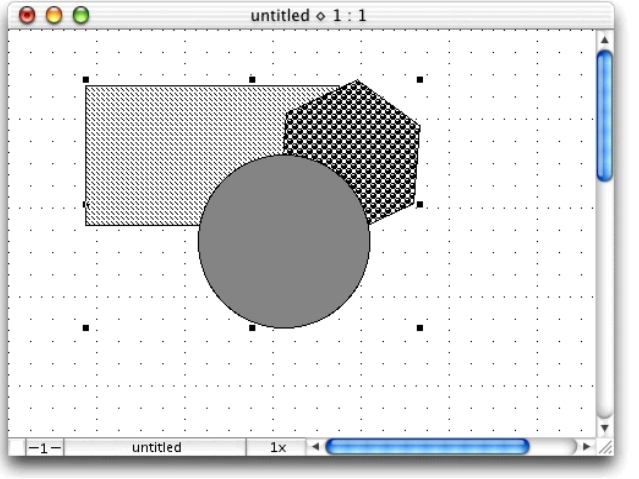
In a drawing that contains several individual objects, you might want to group some objects together so that you can treat them as a single object. When objects are grouped together, most functions you choose will be performed on the entire group just as though it were a single object.

To group several objects together

1. Select all the objects that you want in the group.



2. Open the **Arrange** menu and choose **Group**.



Notice that the objects are now surrounded by a single set of edit handles. This indicates that all objects within the edit handles are part of this group and will be treated as a single object. You can perform any function on the group, such as move, duplicate or fill, and the entire group responds to that command. Once you have grouped several objects, you cannot reposition or edit any individual object or piece of text within the group unless you first ungroup the objects.

Ungrouping objects

If you no longer require a set of objects to be grouped, or if you need to edit one of the individual objects, you can use the **Ungroup** function to return the objects to their individual status.

To ungroup objects:

1. Select the group of objects by clicking one of the objects.
2. Open the **Arrange** menu and choose **Ungroup**.

   Notice that each object has its own set of edit handles again. This is an indication that the objects are no longer part of a grouped set, and that you can now select and edit each object individually.

Aligning and distributing objects

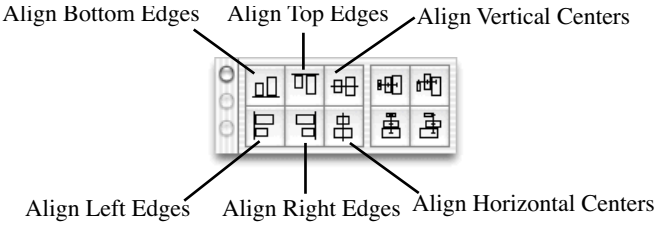
Aligning objects

Alignment palette

The **Alignment** palette provides tools for you to carry out alignments.

To display the Alignment palette

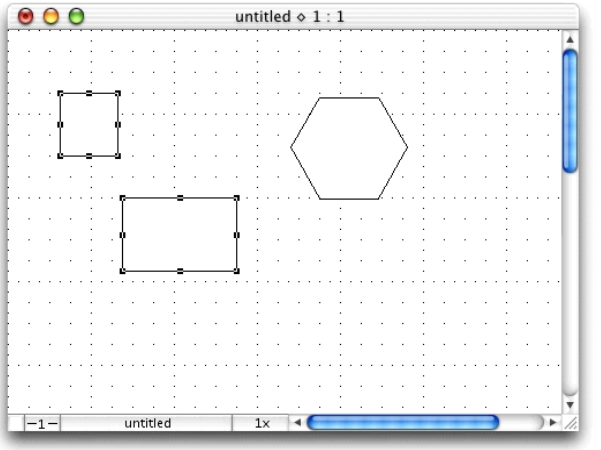
- Choose **Alignment** from the **Palettes** menu in the **View** menu, or
- Choose **Alignment** from the pop-up menu at the bottom left of the document window



NOTE: The remaining buttons are used to distribute objects along a line *(see Distributing objects on page 5-29)*.

To use the Alignment palette

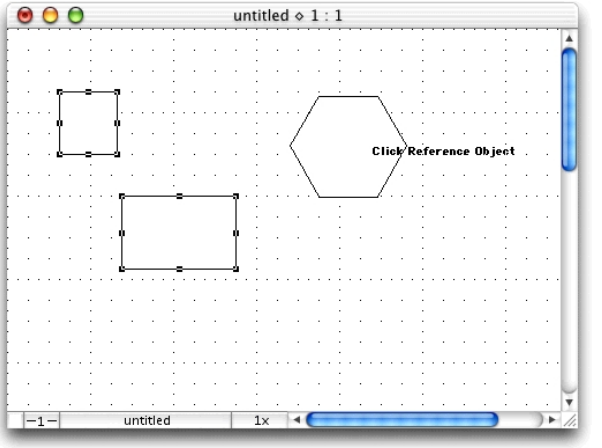
1. Select the object(s) to be aligned.



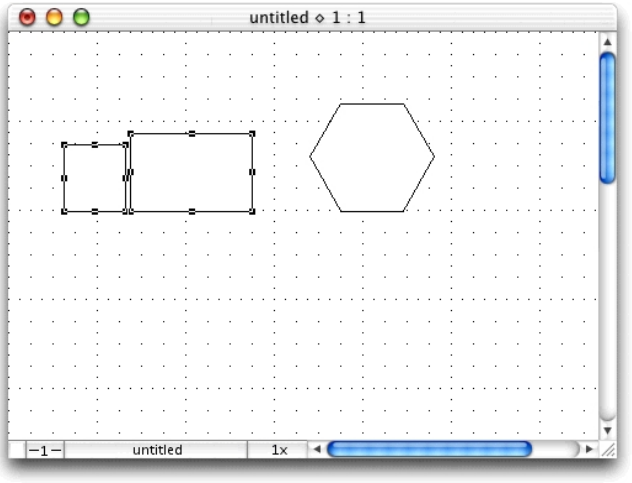
2. In the **Alignment** palette, click the desired alignment button.

The cursor will be displayed as 'Click Reference Object'.

3. Click the object to align the other object(s) with.



The selected object(s) will be aligned with the reference object according to the alignment tool chosen.



NOTE: To align objects to one element of a group (rather than to the group as a whole), hold down the **Option** key when the click reference object cursor appears, then click the element of the group to which you want to align the other objects.

Distributing objects

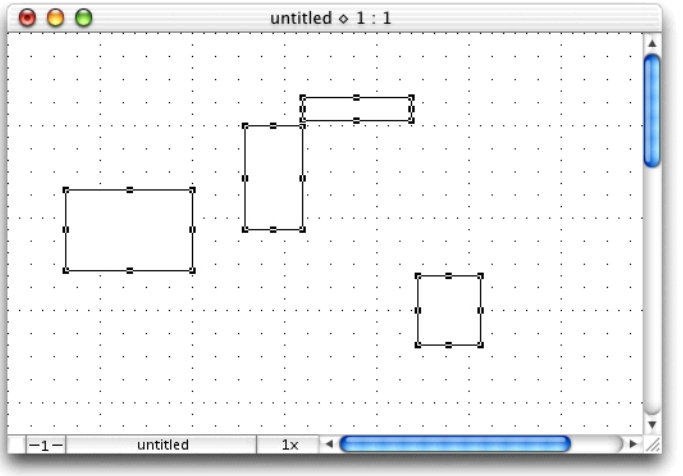
Objects can be positioned and aligned along a defined line. This can be done using the **Distribute on Line** command or using options in the **Alignment** palette.

Distribute on Line command

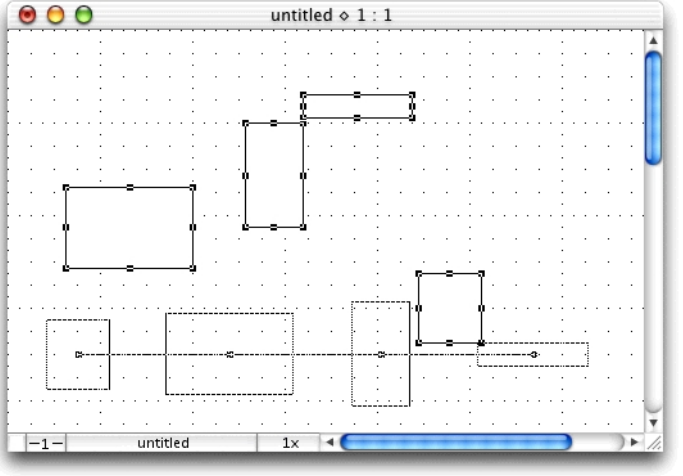
The **Distribute on Line** function allows you to position and align selected objects along a line that you define. The objects are distributed according to their level on the drawing, i.e. the object farthest back appears on the distribution line first, and the foremost object appears last. By default, the objects automatically align themselves along their centers, and will be equally spaced apart on the line. You can also choose to align the objects according to their datum points.

To distribute objects on a line

1. Select the objects to be distributed.

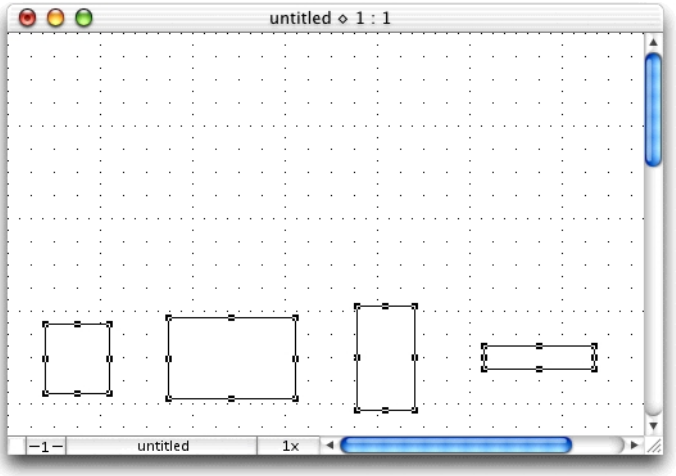


2. Open the **Arrange** menu and choose **Distribute on Line**.
3. Move the pointer to the point on your drawing where you would like to place the first object.
4. Press and hold down the mouse button.
5. Drag in the direction you want to distribute the objects.



6. Release the mouse button.

The objects will be distributed along the line you specified. Their center points will be spaced equally apart along the line.



NOTES:
• To align objects according to their datum points, press and hold down the **Option** key before you open the **Arrange** menu and choose **Distribute on Line**.
• To constrain the line the objects are to be distributed along, hold down the **Shift** key as you define the line and it will snap to 45-degree increments.

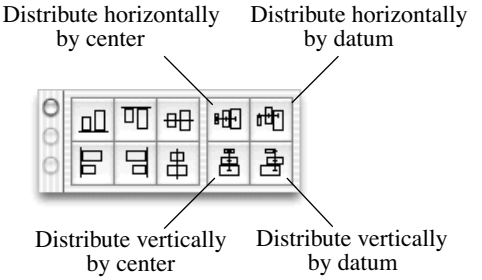
Alignment palette

The distribute controls in the **Alignment** palette distribute objects in the same way as the distribute command, but the line is defined for you.

To display the Alignment palette

- Choose **Alignment** from the **Window** menu, or

- Choose **Alignment** from the pop-up menu at the bottom left of the document window.



To use the distribute controls in the Alignment palette

1. Select the objects on the drawing to be distributed.
2. Click the appropriate button to distribute the objects horizontally or vertically by center or by datum point.

   The objects will be distributed along a line in the manner specified.

◆ Transforming objects

Objects can be transformed by rotating or flipping them.

Rotating objects

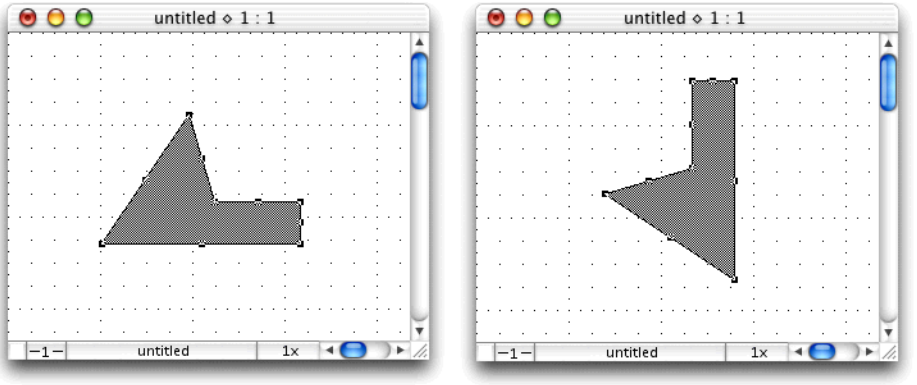
MacDraft provides several tools and commands that can be used to rotate objects freely or by specified amounts.

Rotate by 90° tool

The MacDraft **Tool** palette includes a **Rotate by 90°**tool:

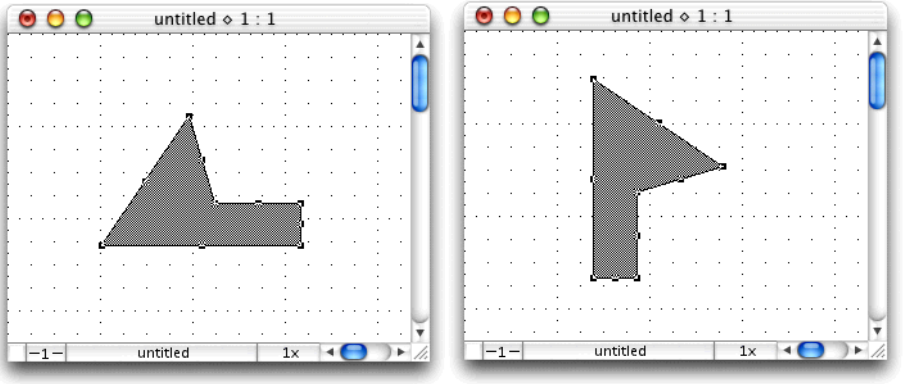
To rotate an object 90° anti-clockwise around its center

- Select an object in the drawing then click the **Rotate 90°** tool.



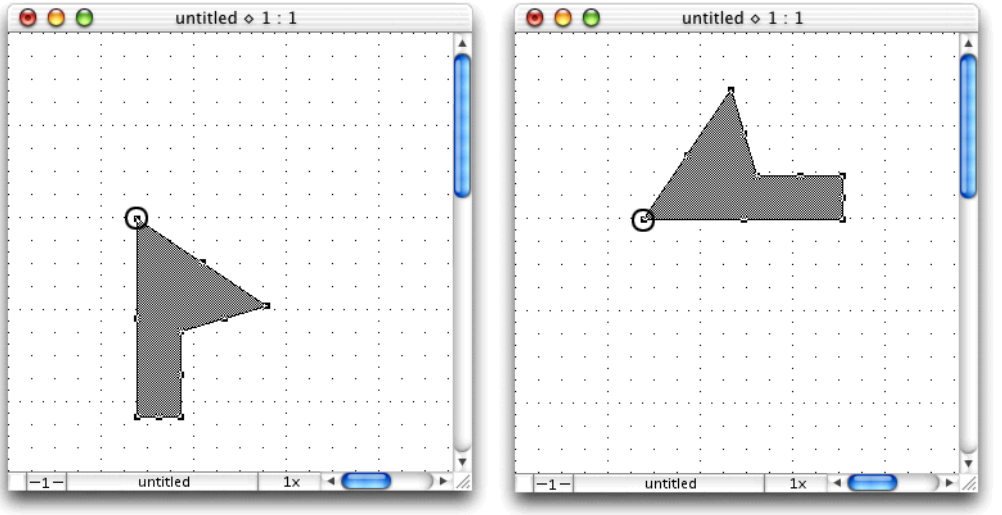
To rotate an object 90° clockwise around its center

- Select an object in the drawing and holding down the **Shift** key, click the **Rotate 90°** tool.



