

MacPC™ Installation and User's Guide

This guide refers to version 1 of MacPC

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Conventions

For clarity this guide uses the following typographical conventions:

<i>This style</i>	<i>Refers to this</i>
COMPUTER	Anything you type, exactly as it appears.
bold	Names of items that appear on the screen.
[⌘], [Esc]	Special keys on the keyboard.
<i>italics</i>	References to other sections of the guide.

The following symbols identify special instructions:

<i>This symbol</i>	<i>Refers to this</i>
➤	A step in a procedure.
■	An item in a list of alternatives.
■	Important information.

Abbreviations

This guide uses the following abbreviations:

<i>This abbreviation</i>	<i>Refers to this</i>
Insignia	Insignia Solutions.
MS-DOS	Microsoft Disk Operating System for the IBM PC.
Windows	Microsoft Windows 3.1 or 3.11.
Macintosh	Any 68k- or PowerPC-based Macintosh.
PC	An IBM PC or compatible computer.

Introduction

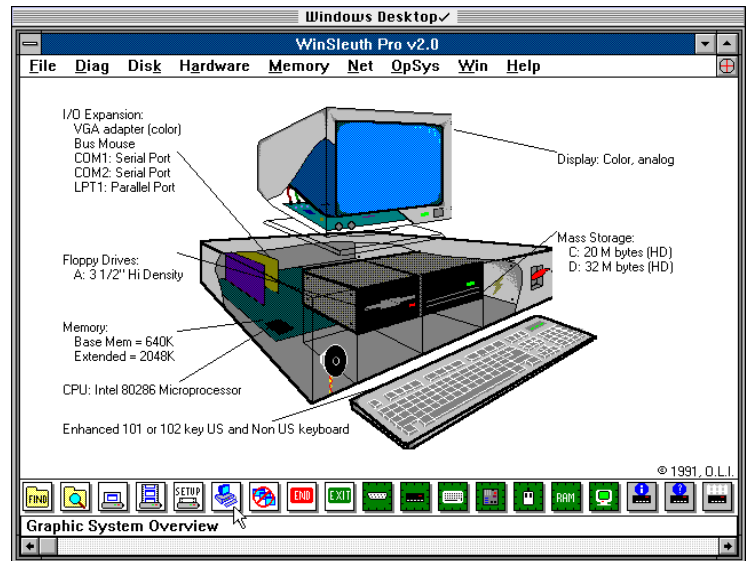


Welcome to MacPC, the software that gives you a PC on your Mac. You just need to add Windows, and you'll then be able to run MS-DOS and Windows applications on your Macintosh.

Read this chapter for a quick overview of the features of MacPC, and then turn to *Installing MacPC*, page 9, to get started.

What is MacPC?

MacPC extends the versatility of your Macintosh by enabling you to run MS-DOS programs alongside your existing Macintosh applications. You just need to add Windows to give you a complete Windows PC in a window on your screen.



WinSleuth Pro for the IBM PC, by Omega Logic Inc, running on a Macintosh using MacPC and Windows

Performance

The faster the Macintosh, the faster the performance of MacPC. On a Power Macintosh the performance is about that of an entry-level 486 PC. On a 68k-based Macintosh the performance is about that of an entry-level 386 PC.

Full integration

MacPC is seamlessly integrated with your Macintosh. It includes clipboard linking to let you copy and paste text and graphics between Macintosh and Windows applications, and it also lets you copy text to and from MS-DOS.

Moving data between your PC and Macintosh applications is no problem, using the MacPC built-in file sharing.

Easy to use

In addition, your PC programs can make use of your Macintosh peripherals, including your floppy disk drive, CD-ROM drive, mouse and keyboard, serial ports, and printers.

MacPC is easy to use – in most cases easier than using a real PC. Many changes that would require a hardware change on a PC can be made simply by choosing an appropriate command from the MacPC menus.

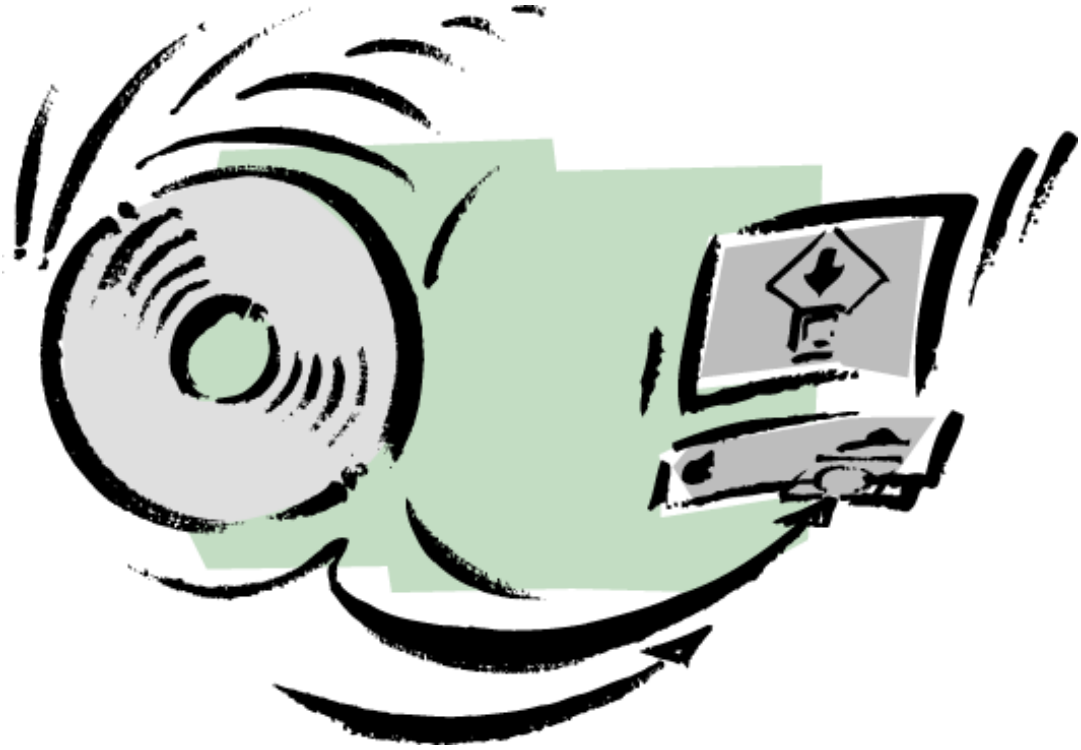
Don't worry if you are not already familiar with PCs; this guide includes brief introductions to MS-DOS and Windows to help you get started. If you get stuck you can use the MacPC balloon help to tell you what each menu command does.

Requirements

The following table summarizes the requirements for MacPC:

<i>Feature</i>	<i>Requirements</i>
Macintosh	Any Macintosh with either a 68k or PowerPC processor.
System	System 7 or later.
Macintosh memory size	8 Mbyte minimum (16 Mbyte with System 7.5), 16 Mbyte recommended.
Application memory size	6 Mbyte minimum, 10 Mbyte recommended.
Hard disk space	13 Mbyte for default installation.
Other hardware	CD-ROM drive.

Installing MacPC



This chapter describes how to install MacPC on your Macintosh, and how to set it up to run MS-DOS and Windows applications.

MacPC and its associated files are supplied on a CD-ROM. The installer automatically detects whether your Macintosh has a PowerPC or 68k processor, and installs an appropriate version of MacPC.

Note that you will need about 13 Mbyte of free disk space to install MacPC.

Installing the MacPC files

MacPC includes an installer which automatically installs all the files you need to run MacPC.

Before you install MacPC you should remove all virus protection programs from your System Folder and restart your Macintosh, as these may interfere with the installation.

If the installation fails, try reinstalling with extensions off by rebooting the Macintosh with the Shift key held down.

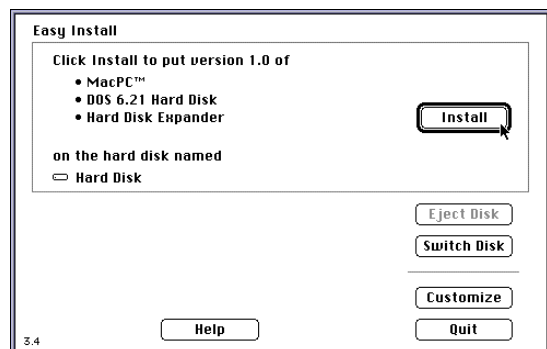
1 Run the installer

- Insert the MacPC CD-ROM.
- Double-click the **Installer** icon.



Installer

- When the welcome screen appears click **OK** to display the **Easy Install** dialog box.



- If necessary, click **Switch Disk** to select the hard disk on which you want to install MacPC.
- Click **Install** to proceed with the installation.

If you are installing on the startup disk, and applications are running, this dialog box appears:

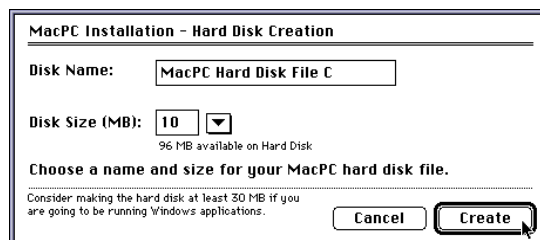


- Click **Continue** to quit from other applications before installing. You will be prompted to save your work if necessary.

The installer then copies all the program and data files for MacPC onto your hard disk.

2 Create a hard disk file

This dialog box then appears, allowing you to create a file to act as the hard disk for MacPC:



By default, the hard disk is created with the name **MacPC Hard Disk File C** and a size of 10 Mbyte, which is sufficient for running MS-DOS applications.

If you want to install Windows and run Windows applications you should make the hard disk file at least 30 Mbyte.

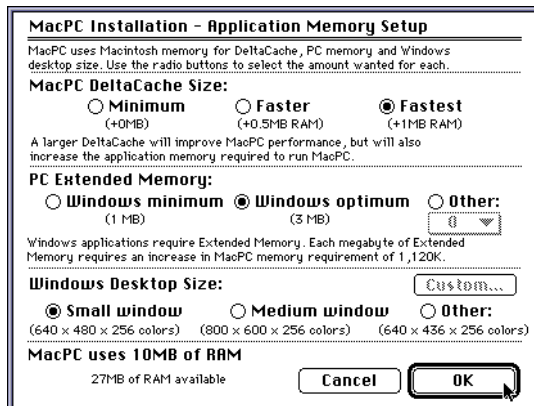
Refer to the appropriate user guides for the applications you want to install for information about the amount of disk space they need.

- Choose the size for the hard disk file from the **Disk Size** pop-up menu.
- Click **Create** to create the hard disk file.

Note that this may take several minutes.

3 Set up memory for MacPC

The installer then displays this dialog box to allow you to set up the amount of memory allocated to MacPC, and the size of the Windows desktop:



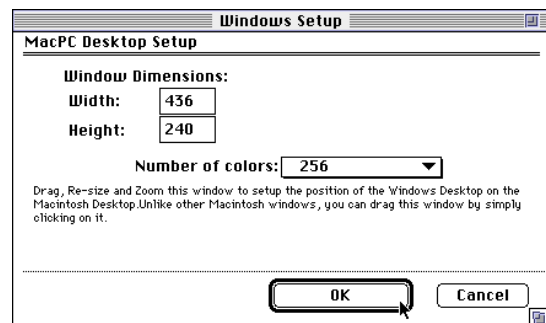
As you select the options you want, the total amount of memory MacPC will need is shown at the bottom of the dialog box. You will be warned if there is not enough memory on your Macintosh.

Setting the **MacPC DeltaCache Size** to **Minimum** or setting a large **Windows Desktop Size** will significantly reduce the performance of MacPC.

The following table shows suggested settings for different requirements:

Option	For minimum memory:	For best performance:
MacPC DeltaCache Size	Minimum	Fastest
PC Extended Memory	Windows minimum	Windows optimum
Windows Desktop Size	Small window	Small window

- Choose the setting you want for each option.
- If you want to specify a different size for the Windows desktop choose **Other** and click **Custom....** This dialog box then allows you to specify the size and number of colors:



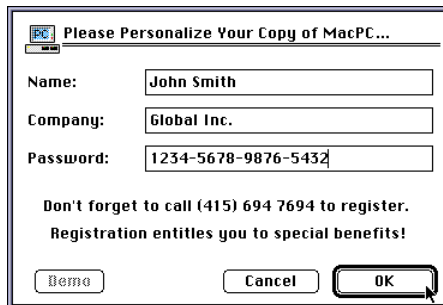
The values you choose determine the initial settings for MacPC but you can change them later if you want; refer to *Setting up the Windows desktop*, page 52.

For best performance your Macintosh **Monitors** control panel should be set to 256 or 16 colors, rather than thousands or millions of colors, and you should use the same setting in the **Windows Setup** dialog box.

- When you have chosen the settings you want, click **OK** to set up MacPC.

4 Personalize MacPC

Finally, this dialog box appears, allowing you to personalize your copy of MacPC:



- Type in your name and company.
- Enter the password from the back of the MacPC CD-ROM case, or click **Demo** to evaluate MacPC for a limited period.

If you install a demonstration copy of MacPC each session is limited to 30 minutes, and you risk losing work when the session ends.

- When you are sure that the information is correct click **OK** to save your details.

This dialog box then confirms that installation was successful:



- Click **Quit**.

MacPC is now set up and ready for use.

5 Run MacPC

- Double-click the **MacPC** icon.



The MacPC MS-DOS window appears and the standard MS-DOS startup information is displayed.

What next?

If you want to use Windows with MacPC refer to *Installing Windows*, page 13.

For more information about using MS-DOS or Windows refer to *Using MacPC*, page 24.

If you are using Windows with MacPC, and have not used a PC before, we recommend you try the *Tutorial*, page 18, which illustrates how you can use MacPC to run a sample PC application.

Installing Windows

Microsoft Windows is not included with MacPC. If you want to use Windows you will need to purchase your own copy, which is supplied on six high-density 3.5 inch disks.

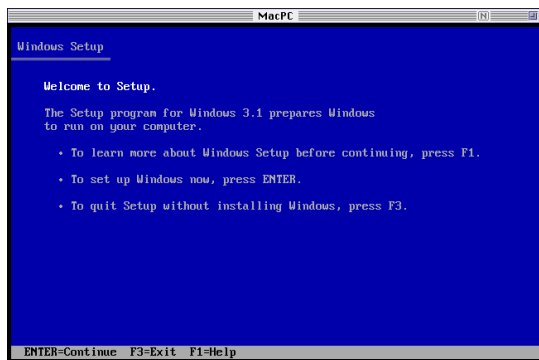
If you want to use the mouse when installing Windows press [M].

To install Windows

- Insert the first installation disk.
- Type the following command at the C: \> prompt:

A:SETUP [↵]

The **Welcome to Setup** screen appears:



- Press [↵] to continue.
- Press [↵] to choose Express Setup.

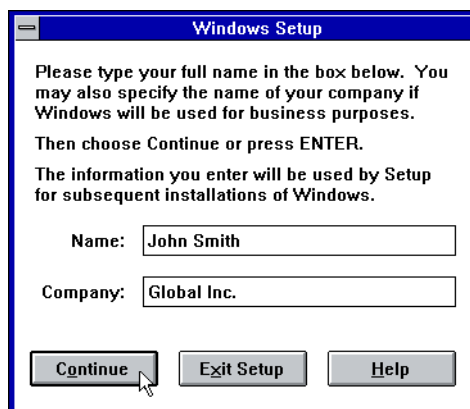
Setup then copies the Windows files to your MacPC hard disk file.

When prompted to insert the next disk:

- Eject the first disk by choosing **Eject** from the MacPC **Setup** menu, or type [][Shift]1.
- Insert disk 2, and press [↵] to continue.

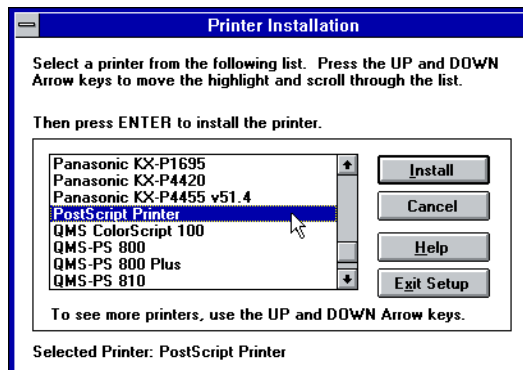
- When prompted, eject disk 2, insert disk 3, and press [↵] to continue.

Windows will then be started, and this dialog box appears:



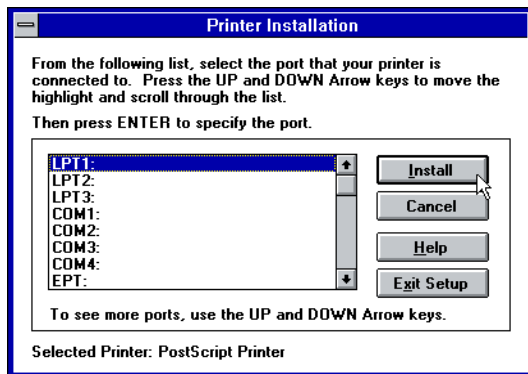
- Enter your name and company in the appropriate fields, using [Tab] to move between the fields, and press [↵].
- When prompted, eject disk 3, insert disk 4, and press [↵] to continue.
- Repeat with disk 5.

This dialog box lets you choose a printer:



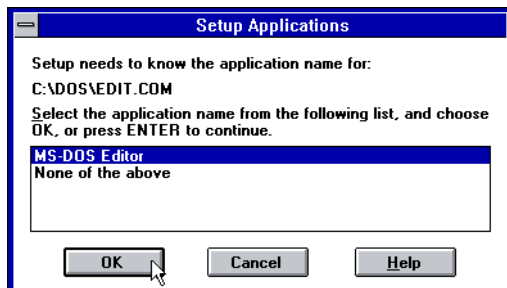
- Scroll down the list using the arrow keys, select **PostScript Printer**, and press [↵].

This dialog box then lets you specify the printer port:



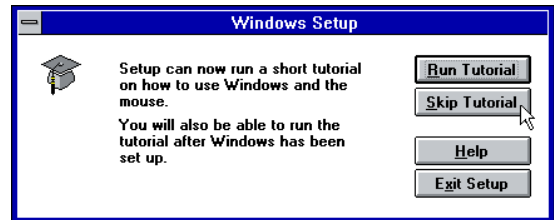
- Press [↵] to select **LPT1:** as your printer port.

This dialog box then allows you to set up applications:



- Press [↵] to select **MS-DOS Editor**.

This dialog box allows you to view a tutorial on Windows:



- Press [Tab] and then [↵] to skip the tutorial.

Finally, this dialog box appears:



- Eject disk 5, and press [↵] to restart MacPC.

You should now configure Windows for best performance, as described below.

To configure Windows to use Insignia drivers

- At the C:\> prompt type:

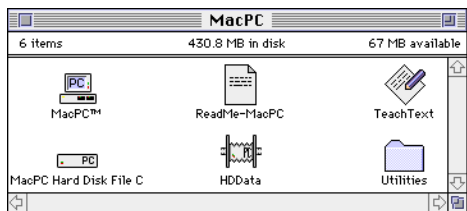
```
SPEEDUP [↵]
```

You are now ready to run Windows; refer to *Running Windows*, page 26.

Additional information

What MacPC installs

The Easy Install option creates a **MacPC** folder on your hard disk containing the following files:



- **MacPC** is the MacPC application.
- **ReadMe-MacPC** contains additional information about MacPC.
- **TeachText** is the application you can use to read the ReadMe file.
- **MacPC Hard Disk File C** is the hard disk file used by MacPC, containing MS-DOS 6.21.
- **HDData** is a data file used by MacPC if you want to create additional non-bootable (D: drive) hard disk files.
- **Utilities** contains Hard Disk Expander, a utility to increase the size of an existing hard disk file.

To run MacPC on an 8 Mbyte Macintosh

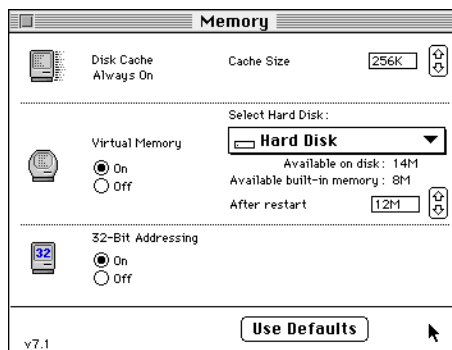
If your Macintosh has 8 Mbyte of RAM you will need to make more memory available before you can run MacPC.

You can do this with a slight loss in performance by using part of your hard disk space as virtual memory.

Alternatively, the RAM Doubler utility available from Connectix Corp. doubles the apparent amount of RAM with no significant loss in performance.

To use virtual memory

- Choose **Control Panels** from the Apple menu, to open the Control Panels folder.
- Open the **Memory** control panel.
- Set **Virtual Memory** to **On**, and set the amount of virtual memory to at least 12 Mbyte by clicking the up-arrow or down-arrow.



- Restart your Macintosh to use the virtual memory you have specified.

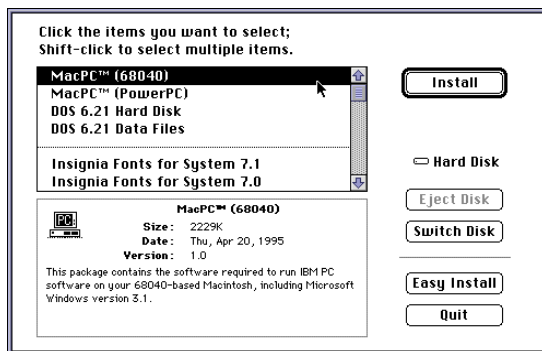
Installing additional MacPC options

The **Customize** button provides additional installation options.

