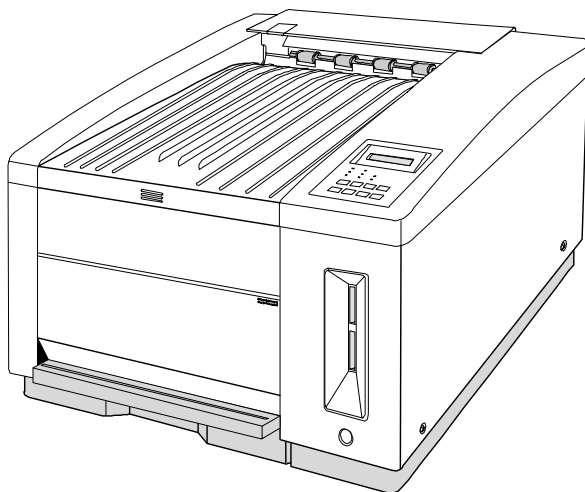# QMS®
magicolor® CX
Reference Guide

1800428-001B

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Typographic Conventions

The following typographic conventions are used in this manual:

`Mixed-Case Courier`	Text you type, and messages and information displayed on the screen
`Mixed-Case Italic Courier`	Variable text you type; replace the italicized word(s) with information specific to your printer or computer
`UPPERCASE COURIER`	Information displayed in the printer message window
lowercase bold	PostScript operators and DOS commands
lowercase italic	Variable information in text
UPPERCASE	File and utility names
↵	Press the Enter key (PC) or Return key (Macintosh)
^	Press and hold down the Ctrl key (PC)

» **Note:** *Notes contain tips, extra information, or important information that deserves emphasis or reiteration.*

▲ **Caution:** *Cautions present information that you need to know to avoid equipment damage, process failure, or extreme annoyance.*

💣 **WARNING!** *Warnings indicate the possibility of personal injury if a specific procedure is not performed exactly as described in the manual.*

ACHTUNG! *Bitte halten Sie sich exakt an die im Handbuch beschriebene Vorgehensweise, da sonst Verletzungsgefahr bestehen könnte.*

Products Covered by this Manual

This manual describes the following versions of the *magicolor* CX printer: a version with 8 MB RAM, a version with 20 MB RAM, a version with 32 MB RAM, and a version with 40 MB RAM. The 32 MB and 40 MB versions come standard with an internal hard disk, a SCSI interface, and an Ethernet or Token-Ring network interface.

❖

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1   Printer Configuration

2 Printer Options

3   Technical Specifications

A   QMS Customer Support

Glossary

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1

Printer Configuration

In This Chapter . . .

Configuration Methods

You can configure the printer in the following ways:

- Through an application or a driver

- Through the printer control panel

- Through PS Executive Series Utilities

- Through printer commands

- Through a remote console (for network users)

Using an Application or Driver

The best way to control the printer is through your application and a printer driver. See chapter 1, "Connecting the Printer," in the user's guide, and your application documentation for information on choosing, installing, and using a printer driver. You should also read the Printing section of your application documentation.

Using the Control Panel

The printer's control panel has two functions: (1) it allows you to change the printer's default settings through the configuration menu and (2) it displays the current status of the printer. The configuration menu is set at the factory for most typical printing environments, so most users don't have to use the control panel often. Typically, you or the system administrator might make a few one-time changes, depending on your printing environment. If you do make changes in the control panel, it's important to realize that any commands given by your application or printer driver will override the control panel settings.

This chapter describes the options available through the control panel and how to use it. Chapter 4, "Troubleshooting," of the user's guide lists the status messages displayed in the control panel.

Using PS Executive Series Utilities

You can also use the PS Executive Series Utilities (shipped with your printer) to control the printer from your host. See the README file on

the utilities disk for information on installing the utilities, and see the
utilities on-line help for details on using the software.

Using Printer Commands

Printer commands (such as PostScript operators, QMS Document
Option Commands [DOCs], and HP PCL and HP-GL commands)
allow advanced users to enable features on a per-job basis.

Refer to your language documentation for specifics on HP PCL and
HP-GL commands.

QMS Document Option Commands are added to the beginning of a
print file and, when interpreted by the printer, turn on specific file pro-
cessing or document handling features. For example, you can use
DOC to specify an emulation, select a specific inputbin or media size,
or choose page orientation. For more information, order the QMS
Crown Document Option Commands manual from your QMS vendor.
See chapter 3, "Technical Specifications," of this manual for a list of
DOCs this printer supports.

Using Remote Console

If a network interface is installed in the printer, the network adminis-
trator can configure the printer through remote console. To avoid con-
fusion in a shared printing environment, only the system administrator
should make configuration changes.

» **Note:** *If remote console has the printer off line, pressing the Online/
Offline key will not take effect until the console puts the printer back
on line.*

The Configuration Menu

```
                        ┌──────────┐
                        │ Online/  │
                        │ Offline  │
                        └──────────┘
                        ┌──────────┐
                        │  Menu    │
                        │   *      │
                        └──────────┘
              ┌──────────┐        ┌──────────┐
              │ Previous │        │   Next   │
              │    ←     │        │    →     │
              └──────────┘        └──────────┘
```

Operator Control   ## Administration

```
┌────────┐                        ┌────────┐
│ Select │                        │ Select │
│   ←     │                        │   ←     │
└────────┘                        └────────┘
```

– Copies
– Collation
– Orientation
– Inputbin
– Chain Inputs
– Color Separation
– Color Model
– Manual Feed Size
– Media

Communications

– Timeouts
– LocalTalk
– Serial
– Parallel
– Network

Emulations

– ESP Default
– Postscript
– PCL5
– HP-GL
– LinePrinter

Special Pages

– Color Balance Page
– Calibration Page
– Header Page
– Trailer Page
– Header Inputbin
– Trailer Inputbin
– Status Page Type
– Print Status
– Registration Page

Startup Options

– Do Start Page
– Do Sys Start
– Do Error Handler

Engine

– Image Alignment
– Default Paper
– Input 1 Name
– Input 2 Name
– Outputbin Name
– Clear Warning
– Def. Resolution
– Page Recovery
– Energy Saver
– Man Feed Timeout

Disk Operations
(appears only if a hard
disk is installed)

– Install Option
– Remove Option
– Format Disk
– Collation
– Spool Overflow

Memory

– K Mem For Spool
– K Mem For PSHeap
– K Mem PSFonts
– K Mem Emulation
– K Mem Emul. Temp
– K Mem Display
– K Mem Disk Cache
– K Mem FrameBuff
– MB Printer Mem.
– Enable Disk Swap

Miscellaneous

– Restore Defaults
– Reboot System
– New Flash Image
– Keypad Language

About the Control Panel

The control panel, located on the front of the printer, allows you to direct the printer's operation. In addition, it displays the current status of the printer, including any condition that needs your attention.

The control panel consists of the following parts:

■ A 2-line, 32-character message window displays status and configuration information.

■ Eight LED indicators provide printer status information.

■ Eight keys allow you to navigate the printer's configuration.
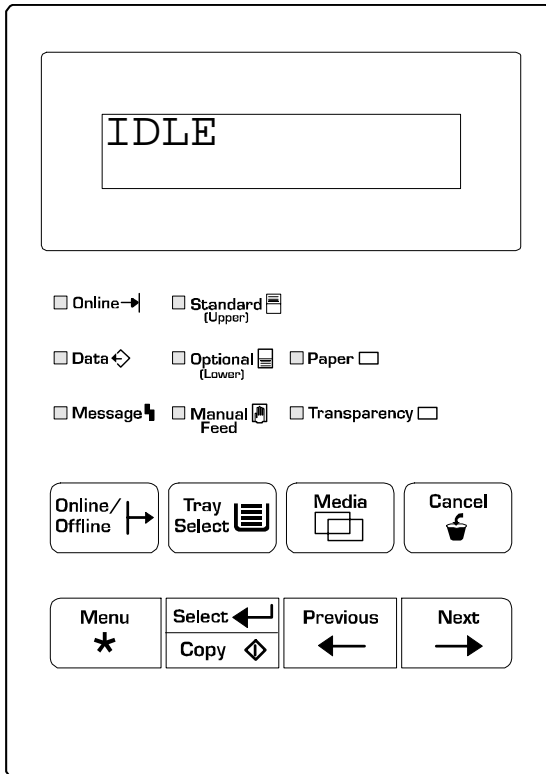
The Message Window

The control panel message window provides status and configuration information. Status messages are listed in chapter 4, "Troubleshooting," of the user's guide. Status messages display in order of priority if the printer is on line; they don't display if the printer is off line.

When you're in the Configuration menu, the top line of the message window displays the name of the current menu, and the bottom line displays the name of an option within that menu.

Setting the Message Window Language

Status messages and configuration menus can be displayed in the message window in English, French, German, or Spanish. If you need to change the message window language, use the Keypad Language option in the Administration/Miscellaneous menu.

Keypad Language

Menu	Choices
Administration Miscellaneous Keypad Language	English (default), French, German, Spanish

Notes

The printer must be restarted for changes to the Keypad Language menu to take effect. You can either let the printer restart automatically after you save the change and exit from the configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

The Control Panel Indicators

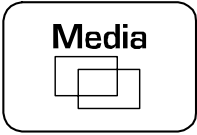|	
☐ Online➔|	Lights when the printer is on line and ready to accept and process new print jobs.
☐ Data ⟷	Lights when the printer is receiving data from one or more of the simultaneous interfaces. This indicator is usually accompanied by a status message in the message window.
☐ Message ⌐	Lights when the printer requires operator intervention. This indicator is usually accompanied by a status message in the message window.
☐ Standard ▤ **(Upper)**	Lights when the standard paper cassette is selected.
☐ Optional ▤ **(Lower)**	Lights when the optional, lower paper cassette is selected.
☐ Manual ✋ Feed	Lights when manual feed is selected using the Tray Select key.
☐ Paper ☐	Lights when the media in the active cassette has been defined to be paper. When this LED and the Transparency LED are both off, it means that the Thick Stock media option (in the Operator Control/Media menu) has been selected.
☐ Transparency ☐	Lights when the media in the active cassette has been defined to be transparency. When this LED and the Paper LED are both off, it means that the Thick Stock media option (in the Operator Control/Media menu) has been selected.
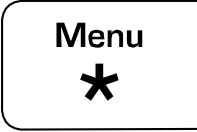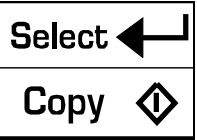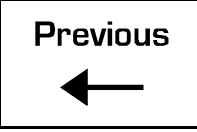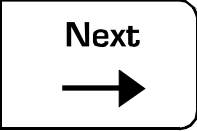
The Control Panel Keys

The printer control panel has eight function keys. The top row of keys (Online/Offline, Tray Select, Media, Cancel) is for frequently used operations. The bottom row of keys is used to navigate menus, select options, and enter values.

» **Note:** *When you're in configuration mode (that is, if you have entered the menu by pressing the Menu key), the printer ignores the Tray Select, Media, and Cancel keys.*

☐ Online→‖	Press the Online/Offline key once to take the printer off line (the indicator goes out). You must take the printer off line before using all other keys except the Cancel key.
	When the printer goes off line, the communication ports are closed, so no new data is accepted. The printer continues printing until it has finished all jobs in process. Although jobs continue to compile and print using the data already received, a job may be interrupted, causing it to wait for more incoming data before printing resumes.
	When the printer is off line, press the Online/Offline key once to place it back on line and ready to accept new print jobs (the indicator goes back on). If a remote console has the printer off line, pressing the Online/Offline key will not take effect until the console puts the printer back on line.
Tray Select ▤	The Tray Select key allows you to select the cassette from which to draw print media: the standard (upper) cassette, the optional (lower) cassette, or the manual feed tray.

Media	The Media key is used to tell the printer whether paper or transparencies are in the currently selected cassette. The factory default for both upper and lower cassettes is paper.
Cancel	Press the Cancel key to cancel the "oldest" print job currently printing, interpreting, or spooling; or to send an end-of-job indicator to print jobs waiting for incoming data. The printer then resumes printing other print jobs in the queue. If you press the Cancel key by mistake, or if you decide not to cancel a print job after pressing this key, press the Menu key to "cancel" the Cancel key's function.
Menu	Press the Menu key to access the configuration menu after the printer goes off line. When you're changing printer configuration, press this key to cancel a change (before pressing the Select key), to return to a previous menu, or to return to a previous character when entering character information.
Select / **Copy**	Press the Select/Copy key to access a menu or to choose a displayed menu option. If you have the CrownCopy copier option installed, use this key to access the Copy menu. The CrownCopy documentation contains information on using the copier option.
Previous	Press the Previous key to return to the previous selection or option for the current menu. When changing character information, use this key to return to the previous choice for the current input character.
Next	Press the Next key to advance through the list of selections or options for the current menu. When changing character information, use this key to advance to the next choice for the current input character.

About the Configuration Menu

The printer's configuration menu allows you change the default printer configuration settings. Any changes made to the configuration will reside as new default settings and affect all subsequent print jobs.

The options in the configuration menu are organized under these main menus:

■ **Operator Control Menu**

Use this menu to select document processing options such as copy count, choosing input and output paper bins, chaining input bins, and duplexing (if a duplexing unit is installed). Document processing selections are usually specified within individual jobs since each job has its own requirements. However, if there's no way of specifying these selections within an application, use the control panel to change selections, send the job, and then change the defaults back.

» **Note:** *Defining document processing selections for a particular job through the control panel is not recommended in a shared environment. When many systems are using the same printer, there's no way of making sure that no other jobs are sent to the printer while the defaults are changed. The Operator Control menu may be password protected with an optional security card if the system administrator does not want users changing defaults.*

■ **Administration Menu**

Use this menu to maintain printer-host communication information, and for selecting and configuring printer emulations, configuring special pages, printing engine calibration, and configuring hard disks, if present.

Accessing the Configuration Menu

To access the configuration menu, make sure the printer is idle (IDLE displays in the message window), then press the Online/Offline key to take the printer off line (the Online/Offline indicator is not lighted), and finally press the Menu key.

For example, the following table shows how to use control panel keys to access the printer configuration menu. Press the control panel keys in the order shown. The printer responds by displaying a status message or configuration menu in the message window.

» **Note:** *You may need to press the Next key more than one time to advance through the list of options.*

Press this key	to...	The message window reads...
Online/Offline	Turn off the Online/Offline indicator and ready the printer for configuration.	IDLE
Menu	Access the configuration menu.	CONFIGURATION OPERATOR CONTROL

The printer must be off line and idle before you can access the configuration menu.

Selecting Configuration Menu Options

Once you access the configuration menu, you use the control panel keys to move through the menu. Use the following keys:

Press this key	to...
Next	Advance to the next option or submenu within a menu.
Previous	Return to the previous option or submenu within a menu.
Select	Select an option or enter a submenu.

For example, the instructions below show how to change the default printer emulation from ESP to PostScript:

Press this key	to...	The message window reads...
Online/ Offline	Turn off the Online/Offline indicator and ready the printer for configuration.	`IDLE`
Menu	Access the configuration menu.	`CONFIGURATION` `OPERATOR CONTROL`
Next	Advance to the Operator Control/ Administration menu.	`CONFIGURATION` `ADMINISTRATION`
Select	Access the Administration menu	`ADMINISTRATION` `COMMUNICATIONS`
Select	Access the Communications menu.	`COMMUNICATIONS` `TIMEOUTS`
Next	Advance to the Communications/Parallel menu.	`COMMUNICATIONS` `PARALLEL`
Select	Access the Parallel menu.	`PARALLEL` `MODE`
Next	Advance to the Parallel/Emulation menu.	`PARALLEL` `EMULATION`
Select	Access the Emulation menu.	`EMULATION` `ESP`
Previous	Advance to the Emulation/PostScript menu.	`EMULATION` `POSTSCRIPT`
Select	Select PostScript as the default emulation.	`POSTSCRIPT` `IS SELECTED`
	After 3 seconds you are returned to the Parallel/Emulation menu.	`PARALLEL` `EMULATION`
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu). You are prompted to save your change(s).	`SAVE CHANGES?` `NO`
Next	Advance to the Save Changes?/Yes option.	`SAVE CHANGES?` `YES`
Select	Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle.	`IDLE`

Changing Character Information

Sometimes, rather than selecting an option, you need to enter character information, like a number or a word.

Entering character information through the control panel is similar to setting the time and date on a digital watch. Use the following keys to change the current input character:

Press this key	to...
Next	Advance to the next choice for the current input character.
Previous	Return to the previous choice for the current input character.
Select	Advance the cursor to the next character (or if the cursor's on the character farthest to the right, this key exits the character selection process).
Menu	Return the cursor to the previous character.

When you exit the character selection process, the printer verifies character information and confirms it in the message window. If character information is valid, you're returned to the previous menu; if it's invalid, you're returned to the input field. Press the Menu key to cancel any changes to the character information.

If the current character information is longer than the value that you need to enter, replace each extra character with a space. The printer interprets a space at the end of character information as a blank.

For example, to change the HP-GL emulation scaling percent, press the control panel keys in the order shown in the following table. (Underlining indicates the current input character in the message window.)

Press this key	to...	The message window reads...
Online/ Offline	Turn off the Online/Offline indicator and readies the printer for configuration.	IDLE
Menu	Access the configuration menu.	CONFIGURATION OPERATOR CONTROL

Next	Advance to the Administration menu.	`CONFIGURATION` `ADMINISTRATION`
Select	Access the Administration menu	`ADMINISTRATION` `COMMUNICATIONS`
Next	Advance to the Communications/ Emulation menu.	`COMMUNICATIONS` `EMULATIONS`
Select	Access the Emulations menu.	`EMULATIONS` `ESP DEFAULT EMUL`
Next	Advance to the Emulations/HP-GL menu.	`EMULATIONS` `HP-GL`
Select	Access the HP-GL menu.	`HP-GL` `PLOTTER`
Next	Advance to the HP-GL/Scaling Percent menu.	`HP-GL` `SCALING PERCENT`
Select	Access the Scaling Percent menu.	`SCALING PERCENT` `100`
Previous	Lower the current character to 0.	`SCALING PERCENT` `000`
Select	Select 0 and move the current character to the next 0.	`SCALING PERCENT` `000`
Next (5 times)	Advance the current character to 5.	`SCALING PERCENT` `050`
Select	Select 5 and move the current character to the last 0.	`SCALING PERCENT` `050`
Select	Select 50 as the default scaling percent.	`50` `IS SELECTED`
	After 3 seconds you are returned to the HP-GL/Scaling Percent menu.	`HP-GL` `SCALING PERCENT`
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu). You are prompted to save your change(s).	`SAVE CHANGES?` `NO`
Next	Advance to the Save Changes?/Yes option.	`SAVE CHANGES?` `YES`
Select	Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle.	`IDLE`

Saving Configuration Changes

Before the printer can accept print jobs with configuration changes, the changes must be saved.

For example, to save configuration changes after exiting a menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window.

Press this key	to...	The message window reads...
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu). You are prompted to save your change(s).	SAVE CHANGES? NO
Next	Advance to the Save Changes?/Yes option.	SAVE CHANGES? YES
Select	Select Yes. The printer finishes printing any print jobs in process, saves your change, and returns to idle.	IDLE
Online/ Offline	Turn on the Online/Offline indicator and ready the printer to accept and print jobs.	IDLE

» **Note:** *The printer may need to be restarted before certain changes to the Administration menu take effect. Some changes restart the printer automatically while others display the message* REBOOT NOW? *in the control panel message window. If this message appears, select* YES *to restart the printer and have the change(s) take effect immediately, or select* NO *to wait until you manually restart the printer for changes to take effect.*

Canceling Configuration Changes

If you change a configuration option and then decide to cancel that change, you can do so when exiting the configuration menu.

For example, to cancel your configuration changes, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window.

Press this key	to...	The message window reads...
Online/ Offline or Menu	Exit from the menu (Online/Offline) or return to the previous menu (Menu) and be prompted to save your change.	SAVE CHANGES? NO
Select	Select No. The printer finishes printing any print jobs in process, does not save your changes, and returns to idle.	IDLE
Online/ Offline	Turn on the Online/Offline indicator and ready the printer to accept print jobs.	IDLE

Restoring the Factory Default Configuration

If you need to cancel all of the configuration changes you have made, you can reset all of the configuration settings to their factory defaults. See "Restore Defaults" on page 63 for more information.

» **Note:** *Remember that any changes made to the configuration menu are lost when the factory defaults are restored. If your printer has a hard disk and you have enabled disk swapping (recommended to take advantage of a hard disk), you should re-enable it after restoring factory defaults.*

Clearing Warning Messages

Use the Clear Warning option to clear a status message that doesn't automatically clear after the related corrective action is taken. See "Clear Warning" on page 60 for more information.

Operator Control Menu

The Operator Control menu consists of the following submenus:

Copies	Collation
Orientation	Inputbin
Chain Inputbins	Color Model
Color Separation	Manual Feed Size
Media	

» **Note:** *The printer must be turned off and on again before changes to this menu take effect (except changes to the Copies menu). The Media key on the printer's control panel provides a faster means of changing this setting, but does not contain a thick stock option.*

Copies

While it is usually preferable to select in your application the number of copies you want to print, you can change the default number of copies for all print jobs through the printer control panel.

Menu	Choices
Operator Control Copies	001 (default)-999

Notes: Sets the default number of copies for all subsequent print jobs until the printer is turned off and on again. This setting has no effect on jobs generated by applications such as FrameMaker that specify a copy number outside of the printer driver.

Collation

Use this option to arrange multiple copies of a document in sequential order.

Menu	Choices
Operator Control Collation	On (default), Off

Notes: For additional information on collation, see chapter 2, "Printing," in the user's guide.

Orientation

Specifies whether text and graphics are placed on the page in a portrait or landscape orientation.

Menu	Choices
Operator Control Orientation	Landscape, Portrait (default)

Inputbin

Allows you to select the default cassette (inputbin) from which media is drawn into the printer.

Menu	Choices
Operator Control Inputbin	Upper (default), Lower

Notes: The lower inputbin refers to the optional lower cassette. The current default inputbin is indicated by the appropriate LED on the print control panel.

Chain Inputbins

Allows you to "chain" input bins (cassettes) so that when the first input bin empties, the printer will automatically draw media from the second input bin with the same size and type of media.

Menu	Choices
Operator Control Chain Inputbins	On (default)—Switch to the next input bin with the same size and type of media when the default input bin is empty.
	Off—Don't switch inputbins; use only the default input bin.

Notes: Use the Operator Control/Inputbin menu to set the default input bin. Make sure the two bins use the same size and type of media.

Color Separation

Use this option to turn color separation on or off.

Menu	Choices
Operator Control Color Separation	On, off (default)

Color Model

Use this option to select between full-color or monochrome printing.

Menu	Choices
Operator Control Color Model	Monochrome, Full Color (default)

Manual Feed Size

Use this option to select the size of the print medium to be fed manually.

Menu	Choices
Operator Control Manual Feed Size	Letter (default), Legal, A4, Executive, Com10, and DL

Notes: The Envelope setting should be used if your envelope size doesn't match any of the other listed envelopes sizes.

Media

Use this option to tell the printer what type of media is in each tray so the printer can optimize output for that media type.