To rotate an object 90° anti-clockwise around its datum point

- Select an object in the drawing and holding down the **Option** key, click the **Rotate 90°** tool. In this example the datum point is marked by a small circle *(see Datum points on page 2-69)*.



Rotate tool and Rotate command

The **Rotate** tool and **Rotate** command allow you to rotate objects by any angle you want. You can rotate objects in various increments using the mouse; to enter a specific value through the keyboard, use the **Rotate Options** *(see Rotate options on page 5-38)*.

You can rotate single objects, multiple objects, or grouped objects. Unless you specify otherwise, selected single or multiple objects will rotate around their individual centers. If you wish you can also specify the center of rotation for selected objects.

To enter rotation mode

- Choose **Rotate** from the **Arrange** menu, or
- Click the **Rotate** tool in the **Tool** palette

To exit rotation mode:

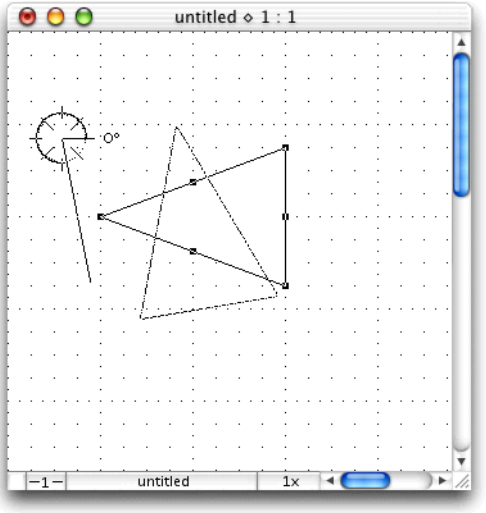
- Click the **Pointer** tool.

Rotating an object

To rotate an object in five-degree increments (the default)

1. Select the object to be rotated.
2. Choose the **Rotate** tool or the **Rotate** command from the **Arrange** menu.
3. Position the cursor in the window, then press and hold down the mouse button.

   The cursor changes into a rotation indicator.
4. Holding down the mouse button, drag in a circular direction until you have rotated the object the desired number of degrees, and release the mouse button.



To see the exact number of degrees an object is being rotated, open the **Show Size** window *(see Show Size on page 6-1)*.

To rotate an object in one-degree increments

- Press and hold down the **Command** key while rotating an object.

Changing the rotation units

To rotate an object in minutes or decimal fractions

1. Press and release the **Shift** key while rotating an object.
2. Continue to drag in a circular direction to rotate the objects in minutes.

The number of degrees remains fixed.

To rotate an object in seconds

1. Press and release the **Shift** key twice while rotating an object.
2. Continue to drag to rotate the objects in seconds.

   As you rotate the object in seconds, the number of degrees and minutes are constrained.

Returning to previous rotation units

You can return to the previous rotation units (from seconds to minutes, and minutes to degrees) by using the **Command** key.

To return to the previous rotation units

- Press the **Command** key while in the rotation mode.

Rotating multiple objects

When rotating multiple objects, by default each object rotates around its individual center.

Rotating grouped objects

When rotating a grouped object, all the objects in the group rotate around the center of the group, unless you specify a different center of rotation.

Rotating text

The rotation feature works exactly the same way when you rotate a text block as it does when you rotate other objects. (See *Selecting rotated text for editing on page 4-6* for information about selecting and editing rotated text blocks.)

Rotating bitmaps

Bitmaps can be rotated only in 90-degree increments.

Rotate your bitmap image in the same way you would rotate another object. When you release the mouse button the bitmap will rotate to snap to the nearest 90-degree increment.

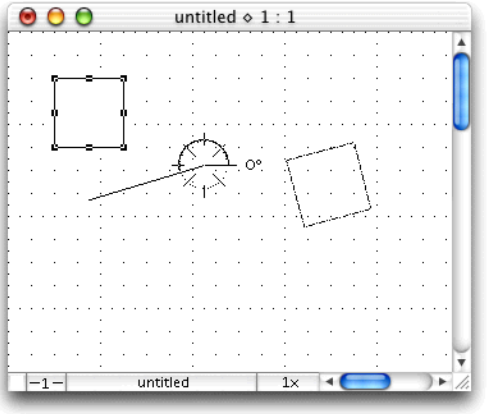
Choosing the centre of rotation

Objects are usually rotated about their centers, however you can also specify any point on the drawing as the center of rotation.

To rotate objects around a specified point

1. Select the objects you want to rotate.
2. Choose the **Rotate** tool or the **Rotate** command from the **Arrange** menu.
3. Position the cursor on the point you want to use as the center of rotation.

   You can use the scroll controls to move to a part of the drawing that is outside your current view.
4. Press and hold down the **Option** key.
5. Press and hold down the mouse button.
6. Holding down the mouse button and the **Option** key, drag in a circular direction until you have rotated the object the desired number of degrees.



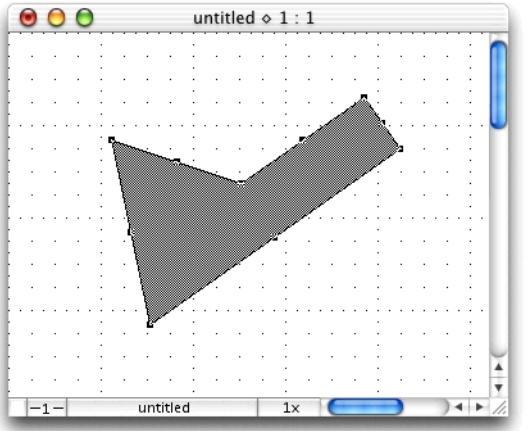
7. Release the mouse button and the **Option** key.

Rotate to zero command

The **Rotate to zero** command allows you to return an object to its original angle of rotation.

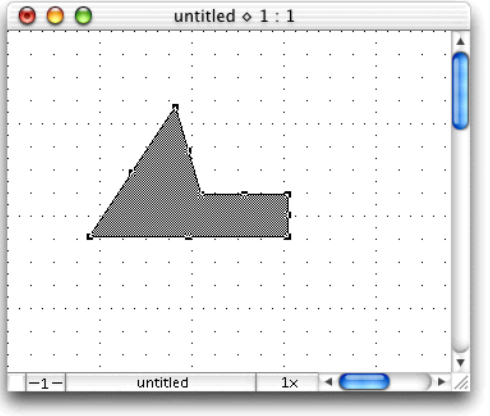
To return an object to its original angle of rotation

1. Select a rotated object.



2. Choose **Rotate to Zero** from the **Arrange** menu.

   The object will be returned to its original angle of rotation.



Rotate options

You can use the keyboard to directly enter the rotation values in degrees, minutes, and seconds using the **Rotate Options** dialog.

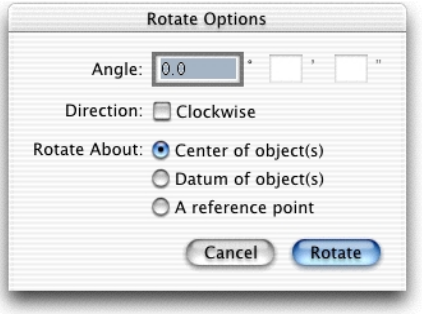
The Rotate Options dialog

To display the Rotate Options dialog

1. Select the object or objects you want to rotate.

2. Choose **Rotate Options** from the **Arrange** menu.

   The **Rotate Options** dialog appears.



Amount of rotation

The fields available to enter the rotation amount vary depending on the **Angular Display** option selected in the **Document Scale and Units** dialog *(see Document units and scale on page 6-21)*. The above screen shot shows the field that appears when decimal degrees are selected.

To enter an amount for rotation, double-click the appropriate field and type in a value.

Direction of rotation

The default direction for rotation is counterclockwise. To rotate an object in a clockwise direction, click the **Clockwise** checkbox.

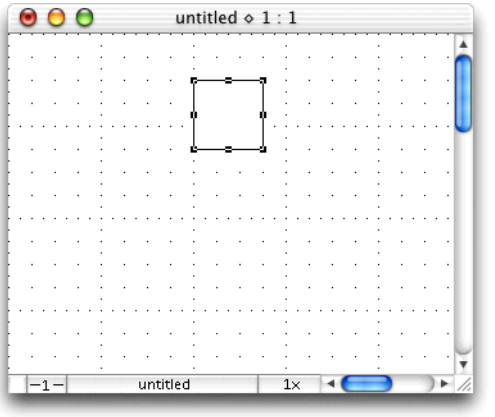
Center of rotation

The default center of rotation is the center of the selected object or objects. To rotate objects about their datum points, click the **Datum of object(s)** radio button *(see Datum points on page 2-69)*. To rotate objects about a specified reference point, click the **A reference point** radio button.

If the **A reference point** radio button is on, the **Rotate Options** dialog disappears and the **Rotation** cursor will be shown over the drawing. Click the point you want to use as the center of rotation.

To rotate an object or objects

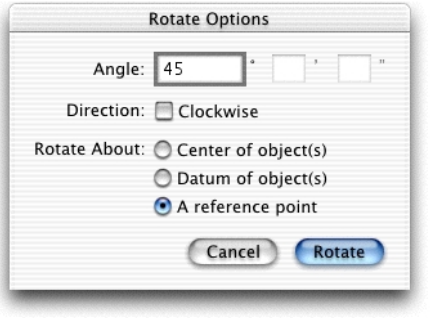
1. Select the object or objects you want to rotate.



2. Choose **Rotate Options** from the **Arrange** menu.

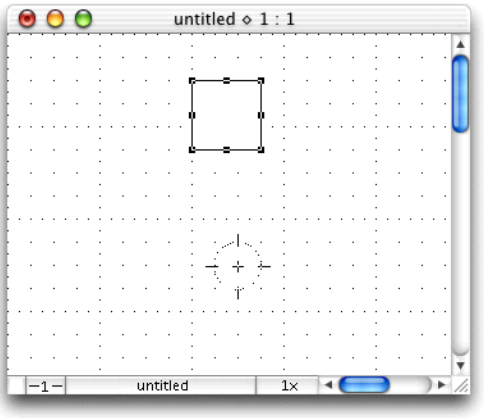
   The **Rotate Options** dialog appears.

3. Enter the desired angle of rotation.
4. Specify the direction and center of rotation.

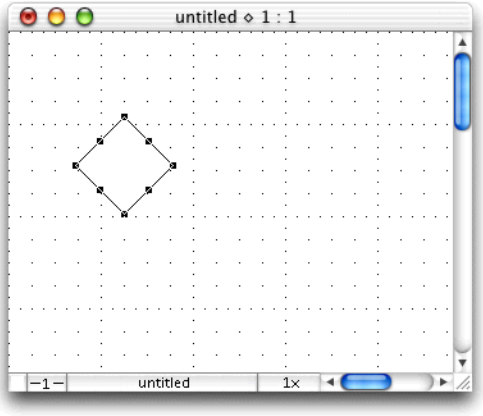


5. Click the **Rotate** button.

6. Specify the reference point to rotate about if necessary.



The selected object or objects will be rotated the specified number of degrees, minutes, and seconds around the requested center of rotation.



Flipping objects

Sometimes you may want to display the reverse image of an object. For this, MacDraft has the **Flip Horizontal** and **Flip Vertical** commands.

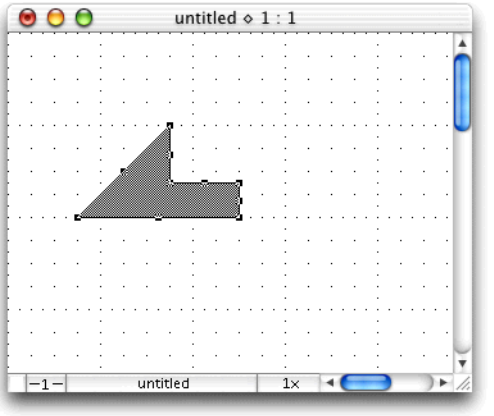
You can duplicate an object and then use one of the **Flip** functions to create the other side of that object for the sake of symmetry, as well as convenience.

NOTE: Pictures can be flipped as well as objects, however text is treated slightly differently *(see Flipping text on page 5-43)*.

Flipping an object or picture

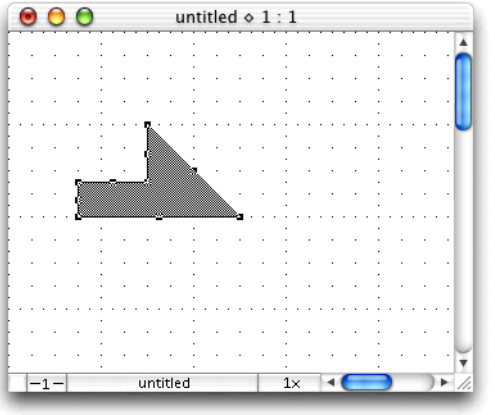
To flip an object horizontally

1. Select the object you want to flip.



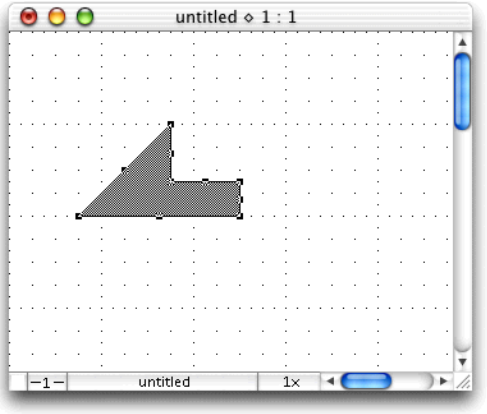
2. Open the **Arrange** menu and choose **Flip Horizontal**.

   The object will be flipped about its vertical axis.



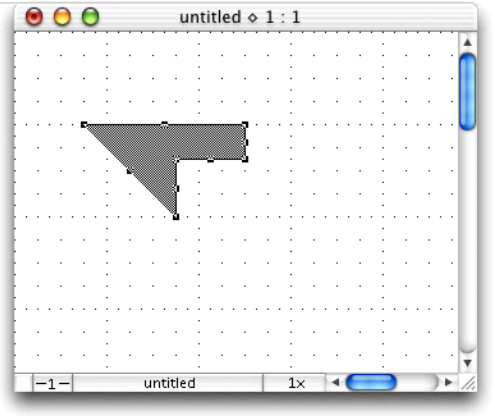
To flip an object vertically

1. Select the object that you want to flip.



2. Open the **Arrange** menu and choose **Flip Vertical**.

   The object will be flipped about its horizontal axis.

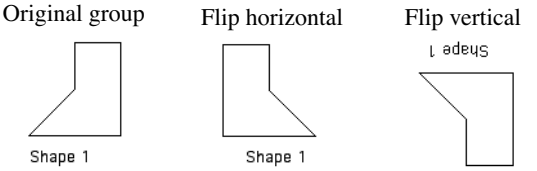


Flipping text

Text is not flipped in the same way as objects, as often it does not make sense to produce a mirror image of text. However you may well want to flip a group that includes text, and have the text shown in its correct position and orientation in relation to the objects in the group. If you do want to produce a mirror image of text, use the **Mirror** text style *(see Define attributes for text on page 4-9)*.