To install selected files

- Run the installer and click **Customize**.

This dialog box allows you to choose the options you want to install:



- Select the items you want to install. Hold down Shift and click to select multiple items.
- Click **Install** to install the selected items.

The options are as follows:

Choose this option	To install this
MacPC (68040)	MacPC for a 68040 Macintosh.
MacPC (PowerPC)	MacPC for a Power Macintosh.
DOS 6.21 Hard Disk	A hard disk file of any specified size.
DOS 6.21 Data Files (see page 45)	The data files needed to create bootable hard disk files from within MacPC.
Insignia Fonts for System 7.1/7.0	TrueType fonts to give the correct IBM extended character set when copying or printing text from MacPC.
Insignia Fonts for System 6	Bitmap versions of the Insignia fonts.
PowerBook Utilities	The ~don't rest and ~rest utilities to improve performance on PowerBooks.
Hard Disk Expander (see page 46)	A utility to increase the size of an existing hard disk file.

Using hard disk files from earlier versions

This section gives instructions for using applications on your existing SoftPC or SoftWindows hard disk files with MacPC.

Note that you should always back up any of your data files, using a Macintosh backup utility, before recreating hard disk files.

To use an existing hard disk file as drive D:

You can attach your existing hard disk file as drive D: using the following procedure.

- Choose **PC Hard Disks...** from the **Setup** menu; refer to *PC Hard Disks...* (*Setup menu*), page 72.
- Select **Other "D:" Drive...** from the **Drive D:** pop-up menu.
- Select the existing hard disk file.
- Click **Reset** to reset MacPC.

MacPC can now access both the new software on drive C: and your existing software on drive D:. In many cases your original software will run correctly if you change the current drive to D: and run the software as normal.

However, some PC applications may not run correctly if run from drive D: rather than drive C:. In this case you should copy the applications to your new hard disk file as described in the following section.

To copy the files from an existing hard disk file

If you prefer, you can copy the contents of an existing hard disk file to your new hard disk file.

- Attach the existing hard disk file as drive D:, as described in the previous section.
- Copy each directory, except for the DOS, WINDOWS, and INSIGNIA directories, using an XCOPY command.

For example, if you have a directory named WP you would type:

```
XCOPY D:\WP C:\WP /S [-]
```

This copies the WP directory and its subdirectories from drive D: to drive C:.

- Copy each file at the root level of your existing drive, except for CONFIG.SYS and AUTOEXEC.BAT, using a COPY command.

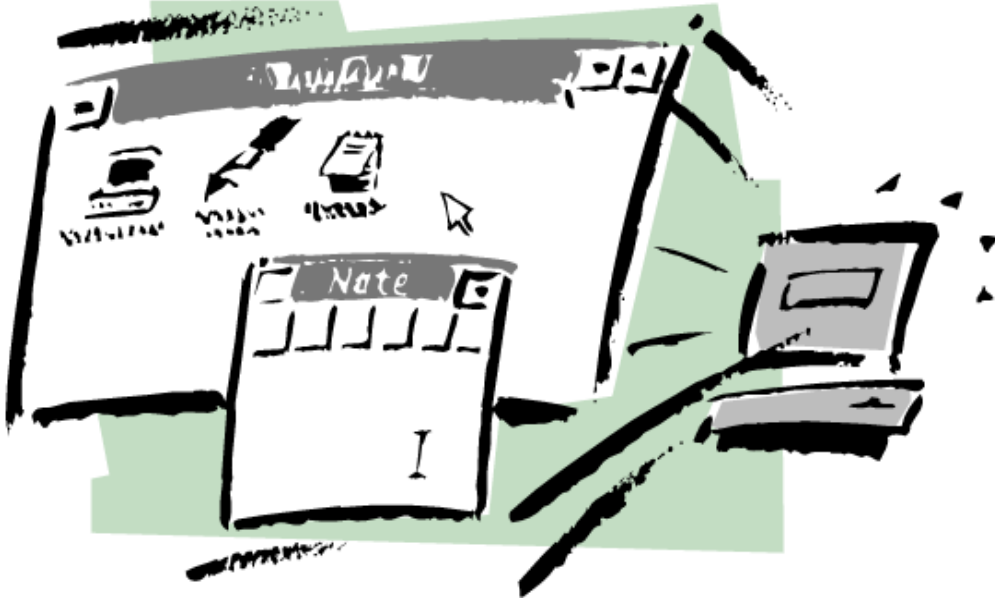
For example, if you have a file called MYDOC.TXT you would type:

```
COPY D:\MYDOC.TXT C:\MYDOC.TXT [-]
```

After copying them you may then run your existing applications from the new hard disk file.

Some applications may not work correctly if copied from one drive to another, in which case you should reinstall them.

Tutorial



This chapter is designed to help you become familiar with using MacPC by installing and running a typical Windows application, and printing from Windows.

To use this tutorial you first need to have installed Windows; refer to *Installing Windows*, page 13.

The tutorial is based on the award-winning Windows program WinPost, which is supplied with your MacPC package. WinPost lets you create simple reminders which you can leave on your Windows desktop. It is a PC shareware application, so if you decide to continue using it please send the author the registration fee, as described in its Read Me! file.

Installing the Windows application WinPost

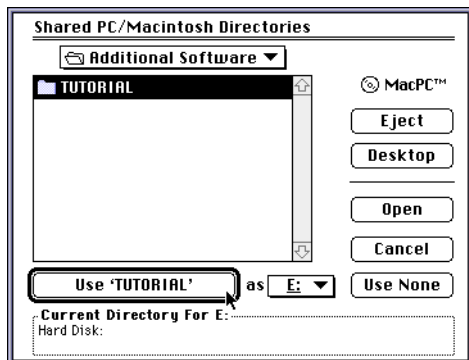
As with most applications, WinPost is installed using a standard Windows setup procedure.

The installer and its associated files are supplied on the MacPC CD-ROM in the TUTORIAL folder in the Additional Software folder.

Alternatively, if you have Apple DiskCopy you can use the file **TUTORIAL.image** to make an MS-DOS floppy disk and then install from this.

1 Set up the TUTORIAL folder

- Choose **Mac/PC Shared Folders...** from the MacPC **Setup** menu.
- Select the TUTORIAL folder on the MacPC CD-ROM.



- Click **Use 'TUTORIAL'** to set up the TUTORIAL folder as PC drive E.

2 Run Windows

The most convenient way of installing Windows applications is from the Windows Program Manager.

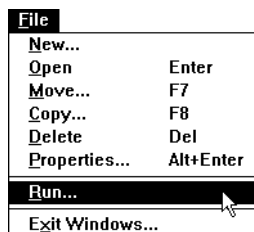
- At the MS-DOS `C:\>` prompt type:

```
WIN [-]
```

After the Windows welcome screen the Windows desktop will be displayed.

3 Run Setup

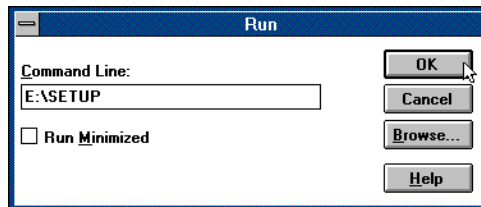
- Choose **Run...** from the Program Manager **File** menu:



The **Run** dialog box appears.

- Type:

```
E:\SETUP
```



Alternatively, if you are installing from a floppy disk type `A:\SETUP`.

- Click **OK** to run the Setup program.

4 Specify where to install WinPost

This dialog box allows you to specify the directory into which WinPost should be installed:

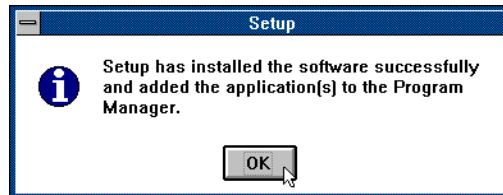


- Click **OK** to install in the WINPOST directory on your MacPC hard disk file.

The files are then copied to the directory you specified.

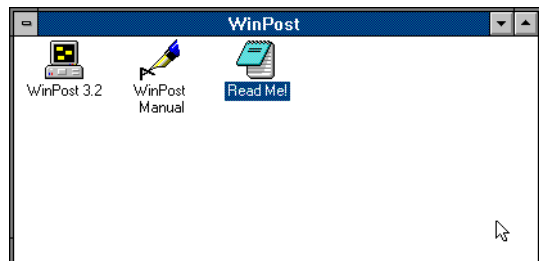
5 Finish the installation

Finally, this dialog box informs you when the installation is complete:



- Click **OK** to return to the Program Manager.

The installation creates a new WinPost group in the Program Manager, containing three icons:



- **WinPost 3.2** is the WinPost application.
- **WinPost Manual** provides documentation for WinPost. Double-click the icon to display the document so that you can read it or print it out.
- **Read Me!** is a document which gives additional information about WinPost.

Running a Windows application

When you install a Windows application the installer usually creates icons for the application, and for any other programs or documents you might need to use with it. Often these are put in a separate group in the Program Manager.

For more information about the components of Windows you may first like to read *Windows basics*, page 30.

To run WinPost

- Double-click the **WinPost 3.2** icon.



The first time you run WinPost, a shareware registration notice is displayed informing you that you can evaluate WinPost for 21 days.

- Click **OK** to dismiss the notice.

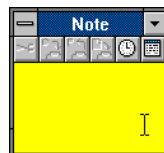
The WinPost program is now running and its icon is displayed at the bottom of the MacPC desktop.



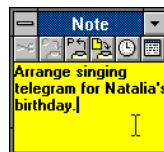
To create a new note

- Double-click the **WinPost** icon on the Windows desktop.

An empty **Note** window appears.



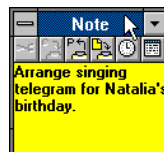
- Type in the information you want to remember.



The buttons along the top of the note provide useful functions. For example, the first three are cut, copy, and paste just like the equivalent commands in Macintosh programs.

To move the note Window

- Drag the **Note** window by its title bar.



To display the WinPost menu

- Click the **WinPost** icon on the Windows desktop.

Move	
C <u>l</u> ose	Alt+F4
S <u>w</u> itch To...	Ctrl+Esc
C <u>r</u> eat <u>e</u> a n <u>o</u> te	▶
S <u>h</u> ow all notes	
H <u>i</u> de all notes	
C <u>y</u> cle through notes	
A <u>r</u> range all notes	
S <u>e</u> lect L <u>a</u> ayout	▶
G <u>e</u> t N <u>o</u> te from Clipboard	
M <u>a</u> in C <u>o</u> ntrol P <u>a</u> nel...	
C <u>o</u> nfigure...	
H <u>e</u> lp	▶
Order Information...	



Some of the commands on the WinPost menu are described below.

For more information about all the commands refer to the **WinPost Manual** file.

To hide all the notes

- Choose **Hide all notes** from the WinPost menu.

The notes will be minimized to a single **Notes - All** icon on the Windows desktop:



Notes - All

To show all the notes

- Choose **Show all notes** from the WinPost menu or double-click the **Notes - All** icon on the Windows desktop.

To arrange the notes tidily

- Choose **Arrange all notes** from the WinPost menu.

The notes will be arranged in a cascade from the top left of the Windows desktop.

To hide the WinPost menu

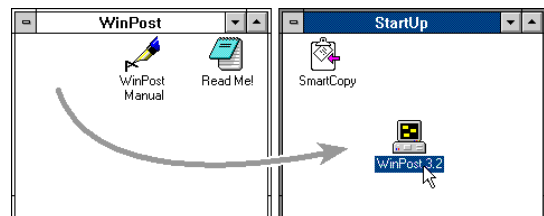
- Click the Windows desktop.

To exit from WinPost

- Choose **Close** from the WinPost menu.

To start WinPost automatically

- Double-click the **StartUp** program group icon to open its window.
- Drag the **WinPost 3.2** icon into the **StartUp** program group window:



Applications in the **StartUp** group are run automatically when Windows starts, so WinPost will always be available for your memos.

Printing from a Windows application

You can print from Windows applications to the printer available to your Macintosh, as set in your Macintosh Chooser.

To illustrate printing from Windows try printing the note you have created.

To set up MacPC

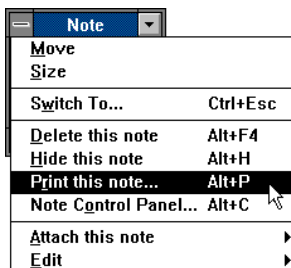
Before printing you need to ensure that MacPC is set up for the Macintosh printer you want to use.

By default, MacPC and Windows are set up for a PostScript printer.

If your Macintosh printer does not support Postscript you need to set up MacPC before you can print. Refer to *To print from Windows to a non-PostScript printer*, page 35, for details of how to do this.

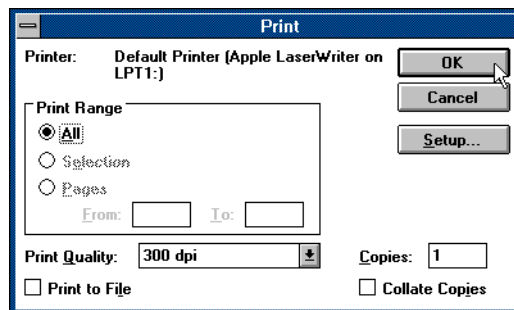
To print a note

- Click the control menu button, in the top left corner of the **Note** window, to display the control menu.
- Choose **Print this note...** from the control menu.



Alternatively, you can use the key shortcut [Alt]P. Note that you should use the Macintosh option key as [Alt].

The **Print** dialog box appears:



- Click **OK** to print the note.

While applications are printing from Windows the **Print Manager** icon appears at the bottom of the Windows desktop.



Print Manager

You can double-click this icon to see a list of the jobs waiting to be printed by Windows.

About 30 seconds after Windows has finished printing, the printouts will automatically be sent to your Macintosh printer.

If you prefer, you can choose when printouts are sent to the printer; refer to *Sending output to the printer*, page 38.

Using MacPC



This chapter describes how to start MacPC, and use it to run Windows and MS-DOS applications on your Macintosh.

MacPC runs your PC applications in a separate window on your Macintosh. You can run PC applications at the same time as using your Macintosh applications.

Running MacPC

To display the MacPC MS-DOS window

- Double-click the **MacPC** icon.



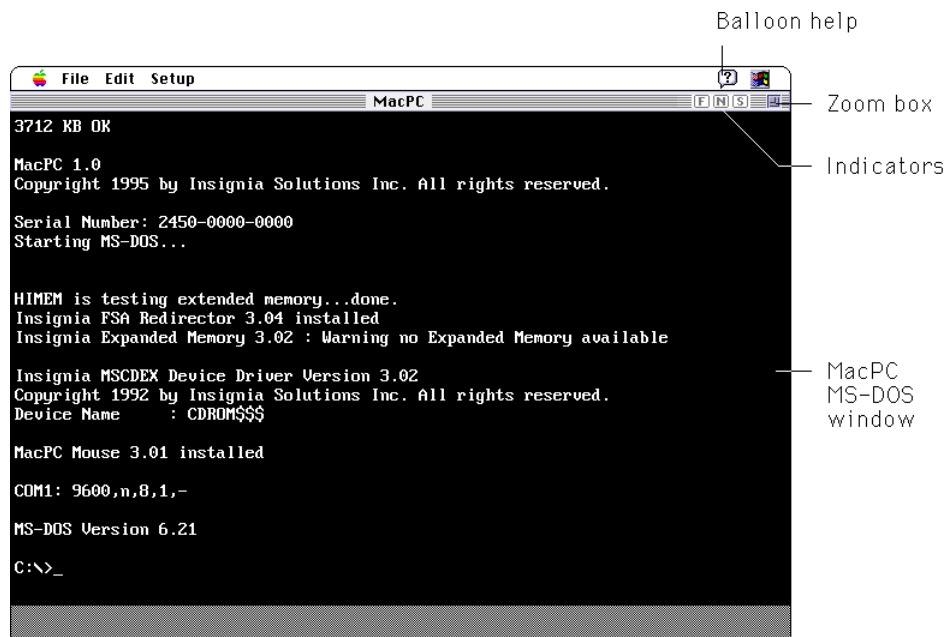
The MS-DOS window appears and the standard MS-DOS startup information is displayed.

The diagram below shows the main features of the MacPC MS-DOS window.

Unless your Macintosh has an extended keyboard, indicators in the title bar show what mode you have selected for the keyboard:

Indicator	What it means
N	Num Lock mode.
S	Scroll Lock mode.
F or K	Function key or Keypad modes for Macintosh computers with no numeric keypad.

For more information about using the keyboard refer to *Using the keyboard and mouse*, page 28.



Running Windows

You can add Microsoft Windows to MacPC so that you can run Windows and use Windows applications; see *Installing Windows*, page 13.

To start Windows

- Type the following command at the `C:\>` prompt:

WIN [-J]

After the Windows welcome screen the Windows desktop will be displayed, as shown below.

A ✓ appears in the title bar when the Windows desktop is running at optimum

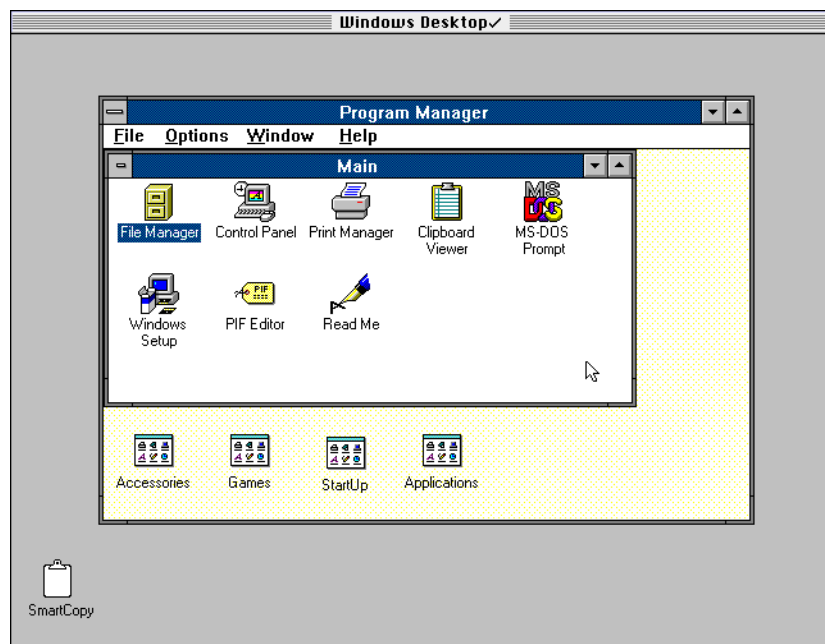
performance; for more information refer to *Improving the performance of MacPC*, page 60.

To use the mouse

As you move the Macintosh mouse pointer onto the MacPC window it automatically changes to the Windows mouse pointer, so that you can switch freely between Windows and Macintosh applications.

To improve performance the Windows mouse pointer is slightly reduced in size.

- Choose **Emulate PC Mouse** from the **Setup** menu if you prefer to work with the full size mouse pointer.



Using the MacPC window and getting help

To change the size of the MacPC MS-DOS window

You can set your MS-DOS window to either of two sizes.

- Select the one you like by clicking the zoom box, in the top right corner of the window.

To use the full screen

If part of the MacPC window is off the screen you can hide the menu bar to make more screen space available.

- Choose **Hide Menu Bar** from the **PC Video** submenu on the **Setup** menu.

This hides the Macintosh menu bar and lets you see all of a VGA display, or a full 640 x 480 Windows desktop, on the Apple 13" or 14" color monitor.

Alternatively, it lets you see all of an EGA or CGA display, or a full 640 x 400 Windows desktop, on a PowerBook.

- To use the menus while the menu bar is hidden hold down the [] key.
- To restore the normal Macintosh menu bar type []B.

To move the MacPC window

- Hold down the [] and [Option] keys together.

The mouse pointer changes to a hand.



- Drag on any part of the MacPC window.

This is useful if you are using the full screen and you cannot see the title bar of the MacPC window.

To get help

You can use Balloon Help to give you information about the MacPC menus, menu commands, and dialog boxes.

- Choose **Show Balloons** from the Balloon Help menu.



To get help about an item move the mouse pointer over it.



Using the keyboard and mouse

MacPC can use the alternative Macintosh keyboards to produce all the keys and key combinations you need to run PC applications.

The PC/AT 101-key keyboard

The illustration below shows the layout and keycap engravings of the 101-key US PC/AT keyboard emulated by MacPC.

The table on the next page lists the Macintosh keyboard keys, or key combinations, needed to produce all the keys on this keyboard that do not correspond directly to Macintosh keys.

In the table the PC/AT keys are given the names shown in the diagram below, except where the keycap engraving is a symbol. In this case they are given descriptions (such as backspace).

On all the Macintosh keyboards all the alpha-numeric and punctuation keys produce the same PC/AT characters when used with

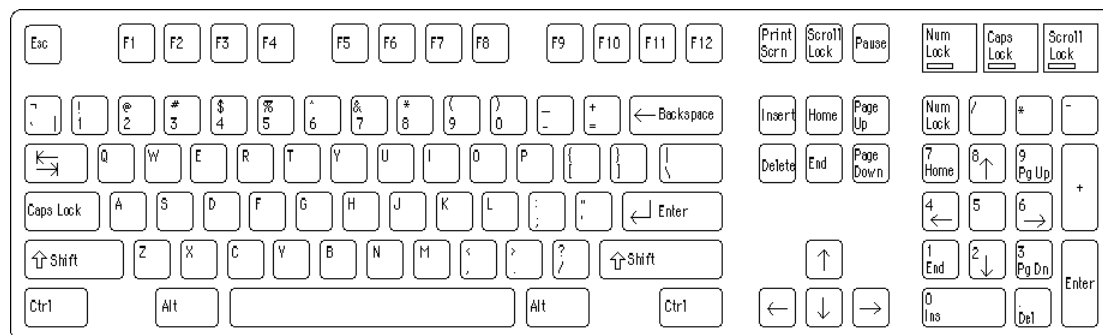
MacPC, so they are not included in the table. Any PC/AT key not included in the table will be produced by the Macintosh keyboard key with the same keycap engraving.