Menu	Choices
Operator Control Media	Paper (default), transparency, thick stock

Notes: First select a media tray (upper for the standard cassette slot, lower for the optional sheet feeder, or manual for the manual-feed tray). Then select paper, transparency, or thick stock for that tray. When the Thick Stock media option has been selected, both the Paper LED and the Transparency LED on the printer control panel are off.

Select Paper for printing paper, envelopes, or labels. Select transparency for printing on overhead transparency film. Select thick stock (for the manual-feed tray only) for printing on stock that is between 24 and 43 lb (90 g/m^2 and 163 g/m^2). The factory default is paper.

Administration Menu

The Administration menu consists of the following submenus:

Communications	**Emulations**
Special Pages	**Startup Options**
Memory	**Engine**
Miscellaneous	

Communications

This menu contains several options that allow you to configure the printer's communication parameters to match the host and application parameters

Timeouts

The Timeouts options limit the amount of time the printer waits on transmission from the host for various types of data.

PostScript Emulation Timeout

The PostScript emulation timeout is the maximum number of seconds the PostScript emulation waits for incoming data.

Menu	Choices
Administration Communications Timeouts PS Wait Timeout	00000-99999 00030 (30 sec.) (default)

Emulation Timeout

The emulation timeout is the maximum number of seconds emulations other than PostScript (such as HP-GL, HP PCL5, and Lineprinter) wait for incoming data.

Menu	Choices
Administration Communications Timeouts Emul Timeout	00000-99999 00005 (5 sec.) (default)

Notes: A value of 000 is the same as infinity (no timeout).

Print Job Timeout

The print job timeout is the maximum number of seconds the printer processes a print job before it ends the job.

Menu	Choices
Administration Communications Timeouts Job Timeout	00000-99999 00000 (infinity, no timeout) (default)

Notes: A value of 000 is the same as infinity (no timeout).

ESP Timeout

The ESP timeout is the maximum number of seconds the printer waits to match an emulation before printing the job in the default emulation.

Menu	Choices
Administration Communications Timeouts ESP Timeout	00000-99999 00003 (3 sec.) (default)

Notes: A value of 000 is the same as infinity (no timeout).

Serial Interface

Use the Administration/Communications/Serial menu to set the serial interface communication values used for printer-host communication.

Mode

Enables or disables the serial port

Menu	Choices
Administration Communications Serial Mode	Interactive (default)—Establish two-way communication between the host and the printer. Noninteractive—Establish one-way communication from the host to the printer. Disabled—Turn off serial communication with the host. The printer stops accepting print jobs over the serial interface.

Notes: The printer must be restarted for changes to the Mode menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Emulation

Sets the serial interface emulation.

Menu	Choices
Administration Communications Serial Emulation	ESP (default), Hexdump, PostScript, PCL5, HPGL, Lineprinter Other optional emulations also appear, if installed.

Min K Spool

Sets the minimum number of kilobytes of system memory allocated to the serial interface.

Menu	Choices
Administration Communications Serial Min K Spool	00000-99999 00015 (default)

Notes: This value must be less than K Mem For Spool.

A 00000 value does not turn off the spooling buffer for the serial interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization.

The printer must be restarted for changes to the Min K Spool menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Spooling Timeout

Sets the number of seconds the interface waits for data from the host before terminating a spooled print job.

Menu	Choices
Administration Communications Serial Spool Timeout	00000-99999 00030 (default)

End Job Mode
Enables (and identifies an end-of-job sequence) or disables data stream sensing for the end-of-document (EOD) command.

Menu	Choices
Administration Communications Serial End Job Mode	None (default)—The printer recognizes only the PostScript ^D command. QMS EOD—The printer recognizes only the QMS %%EndOfDocument command. HP EOD—The printer recognizes only the HP <ESC>%12345X command.

Baud Rate
Sets the rate data is transmitted (bits per second) over the serial interface.

Menu	Choices
Administration Communications Serial Baud Rate	300, 600, 1200, 2400, 4800, 9600 (default), 19200, 38400

Notes: Baud rates of 19200 and 38400 require that both RTS and CTS hardware flow control (Administration/Communications/Serial/Hdwe Flow Ctl menu) be selected. These baud rates do not support XON/XOFF software flow control.

Parity
Sets the check bit used to identify data transmission errors.

Menu	Choices
Administration Communications Serial Parity	None (default), Odd, Even

Notes: The printer's parity setting must match that of the host or application. Use the Administration/Communications/Serial/Ignore Parity menu to specify how the printer handles parity errors.

Ignore Parity

Specifies how the printer should handle parity errors.

Menu	Choices
Administration Communications Serial Ignore Parity	Off (default)—Ignore parity errors. The printer prints its best interpretation of the character(s) affected by the error. On—Don't ignore parity errors. The printer replaces the character(s) affected by the error with a question mark.
Notes: Use the Administration/Communications/Serial/Parity menu to set parity.	

Receive Software Flow Control

Sets the software communication protocol used by the printer to control communication from the host computer.

Menu	Choices
Administration Communications Serial Rcv Sw Flow Ctl	ETX/ACK, Robust XON/XOFF, None, XON/XOFF (default)

Transmit Software Flow Control

Sets the software communication protocol used by the host computer to control communication with the printer.

Menu	Choices
Administration Communications Serial Xmit Sw Flow Ctl	ETX/ACK, None (default), XON/XOFF

Data Bits

Sets the number of data bits transmitted per character.

Menu	Choices
Administration Communications Serial Data Bits	7 Bits, 8 Bits (default)

Stop Bits

Sets the number of stop bits transmitted per character.

Menu	Choices
Administration Communications Serial Stop Bits	1 Bit (default), 2 Bits

Hardware Flow Control

Controls the flow of data between the printer and the host.

Menu	Choices
Administration Communications Serial Hdwe Flow Ctl	DSR POL: Normal (default), reverse DSR: Off (default), on DTR POL: Normal (default), reverse DTR: Off, on (default) RTS: Off (default), on CTS: Off (default), on

Notes: If the host uses hardware flow control, set this option to match the type used by the host.

However, to download printer system software to flash ROM via the serial port, RTS and CTS must be set to On, and the cable pinouts must be connected as shown in chapter 3, "Technical Specifications."

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a serial interface to a PostScript printer. See chapter 3, "Technical Specifications," of this manual for more information on PS Protocol.

Menu	Choices
Administration Communications Serial PS Protocol	**Binary**—Enables quoted binary communications protocol (BCP). Print jobs can change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see chapter 3, "Technical Specifications") for the special characters and ^D (EOF).
	Binary Fixed—Enables binary communications protocol (BCP). Print jobs cannot change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see chapter 3, "Technical Specifications") for the special characters and ^D (EOF).
	Normal—Enables standard, ASCII (7-bit) hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can change this setting through PostScript operators.
	Normal Fixed—Enables standard, ASCII (7-bit) hex protocol. Print jobs cannot change this setting through PostScript operators.

Parallel Interface

Mode

The parallel interface supports Centronics parallel communication as well as IEEE 1284 bidirectional parallel communication.

Menu	Choices
Administration Communications Parallel Mode	Interactive—Establish two-way communication between the host and the printer. Noninteractive (default)—Establish one-way communication from the host to the printer. Disabled—Turn off parallel communication with the host. The printer stops accepting print jobs over the parallel interface.

Notes: The printer must be restarted for changes to the menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer. See chapter 3, "Technical Specifications," for a discussion of the different modes

Emulation

Sets the parallel interface emulation.

Menu	Choices
Administration Communications Parallel Emulation	ESP (default), Hexdump, PostScript, PCL 5C, HPGL, Lineprinter Other optional emulations also appear, if installed.

Min K Spool

Sets the minimum number of kilobytes of system memory allocated to the parallel interface.

Menu	Choices
Administration Communications Parallel Min K Spool	00000-99999 00015 (default)

Notes: This value must be less than K Mem For Spool.

A 00000 value does not turn off the spooling buffer for the parallel interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization.

The printer must be restarted for changes to the Min K Spool menu to take effect. You can either let the printer restart automatically after you save the change and exit the configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Spool Timeout

Sets the number of seconds the interface waits for data from the host before terminating a spooled print job.

Menu	Choices
Administration Communications Parallel Spool Timeout	00000-99999 00030 (default)

Data Bits

Sets the number of data bits transmitted per character.

Menu	Choices
Administration Communications Parallel Data Bits	7 Bits, 8 Bits (default)

End Job Mode

Enables (and identifies an end-of-job sequence) or disables data stream sensing for the end-of-document (EOD) command.

Menu	Choices
Administration Communications Parallel End Job Mode	None (default)—The printer recognizes only the PostScript ^D command. QMS EOD—The printer recognizes only the QMS %%EndOfDocument command. HP EOD—The printer recognizes only the HP <ESC>%12345X command.

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a parallel interface to a PostScript printer. See chapter 3, "Technical Specifications," of this manual for more information on PS Protocol.

Menu	Choices
Administration Communications Parallel PS Protocol	**Binary**—Enables quoted binary communications protocol (BCP). Print jobs can change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see chapter 3, "Technical Specifications") for the special characters and ^D (EOF). **Binary Fixed**—Enables binary communications protocol (BCP). Print jobs cannot change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see chapter 3, "Technical Specifications") for the special characters and ^D (EOF). **Normal**—Enables standard, ASCII (7-bit) hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can change this setting through PostScript operators. **Normal Fixed**—Enables standard, ASCII (7-bit) hex protocol. Print jobs cannot change this setting through PostScript operators.

LocalTalk Interface

» **Note:** *The LocalTalk menu appears only if the optional LocalTalk interface board is installed in the printer.*

Use the Administration/Communications/LocalTalk menu to set the LocalTalk interface values used for printer-host communication.

Mode

Enables or disables the communication interface.

Menu	Choices
Administration Communications LocalTalk Mode	Enabled (default)—Establish one-way LocalTalk communication (from the host to the printer). Disabled—Turn off the LocalTalk interface (the printer stops accepting LocalTalk interface print jobs).

Notes: The printer must be restarted for changes to the Mode menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Minimum Number of Kilobytes for Spooling

Sets the minimum number of kilobytes of system memory allocated to the LocalTalk interface.

Menu	Choices
Administration Communications LocalTalk Min K Spool	00000-99999 (00015 default)

Notes: This value must be less than the K Mem for Spool value.

A 00000 value does not turn off the spooling buffer for the parallel interface. If the value is set to 00000, the printer calculates the Min K Spool automatically at initialization.

The printer must be restarted for changes to the Min K Spool menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Connection

Allows you to enable or disable print spooling.

Menu	Choices
Administration Communications LocalTalk Connection	Conventional (default)—Allow one LocalTalk connection and accept only one print job at a time. If two users send print jobs to the printer, the workstation belonging to the first user is unavailable until the first job has been printed, and the workstation belonging to the second user is unavailable until both jobs have been printed.
	Spool—Allow multiple LocalTalk connections and accept (spools) more than one print job at a time. Workstations are available while jobs are printing.
	Both—Allow both single and multiple LocalTalk connections.

Notes: The printer must be restarted for changes to the Connection menu to take effect. You can either let the printer restart automatically after you save the change and exit the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

PS Protocol

Sets the binary communications protocol (BCP) for communicating over a LocalTalk interface to a PostScript printer. See chapter 3, "Technical Specifications," of this manual for more information on PS Protocol.

Menu	Choices
Administration Communications LocalTalk PS Protocol	**Binary**—Enables quoted binary communications protocol (BCP). Print jobs can change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see chapter 3, "Technical Specifications") for the special characters and ^D (EOF).
	Binary Fixed—Enables binary communications protocol (BCP). Print jobs cannot change this setting through PostScript operators. Data in the printable ASCII range also prints. Use the special quoting mechanism (see chapter 3, "Technical Specifications") for the special characters and ^D (EOF).
	Normal—Enables standard, ASCII (7-bit) hex protocol. Data is sent and received in ASCII format. This mode is recommended if you do not print binary data. It was designed for data in the printable ASCII range. Print jobs can change this setting through PostScript operators.
	Normal Fixed—Enables standard, ASCII (7-bit) hex protocol. Print jobs cannot change this setting through PostScript operators.

Network Interface

This option allows you to configure a network interface, if installed. See the QMS CrownNet documentation that came with the printer for information on the options available in this menu.

Emulations

Optional emulations appear only if installed.

» **Note:** *To choose an emulation or ESP for a particular interface, use the appropriate interface menu in the Administration/Communications menu.*

ESP Default Emulation

The emulation sensing processor (ESP) feature of the printer analyzes incoming print jobs and identifies which emulation the printer will use. The ESP Default Emul sets the ESP default emulation used when ESP is unable to identify the language of a print job. This allows the system administrator to select alternate default emulations.

Menu	Choices
Administration Emulations ESP Default Emul	HPGL, Lineprinter, PostScript, PCL 5C (default)

Notes: You must turn the printer off and back on again for the change to take effect. For more information on ESP, see chapter 3, "Technical Specifications."

PostScript

Halftone Type

This menu allows you to choose a printer default screening option.

Menu	Choices
Administration Emulations PostScript Halftone Type	Enhanced (default) ColorSmooth See "About Printer Default Screening and CRD Options" in chapter 2, "Printing," of the user's guide for information on these options.

Notes: Some application software may be set up to ignore the printer's color settings. For information on preventing this, see "Connecting to a PC" or "Connecting to a Macintosh" in chapter 1, "Connecting the Printer."

Color Rendering

For color matching with PostScript Level 2 applications, this option allows you to choose from color rendering dictionaries.

Menu	Choices
Administration Emulations PostScript Color Rendering	Business (default) Colorimetric Photographic See "About Printer Default Screening and CRD Options" in chapter 2, "Printing," of the user's guide for information on these options.

Notes: Some application software may be set up to ignore the printer's color settings. For information on preventing this, see "Connecting to a PC" or "Connecting to a Macintosh" in chapter 1, "Connecting the Printer."

HP-GL

Plotter

Identifies the HP-GL plotter type.

Menu	Choices
Administration Emulations HPGL Plotter	7550A (default), 7475A, 7470A, Colorpro

Scaling Percent

Identifies the percentage to reduce or enlarge an image.

Menu	Choices
Administration Emulations HPGL Scaling Percent	001-150 (1-150%) 100 (100%) (default)

Notes: To scale plots, select the paper size originally used for the plot in the Paper Type menu, and then enter the reduction or enlargement needed to fit the plot on the new page in the Scaling Percent menu. If necessary, enter new x,y coordinates in the Origin menu to reposition the plot on the page.

Origin (X Direction)

Sets the image offset from the plotter's origin in 0.01" increments.

Menu	Choices
Administration Emulations HPGL Origin X Direction	0000 (default) - 8500 (0"-8.5")

Origin (Y Direction)

Sets the image offset from the plotter's origin in 0.01" increments.

Menu	Choices
Administration Emulations HPGL Origin Y Direction	00000 (default) - 11000 (0"-11.0")

Reverse Image

Determines whether an image is printed in reverse.

Menu	Choices
Administration Emulations HPGL Reverse Image	On—Print a white image on a black background. Off (default)—Print a black image on a white background.

Enhanced Mode

Increases the resolution of a downloaded character.

Menu	Choices
Administration Emulations HPGL Enhanced Mode	On—Uses an increased resolution for the grid Off (default)—Uses standard resolution for the grid
Notes: The HP-GL user-defined character (UC) command downloads and draws characters with an encoding scheme that uses pen control movements and coordinate sequences. The characters are drawn on a grid that is superimposed on the character plot cell.	

Expand Mode

Defines a larger imageable area for the selected media type. This increased imageable area affects the default placement of the scaling points P1 and P2.

Menu	Choices
Administration Emulations HPGL Expand Mode	On—Expands the imageable area. Off (default)—Doesn't expand the imageable area.
Notes: Setting this option to On partially determines the range of plotter units for a selected media type. When the plotter senses the media type, it automatically sets the hard clip limits to 0.591"/15 mm on three sides and to 1.537"/39 mm on the fourth side. However, if Expand Mode is set to On, then the limits are set to 0.197"/5 mm on three sides and 1.143"/29 mm on the fourth side. The HP-GL emulation senses the media size when the Paper Type is set to Scale to Paper or when it is set to a particular media size through the control panel or through a QMS Document Option Command.	

Paper Type

Identifies the original image's paper size.

Menu	Choices
Administration Emulations HPGL Paper Type	Scale to Paper (default), A (letter/8.5"x11.0"), A4 (210x297 mm), B (11.0"x17.0"), A3 (297x420 mm)

Pen 1 - Pen 8 (Pen x/Width)

Sets the width for the eight plotter pens. A width option is available for each pen.

Menu	Choices
Administration Emulations HPGL Pen *x*/Width	00-60 (0.1-6.0 mm) Defaults: Pen 1—7 (0.7 mm) Pen 2—3 (0.3 mm) Pen 3—3 (0.3 mm) Pen 4—3 (0.3 mm) Pen 5—3 (0.3 mm) Pen 6—3 (0.3 mm) Pen 7—3 (0.3 mm) Pen 8—3 (0.3 mm)

Notes: A setting of "0" defaults the pen width to the pixel setting of "1."

Pen 1 - Pen 8 (Pen x/Color)

Sets color for the eight plotter pens. A color option is available for each pen.

Menu	Choices
Administration Emulations HPGL Pen *x*/Color	Black, Violet, Brown, Gray - 25%, Gray - 50%, Gray - 75%, Red, Orange, Yellow, Green, Blue, Cyan, Magenta Defaults: Pen 1—Black (100% black) Pen 2—Black (100% black) Pen 3—Red (70% black) Pen 4—Green (41% black) Pen 5—Blue (89% black) Pen 6—Violet (59% black) Pen 7—Orange (25.8% black) Pen 8—Brown (50% black)

Notes: Cyan=30% black, magenta=59% black, and yellow=11% black.

HP PCL 5C

Default Font

Sets the default font for this emulation.

Menu	Choices
Administration Emulations HP PCL 5C Default Font	Courier12 (default), Courier12Bold, Courier12Italic, Courier10, Courier10Bold, Courier10Italic, Lineprinter, Times*, Times*Italic, Times*Bold, Times*BldItalic, Univ*, Univ*Italic, Univ*Bold, Univ*BldItalic, UnivCond*, UnivCond*Italic, UnivCond*Bold, UnivCond*BldItlc, Select by Index

Notes: * represents a scalable font (default point size [12 points] is used to scale the font and produce the characters in the selected size).

If you use Select by Index to select a font by its font index, the printer uses the Administration/Emulations/PCL5/Default Font Idx value to choose the default font.

Symbol Set

Sets the character set used by the HP PCL5 emulation.

Menu	Choices
Administration Emulations HP PCL 5C Symbol Set	Roman-8 (default), PC-850, PC8-US, PC8-DN, ECMA-94, Legal, HPGerman, HPSpanish, ISO-2, ISO-4, ISO-6, ISO-10, ISO-11, ISO-14, ISO-15, ISO-16, ISO-17, ISO-21, ISO-25, ISO-57, ISO-60, ISO-61, ISO-69, ISO-84, ISO-85, Desktop, PS Math, Math 8, Microsoft-Pub, Pi-Font, PS-Text, Ventura-Intl, Ventura-Math, Ventura-US, Windows, PS-Zapf-Dingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, Zapf-Dingbats300

Notes: Not all symbol sets are available with certain resident fonts. The Desktop, PS Math, Math 8, Microsoft-Pub, Pi-Font, PS-Text, Ventura-Intl, Ventura-Math, Ventura-US, and Windows symbol sets cannot be used with the resident bitmap fonts Courier 10, Courier 10 Italic, Courier 10 Bold, Courier 12, Courier 12 Italic, Courier 12 Bold, and LinePrinter.

The five dingbat symbol sets (PS-ZapfDingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, and Zapf-Dingbats300) can be used with all fonts.

If a mismatch between a symbol set and font occurs, the standard PCL font selection mechanism is used to locate a font that matches the selected symbol set. With the standard set of fonts distributed for your printer, this matches the Times* font, but other user-installed fonts could change this result.

Lines Per Inch

Sets the number of lines printed per inch.

Menu	Choices
Administration Emulations HP PCL 5C Lines/Inch x 100	0100-4800 06 (default)

Line Termination

Adds an indicator which controls the way the printer interprets CR (carriage return) and LF (line feed) characters.

Menu	Choices
Administration Emulations HP PCL 5C Line Termination	CR=CR, LF=LF (default)
	CR=CR+LF, LF=LF
	CR=CR, LF=CR+LF
	CR or LF=CR+LF

Point Size x100

Specifies the point size for scalable fonts in 0.25 point increments.

Menu	Choices
Administration Emulations HP PCL 5C Point Size x100	00025-99975 (0.25-999.75 points)
	01200 (12 points) (default)

Notes: If the font is not scalable or if a bitmap font is specified, this setting is ignored.

Retain Temporary

Allows you to choose whether to retain temporary HP PCL5 fonts and macros at the end of each print job.

Menu	Choices
Administration Emulations HP PCL 5C Retain Temporary	Off (default)—Reset PCL to its default state at the end of each PCL print job, execute an implicit <ESC>E at the start and end of the job, and delete any temporary fonts, macros, and patterns. On—Reset PCL to its default state at the end of each PCL print job. Temporary fonts, macros, and patterns from previous PCL print jobs are retained in memory after the print job has completed. You can recall these downloaded fonts, macros, and patterns from within your PCL file without having to download them again. On Compatibility—Retain the entire state of PCL as well as the temporary macros, fonts, and patterns from previous PCL jobs unless you do one of the following: ■ Change any PCL control panel option ■ Send any PCL-specific DOC—except the emulation DOC ■ Send any other DOC, such as number of copies, duplex, orientation, or inputbin ■ Send a PCL job from a different communications port—for example, if the PCL print environment is set for PCL jobs to print from the parallel port, and a PCL job is sent from the serial port. If any one of these occurs, the PCL state is reset to the new default, and the previous state is lost.

Scalable Fonts

Specifies whether to enable or disable the printing of HP PCL5 scalable fonts by an application.

Menu	Choices
Administration Emulations HP PCL 5C Scalable Fonts	Enable (default)—Allow selection of scalable fonts. When you print PCL4 documents, PCL5 may substitute scalable fonts that could cause your PCL 4 documents to print incorrectly. Disable—Print using bitmap fonts only.

Notes: This feature may be useful when printing PCL4 documents which may inadvertently select unwanted scalable fonts.

Default Font Index

Sets the default font index when Select by Index is chosen in the Administration/Emulations/HP PCL 5C/Default Font menu. If a font by the same index number exists, it is selected as the default font. This font must be a cartridge or downloaded soft font.

Menu	Choices
Administration Emulations HP PCL 5C Default Font Idx	00000-32767 Default: Depends on cartridge or downloaded font(s)

Monochrome HP-GL/2

Menu	Choices
Administration Emulations HP PCL 5C Monochrome HP-GL/2	Off (default)— HP-GL 2 documents are printed in color. On— HP-GL 2 documents are printed in shades of gray.

Pen Color Defaults:

Pen 0 = White

Pen 1 = Black

Pen 2 = Red

Pen 3 = Green

Pen 4 = Yellow

Pen 5 = Blue

Pen 6 = Magenta

Pen 7 = Cyan

Notes: When set to off, this option maps pen colors as follows:

Pen 0=White, Pen 1=Black, Pen 2=Red, Pen 3=Green, Pen 4=Yellow, Pen 5=Blue, Pen 6=Magenta, Pen 7=Cyan.