- **Flip horizontal**: The position of the text in the group is flipped, but the text remains at the same orientation.

- **Flip vertical**: The position of the text in the group is flipped, and the text is rotated through 180°.



◆ Lock and Unlock

You may sometimes want to make sure that objects on your drawing are not moved or changed by mistake. To do this you can use MacDraft's **Lock** feature to make sure certain objects remain unchanged.

Locking and unlocking objects

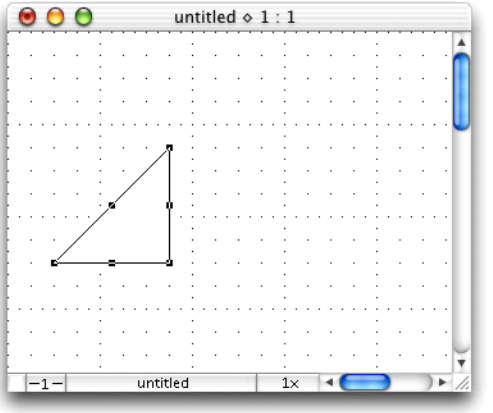
Locking objects

Locked objects on the drawing cannot be edited, moved, copied, pasted, or deleted. None of MacDraft's functions affect locked objects.

To lock objects

1. Select the objects you want to lock.
2. Open the **Arrange** menu and choose **Lock**.

   The objects will be locked and the edit handles are dimmed to indicate this.



Unlocking objects

You may later realize that you need to edit locked objects. To do this, you must first unlock them.

To unlock objects

1. Select the locked objects you want to unlock.
2. Open the **Arrange** menu and choose **Unlock**.

   The objects will be unlocked and the edit handles will be shown normally to indicate this.

Chapter 6 - Drawing aids

MacDraft offers several useful features that make your drawing tasks much easier: show size, rulers, cursor position indicator, grid snap, angle snap, grid lines, snap to object and line snapping, and document units and scale. This chapter discusses these drawing aids in detail.

◆ Show Size

MacDraft is a precision drawing application designed to help you create detailed drawings. The **Show Size** function makes it easier to draw objects precisely because it provides a continuous display of an object's size as you draw or resize it. It also shows the degree of rotation as you rotate objects.

The units displayed in the **Show Size** palette are determined by the current options chosen in the **Document Scale & Units** dialog *(see Document units and scale on page 6-21)*.

Displaying the Show Size palette

To open the Show Size palette

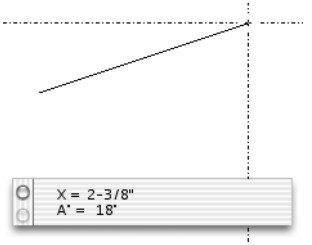
- Choose **Show Size** from the **Window** menu, or
- Choose **Show Size** from the pop-up menu at the bottom left of the document window.

  The **Show Size** palette appears.

Using Show Size with drawing tools

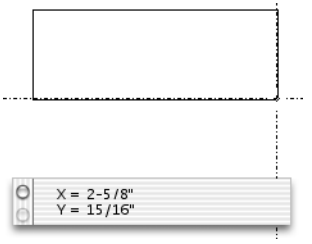
Line tools

When using line tools (including the **Perpendicular**, **Tangent**, **Parallel**, and **Extrude** tools), the **Show Size** palette displays the length (X) of the line and the angle(A°) at which the line is drawn.



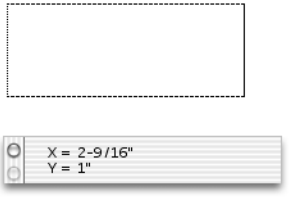
Square-corner rectangles

When drawing square-corner rectangles, the **Show Size** palette displays the width (X) and height(Y) of the rectangle.



Text tool

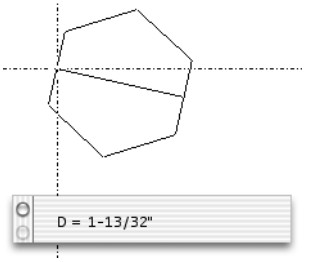
When drawing a rectangle to define the block for paragraph text, the **Show Size** palette displays the width (X) and height(Y) of the rectangle.



Regular polygons

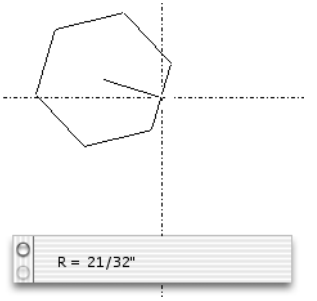
Side to side

When drawing a regular polygon from side to side, the **Show Size** palette displays the side to side diameter (D) of the polygon.



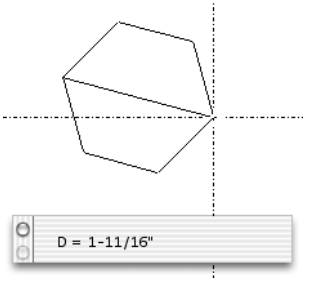
Center to side

When drawing a regular polygon from center to side, the **Show Size** palette displays the center to side radius (R) of the polygon.



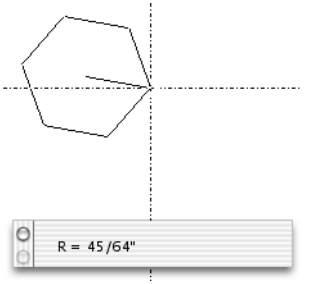
Vertex to vertex

When drawing a regular polygon from vertex to vertex, the **Show Size** palette displays the vertex to vertex diameter (D) of the polygon.



Center to vertex

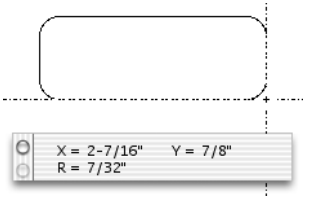
When drawing a regular polygon from center to vertex, the **Show Size** palette displays the center to vertex radius (R) of the polygon.



Rounded-corner rectangles

Proportional- and constant-corner rectangles

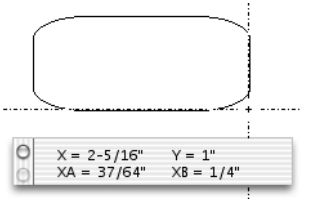
When drawing a proportional- or constant-corner rectangle, the **Show Size** palette displays the height(Y) and width(X) of the rectangle, and the radius(R) of the corners.



Elliptical-corner rectangles

When drawing a proportional- or constant-corner rectangle, the Show Size palette displays the height(Y) and width(X) of the rectangle, and the radius(R) of the corners.

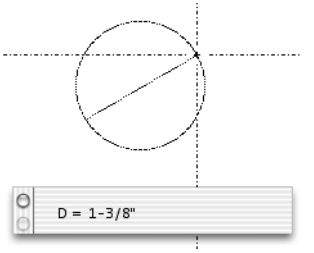
When drawing an elliptical-corner rectangle, the **Show Size** palette displays the height (Y) and width(X) of the rectangle, and the major and minor radii of the arcs on the corners.



Circles and ellipses

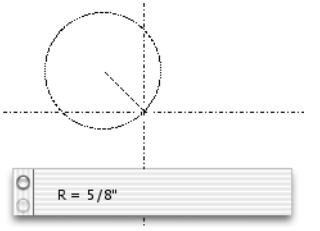
Circles by diameter

When drawing a circle by diameter, the **Show Size** palette displays the diameter (D) of the circle.



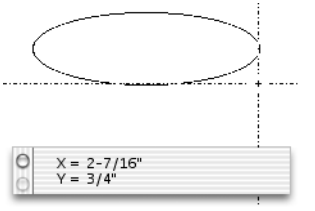
Circle by radius

When drawing a circle by radius, the **Show Size** palette displays the radius (R) of the circle.



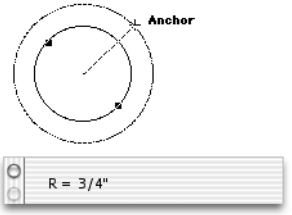
Ellipses

When drawing an ellipse, the **Show Size** palette displays the width(X) and height (Y) diameters of the ellipse.



Concentric circles

When drawing a concentric circle, the **Show Size** palette displays the radius (R) of the circle.

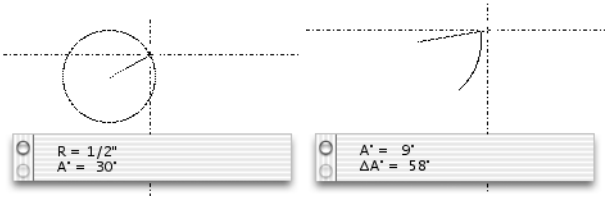


Arcs

By radius

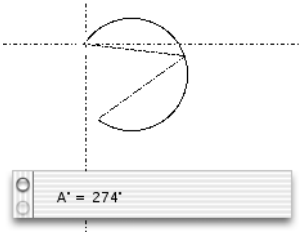
As you drag to create the radius of an arc, the **Show Size** palette displays the length of the radius(R) and the starting angle(A˚). The starting angle is the angle between the line attached to the cursor and the X-axis.

Once you release the mouse button and move the mouse to create the arc, the **Show Size** palette changes to display: the difference between the starting angle and the ending angle of the arc, i.e., the actual number of degrees through which the arc passes(ΔA˚); the angle between the ending angle (shown on-screen by the line attached to the cursor) and the X-axis (A˚).



Arcs by three points

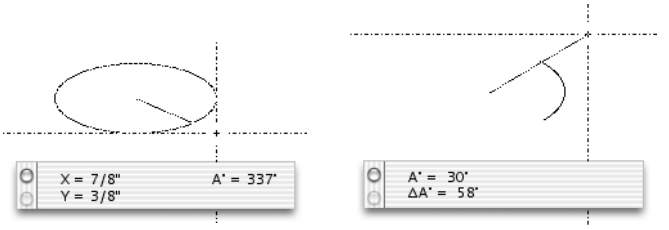
As you create an arc by three points, the **Show Size** palette does not become active until you are moving from the second to the third point in the arc. At that time, it shows the entire arc angle (A°).



Elliptical arcs

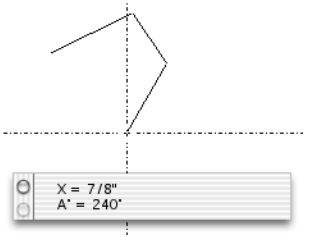
When you start drawing an elliptical arc, the **Show Size** palette displays the height(Y) and width(X) of the ellipse used to define the size of the arc. It also shows you the starting angle (A˚), which is the angle between the line attached to the cursor and the X-axis.

When you finish defining the size and the starting angle of the arc, the window shows you: the difference between the starting angle and the ending angle, i.e. the actual number of degrees through which the arc passes(ΔA˚); the angle between the ending angle (shown on-screen by the line attached to the cursor) and the X-axis (A˚).



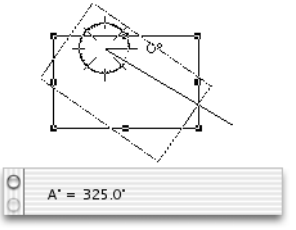
Irregular polygons

When using **irregular polygon** or **polyline** tools (including the double-line polygon or polyline tools), the **Show Size** palette displays the length (X) of the line and the angle(A°) of the line, for each side of the polygon as it is drawn.



Using Show Size with rotation

When rotating an object, the **Show Size** palette displays how much you have rotated the object(A°).



Angles of rotation range from zero to 360 degrees, moving counterclockwise from a rightward-pointing or "due East" orientation.

You can rotate objects in degrees, minutes and seconds, or in degrees and decimal fractions *(see Rotating objects on page 5-32)*.

Hiding the Show Size palette

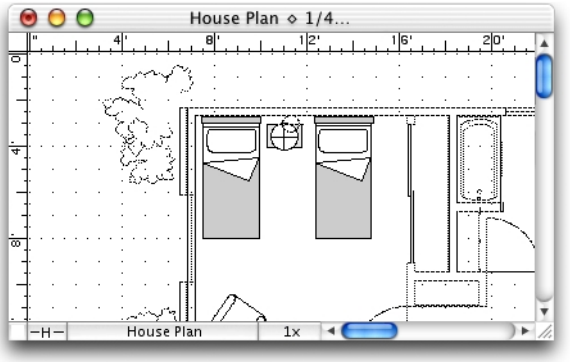
To remove the Show Size palette from the screen

- Click the palette's close box, or
- Choose **Show Size** from the **Palette** submenu in the **View** menu, or
- Choose **Show Size** from the pop-up menu at the bottom left of the document window.

The **Show Size** palette disappears, and there will no longer be a checkmark against its name in the **Window** menu.

◆ Rulers

Rulers are used as drawing aids to help you position objects in precise locations on your drawing. Rulers appear along the top and on the left side of the drawing window.



The displayed rulers reflect the current position of the window during scrolling, and their scale reflects the current magnification level.

Displaying rulers

To display rulers

- Open the **Layout** menu and choose **Show Rulers**.

The rulers will be displayed, and a checkmark appears by the **Show Rulers** command in the **Layout** menu.

Types of rulers

MacDraft offers two types of rulers: standard and scale.

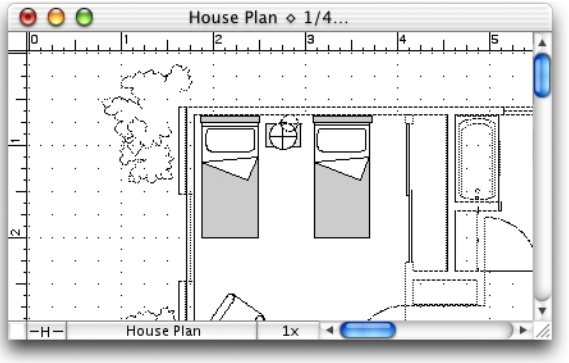
Standard rulers

Standard rulers show the actual size of the drawing in the units specified in the **Set Scale** and **Units** dialog *(see Units on page 6-22)*.

To display standard rulers (if Show Rulers is checked)

- Open the **Layout** menu and choose **Standard Rulers**.

  The rulers show the actual size of the drawing, in this example, in inches.



Scale rulers

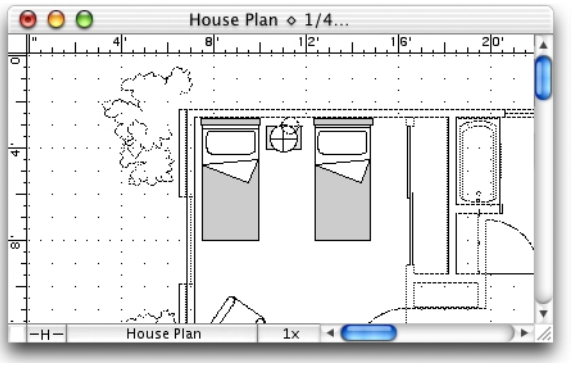
Scale rulers reflect the current drawing scale of your document. For example, on a 1/4" = 1' scale, the major ruler divisions will be in increments of four: 4 ft., 8 ft., and so on *(see Document units and scale on page 6-21)*.