The PowerBook and Portable keyboards do not have function keys or a numeric keypad. MacPC therefore provides two special modes to enable these keys to be entered. Press []F to select Function mode, which lets you type function keys. Press []K to select Keypad mode, to let you use the PC keypad.

Press the same keys again to cancel the mode.

The PC mouse

The PC mouse usually has two buttons. MacPC uses the Macintosh mouse button as the left PC mouse button. The right mouse button is obtained by using keypad =, or enter on PowerBooks.



<i>PC key</i>	<i>Extended kybd</i>	<i>Standard kybd</i>	<i>PowerBook kybd</i>	
			<i>Normal mode</i>	<i>Func mode</i>
Alt	option	option	option	
Right Alt (Alt Gr)	right option	[][←]	[][←]	
Backspace	delete	delete	delete	
Break	ctrl pause (F15)	ctrl [] keypad /	ctrl [] \	
Ctrl	ctrl	ctrl	ctrl	
Ctrl right	right ctrl	[][↓]	[][↓]	
Delete	del	[]D	[]D	
End	end	[]L	[]L	
Escape	escape	escape or []E	escape or []E	
[F1] to [F9]	F1 to F9	[] keypad 1 to 9	[]1 to 9	1 to 9
[F10]	F10	[] keypad 0	[]0	0
[F11]	F11	[] keypad .	[]-	
[F12]	F12	[] keypad enter	[]=	
Home	home	[]O	[]O	
Insert	help/ins	[]I	[]I	
Page Up	page up	[]U	[]U	
Page Down	page down	[]W	[]W	
Pause	pause (F15)	[] keypad /	[] \	
Print Scrn	print screen (F13)	[] keypad = or []P	[] [or []P	
Scroll Lock	scroll lock (F14)	[] keypad clear	[]	
Shift right	right shift	[][→]	[][→]	
Right mouse button	keypad =	keypad =	enter	
<i>PC keypad key</i>	<i>NumLock off</i>	<i>NumLock off</i>	<i>Normal mode</i>	<i>Keypad mode</i>
Del	keypad .	keypad .		. (period)
End	keypad 1	keypad 1		1
Enter	keypad enter	keypad enter		enter
Home	keypad 7	keypad 7		7
Ins	keypad 0	keypad 0		0
Num Lock	keypad clear or numlock	keypad clear or numlock	[]N	[]N
Pg Up	keypad 9	keypad 9		9
Pg Dn	keypad 3	keypad 3		3
[↑]	keypad 8	keypad 8		8
[↓]	keypad 2	keypad 2		2
[←]	keypad 4	keypad 4		4
[→]	keypad 6	keypad 6		6
/	/	/	[]/	
*	*	*	[]'	
+				+
-				-

Windows basics

Windows 3.1 is a graphical user interface for PCs. It gives you an easier way of moving around the MS-DOS structure of files and directories, and provides some extra facilities for managing the system.

If you are familiar with running applications on your Macintosh you should not experience too much trouble using Windows. Many of the techniques of using the mouse and resizing

and moving windows are almost identical in both systems.

Before using Windows you may find it helpful to read about MS-DOS; refer to *Using MS-DOS*, page 97.

The following diagram gives a brief description of the most important components of Windows.

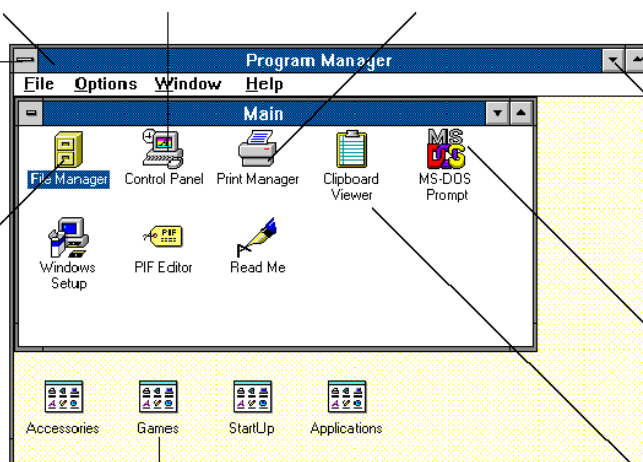
Program Manager is always active when you are working with Windows. You can use **Program Manager** to start other applications, and organize applications into logical groups.

The applications in the **Control Panel** allow you to change the configuration of Windows. Any changes you make are stored in the Windows initialization file WIN.INI.

Print Manager allows you to define default printers, connect to printers on a network, change the configurations of printers, and manage the active printing of files.

Control menu box provides commands to manipulate or close the window.

File Manager is a tool for managing files and directories in a graphical fashion. You can use **File Manager** to view all your files and directories, and copy, move, delete, and rename files.



Maximize button enlarges the window to fill the entire desktop.

Minimize button reduces the window to an icon on the desktop.

MS-DOS Prompt lets you switch to MS-DOS, keeping your Windows session running.

Clipboard Viewer allows you to look at the contents of the Windows clipboard.

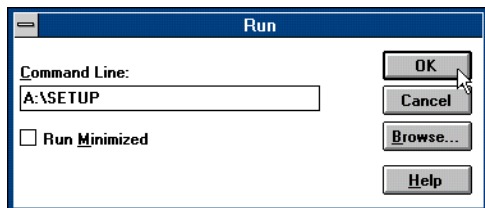
A group icon is a minimized group window, comparable to a closed folder in the Macintosh Finder. Group icons are usually located along the lower edge of the **Program Manager** window.

Installing and running Windows applications

Most Windows applications are installed using the standard Windows setup procedure. Provided you have standard 3.5-inch disks for your Windows application, the procedure is similar to installing software on your Macintosh.

To install a Windows application

- Choose **PC Floppy Disks...** from the **Setup** menu and check that **Drive A:** is set to **SuperDrive** to use the Macintosh internal floppy disk drive for drive A:.
- Insert the installation floppy disk into the Macintosh floppy disk drive.
- Choose **Run...** from the Program Manager **File** menu.
- Follow the application's installation instructions. For example, you may be instructed to type `A:\SETUP`.



- Click **OK** to start the installation.

As the installation proceeds, dialog boxes similar to the one shown below will prompt you for information needed for the installation.



To run a Windows application

- Double-click the application icon in the appropriate program group.

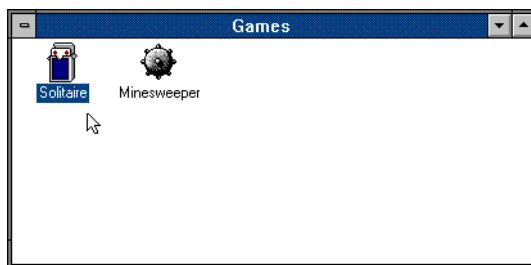
For example, to run Solitaire, supplied with Windows, proceed as follows:

- Double-click the **Games** program group icon to open it.



Games

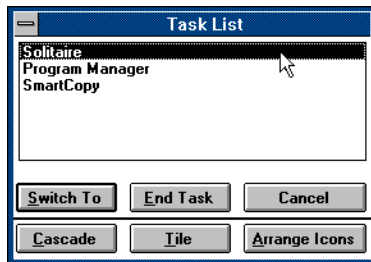
- Double-click the **Solitaire** icon to run Solitaire.



To switch between applications

- Choose **Switch To** from the control menu of the window you are working in or double-click the Windows desktop background.

You will see a **Task List** of applications that you are currently running within Windows.



- Double-click the name of the application you want to use.

To use Windows Help

Windows 3.1 comes with a comprehensive on-line help system. It is a convenient way of looking up information about a task you are performing, a feature you want to know more about, or a command you want to use. Windows Help is available whenever you see a **Help** command button or a **Help** menu in the menu bar.

- Choose the command you want from the **Help** menu.

The commands are explained in the following table:

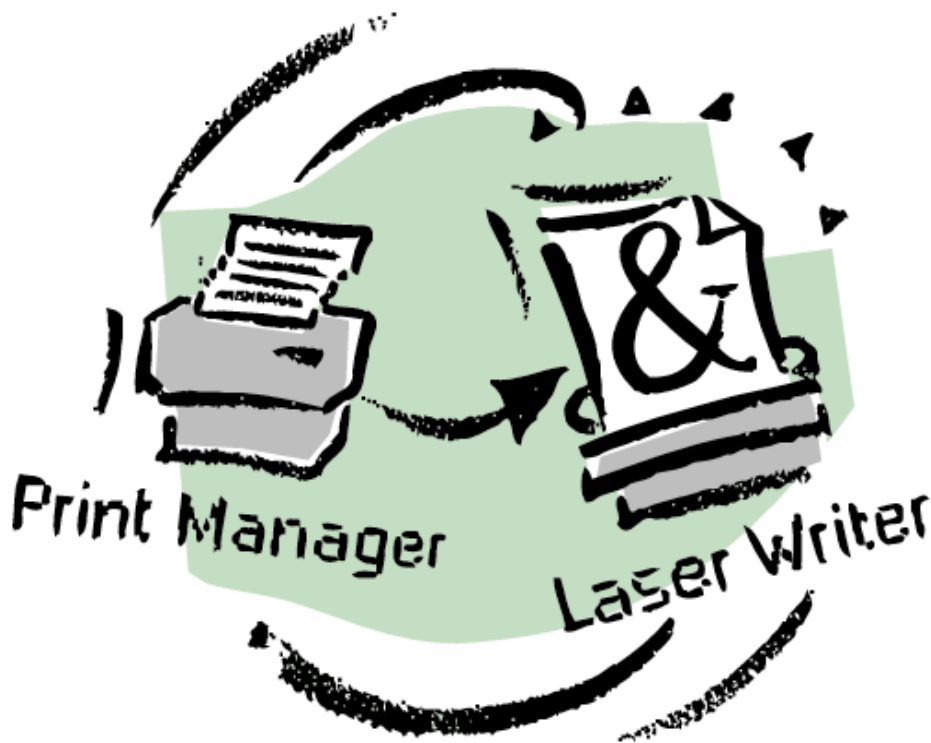
<i>Command</i>	<i>What it displays</i>
Contents	An alphabetical list of all Help topics available for the active application.
Search For Help On	A dialog box for locating information about a specific topic.
How To Use Help	Information on using Windows Help.
About (application)	Information about the active application (registration details, version number, and so on).

For more information

For more information about using Windows refer to any good book on Windows, such as *Windows for Dummies* from IDG books or the *Microsoft Windows User's Guide and User's Reference*.

If you wish to do the Windows tutorial you will need to have a desktop of 640 x 480, otherwise you will be informed that you need at least a VGA display.

Printing from MacPC



This chapter describes how to print from Windows and MS-DOS applications to your Macintosh printer.

Selecting a printer

MacPC allows you to print from Windows and MS-DOS applications to either PostScript or non-PostScript printers.

Printing from Windows

Windows applications give best results when set up for a PostScript printer; refer to *To print from Windows to a PostScript printer* opposite.

If your Macintosh printer does not support PostScript refer to *To print from Windows to a non-PostScript printer*, page 35.

Printing from MS-DOS


Most MS-DOS applications give best results when set up for a dot-matrix printer. MacPC emulates the widely-used Epson LQ-2500 printer on any Macintosh printer; refer to *To print from an MS-DOS application to any Macintosh printer*, page 36.

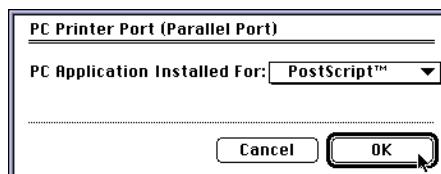
Some MS-DOS applications include a generic PostScript printer driver, in which case you can print from them to a PostScript printer; refer to *To print from an MS-DOS application with a generic PostScript printer driver to a PostScript printer*, page 37.

Printing to a serial printer

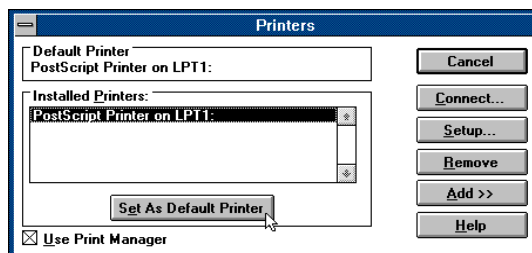
MacPC can also drive a PC printer connected to a serial port on the Macintosh, so that your application can print directly to it; refer to *To print to a serial printer*, page 37.

To print from Windows to a PostScript printer

- Choose **Chooser** from the  menu, and from the Chooser select the PostScript printer you want to print to.
- Choose **PC Printer Port...** from the MacPC **Setup** menu to display the currently-selected printer support:



- If necessary select **PostScript** from the pop-up menu and click **OK**.
- Locate and open the **Main** program group in the Windows Program Manager, and double-click the **Control Panel** icon.
- Double-click the **Printers** control panel icon to display the **Printers** dialog box:



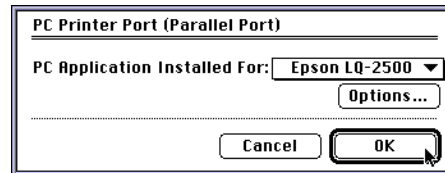
The currently-selected printer is shown in the **Default Printer** box at the top of the dialog box. Available printer drivers are shown in the **Installed Printers** list.

- If necessary, select **PostScript Printer on LPT1** in the **Installed Printers** list, and click **Set As Default Printer**.
- Click **Close** to close the dialog box.
- Print from the Windows application; typically you do this by choosing **Print...** from the application's **File** menu.

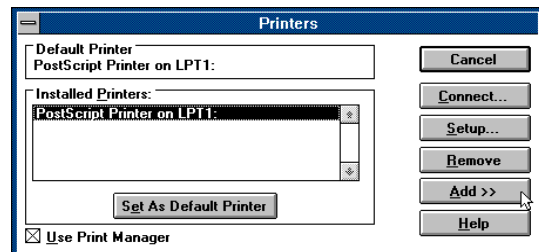
The application will first print to the MacPC PostScript buffer, and the PostScript will then be sent to the Macintosh Chooser. At this point the **Print** dialog box for the Macintosh printer will be displayed; choose **Print** to send the print job to the printer.

To print from Windows to a non-PostScript printer

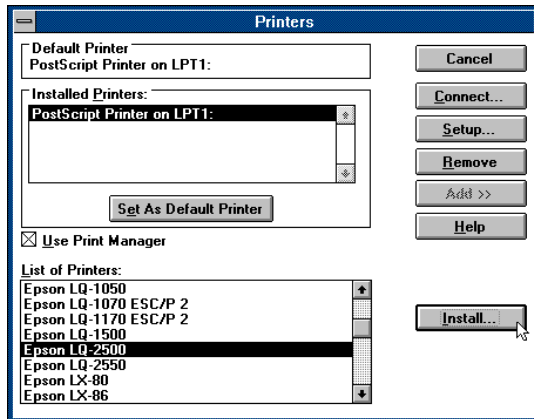
- Choose **Chooser** from the **Apple** menu, and from the Chooser select the non-PostScript printer you wish to print to (for example, DeskWriter or StyleWriter).
- Choose **PC Printer Port...** from the MacPC **Setup** menu to display the currently-selected printer support:



- If necessary select **Epson LQ-2500** from the pop-up menu and click **OK**.
- Locate and open the **Main** program group in the Windows Program Manager, and double-click the **Control Panel** icon.
- Double-click the **Printers** control panel icon to display the **Printers** dialog box.



- Click **Add>>** to display a list of available printer drivers.



- Select **Epson LQ-2500** and click **Install**.

You will be prompted to insert the Windows installation disk #6.

- Insert the appropriate disk and click **OK**.

Epson LQ-2500 on LPT1: will be added to the **Installed Printers** list.

- Select **Epson LQ-2500 on LPT1:** in the **Installed Printers** list and click **Set As Default Printer**.
- Click **Close** to close the dialog box.
- Print from the Windows application; typically you do this by choosing **Print...** from the application's **File** menu.

The application will first print to the MacPC Epson LQ-2500 printer emulation, and the print data will then be sent to the Macintosh Chooser. At this point the **Print** dialog box for the Macintosh printer will be displayed; choose **Print** to send the print job to the printer.

To print from an MS-DOS application to any Macintosh printer

- Choose **Chooser** from the **Apple** menu, and from the Chooser select the printer you want to print to.
- Choose **PC Printer Port...** from the MacPC **Setup** menu to display the currently-selected printer support.
- If necessary select **Epson LQ-2500** from the pop-up menu and click **OK**.
- Configure your MS-DOS application to print to an Epson LQ-2500 or equivalent on the **LPT1** or parallel port.
- Print from the MS-DOS application as you typically would.

The application will first print to the MacPC Epson LQ-2500 printer emulation, and the print data will then be sent to the Macintosh Chooser. At this point the **Print** dialog box for the Macintosh printer will be displayed; choose **Print** to send the print job to the printer.


Epson LQ-2500 printing is suitable for most MS-DOS software, which typically produces black and white, 80 to 132 character wide, plain text output.

If your application presents you with a number of Epson options, choose one of the following printers in order of preference:

- LQ-2500
- LQ-1000
- LQ-1500, v2 ROM
- LQ-1500
- FX-105
- Epson printer

For more information refer to *Epson LQ-2500 emulation options*, page 80.

To print from an MS-DOS application with a generic PostScript printer driver to a PostScript printer

- Choose **Chooser** from the  menu, and from the Chooser select the PostScript printer you want to print to.
- Choose **PC Printer Port...** from the MacPC **Setup** menu to display the currently-selected printer support.
- If necessary select **PostScript** from the pop-up menu and click **OK**.
- Configure your MS-DOS application to print to a generic PostScript printer on the LPT1 or parallel port.
- Print from the MS-DOS application as you typically would.

The application will first print to the MacPC PostScript buffer, and the PostScript will then be sent to the Macintosh Chooser. At this point the **Print** dialog box for the Macintosh printer will be displayed; choose **Print** to send the print job to the printer.

To print to a PC serial printer

If you have a serial printer with a DB-25 connector, you can set up MacPC to print directly to the printer through one of the Macintosh serial ports (printer or modem).

A “Macintosh Plus to ImageWriter” printer cable with the Mini-8 connection on one end and the DB-25 connection on the other can be used to connect the serial printer to the Macintosh.

- Choose **PC Serial Ports...** from the MacPC **Setup** menu.

Check that COM1 is assigned to the port the serial printer is plugged into (modem port or printer port).

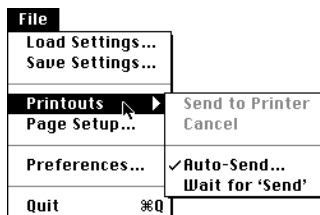
- Set up the printer driver for the serial printer, in either MS-DOS or Windows, to print directly to COM1.

In MS-DOS applications this may not be an option. If this is the case, use the following MODE command at the C:\> prompt to redirect output from LPT1 to COM1:

```
MODE LPT1=COM1 [-J]
```

Sending output to the printer

The options on the **Printouts** submenu on the **File** menu allow you to specify when printing from your Windows or MS-DOS program is sent to the printer.

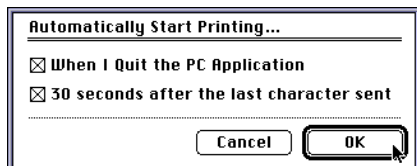


Auto-Send... specifies that output is automatically sent to the Macintosh printer; this is set by default.

Wait for 'Send' specifies that output should not be sent until you select **Send to Printer**.

To print automatically

- Choose **Auto-Send...** from the **Printouts** submenu on the **File** menu to select automatic printing. This dialog box appears:



- Check **30 seconds after the last character sent** to print automatically 30 seconds after the application has stopped sending output.

- Check **When I Quit the PC Application** to print when you exit from the MS-DOS application in MacPC.

If either or both of these options is checked a ✓ will be displayed beside the **Auto-Send...** command in the **Printouts** submenu.

To print manually

If you expect to produce a number of small printouts at irregular intervals you can turn off automatic printing, and then print manually when they are completed.

- Choose **Wait for 'Send'** from the **Printouts** submenu on the **File** menu to turn off automatic printing.
- Choose **Send to Printer** to send any output to the printer. If there is no output waiting the command will not be available.

To cancel printing

- Choose **Cancel** from the **Printouts** submenu on the **File** menu.

This can be used to cancel printing you do not want.

Setting up MacPC



This chapter describes how to build a PC to the specification you want, using MacPC to emulate the PC's ports, disks, memory, and display.

Using the Setup menu

You set up MacPC using the commands on the **Setup** menu.



Use **PC Serial Ports...** and **PC Printer Port...** to set up the emulated PC ports.

Use **PC Floppy Disks...** and **PC Hard Disks...** to specify how the PC disk drives are emulated on the workstation, and **Mac/PC Shared Folders...** to set up Macintosh folders as PC drives.

Use **PC Memory...** to set up the amount of extended or expanded memory you want to use.