When set to on, this option tells the printer to map each pen to its assigned color, then convert the color to a grayscale using the National Television System Committee (NTSC) color standard for luminosity coefficients (Additive System):

$Y = 0.30R + 0.59G + 0.11B$

Example of how to use the color standard formula:

WhiteY = [1*0.30) + (1*0.59) + (1*0.11)]—100% gray
BlackY = [0*0.30) + (0*0.59) + (0*0.11)]—0% gray
RedY = [1*0.30) + (0*0.59) + (0*0.11)]—30% gray
GreenY = [0*0.30) + (1*0.59) + (0*0.11)]—59% gray
YellowY = [1*0.30) + (1*0.59) + (0*0.11)]—89% gray
BlueY = [0*0.30) + (0*0.59) + (1*0.11)]—11% gray
MagentaY = [1*0.30) + (0*0.59) + (1*0.11)]—41% gray
CyanY = [0*0.30) + (1*0.59) + (1*0.11)]—70% gray

Download Location

Controls the default storage location of PCL objects (fonts, macros, and patterns).

Menu	Choices
Administration Emulations HP PCL 5C Downld Location	Disk (default)—All downloaded PCL objects are stored in the default disk resource, if present. These objects remain on the disk even if the printer power is turned off. (If this option is set to Disk and no hard disk is installed, RAM is used as the default storage location.)
	Memory—All downloaded PCL objects are stored in temporary storage in RAM. If the printer has both a hard disk and a large amount of memory, setting this option to Memory enhances printer performance.

Notes: Document Option Commands specifying resources override this option on a per-job basis (unless the location is specified as RAM, in which case DOC does not override).

Before you download any objects, ensure that the printer has enough memory, or they may not be available for use. If it doesn't, you can install additional SIMMs to increase printer memory, or, if a hard disk is available, you can enable disk swapping (Administration/Memory/Enable Disk Swap menu).

Lineprinter

Point Size (in 100ths of an inch)

Sets point size (in .01 point increments) of the font for the current print job.

Menu	Choices
Administration Emulations Lineprinter Point Sz 100ths	00400-25600 (4-256 points) 00880 (8.8 points) (default)

Character Map

Specifies the type of character map to be used.

Menu	Choices
Administration Emulations Lineprinter Character Map	ASCII (default), EBCDIC

Line Numbering

Specifies if a five-digit number is to be prefixed to the beginning of each line.

Menu	Choices
Administration Emulations Lineprinter Line Numbering	On—Number all lines. Off (default)—Don't number lines.

Tab Stops

Specifies the number of spaces between tab stops.

Menu	Choices
Administration Emulations Lineprinter Tab Stops	0-256 8 (default)

Line Feed is Carriage Return-Line Feed

Specifies whether each line feed (LF) in the print job is translated to a carriage return/line feed (CRLF) combination.

Menu	Choices
Administration Emulations Lineprinter LF is CRLF	On (default)—Translate all line feeds to carriage return/line feed combinations. Off—Use lines feeds only as line feeds.

Carriage Return is Carriage Return-Line Feed

Specifies whether each carriage return (CR) in the print job is translated to a carriage return/line feed (CRLF) combination.

Menu	Choices
Administration Emulations Lineprinter CR is CRLF	On—Translate all carriage returns to line feeds. Off (default)—Use carriage returns only as carriage returns.

Form Feed is Carriage Return-Form Feed

Specifies whether each form feed (FF) in the print job is translated to a carriage return/form feed (CRFF) combination.

Menu	Choices
Administration Emulations Lineprinter FF is CRFF	On (default)—Translate all form feeds to carriage return/form feed combinations. Off—Use form feeds only as form feeds.

Orientation

Specifies whether text and graphics are placed on the page in a portrait or landscape orientation.

Menu	Choices
Administration Emulations Lineprinter Orientation	Landscape, Portrait (default)

Autowrap

Specifies whether long lines are to be wrapped to the next line instead of being truncated.

Menu	Choices
Administration Emulations Lineprinter Autowrap	On (default)—Wrap long lines. Off—Truncate long lines.

Lines Per Page

Specifies the number of lines printed on a page before an automatic page eject.

Menu	Choices
Administration Emulations Lineprinter Lines per Page	1-128 87 (default)

Notes: Interline spacing is set to the selected point size. Logical pages consisting of more lines than specified are split into multiple pages.

Margins

Defines the left, right, top, and bottom margins.

Menu	Choices
Administration Emulations Lineprinter Margins	Bottom (default)-17000 (0"-17.00") Left (default)-17000 (0"-17.00") Right (default)-17000 (0"-17.00") Top (default)-17000 (0"-17.00")

Font

Sets the printer fonts for the current print job.

Menu	Choices
Administration Emulations Lineprinter Font	All printer-resident PostScript fonts. Default: Courier

Notes: Any PostScript fonts available on the printer can be used. To see a list of available PostScript fonts, print an advanced status page through the printer configuration menu (Administration/Special Pages/Status Page Type) or through the PS Executive Series Utilities.

Optional Emulations

If you have an optional emulation installed, such as LN03 Plus, see the documentation that came with it for a description of the options under the Administration/ Emulations menu.

Special Pages

Status Pages

Printing a status page is a two-step procedure: Identify the type of status page you want to print, and then print it.

Status Page Type

Two types of status pages are available:

Menu	Choices
Administration Special Pages Status Page Type	Standard (default)—Lists printer identification information, current memory configuration, timeouts, communication settings, input buffer sizes, and available fonts. It also has tickmarks for measuring the printer's alignment.
	Advanced—Contains the same information as the standard status page as well as configuration menu settings, fonts, and downloaded emulations.

Status Page

Prints a status page.

Menu	Choices
Administration Special Pages Print Status	Yes, No (default)

Notes: The type of status page printed is determined by the selection made in the Status Page Type menu.

Registration Page

Prints a registration page. This page allows you to check color registration (placement of each of the process colors on the page).

Menu	Choices
Administration Special Pages Registration Page	Yes—Prints registration page. No (default)—Registration page will not be printed.

Notes: Color marks going around the outside of the page demonstrate horizontal and vertical color registration. Circles in the center of the page demonstrate cyan, magenta, and yellow color mixtures and red, green, and blue color mixtures. See the Administration/Engine/Image Alignment menu for calibration instructions.

Color Balance Adjustment Page

Prints a page with instructions to help you balance the color on your printer.

Menu	Choices
Administration Special Pages Color Balance Adjustments	Yes—Prints color balance page. No (default)—Color balance page will not be printed.

Notes: Three color swatches indicate what direction and angle to adjust the Cyan, Magenta, and Yellow print density controls located under the top cover of the printer.

Header Page

Menu	Choices
Administration Special Pages Header Page	On—Print a header page before each job. Off (default)—Don't print a header page before each job.

Header Inputbin

You can select the input bin (tray or cassette) from which the printer pulls media when printing the header page.

Menu	Choices
Administration Special Pages Header Inputbin	Upper (default)—Pull header page media from the upper input bin. Lower—Pull header page media from the (optional) lower input bin.

Notes: If you used the Administration/Engine/Inputbin *x* Name options to change the names of the input bins, these names replace Upper and Lower in the message window.

Trailer Page

Menu	Choices
Administration Special Pages Trailer Pages	Off (default)—Don't print a trailer/error page for each print job. On—Print a trailer/error page for each print job. On Error—If any print job errors exist, print a trailer page that lists the errors as well as other trailer page information. Errors Only—If any print job errors exist, print a trailer page that lists the errors but omits other trailer page information.

Notes: See the *QMS Crown Document Option Commands* manual (available for purchase from your QMS vendor) for more information.

Trailer Page Inputbin

You can select the input bin (tray or cassette) from which the printer pulls media when printing the trailer page.

Menu	Choices
Administration Special Pages Trailer Inputbin	Upper (default)—Pull trailer page media from the upper input bin. Lower—Pull trailer page media from the lower input bin.

Notes: If you used the Administration/Engine/Inputbin *x* Name options to change the names of the inputbins, these names replace Upper and Lower in the message window.

Printer Start-Up Options

Error Handler

Error Handler is a diagnostic tool that identifies PostScript errors encountered during a print job.

Menu	Choices
Administration Startup Options Do Error Handler	Yes—Load the Error Handler. No (default)—Don't load the Error Handler.

Notes: The printer must be rebooted for this option to take effect. Refer to the *PostScript Language Reference Manual* (Adobe Systems Incorporated, Reading, PA: Addison-Wesley, 1990, ISBN 0-201-18127-4) for more information on PostScript errors.

Start-Up Page

By default, the printer prints a start-up page when you turn it on. You can turn the start-up page off to conserve paper and toner.

Menu	Choices
Administration Startup Options Do Start Page	Yes (default)—Print a start-up page each time the printer is turned on. No—Don't print a start-up page each time the printer is turned on.

Notes: If you used the Administration/Engine/Inputbin *x* Name options to change the names of the input bins, these names replace Multipurpose, Lower, and Optional in the message window.

SYS\START

If Do Sys Start is enabled, when the printer is turned on, the controller checks the hard disk, if present, for a PostScript file named SYS\START and executes this file.

Menu	Choices
Administration Startup Options Do Sys Start	Yes (default)—Check the hard disk, if present, for and execute the SYS\START file when the printer is turned on.
	No—Don't check the hard disk for a SYS\START file.

Notes: This file does not print. Information on creating a SYS\START file is available via Q-FAX (see appendix A, "QMS Customer Support," in the user's guide, for information on using Q-FAX).

Memory

This submenu allows you to allocate the printer's memory (RAM and, if a hard disk is present and disk swapping is turned on, hard disk space) among the various memory clients. This flexibility allows experienced users to optimize the printer's performance according to a given set of conditions.

▲ *Caution: Misallocated memory may hinder the performance level of the printer. If you try to set a memory client below a minimum required value or above a maximum allowable value, the message INCORRECT VALUE appears in the message window.*

To find out how memory is currently allocated, print a status page (this option is in the Administration/Special Pages menu) or check each client individually in the configuration menu. When you allocate memory to a specific client through the control panel, it is allocated in kilobytes (KB). The sizes listed on the status page are in bytes, so you must divide the numbers on the status page by 1024 to get the equivalent number of kilobytes entered through the control panel.

The printer automatically reallocates added or freed memory to either the Display List or the Frame Buffer client, whichever asks for it first.

This is the best place for it for most users, but it can be reallocated to other memory clients.

The value for each memory client must be evenly divisible by 4 KB: if a value is entered that is not evenly divisible by 4 KB, it is automatically converted to the next lower value that is divisible by 4 KB. For example, if you enter 102 KB, the actual value is lowered to 100 KB (assuming there is enough memory available to allocate to this client). The amount shown on the status page will then be 102,400 (100 x 1024).

Spooling Buffer Memory

Listed as Host Input on the status page, this is the amount of memory used to store incoming data from all the interfaces until the physical print engine can print the job. When enough memory is allocated to this client, the host becomes free more quickly, and the number of jobs that the printer can accept simultaneously is increased. So increasing this client can be beneficial in reducing network traffic, but throughput speed is not necessarily increased. If available, a hard drive can supplement this client with additional memory needed for spooling. The size range and default varies depending upon the amount of memory available on your system.

Menu	Choices
Administration Memory K Mem for Spool	Variable.

PostScript Heap Memory

This is the amount of memory (KB) dedicated to the PostScript emulation interpreter. This memory holds downloaded PostScript emulation fonts, operators, and forms. The size range and default varies depending upon the amount of memory available on your system. This memory client is also known as virtual memory.

Inefficiently coded PostScript jobs can consume an infinite amount of virtual memory or leave objects in the PostScript heap after the print jobs are completed, leading to virtual memory errors. If not enough memory is allocated to the PostScript heap, the job cannot print.

Increasing the memory allocated to this client allows more complex jobs to print and increases the number of fonts that can be downloaded to virtual memory. If you receive a virtual memory error when attempting to print a job or download a font, this client should be increased in small increments until the error message goes away.

Menu	Choices
Administration Memory K Mem for PSHEAP	Variable

PostScript Fonts Memory

This is the amount of memory (KB) dedicated to caching previously scaled bitmap representations of fonts for the PostScript emulation interpreter. This reduces the number of times a PostScript font must be converted from outline form to bitmap form, thus reducing processing time. The size range and default varies depending upon the amount of memory available on your system. It is listed as Font Cache on the status page.

As the font cache memory fills, the printer erases bitmapped characters to make room for new characters. By increasing the memory allocated to this client, the printer can store more characters and spend less time erasing and replacing characters in the cache.

Normally, you do not need to change this memory client unless you use a large number of fonts at different point sizes. There is no specific formula to use in figuring the amount of memory required by the font cache, but after a certain point, large font caches cause printing to take longer than smaller font caches because of the search time through the cache. You should experiment to see what font cache size works best for you.

Menu	Choices
Administration Memory K Mem for PS Fonts	Variable

Emulation Memory

This is the amount of memory (KB) dedicated to non-PostScript emulations for temporary storage and for loading optional emulations. The size range and default varies depending upon the amount of memory available on your system.

Increasing this client's memory allows more complicated non-PostScript jobs to print and allows larger, optional emulations or multiple emulations to be loaded and ready to process jobs, without having to be reloaded every time a job in that emulation is sent.

If an emulation is loaded to process a print job and there is not enough memory in the emulation client, another emulation already loaded might be unloaded automatically to obtain the necessary memory. If you notice a delay in printing between jobs that have different non-resident emulations, it's possible that emulations are being reloaded each time they are run. Adding to the emulation client might eliminate this unloading and reloading and, consequently, increase throughput.

Also, increase the emulation client if you are printing complex non-PostScript jobs that might require more memory to process correctly.

Menu	Choices
Administration Memory K Mem Emul	Variable

Note: If you are using the optional CCITT emulation, this value should be increased by 200 KB.

Temporary Emulation Memory

This is the amount of memory (KB) to be used by non-PostScript emulations for storing downloaded fonts. The size range and default varies depending upon the amount of memory available on your system.

This memory allows context switching, which is the ability to retain downloaded fonts even after the printer changes from one emulation to another. Context switching prevents repetitive downloading and traffic congestion on networks.

Normally, this memory client does not need to be changed unless you plan to download many different non-PostScript fonts.

Menu	Choices
Administration Memory K Mem Emul Temp	Variable

Display List Memory

This is the amount of memory (KB) dedicated to the display lists. The display list client holds the intermediate representation of pages to be printed in compressed blocks of data. The size range and default varies depending upon the amount of memory available on your system.

Display List shares its memory with the PostScript heap. Many pages of compressed blocks belonging to multiple print jobs can be stored simultaneously in the display list. If enough memory is allocated to this memory client, a page can always be ready to print as soon as another page has been imaged by the print engine, so increasing the amount of memory in this client might improve printing throughput. If not enough memory is allocated to this client, memory is taken from the excess memory client (PostScript heap) to complete the print job.

Menu	Choices
Administration Memory K Mem Display	Variable

Frame Buffer Memory

This is the amount of system memory (KB) dedicated to the frame buffers. This client holds rasterized pages that are ready to be transferred to the print engine. The amount of frame buffer storage affects the maximum size of any single page. The resolution, page size, and number of colors that can be printed depends on how much RAM is in the printer. See "Changing Print Resolution" in chapter 2, "Printing," of the user's guide for information on minimum RAM requirements.

Menu	Choices
Administration Memory K Mem Framebuff	Variable

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Disk Cache Memory

This is the amount of memory (KB) dedicated to the disk cache, the area in which frequently used data is stored so it does not have to be continually read from and written to disk, if present (either an internal or an external drive). The size range and default varies depending on the amount of memory available on your system.

If not enough memory is available for this client, some or all hard disks may not be accessible and/or an insufficient number of disk cache blocks may be available.

Menu	Choices
Administration Memory K Mem Disk Cache	Variable

Printer Memory

This memory client cannot be changed: it is the amount of memory in the printer that is available to be split among the other memory clients.

Menu	
Administration Memory MB Printer Mem	

Enable Disk Swap

If the printer has a hard disk, then Enable Disk Swap should be enabled to take full advantage of it. Disk swapping gives your printer virtual memory capability for all memory clients through the creation of a "swap file" on a hard disk. The default size of the swap file depends on the amount of RAM installed. The more RAM is installed, the larger the default swap file size will be. The printer uses this file as an extension of its memory. As the physical RAM fills, the printer can swap the contents to the hard disk file to allow more space. This file swapping between disk and RAM occurs at various times throughout the printing process and is completely transparent.

If disk swapping is enabled and a hard disk is not available or not turned on, the printer automatically resets to the factory defaults. It would then be necessary to re-enable disk swapping, if you want this functionality.

The printer must be restarted for changes to the Enable Disk Swap setting to take effect. Changing this setting causes the `REBOOT NOW?` prompt to appear. You can either choose to restart the printer now and this change takes effect immediately or you can manually restart the printer and have this change take effect later.

If you Enable Disk Swap and restart the printer, then the disk cache size automatically increases to 256 KB. See "Disk Cache Memory" on page 58 for more information.

Menu	Choices
Administration Memory Enable Disk Swap	No (default)—Don't enable disk swapping. Yes—Enable disk swapping.

Printer Engine Features

Clear Warning

Use this option to clear a status message that doesn't automatically clear after the related corrective action is taken.

Menu	Choices
Administration Engine Clear Warning	Options in this menu include all status messages that don't automatically clear. Select the message that you want to clear after correcting the specified status. See chapter 4, "Troubleshooting," in the user's guide, for details.

Notes: You should select the appropriate Clear Warning option each time you replace a developer cartridge, whether or not a warning message is actually displayed. See "Replacing a Developer Cartridge" in chapter 3 in the user's guide for information. Also, if you clear REPLACE FUSER or 100K CHECKUP, the counter that tracks that particular service resets to 0 and the message does not reappear until after another complete cycle. If you continue to use the printer without the proper maintenance or part replacement, print quality can deteriorate, and the wear on the printer can shorten the printer's life.

Energy Saver

The Energy Saver option specifies whether the printer changes to a low-power state (the engine remains on, but the fuser turns off) after the printer is inactive for a user-defined length of time. This low-power state is compliant with US Environmental Protection Agency (EPA) Energy Star regulations. When a print job is received, the printer returns from the Energy Saver state to an active state within 90 seconds.

Menu	Choices
Operator Control Energy Saver	15 minutes, 30 minutes, 1 hour (default), 2 hours, 3 hours—(Idle time before activation of low-power state). Off—Stay at normal power levels all of the time.

Notes: The 1-hour setting is compliant with Energy Star regulations. Some optional daughterboards may cause the product to become non-Energy Star compliant.

Image Alignment

This option allows you to adjust the horizontal and vertical placement of printed images. To check image alignment, print a standard status page (Administration/Special Pages/Print Status). When the printer is placing images properly, the alignment angle bar in the lower-left corner of the status page is 0.5"/12.7 mm from the left and bottom edges of the page. If the angle bar is off, use the Administration/Engine/Image Alignment option to align the image horizontally and vertically in pixel increments (1/300" or 0.08 mm). Engine constraints may limit the accuracy of pixel alignment.

Horizontal Offset

Menu	Choices
Administration Engine Image Alignment Horiz Offset	000-300 (0.00"/0 mm-1.00"/25.4 mm) 100 (0.33"/.84 mm) (default)

Notes: Values above 100 move the image to the right. Values below 100 move the image to the left.

Vertical Offset

Menu	Choices
Administration Engine Image Alignment Vertical Offset	000-300 (0.00"/0 mm-1.00"/25.4 mm) 100 (0.33"/.84 mm) (default)

Notes: Values above 100 move the image down. Values below 100 move the image up.

Default Paper

Default Paper is used when the default media is requested but the default input bin is missing from the engine so there's no way to sense the media size automatically.

Menu	Choices
Administration Engine Default Paper	Letter (default), A4

Inputbin x Name

These options are used to name input bins 1 and 2 (upper and (optional) lower cassette).

Menu	Choices
Administration Engine Inputbin x Name	Up to 16 alphanumeric characters Inputbin 1 "upper" / Inputbin 2 "lower" (default)

Outputbin x Name

Use this option to assign a name to the output bin.

Menu	Choices
Administration Engine Inputbin x Name	Up to 16 alphanumeric characters Outputbin "upper" (default)

Default Resolution

Menu	Choices
Administration Engine Deaf. Resolution	300 dpi—300 x 300 dpi resolution 600 dpi—600 x 600 dpi resolution (default) 1200 dpi—1200 x 600 dpi resolution Default depends on how much memory is in the printer. See "Changing Print Resolution" in chapter 2, "Printing," of the user's guide for information on minimum RAM requirements for different resolutions, page sizes, and numbers of colors.

Page Recovery

When a media jam or other similar error occurs, the printer can reprint the job starting from the page on which the jam occurred.

Menu	Choices
Administration Engine Page Recovery	On—Reprints a print job from the page on which the jam or error occurred. Off (default)—Don't reprint a print job when a jam or error occurs.

Manual Feed Timeout

This option allows you to set the amount of time the printer waits for paper to be inserted into the manual feed slot before it cancels the job.

Menu	Choices
Administration Engine Man. Feed Timeout	000 - 300 seconds 060 seconds (default)

Notes: A value of 000 sets the timeout to infinity

Miscellaneous

Restore Defaults

If you need to cancel all of the configuration changes you have made, you can reset all of the configuration settings to their factory defaults

Menu	Choices
Administration Miscellaneous Restore Defaults	Yes, No (default)

Notes: This process takes several minutes to complete. Remember that any changes made to the configuration menu are lost when the factory defaults are restored, so if you think any changes have been made, it's a good idea to print an advanced status page (Administration\Special Pages\Print Status menu) to have a record of these changes. If the printer has a hard disk and you have enabled disk swapping (recommended to take advantage of a hard disk), you should re-enable it after restoring factory defaults (Administration\Memory\Enable Disk Swap menu).

Reboot System

You can use this selection to restart the printer without turning off the power switch. You would use this when you've made changes to the configuration and need to restart the printer before the new settings will be acknowledged.

Menu	Choices
Administration Miscellaneous Reboot System	Yes, No (default)

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New Flash Image

The system software in your printer is stored on flash memory. This allows you to update the system software without opening the printer and installing new PROMs.

Menu	Choices
Administration Miscellaneous New Flash Image	Yes, No (default)

Notes: The procedures for downloading a new flash image are in chapter 2, "Printer Options."

Keypad Language

Status messages and configuration menus can be displayed in the message window in English, French, German, or Spanish.

Menu	Choices
Administration Miscellaneous Keypad Language	English (default), French, German, Spanish

Notes: The printer must be restarted for changes to the Keypad Language menu to take effect. You can either let the printer restart automatically after you save the change and exit from the Configuration menu, or you can wait for the change to take effect the next time you manually turn on the printer.

Disk Operations

» **Note:** *This menu appears only if the printer has a hard disk.*

▲ *Caution: If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer, this QMS magicolor CX software release will automatically reorganize the files on the hard disk when the printer is turned back on again. Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is reattached to an earlier QMS Crown printer.*

This reorganization process takes time. If, when you first turn the printer on after attaching a previously used hard disk, it does not come on line immediately, be patient. Interrupting the reorganization process could cause all files on the hard disk to be lost.

Install Option

Use the Administration/Disk Operations/Install Option menu to add optional fonts to the hard disk from a font card. This selection copies data from the card to the hard disk. See chapter 2, "Printer Options," for instructions.