To display scale rulers (if Show Rulers is active)

- Open the **Layout** menu and choose **Scale Rulers**.

  The rulers show the drawing measurements according to the scale specified.

In this example, the scale is 1/4" = 1' and the size units are set at fractional feet and inches *(see Units on page 6-22)*.



Setting the rulers' zero points

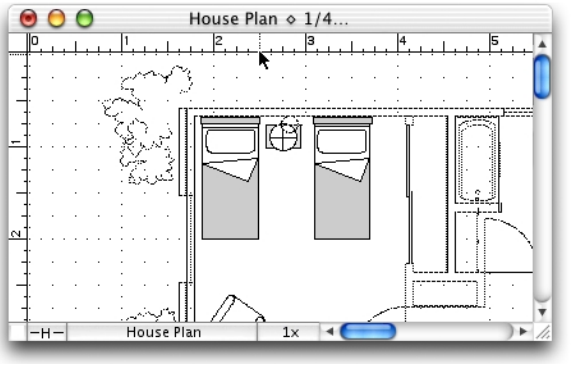
There may be occasions when you want to change the zero point of the rulers from the upper left corner of your drawing to some other convenient point on the drawing. For instance, you may want to set the zero point of the rulers to one edge of an object so that you can position other objects relative to that particular point. For this reason, MacDraft allows you to change the zero points of the rulers.

When you change the zero point of one or both of the rulers, the positioning of the new zero point is dependent upon the grid snap *(see Using the grid snap function on page 6-15)*. You can change the zero point of either the top or left ruler independently, or change the zero points of both rulers at the same time.

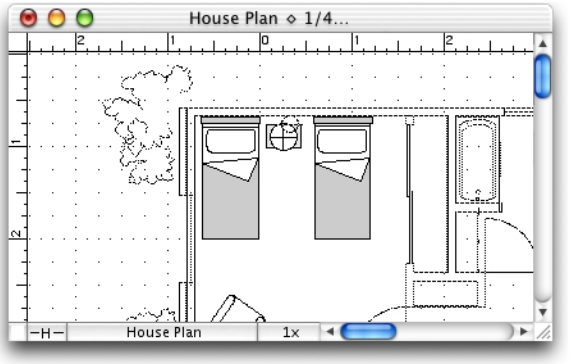
Setting the zero points of the rulers independently

To change the zero point of either the top or the left edge ruler independently of the other

1. Position the tip of the pointer on either ruler, at the place you want the new zero point for that ruler to be, and click.



The zero point is repositioned as specified.



To change the zero point of either the top or the left edge ruler back to the upper left corner

1. Hold down the **Option** key.
2. Position the tip of the pointer on the ruler you want to change and click.

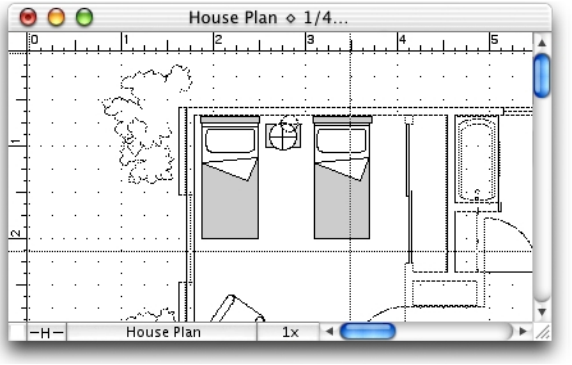
   The zero point for that ruler reverts to the upper left corner, while the other ruler's zero point stays unchanged.

Setting the zero points of both rulers simultaneously

You can change the zero points of both rulers simultaneously by using the cursor. In this way, you can easily align the zero points of both rulers to a particular point on your drawing.

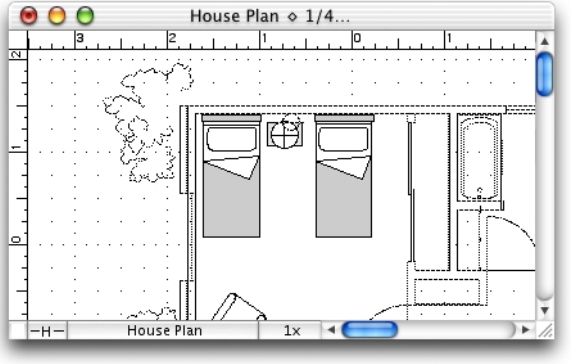
To set the zero points for both rulers at the same time

1. Position the tip of the pointer in the box where the two rulers cross at the upper left corner of the drawing window.
2. Press and hold down the mouse button.
3. Drag diagonally downward and to the right until the cursor is positioned on the new zero point you want for both rulers.



4. Release the mouse button.

   The zero points of both rulers are repositioned as specified.



To reset the zero points of both rulers to the upper left corner of your drawing

- Click the small box where the two rulers cross at the upper left corner of the drawing window.

  The zero points will be reset.

◆ Cursor position indicator

The cursor position indicator shows the position of the cursor (that is, the crosshair cursor, the arrow pointer, and the various other cursor icons) on your drawing. This allows you to determine accurately the starting and ending points of an object, and also gives you the ability to discover the precise position of any point on your drawing.

The cursor position indicator shows the absolute position of the cursor in relation to the zero origin. The zero origin of the cursor position (X=0, Y=0) is determined by the zero points on the rulers. Therefore, if you move the zero points on the rulers, the zero origin of the cursor position indicator also changes. This feature is very useful, especially when you want to make measurements relative to a specific point on your drawing *(see Setting the rulers' zero points on page 6-10)*.

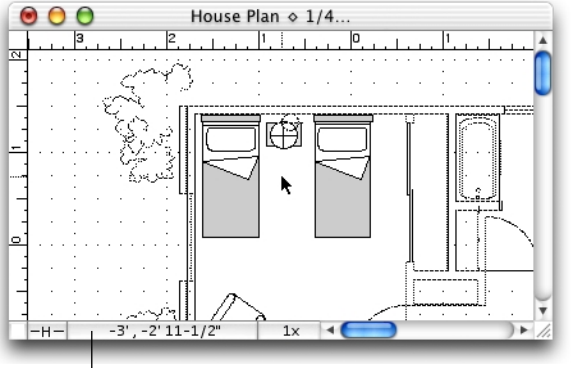
The cursor position indicator reflects the drawing environment. The X/Y position of the cursor's position is displayed according to the scale of the drawing and in the size units that are currently selected *(see Document units and scale on page 6-21)*.

Activating the cursor position indicator

To activate the cursor position indicator

- Open the **View** menu and choose **Show Cursor Position**.

  The X/Y position of the cursor will be shown on the bottom left edge of the document window as shown below.



Cursor position

As you move the cursor around on your drawing, the cursor position indicator shows the cursor's X/Y position relative to the zero points of the rulers.

NOTE: If you click the cursor position indicator, the **Palette** menu appears providing an additional method of opening/closing palettes.

Hiding the cursor position indicator

To hide the cursor position indicator

- Open the **View** menu and choose **Show Cursor Position**.

  The cursor position disappears, and the checkmark will be removed from the **Show Cursor Position** command in the **View** menu.

◆ Positioning objects

MacDraft provides several features to aid in the precise positioning of objects: grid snap, angle snap, grid lines, snap to object and line snapping. The grid snap and angle snap features allow you to superimpose an invisible network of "magnets" over your drawing so that objects can be drawn, moved, or resized precisely and easily. Grid lines provide visual guidelines that assist you in drawing. Snap to object allows you to position one object directly next to another, and line snapping allows you to snap the end of lines to a specified point on another object.

For more information about drawing objects, *see Chapter 2 - Creating and editing objects on page 2-1*.

Grid snap

You should set the grid snap to the smallest length you need in or between objects in your drawing. For example, if you wanted to draw a line that is 5 3/4 inches long, you should set the grid snap to one-quarter inch. With the grid snap set this way, the cursor will snap to every quarter-inch increment as you draw the line.

Values shown in the **Set Grid** submenu will be always given in the current scale and unit system *(see Document units and scale on page 6-21)*.

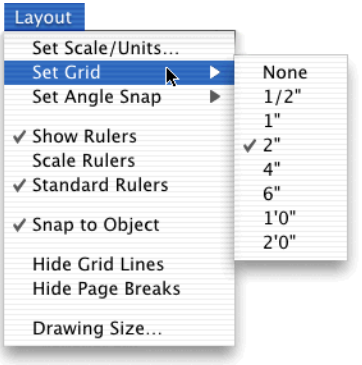
Setting the grid snap

Before you set the grid snap, you should choose a scale to be used for your drawing. The grid snap setting should be appropriate for that scale *(see Document units and scale on page 6-21)*.

To choose a new grid snap

1. Open the **Layout** menu and drag until **Set Grid** is highlighted.

   The **Set Grid** submenu appears. A checkmark indicates the document's current grid snap.



   The **Set Grid** submenu shows the grid spacing for the current scale. Each scale has its own set of possible grid spacings. For example, a scale of 1:1 (1"=1") in fractional units will have increments as small as 1/64th of an inch and as large as 1/4 of an inch.

2. Holding down the mouse button, drag through the submenu until the grid snap you want is highlighted, and release the mouse button.

   The grid snap remains as set until it is changed again.

Using the grid snap function

When a grid snap other than **None** is chosen, any object you draw or move will automatically be positioned to the nearest grid snap position. You will not be able to begin or end a draw or move action between the grid snap positions. For example, if you were moving an object with the grid spacing set at 1/4 inch, the object would move in quarter-inch increments. For information about the affects of grid snap on specific objects *see Chapter 2 - Creating and editing objects on page 2-1*.

You can activate or deactivate the grid snap to suit your needs at the time.

Turning the grid snap off and on

At times you may want to turn off the grid snap when you draw or move objects.

To turn off grid snap

1. Open the **Layout** menu and drag until **Set Grid** is highlighted.

The **Set Grid** submenu appears.

2. Choose **None** to turn off the grid snap.

To turn on grid snap

1. Open the **Layout** menu and drag until **Set Grid** is highlighted.

   The **Set Grid** submenu appears.

2. Choose the desired grid snap.

Releasing objects from the grid snap

You can temporarily suspend the grid snap function by holding down the **Command** key as you move or draw an object. This technique allows you to position an object on a location that does not fall at a grid snap point.

WARNING: If you turn the grid snap off while drawing or moving an object, that object will be removed from the grid. This means that it will be difficult for you to draw lines or borders tangential to the object, or align the object with other objects.

Snapping edges and lines along their lengths

As you draw an object with grid snap on, its edges get longer by small increments as they jump to the closest grid snap point. Rather than a line or edge snapping to the grid, hold down the **Option** key as you draw and the line or edge length will snap to increments of the current grid snap. For example, if the current grid snap is 1/4" and you draw a 30˚ line while holding down the **Option** key, the line length will grow in quarter-inch increments.

Angle snap

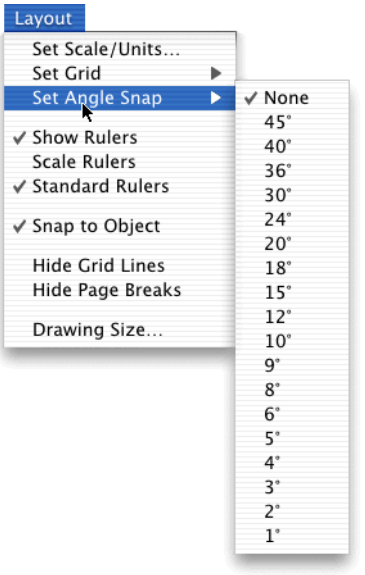
You should set the angle snap to the angle you need in or between objects in your drawing. For example, if you wanted to draw a line at an angle of 14 °, you should set the angle snap to 2°. With the angle snap set this way, the cursor will snap to two degree increment as you draw the line.

Setting the angle snap

To choose a new angle snap

1. Open the **Layout** menu and drag until **Set Angle Snap** is highlighted.

The **Set Angle Snap** submenu appears. A checkmark indicates the document's current angle snap.



The **Set Angle Snap** submenu shows the possible angle choices.

2. Choose the angle snap you want.

   The angle snap remains as set until it is changed again.

Using the angle snap function

When an angle snap other than **None** is chosen, objects you draw or edit (that angle is relevant to) will be positioned automatically to the nearest angle snap position. You will not be able to draw lines between the angle snap positions. For information about the affects of angle snap on specific objects *see Chapter 2 - Creating and editing objects on page 2-1*.

You can activate or deactivate the angle snap to suit your needs at the time.

Turning the angle snap off and on

At times you may want to turn off the angle snap when you draw objects.

To turn off angle snap

1. Open the **Layout** menu and drag until **Set Angle Snap** is highlighted.

   The **Set Angle Snap** submenu appears.

2. Choose **None** to turn off the angle snap.

To turn on angle snap

1. Open the **Layout** menu and drag until **Set Angle Snap** is highlighted.

   The **Set Angle Snap** submenu appears.

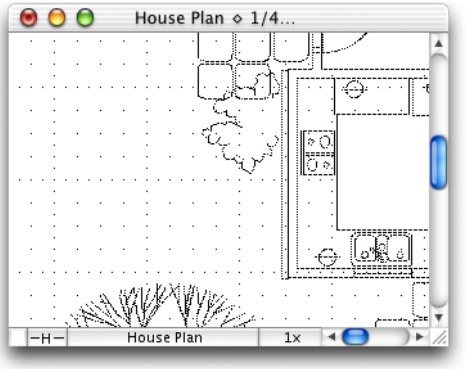
2. Choose the angle snap you want.

Releasing objects from the angle snap

You can temporarily suspend the angle snap function by holding down the **Shift** key as you draw an object. This technique allows you to draw an object at an angle that is not an angle snap line.

Grid lines

Grid lines provide visual guidelines that assist you in drawing.



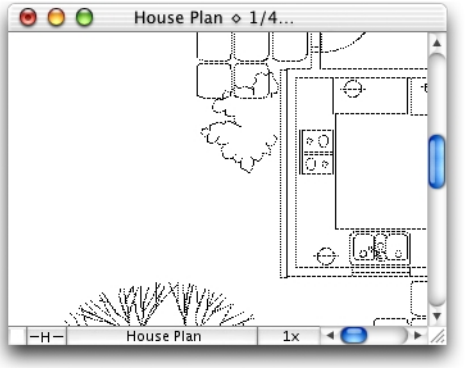
Hide/show the grid lines

The grid lines are shown by default, but you can hide them if you wish.

To hide grid lines

- Open the **Layout** menu and drag until **Hide Grid Lines** is highlighted.

The grid lines are hidden and a checkmark appears by **Hide Grid Lines** in the **Layout** menu.



To show grid lines

- Open the **Layout** menu and drag until **Hide Grid Lines** is highlighted.

  The grid lines will be shown again, and the checkmark will be removed from beside **Hide Grid Lines** in the **Layout** menu.

Snap to object

The snap to object feature allows you to position one object directly next to another. When snap to object is enabled, the cursor will snap to the vertices of existing objects. For example, you could draw a line and make one of its end points coincide precisely with the corner of a rectangle.

By default, the **Snap to Object** function is active when you open a new MacDraft document.

To turn off snap to object

- Open the **Layout** menu and choose **Snap to Object**.

  The checkmark will be removed from the command, and snap to object will be turned off.

To turn on snap to object

- Open the **Layout** menu and choose **Snap to Object**.

  Snap to object will be turned on, and a checkmark appears next to its name in the **Layout** menu.