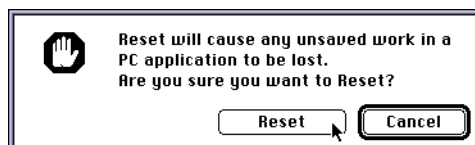
Use **PC Video** to choose the emulation of a PC display adapter.

These commands are described in greater detail in the following pages.

Resetting MacPC

After changing any of these settings, which would correspond to a hardware change on a real PC, MacPC has to be reset.

The following dialog box is displayed to warn you and give you the option of canceling the change.



Setting up disk drives

PCs identify the different types of disk drive using the drive letters A: to Z:.

The table below shows the significance of the different drive letters and how they are set up when you first install MacPC.

You can set up the floppy disk drives A: and B:, the hard disk drives C: and D:, and the shared folders E: to H: using the appropriate options on the **Setup** menu.

Drive letters

The `CONFIG.SYS` file on the hard disk supplied with MacPC sets `LASTDRIVE` to H, giving a default of four shared folders, E: to H:. Drive F: is only available for use as a

shared folder if you are not using it as a CD-ROM drive.

Although drive D: is normally a hard disk and drive E: is normally used for the first shared folder, this does not preclude the use of drive D: as a shared folder if desired. If drive D: is to be used as a shared folder it must not be set up as a hard disk.

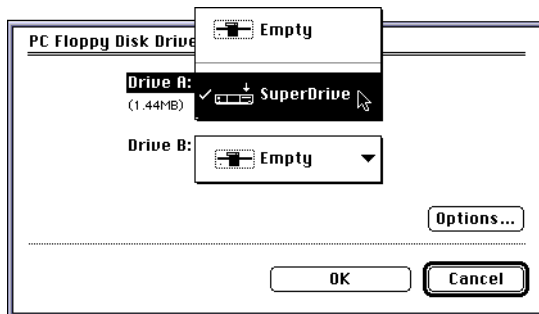
Equally, if you set up a hard disk with more than one partition and assign the first partition as drive D:, MS-DOS will use drive E: for the second partition, drive F: for the third, and so on. In this case, you need to use subsequent letters for any shared folders you set up.

<i>Drive</i>	<i>Default</i>	<i>Description</i>
A:	Internal	The floppy disk drive.
B:	Empty	Additional floppy disk drive.
C:	MacPC Hard Disk File C	The startup, or boot, hard disk drive.
D:	Empty	Additional hard disk drive.
E:	MacPC	Shared PC/Macintosh folder.
F:	Empty	Default for CD-ROM drive.
G:	Empty	Additional shared PC/Macintosh folder.
H:	Empty	Additional shared PC/Macintosh folder.

Setting up floppy disk drives

To set up the floppy disk drives A: or B:

- Choose **PC Floppy Disks...** from the **Setup** menu.
- Select the option you want to use from the **Drive A:** or **Drive B:** pop-up menu:



By default, drive A: is set up as the Macintosh internal SuperDrive and drive B: is empty.

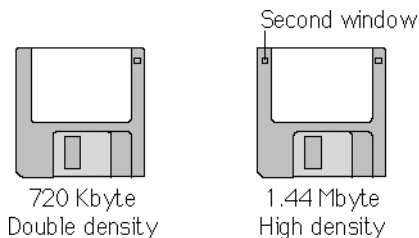
For more information about the floppy disk drive options refer to *PC Floppy Disks...* (*Setup menu*), page 70.

Refer to the **ReadMe-MacPC** file for details of third-party drives supported by MacPC.

Which disks to use

On a PC a double density (720 Kbyte) 3.5-inch disk can be formatted as 1.44 Mbyte, but it will not be recognized as a valid PC disk by your Macintosh. Likewise, a high density 3.5-inch disk will only be accepted if it is the correct 1.44 Mbyte format.

The 3.5-inch high-density disks are identified by the drive by a second window, opposite the write-protect window.



You cannot use Macintosh format floppy disks as drives A: or B:.

Setting up hard disk drives

MacPC emulates each PC hard disk using a single file on the Macintosh.



MacPC Hard Disk File C

The individual MS-DOS files within a MacPC hard disk file are accessible only from within MacPC and you cannot list them directly from the Finder.

Use Insignia's AccessPC utility to use MacPC hard disk files from the Finder.

MacPC hard disk files can be attached to and detached from either of the PC drives C: and D: without affecting the information stored within the hard disk file.

MacPC will always use drive C: to start up unless a floppy disk is in the A: disk drive. You must therefore always have a bootable MacPC hard disk file attached to drive C:. This must include the MS-DOS startup files which are installed when the hard disk file is created.

You can create a non-bootable (D: drive) hard disk file from within MacPC. It is built using the data from the first HDData file, which is installed when you install MacPC.

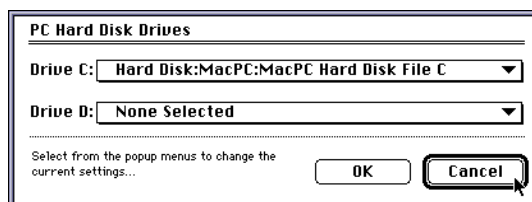
The easiest way of creating a bootable (C: drive) hard disk file is to use the installer. Alternatively, you can create one from within MacPC, but to do so you need the complete set of HDData files.

You can increase the size of an existing MacPC hard disk file using the HD Expander utility, which is installed in the MacPC Utilities folder.

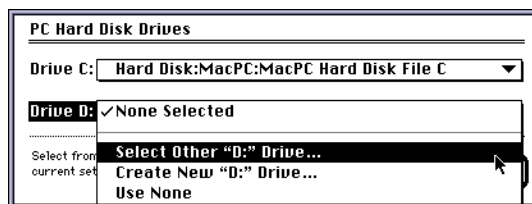
To choose the hard disk file for C: or D:

- Choose **PC Hard Disks...** from the **Setup** menu.

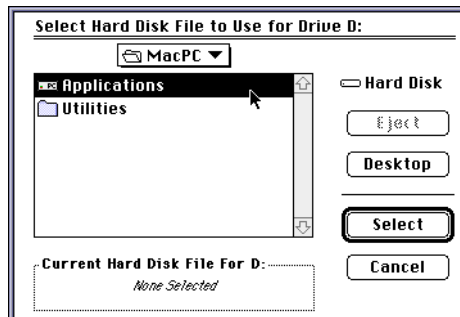
The following dialog box shows the hard disk files selected for drives C: and D:.



- Choose **Select Other "C:" Drive...** or **Select Other "D:" Drive...** from the appropriate pop-up menu.

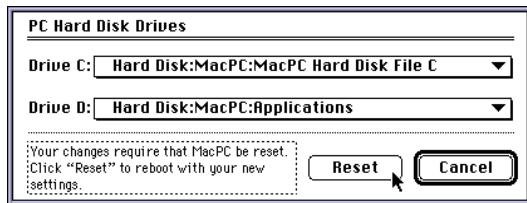


The following dialog box lets you select the hard disk file to use:



-
- Select the hard disk file you want to use and click **Select**.

This dialog box then allows you to reset MacPC or cancel the change:



- Click **Reset** to restart MacPC with the new drive you have specified.

To create a new C: drive

- Insert the MacPC CD-ROM, and double-click the **Installer** icon.
- When the welcome screen appears click **OK** to display the **Easy Install** dialog box.
- Click **Customize**, and select the **DOS 6.21 Hard Disk** option.
- Click **Install** and follow the instructions.

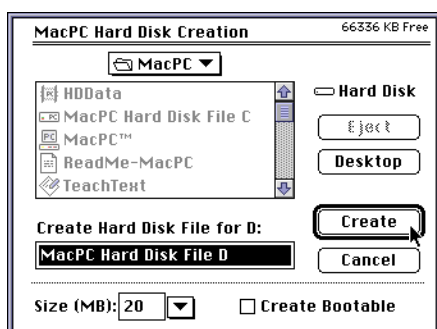
The **MacPC Installation – Hard Disk Creation** dialog box will be displayed.

- Enter a name for the new hard disk, and choose the size from the **Size** pop-up menu.
- Click **Create** to create the hard disk file.

To create a new D: drive

- Choose **PC Hard Disks...** from the **Setup** menu.
- Choose **Create New “D:” Drive...** from the **Drive D:** pop-up menu.

This dialog box appears:



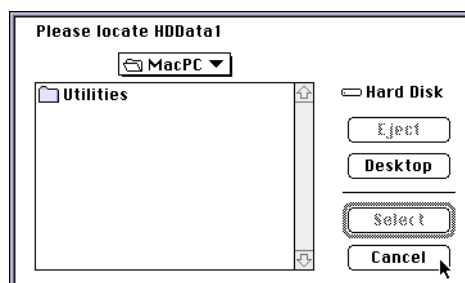
- Enter a name for the new hard disk file.
- Select the size from the pop-up menu. The options available will depend on the amount of free space on your Macintosh hard disk.

The **Create Bootable** option installs MS-DOS, and the Insignia utility files so that the hard disk file can be used as drive C:. To use this option you must have installed the MacPC data files using the **DOS 6.21 Data Files** option in the installer's Customize dialog box.

- Click **Create** to create the hard disk file you have specified.

The new hard disk file will be created using the information in the HDData file, and the other data files if you checked **Create Bootable**.

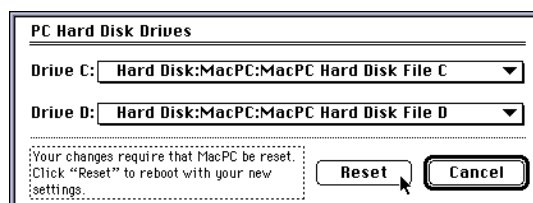
If MacPC cannot locate the HDData files the following dialog box will be displayed:



- Locate the data files on the MacPC CD-ROM, or on your hard disk if you have installed them using the installer.

Alternatively, click **Cancel**, and install MacPC data files using the installer as described above.

MacPC will then need to be reset to use the new drive that you have created.



- Click **Reset** to restart MacPC with the new drive you have created.

To remove the hard disk file from D:

- Choose **PC Hard Disks...** from the **Setup** menu.
- Choose **Use None** from the **Drive D:** pop-up menu.
- Click **Reset** to restart MacPC with drive D: unattached.

To increase the size of a hard disk file

- Quit from MacPC if the hard disk file you want to expand is set up as the C: or D: drive.
- Double-click the **HD Expander** icon:



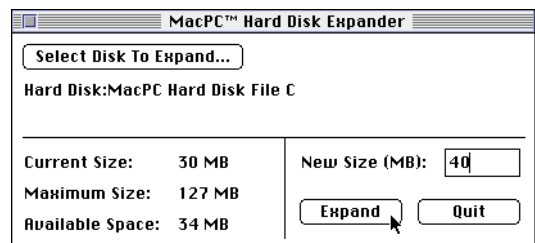
HD Expander

- When the **Hard Disk Expander** window appears click **Select Disk to Expand...**, and choose the hard disk file.

Alternatively you can drag the hard disk file icon and drop it onto the HD Expander icon.

The **Hard Disk Expander** shows the current size of your hard disk file.

- Enter the new size, and click **Expand**:



- When the hard disk file has been expanded click **Quit** to quit from the HD Expander.

Moving PC files to and from the Macintosh

MacPC allows MS-DOS files to be stored in the Macintosh filing system and accessed by MS-DOS and Windows applications as though they were on an MS-DOS disk.

In the case of a real PC, a shared drive would be on another computer and MS-DOS would be able to access it through a software driver. MacPC uses this attribute of MS-DOS to access specified Macintosh folders, which can be on your hard disk or a remote file server, according to your needs.

The MS-DOS files in a shared folder are held as individual Macintosh files and can be used by Macintosh applications that can work with MS-DOS files.

Filenames in MS-DOS

Not all Macintosh filenames are valid as MS-DOS names. It is therefore recommended that you adhere to the MS-DOS filename conventions when creating files on the Macintosh that you will want to access from MacPC.

MS-DOS filenames have the form:

name.ext

where *name* is eight characters or less, and *ext* is three characters or less.

Filenames can include the letters A–Z, the digits 0–9, and the following symbols:

_ ^ \$ ~ ! # % & - { } () @ ' ,

Upper and lower case letters are considered equivalent.

When accessing Macintosh files using a shared folder, an illegal MS-DOS filename that does not adhere to the above restrictions is converted to a legal name, although it may not be accessible to MS-DOS if another file of the same name already exists.

For example, if you list the files on the E : drive the file:



ReadMe-MacPC

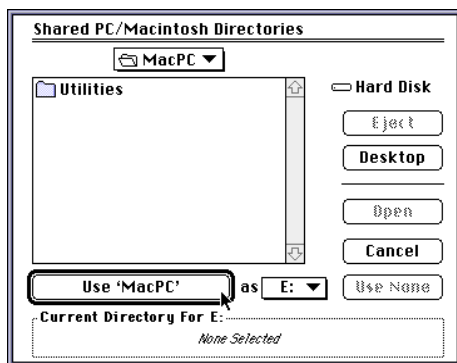
will be given the name:

README-M.\$PQ

To set up a Macintosh folder as PC drives E: to H:

- Choose **Mac/PC Shared Folders...** from the **Setup** menu.

This dialog box lets you select the folder to use as drive E: to H:.



- Choose the drive you want to use from the pop-up menu.
- Select the Macintosh folder you want to use, so that its name appears in the button below the list of files.
- Click the button to use the folder you have selected.

Any drive letters already in use, such as for CD-ROMs, will be grayed out.

You can make more drive letters available for shared folders by altering `LASTDRIVE`; refer to *Drive letters*, page 41.

To list the Macintosh folders set up as PC drives

- Type the following command at the MS-DOS `C:\>` prompt:

```
NET USE [A-Z]
```

Setting up CD-ROM drives

MacPC allows you to read data CD-ROMs which are compatible with the Microsoft CD-ROM Extensions (MSCDEX) as MS-DOS drives.

The CD-ROMs can be read by MS-DOS commands, if appropriate, or by executing a relevant application program (which is often on the CD-ROM itself).

If you are using a hybrid disk with both a Macintosh and a PC partition you will need a different CD driver to the one supplied by Apple, such as RapidCD from Insignia Solutions.

To set up the CD-ROM drive F:

- Type the following command at the MS-DOS C:\> prompt:

```
USECD [-]
```

To list the files on a CD-ROM

- Type the following command at the MS-DOS C:\> prompt:

```
DIR F: [-]
```

To run CD-ROM applications

- Follow the instructions supplied with the CD-ROM.

MSCDEX options

The USECD batch file runs the following MSCDEX command:

```
MSCDEX /D:CDROM$$$ /L:F [-]
```

This assigns the CD-ROM to drive F:.

For information about other options available with the MSCDEX command type the following command at the MS-DOS C:\> prompt:

```
HELP MSCDEX [-]
```

For example, you can set up the CD-ROM drive as drive G: with the command:

```
MSCDEX /D:CDROM$$$ /L:G [-]
```

If the CD-ROM drive does not work, check that your CONFIG.SYS file includes the line:

```
DEVICE=C:\INSIGNIA\CDROM.SYS
```

For more information refer to *MS-DOS configuration*, page 107.

Setting up memory

When you first install MacPC a recommended PC memory configuration is set up for you, and you should not normally need to change this.

If you do need to change the memory configuration, the easiest way is to reinstall MacPC using one of the **MacPC** options in the installer's Customize dialog box.

Alternatively, you can manually configure the PC memory using the following procedure:

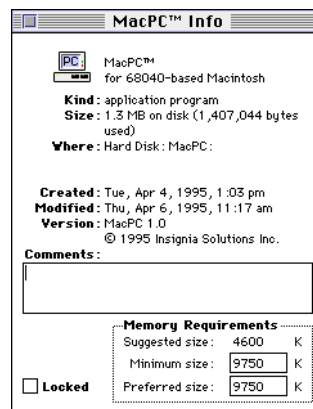
- Increase the MacPC application memory size.
- Change the MacPC PC memory configuration.

These steps are described in greater detail in the following sections.

To change the application memory size

- Select the **MacPC** icon.
- Choose **Get Info** from the Finder's **File** menu.

This dialog box shows the Minimum and Preferred sizes to be used for MacPC:



For each 1 Mbyte of additional PC memory you want to use you need to increase the application memory size by 1120 Kbyte.

For example, to increase the extended memory from 1 Mbyte to 3 Mbyte, while keeping 1 Mbyte of DeltaCache, increase the Preferred size by 2240 Kbyte.

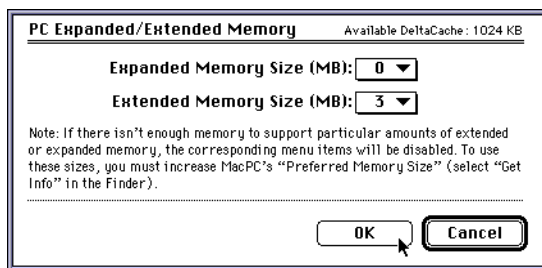
The amount of memory you need also depends on the size and number of colors used for the Windows desktop.

- Click the close box, in the top left corner of the **MacPC Info** dialog box, to close it.

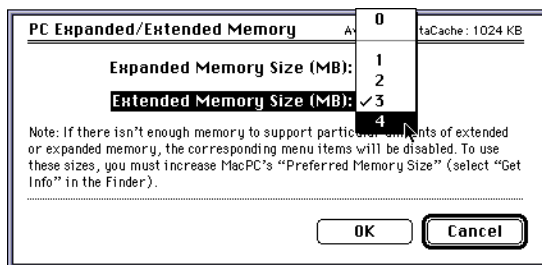
To change the PC memory

- Choose **PC Memory...** from the **Setup** menu.

This dialog box shows the current size for each type of PC memory, expanded and extended, and allows you to change it:



- Select the amount of memory from the appropriate pop-up menu.



You can choose any combination of expanded and/or extended memory up to the total amount of available memory, as shown in the top right corner of the dialog box.

Any of the available memory not used for extended or expanded memory is allocated to the DeltaCache, which is used to improve the performance of MacPC.

Reducing the DeltaCache below about 1024 Kbyte will significantly reduce the performance of MacPC.

- Click **Reset** to restart MacPC with the memory configuration you have selected.

Setting up the Windows desktop

MacPC includes a Windows Display Driver that improves the performance of Windows graphics. It also allows you to run Windows in a window of any size, up to the full size of your Macintosh screen.

To set up the Windows desktop

- Choose **Windows Desktop...** from the **Setup** menu.

The **Windows Setup** window allows you to specify the size and position of the Windows window, and the number of colors to use.

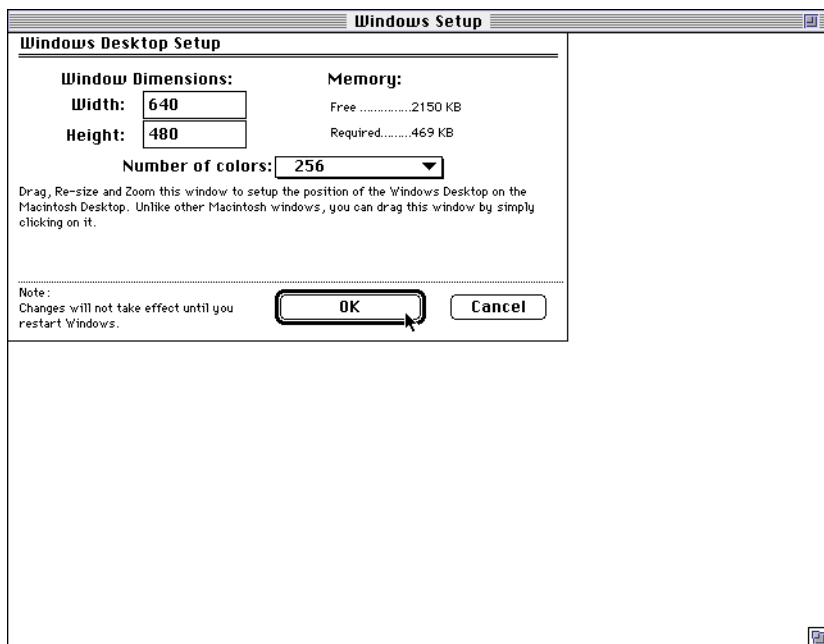
The Macintosh menu bar is hidden so that you can use the full Macintosh screen if you wish.

You can move the **Windows Setup** window to the position you want it on the screen by clicking on any part of the window and dragging to the position you want.

As you change the size and number of colors the memory required is shown. This must be less than the free memory.

If there is insufficient memory for the size you require, increase the application memory size; refer to *To change the application memory size*, page 50.

The changes you make take effect when you next run Windows.



To specify the size for the Windows desktop

- Resize the **Windows Setup** window by dragging the size box in the lower right corner of the window.

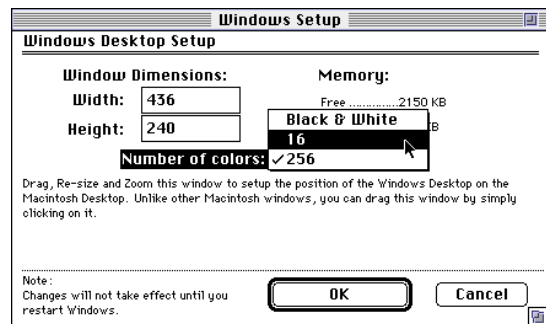
To use the full Macintosh screen

- Click the zoom box near the right end of the title bar.

Click the zoom box again if you want to restore the window to its original size.

To select the number of colors for Windows

- Select the number you want from the **Number of colors** pop-up menu.



For best performance set the number of colors to the same setting as the setting in your Macintosh **Monitors** control panel, and do not set the **Monitors** control panel to thousands or millions of colors.