Remove Option

Use the Administration/Disk Operations/Remove Option menu to remove a previously installed optional font. See chapter 2, "Printer Options," for instructions.

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2

Printer Options

In This Chapter . . .

Available Options and Accessories

The following options, accessories, and spare parts are available for your printer. Contact your QMS vendor for information on obtaining them.

Documentation	QMS Crown Document Option Commands
	QMS Crown Network Notes
CrownCopy	Color copier that attaches directly to a printer SCSI port. See the documentation that accompanied this option for installation and use instructions.
Envelope cassette	30-envelope cassette; can be used in the standard media-cassette slot or the optional sheet feeder.
Sheet Feeder	250-sheet feeder that comes with a media cassette that is interchangeable with the standard cassette.
RAM	4MB, 60 ns, no parity, 72-pin, 1MB x 32 bits 8MB, 60 ns, no parity, 72-pin, 2MB x 32 bits 16MB, 60 ns, no parity, 72-pin, 4MB x 32 bits 32MB, 60 ns, no parity, 72-pin, 8MB x 32 bits
	Does support 2K or 4K refresh-type DRAMs
	Additional information is in Q-FAX document 6502, "QMS-tested SIMMs and Hard Disks." This document contains a description of each approved SIMM, its manufacturers and part numbers, and the QMS products on which it can be used. See appendix A, "QMS Customer Support," in the user's guide to find out how to access Q-FAX documents.
Emulations	CALS Host-based filter
	CCITT Loadable disk format or host-based filter
	LN03+ Loadable disk format
	TIFF Loadable disk format or host-based filter

Fonts	**HP ProCollection card**
	Courier, Prestige Elite, Letter Gothic, Tms-Rmn, Helv, and LinePrinter
	Intellifont SIMM
	Clarendon, Courier, Garamond (Stempel), Times Roman, Albertus, Antique Olive, Letter Gothic, Line Printer, Omega, Univers, ITC Zapf Dingbats, Coronet, and Marigold
	Kanji Font SIMM
	Ryumin Light-KL, Gothic BBB-Medium (licensed to QMS by Morisawa and Company, Ltd.), Mincho Medium, Mincho Heavy, Gothic Bold, and Gothic Heavy (licensed to QMS by TypeBank)
LocalTalk Interface Board	
System Administrator Security Card	
Hard Disks— Internal IDE, External SCSI	Internal IDE hard disk (requires a SCSI daughterboard for installation).
	SCSI daughterboard which supports and internal hard disk and up to 3 external SCSI hard disks
	Specifications are included in Q-FAX document 6502, "QMS-tested SIMMs and Hard Disks." This document contains a description of each approved hard disk, its manufacturers and part numbers, and the QMS products on which it can be used. See appendix A, "QMS Customer Support," in the user's guide to find out how to access Q-FAX documents.
Token-Ring Interface	LAN Manager/LAN Server
	TCP/IP
	NetWare
EtherNet Interface	LAN Manager/LAN Server
	TCP/IP
	NetWare
	EtherTalk

The Sheet Feeder

Unpack the sheet feeder and make sure you received the following:

- Sheet feeder unit

- Two small metal brackets

- Four large plastic corner brackets

» **Note:** *There may be several other pieces with the sheet feeder, but they are not required for this procedure.*

☀ **WARNING!** *Your printer weighs approximately 106 lbs (48 kg) without consumables. Be sure to have help when lifting and moving it. If consumables are installed, be sure to keep the printer level when moving it to prevent accidental spills.*

ACHTUNG! *Das Gewicht dieses Druckers beträgt ohne Verbrauchsmaterial ca. 48 kg. Bitte versuchen Sie niemals, den Drucker alleine anzuheben oder zu transportieren. Achten Sie bitte darauf, daß der Drucker mit eingebauten Tonerkartuschen nur waagerecht transportiert wird.*

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1 **Turn the printer off, remove the power cord, and disconnect all interface cables from the printer.**

2 **With the help of another person, pick up the printer by the four corners and align it above the sheet feeder.**

Keeping the printer level, lower it onto the sheet feeder . The bottom side edges of the printer rest inside the sides of the sheet feeder.
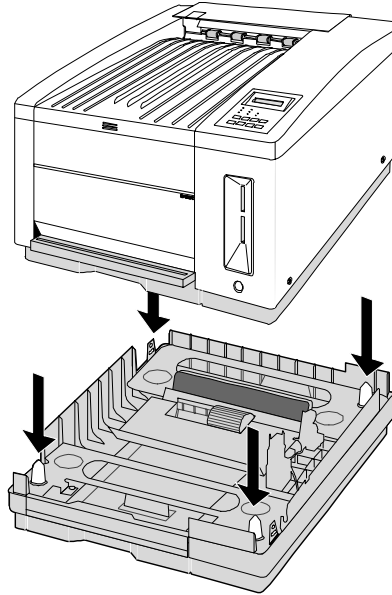
**3   Install the two small metal brackets using the following pro-
cedure:**

a   Align one of the metal brackets with the outside of the metal
post on the front right side of the sheet feeder. Make sure the
holes on the post and bracket are centered and that the
flange on the bottom of the bracket goes into the slot on the
post.

b   Attach the bracket to the post using one of the two small
metal screws that came with the sheet feeder.

c   Align and attach the second metal bracket to the rear left
sheet feeder post in the same way as you did the first bracket.

Metal Bracket
Rear Left

Metal Bracket
Rear Left

Metal Bracket
Front Right
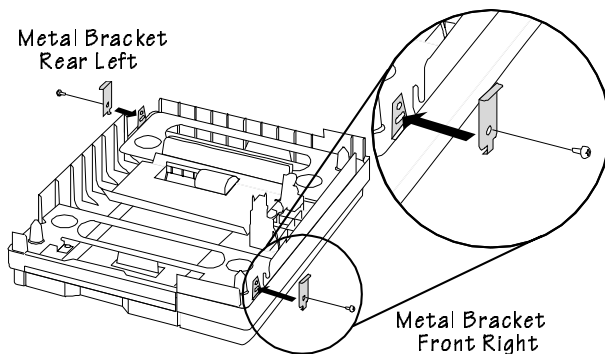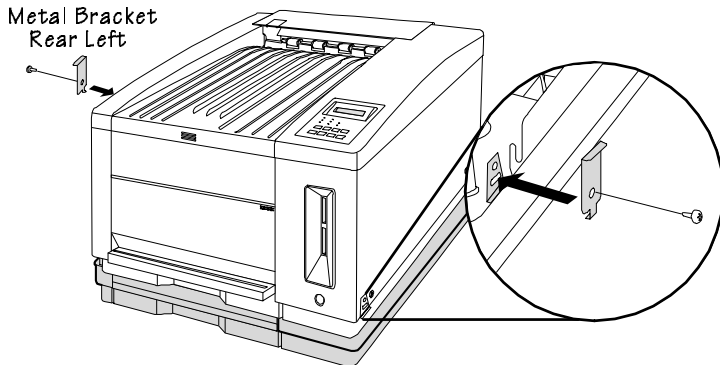
4   Snap the plastic brackets onto the appropriate corners of the sheet feeder.

The inside corner of each bracket is labeled to indicate which corner of the sheet feeder it fits in. These brackets also have small rims on the bottom that fit inside the edges of the sheet feeder.

```
Rear                                          Rear
Left                                          Right


              (Top View)
Front                                         Front
Left                                          Right
```
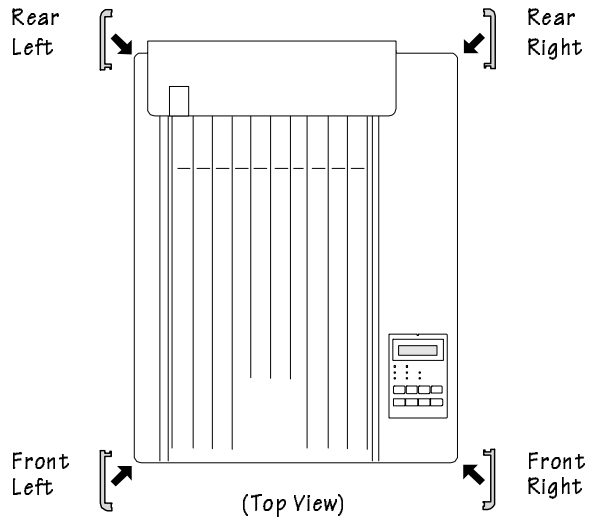
The sheet feeder is now installed. See chapter 2, "Printing," in the user's guide for information on handling media and filling cassettes.

» **Note:** *If you move the printer with the sheet feeder attached, lift the unit by the four bottom corners, not by the sheet feeder's cassette slot.*

The Envelope Cassette

You can purchase an envelope cassette from your QMS vendor. The envelope cassette holds up to 30 24-lb (90 g/m2) DL and Com 10 envelopes. They should be the top-flap type with pre-folded sealing flaps. The leading edge (the edge that feeds into the printer) must be thin and well creased. End-flap envelopes, envelopes with transparent windows, and envelopes with three or more layers on the left and right edges are not recommended. The envelope cassette fits in the slot for the standard or the optional media tray, but we recommend it be used in the standard slot.

Installing the Envelope Cassette

1   Remove the paper cassette from the printer.
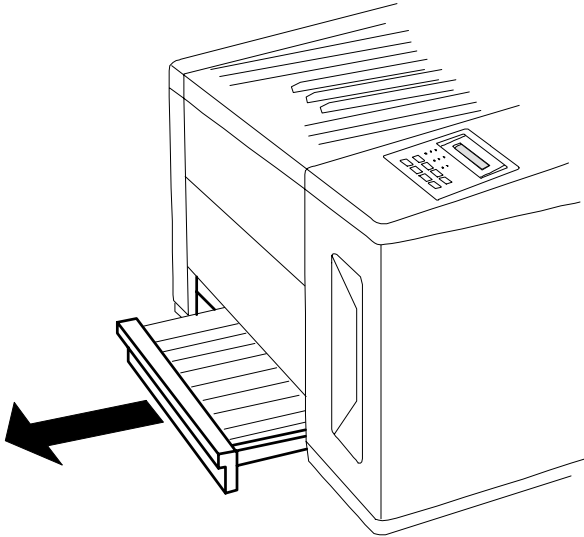
**2   On the envelope cassette, open the stacker arm and set the
side and rear envelope stackers to the correct envelope size.**

Stacker Arm

DL
#10

Set the
side stackers

Set the
rear stacker

#10   DL
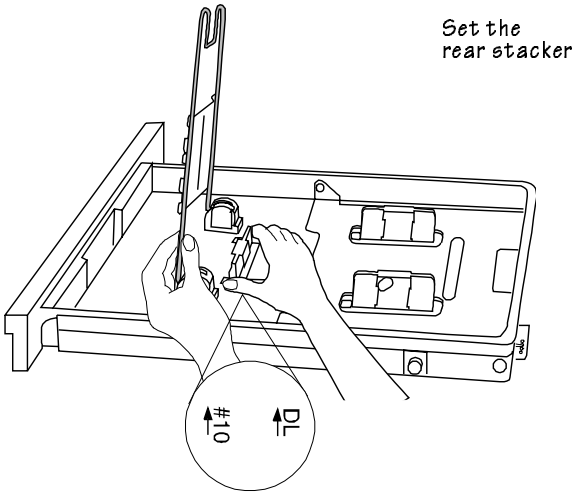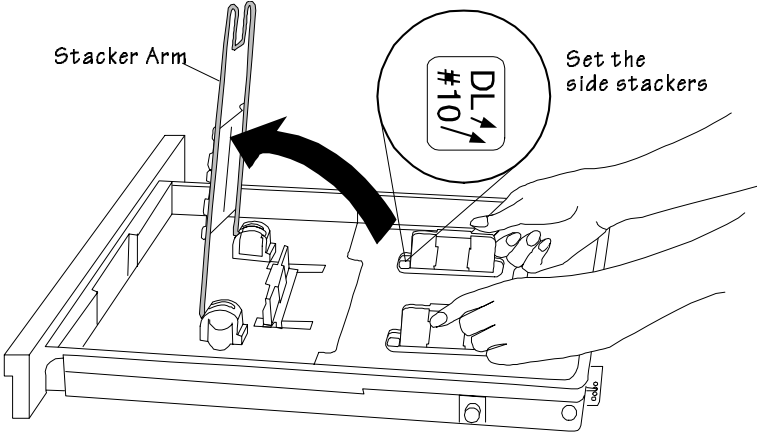
3   **Set the envelope-size key to the correct envelope size.**
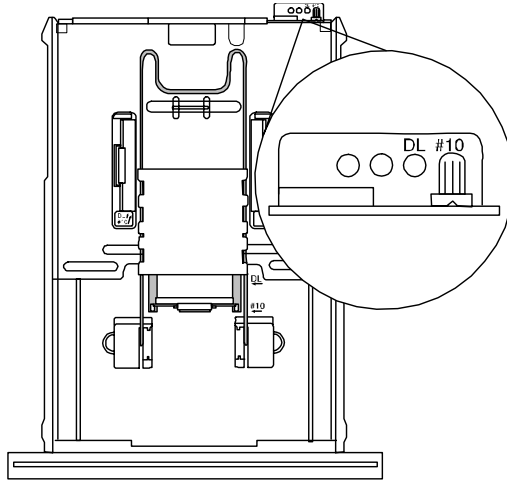
4   **Lift the stacker arm and load 30 or fewer envelopes printing-side up, so that the flap side will be on the left when the envelope is pulled into the printer.**
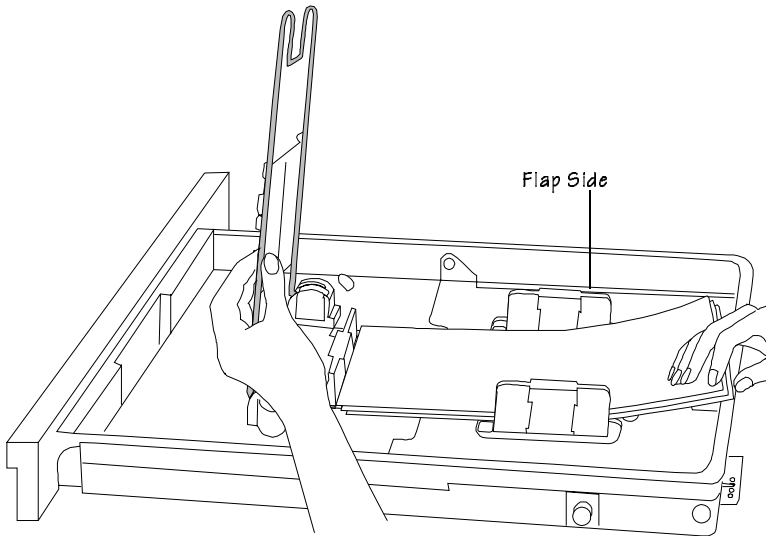
5   **Lower the stacker arm.**

6   Slide the envelope cassette into the printer.
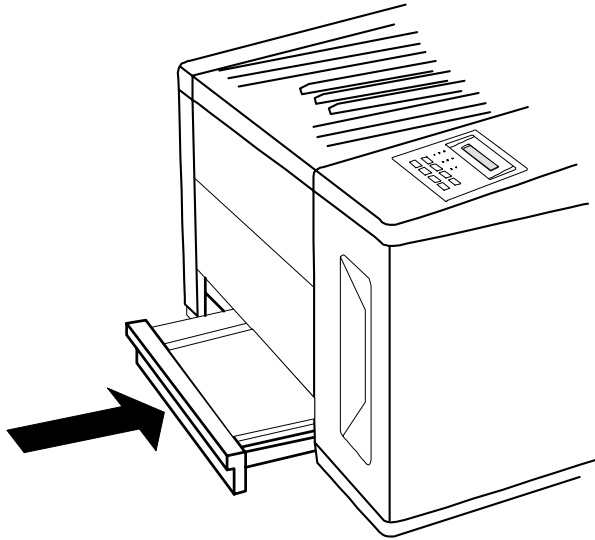
7   Make sure you select the correct envelope size through your software driver when printing.

Font Cards

You can purchase cards containing fonts not resident on the printer. The printer can support two cards at once. Fonts cards may go in either of the two slots located on the front of the printer, below the control panel. Contact your QMS vendor for availability.

▲ **Caution**: *Usually, the printer must be off line before you insert or remove a card. Press the Online/Offline key to turn the LED off. If you forget to take the printer off line, turn the printer power off and back on to regain access to the printer's resident fonts and the data stored in the printer's memory.*

However, before installing or removing the ProCollection font card, you must turn off your printer rather than just take it off line. Then turn the printer back on after you finish.

Using Font Cards

Use the following procedure to install a font card:

1   If you are installing a ProCollection card, turn off the printer. Otherwise, press the Online/Offline key to take the printer off line (the LED should be off).

▲ **Caution**: *Font cards fit in only one direction, with the front label facing left, toward the center of the printer. Do not force them in backwards; this could damage the card and printer.*

2   **Insert the card into either slot with the front label side facing left toward the inside of the printer.**
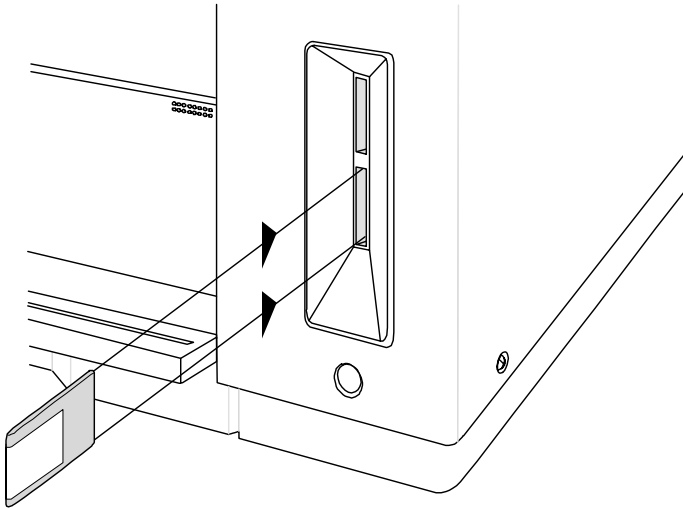
3   **Depending on the type of card you are installing, either turn the printer on again or put it back on line.**

To remove a card, use the following procedure:

1   **If you are removing a ProCollection card, turn off the printer. Otherwise, press the Online/Offline key to take the printer off line (the LED should be off).**

2   **Pull the card out gently.**

3   **Depending on the type of card you are removing, either turn the printer on again or put it back on line.**

»   **Note:** *If you are using an application, make sure the printer driver installed supports the fonts on the card, if you want to use those fonts. If not, contact your application manufacturer for support.*

Security Cards

An optional security card allows the Operator Control and Administration menus to be password protected, so that only users who know the password can change printer configurations. When a security card is installed, a new menu, Installation, appears in the printer's Configuration menu. The Installation menu is used to password-protect the printer.

▲ **Caution**: *The printer must be off line before you insert or remove a security card. If you forget to take the printer off line before you insert or remove a security card, turn the printer off and back on again to regain access to the data stored in the printer's memory.*

Using a Security Card

1   Take the printer off line.

▲ **Caution**: *A security card fits in only one direction, with the front label facing left, toward the center of the printer. Do not force the card in backwards; this could damage the card and printer.*

2   Insert the security card into either slot with the card's front label facing left, toward the inside of the printer.
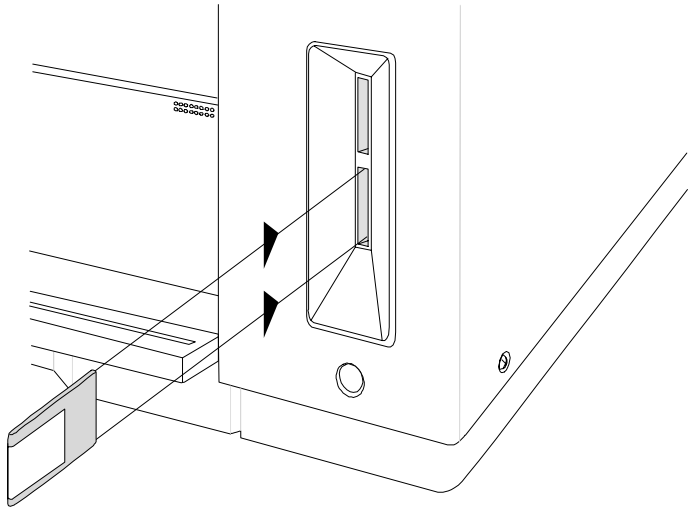
3   Press the Menu key to enter the Configuration menu. Press the Next key until the following message displays in the control panel message window:

```
CONFIGURATION
INSTALLATION
```

4   Press the Select key to enter the Installation menu, then use the Next key to view the menu options:

```
OPERATOR PASSWRD
USE OPERATOR PWD
ADMIN PASSWORD
USE ADMIN PWD
```

5   To password-protect the Operator Control menu, press Select to display the message

```
INSTALLATION
OPERATOR PASSWRD
```

Then, specify the password. (See "Changing Character Informa-
tion" in chapter 1, "Printer Configuration," for detailed instructions
for entering alphanumeric values.)

6   **When you have entered the complete password, press the
    Select key. This saves the password and returns you to the
    Installation menu.**

7   **To turn on the Password option, press the Next key to dis-
    play the message**

```
INSTALLATION
USE OPERATOR PWD
```

8   **Press the Select key to enter this submenu. Then press the
    Next key to display the message**

```
USE OPERATOR PWD
YES
```

9   **Press the Select key. This activates the password option and
    returns you to the Installation menu.**

10 **To password-protect the Administration menu, press the
    Next key to display**

```
INSTALLATION
ADMIN PASSWORD
```

11 **Press Select, then specify the password. (See "Changing
    Character Information" in chapter 1, "Printer Configuration,"
    for detailed instructions for entering alphanumeric values.)**

12 **When you have entered the complete password, press the
    Select key. This saves the password and returns you to the
    Installation menu.**

13 **To turn on the Password option, press the Next key to dis-
    play the message**

```
INSTALLATION
USE ADMIN PWD
```

14 Press Select to enter this submenu. Press the Next key to display

```
USE ADMIN PWD
YES
```

15 Press Select. This returns you to the Installation menu.

16 Once the passwords are entered and activated, press the Menu key to return to the Main menu. The following message is displayed:

```
SAVE CHANGES?
*NO
```

17 Press the Next key to display

```
SAVE CHANGES?
YES
```

18 Press Select. Remove the security card from the card slot, and put the printer back on line.

Once a menu is password-protected, you cannot enter it or make changes in it until you enter a valid password. You know a menu is password protected if

```
ENTER PASSWORD
```

appears on the message window when you try to enter the Configuration menu. If you enter an invalid password, the message window flashes

```
INVALID PASSWORD
```

for three seconds, and then returns to the parent menu. If you forget the password, the system administrator can recover it by repeating the "Using a Security Card" procedure.

If you enter the correct password, you are allowed to enter the menu. The password for the two menus may be the same or different.

Installation Menu

The Installation menu appears only if a security card is installed. The system administrator uses the Installation menu to set passwords for the Operator Control and Administration menus.

Operator Password

Allows you to enter a password used to enter the Operator menu when enabled.