Line snapping

MacDraft is able to snap the final point of a line to the mid point or end point of a straight edge or circular arc, or to the center of an object. This is done by holding down the **M**, **E** or **C** key while drawing a line.

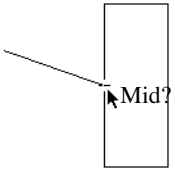
NOTE: These snap keys can be used when drawing unconstrained lines *(see Drawing basic lines on page 2-4)*, including lines drawn with the **Mid** point, **End** point and **Center** point line tools and **Tangent** from line tool *(see Drawing special lines on page 2-46)*.

The mid point and end point snap keys, **M** and **E**, can be used when drawing a line to straight edged objects (lines, polylines, polygons and square-corner rectangles); any of these objects can be part of a group. The end point key, **E**, can also be used to snap the end of a line to the end of a circular arc. The center key, **C**, can be used to snap the end of a line to the center of any closed shape, including shapes within groups, but not with text objects, dimension objects, bitmap or pixel objects.

Drawing a line to the mid point of an existing edge, line or arc

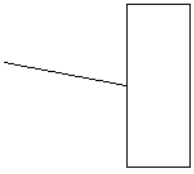
To draw a line to the mid point of an existing edge or line

1. Choose a line tool from the **Tool** palette and begin drawing the line *(see Drawing unconstrained lines on page 2-5)*.
2. Press and hold down the "**M**" key. The cursor will read "Mid?".



3. Still holding down the "**M**" key, bring the cursor near to the edge or line you wish to snap the end point of the line to.

   The line will snap to the mid point of the existing edge or line that is near the cursor.
4. Finish the line by releasing the mouse button.



The line appears on the drawing between the starting point and the mid point of the specified edge or line. The cursor reverts to the line tool, allowing another line to be drawn.

A line can be drawn to an end point of an existing edge, line, arc or center of an object in the same way, by holding down the "**E**" or "**C**" key instead of the "**M**" key.

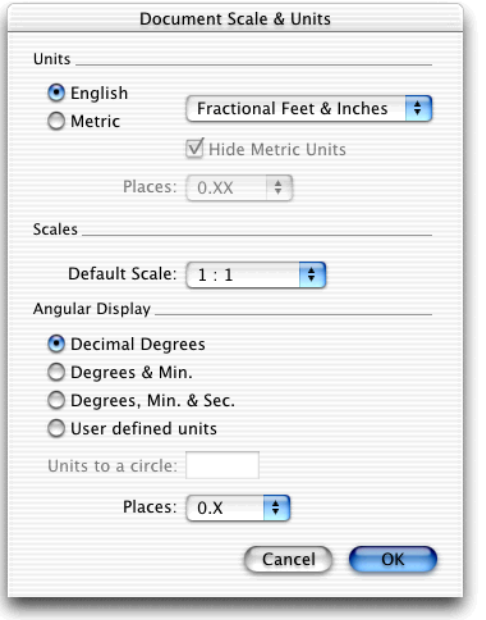
◆ Document units and scale

When setting up the drawing environment, you can choose the units in which you want to work. The units chosen affect the **Show Size** palette, the grid lines and grid snap, the scale options and rulers, dimension and area calculations and the units of rotation. The unit options can be set in the **Document Scale and Units** dialog.

Displaying the Document Scale and Units dialog

1. Open the **Layout** menu and choose **Set Scale/Units**.

   The **Document Scale & Units** dialog appears.



2. Make any changes as discussed in the next section, and click the **OK** button to close the dialog and apply the changes.

Units

English or metric units

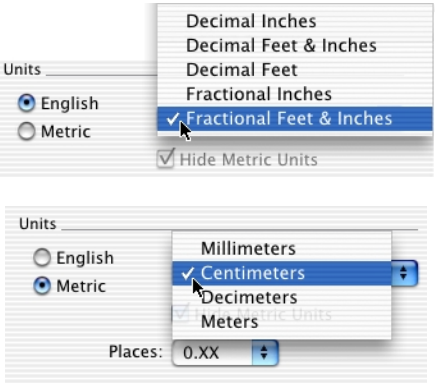
To choose the units

- Click the radio button beside **English** or **Metric**, depending on the type of units you want to use in the document.

Unit size

To select the unit size

1. Click the unit size pop-up menu.



2. Choose the unit size option you want. Your choice appears on the button.

   The numerical values shown on the drawing reflect the chosen units.

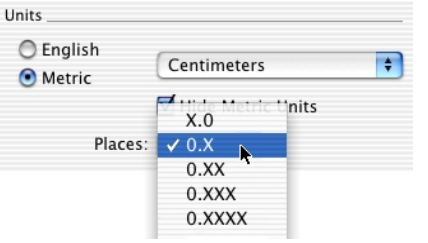
Decimal places

If you chose a metric or decimal English unit size, you can also specify the number of decimal places that you want to be displayed in numerical values. You can choose either one, two, three, or four places behind the decimal point, as well “None” (no places) to show integers only. Values will be rounded off to the selected number of decimal places. The default number of places behind the decimal is two. In larger scales, the number of decimal places allowed for display may be reduced automatically.

To change the number of decimal places

1. In the **Document Scale and Units** dialog click the **Places** button.

The decimal places pop-up menu appears.



2. Choose the desired number of decimal places.

   Once you have made your choice and closed the dialog, all numerical values will be rounded off to the selected number of decimal places.

Hide metric units

In some metric drawings, showing the units may be unnecessary. MacDraft allows you to hide the unit names so that areas and dimensions are shown in numerals only.

To hide metric units

1. In the **Document Scale & Units** dialog, click the **Metric units** checkbox. The **Hide Metric Units** check button becomes available.
2. Click the **Hide Metric Units** checkbox.

   The option will be on, and the unit names will not be shown with the drawing's dimension line and area values.

Scales

Before starting a drawing, you need to determine the sizes of the objects, and the paper you are going to use. For large drawings it is impractical to draw objects at their actual sizes; it is necessary to reduce them, yet still maintain their proper proportions.

A scale accomplishes this. A scale is the ratio of the object's size on the drawing to its size in the real world. For example, if you choose a scale ratio of one inch equals ten feet (1" = 10'), a line drawn ten inches long on a drawing would represent a 100-foot line in the real world. To avoid having to calculate the size of each object to the scale of the drawing, use the **Show Size** function *(see Show Size on page 6-1)*.

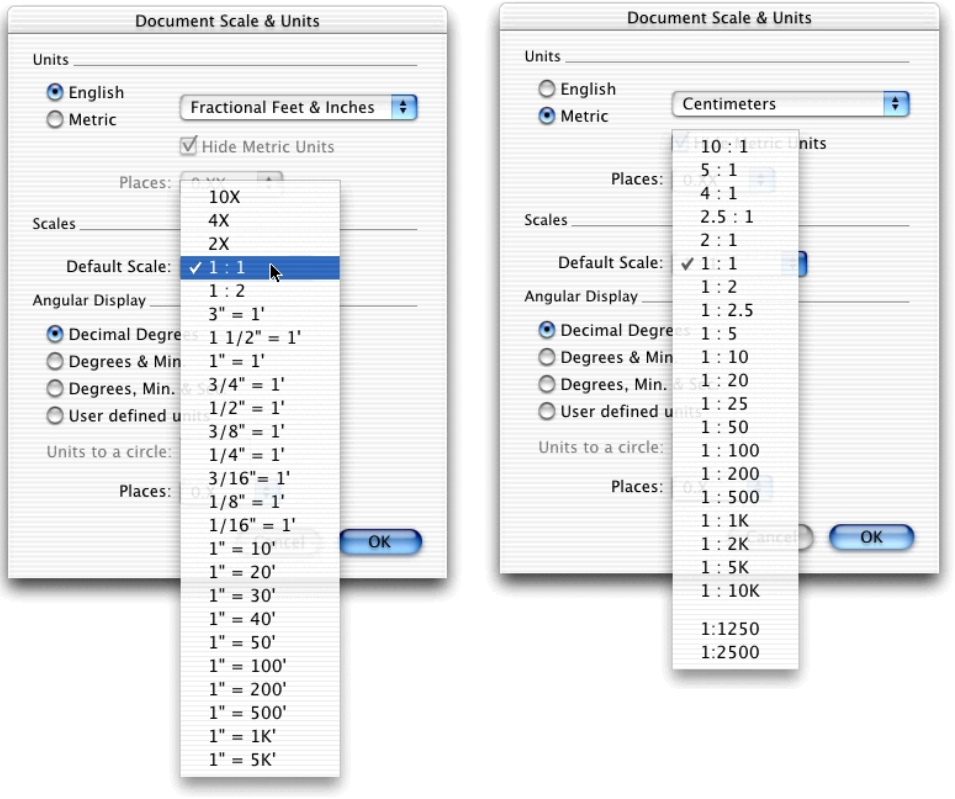
MacDraft offers 25 different Feet & Inches scales and 22 Metric scales for your use. This versatility allows you to create a drawing at one scale, and then have it automatically converted to a different scale.

You can also have multiple drawings, all at different scales, displayed on the screen at the same time. This makes it easy for you to copy and paste between drawings. When you paste an object into a drawing with a different scale, the object automatically adjusts in size to conform to the scale of the new drawing *(see Cut/copy and paste on page 5-6)*. Alternatively you can use the **Paste Unscaled** command to paste an object into another document at its original size *(see Paste unscaled on page 5-8)*.

Specifying the scale

To specify the default scale

1. In the **Document Scale & Units** dialog, click the **Default Scale** button to open the **Scale** pop-up menu. The options available depend on the units chosen.



2. Choose the scale you want.

   The new scale will be shown in the **Default Scale** button.

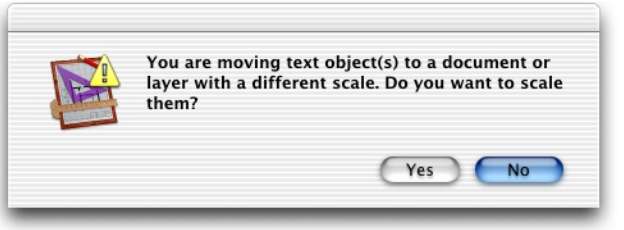
3. Click the **OK** button to close the dialog and apply the changes.

   The dialog disappears and your drawing now reflects the new scale

If you create a drawing at one scale, and then decide later to change to a new scale, simply follow the steps outlined above to choose a new scale. In most cases the appearance of the objects on the drawing will either grow or shrink depending on the new scale chosen, however if there is text on the document you can choose if you want the text to be scaled or not.

Scaling text

If you change the scale of a document that contains text, an alert appears asking if you want to scale the text or not.

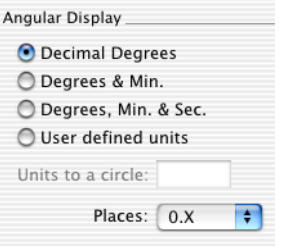


- Click **Yes** if you want the text to be resized according to the new scale, or
- Click **No** if you wish the text to be shown at the size it currently is on screen.

Angular display

The **Angular Display** choices let you specify the units in which you want rotation and angular dimensions to be shown and calculated.

You can choose to display the rotation units in decimal degrees (e.g. 63.58˚), in degrees and minutes (e.g. 51˚ 14'), in degrees, minutes and seconds (e.g. 47˚ 22' 30"), or in user defined units.



See *Angular dimension objects on page 4-22* and *Rotating objects on page 5-32* for information on using angular dimensions and rotating objects.

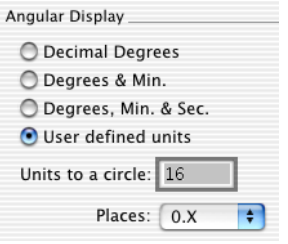
Setting the rotation units

To specify the rotation units

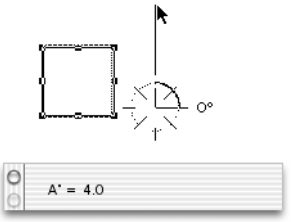
- In the **Document Scale & Units** dialog, click one of the radio buttons in the **Angular Display** section, depending on the type of units you want to use in the document.

User defined units

If you click **User defined units**, you can specify the number of units to a circle by typing a value in the **Units to a circle** field.



With a value of 16 units to a circle, at one decimal place, 90° will be displayed as 4.0.



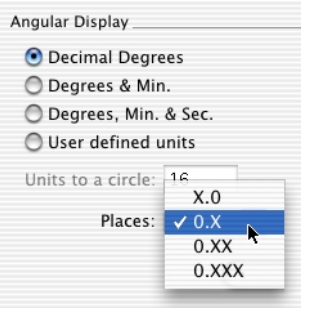
Decimal places

If you choose decimal degrees or user defined units for the units of angular display, you can also select the number of decimal places you would like to be displayed for angular values.

To change the number of decimal places

1. Click the **Places** button.

The decimal places pop-up menu appears.



2. Choose the desired number of decimal places.

   Once you have made your choice and closed the dialog, all angular values will be rounded off to the selected number of decimal places.

Chapter 7 - Symbol libraries

◆ Symbol libraries

Symbol libraries give you the ability to save, catalog, and reuse standard images or symbols. Previously created symbols can be taken out of symbol libraries and placed directly into your drawings. You can also create your own electrical and architectural symbols or commonly used images; these can then be stored in easy-to-access libraries, and inserted into drawings as required. The symbols in the libraries retain all their drawing attributes, such as their scale, and rotation.

Symbol libraries available

Microspot offers four sets of **Microspot Symbol Libraries**. These contain graphic images ready for use in MacDraft documents, or other applications, and provide you with many of the elements you need to complete or embellish your drawings quickly and easily.

Each component has been professionally drawn, using vectors rather than bitmaps, providing you with the highest possible quality of printing. Once placed in a drawing, a symbol can easily be edited to suit your own needs.

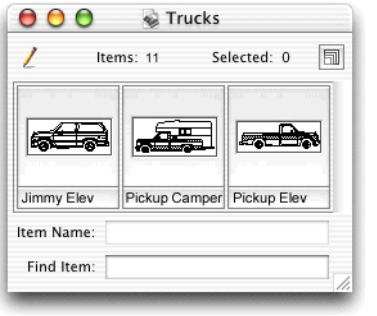
Sample library

A sample Media Assistant Lite library 'MacDraft Libraries Sampler' is included with MacDraft. To use any of the items in the library, simply drag and drop them into your MacDraft drawing.

Library contents

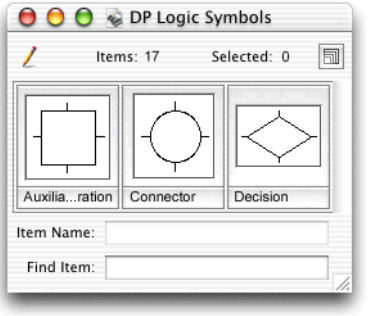
Graphics Volume 1

Over 200 images of people, cars, trucks, trees and other landscape elements. This set is ideal for architects, illustrators and designers as well as for general graphics and presentations.



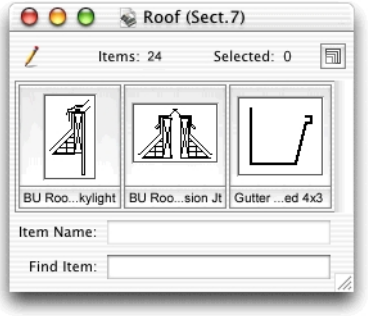
Graphics Volume 2

Contains over 200 graphic elements to help you create professional-looking organizational charts, design computer logic diagrams, embellish business charts, or add character to your correspondence and presentations.