Using modems and other serial devices

The MacPC serial ports can be used to connect modems, printers, and other kinds of serial devices to your Macintosh computer's serial (modem or printer) ports.

To use a serial device with MacPC you need:

- An external serial device, internal modem, or network device that can be connected to a Macintosh serial port.
- A suitable cable.
- MS-DOS software that communicates via a serial port.
- COM1 : or COM2 : assigned to the Macintosh serial port.

Data rates

The data transfer rates which MacPC can handle depend on the speed of your Macintosh. In general, note the following:

- When sending data from MacPC any data rate (baud rate) can be used.
- When receiving data into MacPC choose a lower data rate if you are running on a slower Macintosh.

You can trade off speed for block size – at higher speeds keep the data block size small (100-200 bytes).

If the incoming data rate is too high some of the data may be lost and serial communications programs will not be able to connect. Reduce the rate if you have problems. If the MS-DOS program and the external device use compatible handshaking there should be no problems.

Assigning serial ports

Use the **PC Serial Ports...** command on the **Setup** menu to set up the ports; refer to *PC Serial Ports... (Setup menu)*, page 83.

Serial devices

This section gives details of the different serial devices that can be used with MacPC.

Modems

Hayes-compatible modems and MS-DOS communications programs work well with MacPC. Most modems that work with Macintosh applications will also work with MS-DOS software running in MacPC.

Not all such communications programs will work, for the simple reason that some of them depend upon reading the status of, or receiving signals from, lines that the Macintosh serial port does not have.

PC-compatible computers can have up to 25 pins on their serial ports compared to eight on the Macintosh.

Printers

If you are using a serial printer with MacPC, and your PC program is sending output directly to it, you should make sure that you have the correct cable. The printer may need to be configured to match the serial port settings of MacPC (see below).

Problems with serial printing may be due to handshaking; that is, the interchange of signals between the program and the printer to ensure that data is not sent before the printer can accept it.

Flow control

The **Flow control** option in the **PC Serial Ports** dialog box converts software handshaking from the outside world of devices into hardware handshaking as far as the PC programs are concerned. This is only needed because most PC programs use hardware handshaking and a few devices, especially printers, use only software handshaking.

If you are using the correct cable to your printer, and both printer and PC program use hardware handshaking, you should print successfully.

If you have printing problems, try to configure your printer and PC program to use software handshaking.

If your program cannot be configured for software handshaking, make sure that the printer is using XON/XOFF and check **Flow Control** in the **PC Serial Ports** dialog box.

MacPC will now convert the software signals sent by the printer into emulated hardware signals that your PC program can understand.

Other devices

Other serial devices may or may not work, depending on their requirements and how configurable they are. Almost any device that uses software flow control will work.

Cables

The Apple Peripheral-8 cable or equivalent will work for connecting an Apple modem, an ImageWriter II, or LaserWriter printer to a serial port. For other modems use a Macintosh-to-Hayes cable. For other printers use a Macintosh-to-ImageWriter I cable.

Specifications

MacPC supports the following serial port transmission rates, in bits per second:

300	1200	2400	4800	7200
600	1800	3600	9600	19200

Supported serial port transmission protocols:

Parity: Even, Odd, None, Mark, or Space.

Data bits: 5, 6, 7, or 8.

Stop bits: 1, 1.5, or 2.

By default, COM1: is set up by the following MODE command in the AUTOEXEC.BAT file:

```
MODE COM1:9600,n,8,1
```

This gives the following communications settings:

9600 baud, no parity, 8 data bits, 1 stop bit.

These settings can be changed with another MODE command.

Limitations

Programs that do not work well are those that are extremely timing-sensitive or that rely on serial port lines that are not available on the Macintosh serial port.

MacPC has no access to the DSR, DCD, or RI signals, and the RTS line cannot be set up due to the lack of lines. Instead, MacPC makes the DSR and RLSD/DCD lines seem to always have the same status as the DTR line. RI is always set to off.

Copy-protection locks do not work on MacPC due to unavoidable timing variations in its processing of serial port signals through the Macintosh serial port driver.

International usage

To use MS-DOS software in countries outside the USA and English-speaking Canada you may need to adjust it for the different keyboard layouts, screen display character sets, and printer character sets required in each country.

MacPC includes a special `KEYBOARD.SYS` file that configures MS-DOS to match the layouts of international Macintosh keyboards.

An additional facility is supplied for Danish and Norwegian users to provide the \emptyset and \O characters in place of \o and \O .

To use an international keyboard for MS-DOS

- Type the following line (or include it in your `AUTOEXEC.BAT` file):

```
KEYB XX,,C:\INSIGNIA\KEYBOARD.SYS [-]
```

where `XX` represents the code for the keyboard that you wish to install (see the table opposite). The two-letter code is followed by two commas then the path to the `KEYBOARD.SYS` file. Note that the only space in the line is just after `KEYB`; there is no space between the two commas.

Some MS-DOS programs, such as Microsoft Windows, look at the PC hardware directly rather than at the MS-DOS settings and so will ignore the installed `KEYBOARD.SYS` driver.

The countries and the codes are as follows:

<i>Country</i>	<i>Code</i>	<i>Country</i>	<i>Code</i>
Belgium	BE	Netherlands	NL
Brazil	BR	Norway	NO
Canadian French	CF	Poland	PL
Czechoslovakia (Czech)	CZ	Portugal	PO
Czechoslovakia (Slovak)	SL	Spain	SP
Denmark	DK	Sweden	SV
Finland	SU	Switzerland (French)	SF
France	FR	Switzerland (German)	SG
Germany	GR	United Kingdom	UK
Hungary	HU	United States	US
Italy	IT	Yugoslavia	YU
Latin America	LA		

For example, to use the key assignments for an Italian keyboard type:

```
KEYB IT,,C:\INSIGNIA\KEYBOARD.SYS [-]
```

To use an international keyboard for Windows

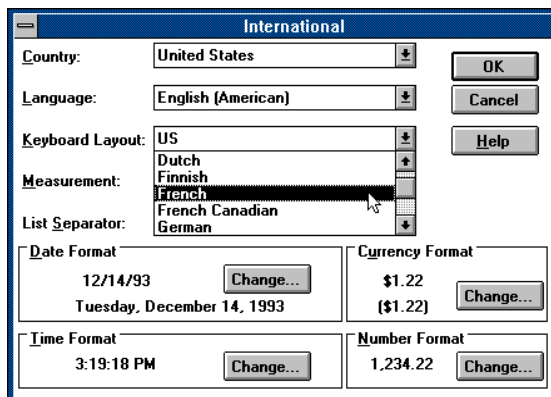
- Double-click the **International** icon in the Windows **Control Panel** window.



International

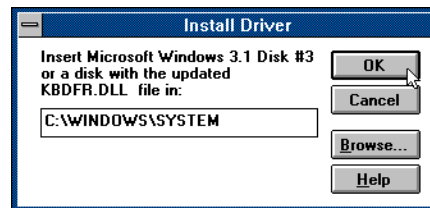
The **International** dialog box will be displayed.

- Click the down arrow to open the **Keyboard Layout** drop-down list box, and select the layout you require.



- Click **OK**

The following dialog box lets you specify the location of the appropriate keyboard driver:



- Type C : \WINDOWS\SYSTEM.
- Click **OK** to use the keyboard layout you have selected.

To set up international printing

The following options are available for international printing.

Epson LQ-2500 printing

The MacPC Epson LQ-2500 emulation is complete, including the printer's international character sets. The LQ-2500 fonts provided include the IBM Extended Character Set graphics.

When you set options in the **Epson LQ-2500 Emulation Options** dialog box you are setting up the initial defaults of the printer, just as if you used the control panel of a real LQ-2500. These initial settings may be changed by your MS-DOS program.

If your MS-DOS software takes complete control of the printer, including margin settings, pitch setting, and character set selection, then you should leave the options at the default settings and your printouts will be fine.

PostScript or direct printing

For MS-DOS software that prints via PostScript or directly to an attached PC-compatible printer, the LQ-2500 settings are unnecessary and will not affect your printouts.

To set up MS-DOS for Denmark or Norway

To get the ø and Ø characters needed by Danish and Norwegian users on-screen and in printouts:

- Check the **“Codepage 850” International Support** option in the **MacPC Preferences** dialog box.

- In the `CONFIG.SYS` file add the lines:

```
COUNTRY=045,850,C:\DOS\COUNTRY.SYS
DEVICE=C:\DOS\DISPLAY.SYS
CON=(EGA,850,1)
```

- In the `AUTOEXEC.BAT` file add the lines:

```
NLSFUNC
MODE CON CODEPAGE PREPARE=((850)C:\DOS\EGA.CPI)
MODE CON CODEPAGE SELECT=850
KEYB DK,850,C:\INSIGNIA\KEYBOARD.SYS
```

- You must then reset MacPC.

The above example is for Denmark; for Norway, replace the country code 045 with 047 and the keyboard code DK with NO.

Improving the performance of MacPC

This section explains how to set up MacPC to obtain the best possible performance from your PC applications.

The main factor affecting the performance of MacPC is the DeltaCache. In addition, when running Windows, the following three factors have an effect:

- The position and size of the Windows desktop.
- The number of colors used for the Windows desktop.
- The amount of extended memory specified.

DeltaCache

When MacPC runs it is allocated the size of memory specified in the **MacPC Info** dialog box.

Any memory not used for the MacPC application is available for PC extended or expanded memory, or for the DeltaCache if not allocated to PC memory.

The performance of MacPC will be significantly reduced if less than 1 Mbyte (1024 Kbyte) is available for the DeltaCache. Increasing the DeltaCache above 1 Mbyte will give a small additional increase in performance.

The Windows desktop

The performance of the Windows desktop is optimal when the whole window is visible on the screen, unobscured by another window.

For best performance the **Monitors** control panel should be set to 256 or 16 colors, and the Windows desktop should match this.

When the Windows desktop is optimal a ✓ is displayed in the title bar. Alternatively, if the title bar is not visible press []-option to change the mouse pointer to a hand.

The hand pointer includes a period to indicate whether the Windows desktop is optimal:



Optimal



Non-optimal

The performance of MacPC will also decrease slightly as the size of the Windows desktop is increased.

Extended memory

Windows needs at least 1 Mbyte of extended memory to run, and will run more efficiently with at least 3 Mbyte of extended memory. However, you should ensure that at least 1 Mbyte of DeltaCache remains available or the improvement in performance will be lost.

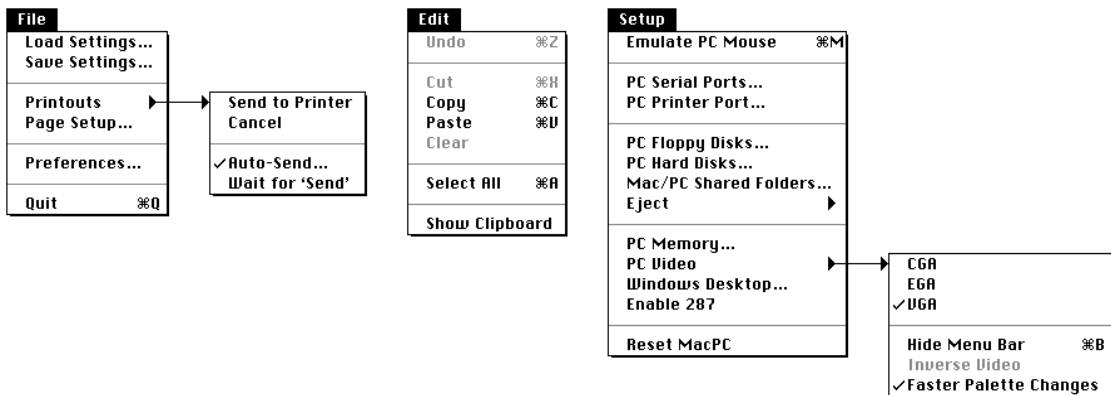
The amount of DeltaCache available is displayed in the top right corner of the **PC Expanded/Extended memory** dialog box.

MacPC commands

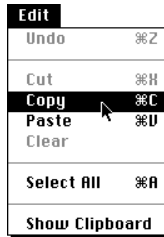
This chapter provides detailed information about each of the MacPC menu commands, arranged in alphabetical order for ease of reference.

Menus

The following diagrams show the commands available on the menus in MacPC:



Note that the commands **Undo**, **Cut**, and **Clear** on the **Edit** menu have no function in MacPC and so are not included in this chapter.

A screenshot of the 'Edit' menu from the MacPC application. The menu is displayed as a vertical list with a black title bar at the top containing the word 'Edit' in white. The menu items are: 'Undo' with a keyboard shortcut of ⌘Z, 'Cut' with ⌘H, 'Copy' with ⌘C (this item is highlighted with a mouse cursor), 'Paste' with ⌘U, 'Clear', 'Select All' with ⌘A, and 'Show Clipboard' at the bottom.

Edit	
Undo	⌘Z
Cut	⌘H
Copy	⌘C
Paste	⌘U
Clear	
Select All	⌘A
Show Clipboard	

Using Windows

Copy (Edit menu)

Use the **Copy** command to copy highlighted text or graphics so that you can paste them into another Macintosh application.

When you copy a highlighted area of the screen MacPC places it onto the clipboard, replacing the previous contents of the clipboard.

Holding down the option key when choosing **Copy** replaces return characters with spaces, so that the text will be treated by a word processor as a single paragraph.

When you are using Windows, the MacPC SmartCopy utility automatically links the Windows and Macintosh clipboards. You can therefore copy text and graphics directly using the **Copy** command on the Windows application's **Edit** menu. For more information refer to *Paste (Edit menu)*, page 69.



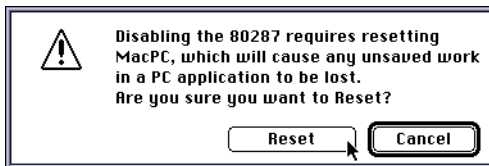
Disable/Enable 287 (Setup menu)

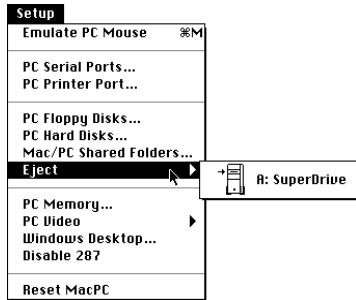
Use the **Disable 287** command to disable emulation of the 80287 math co-processor, which uses the 68881 or 68882 math co-processor in your Macintosh, or the built-in math co-processor in the 68040.

You may need to select this command if you are running an MS-DOS application which is written to use the 80287, and which does not appear to run properly with the emulated math co-processor. The Macintosh math co-processor has a different precision than the emulated math co-processor so there may be a few applications that do not run properly.

When you choose **Disable 287** the command changes to **Enable 287**.

After choosing either command this dialog box is displayed to allow you to reset MacPC or cancel the command:





Eject (Setup menu)

Use the **Eject** command to eject a floppy disk from a floppy disk drive or a CD-ROM from a CD-ROM drive.

Choosing **Eject** displays a submenu showing each of the drives containing an ejectable disk. Choose **Eject** and one of the drives on the submenu to eject a disk from the specified drive. The **Eject** command can also be used to eject a CD from a CD-ROM drive.

You can also eject a floppy disk by typing [][Shift]1, [][Shift]2, or [][Shift]0 for an internal, second internal, or external drive, respectively.



Emulate PC Mouse/Mac Mouse (Setup menu)

Use the **Emulate PC Mouse** command to use the Macintosh mouse to emulate a Microsoft Bus Mouse.

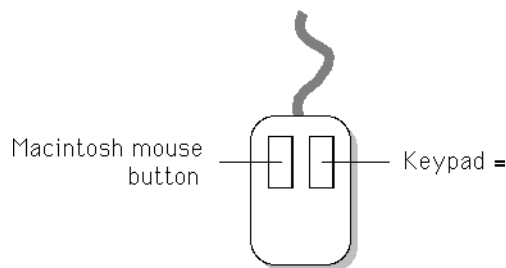
When running Windows the PC mouse is automatically emulated whenever the Macintosh mouse pointer is in the MacPC window. Note that to improve performance the Windows mouse pointer is slightly reduced in size. Choose **Emulate PC Mouse** if you prefer to work with the full size mouse pointer.

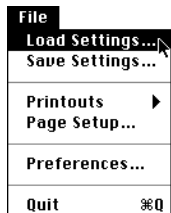
When you choose **Emulate PC Mouse** the command changes to **Mac Mouse**, the Macintosh mouse cursor will disappear, and the MacPC menu bar will be unavailable.

To switch between the two options type []M.

To restore the Macintosh mouse temporarily, so that you can select menu commands, hold down the [] key.

The PC mouse usually has two buttons. The right mouse button is obtained with keypad =, []R, or enter on PowerBooks.



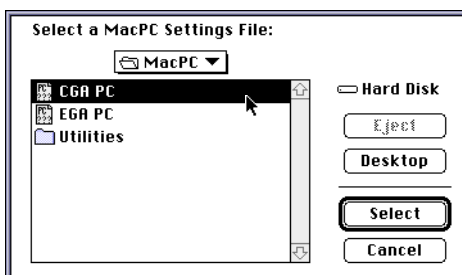


Load Settings... (File menu)

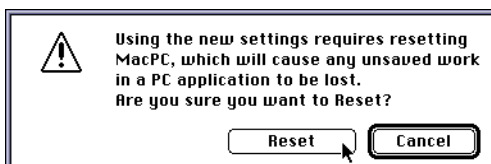
Use the **Load Settings...** command to set up MacPC with one of a number of alternative configurations. You create a settings file by setting up MacPC in the configuration that you want, and then choosing the **Save Settings...** command on the **File** menu; refer to *Save Settings... (File menu)*, page 92.

The settings file stores information about each of the settings you have selected from the **Setup** menu.

To load a settings file from MacPC choose **Load Settings...**. This dialog box appears:



Select the settings file you want and choose **Select**. If the settings file you choose changes the configuration of disks, memory, or video MacPC will need to be reset, and the following dialog box will be displayed to allow you to proceed or cancel the operation:



You should close all Windows applications and exit Windows before resetting MacPC.

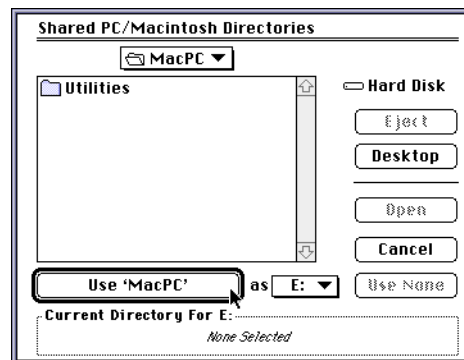
You can start MacPC with particular settings by double-clicking the appropriate settings file or by dragging it onto the **MacPC** icon.



Mac/PC Shared Folders... (Setup menu)

Use the **Mac/PC Shared Folders...** command to set up MacPC drives. This allows you to share files between MacPC and the Macintosh.

When you choose **Mac/PC Shared Folders...** this dialog box appears:



To assign an MS-DOS drive to a folder on the Macintosh first select the drive you want to assign from the pop-up menu. Initially MacPC provides the four shared drives E: to H:.

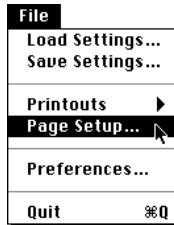
Locate the Macintosh folder you want to use so that it appears as the title of the **Use** button. Then click this button to assign the specified folder to the selected drive.

Click in the space below the list of files to select the currently-displayed folder.

Alternatively, click **Use None** to remove the association with the selected drive.

To run programs on a CD-ROM refer to *Setting up CD-ROM drives*, page 49. If any drive letters are already in use for CD-ROM drives they will be dimmed and unavailable for use as shared drives.

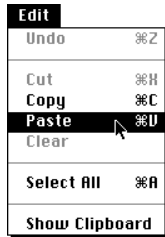
For more information about using shared drives, refer to *Moving PC files to and from the Macintosh*, page 47.



Page Setup... (File menu)

Use the **Page Setup...** command to set up the printer so that you can print from MacPC.

For more information about printing from MacPC refer to *Printing from MacPC*, page 33.



Using Windows

Paste (Edit menu)

Use the **Paste** command to enter text from the clipboard into MacPC, character by character. You cannot use the **Paste** command for graphics and, if the clipboard does not contain text, the **Paste** command will be dimmed on the menu.

You can paste text previously copied from the MacPC MS-DOS window using the **Copy** command on the **Edit** menu; refer to *Copy (Edit menu)*, page 62. Alternatively, you can paste text cut or copied from another Macintosh application.

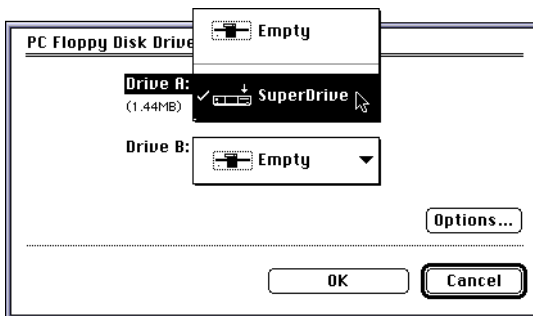
When you are using Windows, the MacPC SmartCopy utility automatically links the Windows and Macintosh clipboards. You can therefore paste text and graphics directly using the **Paste** command on the Windows application's **Edit** menu.



PC Floppy Disks... (Setup menu)

Use the **PC Floppy Disks...** command to set up the two floppy disk drives, A : and B :, supported by MacPC.