Menu	Choices
Installation Operator Passwrd	Up to 16 alphanumeric characters
Notes: Enable the password in the Installation/Use Operator Pwd menu.	

Use Operator Password

Determines if a password is required to enter the Operator menu.

Menu	Choices
Installation Use Operator Pwd	On—Require a password to enter the Operator Control menu. Off (default)—Don't require a password to enter the Operator Control menu.
Notes: Enter the password in the Installation/Operator Passwrd menu.	

Admin Password

This represents the password used to enter the Administration menu when enabled.

Menu	Choices
Installation Admin Pwd	Up to 16 alphanumeric characters
Notes: Enable the password in the Installation/Use Admin Pwd menu.	

Use Admin Password

Determines if a password is required to enter the Administration menu.

Menu	Choices
Installation Use Admin Pwd	On—Require a password to enter the Administration menu.
	Off (default)—Don't require a password to enter the Administration menu.
Notes: Enter the password in the Installation/Admin Password menu.	

Using Passwords

When a password is required to enter the Operator Control or Administration menu, the message window will display

```
ENTER PASSWORD
```

if you press the Select key to enter the menu. Enter the password or press the Menu key to return to the menu.

If you specify the correct password, access to the selected menu is granted. However, if you enter an invalid password, the message window flashes

```
INVALID PASSWORD
```

for three seconds and then returns you to the Configuration menu.

Removing and Replacing the Controller Board

▲ **Caution**: *It's very important to protect the controller board from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but turned off). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Redischarge your body each time after walking around and before touching the controller board again. Handle the controller board carefully, and try to handle it by the edges only.

Removing the Controller Board

▲ **Caution:** *The following procedure is written for the system administrator. Do not attempt this procedure if you have no experience working with circuit boards.*

1　**Turn the printer off, remove the power cord, and disconnect all interface cables from the printer.**

2　**Loosen the two mounting screws that hold the controller board to the printer.**

3   **Pull the controller board straight out and lay it on a flat sur-
      face.**
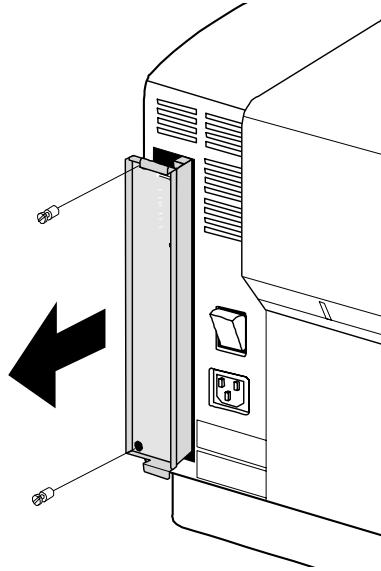
Replacing the Controller Board

▲ **Caution:** *The following instructions are written for advanced users.
Do not attempt this procedure if you have no experience working with
circuit boards.*

1   **Reinsert the controller board making sure it's properly
      seated in its connectors.**

2   Tighten the two mounting screws.
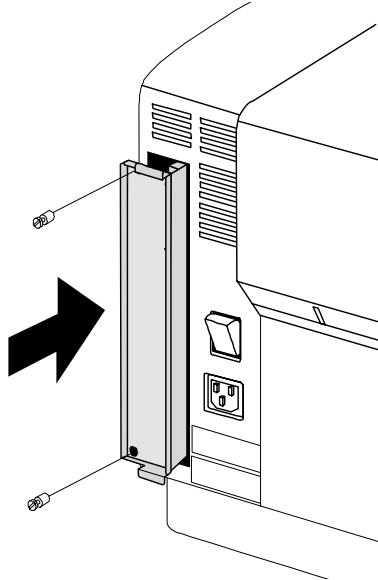
**3   Reconnect all interface cables and the power cord, and then
turn on the printer.**

Single In-Line Memory Modules (SIMMs)

» **Note:** *If you're installing an Intellifont SIMM, see "The Intellifont SIMM" on page 26 for instructions. Intellifont SIMM and RAM SIMM connectors are **not** interchangeable.*

1   **Follow the instructions in "Removing the Controller Board" on page 20, being careful to discharge electrostatic buildup before you begin.**

2   **Turn the controller board so that the side where the SIMMs are located is closest to you.**

J1

J2
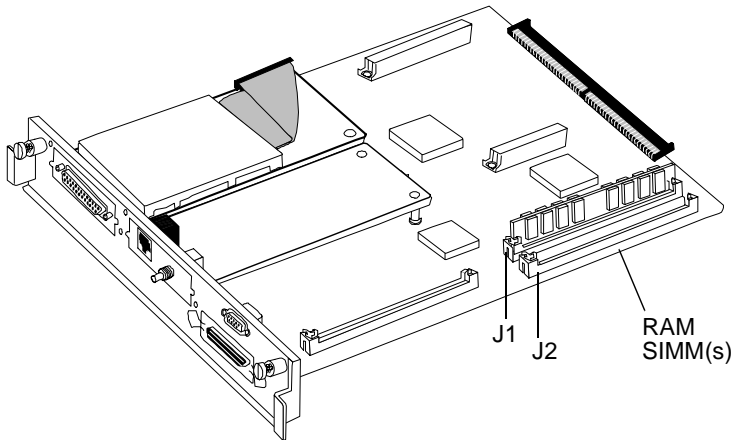
RAM
SIMM(s)

---

3   Remove the currently installed SIMM(s).

Pull the latch on each side of the SIMM connector outward using your thumbs. Tilt the SIMM forward and lift it out of the connector.
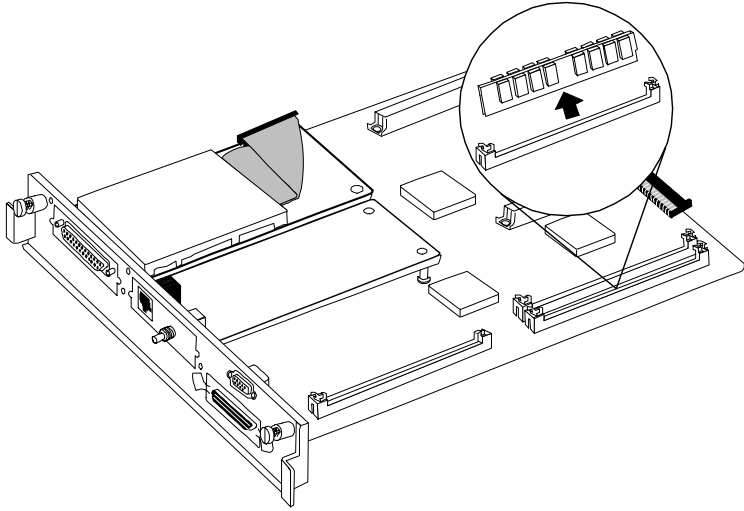
**4   Insert the new SIMM into the connector closest to the edge
of the board (J2).**

»   **Note:** *If you're only going to install one SIMM, it must be placed in
J1, the connector closest to the center of the board.*

Position the SIMM at a 60° angle to the controller board, with the
notch on the right side and the bottom edge in the connector.
Then pull the SIMM towards you to a 90° angle until you feel it fit
into place behind the clips on either side of the connector. (You
may need to use your fingers to open these clips.) When seated,
the SIMM stands upright, firmly in place.

J1

J2
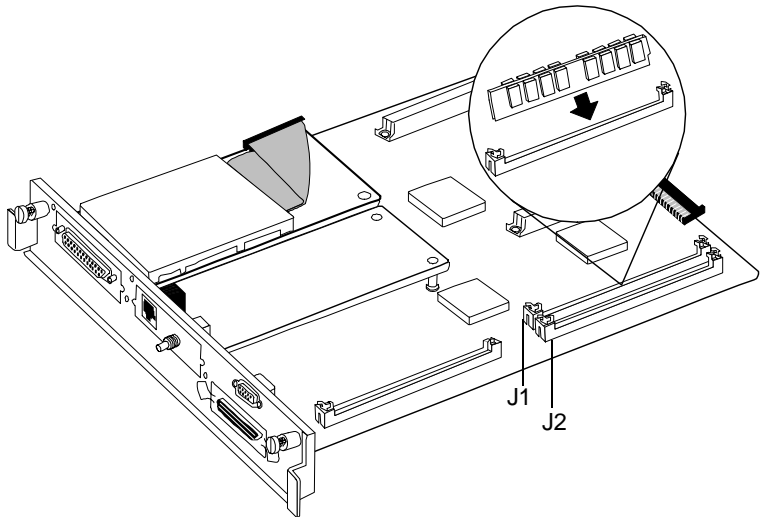
▲   **Caution***: If you cannot easily fit the SIMM into place, do not force
it. Reposition it, making sure that the bottom of the SIMM is
seated completely in the connector.*

**5   Repeat step 4 to install the other SIMM in the remaining con-
nector (J1).**

**6   Follow the instructions in "Replacing the Controller Board"
on page 21, being careful to follow the directions for elimi-
nating electrostatic buildup.**

The Intellifont SIMM

» **Note:** *If you're installing a RAM SIMM, see "Single In-Line Memory Modules (SIMMs)" on page 23 for instructions. Intellifont SIMM and RAM SIMM connectors are* **not** *interchangeable.*

An optional Intellifont SIMM increases the number of fonts available to the HP PCL 5 emulation on your printer from 20 to the 37 PCL 5 fonts available on a Hewlett-Packard LaserJet 4Si.

🕭 **WARNING!** *Turn off the printer and unplug the power cord before taking the cover off the printer.*

ACHTUNG! *Bitte schalten Sie den Drucker aus und ziehen Sie den Netzstecker heraus bevor Sie die Druckerabdeckung öffnen.*

▲ **Caution:** *It's very important to protect the printer tray assembly from electrostatic damage while performing this task.*

If an anti-static wrist strap is provided in your printer option kit, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in but turned off). Never attach the wrist strap to any piece of equipment with an electrical current present. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you perform this task.

If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the tray assembly cover. Redischarge your body each time after walking around and before touching the printer tray assembly again.

1 **Follow the instructions in "Removing the Controller Board" on page 20, being careful to discharge electrostatic buildup before you begin.**

**2   Turn the controller board so that the Intellifont SIMM slot is
    on the side to you.**

Intellifont SIMM slot
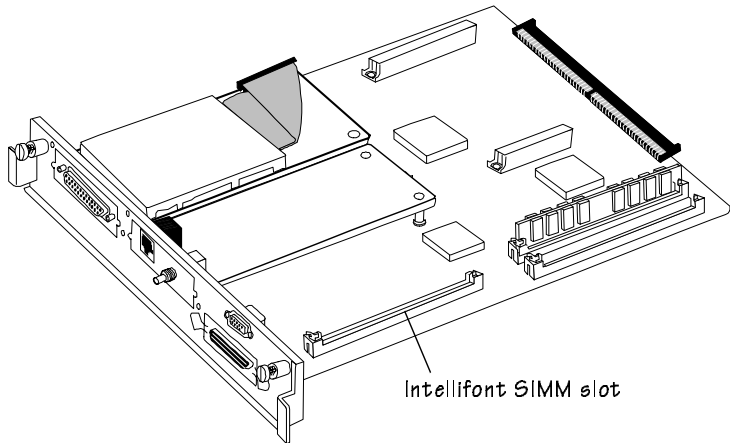
3   Insert the SIMM into the connector.

Position the SIMM at a 60° angle to the controller board, with the
notch on the left side and the bottom edge in the connector. Then
push the SIMM forward until you feel it fit into place behind the
clips on either side of the connector. (You may need to use your
fingers to open these clips.) When seated, the SIMM stands at an
angle, firmly in place.

22° angle
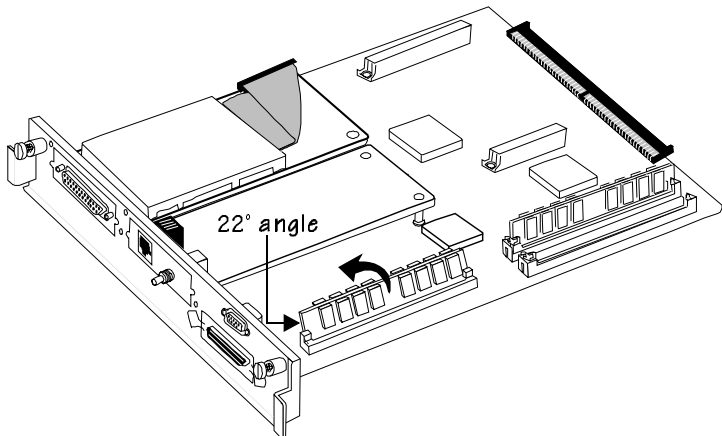
**4   Follow the instructions in "Replacing the Controller Board"
     on page 21, being careful to follow the directions for elimi-
     nating electrostatic buildup.**

Increasing the Disk Cache Size

If your printer has 8 MB of RAM total, you must set the disk cache
to a minimum of 48 KB (Administration/Memory/Disk Cache menu) to
use the Intellifont SIMM.

»   **Note:** *You may need to decrease one of the other memory clients
     before increasing the disk cache client, or add more memory.*

If your printer has more than 8 MB RAM, the size of the disk cache
is automatically adjusted.

Verifying the Installation

Once you have installed the Intellifont SIMM, print a start-up page
and an advanced status page to verify the installation.

1   Wait for the printer message window to display `IDLE`**.**

**2   If necessary, use the Administration/Startup Options/Startup
     Page menu to enable start-up pages.**

3   Turn the printer off and back on again.

In the Options section of the start-up page, a new option identi-
fied as `%cartridge2%` verifies the installation of the SIMM.

**4   Use the Administration/Special Pages/Status Page Type
     menu to change the default Standard setting to Advanced.**

**5   Print an Advanced Status Page (Administration/Special
     Pages/Status Page Type selection, followed by Administra-
     tion/Special Pages/Print Status).**

The list of HP PCL fonts includes all of the new Intellifont fonts.
Keep this status page for reference when accessing these fonts.

Accessing the Fonts

Using Your PCL Application

Use your PCL application to set the font for a single document. See your application documentation for information.

Using the Printer Configuration Menu

Use the printer configuration menu to set the default font for all PCL documents.

» **Note:** *Before beginning this procedure, you must have a PCL 5 font list from the advanced status page. See steps 4 and 5 of "Verifying the Installation" on page 28 for information on printing an advanced status page.*

1   **Access the Administation/PCL5/Default Font menu.**

2   **Choose the Select by Index option.**

3   **Access the Administration/PCL5/Default Font Idx menu.**

4   **Identify the appropriate font selection index.**

The font selection indexes are listed in the PCL 5 font list on the advanced status page.

5   **Save your changes and put the printer back on line.**

Interface Daughterboards

This section describes how to install an interface daughterboard. Only magicolor CX daughterboards can be used with the magicolor CX printer.

1   Follow the instructions in "Removing the Controller Board" on page 20, being careful to eliminate electrostatic buildup before you begin.

2   Using a Phillips screwdriver, remove an optional I/O plate.
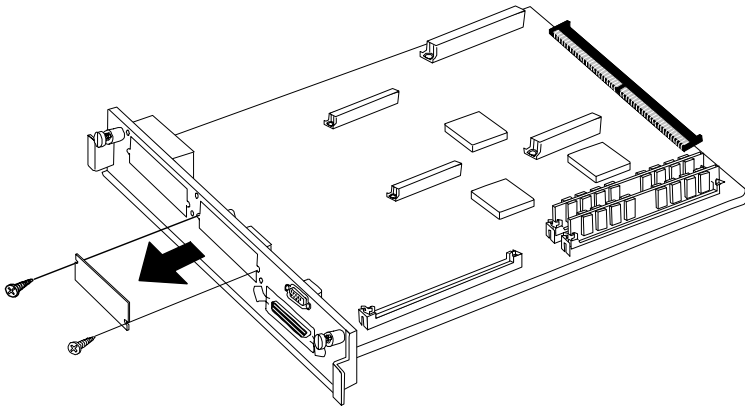
3   Attach the interface.

a   Position the interface so the port slides into the opening you
just created.

b   Snap the interface onto the connector and the plastic
standoff.

It's okay to push down gently with your thumb positioned on
the interface right over the connector.
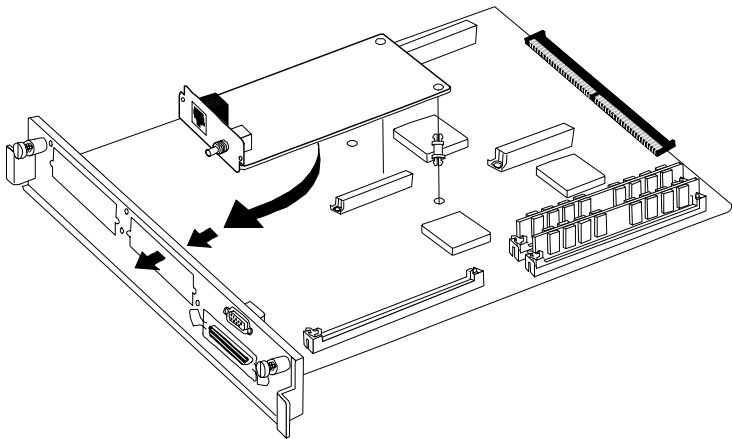
4   Using the two screws you removed in step 2, fasten the new interface plate to interface card to hold the card in place.
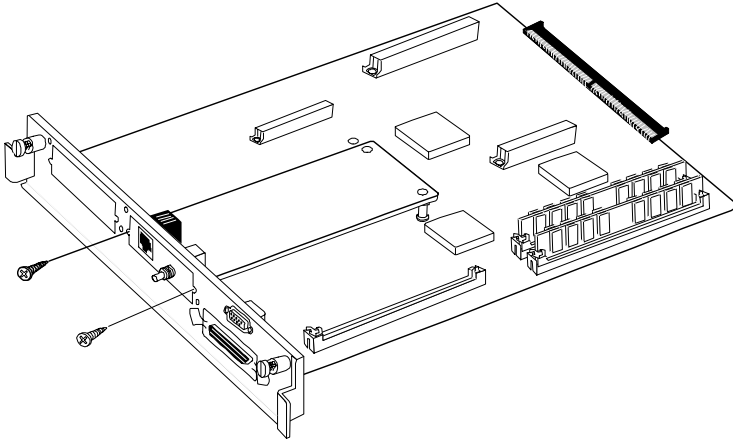
5   Follow the instructions in "Replacing the Controller Board" on page 21, being careful to eliminate static electricity.

6   If your interface kit came with an external power supply box, attach it to the round connector next to the interface port; then connect the box to a power cord and plug the power cord into an electrical outlet.

Connecting a Macintosh to a LocalTalk Interface

An optional LocalTalk interface is available from your QMS vendor.

1   Turn the printer off, remove the power cord, and disconnect all interface cables from the printer.

2   Install the LocalTalk interface board.

Instructions for installing it are in "Interface Daughterboards" on page 30.

3   Connect the printer to the Macintosh and turn on the printer.
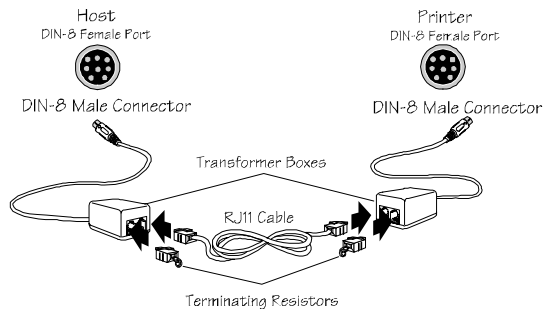
If you're replacing a printer already connected to a Macintosh, you probably already have the necessary cables. If not, contact your QMS vendor or a local computer store. Also, see chapter 3, "Technical Specifications," for information on Macintosh printer cabling.

4   Install the Macintosh printer driver.

See "Macintosh Printer Drivers" in chapter 1, "Connecting the Printer," of the user's guide for information.

5   Now you're ready to print.

See chapter 2, "Printing," of the user's guide for information.

Installing an Internal IDE Hard Disk

The internal IDE hard disk is identified by the hard disk device number DSK7.

IDE Hard Disk Assembly Kit

The IDE hard disk assembly kit includes the following:

- IDE hard disk

- Plastic ribbon cable

- 4 screws

Installing an Internal IDE Hard Disk

1 Connect one end of the plastic ribbon cable to the hard disk.

Align the colored edge of the cable with pin 1 on the hard disk connector.

▲ **Caution**: *The plastic ribbon cable is fragile. Handle it gently.*
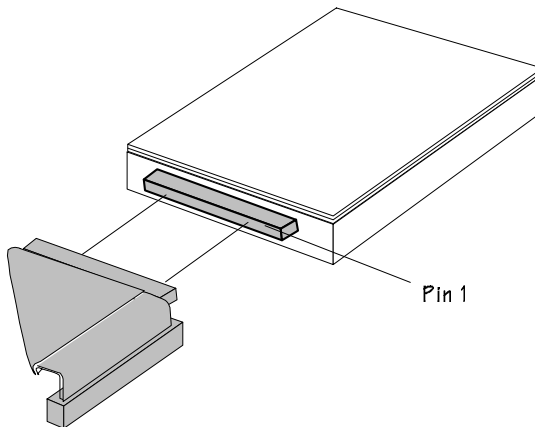
2   Connect the other end of the cable to the IDE-SCSI board.

Align the colored stripe on the cable with pin 1 on the IDE-SCSI board connector (you'll have to fold the cable to do this).

▲   **Caution**: *The plastic ribbon cable is fragile. Handle it gently. Do not pull on it or push down hard on it.*

Pin 1
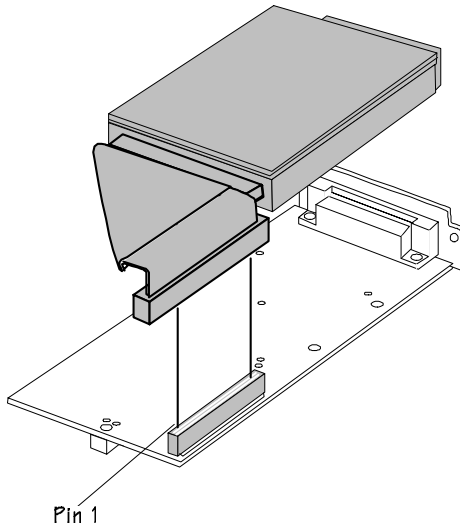
3 Attach the hard disk to the IDE-SCSI board.

Align the hard disk with the 2.5" hard disk outline on the IDE-SCSI board. The screw holes in the bottom of the hard disk should match up with the holes in the board.

Fasten the hard disk to the board with the four screws provided in the kit.
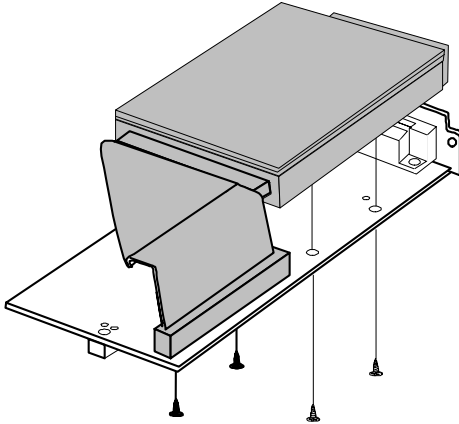
4 Install the IDE-SCSI board in the printer.

See "Interface Daughterboards" on page 30.

5 Format the new hard disk.

Use the instructions given in "Formatting a Hard Disk" on page 39.