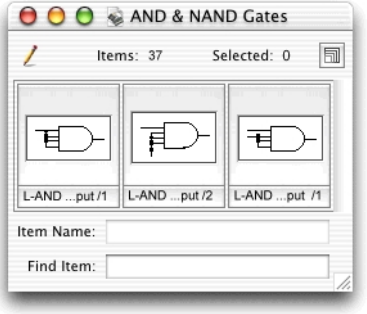
Architecture

A comprehensive set of over 1100 commonly used symbols for the creation of residential and light commercial construction drawings. These libraries provides architects, engineers and constructors with symbols that address the 16 standard specification formats used in construction drawings.



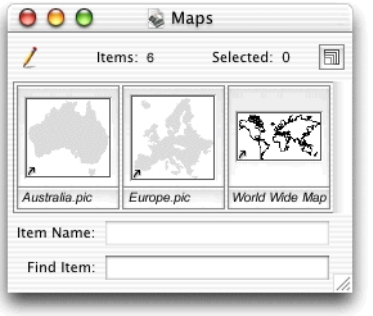
Electronic Schematic

Incorporates over two hundred symbols for a wide array of electronic components and elements used to create schematic diagrams. Everything from vacuum tubes to transistors and logic gate symbols is included.



Volume 5

Over 200 images including computers and peripherals; road signs and lights; landscape elements; stars; signs to write on; maps; furniture and installations.



Purchasing symbol libraries

Contact your local supplier, or Microspot to purchase drafting symbol libraries. For contact details *(see Registration information on page 1-3)*.

Microspot Media Assistant Lite

MacDraft Symbol Libraries are currently provided in Microspot Media Assistant catalogs. The Media Assistant Lite application is provided on your MacDraft CD and its features are discussed in depth in the Media Assistant Lite on-line manual. You can open the manual from the Media Assistant Lite application's **Help** menu. A very brief description of using the MacDraft symbol libraries is provided here.

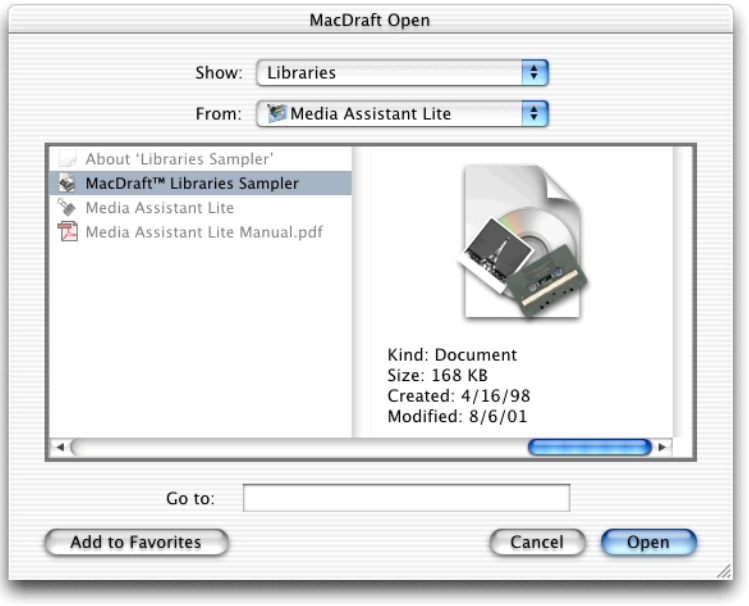
Open a catalog from within Microspot MacDraft

Media Assistant catalogs can be opened directly from within the MacDraft application.

To open a catalog

1. Open the **File** menu and select **Open**.

The standard open dialog appears.



2. Choose **Libraries** from the **Show** pop-up menu at the top of the dialog.
3. Locate the Media Assistant catalog you wish to use and click the **Open** button.

   Media Assistant Lite will be launched and the selected catalog will appear.

Adding items to a catalog

If you draw an object or group of objects in your MacDraft document, and wish to store that object or group for use in other documents, it is easy to do so using one of the following methods.

Using drag and drop

To drag and drop an object into an open catalog

1. Hold down the **Command** and **Shift** keys.
2. Click the object or group in your MacDraft drawing.
3. Still holding down the **Command** and **Shift** keys, drag the selection over the catalog window.
4. Release the mouse button and the **Command** and **Shift** keys.

   A copy of the object or group will be stored in the catalog.

Using Cut/Copy and Paste

To Cut/Copy and Paste an object into an open catalog

1. Click the object or group in your MacDraft drawing.
2. Choose **Cut** or **Copy** from the **Edit** menu.
3. Click the **Media Assistant Lite** catalog you wish to store the object in.
4. Choose **Paste** from the **Edit** menu.

   A copy of the object or group will be stored in the catalog.

Retrieving data

When you want to use a symbol or graphic stored in a catalog in a MacDraft document, you can retrieve items for use in the following ways:

Using drag and drop

To drag and drop an item out of a catalog into an open MacDraft document

1. Click the required item in the catalog to select it.
2. Holding down the mouse button, drag the item over the MacDraft document window.
3. Release the mouse button.

   A copy of the item will be placed in the MacDraft document.

Using Cut/Copy and Paste

To Cut/Copy and Paste an item from a catalog into an open MacDraft document

1. Click the required item in the catalog to select it.

2. Choose **Cut** or **Copy** from the **Edit** menu.
3. Click the MacDraft document you wish to place the item in.
4. Choose **Paste** from the **Edit** menu.

   The item or a copy of it will be placed in the MacDraft document.

NOTE: Hold down the **Shift** key to choose **Paste Unscaled** from the MacDraft **Edit** menu *(see Paste unscaled on page 5-8)*.

Saving catalogs

Media Assistant Lite has an auto save feature that automatically saves catalogs each time a new item is added or items are changed, so there is no need to save the catalogs.

Chapter 8 - Drawing layout and printing

◆ Drawing layout

Using MacDraft Personal Edition, you can create drawings of a limited size. If you wish to produce larger drawings, you must upgrade the Microspot MacDraft or Microspot PC Draft application. Contact your local supplier or Microspot for details *(see Upgrade information on page 1-4)*.You define the desired drawing size by using **Page Setup** options in conjunction with the **Drawing Size** feature. The **Page Setup** dialog, opened by choosing the **Page Setup** command in the **File** menu, determines the size of the individual pages that make up the overall drawing area. The **Drawing Size** feature in the **Layout** menu, has a graphical interface that lets you select the number of pages needed to achieve the desired overall size of the drawing.

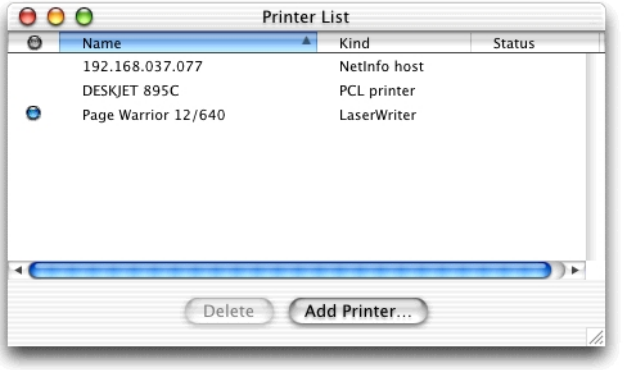
Before you define the overall size of your drawing using the **Drawing Size** feature, you should select the printer to be used, and set the **Page Setup** information for that printer in the **Page Setup** dialog.

Choosing your printer

To choose a printer

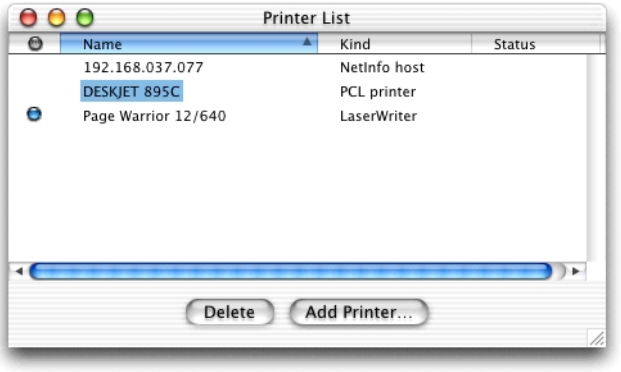
1. Launch the **Print Center** application.

   The **Printer List** window appears listing the available printers.

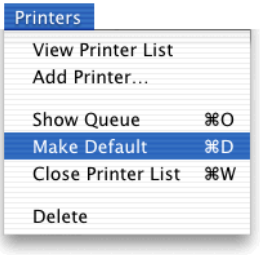


2. Select the printer you want to set as the default printer.

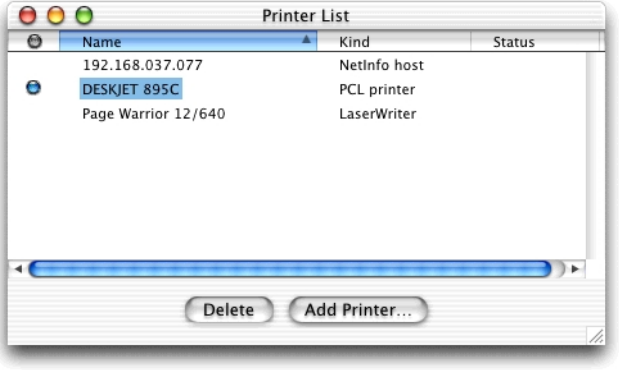
The printer name will be highlighted.



3. Choose **Make Default** from the **Printers** menu.



A mark appears next to the printer name indicating that it is the default printer.

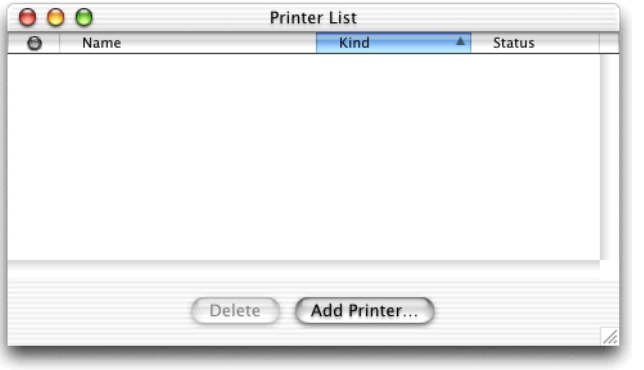


4. If you have changed the selected printer, an alert appears warning you to check your **Page Setup** options.

To add a printer

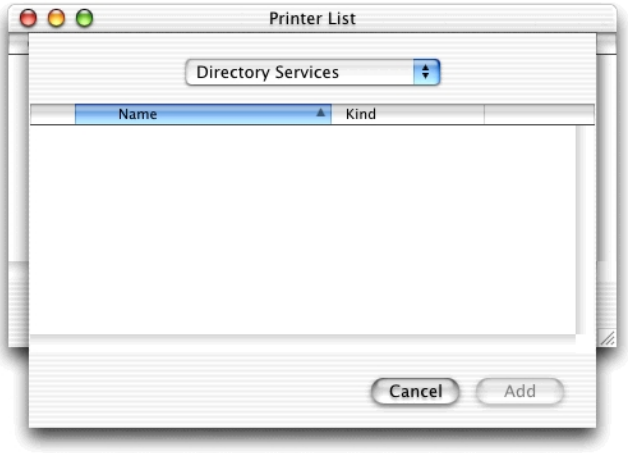
1. Launch **Print Center**.

   The **Printer List** window appears.



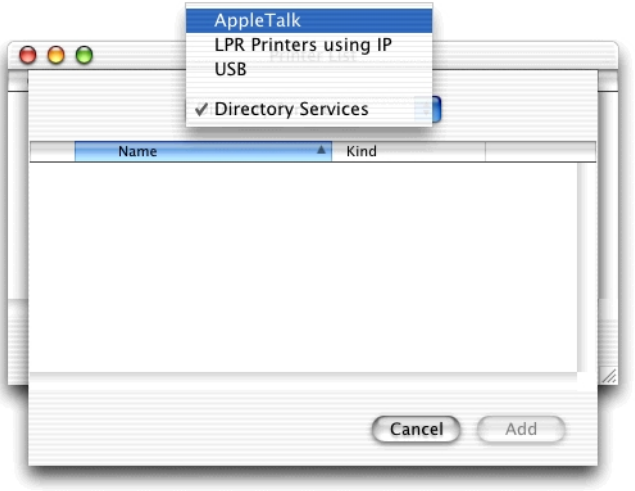
2. Click the **Add Printer** button.

The sheet appears.

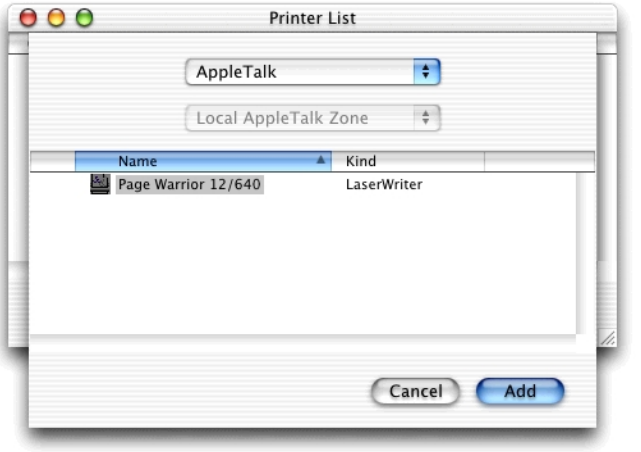


If your printer is connected directly, choose the appropriate setting from the pop-up menu at the top of the dialog.

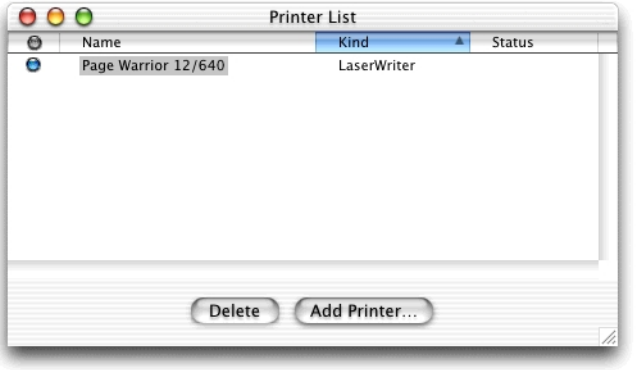
If the printer is connected over the network, choose **Apple Talk** from this pop-up menu.



The connected printer appears in the list and will be highlighted.



3. Click the **Add** button.
4. The printer appears in the **Printer List** dialog and will be set as the default printer.



5. Quit **Print Center**.

NOTE: For further information about choosing your printer, see the documentation provided with your printer/printer driver.