When you choose the **PC Floppy Disks...** command this dialog box allows you to choose which floppy disk drive you want to use with MacPC:

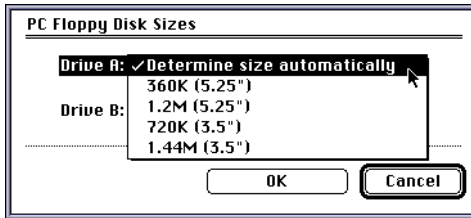


The alternatives for either drive are as follows:

Select this option	To use this drive
Empty	None.
SuperDrive	An internal or external SuperDrive attached to the Macintosh.
Other	Any compatible external drive attached to the Macintosh.

The capacity of the drive is shown below the **Drive A** or **Drive B** label in the dialog box. In the case of some third-party external drives MacPC cannot determine the drive capacity, in which case you may need to specify the capacity manually.

Click **Options...** to display the following dialog box and select the correct option from the pop-up menu:



Specify the maximum capacity of the drive, not the disk density being used.

Refer to the **ReadMe-MacPC** file for details of third-party drives supported by MacPC.



Setting up hard disk drives

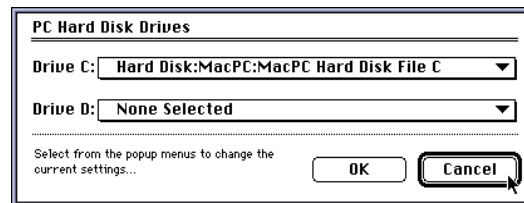
PC Hard Disks... (Setup menu)

Use the **PC Hard Disks...** command to set up the hard disk drives, C: and D:, supported by MacPC. Each MacPC hard disk is a file on the Macintosh.

The MacPC hard disk files can be attached to and detached from either of the PC drives C: or D: without affecting the information stored within the hard disk file.

MacPC will always use drive C: to start up unless a floppy disk is in an attached disk drive. You must therefore always have a MacPC hard disk file attached to drive C:. This must include the MS-DOS startup files which are installed when the disk file is created with the **Create Bootable** option checked.

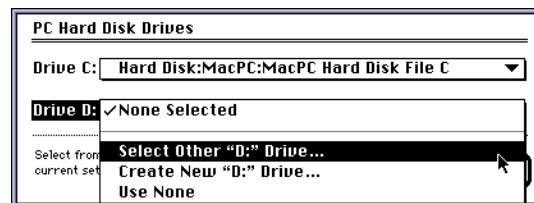
When you choose **PC Hard Disks...** this dialog box appears:



You set up each drive using a pop-up menu of options.

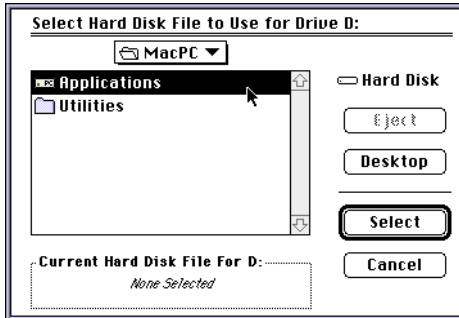
The **Drive C:** menu initially shows the name of the MacPC hard disk file selected for that drive. If the previously selected hard disk file has been moved or is missing the menu will show the message **Can't find...**, followed by the name of the file.

To change either drive select an option from the corresponding pop-up menu.



Selecting another drive

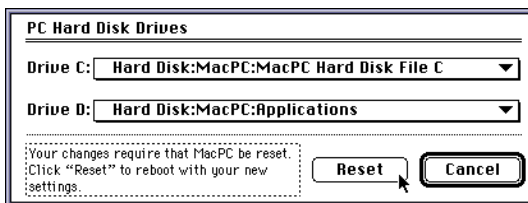
Choose **Select Other “C:” Drive...** or **Select Other “D:” Drive...** to select another MacPC hard disk file for the drive. This dialog box appears:



Choose the MacPC hard disk file you want to assign to the drive.

The box in the lower left corner of the dialog box shows the name of any currently-selected hard disk file. Click this to show other hard disk files and folders in the same folder.

If you are changing the MacPC hard disk file assigned to drive C : or D : MacPC will need to be reset to enable the new disk to be used. This dialog box allows you to proceed or cancel the operation:



You should close all Windows applications and exit Windows before resetting MacPC.

Creating a new drive

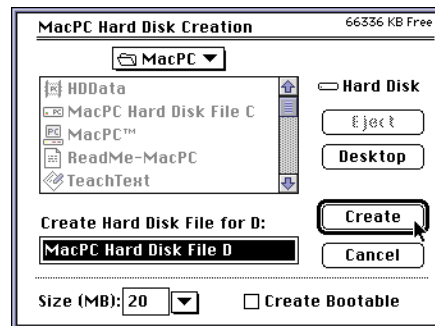
The easiest way to create a new drive is to use the Customize option in the installer; refer to *Installing additional MacPC options*, page 16.

Alternatively, you can create a new hard disk file from within MacPC.

To create a new empty hard disk file for drive D: you need to have the HDData data file. This is installed by the Easy Install option when you install MacPC.

To create a new bootable hard disk file, which you can use for drive C:, you need to have the full set of HDData files. You can install these using the **DOS 6.21 Data Files** option in the installer's Customize dialog box.

To create a new drive manually choose **Create New "C:" Drive...** or **Create New "D:" Drive...**. This dialog box appears:

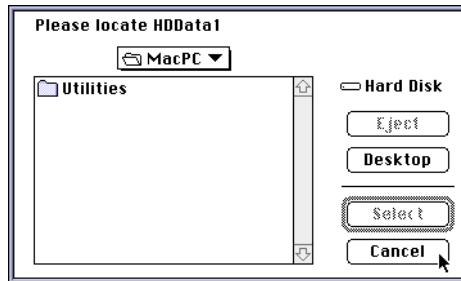


Enter a name for the hard disk file and select its size from the pop-up menu. The size options available will depend on the amount of free space on the Macintosh hard disk.

The **Create Bootable** check box specifies whether MS-DOS and the Insignia utility files should be installed so that the hard disk can be used as an MS-DOS startup disk. You should only use this if you have first installed the full set of HDData files.

When you have selected the options you want click **Create**, and MacPC will create the hard disk file. To do this it uses the information in the HDData files.

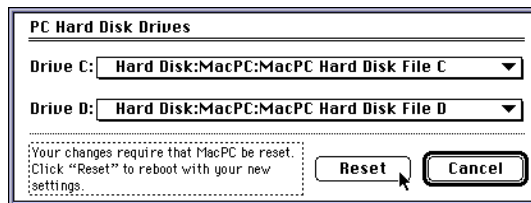
If MacPC cannot locate the HDData files the following dialog box will be displayed:



Locate the data files on the MacPC CD-ROM, or on your hard disk if you have installed them using the installer.

Alternatively, click **Cancel** and install the MacPC data files as described above.

MacPC will then need to be reset to use the new drive you have created.



**Leaving drive D:
unattached**

Choose **Use None** if you do not want to attach a MacPC hard disk file to drive D : . This option is not available for drive C : .



PC Memory... (Setup menu)

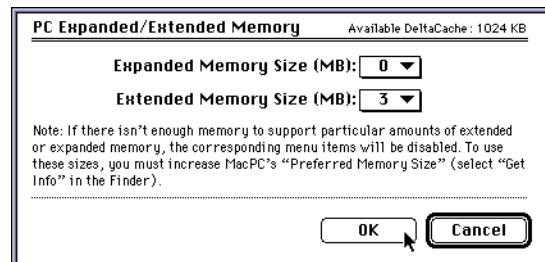
Use the **PC Memory...** command to choose how much additional PC memory is available for your PC applications.

Two different memory standards have been used on PCs, and PC applications are generally designed to use one or other of these. The following table summarizes the key features of each:

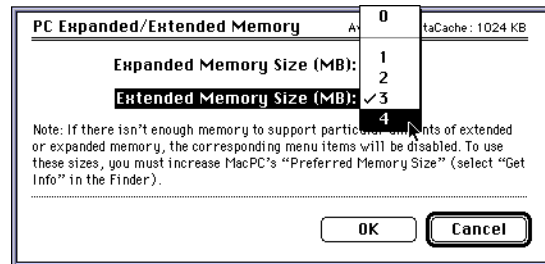
<i>Type of PC memory</i>	<i>Description</i>
Expanded memory	Also referred to as LIM or EMS (Lotus, Intel, Microsoft Expanded Memory Specification). Used by earlier real-mode PC applications.
Extended memory	Also referred to as XMS (Extended Memory Specification).

MacPC supports both of the standard methods for providing extra PC memory: expanded memory and extended memory.

When you choose **PC Memory...** the following dialog box shows the current size set for each type of PC memory and allows you to change it:



Choose the amount of memory to allocate from the pop-up menu.

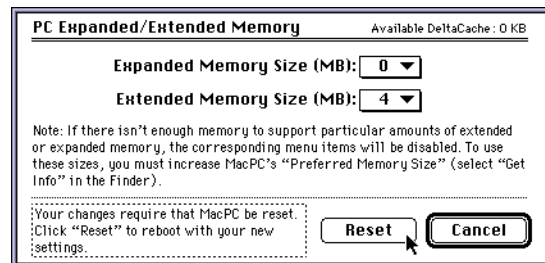


The available memory is divided into the expanded and extended memory you set, and any remaining memory is used for the DeltaCache.

The DeltaCache improves the performance of MacPC and it is recommended that you leave at least 1024 Kbyte available for it.

If the required amount of memory is grayed out, adjust the application memory size as described on the next page.

MacPC will need to be reset to use a different amount of expanded or extended memory.



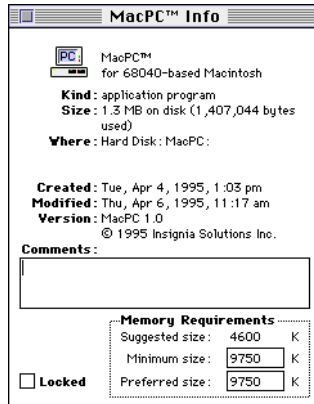
Click **Reset** to reset MacPC or **Cancel** to continue without changing the PC memory setting.

- You must close all Windows applications and exit Windows before resetting MacPC.

Increasing the application memory size

To make more memory available for PC memory you need to increase the application memory size for MacPC by 1120 Kbyte for every 1 Mbyte of additional PC memory you want to use.

To do this select the **MacPC** icon and choose **Get Info** from the Finder's **File** menu.



Enter the new size in both the **Minimum size** and the **Preferred size** boxes.

The total amount of free memory, as shown in the top right corner of the **PC Expanded/Extended Memory** dialog box, is used as DeltaCache to improve the performance of the MacPC PC emulation.

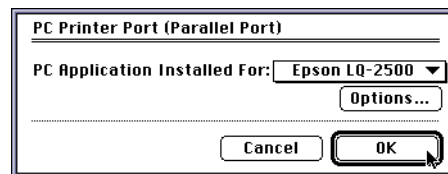
Reducing the amount of memory available for DeltaCache may adversely affect the performance of MacPC.



PC Printer Port... (Setup menu)

Use the **PC Printer Port...** command to select the type of printer emulation to be used for the output from LPT1:, the standard MS-DOS printer port.

When you choose **PC Printer Port...** this dialog box appears:

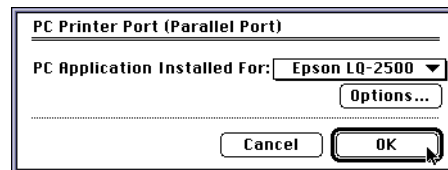


PostScript

PostScript is the default option. Choose this if your Macintosh has access to a PostScript printer, such as a member of the Apple LaserWriter family, and you are using Windows or one of the few MS-DOS applications that support PostScript. MacPC will send the output to the printer without conversion.

Epson LQ-2500

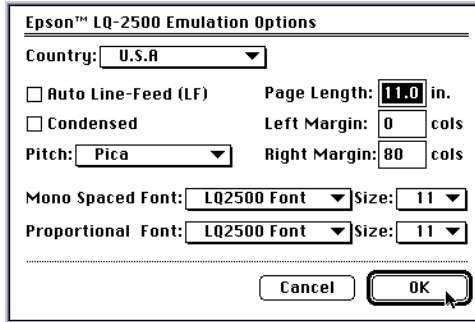
Choose **Epson LQ-2500** for most MS-DOS applications or if your Macintosh printer is not a PostScript printer. MacPC will convert the output and format it appropriately for the Macintosh printer selected in the Macintosh Chooser.



This option supports the IBM extended character set, including graphics characters, and you should choose this if you want to use the **Print Screen** command or the PRINT command from MS-DOS.

Epson LQ-2500 emulation options

Click **Options...** to set up the Epson LQ-2500 emulation options. These correspond to the most important options available on the Epson LQ-2500. This dialog box appears:

The image shows a dialog box titled "Epson™ LQ-2500 Emulation Options". It contains several settings: "Country:" is a dropdown menu set to "U.S.A."; "Auto Line-Feed (LF)" is an unchecked checkbox; "Condensed" is an unchecked checkbox; "Pitch:" is a dropdown menu set to "Pica"; "Page Length:" is a text field set to "11.0" with "in." to its right; "Left Margin:" is a text field set to "0" with "cols" to its right; "Right Margin:" is a text field set to "80" with "cols" to its right; "Mono Spaced Font:" is a dropdown menu set to "LQ2500 Font" with "Size:" set to "11"; "Proportional Font:" is a dropdown menu set to "LQ2500 Font" with "Size:" set to "11". At the bottom right are "Cancel" and "OK" buttons.

Country

Allows up to 12 special characters to be printed, depending on the country selected. If you are using an application designed for a different national language, select the language you want to use from the pop-up menu.

If "**CodePage 850**" **International Support** is checked in the **MacPC Preferences** dialog box, **Country** should be set to **U.S.A** only.

Auto Line-Feed (LF)

Prints a line feed after every carriage return. If your printed output has unwanted double spacing the application is already including line feeds and you should uncheck this option.

Condensed

Condenses the characters horizontally to 60%. Check this option if you want to fit 132 column printing across the width of US letter size or A4 paper.

Pitch

Choose the pitch setting you want from the pop-up menu.

Pica, the default, gives 10 characters per inch and is the recommended setting.

Elite (12 characters per inch) and **15 pitch** (15 characters per inch) reduce the horizontal spacing to fit more characters on a line. The character size and line spacing are set by the **Mono Spaced** font size.

Proportional selects proportional printing.

Mono Spaced Font and Proportional Font

By default, two LQ-2500 fonts are selected which emulate the character sets and spacing of the monospaced and proportional fonts found on an LQ-2500. Alternatively, you can select any font on your Macintosh for either of these two fonts. For best results you should use only monospaced fonts (such as Courier or Monaco) for the **Mono Spaced Font** option. The font size chosen for the **Proportional Font** option should be similar to that already chosen for the monospaced font, because the size selected for the monospace font governs the character size and line spacing of the proportional font as well.

Page Length

Specifies the length of the printed area to the nearest 0.5 inches.

The default value, 11 inches, is suitable for printing on US letter size or International A4 size paper.

If you are using an application which has page layout options (like a word processor), **Page Length** should be set to slightly more than the page length you have specified in the application.

If you are printing from an application which does not have page layout options or are using **Print Screen**, **Page Length** should be set to slightly less than the actual paper length to avoid the production of blank pages.

Left Margin

Specifies the number of columns used for the left margin. At the default **Pica** pitch there are 10 columns per inch.

You can ignore this option if you are using an application, such as a word processor, which sets the margins itself.

Right Margin

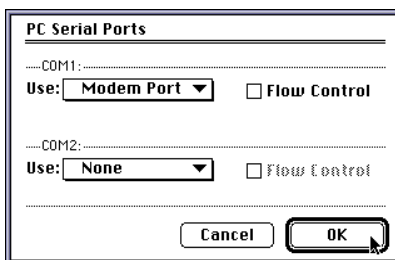
Specifies the number of columns to be used for the right margin. The right margin will only need to be set if the application is assuming a narrower page width and the lines of print are wrapped round, or the application is assuming a wider page width and the lines of print run over the paper edge.



PC Serial Ports... (Setup menu)

Use the **PC Serial Ports...** command to emulate the standard serial ports provided on a PC using the Macintosh modem and printer ports.

When you choose **PC Serial Ports...** this dialog box shows which Macintosh serial port is being used to emulate each of the PC serial ports, COM1 : and COM2 : .



For each PC serial port a pop-up menu lets you choose one of the following options:

Select this option	To do this
Modem Port	Use the Macintosh modem port.
Printer Port	Use the Macintosh printer port.
None	Leave the port unassigned.
Text File...	Send output to a Macintosh text file document. No input is allowed.

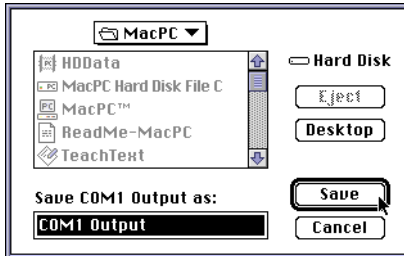
Select **Flow Control** to use handshaking, if available. It allows MacPC to communicate with slow serial printers without losing data by halting the flow of data until the printer is ready.

If either Macintosh port is already in use by the LocalTalk network the corresponding option will be dimmed on the pop-up menu.

Saving output to a file

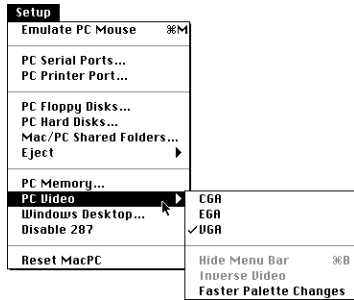
Select **Text File...** to send serial output to a Macintosh text file document, which can then be used by another application or printed at a later date.

When you choose **Text File...** from the pop-up menu this dialog box appears:



Enter a name for the text file and click **Save** to create the file.

For more information about interfacing serial devices to MacPC, refer to *Using modems and other serial devices*, page 54.



PC Video (Setup menu)

Use the **PC Video** command to select which video adapter is emulated by the MacPC MS-DOS window. To change the video adapter you will need to reset MacPC, and a warning will be displayed to allow you to cancel the command.

The following video options are available:

<i>Adapter</i>	<i>Description</i>
CGA	320 x 200 with 4 colors, or 640 x 200 monochrome.
EGA	640 x 350 16 colors.
VGA	Up to 640 x 480 with up to 16 colors, or up to 320 x 200 with up to 256 colors.

Hide Menu Bar

If part of the MacPC window is off the screen you can choose **Hide Menu Bar** to display a full VGA PC screen on a standard Macintosh 13" or 14" monitor with a resolution of 640 x 480, or a full EGA or CGA screen on a PowerBook screen with a resolution of 640 x 400.

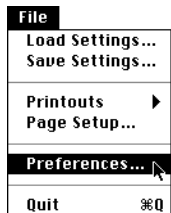
To display the menu bar when **Hide Menu Bar** is selected hold down the [] key or type []B to revert to the normal menu bar.

Inverse Video

If you are working with the **Monitors** control panel of your Macintosh set to fewer than 16 colors or grayscales you can choose **Inverse Video**. This changes the MacPC display between a normal PC display with white characters on a black screen, and a Macintosh display with black characters on a white screen.

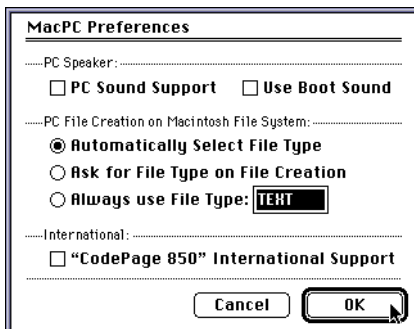
Faster Palette Changes

With VGA mode you can have the option of selecting **Faster Palette Changes**. This uses the Macintosh palette to give faster animation in PC applications that use palette changes. However, it may give incorrect colors in some situations because two colors are reserved by the Macintosh system, so you may need to experiment to obtain the best results.



Preferences... (File menu)

Choose **Preferences...** to customize the way that MacPC works. When you choose **Preferences...** this dialog box appears:



Select the preferences you want, as described below, and click **OK**.



Your preferences are saved in the **MacPC Prefs** file when you quit from MacPC. This file is located in the **Preferences folder** within the System Folder.

These options specify how MacPC emulates the PC speaker.




Check **PC Sound Support** to give PC sound using the Macintosh speaker.

Check **Use Boot Sound** if you want MacPC to simulate the sounds made by a PC on start-up.



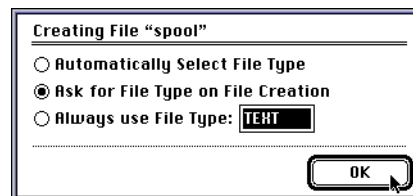
These options let you choose what types of Macintosh documents are created when MacPC creates MS-DOS files in Macintosh folders. For details of how to set up shared folders, refer to *Mac/PC Shared Folders... (Setup menu)*, page 67.

Choose **Automatically Select File Type** to assign standard MacPC file icons to the files you create, based on their extension:

<i>Document icon</i>	<i>Used to identify</i>	<i>Assigned to these extensions</i>
 PCFA	MS-DOS programs.	.COM or .EXE
 PCFL	PC binary files.	.BIN, .DVR, .OBJ, .OVL, .OVR, or .SYS
 TEXT	MS-DOS data files.	All other extensions.

MS-DOS data files can be recognized by most Macintosh applications, including TeachText, MacWrite II, Microsoft Word, Excel, and WordPerfect.