6 Turn on the printer.

7 Ensure that the printer recognizes the disk.

If the printer recognizes the disk, DISK ONLINE appears on the printer start-up page (if it's enabled). DISK ONLINE also appears on the standard status page or on the first page of the advanced status page.

Attaching External Hard Disks

If your printer has a SCSI board installed, you to connect up to 3 external SCSI hard disks to the printer. The documentation that comes with your external SCSI (Small Computer System Interface) hard disk contains information on connecting and configuring the disk.

An adapter cable may be necessary to connect the hard disk to the SCSI interface. Your QMS vendor or a local computer store can provide you with this adapter cable.

When an external hard disk is connected to the printer, you control the disk through the Administration/Disk Operations submenu. This section explains how to use the Disk Operations submenu to download and remove fonts or emulations. (You can also load optional fonts from cards as QMS *magicolor* CX printer described earlier in this chapter in "Font Cards" on page 12.)

▲ **Caution***: If you connect to this printer an external hard disk you previously used with an earlier QMS Crown printer, this QMS magicolor CX software automatically reorganizes the files on the external hard disk when the printer is turned off and back on. Once this reorganization is done, the files on the hard disk can no longer be accessed if the hard disk is reattached to an earlier QMS Crown printer. The printer release number is indicated on the status and start-up pages.*

This reorganization takes time. Don't interrupt the reorganization, because all files on the disk might be lost.

» **Note:** *If an error occurs during these operations, an error message displays until you press the Menu key. You must then restart the operation from the beginning. Two error messages you may see are* READ FAILURE *(the disk has encountered a read error) and* WRITE ERROR *(either the hard disk had a write error or there is no room for data on the hard disk or in RAM).*

Identifying External SCSI Hard Disks

Hard disks are identified by device numbers which you assign. Valid choices for external SCSI hard disks range from DSK0 to DSK6. (The recommended device number for the internal IDE hard disk is DSK7.) However, you cannot repeat numbers; each device number must be unique.
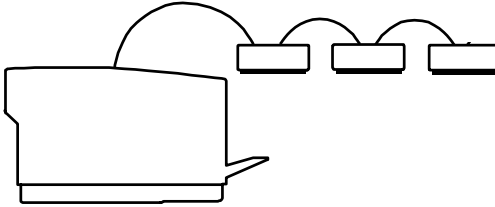
For the printer to recognize any attached hard disk(s), each hard disk must be turned on before you turn on the printer. If the printer recognizes the disk(s), DISK ONLINE appears on the printer start-up page (if it's enabled). DISK ONLINE also appears on the standard status page or on the first page of the advanced status page.

Formatting a Hard Disk

You have two ways of formatting a hard disk:

■ PS Executive Series Utilities

■ Printer configuration menu

Before you can use a formatted hard disk, you must increase the size of the disk cache. The way you do this depends on how much memory your printer has.

■ **If your printer has 8 MB of RAM**, enable disk swapping (Administration/Memory/Enable Disk Swap menu), which automatically increases the disk cache size. See "Enable Disk Swap" in chapter 1, "Printer Configuration," for more information.

■ **If your printer has more than 8 MB of RAM**, increase the disk cache size (Administration/Memory/K Mem Disk Cache menu) to 256 KB. See "Disk Cache Memory" in chapter 1, "Printer Configuration," for more information.

After you have increased the disk cache size, you must restart the printer and print a status page to ensure that the disk cache size has been increased. (Notice that `VM remaining` memory has also been automatically increased.)

Formatting with PS Executive Series Utilities

The PS Executive Series Utilities offer formatting options for both Macintosh and PC setups. See the on-line documentation for details on formatting disks.

Formatting with the Printer Configuration Menu

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table.

The printer responds by displaying a status message in the message window.

» **Note:** *You may need to press the Next key one or more times to advance through the list of options.*

Use this key...	to...	The message window reads...
Select	Access the Administration/Disk Operations/Format Disk menu.	`DISK OPERATIONS` `FORMAT DISK`
Select	Access the Format Disk/Dsk#: menu.	`FORMAT DISK` `DSK#: x`
Next	Scroll through the list of attached disks.	`FORMAT DISK` `DSK: x`
Select	Select the disk and display a format confirmation message.	`FORMAT DISK` `ARE YOU SURE?`
Select	Begin the formatting process. The hard disk is formatted while the system reboots.	`FORMAT DISK` `FORMATTING...`
	You are informed when the formatting process is complete. The printer then reboots, and a start-up page prints (if enabled).	`FORMAT DISK` `FORMAT COMPLETE`

» **Note:** *After an unformatted disk is formatted and the `FORMAT COMPLETE` message displays, you must turn the printer off and back on again before the printer can recognize the disk.*

Installing Fonts

Optional fonts can be installed in two ways:

■ You may use optional fonts by inserting the font card in one of the card slots below the printer's paper cassette. However, when you remove the font card from the card slot, you can no longer use those fonts. This procedure is covered in "Using Font Cards" on page 12.

■ You can install (copy) the contents of a font card to a printer hard disk, if present. The procedure that follows describes how to install the font card on your hard disk. Once the fonts are stored on the hard disk, they can be downloaded to the printer's memory when needed for printing.

▲ **Caution**: *If you install the contents of a font card to a hard disk, any optional fonts of the same type are overwritten. The original optional fonts must be downloaded again before you can access them. For example, optional PostScript fonts on the hard disk are overwritten by the PostScript fonts on a PostScript font card.*

Procedure

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window (DSK refers to the hard disk number, and CAR0 and CAR1 refer to the font card slot number).

» **Note:** *You may need to press the Next key one or more times to advance through the list of options.*

Key	Purpose	Message
Select	Accesses the Administration/Disk Operations/Install Option menu.	DISK OPERATIONS INSTALL OPTION
Select	Accesses the Format Disk/Dsk#: menu.	INSTALL OPTION DSK#: *x*
Next	Scrolls through the list of attached disks.	FORMAT DISK DSK: *x*

Select	Selects the disk and accesses the card address from which the optional font is being installed.	`INSTALL SOURCE` `CAR#: x`
Select	Prompts you to insert the font card in one of the card slots below the printer's media cassette.	`INSTALL OPTION` `INSERT MEDIA`
	Begins reading data from the card and installing the appropriate files on the hard disk. This usually takes several minutes.	`INSTALL OPTION` `READING DATA...`
	Acknowledges completion of the installation process.	`INSTALL OPTION` `INSTALL COMPLETE`
Menu	Exits from the Install Option menu and returns to the Disk Operations menu.	`DISK OPERATIONS` `INSTALL OPTION`

After the option is installed, remove the card from the slot and place the printer back on line.

Removing Fonts

Use the Administration/Disk Operations/Remove Option menu to remove optional fonts from your hard disk. You need the original font card containing the files, because the contents of the card is compared to the contents of the hard disk and the matching files are deleted from the hard disk.

Procedure

After you have accessed the Administration/Disk Operations menu, press the control panel keys in the order shown in the following table. The printer responds by displaying a status message in the message window (DSK refers to the hard disk number, and CAR0 and CAR1 refer to the font or card number).

» **Note:** *You may need to press the Next key one or more times to advance through the list of options.*

Key	Purpose	Message
Select	Accesses the Administration/Disk Operations/Remove Option menu.	`DISK OPERATIONS` `REMOVE OPTION`

Select	Accesses the Remove Option/Dsk#: menu.	`REMOVE OPTION` `DSK#:` *x*
Next	Scrolls through the list of attached disks.	`REMOVE OPTION` `DSK:` *x*
Select	Selects the disk and accesses the card address from which removal information is being read.	`REMOVE SOURCE` `CAR#:` *x*
Select	Prompts you to insert the font card in one of the card slots below the printer's media cassette.	`REMOVE OPTION` `INSERT MEDIA`
	Begins reading data from the card and removing the appropriate fusiform the hard disk This usually takes several minutes.	`REMOVE OPTION` `READING DATA...`
	Acknowledges completion of the installation process.	`REMOVE OPTION` `REMOVE COMPLETE`
Menu	Exits from the Install Option menu nd returns to the Disk Operations menu.	`DISK OPERATIONS` `REMOVE OPTION`

After the option is removed, remove the card from the slot and place the printer back on line.

Installing an Emulation

Optional emulations, such as LN03 or CCITT, are available as PostScript files on PC floppy disks. This section describes how to download an optional emulation from a floppy disk to the printer's optional hard disk.

» **Note:** *At least one hard disk (internal or external) must be installed on the printer before you can download an emulation. If more than one hard disk is available, the emulation automatically installs itself on the disk with the most free storage space. Once an emulation is downloaded, the only way to remove it is to reformat the hard disk (Administration/Disk Operations/Format Disk menu or PS Executive Series Utilities).*

Procedure—PC Users

1   **If necessary connect the PC to the printer's parallel or serial port.**

2   **Turn on the printer, and wait for IDLE to appear in the message window.**

3   **Insert the emulation disk in your PC's 3.5" disk drive, and change to that drive (for example, if you're using the A drive, type a:↵).**

4   **Send the emulation to the printer's hard disk.**

   ■   If your PC and printer are connected through the parallel port, type

```
copy /b *.ps lpt#↵
```

   where # is 1 to 3. (/b refers to binary files.)

   ■   If your PC and printer are connected through the serial port, type

```
copy /b *.ps com#
```

   where # is 1 to 4. (/b refers to binary files.)

5   **When the downloading is complete, reboot the printer.**

The emulation is ready to be used.

Updating System Software

The system software in your printer is stored on 4 MB of flash memory. This allows you to update the system software without opening up the printer and installing new PROMs. Updated system software allows you to take advantage of future enhancements to the printer.

Updating the system software is a three-step procedure:

1   Choose the appropriate compressed system software files.

2   Install the system software on your computer.

3   Download the system software to the printer.

The following sections explain these steps in detail.

Choosing the Appropriate System Software Files for Downloading

System software is provided in different formats on both PC and Macintosh disks. The disks you use depend on whether your printer is functioning (the printer starts up normally, and IDLE displays in the message window) or not, the current firmware version, and how you plan to download the system software to the printer.

Computer	Disk Set	Hard Disk Space Needed (approx.)	Printer		Interfaces for Downloading
			Functional	Non-Functional	
Macintosh	SYSTEMLOADER	1.75 MB	√	√	Serial
	SYSTEMDL.PS	3.25 MB	√		All
PC	SYSTEM.DL	1.75 MB	√	√	Parallel, serial
	SYSTEMDL.PS	3.25 MB	√		All

Installing the System Software

Once you have identified the appropriate print system software disk set (using the table in the previous section), you must install the software on your computer's hard disk before you can download it to the printer.

1   **Ensure that your computer has enough free hard disk space for the system software.**

2   **Create a new folder (Macintosh) or directory (PC) on your computer.**

3   **Insert Disk 1 of the appropriate print system software in your computer's disk drive.**

4   **Install the files on your computer's hard disk.**

   ■   **Macintosh**

   a   Open the Installer application.

   ■   **If you're using the SYSTEMDL.PS file** (see the table in the previous section), double-click the PRINTSYSTEM.INSTALLER file icon.

   ■   **If you're using the SYSTEM.DL file** (see the table in the previous section), double-click the SYSTEM-LOADER.1 icon.

   b   In the dialog box that appears, change the Install Location to the folder you created in step 2. Use the drop-down list box to select Select Folder, in the Select the Installation Folder dialog box select the appropriate disk and folder, and then click Select.

   c   Click Install to begin the installation.

   d   When prompted, insert disk 2 of the system software.

   The installation takes a few minutes. The Installer places the appropriate system software file (either SYS-TEMDL.PS or SYSTEMLOADER) in the folder you selected in step b.

   e   When the installation is finished, you're prompted to click Quit to exit the Installer program.

■ **PC**

a   At the DOS C:*DIRECTORY* prompt, type `x:pkunzip` `x:system`↵ where *DIRECTORY* is the name of the new directory you created in step 2, and *x* is the name of the disk drive in which you inserted Disk 1.

b   Follow the prompts. They instruct you to insert the system software disks in the following order:

■   Last disk (system software disk 2)

■   Disk 1 (system software disk 1)

■   Disk 2 (system software disk 2)

■ **UNIX**

a   Follow the instructions given above for either the Macintosh or the PC.

b   After the system software file has been decompressed on hard disk of the Macintosh or the PC, upload the decompressed file to the UNIX system.

5   **Download the system software to the printer.**

The procedure for downloading system software depends on whether the print system software is functional (the printer starts up normally, and `IDLE` displays in the message window) or non-functional (the printer can't start up; the message window remains blank), and which system software file you decompressed in the previous step.

See one of the following sections for instructions:

■   "Downloading System Software to a Functional Printer— SYSTEMDL.PS" on page 48

■   "Downloading System Software to a Functional Printer— SYSTEM.DL" on page 51

■   "Downloading System Software to a Non-Functional Printer" on page 56

Downloading System Software to a Functional Printer—SYSTEMDL.PS

If the print system software is non-functional (the printer can't start up), go to "Downloading System Software to a Non-Functional Printer" on page 56.

If the print system software is functional (the printer starts up normally, and IDLE displays in the message window), and if you decompressed the file SYSTEMDL.PS in the previous section, use these instructions.

Before You Begin Downloading the Software

■   Ensure that the system software is decompressed, as described in the previous section.

■   Turn on the printer, wait for IDLE to appear in the message window, and then print an advanced status page.

   This procedure may change the current configuration settings. The advanced status page provides a record of all current configuration settings, so you can verify them, and reconfigure them, if necessary, after the system software has been updated.

■   Ensure that the Administration/Communications/*Interface*/Emulation menu (where *Interface* is the interface you plan to use to download the system software), is set to ESP or PostScript.

■   Ensure that the printer is on line and idle.

Macintosh

1   **In the Chooser, choose the printer to be upgraded.**

2   **Open PS Executive by double-clicking on the PS Exec icon.**

3   **From the File menu, choose Print PS File.**

4   **Click the Option button, make sure all options are disabled, and then click OK.**

5   **Select the SYSTEMDL.PS file, and choose Send.**

    The downloading process takes about 5 minutes, depending on the size of the file and the speed of your computer. The printer's Transparency indicator blinks as the new system image is copied to flash memory.

    After the updated system software has been written to flash memory, the printer reboots with the new system image, prints a start-up page, and returns to IDLE.

»   **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

6   **Print another advanced status page, and verify that the configuration settings match the previous configuration settings (on the advanced status page printed in step 1).**

7   **If there are differences in the configuration settings, reconfigure them through the printer configuration menu.**

8   **On your computer's hard disk, delete the folder containing the SYSTEM.SEA and SYSTEM.SEA.2 files.**

PC and UNIX

1 Download the new system software PostScript file SYS-TEMDL.PS to the printer, over any available interface, the way you would normally send a PostScript file.

For example, you might use PS Executive, **copy,** or **fstprn** from a PC, or **qpr** or **put** from a UNIX system.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your computer. The printer's Transparency indicator blinks as the new system image is copied to flash memory.

After the updated system software has been written to flash memory, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

2 Print another advanced status page, and verify that the configuration settings match the previous configuration settings (on the advanced status page printed in step 1).

3 If there are differences in the configuration settings, reconfigure them through the printer configuration menu.

Downloading System Software to a Functional Printer—SYSTEM.DL

If the print system software is non-functional (the printer can't start up), go to "Downloading System Software to a Non-Functional Printer" on page 56.

If the print system software is functional (the printer starts up normally, and IDLE displays in the message window), and if you decompressed the file SYSTEMLOADER (Macintosh) or SYSTEM.DL (PC) in the previous section, use these instructions.

» **Note:** *Before you can use these instructions, you must have decompressed the system software, as described in the previous section.*

Macintosh

» **Note:** *This downloading procedure requires a connection from the Macintosh's serial port (either the modem or the printer port) to the printer's serial port. The cable must have a DIN-8 female connector on the Macintosh end. It must also must be wired as a null modem or it must have a null modem adapter. The type of connector for the printer's serial port end of the cable depends on the type of null modem assembly. Your Macintosh vendor can provide you with this equipment, or you can use the "Pinouts" section of chapter 3, "Technical Specifications," if you want to make your own cable.*

1 **Connect the Macintosh to the printer's serial port.**

You can use either the printer or modem port on the Macintosh. However, the modem port provides the fastest download.

» **Note:** *To use the printer port you must first disable AppleTalk in the Chooser.*

2 **Turn on the printer, wait for IDLE to appear in the message window, and then print an advanced status page.**

This procedure should not change the current configuration settings. However, the advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

Printer Options 2-51

3   **Take the printer off line.**

4   **Access the Administration/Miscellaneous/New Flash Image
     menu.**

5   **Select Yes in the New Flash Image menu.**

     The printer waits for the new system software (image) to be sent
     from your Macintosh. (`YES` remains in the message window until
     the new image is sent.)

6   **Send the new system software image to the printer.**

     a   At the Macintosh, double-click the SystemLoader icon.

     b   In the dialog box that appears, make sure the correct
          download port is selected, and then choose the Send button
          to start the download.

          The downloading process takes about 10 minutes, depending
          on the size of the file and the speed of your Macintosh. The
          Transparency indicator blinks as the new system image is
          written to flash ROM. After the updated system software has
          been written to flash ROM, the message `Download Com-
          plete!` appears on the Macintosh screen, the printer
          reboots with the new system image, prints a start-up page,
          and returns to `IDLE`.

»   **Note:** *The new flash image does not erase the old image until
          the printer verifies that the new image is valid.*

7   **Print another advanced status page, and verify that the con-
     figuration settings match the previous configuration settings
     (on the advanced status page printed in step 2).**

8   **If there are differences, correct them through the printer con-
     figuration menu.**

9   **On your Macintosh hard disk, delete the folder containing
     the SYSTEMLOADER application.**

PC—Parallel Port

This is the recommended method for downloading from an IBM or
compatible PC because it is the fastest method and because no addi-
tional cables or changes of port settings are necessary.

After you have decompressed the system software, as described in the previous section, use the following procedure to update the system software in flash memory.

» **Note:** *If you're using a serial port, skip to the following section, "PC—Serial Port."*

1 Turn on the printer, wait for IDLE to appear in the message window, and then print an advanced status page.

This procedure should not change the current configuration settings. However, the advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

2 Take the printer off line.

3 Access the Administration/Miscellaneous/New Flash Image menu.

4 Select Yes in the New Flash Image menu.

The printer waits for the new system software (image) to be sent via your PC's parallel port. (YES remains in the message window until the new image is sent.)

5 Send the new image to the printer.

Type

```
copy /b system.dl lpt#↵
```

where # is 1 to 3. (/b refers to binary files.) If you're not sure of the number of the parallel port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Transparency indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to IDLE.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

---

6   Print another advanced status page, and verify that the current configuration settings match the previous configuration settings (on the advanced status page printed in step 1).

7   If there are differences in the configuration settings, correct them through the printer configuration menu.

PC—Serial Port

This method for downloading the system software from an IBM or compatible PC should be used only when a parallel port is not available because it's slower and because it requires a null modem cable (see the "Pinouts" section of chapter 3, "Technical Specifications," for more information) and special software to set the PC's serial port to 38400 baud (see step 2, below).

After you have decompressed the system software, as described in an earlier section, use the following procedure to update the system software in flash memory.

»   **Note:** *If you're using a parallel port, refer to the previous section, "PC—Parallel Port."*

1   Connect the PC to the printer's serial port, using a null modem cable.

2   Download the DOS ModeX program from the QMS Bulletin Board.

Using your modem, dial in to the QMS Bulletin Board, as described in appendix A, "QMS Customer Support," in the user's guide. After you access the QMS Main Library through the L (Library of Files) selection, do the following:

a   Choose D (Download a File).

b   Type `hibaud.exe`↵

c   Exit from the Bulletin Board.

d   Terminate the connection.

3   Type `hibaud`↵ **to extract the ModeX files.**

4   Set the PC's baud rate to 38400 by typing

```
modex.exe↵
modex # 38400 n 8 1↵
```

where # is 1-4. See the MODEX.DOC file for more information on this program.

5   Turn on the printer, wait for `IDLE` to appear in the message window, and then print an advanced status page.

This procedure should not change the current configuration settings. However, the advanced status page provides a record of all current configuration settings, so you can verify that they are the same after the system software has been updated.

6   Take the printer off line.

7   Turn on the RTS and CTS hardware flow control settings.

   a   Access the Administration/Communications/Serial/Hdwe Flow Ctl menu.

   b   Set RTS to On.

   c   Set CTS to On.

   d   Press the Online/Offline key to be prompted to save your changes.

   e   Select Yes to Save Changes.

8   Access the Administration/Miscellaneous/New Flash Image menu.

9   Select Yes in the New Flash Image menu.

The printer waits for the new system software (image) to be sent via your PC's parallel port. (`YES` remains in the message window until the new image is sent.)

---

10 Send the new image to the printer.

Type

```
copy /b system.dl com#↵
```

where # is 1 to 4. (/b refers to binary files.) If you're not sure of the number of the serial port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Transparency indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to `IDLE`.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

11 Print another advanced status page, and verify that the current configuration settings match the previous configuration settings (on the advanced status page printed in step 5).

12 If there are differences in the configuration settings, correct them through the printer configuration menu.

Downloading System Software to a Non-Functional Printer

If the print system software is functional (the printer starts up normally, and `IDLE` displays in the message window), go to "Downloading System Software to a Functional Printer—SYSTEMDL.PS" on page 48 or "Downloading System Software to a Functional Printer—SYSTEM.DL" on page 51.

If the print system software is non-functional (the printer can't start up), use these instructions to download the system software.

» **Note:** *Before you can use these instructions, you must have decompressed the system software, as described in the previous section.*

Macintosh

If the current print system software is not functioning, you must con-
nect your Macintosh to the printer's serial port to reinstall the system
software. The downloading procedure will not work over the LocalTalk
or CrownNet interface in this case.

» **Note:** *This downloading procedure requires a connection from the
Macintosh's serial port (either the modem or the printer port) to the
printer's serial port. The cable must have a DIN-8 female connector
on the Macintosh end. It must also must be wired as a null modem or
it must have a null modem adapter. The type of connector for the
printer's serial port end of the cable depends on the type of null
modem assembly. Your Macintosh vendor can provide you with this
equipment, or you can use the "Pinouts" section of chapter 3,
"Technical Specifications," if you want to make your own cable.*

1 **Connect the Macintosh to the printer's serial port.**

You can use either the printer or modem port on the Macintosh.
However, the modem port provides the fastest download.

» **Note:** *To use the printer port you must first disable AppleTalk in
the Chooser.*

2 **Turn on the printer.**

3 **When the control panel indicators stop flashing (the mes-
sage window will remain blank since the printer is non-func-
tional), send the new system software file SYSTEM.DL to the
printer.**

a At the Macintosh, double-click the SystemLoader icon.

b In the dialog box that appears, make sure the correct
download port is selected, and then choose the Send button
to start the download.

The downloading process takes about 10 minutes, depending
on the size of the file and the speed of your Macintosh. The
Transparency indicator blinks as the new system image is
written to flash ROM. After the updated system software has
been written to flash ROM, the message `Download Com-
plete!` appears on the Macintosh screen, the printer

reboots with the new system image, prints a start-up page, and returns to IDLE.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

PC—Parallel Port

If the current print system software is not functioning, you must connect your PC to either the printer's parallel or serial port to reinstall the system software. The downloading procedure will not work over the CrownNet interface in this case.