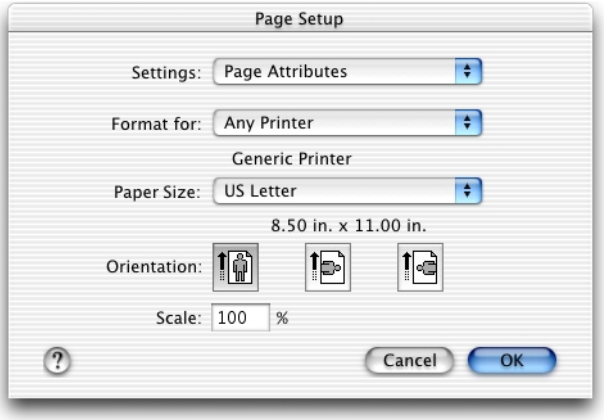
Defining your page setup

The **Page Setup** options allow you to specify how you want your document to appear on the printed page. The **Page Setup** options available will be determined by the printer you selected in the **Print Center** *(see Choosing your printer on page 8-1)*. The **Page Setup** dialog for the LaserWriter® is shown below.

Displaying the Page Setup dialog

- From within MacDraft, open the **File** menu and choose **Page Setup**.

  A **Page Setup** dialog similar to the one below appears.



Page Setup options

Refer to your printer or printer driver documentation for complete details of the **Page Setup** options available. The most important choices: **Paper**, **Orientation** and **Scale** are discussed in the following sections.

When you have finished specifying the **Page Setup** options, click the **OK** button to close the **Page Setup** dialog.

Paper

Selecting the paper size

1. Click the **Paper** pop-up menu to display the paper sizes available for your printer.
2. Select the size of the paper that you will be printing on.

NOTES:
• As MacDraft Personal Edition only allows you to produce drawings of a relatively small size, you may not be able to produce a drawing as large as your paper size.
• As most printers require some margin around the edges of the printed page, you will not be able to print to the full size of the paper. MacDraft will show appropriate page drawing areas (or block sizes) which take into account the required printer margins.

Orientation

Selecting the page orientation

- Click the **Portrait** icon to print objects vertically on the page.
- Click one of the **Landscape** icons to print objects horizontally on the page.

Scale

Selecting the scale

Enter a percentage value into the **Scale** text box to reduce or enlarge the printout of your drawing.

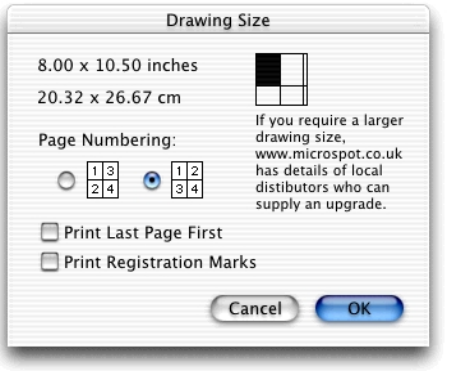
Defining your drawing size

Once you have specified the **Page Setup** options you are ready to define the overall size of the drawing.

To set the size of your drawing

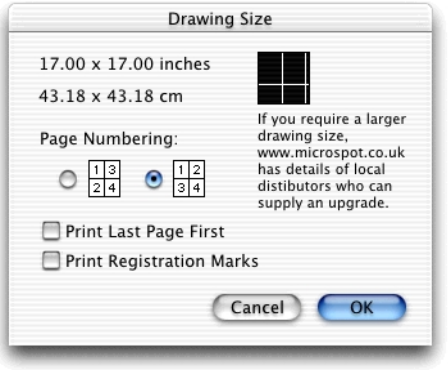
1. Open the **Layout** menu and choose **Drawing Size**.

A dialog appears, displaying the current total drawing size in the form of a block diagram.



The diagram is divided into blocks and represents the maximum drawing size available, each of the blocks representing a single page. The blocks that are darkened indicate the current drawing size.

2. Position the cursor on one of the darkened page blocks.
3. Press and hold down the mouse button.
4. Holding down the mouse button, drag until you have activated the number of page blocks required to make up the drawing size you want, then release the mouse button.

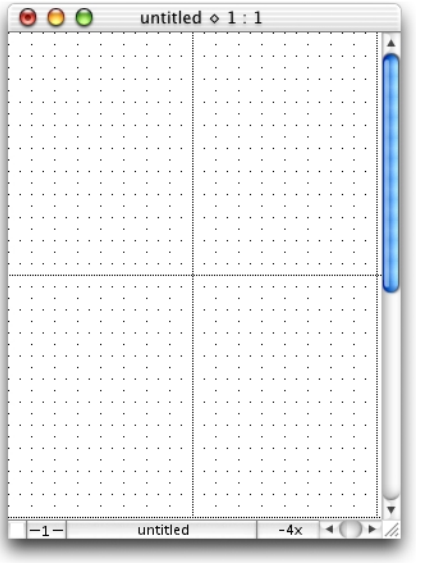


5. Click the **OK** button to close the **Drawing Size** dialog.

NOTE: The MacDraft drawing window generally shows only a portion of the overall drawing. Therefore, when you change the drawing size it may not be noticeable until you zoom out or scroll to another area of the drawing.

Hiding and displaying page breaks

Page breaks are visual aids that can be useful when you create a large drawing. They can help you locate a particular area of the drawing quickly, and they allow you to see if an object happens to fall on the edge of a page, so you can move it if necessary. The page breaks are shown by default.



To hide page breaks

- Open the **Layout** menu and choose **Hide Page Breaks**.

  A checkmark appears against the command in the menu to show that it is active.

To display page breaks

- Open the **Layout** menu and choose **Hide Page Breaks** again.

  The checkmark will be removed from the command in the menu to show that it is inactive.

Microspot MacDraft printing options

MacDraft gives you options to choose how pages are printed. For example, you can specify the order in which pages in a document are printed and whether or not registration marks are printed.

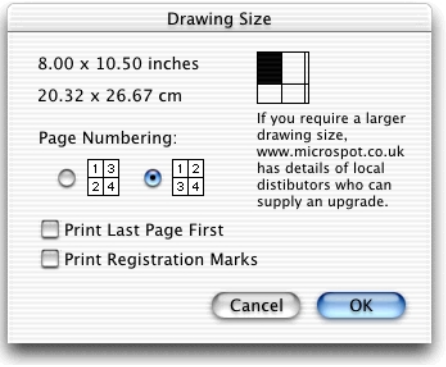
These options are set in the **Drawing Size** dialog.

Opening the Drawing Size dialog

To open the dialog

- Open the **Layout** menu and choose **Drawing Size**.

  The **Drawing Size** dialog appears.



Specifying how pages are numbered

You can choose to number pages by column or by row. In either case, page one appears in the upper left corner of the document. Page numbers are not added to the document with these options but, as the pages are printed in number order, this setting affects the print order of the pages.

To number pages

- In the **Drawing Size** dialog, click one of the **Page Numbering** buttons, either by column (in ascending order from top to bottom), or by row (from left to right).

Printing in reverse order

If your printer produces pages face up, it is useful to be able to print pages in reverse order so that the printed pages end up in order, starting with page one on the top.

To print the pages in the document from the last page to the first page

- In the **Drawing Size** dialog, click the checkbox beside **Print Last Page First**.

  The pages will be printed in reverse order.

Printing registration marks

If required, you can print crop marks at the corners of each printed page to show the edges of the drawing area.

To print pages with registration marks

- In the **Drawing Size** dialog, click the checkbox beside **Print Registration Marks**.

Printing a document

Before you print, make sure that you have chosen the printer you want to use from the **Print Center** *(see Choosing your printer on page 8-1)*, and have specified appropriate **Page Setup** options *(see Defining your page setup on page 8-6)*.

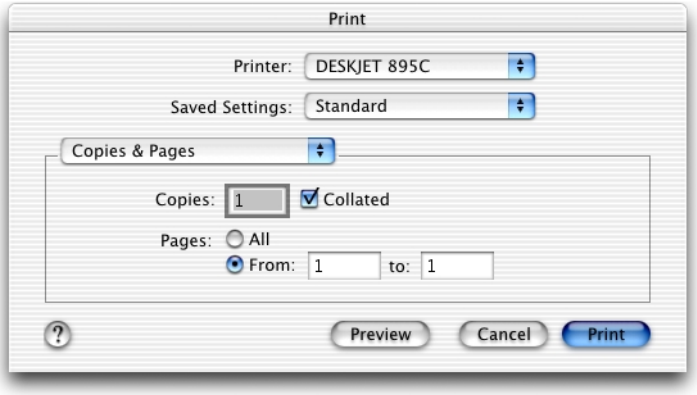
Choosing your printing options

The printing options available will be determined by the printer selected in the **Print Center**. See your printer or printer driver documentation for details.

To choose your printing options

1. Open the **File** menu and choose **Print**.

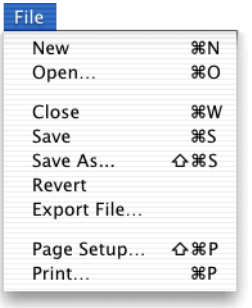
A dialog similar to the one below appears.



2. Set the print options according to your requirements then click the **Print** button to produce your printed document.

Appendix A - Menus

File menu



New

Use to create a new untitled document or symbol library.

Open

Opens the standard **Open** dialog allowing you to locate and open other MacDraft documents, or Media Assistant Lite catalogs.

Close

Closes the document. Before closing, a dialog will ask if you want to save the changes made to the document.

Hold down the **Option** key and this command changes to **Close All**. Use to close all open documents. Again dialogs appear asking if you want to save any changes made to documents.

Save

Saves your drawing to disk. If the drawing has not been saved before, you will be asked to name the document and specify a location to save it. The drawing remains open.

Save As

Opens the **Save** dialog used to save a copy of the current drawing under a different name or in a different location. You will be asked to name the document and/or specify a location to save it. A copy of the drawing will be saved with the new name and/or in the new location.

Revert

Reverts to the last saved version of the document. An alert appears, giving you the date and time the document was last saved, and asking you to confirm that you wish to return to the last saved version.

Export File

Opens the **Export File** dialog used to export a file in any format supported by **QuickTime Graphic Exporters**.

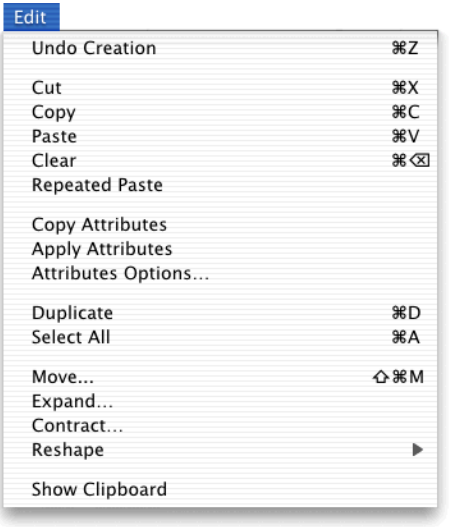
Page Setup

Opens the **Page Setup** dialog used to specify how you want your document to appear on the printed page. Options include paper size, orientation and scale.

Print

Opens the **Print** dialog used to print out the drawing. The printing options available will be determined by the selected printer, but usually include page range, number of copies and so on.

Edit menu



Undo/Redo

Undo reverses the last operation performed. **Redo** performs an operation that was reversed by using the **Undo** command.

Cut

Removes a selected object from the drawing and places it on the **Clipboard**.

Hold down the **Option** key and this menu item changes to **Cut Special**. This command is used to place objects on the **Clipboard** as enhanced PICT images.

Copy

Copies a selected object from the drawing and places it on the **Clipboard**.

Hold down the **Option** key and this menu item changes to **Copy Special**. This command is used to place objects on the **Clipboard** as enhanced PICT images.

Paste

Pastes an object from the **Clipboard** onto the drawing at the point where you click.

Hold down the **Shift** key and this menu item changes to **Paste Unscaled**. Use this command to paste an object into a document and have it appear at its original size, regardless of any differences in view scale between the object and the destination document window.

Clear

Removes a selected object from the drawing.

Repeated Paste

Use to repeatedly paste an object onto a drawing.

Copy Attributes

Use to copy an object's graphic attributes (fill, pen color or pattern, line weight and line style etc.) and object information.

Apply Attributes

Use to apply copied attributes to selected objects.

Hold down the **Shift** key when you choose **Apply Attributes** and the **Apply Attributes** dialog appears. Use the **Apply Attributes** dialog to check and change the attributes before applying them to an object. Any changes made to the **Apply Attributes** dialog relate to the current apply action only.

Attributes Options

Opens the **Attributes Options** dialog used to check and, if necessary, change copied attributes before applying them. The settings remain as specified until changed or until the application is closed.

Duplicate

Use to make an exact copy of any object or line on the drawing.

Hold down the **Shift** key and this menu item changes to **Duplicate Without Offset**. Use this option to create a duplicate that is placed directly on top of the original.

Hold down the **Control** key and this menu item changes to **Duplicate Unlocked**. Use this command to avoid duplicating locked objects. All other objects in the selection will be duplicated.

Select All

Selects all the objects on the active layer.

Hold down the **Shift** key and this menu item changes to **Select None**. Use this option to deselect all selected objects.

Move

Opens the **Move** dialog which allows you to move objects or groups with precision by entering values from the keyboard.

Expand

Opens the **Expand** dialog used to increase the size of an object by multiplying its dimensions by specified values.

Contract

Opens the **Contract** dialog used to reduce the size of an object by dividing its dimensions by specified values.

Reshape

Use the commands in the **Reshape** submenu to reshape an object so that straight lines and sharp corners become curved lines and rounded corners, or to reverse the smoothing action.

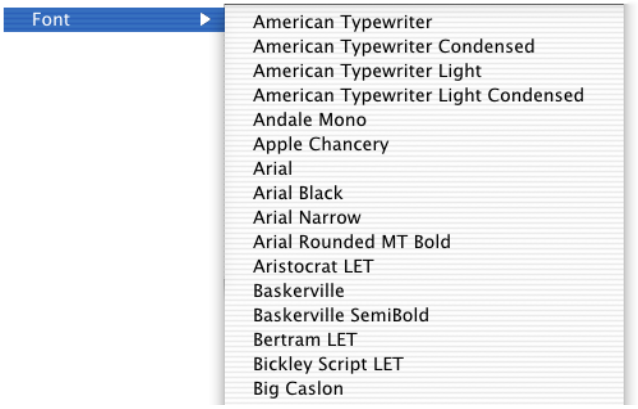
Show Clipboard

Opens the Clipboard window.

Text menu

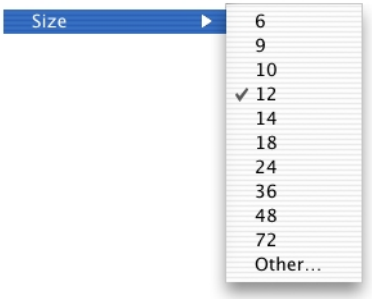
Font

The **Font** submenu lists the fonts installed on your system. Select the font you want to use from the list.



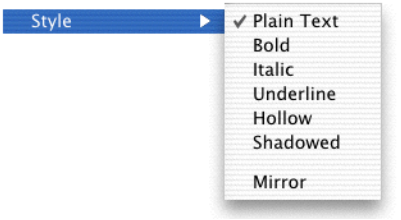
Size

The **Size** submenu lists the text sizes available. Select the text size you want to use from the list.



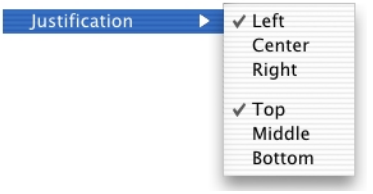
Style

The **Style** submenu lists text styles. Select the text style to use from the list.



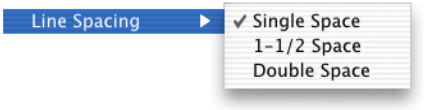
Justification

The **Justification** submenu provides options for justifying text. Select a horizontal and/or vertical justification option for text.