Choose **Ask for File Type on File Creation** if you want to be prompted to enter the four-character type to be used each time a file is written to a shared drive from MacPC. This dialog box appears:



Enter the file type for the file you are creating. Alternatively, choose one of the options **Automatically Select File Type** or **Always use File Type** to specify the file type automatically and change the preferences for all subsequent files created by MacPC.

Choose **Always use File Type** if you want to use a specified file type for every file regardless of its extension. The default type is TEXT, but you can specify any other four-character type.

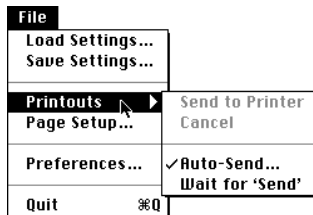
International

You configure MS-DOS to use a different character set by loading and selecting a code page. Refer to the *Microsoft MS-DOS User's Guide and User's Reference* for more information.

When you check **“CodePage 850” International Support** MacPC changes the character set used for printing with the LQ-2500 option to make it consistent with the code page 850 character set. This gives the characters ø and Ø (found in the Danish and Norwegian alphabets) in place of ¢ and ¥, and ensures that they can be copied and pasted.

If you are using the CGA video mode, selecting **“CodePage 850” International Support** also changes the display character set. This would require a hardware change on a real PC.

After changing the **“CodePage 850” International Support** setting you need to reset MacPC to make the change take effect.



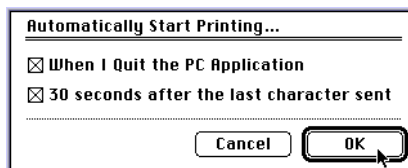
Auto-Send...

Printouts (File menu)

Use the **Printouts** command, and the appropriate command from the submenu, to control how output is sent from your MS-DOS program to be printed.

You can either choose to have printing happen automatically or when you specify.

Choose **Auto-Send...** to specify when printing should start automatically. This dialog box appears:



Check **When I Quit the PC Application** to print when you exit from the MS-DOS application in MacPC.

Check **30 seconds after the last character sent** to print 30 seconds after the application has stopped sending output, even though it may still be running.

If either or both of these options is checked a ✓ will be displayed beside the **Auto-Send...** command in the **Printouts** submenu.

Wait for 'Send'

Choose **Wait for 'Send'** if you want to specify when printing should begin. Output will not be sent to the printer until you select **Send to Printer**. Use this option if you expect to produce a number of small printouts at irregular intervals and you do not want them printed until they are all completed.

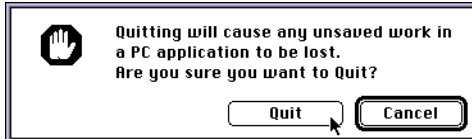
Choose **Cancel** to discard any print output that has not yet been printed.

Send to Printer and **Cancel** will be dimmed unless there is some output waiting to be printed.



Quit (File menu)

Use the **Quit** command to leave MacPC and return to the Finder. This is equivalent to switching off a real PC. This dialog box warns you that work can be lost if you quit without exiting from PC applications or saving files:



Choose **Cancel** to cancel the command or **Quit** (or type []Q) to quit.

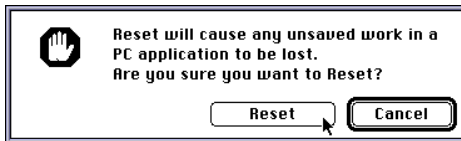
You should close all Windows applications and exit Windows before quitting MacPC.



Reset MacPC (Setup menu)

Use the **Reset MacPC** command to re-start MacPC. This is equivalent to holding down [Ctrl][Alt][Delete] together on a PC.

This dialog box warns you that work can be lost if you have not exited from PC applications or saved files before resetting:



Click **Cancel** to cancel the command or **Reset** to restart MacPC.

Just like a real PC, holding down [Ctrl][Alt][Delete] together produces an immediate reset without the warning dialog box.

The equivalent keys on the Macintosh keyboard are control-option-command D; refer to *Using the keyboard and mouse*, page 28, for more information.

You should close all Windows applications and exit Windows before resetting MacPC.



Save Settings... (File menu)

Use the **Save Settings...** command to save the configuration of MacPC in a settings file. You can create different settings files for the different configurations of MacPC you need to use:

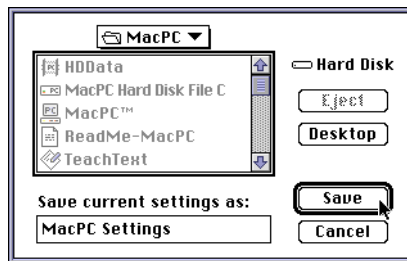


Large desktop



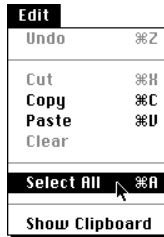
Small desktop

When you choose **Save Settings...** this dialog box appears:



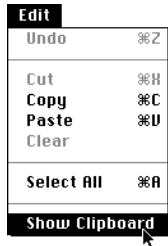
To load a settings file you have created use the **Load Settings...** command.

You can run MacPC with particular settings by double-clicking the appropriate settings file or by dragging it onto the **MacPC** icon.



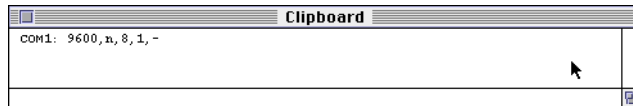
Select All (Edit menu)

Use the **Select All** command to select the whole MacPC screen. You can then copy the text from the MacPC screen onto the clipboard using the **Copy** command.



Show Clipboard/Hide Clipboard (Edit menu)

Use the **Show Clipboard** command to display the contents of the clipboard.



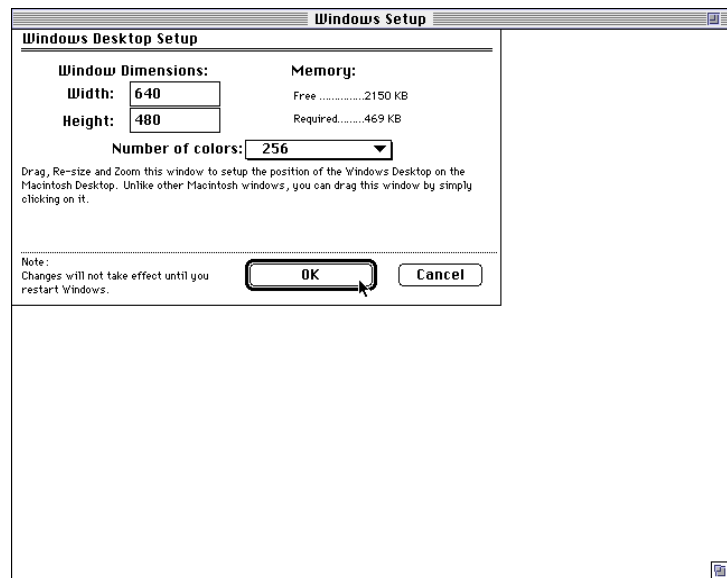
When the clipboard is displayed the command changes to **Hide Clipboard**.



Windows Desktop... (Setup menu)

Use the **Windows Desktop...** command to set up the window you want to use for running Windows.

When you choose **Windows Desktop...** the following window appears, showing you the currently-selected size, position, and number of colors for the Windows desktop:



While the **Windows Setup** window is displayed the Macintosh menu bar is hidden so that you can use the full Macintosh screen for Windows if you wish.

Drag the **Windows Setup** window to indicate where you want the Windows desktop on the screen, by dragging with the mouse pointer on any part of the window.

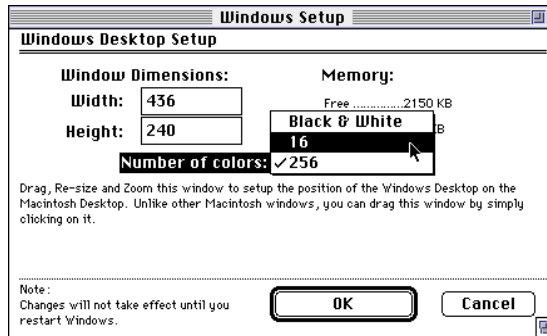
Changing the size

To specify the size for the Windows screen, resize the **Windows Setup** window by dragging the size box in the lower-right corner of the window or enter the size in the **Width** and **Height** boxes.

To use the full Macintosh screen for Windows click the zoom box near the right end of the title bar.

Choosing the number of colors

Select the number of colors to use for Windows from the pop-up menu.



For best performance, set the number of colors to the same as the **Monitors** control panel of the Macintosh.

When you next run Windows its window will have the size, position, and number of colors you have specified.

Using MS-DOS

This chapter describes the operating system that most PCs use, called MS-DOS. MacPC includes version 6.21 of MS-DOS, and this chapter explains the basics of how MS-DOS works and how to use it.

If you are already familiar with MS-DOS you can skip most of this chapter (although the *MS-DOS commands* section may be useful to you later on).

For more information about MS-DOS read any good book about MS-DOS, such as *DOS for Dummies* from IDG books or the *Microsoft MS-DOS User's Guide and User's Reference*.

Getting started

When you first run MacPC you will see some rather cryptic information flash by on your screen. MS-DOS displays this information to let you know how it is configuring your system.

When the information stops scrolling past you will see the following prompt:

```
C:\>_
```

This prompt is the basic user interface of MS-DOS. The underscore next to the prompt is the cursor, which shows where text will appear when you type.

On the Macintosh you perform operations on files and folders by manipulating their icons with the mouse or by selecting menu commands from the Finder. In MS-DOS you perform such operations by typing an MS-DOS command at the `C:\>` prompt.

Note that you must press [↵] after every command you type.

If you have entered a valid command, MS-DOS will carry out the operation you requested. If you have mistyped the command or used an invalid command you will see:







Bad command or file name

MS-DOS displays this message whenever it does not recognize something.

There are a number of MS-DOS commands. Many are described in the section *MS-DOS commands*, page 102.

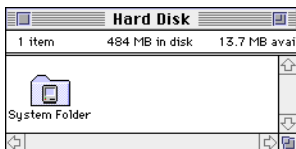
MS-DOS basics

The following table gives some basic information about MS-DOS in terms of the equivalent Macintosh information you are already familiar with:

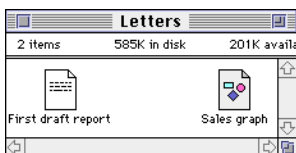
Macintosh	MS-DOS
<p>A file is represented by an icon:</p>  <p>Draft report</p>	<p>A file is represented by a filename of up to 8 characters, followed by an extension of up to 3 letters:</p> <p>REPORT1.TXT</p>
<p>The icon shows the type of the file:</p>  <p>Draft report</p>  <p>Sales graph</p>	<p>The extension (often) shows the type of the file:</p> <p>REPORT1.TXT</p> <p>PICTURE.BMP</p>
<p>Disks are represented by icons on the desktop:</p>  <p>Hard Disk</p>  <p>Letters</p>	<p>Disks are represented by drive letters:</p> <p>Hard disks: C: D:</p> <p>Floppy disk drives: A: B:</p>
<p>Programs you can run are represented by application icons:</p>  <p>TeachText</p>	<p>Program files are identified by a .EXE extension:</p> <p>EDIT.EXE</p> <p>Batch files contain commands you can run:</p> <p>INSTALL.BAT</p>

Macintosh

The highest level of the filing system is the disk window:



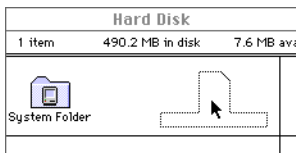
You see the contents of a drive by opening its window:



Files are organized into folders:



You copy a file by dragging it from one disk window to another:



MS-DOS

The highest level of the filing system is called Root, and is referred to in commands as:

C:\

You see the contents of a drive by selecting it, for example by typing:

A: [↵]

and then listing the files:

DIR [↵]

Files are organized into directories. You identify the file by specifying the drive, list of directories, and filename, separated by \ characters:

C:\REPORTS\REPORT1.TXT

You copy a file by using the COPY command:

COPY C:\REPORT1.TXT A: [↵]

Installing and running MS-DOS applications

To install an MS-DOS application you should follow the installation instructions in the manual supplied with the application.

MS-DOS software is typically supplied on one or more floppy disks, and to install the program you copy the files from these disks to your PC hard disk. To simplify the installation process most MS-DOS programs provide a batch file which automatically copies the files for you. The batch file is typically called `SETUP.BAT` or `INSTALL.BAT` and you run it by typing `SETUP` or `INSTALL` at the `C:\>` prompt.

Installing from 3.5-inch PC disks

The simplest way of installing PC software is to install directly from 3.5-inch installation disks.

A typical sequence would be as follows:

- Choose **PC Floppy Disks...** from the **Setup** menu and check that **Drive A:** is set to **SuperDrive** to use the Macintosh internal floppy disk drive for drive A:.
- Insert the first installation disk.
- Follow the instructions supplied with the software. For example, you may be instructed to type:

```
A:INSTALL [↵]
```

or

```
A:SETUP [↵]
```

If at any stage during the installation you need to change disks, eject the current disk by choosing **Eject** from the **Setup** menu (or press `[][Shift]1`, `[][Shift]2`, or `[][Shift]0` to eject a disk from the internal, second internal, or external drive, respectively).

Installing from 5.25-inch PC disks

If the software is supplied on 5.25-inch disks you have the following options:

- Use a PC to copy the software onto 3.5-inch MS-DOS format disks and then install from these.
- Copy the software across from a PC to a folder on your Macintosh, via a network or a serial connection, attach the folder to MacPC as a shared drive, and then install from the files in this folder. Refer to *Moving PC files to and from the Macintosh*, page 47.
- Use an external 5.25-inch floppy disk drive. Refer to the file **ReadMe-MacPC** for details of which devices are supported.

Note that some applications suggest you copy all the required files onto your hard disk before installation. Only do this if the user guide for the application recommends it, and follow the instructions precisely.

Choosing where to install

The installation program will typically give you the choice of where to install the files it is copying from the installation disks.

You have the following options:

<i>Install here</i>	<i>In this situation</i>
Drive C: or D: MacPC hard disk file.	If you are sure that the files you are installing will fit on the MacPC hard disk file you have created, and that you do not need to access the files using Macintosh applications.
A Macintosh folder set up as a network drive E: to Z:; refer to <i>Mac/PC Shared Folders...</i> (Setup menu), page 67.	If you are not sure how much space the software you are installing takes up, or you may need to access the files using Macintosh applications.

Note that some PC application installer programs will only install onto a hard disk. Also, some programs will assume that drives E: to Z: are a PC network, and install additional networking software if you specify these drives.

Disk space requirements

Before installing onto the hard disk check the disk space requirements specified in the PC application's manual, and check the available hard disk space by typing the following command at the MS-DOS C:\> prompt:

```
CHKDSK [-]
```

Note that 1048576 bytes = 1 Mbyte.

MacPC hard disk files can be expanded using the Hard Disk Expander utility; refer to *To increase the size of a hard disk file*, page 46.

MS-DOS commands

You can type MS-DOS commands at the MacPC C:\> prompt in exactly the same way as you would on a real PC.

The following list gives the most useful MS-DOS commands; refer to an MS-DOS reference guide for more detailed information.

In the syntax for each command square brackets indicate optional arguments.

MacPC does not include MSBACKUP, or its restore capabilities, due to system software limitations. BACKUP and RESTORE are included instead.

CD

Changes the current directory.

Syntax

```
CD [path] directory
```

Example

To change your current directory to \LOTUS type:

```
CD \LOTUS [-]
```

COPY

Copies one or more files between two directories.

Syntax

```
COPY [drive:] [path] file [drive:] [path] file
```

Example

To copy a file named BUDGET.WK1 from the LOTUS directory on your C: drive to the D: drive type:

```
COPY C:\LOTUS\BUDGET.WK1 D: [-]
```

DEL

Deletes specified files.

Syntax

```
DEL [drive:] [path] file
```

Example

To delete the file named REPORT.OLD from the WP directory on your D: drive type:

```
DEL D:\WP\REPORT.OLD [-]
```

DIR

Lists the files in a directory.

Syntax

```
DIR [drive:] [path]
```

Example

To list the files on your D: drive in the WP directory type:

```
DIR D:\WP [-]
```

FDISK

Configures a hard disk for use with MS-DOS.

Syntax

FDISK

For more information refer to an MS-DOS reference guide.

FORMAT

Formats a disk.

Syntax

FORMAT [*drive:*] [/option]

Example

To format a 720 Kbyte 3.5-inch floppy disk in the SuperDrive type:

```
FORMAT A: /N:9 /T:80 [-]
```

To format a 1.4 Mbyte 3.5-inch floppy disk in the SuperDrive type:

```
FORMAT A: [-]
```

Note that you should only format low-density disks in the 720 Kbyte format and high-density disks in the 1.4 Mbyte format.

To format a hard disk use the **PC Hard Disks...** command; refer to *PC Hard Disks... (Setup menu)*, page 72.

Drives set up as MacPC shared drives cannot be formatted.

Gives help about using an MS-DOS command.

HELP

Syntax

HELP [*command*]

Where *command* is the long or short form of the command.

Example

To get help about the FORMAT command type:

```
HELP FORMAT [-]
```


KEYB

Selects a foreign keyboard character set.

Syntax

```
KEYB [xx, , [[drive:] [path] [file]]]
```

where *xx* is a two-letter keyboard code and *file* is the name of the keyboard definition file. For more information refer to *International usage*, page 57.

Example

To use a Spanish Macintosh keyboard to emulate a Spanish IBM keyboard type:

```
KEYB SP, , C:\INSIGNIA\KEYBOARD.SYS [-]
```

Note that you should always use the full filename as shown in the example. It loads a special Insignia version of the MS-DOS keyboard file. This line can be included in your AUTOEXEC.BAT file.

MKDIR (MD)

Makes a subdirectory.

Syntax

```
MKDIR [drive:] [path] directory
```

Example

To make a directory named PCAPPS on your D: drive type:

```
MKDIR D:\PCAPPS [-]
```

PRINT

Prints a text file to the printer.

Syntax

```
PRINT [drive:] [path] file
```

Example

To print the file named TEXT.OUT from the WP directory on your D: drive type:

```
PRINT D:\WP\TEXT.OUT [-]
```

Note that after entering a PRINT command you may see the message:

Enter the name of the list device [prn:]

Respond by pressing [↵].

RMDIR (RD)

Removes an empty directory.

Syntax

```
RMDIR [drive:] [path] directory
```

Example

To remove the empty directory named TEMP from your D : drive type:

```
RMDIR D:\TEMP [↵]
```

TYPE

Displays the contents of a text file on the screen.

Syntax

```
TYPE [drive:] [path] file
```

Example

To display the contents of the file TEXT.OUT from the WP directory on your D : drive type:

```
TYPE D:\WP\TEXT.OUT [↵]
```

XCOPY

Copies files and directories, including their subdirectories.

Syntax

```
XCOPY [drive:] [path] file [drive:] /S
```

Example

To copy all the files and directories from your C : drive to your D : drive type:

```
XCOPY C:\*.* D: /S [↵]
```

MS-DOS configuration

MS-DOS has two configuration files, `CONFIG.SYS` and `AUTOEXEC.BAT`, that you may need to know about. Both are held in the root directory `C:\`.

You can alter both files by using any text editor. For information about using the MS-DOS editor to do this refer to *Editing configuration files*, page 109. But please note that you should only alter the files if you are certain you know what you are doing.

As a precaution, we recommend that you make copies of your `CONFIG.SYS` and `AUTOEXEC.BAT` files and store them away for emergency use. If a disaster does occur you can then copy the files onto your MacPC hard disk file to help recovery. You will also find copies of your original `CONFIG.SYS` and `AUTOEXEC.BAT` files in the `INSIGNIA` directory. Finally, under certain situations MS-DOS creates its own backups of these files (usually called `CONFIG.OLD` and `AUTOEXEC.OLD`). If need be, you can use these backups to recover from any disaster.

CONFIG.SYS

This is a text file that contains commands that configure the PC's hardware components. When MS-DOS starts, it carries out the commands in `CONFIG.SYS` before it does anything else.

The following listing shows the default `CONFIG.SYS` file:

```
FILES=20
BUFFERS=16
device=c:\dos\himem.sys
device=c:\insignia\host.sys
device=c:\insignia\em_drvr.sys
device=c:\insignia\cdrom.sys
device=c:\dos\setver.exe
lastdrive=h
STACKS=9,256
```

AUTOEXEC.BAT

This is a file that MS-DOS runs immediately after carrying out the commands in CONFIG.SYS. It can contain any commands you want to be executed whenever you start up the system. You can also include statements in this file that tell MS-DOS where to look for specific commands.

The following listing shows the default AUTOEXEC.BAT file:

```
C:\WINDOWS\SMARTDRV.EXE
@echo off
path C:\WINDOWS;c:\insignia;c:\dos;c:\
c:\insignia\ckconfig
c:\insignia\fsadrive e:
c:\insignia\mouse.com
mode com1:9600,n,8,1
prompt $p$g
ver
set TEMP=C:\DOS
```

Note that the line C:\WINDOWS\SMARTDRV.EXE and the reference to C:\WINDOWS in the path statement are only present if Windows has been installed.

Editing configuration files

MS-DOS includes a simple screen editor which you can use to create, edit, and print plain text files. You can choose editing commands from menus, and edit text using the mouse. The MS-DOS editor is particularly useful for editing MS-DOS batch programs and files, such as `AUTOEXEC.BAT` and `CONFIG.SYS`.

To use the mouse with the MS-DOS editor

- Choose **Emulate PC Mouse** from the **Setup** menu.

To restore the normal Macintosh mouse at any time type []M.