Using the parallel port is the recommended method for downloading from a PC because the parallel port is faster than the serial port and because no additional cables or changes of port settings are necessary.

» **Note:** *If you're using a serial port, skip to the following section, "PC— Serial Port."*

1   If necessary, connect the PC to the printer's parallel port.

2   Turn on the printer.

3   When the control panel indicators stop flashing (the message window will remain blank since the printer is non-functional), send the new system software file SYSTEM.DL to the printer.

Type

```
copy /b system.dl lpt#↵
```

where # is 1 to 3. (/b refers to binary files.) If you're not sure of the number of the parallel port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Transparency indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to IDLE.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

PC—Serial Port

If the current print system software is not functioning, you must con-
nect your PC to either the printer's parallel or serial port to reinstall
the system software. The downloading procedure will not work over
the CrownNet interface in this case.

This method for downloading the system software from a PC should
be used only when a parallel port is not available because it's slower
and because it requires a null modem cable (see the "Pinouts" sec-
tion of chapter 3, "Technical Specifications," for more information) and
special software to set the PC's serial port to 38400 baud (see step 2,
below).

» **Note:** *If you're using a parallel port, refer to the previous section,
"PC—Parallel Port."*

**1   If necessary, connect the PC to the printer's serial port,
using a null modem cable.**

**2   Download the DOS ModeX program from the QMS Bulletin
Board.**

Using your modem, dial in to the QMS Bulletin Board, as
described in appendix A, "QMS Customer Support," in the user's
guide. After you access the QMS Main Library through the L
(Library of Files) selection, do the following:

a   Choose D (Download a File).

b   Type `hibaud.exe↵`

c   Exit from the Bulletin Board.

d   Terminate the connection.

3   Type `hibaud↵` to extract the ModeX files.

4   Set the PC's baud rate to 38400 by typing

```
modex.exe↵
modex # 38400 n 8 1↵
```

where *#* is 1-4. See the MODEX.DOC file for more information on
this program.

5   Turn on the printer.

6 **When the control panel indicators stop flashing (the message window will remain blank since the printer is non-functional), send the new system software file SYSTEM.DL to the printer.**

Type

```
copy /b system.dl com#↵
```

where # is 1 to 4. (/b refers to binary files.) If you're not sure of the number of the serial port, check your PC's documentation.

The downloading process takes about 5 minutes, depending on the size of the file and the speed of your PC. The Transparency indicator blinks as the new system image is copied to flash ROM. After the updated system software has been written to flash ROM, the printer reboots with the new system image, prints a start-up page, and returns to IDLE.

» **Note:** *The new flash image does not erase the old image until the printer verifies that the new image is valid.*

❖

3

Technical Specifications

In This Chapter . . .

Print Engine Specifications

Duty Cycle (maximum)	5,000 color prints per month 20,000 monochrome prints per month
Print Method	Cyan, magenta, yellow, and black electrophotographic recording with semiconductor laser. Dry toner image transfer to print media.
Print Speed	12 pages per minute monochrome 6 pages per minute 2- or 3-color 3 pages per minute 4-color **>>Note:** *These speeds are based on the use of letter or A4 size with 30% or less toner coverage. Actual print speed depends on the host application.*
Resolution	300 x 300 dpi 600 x 600 dpi 1200 x 600 dpi **>>Note:** *Printing 600 dpi color documents requires that at least 20 MB RAM be installed in the printer. Printing 1200 dpi color documents requires that at least 40 MB RAM is installed. See "Changing Print Resolution" in chapter 2, "Printing," of the user's guide for information on resolution.*
Noise Level	Not more than 58 dB (A)
Warm-Up Time	Within 4.5 minutes from cold start
Dimensions	20.5" W x 22.3" D x 14.6" H 520 mm W x 565 mm D x 370 mm H
Weight	Approximately 106 lbs (48 kg) without consumables or interfaces installed

Electrical Requirements	**Frequency** 60 Hz ±2 Hz
	Power Requirement 120 V ±10%
	Power Consumption Standby: 1000 W max.; 150 W ave. Operation: 1000 W max.; 250 W ave. Energy Saver Mode: less than 45 W

Controller Specifications

Emulations	PostScript Level 2 HP PCL 5 (HP XL 300) HP-GL 7475A/7550 Lineprinter
Fonts	39 resident PostScript fonts; all typefaces have multilingual character sets
	7 resident bitmap HP PCL fonts in 25 symbol sets, 12 resident scalable HP PCL fonts in 35 symbol sets, and 1 resident scalable HP PCL font in 5 symbol sets, all of which can automatically be rotated to landscape orientation
	40 resident HP-GL symbol sets
	Support for Type 1 and Type 3 host-resident downloadable and printer-card-resident PostScript fonts
	Support for Type 42 (PostScript format) host-resident downloadable TrueType fonts
Interfaces	Centronics/IEEE 1284
	RS 232 Serial
	The 32 MB configuration of the printer ships with an Ethernet or Token-Ring and a SCSI interface

Memory	8, 20, or 32 MB, depending on which configuration is ordered (upgradable to 64 MB)
	4 MB system flash memory
	2 MB font PROM/mask ROM
Hard Disk	The 32 MB configuration of the printer ships with an internal IDE disk; 85 MB minimum
Type	IDT 79R3081E RISC microprocessor operating at 40 MHz

Environmental Requirements

Relative Humidity	**Optimal**
	60%-70%
	Acceptable
	20%-80%
Temperature Range	**Optimal**
	63.5F-80.6F 17.5C-27C
	Acceptable
	50F-90.5F 10C-32.5

Print Media and Consumables

In the user's guide, see chapter 2 ("Printing") for print media specifications, and see chapter 3 ("Maintenance") for consumables specifications and storage information.

Options, Accessories, and Replacement Parts

See chapter 2, "Options" of this manual for a list of available printer options, accessories, and replacement parts.

Pinout and Cable Specifications

Serial Pinouts

This table gives the pinouts for the printer's 9-pin RS-232 interface port.

Pin	Name
1	Not Used
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR)
5	Signal Ground (GND)
6	Data Set Ready (DSR)
7	Ready To Send (RTS)
8	Clear To Send (CTS)
9	Reserved

IBM PC/XT, PC/AT, and Compatible Pinouts

This diagram gives the suggested cable pinouts for IBM PC/XT, PC/AT, and compatible computers

Not all serial cables are configured as shown and may require an additional null-modem adapter. Check with your cable vendor for compatibility. To download printer system software via the serial port, your hardware must have RTS and CTS support. Make sure that pins 4 and 5 on the 25-pin serial cable and pins 7 and 8 on the 9-pin serial cable are criss-crossed as shown in this diagram.

To Printer 9-Pin			To CPU XT 25-Pin		To Printer 9-Pin			To CPU AT 9-Pin	
	1	Not Used				1	Not Used		
RXD	2		2	RXD	RXD	2		2	RXD
TXD	3		3	TXD	TXD	3		3	TXD
DTR	4		20	DTR	DTR	4		4	DTR
DSR	6		6	DSR	DSR	6		6	DSR
GND	5		7	GND	GND	5		5	GND
RTS	7		4	RTS	RTS	7		7	RTS
CTS	8		5	CTS	CTS	8		8	CTS
	9	Not Used				9	Not Used		
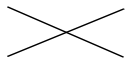
LocalTalk (Optional Interface) Pinouts

These are the pinouts for the optional 8-pin LocalTalk cable:

Pin	Name
1,2,7	Reserved
3	Transmit Data - (TXD)
4	Signal Ground (GND)
5	Receive Data - (RXD)
6	Transmit Data + (TXD)
8	Receive Data + (RXD)

Macintosh to Serial Pinouts

These are the pinouts for a cable connecting the Macintosh printer or modem port to the printer's serial port. To download printer system software from a Macintosh, you must have this type cable.

To Macintosh DB-9			To Printer Din-8	
HandshakeOut	1		7	RTS
HandshakeIn	2		8	CTS
TXD-	3		3	TXD
RXD-	5		2	RXD
GND,RXD+	4,8*		5	GND
	6	Not Used		
	7	Not Used		

* Pins 4 and 8 must be connected on the Din-8.

Centronics/1284 Parallel Pinouts

Signal Pin No.	Signal Description	Direction
1	Strobe-	In
2	Data 1	InOut
3	Data 2	InOut
4	Data 3	InOut
5	Data 4	InOut
6	Data 5	InOut
7	Data 6	InOut
8	Data 7	InOut
9	Data 8	InOut
10	Acnlg-	Out
11	Busy+	Out
12	Pe+	Out
13	Select	Out
14	Autofeed	In
15	Reserved	-
16	Ground	-
17	Ground	-
18	Vcc Test	-
19-30	Ground	-
31	Iprime	In
32	Fault-	Out
33	Reserved	-
34	Reserved	-
35	Reserved	-
36	Selectin	In

Notes to the Parallel Pinouts Table

Direction refers to the direction of signal flow as viewed from the printer.

Return denotes "twisted-pair return" and is to be connected at signal-ground level. When wiring the interface, be sure to use a twisted-pair cable for each signal and never fail to complete connection on the return side. To prevent noise effectively, these cables should be shielded and connected to the chassis of the system unit and printer, respectively.

All interface conditions are based on Transistor-Transistor Logic (TTL) level. Both the rise and fall times of each signal must be less than 0.2 microseconds.

Data transfer must be carried out by recognizing the ACKNLG or BUSY signal.

The cable must have an overall braided shield, Belden 8345 or equivalent.

Connectors must have shielded housings. The overall shield must be bonded to the shielded housings at both ends of the cable.

Macintosh Printer Cables

The following hardware, available from your QMS vendor or a local computer store, is necessary to connect the Macintosh to the printer:

- Two PhoneNET-type transformer boxes (one for the printer port and one for the Macintosh port), each with a DIN-8 connector
- An RJ11 (telephone) cable
- Two terminating resistors to close the open sockets left in the transformer boxes after the connection is made.

PC Printer Cables

Parallel Cables

We recommend using a parallel cable if possible, because parallel communication doesn't require printer or PC configuration, while serial communication often does. However, if the printer is more than 6.5 feet (2 meters) from the computer, we recommend using a serial cable for better communication.

Your printer supports both IEEE 1284 bidirectional and Centronics parallel communication. If your computer supports IEEE 1284 bidirectional parallel communication, you need an IEEE 1284 bidirectional parallel cable. This cable must be 6.5 feet (2 meters) or less in length. If your computer supports only Centronics (IEEE 488) unidirectional communication, you may use either an Centronics parallel cable (unmarked on cable) or an IEEE 1284 bidirectional parallel cable (IEEE 1284 is indicated on the cable). However, we recommend an IEEE 1284 cable.

Serial Cables

If the printer is more than about 6.5 feet (2 meters) from the computer, we recommend using a serial cable for better communication. For best results, the serial cable should be less than 25 feet (7.6 meters) long. The serial cable needs to be connected to a null-modem adapter. The null-modem adapter, which rearranges the signal paths from the cable to match the correct pins on your computer port, plugs into the end of the serial cable.

Communication Modes

Simultaneous Interface Operations (SIO)

All your printer's ports are active at the same time, so you can attach parallel, serial, and other interface cables and communicate to all ports from four host computers or networks simultaneously.

The Emulation Sensing Processor (ESP)

The QMS *magicolor* CX employs ESP technology, which works with most popular commercially available applications, and uses a form of artificial intelligence to analyze incoming file data and select the appropriate printer emulation from those installed on the printer. Your printer can interpret printer languages without your having to change printer switch settings or send software commands to accommodate different printer languages.

When your printer is in ESP mode, you can easily print files prepared for a PostScript printer or an HP LaserJet. The file prints correctly as long as it begins with the traditional PostScript or HP PCL commands for such items as page formats and job parameters (number of copies, page margins, fonts).

The QMS *magicolor* CX prints almost any file sent in an emulation ESP technology understands. Most users never have to change from ESP mode to another mode.

You can either allow your printer to operate in its default ESP mode or configure its ports to accept jobs in only a particular emulation mode (for example, PostScript emulation only, HP PCL only, or HP-GL emulation only). The default printer communication settings can be changed through the Configuration menu, which you access through the control panel—in the Administration/Communications menu. You can choose a default emulation for the parallel and serial interfaces in the Administration/Emulations menu, and can configure the printer defaults for each emulation mode. (The optional LocalTalk interface uses only PostScript.)

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Advanced users can also use PostScript operators to reconfigure printer ports. The *PostScript Language Reference Manual* (Adobe Systems Incorporated, Reading, PA: Addison-Wesley, 1990, ISBN 0-201-18127-4) contains information about PostScript operators. Generally, it is best to keep your printer in ESP mode. Since ESP mode is the factory default, all you have to do to use it initially is connect your host and printer and then send a file.

Parallel Interface Modes

In addition to the Centronics parallel interface, your printer provides IEEE 1284 bidirectional parallel interface, which supports five modes of operation. Although the printer automatically recognizes and uses the mode dictated by the host, the modes can be set manually through the printer control panel. See chapter 1, "Printer Configuration," for information on manually selecting modes through the control panel.

Byte Mode

Printer-host parallel communication is done in bytes. The byte mode may be used by the host device in a DMA (Direct Memory Access) mode for more efficient operation.

When byte transfer is complete and there is no more data to transmit, the host may do one of the following:

■ Terminate and return to the compatibility mode.

■ Stay in the Host Busy, Data Not Available phase.

■ Set Host Busy Low, putting the interface into the idle phase.

If there is additional data, the host may do one of the following:

■ Set Host Busy Low, indicating that the host can accept additional data.

■ Stay in the Host Busy, Data Not Available phase.

■ Terminate and return to the compatibility mode.

Check your host documentation to see if the host is 1284 compatible.

Compatibility Mode

Printer-host parallel communication is done in a manner that ensures compatibility.

ECP (Enhanced Compatibility Port) Mode

This is an advanced version of byte mode which allows transfer of data in either direction without returning to the compatibility mode. The parallel communication is a half-duplex channel with either device, the host or the printer, making a request for data transfer when there is available data. In the case of simultaneous requests for transfer, the printer always defers to the host.

EPP (Enhanced Parallel Port) Mode

Printer-host parallel communication is done via asynchronous bidirectional eight-bit transfer. A return to compatibility mode is not required.

Nibble Mode

Printer-host parallel communication is done in nibbles (four bits; one-half byte) with the low order nibble sent first. A transfer of two nibbles is required for each byte of information.

End Job Mode

When sending print jobs through the serial and parallel protocols, some applications and their printer drivers append an end-of-document command (EOD) to each print job to ensure that each file prints correctly. The reason for this is that some protocols and print queuing systems send print jobs to the printer as one continuous data stream (one print job immediately following another).

But the problem with this system is that some applications are limited by the printer language and are unable to produce an EOD command. This becomes even more problematic when you're printing to a QMS Crown printer, where print jobs of all supported emulations can be received simultaneously. ESP technology examines the first part of each print job to determine its emulation. Once the emulation is identified, the print job processes without further checking. This minimizes

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any slowdown resulting from the sensing process. To help ESP technology determine the proper emulation of successive print jobs, the printer must be able to identify the end of job for each job.

Therefore, unless a wait timeout (the amount of time the printer is waiting on data from the host) occurs and ends each print job, or unless you add an EOD command between each file being printed through these protocols, some print jobs may be interpreted by the printer as one job and may "run" together. See chapter 1, "Printer Configuration," for more information on emulation timeout.

When printing multiple jobs with little or no time delay and with no EOD command between each job, the serial and parallel protocols may be unable to detect an end of job automatically. So the End Job Mode feature on QMS Crown printers was designed to allow you to set the end of document for print jobs being sent through these protocols.

Common Reasons to Use End Job Mode

If you are printing via the serial and parallel protocols, and one of the following conditions exists, you may need to set the end job mode:

■ Multiple print jobs with little or no time delay and with no EOD commands have been sent to the printer and the message window displays only one active job.

■ Multiple print jobs of the same printer language have been sent to the printer and they print on the same page. (For example, you send the AUTOEXEC.BAT file with no EOD command followed with little or no time delay by the CONFIG.SYS file, and they both print on the same page.)

■ Multiple print jobs of different printer languages "run" together as if they are a single print job. (For example, you send a PCL print job followed by a PostScript print job, and the PCL job prints and is followed by what appears to be program code instead of your PostScript print job.)

■ You want to print multiple jobs with header pages.

■ You want to print multiple jobs where job separation is important.

When your printer is in ESP mode, printing multiple jobs through the serial and parallel protocols and end job mode is not set, ESP technology interprets the emulation for only the first job. The print jobs that follow are interpreted as being the same emulation as the first job. For example, if there are two print jobs, the first a PCL file with no EOD command, and the second a PostScript file with a Ctrl-D (a PostScript end-of-file character)—ESP technology interprets the emulation of the first job correctly. But since the first print job has no EOD command, it "runs" into the second job, and even though the second job is PostScript, it prints in PCL.

Using the EOD Commands

Since the serial and parallel protocols may not be able to detect an EOD automatically, due to a lack of an EOD command in some printer languages, you can insert an EOD command at the end of your file to tell the printer where your print job ends. QMS Crown printers recognize two end-of-document commands: QMS EOD and HP EOD.

These commands are functionally the same. They enable data stream sensing for the EOD command, allowing your host computer to control print job separation. The QMS EOD and the HP EOD commands perform an end of document for all of the printer emulations supported on your printer (PostScript, HP-GL, HP PCL, and Lineprinter).

See your system administrator or applications development department to have them identify the standard EOD command for your organization, or to have them select a standard EOD command.

Setting the End Job Mode for the Serial and Parallel Protocols

Your printer can be connected through the serial or parallel interface to a stand-alone PC, to a PC print server, or to some other type of print queuing system. This section provides a quick guide to the steps needed to set the end job mode for each environment. The following sections provide more detailed information for each step.

Stand-Alone PC

1   Set the end job mode from the printer's control panel.

2   Add the EOD command to your file.

»   **Note:** *If using steps 1 and 2 is not feasible in your stand-alone PC environment, you can alternatively use a program that either causes an emulation timeout or that inserts an EOD command between each print job. See your QMS vendor for more information on this type of program.*

PC Print Server

1   Set the end job mode from the printer's control panel.

2   Create a job separator to append an EOD command and send it between each print job.

Other Print Queuing Systems

If you use a print queuing system other than a PC print server and you experience what appears to be an EOD command problem, you may need to use another procedure, such as a print utility, an initialization sequence, or a header page to add an EOD command. See your print queuing system documentation, your network administrator, or your QMS vendor for more information.

Setting the End Job Mode via the Control Panel

Use the following procedure to set the end job mode from the printer's control panel for printers connected via the serial or parallel interface to a stand-alone PC, a PC print server, or some other type of print queuing system.

»   **Note:** *If you print both serial and parallel protocol jobs, then you must set the end job mode for each protocol.*

Wait for the printer to go idle, and then press the control panel keys in the order shown in the following instructions to access the End Job Mode option. The printer responds by displaying a status message in the message window.

» **Note:** *You may need to press the Next key one or more times to advance through the list of options.*

Key	Purpose	Message Window
Online/ Offline	Turns off the Online/Offline indicator and readies the printer for configuration.	`IDLE`
Menu	Accesses the configuration menu.	`CONFIGURATION OPERATOR CONTROL`
Next	Advances to the Operator Control/ Administration menu.	`CONFIGURATION ADMINISTRATION`
Select	Accesses the Administration menu	`ADMINISTRATION COMMUNICATIONS`
Next	Advances to the Communications/Parallel (or Serial) menu.	`COMMUNICATIONS PARALLEL (`*or*` SERIAL)`
Select	Accesses the Parallel (or Serial) menu.	`PARALLEL/SERIAL MODE`
Next	Advances to the Parallel (or Serial)/End Job Mode menu.	`PARALLEL/SERIAL END JOB MODE`
Select	Accesses the End Job Mode menu.	`END JOB MODE` *OPTION*
Next	Advances to the appropriate option (QMS EOD, HP EOD, or None).	`END JOB MODE` *OPTION*
Select	Selects the option.	*OPTION* `IS SELECTED`
	Returns to the Parallel (or Serial)/End Job Mode menu.	`PARALLEL/SERIAL END JOB MODE`
Online/ Offline	Asks you if you want to save your change.	`SAVE CHANGES? NO`
Next	Advances to the Yes option.	`SAVE CHANGES? YES`
Select	Saves your change and idles the printer.	`IDLE`
Online/ Offline	Puts the printer back on line.	`IDLE`

Adding an EOD Command to Your File

When adding an EOD command to your file, use the syntax for the selected EOD command exactly as written (the command's syntax is case sensitive).

» **Note:** *<ESC> represents the escape character. (The decimal value for the escape character is 027, and the hexadecimal value is 1B.) How you enter the escape character depends on your application. Some applications allow you to press and hold the ALT key and then type 027 to enter the escape character, while others allow you to type certain character sequences to represent the escape character. See your computer or application documentation to find out how to enter the escape character on your system.*

For this EOD command...	Use this syntax...
QMS EOD	%%EndOfDocument <CR><LF>
HP EOD	<ESC>%-12345X

» **Note:** *The <CR><LF> sequence following the %%EndOfDocument line for the QMS EOD is necessary to avoid an INPUT IDLE message remaining in the printer message window after the document finishes printing.*

When the QMS EOD or the HP EOD is set, the printer does not recognize the Ctrl-D EOD command. Add your organization's standard EOD command to the end of your print file, or add it to a separate file as follows.

Adding an EOD Command to the End of Your File

Create an output file (for example, ASCII, PCL, or PostScript file to disk) and add your organization's standard EOD command (QMS EOD or HP EOD) to the end of that file.

Sample output file:

```
Text
Text
Text
Text
%%EndOfDocument
```

Adding an EOD Command to a Separate File

Create an ASCII text file that contains only the EOD command. For example, create a DOS batch file listing each print filename followed by the EOD command filename for each file being printed. Then "run" the batch file to print your list of files.

Sample DOS batch file:

Command	Explanation
Print mktg.doc	Job filename
Print end.txt	EOD command filename
Print acct.doc	Job filename
Print end.txt	EOD command filename

Creating a Network Job Separator

If your printer is connected to a network through a PC and the PC is acting as a print server managing the printing of shared network files, then your system administrator must create a job separator and associate it with a print job queue. Different network environments have different procedures for creating the job separator, such as initialization sequences, custom banner pages, print job headers, or print job trailers. The print server does not necessarily send multiple print jobs to the printer in the order that you queued them to the printer. The network job separator is accessed with each print job, so this ensures that network job separation is enforced. See *QMS Crown Network Notes* for more information on how to create a network job separator for several commonly used networks.

Document Option Commands

This section lists the QMS Document Option Commands supported by this printer. It also provides updated information on HP PCL 4 and PCL 5 DOC commands that has not yet been included in other QMS manuals. For more information, order the *QMS Crown Document Option Commands* manual from your QMS vendor.

QMS Document Option Commands are added to the beginning of a print file and, when interpreted by the printer, turn on specific file processing or document handling features. For example, you can use DOC to specify an emulation, select a specific inputbin or media size, or choose page orientation.