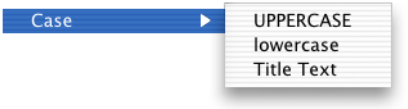
Line Spacing

The **Line Spacing** submenu lists line spacing options for text. Select the line spacing you want to use from the list.



Case

The **Case** submenu lists the case options available for text. Select the case option you want to use from the list.



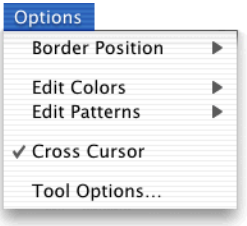
Select All Text

Selects all text objects in the current layer.

Hide Text

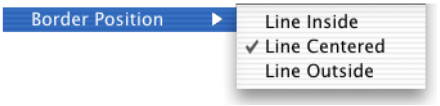
Hides text on the drawing. When this option is on, text is also omitted from printed output.

Options menu



Border Position

Opens a submenu that lists the options available for border positions. Choose the desired option from the submenu.

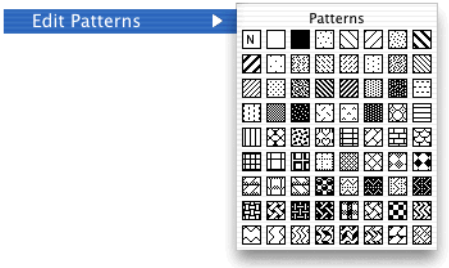


Edit Colors

Opens the colors palette. Select a color from the palette to edit it.

Edit Patterns

Opens the patterns palette. Select a pattern from the palette to edit it.



Cross Cursor

Choose to activate and deactivate the crosshair-style drawing cursor. When **Cross Cursor** is active, the cursor appears as a large crosshair cursor which extends into the drawing's rulers. When **Cross Cursor** is off, the cursor is displayed as a small cross.

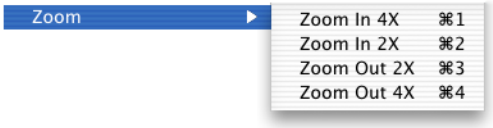
Tool Options

Opens the **Tool Options** dialog for the selected tool (if available).

View menu

Zoom

Use the options in the **Zoom** submenu to increase or decrease the current magnification by a factor of two or four.



Restore Prev. Zoom

Changes the view back to the previous level of magnification.

Home View

Changes view to display an unmagnified view of the upper left corner of drawing.

Show Cursor Position

Choose **Show Cursor Position** to show or hide the cursor position indicator. When Show Cursor Position is on, the X and Y coordinate position of the cursor will be displayed at the bottom left of the document window. When Show Cursor Position is off, this display does not appear.

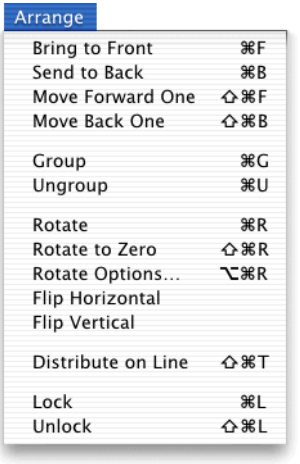
Show Area

Calculates the area value of a selected object and displays the result in the center of the object.

Hide Area

Hides the result of the area calculations for a selected object.

◆ Arrange menu



Bring To Front

Moves the selected object to the front of the active layer.

Send To Back

Moves the selected object to the back of the active layer.

Move Forward One

Moves the selected object forward one level on the active layer.

Move Back One

Move the selected object back one level on the active layer.

Group

Links two or more objects so that they can be treated as a single object.

Hold down the **Shift** key and this command changes to **Ungroup**.

Ungroup

Converts grouped objects to their original individual state.

Rotate

Use to freely rotate a selected object.

Rotate To Zero

Choose to return rotated objects to their original orientations.

Rotate Options

Opens the **Rotate Options** dialog used to specify rotation for a selected object by entering precise units of rotation.

Flip Horizontal/Flip Vertical

Flips selected objects horizontally / vertically.

Distribute On Line

Distributes selected objects along a straight line, and spaces them equally about their centers or datum points.

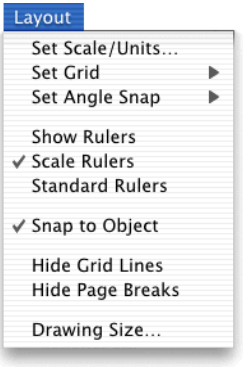
Lock

Restricts objects so that they cannot be changed.

Unlock

Returns locked objects to their original condition so that they can be changed.

Layout menu

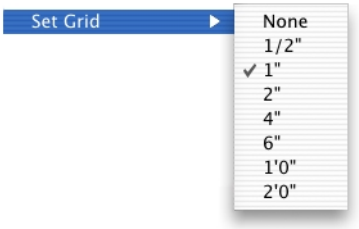


Set Scale/Units

Opens the **Set Scale/Units** dialog which lets you choose the units, default scale and dimension standards for a drawing.

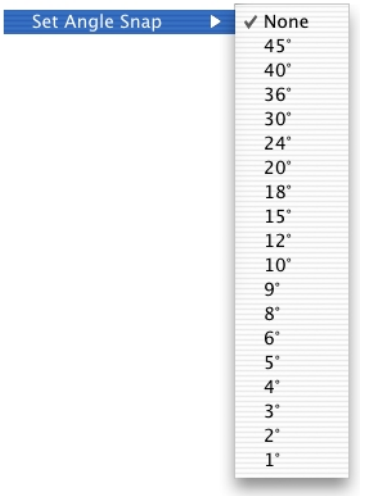
Set Grid

This submenu allows you to choose from the various grid snap options available in English or metric scales. The options reflect the current scale and size units chosen.



Set Angle Snap

This submenu allows you to choose from the various angle snap options available.



Show Rulers

Choose to display or hide the rulers on the top and left sides of the drawing.

Scale Rulers

When **Show Rulers** is on, choose **Scale Rulers** to display rulers based on the current scale of the drawing. The scale rulers also reflect the current size units.

Standard Rulers

When **Show Rulers** is on, choose **Standard Rulers** to display the standard rulers which show the actual size of the drawing in the units specified in the **Set Scale and Units** dialog.

Snap to Object

Choose to turn **Snap To Object** on or off. When **Snap to Object** is on, objects you draw or move snap to the vertices of nearby objects on the drawing. When **Snap to Object** is off, objects you draw or move do not snap to nearby objects.

Hide Grid Lines

Choose to hide or show the grid lines.

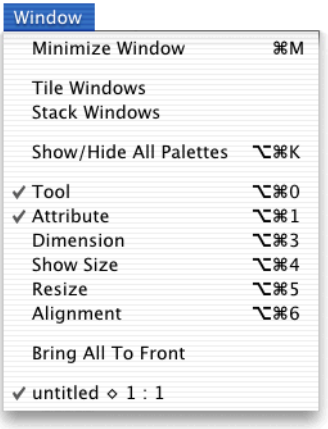
Hide Page Breaks

Choose to show or hide the page boundary lines.

Drawing Size

Opens the **Drawing Size** dialog which allows you to set the size of the drawing.

Window menu



Show/Hide All Palettes

Choose to show or hide all the application palettes.

Tool

Choose to show or hide the **Tool** palette.

Attribute

Choose to show or hide the **Attribute** palette.

Dimension

Choose to show or hide the **Dimension** palette.

Show Size

Choose to show or hide the **Show Size** palette.

Resize

Choose to show or hide the **Resize** palette.

Alignment

Choose to show or hide the **Alignment** palette.

Tile Windows

Select to display open documents next to each other across and down the screen.

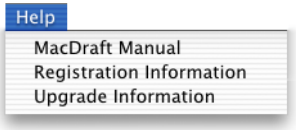
Stack Windows

Select to display open documents one on top of the other, and slightly offset from each other.

[Drawing Names]

Open drawings are listed at the bottom of the **Window** menu. Select the drawing name to make it the active document.

◆ Help menu



MacDraft Manual

Choose to open the MacDraft manual in Adobe Acrobat Reader.

Registration Information

Opens the **Registration** dialog used to register your product via the Internet.

Upgrade Information

Opens the **Upgrade Information** dialog used to obtain information (if any) about upgrades from the Microspot web pages.

Appendix B - Special usage of keys

Command keys

MacDraft Menu

Hide MacDraft	Command H
Quit MacDraft	Command Q

File menu

New Drawing	Command N
Open	Command O
Close	Command W
Close All	Command Option W
Save	Command S
Save As	Command Shift S
Page Setup	Command Shift P
Print	Command P

Edit menu

Undo/Redo	Command Z
Cut	Command X
Cut Special	Command Option X
Copy	Command C
Copy Special	Command Option C
Paste	Command V
Paste Unscaled	Command Shift V
Clear	Command Backspace
Duplicate	Command D
Duplicate Without Offset	Command Shift D
Duplicate Unlocked	Command Control D
Select All	Command A
Select None	Command Shift A
Move	Command Shift M
Smooth	Command -

Unsmooth	Command Shift -

View menu

Zoom In 4X	Command 1
Zoom In 2X	Command 2
Zoom Out 2X	Command 3
Zoom Out 4X	Command 4
Restore Prev. Zoom	Command [
Home View	Command H

Arrange menu

Bring To Front	Command F
Send To Back	Command B
Move Forward One	Command Shift F
Move Back One	Command Shift B
Group	Command G
Ungroup	Command Shift G
Ungroup	Command U
Rotate	Command R
Rotate To Zero	Command Shift R
Rotate Options	Command Option R
Distribute On Line	Command Shift T
Lock	Command L
Unlock	Command Shift L

Window menu

Minimize Window	Command M
Show/Hide All Palettes	Command Option K
Show/Hide Tool Palette	Command Option 0
Show/Hide Attribute Palette	Command Option 1
Show/Hide Dimension Palette	Command Option 3
Show/Hide Show Size Palette	Command Option 4
Show/Hide Resize Palette	Command Option 5
Show/Hide Alignment Palette	Command Option 6

Notes

There are many **Command** Key, **Command Shift** Key and **Command Option** Key equivalents available. The following may be help you to remember them.

A Command Shift Key combination usually denotes doing the opposite of, or something related to, the equivalent Command Key combination. For Example,

Command A is Select All; Command Shift A is Select None.

Command R is Rotate; Command Shift R is Rotate To Zero.

Command P is Print; Command Shift P is Page Setup…

Command S is Save; Command Shift S is Save As…

A Command Option Key combination usually denotes choosing options for the related Command Key combination. For Example,

Command A is Select All; Command Option A is Select Special…

Command R is Rotate; Command Option R is Rotate Options…

Appendix C - File formats

◆ Supported file formats

MacDraft supports document files in the formats listed below.

Opening and saving MacDraft documents and stationery is discussed in Chapter 1 (see *(see Document handling on page 1-4)* and *(see Saving and exporting on page 1-29)*), symbol libraries and are discussed in Chapter 7 *(see Symbol libraries on page 7-1)*. Files in other formats can be exported using the **Export** command *(see Exporting a document on page 1-32)*, and can be brought into a MacDraft document using copy and paste or drag and drop *(see Drag and drop on page 5-1)*. The conversion issues involved in opening/saving or importing/exporting the remaining file formats are discussed in this appendix.

Microspot MacDraft can read files in the following formats

- MacDraft/PC Draft
- Stationery
- PICT
- Enhanced PICT
- Libraries

Microspot MacDraft can write files in the following formats

- MacDraft/PC Draft
- Stationery
- PICT
- Enhanced PICT

Microspot MacDraft can export files in the following formats

- BMP
- JPEG
- MacPaint
- PhotoShop
- PICT
- PNG
- QuickTime Image
- SGI Image

- TGA
- TIFF

Opening documents in other formats

Many Documents in formats other than the MacDraft format can be opened directly from within MacDraft.. To open a document in a format other than Microspot MacDraft format

1. Choose **Open** from the **File** menu.
2. A standard **Open** dialog appears, listing documents in the current directory.
3. If necessary, open the **Show** pop-up menu, and select either the specific document format required, or All.
4. Locate the document you want to open.
5. Click the document name to select it.
6. Click the **Open** button.

   MacDraft converts the drawing, and opens it in an untitled window.

NOTE: Large or complicated drawings may take some time to convert.

◆ PC Draft

Microspot PC Draft 5.0

Exchanging documents between MacDraft Personal Edition 5.0 and PC Draft Personal Edition 5.0 presents no problems, as MacDraft and PC Draft documents are now fully interchangeable.

◆ PICT or enhanced PICT documents

Saving a document in PICT or enhanced PICT format

Saving a document as a PICT allows you to transfer images into other applications that support the PICT format.

The major benefits of using the PICT format are that it makes it easier to use graphics with certain page layout programs. Many word processors and page layout products can open PICT and enhanced PICT files directly, treating them as graphics inserted in text documents.

In addition, IDD (the original developers of MacDraft) developed an enhancement of the PICT format, allowing higher resolution printing of PICT images in other applications. Enhanced PICT files combine PICT information with the PostScript® data that produces quality laser output.

With enhanced PICT, images can be pasted into another application's documents, then printed at the same sharp PostScript resolution available within MacDraft.

NOTE: The commands **Cut** and **Copy**, when used with the **Option** key, can move enhanced PICT images of MacDraft objects into the **Clipboard** and other applications *(see The Move command on page 5-11)*.

To save a document in PICT or enhanced PICT format

1. Choose **Save As** from the **File** menu.
2. Choose PICT or enhanced PICT from the **Format** pop-up menu in the **Save** dialog.
3. Enter a new name for the document unless you intend to replace the existing MacDraft document with the PICT or enhanced PICT document.
4. Click the **Save** button.

   When you choose to save a MacDraft document in the PICT or enhanced PICT format, some of the MacDraft attributes may be lost. However, this is usually not important for page layout programs, because these programs address a document merely as a picture.

   In a document saved in the enhanced PICT format, the onscreen PICT image might not reflect all the attributes of a MacDraft image. However, the PostScript code embedded in the file has all the MacDraft attributes, so the printed output looks like the original MacDraft drawing.

   The PICT format icon has a different appearance from a MacDraft drawing icon. The different icons are to help you distinguish between standard MacDraft drawings and PICT documents (including enhanced PICT documents).

NOTE: Because enhanced PICT files include both PICT images and PostScript printing code, those documents will often take considerably more disk space than

other MacDraft files. The more complicated the image, with more shapes and more edit handles, the larger the file will be.

Opening a document saved in PICT or enhanced PICT format

You can open a MacDraft file saved in the PICT or enhanced PICT format from the desktop by double-clicking, or from within MacDraft.

NOTE: MacDraft enhanced PICT files have the same icon as MacDraft PICT files as they are PICT files that contain PostScript data.

To open a document saved in PICT or enhanced PICT format

1. Open the **File** menu and choose **Open**.
2. Choose PICT or enhanced PICT from the **Show** pop-up menu in the standard **Open** dialog.
3. Locate and click the name of the document that you want to open.
4. Click the **Open** button.

   MacDraft documents saved as PICT will not loose any information when reopened in MacDraft (unless edited in another application first).

   NOTE: The two known outstanding exceptions to this are: Area calculations and Point to Point dimension lines. The displayed Area calculations loose their links to the parent objects, and Point to Point dimension lines will be broken into text and line objects.

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