To run the MS-DOS editor

- Type the following command at the `C:\>` prompt:

```
EDIT filename [-]
```

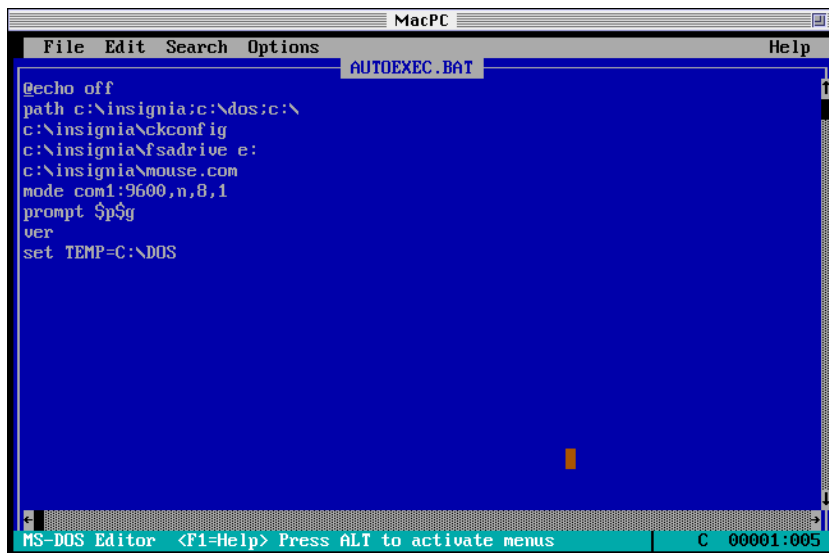
where *filename* is the name of the file you want to edit.

Alternatively, type `EDIT [-]` with no filename to create a new file.

For example, to edit the `AUTOEXEC.BAT` configuration file type:

```
EDIT AUTOEXEC.BAT [-]
```

The file will then be displayed in the MS-DOS editor window, as shown below.



To edit the file

- Position the cursor using the cursor keys, or by moving the mouse and clicking.
- Type to insert text at the cursor.
- Drag to select text. Whatever you type will then replace the selected text, or you can delete it by pressing delete.
- Use the **Cut**, **Copy**, **Paste**, and **Clear** commands from the MS-DOS editor's **Edit** menu in exactly the same way as you would use the equivalent commands in Macintosh applications.

You will be prompted to save the file before exiting if you have made any changes to it.

- Click **Yes**, or press [↵], to save the changes and exit from the MS-DOS editor.

To use the MS-DOS editor on a black and white Macintosh

For best results when using a monochrome Macintosh screen you can reconfigure the MS-DOS editor so that the cursor and selected items in the menus are more visible.

- Run the MS-DOS editor.
- Choose **Display** from the editor's **Options** menu.
- Use the tab and arrow keys to select a foreground color of white and a background color of black.
- Press [↵] to use the options you have specified.

Troubleshooting

This chapter gives suggested solutions to problems that you may encounter when running PC applications on your Macintosh with MacPC.

It also includes details of the MacPC and MS-DOS error messages, with explanations and suggested solutions.

Common problems

The following sections give solutions to the most commonly-encountered problems when using MacPC.

Using floppy disks

How do I eject a floppy disk?

Choose **Eject** from the **Setup** menu, and choose the drive from the submenu.

Alternatively, press [][Shift]1, [][Shift]2, or [][Shift]0 to eject a disk from the internal, second internal, or external drive, respectively.

How do I format a disk?

Use the MS-DOS `FORMAT` command; refer to *FORMAT*, page 104.

How do I read 5.25-inch MS-DOS disks?

Refer to *Installing from 5.25-inch PC disks*, page 101.

Using hard disks

How do I create a new hard disk?

Use the **Customize** option of the MacPC installer. Alternatively, use the **PC Hard Disks...** command on the **Setup** menu; refer to *Creating a new drive*, page 74.

How do I make a hard disk file larger?

Use the Hard Disk Expander utility; refer to *To increase the size of a hard disk file*, page 46.

Can I use hard disk files from other versions of SoftWindows and SoftPC?

The hard disk files are compatible across all versions of MacPC, SoftWindows, and SoftPC.

Using CD-ROM

How do I set up a CD-ROM drive?

Use the `USECD` batch file supplied with MacPC; refer to *Setting up CD-ROM drives*, page 49.

How do I read an MS-DOS CD-ROM?

Insert the CD-ROM, and then access it as drive `F:`.

How do I eject a CD-ROM?

Choose **Eject** from the **Setup** menu, and choose the CD-ROM drive from the submenu.

Using memory

How do I select extended or expanded memory for PC applications?

Use the **PC Memory...** command on the **Setup** menu; refer to *PC Memory... (Setup menu)*, page 76.

Using the mouse

The mouse pointer has disappeared

While the mouse is selected for use by MS-DOS applications it is not available to the Macintosh. To restore it type []M.

How do I get the right mouse button for PC applications?

Type keypad = (or the enter key on PowerBooks).

Using keyboards

How do I get PC keys on the Macintosh keyboard?

Refer to *Using the keyboard and mouse*, page 28.

How do I set up a foreign keyboard in MS-DOS?

Use the MS-DOS `KEYB` command; refer to *International usage*, page 57.

Using the screen

How do I set up a foreign keyboard in Windows?

Use the Windows **International** control panel; refer to *To use an international keyboard for Windows*, page 58.

How do I change the size of the MacPC MS-DOS window?

Click the zoom box on the MacPC MS-DOS window. The screen will change between two sizes.

How can I use MacPC in reverse video?

Set the Macintosh **Monitors** control panel to black and white, and then choose **Inverse Video** from the **PC Video** submenu on the **Setup** menu.

Using printers

How do I set up the COM and LPT ports?

Refer to *Using modems and other serial devices*, page 54, *PC Serial Ports... (Setup menu)*, page 83, and *PC Printer Port... (Setup menu)*, page 79.

How can I print from a PC application?

Refer to *Printing from MacPC*, page 33.

Printing is not working properly

Check that the correct port is selected in the PC application:
LPT1: for a printer selected in the Macintosh Chooser, or
COM1: or COM2: for a directly connected printer.

If you are using LPT1: check that Windows or the PC application is set to the correct printer option: PostScript or Epson LQ-2500.

Check that the **Auto-Send...** command is specified to ensure that data is being sent to the printer, or choose **Send to Printer**; refer to *Sending output to the printer*, page 38.

Using serial devices

How do I use the Macintosh serial ports with PC applications?

Refer to *Using modems and other serial devices*, page 54, and *PC Serial Ports... (Setup menu)*, page 83.

Configuring MacPC

Running PC applications

Where are the MacPC preferences stored?

In the **MacPC Prefs** file; refer to *Preferences...* (*File menu*), page 86.

How do I install PC software with MacPC?

Refer to *Installing and running Windows applications*, page 31, or *Installing and running MS-DOS applications*, page 100.

How do I run Windows?

Refer to *Running Windows*, page 26.

How do I use MS-DOS commands?

Type them at the `C:\>` prompt; refer to *Using MS-DOS*, page 97.

How can I edit MS-DOS files?

Use the MS-DOS editor, `EDIT`; refer to *Editing configuration files*, page 109. Alternatively, you can use the Windows Notepad text editor.

MS-DOS errors

These errors appear in the MacPC MS-DOS window:

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
Invalid drive specification	If you are trying to access drive D:, this drive is not configured. If you are trying to access a shared drive, the Insignia software needed to handle shared drives is not properly set up in your startup disk.	Refer to <i>PC Hard Disks... (Setup menu)</i> , page 72, or <i>Moving PC files to and from the Macintosh</i> , page 47.
Not ready error reading drive A	The drive is set to Empty or it has no disk in it.	Insert a disk.
Not ready error reading drive C	The hard disk file is corrupted (extremely rare).	Create a new startup disk using the PC Hard Disks... command.
Not ready error reading drive D	No drive D: is selected, drive D: is set to Empty , or the hard disk file is corrupted (extremely rare).	Select a hard disk file.
Non System disk (or similar message)	<p>If you see this message when MacPC is starting up it usually means that there is an MS-DOS disk (which is not a startup disk) in the drive.</p> <p>This may be because you have been using AccessPC to read an MS-DOS disk.</p>	Eject the disk and restart MacPC.

MacPC shared drive errors

These errors appear in the MacPC MS-DOS window and relate to the use of shared drives.

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
The ... drive is already in use	The drive specified in a NET USE command is already in use.	It may be set up as a shared drive, a hard disk partition (MS-DOS assigns drive letters automatically to the second and further partitions), or a RAM drive or other device driver.
The ... drive is not already in use	You are trying to detach a drive which is not in use with a NET USE /d command.	
The ... drive is not a network drive	You are trying to detach a drive that is not a shared drive with a NET USE /d command.	It is a drive of some other type.
Illegal drive specification	The drive letter you are using for a shared drive is either missing or further along the alphabet than the limit set by LASTDRIVE.	Refer to <i>Moving PC files to and from the Macintosh</i> , page 47.
MacPC couldn't find that folder	This usually means that since the last time MacPC ran the shared drive folder or disk was moved or renamed.	Use the Mac/PC Shared Folders... command to select a new folder.
MacPC couldn't read that folder	The folder specified for a shared drive cannot be read.	Check your access privileges.
That name is not a folder	A shared drive has been given a document name; only folders or disks can be used as shared drives.	Use the Mac/PC Shared Folders... command to select a new folder.

MacPC errors

These errors are displayed in a Macintosh dialog box.

MacPC licensing

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
Sorry, this demonstration version of MacPC has expired	Only relevant to demos.	Buy a copy of MacPC.
Sorry - Incorrect Password	The password is incorrect.	Retype it.
Sorry - Incorrect type of Password	The password is incorrect.	You should retype the password given on your Authorization Card.
Thank you for trying this demonstration version of MacPC	Only relevant to demos.	Buy a copy of MacPC.
Both the 'Name' and 'Company Name' fields must be entered	You have omitted a field in the Personalization dialog.	Enter the missing field.
Sorry - there are too many MacPC users. MacPC may quit in 2 minutes. Please save your work	Your concurrent use license allows a maximum number of simultaneous users of MacPC, and this number has been exceeded.	Save your files and try again later.
Sorry - there are still too many MacPC users. MacPC has to quit now	The number of users has not decreased.	Buy another copy of MacPC.

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
The number of MacPC users is now below the limit. This copy will continue running	Another user has finished and you can now use MacPC.	
Sorry - there are too many MacPC users. Please try again later	The program already has the maximum number of users allowed by your particular license.	Ask another user to quit.
Please enter your MacPC Password...		Enter the password. The password is found on the back of the MacPC CD-ROM case.

Note

If these errors occur regularly you may need to upgrade your software license to allow a larger number of users. For more information refer to *Product upgrades*, page 129.

Running MacPC

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
The MacPC CPU has encountered an illegal instruction	The MS-DOS program you are running has an illegal instruction in it and MacPC cannot process it.	Try again. If the error recurs reinstall the program. Try running the program in a slightly different way. If the error occurs consistently contact Insignia technical support.
Internal error in MacPC procedure	This is a rare, but fatal, error and there is no way to recover.	Restart MacPC and retry the operations that produced the error. If the error recurs contact Insignia technical support.
MacPC does not support a ROM BASIC	This message indicates that a program has tried to access ROM BASIC. MacPC has no ROM BASIC.	If you want to use BASIC, use the QBASIC supplied with MacPC.
MacPC is in a continuous reset state	The CPU is being continuously reset. A PC/AT would lock up in this state, but MacPC will detect it. It has been caused by the application you are running.	If the problem persists, contact Insignia technical support.
Unknown type of video adapter currently in use	This version of MacPC does not support the video adapter specified in the preferences files.	A valid adapter will be selected.
MacPC has been damaged. Please reload the application from your original disk	The MacPC program file must be reinstalled.	Refer to <i>Installing the MacPC files</i> , page 10.

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
Sorry - can't modify resources. Please make sure that your MacPC application is writable	The MacPC application is locked or on a read-only disk.	Unlock MacPC and try again.

MacPC hard disk files

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
Can't find ...	This message will have named a hard disk file which cannot be found.	It may have been moved or renamed.
Document is not a MacPC hard disk file	The selected hard disk file is not a valid MacPC hard disk file or MacPC will not properly recognize a hard disk file.	Make sure you do not have QuickFolder or Shield INIT in your System Folder. Maybe another application has written into the document – only MacPC can do this correctly.
The hard disk document name must not be empty	The hard disk filename in your MacPC settings file is blank.	Use the PC Hard Disks... command to assign a valid hard disk file.
Locked or already in use:...	The hard disk file specified is either locked, in use by another user, or mounted by AccessPC.	Unlock the hard disk, or unmount it with AccessPC.
MacPC could not create the new hard disk document	You probably do not have the correct access privileges on a file server, are using an anti-virus extension, or the size of the hard disk was not large enough for the MS-DOS software to be loaded.	Either change the access privileges, disable the anti-virus extension, or specify a larger disk.

Memory

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
The amount of LIM requested is invalid or exceeds available memory	You have requested too much expanded memory.	Check that you have not requested more than 32 Mbyte. If not, your request is valid but there is not enough RAM available to satisfy it. Refer to <i>Setting up memory</i> , page 50.
Out of memory	You are running close to the minimum amount of memory needed by MacPC.	Increase the application memory size; refer to <i>To change the application memory size</i> , page 50.
MacPC couldn't allocate the requested number of Expanded Memory pages	There is not enough memory available to provide the requested amount of expanded memory.	You can try allocating less. Refer to <i>Setting up memory</i> , page 50.
MacPC couldn't use that drive	MacPC has a memory problem in setting up the shared drive.	Refer to <i>Setting up memory</i> , page 50.
There isn't enough space for the new Hard Disk file	There is insufficient space on the selected Macintosh drive.	Make more space available on your hard disk or create a smaller MacPC hard disk file.
Unable to create EGA font - possibly due to insufficient memory	There is not enough memory available for MacPC to create the font.	Refer to <i>Setting up memory</i> , page 50.

Floppy disk drives

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
The IBM hardware-compatible floppy disk drive is no longer attached to this machine	The floppy disk drive that was selected for drive A : or drive B : has been removed since the last time MacPC ran.	Use the PC Floppy Disks... command to set drive A : or B : to use another PC-compatible drive or to Empty .

Network drives

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
Mac files must be accessed from a folder	Drive E : has been given a document name; only folders or disks are valid.	Use the Mac/PC Shared Folders... command to select a new folder.

Serial ports

<i>Error</i>	<i>Explanation</i>	<i>Suggestion</i>
Both serial port emulations cannot use the same serial port	The preferences file has become corrupt.	Ensure that COM1 : and COM2 : are assigned to different ports.
One of the serial port emulations is configured to use your AppleTalk port	The port that you have requested for COM1 : or COM2 : on MacPC is already in use by AppleTalk.	Either use the Macintosh Chooser to disable AppleTalk or use the PC Serial Ports... command to reassign COM1 : or COM2 :.
Unable to open the serial port output file	The file that you selected for use for the serial port output may be locked, or in use by another application or network user.	Specify a different output file.

Specification

This chapter gives a full technical specification of MacPC.

General specification

<i>Feature</i>	<i>Specification</i>
Processor	80286.
Math co-processor	80287 (requires 68881/68882, 68040, or PowerPC processor).
ROM BIOS	AT-compatible.
MS-DOS	Version 6.21.
Memory	640 Kbyte. Expanded: up to 32 Mbyte. Extended: up to 15 Mbyte.
Hard disk drives	Two drives, C : and D : .
Shared drives	Multiple drives, E : to Z : .
Floppy disk drives	Two drives, A : and B : .
Video	Video Graphics Array (VGA), Enhanced Graphics Adapter (EGA), or Color Graphics Adapter (CGA).
Display	Color on a Macintosh with at least 16 colors or grayscales; otherwise monochrome.
Windows desktop	Black & white, 16 colors, or 256 colors. Size: 436 x 240 to 1280 x 1024.
Printer port	One port, LPT1 : .
Printer	Epson LQ-2500, 132 columns, or PostScript printer.

<i>Feature</i>	<i>Specification</i>
Serial ports	Two ports, COM1 : and COM2 : .
Keyboard	101-key, AT-style keyboard supported by any Macintosh keyboard.
Mouse	Microsoft Bus Mouse compatible.
CD-ROM drives	One drive; Microsoft CD-ROM extension software included.

Glossary

Application icon

In Windows, a graphic icon that represents a running application. This icon appears only after you start an application and reduce (minimize) it.

Application window

In Windows, the window containing the work area and menu bar for an application. The name of the application appears at the top of the window.

AUTOEXEC.BAT

A special batch file that is executed each time a PC boots up.

Batch file

A text file containing MS-DOS commands that can be executed to run the commands it contains as if they were typed in at the keyboard.

Boot

The PC terminology for starting up the computer.

CD-ROM

A read-only form of data storage, using standard Compact Disc media, capable of providing over 600 Mbyte of data.

CGA

Color Graphics Adapter, a display standard available for the PC.

CONFIG.SYS

A special MS-DOS text file that contains commands to configure the MS-DOS operating system.

Control menu box

An application running in Windows has a control menu box at the top left of the application window. This allows you to control the characteristics of the window and switch between applications.

Directory

The PC name for a folder. As on the Macintosh, it can contain files and other directories.

EGA

Enhanced Graphics Adapter, a display standard available for the PC.

Expanded memory

The LIM (Lotus, Intel, Microsoft) standard for extending the amount of memory available to PC applications beyond their original 640 Kbyte.

Extended memory

The XMS (Extended Memory System) for extending the amount of memory available to PC applications using 80286 protected mode.

Extension	The last part of an MS-DOS filename which can be used to specify the type of file. It consists of a period and up to three letters; for example .BAT.
FDHD	An alternative name for the Macintosh SuperDrive.
ISO 9660 standard	The official term for the High Sierra standard format for CD-ROMs.
MS-DOS	Microsoft Disk Operating System; the system software and filing system used on IBM PC or compatible computers.
Network drive	A general name for disk drives that are treated by the PC as being on a different computer. Network drives cannot be formatted or partitioned.
SCSI	Small Computer Systems Interface (pronounced 'scuzzy'), the industry standard for connecting peripheral devices to host computers. Most Macintosh computers have SCSI ports as standard.
SuperDrive	The dual-format 3.5-inch floppy disk drive provided on all recent Macintosh computers. It can read, write, and format both Macintosh disks and MS-DOS disks.
Type	A four-character code which identifies the type of document created by an application on the Macintosh. MacPC allows you to specify what type code is allocated to the files it creates.
VGA	Video Graphics Array, the most widely-accepted standard for PC graphics displays.
Volume	An alternative name for a disk.
WIN.INI	A Windows initialization file that allows you to customize your Windows environment.

Technical support

Insignia Solutions is committed to helping you get the most out of your software. As a registered customer of Insignia Solutions, you are entitled to free warranty support for your Insignia products.

The information below will be helpful if you need to call for technical assistance:

- Software name
- Version
- Serial number
- Computer model
- RAM (Kbyte)
- Operating system

Before you call technical support, please follow this pre-call checklist so our support technicians can help you more quickly and efficiently:

- Consult the documentation included with your product. It should provide answers to many of your questions.
- Have your software serial number available when you call.
- Let the technician know whether the program worked correctly prior to the problem you are experiencing, and whether you made any changes to your computer environment.
- If possible, be prepared to reproduce the sequence of steps or use the application that demonstrates the problem.
- Make a note of any error messages that appeared.

Technical support hotline

Phone: (415) 694-7694

Fax: (415) 694-3705

AppleLink: INSIGNIA.TCH

The phone lines are open from 7am through 5pm, PST, Monday through Friday.

Customers in other countries

If you are located outside the Americas, support is provided through the authorized dealers in your country.

Product upgrades

If you want to upgrade your Insignia product, contact the dealer you purchased it from. Software registration is required for upgrades, and will ensure that you are informed of new releases.

Support contact

For technical assistance, contact your dealer.

For further information, please contact Insignia's international sales and customer services at the following address:

Insignia Solutions Limited
Kingsmead Business Park
London Road
High Wycombe
Buckinghamshire
HP11 1JU
United Kingdom

Phone: (+44) (1494) 459426

Fax: (+44) (1494) 459720

AppleLink: UK0032

The phone lines are open from 9am through 5pm, UK time, Monday through Friday.

Software registration

Software registration is the key to receiving the full benefits of Insignia Solutions' customer services. Please be sure to register your copy of MacPC by calling the following number:

(415) 694-7694

Periodically, Insignia Solutions will make available upgrade/update versions of certain programs at a modest charge to registered customers. As a registered customer, Insignia will notify you of upgrades/updates.

As a registered user, you will have full access to Insignia's customer service and technical support organizations.

CD-ROM replacement

A replacement CD-ROM is available only if you have registered your copy of MacPC. A charge applies in some circumstances.

Please contact our technical support organization to verify defective media. For information on how to contact us, refer to *Technical support*, page 127.

Product upgrades

To upgrade your Insignia product, contact our sales and customer service representatives at the numbers listed below:

Phone: 800-848-7677 or (415) 694-7677
Fax: (415) 694-3705

The phone lines are open from 7am through 5pm, PST, Monday through Friday.

For customers in Europe, please contact your software supplier. For further assistance contact Insignia international sales at the address given on page 128.

**If you need networking
support**

Upgrading MacPC

MacPC does not support PC networking. If this is important you need to upgrade MacPC to SoftWindows for Power Macintosh or SoftWindows for Macintosh, which support networking. To purchase an upgrade to either of these products please contact our sales and customer service representative on one of the following numbers:

- USA: Phone 800-947-7706
- Europe: Fax (+44) (1494) 537817