Header/Trailer Page Commands

Header pages	%%IncludeFeature: header
Trailer pages	%%IncludeFeature: trailer

Header/Trailer Information Commands

Application used	%%Creator:
Copyright statement	%%CopyRight:
Current date	%%Date:
Date and time created	%%CreationDate:
Host computer	%%Host:
Owner	%%For:
Routing information	%%Routing:
Title	%%Title:
Version and revision	%%Version:

HP-GL Emulation Features Commands

Enhanced mode	%%IncludeFeature: enhanced
Expanding plots	%%IncludeFeature: expand
Original paper size	%%IncludeFeature: size
Pen width	
and color selection	%%IncludeFeature: pen
Plotter selection	%%IncludeFeature: plotter
Reverse image	%%IncludeFeature: reverse
Scaling plots	%%IncludeFeature: scaling
Shifting origin	%%IncludeFeature: origin

HP-PCL 5 Emulation Features Commands

Carriage returns	%%IncludeFeature: criscrlf
Font selection	%%IncludeFeature: font
Font by id	%%IncludeFeature: fontid
Font storage	%%IncludeFeature: resource
Line feeds	%%IncludeFeature: lfiscrlf
Lines per inch	%%IncludeFeature: linesperinch
Point size	%%IncludeFeature: pointsize
Remove from disk	%%IncludeFeature: remove
Reset to defaults	%%IncludeFeature: reset
Symbol set	%%IncludeFeature: symbolset
Retain temporary macros/fonts	%%IncludeFeature:retaintemporary
Select monochrome	%%IncludeFeature:monochromegl
Enable scalable fonts	%%IncludeFeature:scalablefonts
Establish resource/ def. object ID	%%IncludeFeature:install

Lineprinter Emulation Features Commands

Automatic text wrap	%%IncludeFeature: autowrap
Carriage returns	%%IncludeFeature: criscrlf
Font selection	%%IncludeFeature: font
Form feed	%%IncludeFeature: ffiscrff
Line feeds	%%IncludeFeature: lfiscrlf
Lines per page	%%IncludeFeature: linesperpage
Map using ASCII or EBCDIC	%%IncludeFeature: map
Margins	%%IncludeFeature: lpmargins
Number on for 5-digit numbers	%%IncludeFeature: number
Orientation	%%IncludeFeature: lporientation
Point size	%%IncludeFeature: pointsize
Tabs selection	%%IncludeFeature: tabs

Printer Features Commands

Collating print jobs	%%IncludeFeature: collate
Color model selection	%%IncludeFeature: colormodel
Color separations	%%IncludeFeature: colorseparation

Copies, number of	%%IncludeFeature: numcopies
Emulation selection	%%IncludeFeature: emulation
Media type selection	%%IncludeFeature: mediatype
Orientation selection	%%IncludeFeature: orientation
Paper selection	%%IncludeFeature: input
Resolution selection	%%IncludeFeature: resolution

Updated DOC Commands

This section provides updated information on HP PCL 4 and PCL 5 DOC commands. This information will be merged into the appropriate manuals as they are revised. But until then, it supersedes the following *QMS Crown Document Option Commands* manual (part number 1800216-001E).

Updated PCL 5 DOC Commands

Disable Scalable Fonts Command

Syntax	**%%IncludeFeature:scalablefonts(*value*)**	
Purpose	Enables/disables PCL 5 scalable fonts	
Variable	*value*	
	Purpose	Specifies whether to disable scalable fonts.
	Range	0—Enables scalable fonts
		1—Disables scalable fonts
	Default	0
Notes	Disable scalable fonts to	
	■ Print PCL 4 documents which inadvertently select PCL 5 scalable fonts.	
	■ More closely emulate the PCL 4 font environment.	

Install Object Command

Syntax	**%%IncludeFeature:install**(*resource id object id*)
Purpose	Establishes the current resource and the default object ID value for the current job to which it is attached. If it is attached to a job that downloads a font without setting the current object ID using the PCL escape sequence <ESC>(#X, it has the appearance of "storing" the font on disk.
Variables	*resource id*

	Purpose	Identifies one of the possible locations for downloaded objects
	Range	0 to 6
	Default	Internal system disk
	Format	Integer
	Notes	If no **%%IncludeFeature:install** DOC command is sent, the internal default location is used; otherwise, this parameter, which must be provided, specifies one of the alternate locations. For most QMS printers, resource 6 is the system disk.
	object id	
	Purpose	Assigns an ID to an object, such as a font, macro, or pattern
	Range	0-32767
	Default	0
	Format	Integer
	Notes	The object ID can be used instead of the usual PCL command to assign an ID. This ID is overwritten by any ID assigned from the PCL print job, if present. If neither a DOC command nor the PCL print job specify an ID, the default ID of 0 is used. Identifiers must be unique. If the ID matches an ID for an existing object, that object is deleted and replaced by the new object. If a **%%IncludeFeature:remove** command precedes a **%%IncludeFeature:install** command, the **install** command is ignored (these two commands are mutually exclusive).

Notes	All downloaded objects are by default temporary and will be deleted at the end of a job unless Retain Temporary is set to On or On Compatibility. If the file the **%%IncludeFeature:install** command is attached to does not make its downloaded fonts permanent or Retain Temporary is not set, then those objects are removed from the disk when the job completes.
	A downloaded font can be accessed only by its ID if the font is stored in the current resource. Regardless of its resource, a font can be selected by its attributes. Example A shows a pair of jobs that will not produce the desired results (subjob 2 has only the appearance of storing the font on disk). By contrast, examples B and C show a pair of jobs that will produce the desired results.
Example A—Job 1	%! %%IncludeFeature:emulation(pcl5) install(6 20) %%EndComments <ESC>)s#W<<*download font header*>><ESC>*c33E <ESC>(s#W<<*char 33 data*>><ESC>*c34E <ESC>(s#W<<*char 34 data*>>... <ESC>*c5F
Example A—Job 2	<ESC>(20X*this text is NOT in the downloaded font...*
Example B—Job 1	%! %%IncludeFeature:emulation(pcl5) installl(6 20) %%EndComments <ESC>)s#W<<*download font header*>><ESC>*c33E <ESC>(s#W<<char 33 data>><ESC>*c34E <ESC>(s#W<<char 34 data>>.. <ESC>*c5F
Example B—Job 2	**<ESC>(8U<ESC>(s1p12v0s0b4153*This text will be in the downloaded font,*** if it supports the ROMAN-8 symbol set, is proportionally spaced, 12 points in height (or scalable), upright, medium weight, and has type # 4153.
Example C—Job 1	%! %%IncludeFeature:emulation(pcl5) installl(6 20) %%EndComments <ESC>)s#W<<*download font header*>><ESC>*c33E <ESC>(s#W<<*char 33 data*>><ESC>*c34E <ESC>(s#W<<*char 34 data*>>... <ESC>*c5F

Example C—Job 2	%! %%IncludeFeature:emulation(pcl5) install(6) %%EndComments <ESC>(20Xthis text is also in the downloaded font...

Remove Object Command

Syntax	%%IncludeFeature:remove(*resource id object id object type*)
Purpose	Removes an external object from the printer system.
Variables	*object type*

	Purpose	Specifies the kind of objects that are to be deleted from the specified printer system.
	Range	*, font, macro, pattern, or other object type
	Default	N/A
	Format	Character
	Notes	If *object type* is * or is not specified, then all objects on the specified resource with the specified object id are removed.
	object id	
	Purpose	Specifies the ID of the object that is to be removed from the printer system.
	Range	*, -1 to 32767
	Default	-1 (wildcard)
	Format	Integer

Notes	If the *object id* is not specified, or if it is specified as * or -1, all objects on the specified resource are removed.

Notes:	Unlike the **%%IncludeFeature:install** command, the **%%IncludeFeature:remove** command does not set any defaults, and it is not directly related to the job to which it is attached. This command allows you to remove external objects from the system without having to generate a job containing both the DOC command to set the appropriate current resource and the PCL code to delete the desired object. If this command is specified more than once, the last command received is the one that will be executed. In the following example, the **remove(6 5 font)** command is executed, and the r**emove(6 1 macro)** command is ignored: **%%IncludeFeature:remove(6 1 macro) remove(6 5 font)**

Remove Resource Command

Syntax	**%%IncludeFeature:removeresource**(*resource id object id*)
Purpose	Identifies an external object that is to be removed from the printer system.
Notes	This is an obsolete DOC command that is identical to the remove command, except that it does not allow specification of an object type. The DOC string "removeresource(aaa bbb)" is equivalent to "remove(aaa bbb *)".
Variables	*resource id*

	Purpose	Indicates the resource from which the object is to be removed.
	Range	0-6
	Default	N/A
	Format	Integer
	Notes	This ID must be specified. It indicates the resource from which the desired object is to be removed. There is no way to specify "all resources." If a **%%IncludeFeature:install** command precedes the **%%IncludeFeature:remove** command, the **remove** command is ignored (these commands are mutually exclusive). If the disk does not exist, PCL issues the `NO SPACE FOR FONT, MACRO, OR PATTERN` error message.

	object id	
	Purpose	Specifies the ID of the object that is to be removed from the printer system.
	Range	*, -1 to 32767
	Default	-1 (wildcard)
	Format	Integer
	Notes	If the object id is not specified, or it is specified as * or -1, all objects on the specified resource with the specified object type are removed.

Resource Command

Syntax	**%%IncludeFeature:resource***(resource id object code)*
Purpose	Establishes the current resource and the default object code value for the current job to which it is attached.
Notes	This command is identical to the **%%IncludeFeature:install** DOC command. It is included for backward compatibility.
	All downloaded objects are by default temporary, and will be deleted at the end of a job unless Retain Temporary is set to on, true, or on compatibility. If the file that the **%%IncludeFeature: resource** command is attached to does not make the downloaded font permanent and Retain Temporary is not set, then those objects are removed from the disk when the job completes.
	A downloaded font can only be accessed by its ID if the font is stored in the current resource. Regardless of its resource, a font can be selected by its attributes.

Variables	*resource id*	
	Purpose	Identifies one of the possible locations for downloaded objects.
	Range	0-6
	Default	Internal system disk (usually DSK6:/BIN/EMULATE/PCL/FONTS
	Format	Integer
	Notes	If no resource item is provided, the internal default location is used; otherwise, this parameter, which must be provided, specifies one of the alternate locations. For most QMS printers, resource 6 is the system disk.
	object code	
	Purpose	Assigns a code to an object such as a font, macro, or pattern.
	Range	0-32767
	Range	0
	Format	Integer

Select Font Command

Syntax	%%IncludeFeature:font (*font name*)
Purpose	Specifies the default font to use.
Notes	Fonts are identified by the names shown above. Only the resident fonts may be selected (the available set varies from printer to printer). An asterisk "*" in the name indicates that a font is scalable, and that a point size is to be applied. The value selectbyid indicates that the default font ID or unique font index will be used for default font selection. Selecting a bound, bitmap font overrides the default settings for symbol set and point size. An unbound font uses the specified default symbol set if possible, while a scalable font uses the default font size.
Variable	*font name*

	Purpose	Specifies the default font name.
	Range	courier12 times*blditalic courier12bold univ* courier12italic univ*italic courier10 univ*bold courier10bold univ*blditalic courier10italic univcond* lineprinter univcond*italic times* univcond*bold times*italic univcond*blditlc times*bold selectbyindex
	Default	Depends on printer configuration
	Format	Character

Select Font Index Command

Syntax	%%IncludeFeature:fontid *(index #)*
Purpose	Specifies the default font index number.

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Notes	This index is used when the Default Font selected is selectbyid. This allows for selection of fonts only on the current resource. Selection of default font by index overrides the symbol set value. The symbol set is overridden if a bound font is selected as the default or if an unbound font is selected that does not support the default symbol set. If a font with the specified index exists, it is selected as the Default Font. If the specified value does not exist, courier 12 point is substituted.
Variable	*index #*

	Purpose	Specifies the index number of the default font.
	Range	0 to 32767
	Default	Selectbyid-dependent
	Format	Integer

Select Symbol Set Command

Syntax	**%%IncludeFeature:symbolset** *(name)*
Purpose	Specifies the default symbol set for the emulation.
Notes	This command specifies the default symbol set. Not all symbol sets are available with certain resident fonts. In particular, the Desktop, PS Math, Math 8, Microsoft Pub, Pi Font, PS Text, Ventura Intl, Ventura Math, Ventura US, and Windows symbol sets cannot be used with the resident bitmap fonts: courier10, courier10bold, courier10italic, courier12, courier12bold, courier12italic, and lineprinter. The five dingbat symbol sets (PS-Zapf-Dingbats, Ventura-Dingbats, Zapf-Dingbats100, Zapf-Dingbats200, and Zapf-Dingbats300) can be used with all fonts. If a mismatch between symbol set and font occurs, the standard PCL font selection mechanism is used to locate a font that matches the selected symbol set. With the standard set of fonts distributed by QMS, this matches the Times* font, but other user installed fonts could change this result.
Variable	*name*

	Purpose	Specifies the symbol set name.

Range	roman-8	iso-60
	pc-850	iso-61
	pc8-us	iso-69
	pc8-dn	iso-84
	ecma-94	iso-85
	legal	desktop
	hpgerman	ps-math
	hpspanish	math8
	iso-2	microsoft-pub
	iso-4	pi-font
	iso-6	ps-text
	iso-10	ventura-intl
	iso-11	ventura-math
	iso-14	ventura-us
	iso-15	windows
	iso-16	ps-zapf-dingbats
	iso-17	ventura-dingbats
	iso-21	zapf-dingbats100
	iso-25	zapf-dingbats200
	iso-57	zapf-dingbats300
Default	N/A	
Format	Character	

Set Carriage Return (Line Termination)

Syntax	**%%IncludeFeature:criscrlf*(value)***	
Purpose	Controls the default line termination mode (the *<ESC>&k#G* command). Specifies the line termination treatment of a carriage return.	
Variable	*value*	
	Purpose	Specifies whether a carriage return is treated simply as a carriage return, or as a carriage return-line feed combination.
	Range	Off/false—Treat line feed as a line feed.
		On/true—Treat line feed as a carriage return-line feed combination.
	Default	Printer configuration dependent
	Format	Boolean

Notes	The result of various settings for these parameters is shown in table below, in terms of the equivalent code passed to the PCL line termination command (*<ESC>&k#G*). The second setting (lfiscrlf on, criscrlf off) is correct for most ASCII listings printed from UNIX machines. PC listings should usually be done with both items set to off, and Macintosh listings usually require the third setting (lfiscrlf off, criscrlf on). The following table shows the criscrlf/lfiscrlf commands and the corresponding PCL Line Termination command parameters.

LFISCRLF	CRISCRLF	PCL Code	Comments
Off	Off	0	CR→CR,LF→LF,FF→FF
On	Off	2	CR→CR,LF→CR-LF,FF→CR-FF
Off	On	1	CR→CR-LF,LF→LF,FF→FF
On	On	3	CR→CR-LF,LF→CR-LF,FF→CR-FF

Set Linefeed (Line Termination)

Syntax	**%%IncludeFeature:lfiscrlf** *(value)*	
Purpose	Controls the default line termination mode (the *<ESC>&k#G* command); specifies the line termination treatment of a linefeed.	
Variable	*value*	
	Purpose	Specifies whether a linefeed is treated simply as a linefeed or as a carriage return-linefeed combination
	Range	Off/false——Treats linefeed as a linefeed.
		On/true——Treats linefeed as carriage return-linefeed combination
	Default	Printer configuration dependent
	Format	boolean
	Notes	The result of various settings for these parameters is shown in the table included in the Set Carriage Return (Line Termination) discussion, in terms of the equivalent code passed to the PCL line termination command. The second setting (lfiscrlf on, criscrlf off) is correct for most ASCII listings printed from UNIX machines. PC listings should usually be done with both items set to Off, and Macintosh listings usually require the third setting (lfiscrlf Off, criscrlf On). Note that the FF becomes a CR-FF when the LF is a CR-LF.

Set Lines Per Inch Command

Syntax	**%%IncludeFeature:linesperinch** *(#)*	
Purpose	Sets the default PCL line spacing.	
Notes	Both the **%%IncludeFeature:linesperinch** and **%%IncludeFeature:linesperpage** DOC commands affect PCL's default VMI (vertical motion index). In the event that both are specified, the **linesperpage** DOC command is ignored.	
Variable	*#*	
	Purpose	Specifies the default number of lines per inch.
	Range	1-48

Default	6
Format	Integer

Set Lines Per Page Command

Syntax	**%%IncludeFeature:linesperpage** *(#)*	
Purpose	Sets the default PCL line spacing.	
Notes	Both the **%%IncludeFeature:linesperinch** and **%%IncludeFeature:linesperpage** DOC commands affect PCL's default VMI (vertical motion index). In the event that both are specified, the **linesperpage** DOC command is ignored.	
Variable	*#*	
	Purpose	Specifies the number of lines on the default page at the default orientation.
	Range	1-3000
	Default	Printer configuration dependent
	Format	Integer

Set Point Size Command

Syntax	**%%IncludeFeature:pointsize***(default font size)*	
Purpose	Specifies the point size for scalable default font	
Notes	If the selected font is not scalable or if a bitmap font size is specified, this setting is ignored.	
Variable	*default font size*	
	Purpose	Specifies the floating point number for point size.
	Range	0.25 to 999.75 in 0.25 increments
	Default	Printer configuration dependent
	Format	Floating point number

Notices

FCC Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

» **Note:** *To comply with part 15 of FCC rules, shielded interface cables must be used.*

Canadian Users Notice

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques (de la classe A) prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

WARNING! *To prevent electrical shock, do not remove any covers from your printer unless you are experienced in working with circuit boards and are following instructions for procedures described in QMS documentation.*

ACHTUNG! *Um einen Elektroschock zu vermeiden, sollte die Druckerabdeckung niemals von Unbefugten geöffnet werden. In jedem Fall müssen die diesbezüglichen Hinweise des Handbuches genau beachtet werden!*

▲ **Caution:** *Any modifications or changes to this product not expressly approved in writing by the manufacturer responsible for compliance to Federal Regulations could void the user's authority to operate this product within the Laws and Regulations of the Federal Communications Commission.*

Laser Safety

This printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

Warranty Considerations

Various factors can affect a printer's warranty. Two important ones are consumables and electrostatic discharge. Read your printer warranty carefully, and then store it in a safe place.

» **Note:** *Don't return any merchandise to the manufacturer without calling for a return merchandise authorization (RMA) number.*

Consumables and Your Printer Warranty

The use of non-QMS consumables and/or accessories alone does not affect either your warranty or any maintenance contract you may have purchased. However, if QMS printer failure or damage is found to be directly attributable to the use of non-QMS consumables and/or accessories, QMS will not repair the printer free of charge. In this case, standard time and material charges will be applied to service your printer for that particular failure or damage. QMS recommends that you use only QMS consumables and accessories to support your printer. To order QMS consumables and accessories in the US, call

(800) 777-7782. In all other countries, check appendix A, "QMS Customer Support," in the user's guide, for the QMS office closest to you.

Electrostatic Discharge and Your Printer Warranty

Electrostatic discharge can destroy circuit boards, such as a SIMM or your printer's controller board. To prevent this, use an anti-static wristband. To use an anti-static wristband, attach one end of it to your wrist and the other end to any convenient electrical ground (for example, the bare metal chassis of equipment, as on the back of a computer, that is plugged in **but turned off**). **Never attach the wrist strap to any piece of equipment with an electrical current present**. Turn off all power switches first. Plastic, rubber, wood, painted metal surfaces, and telephones are not acceptable grounding points. The printer isn't an acceptable grounding point either because it must be unplugged before you remove you can access the printer's controller board.

If you don't have an anti-static wrist strap, discharge your body's static electric charge by touching a grounded surface before you handle any printer boards or components and before removing the controller board cover. Redischarge your body each time after walking around and before touching the printer controller board again. Handle the tray carefully, and try to handle it by the edges only.

Incidental and consequential damages caused by not discharging electrostatic buildup can affect your printer warranty.

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A

QMS Customer Support

In This Chapter . . .

- "Sources of Support" on page 2
- "QMS World-wide Offices" on page 5

Sources of Support

Your QMS Vendor

Your local vendor (the one from whom you bought the printer) may be best equipped to help you. Your vendor has specially trained service technicians available to answer questions, and the equipment to analyze your printer problems.

Your Application Vendor

Often, "printing" problems have more to do with the application being used than with the printer. In this case, the application manufacturer is the best source of help.

Q-FAX

Q-FAX, a QMS information retrieval service, provides application notes, technical support notes on common printing problems, and information about printer specifications, options, accessories, consumables, and prices.

In the United States and Canada, call (800) 633-7213 to reach Q-FAX. In all other countries, call (334) 633-3850. Have your fax number handy when you call (or place the call from your fax machine's handset).

You can choose to have either a directory (a list of currently available documents on a particular topic) or a specific document sent to you. The first time you call, request the directory (press 2 on your phone or fax keypad when prompted). Then call back to request specific documents. You can order up to three documents per call.

The QMS Corporate Bulletin Board System

The QMS Corporate Bulletin Board System (BBS) contains technical support notes, application notes, drivers, patches and utilities. Technical questions not requiring an immediate response can be left on electronic mail for the Sysop (System Operator).

The bulletin board [(334) 633-3632] operates at 1200, 2400, 9600, and 14400 baud, 8 data bits, no parity, 1 stop bit, with XMODEM, YMODEM, and ZMODEM capabilities. Contact the QMS Customer Response Center for more information about the bulletin board.

CompuServe

Through CompuServe, you can ask general (non-technical) questions, share information with other users, and access printing information and programs. When you use CompuServe, type `go qmsprint` to go to the forum where QMS is located.

The QMS library section contains application notes, printer drivers, utilities, technical information, and announcement files.

Internet

The QMS server provides access to technical reports, new product announcements, a trade show schedule, and other general information about QMS.

If you have access to the World Wide Web, you can view the QMS home page at http://www.qms.com/. The QMS ftp resource is ftp.qms.com.

The QMS Customer Response Center (CRC)

The QMS Customer Response Center is available M-F, 7:00 am-6:00 pm, Central Standard Time, at **(334) 633-4500 (US)**. You can also fax questions to CRC at **(334) 633-3716 (US)**. Please indicate whether you would like a fax or a phone call.

If you call for assistance, have the following information ready so our technicians can help you more quickly:

- Your phone number, fax number, and shipping address

- A description of the problem

- The printer model and serial number

- The type of host computer you are using

- The type and version of operating system you are using

- The interface you are using, and, if serial, the protocol

- The application and version you are using

- The emulation you are using

- Your printer firmware version (listed on the status and start-up pages)

QMS World-wide Offices

QMS United States and Latin America

General Contact
1 (334) 633-4300
Fax 1 (334) 633-4866
Email info@qms.com

Customer Response Center (CRC)
Technical Assistance
   1 (334) 633-4500   7:00 am–6:00 pm Central Time
Bulletin Board Service
   1 (334) 633-3632

Latin America Fax
1 (334) 639-3347

National Service
Service Information, Installation, and Maintenance Pricing
   1 (800) 762-8894
On-Site Service and Depot Repair Information
   1 (800) 858-1597   7:00 am–7:00 pm Central Time
Spare Parts Ordering and Information
   1 (334) 633-4300 x2530   8:00 am–5:00 pm Central Time

QMS Canada

General Contact
1 (514) 333-5940 or 1 (800) 361-3392
Fax 1 (514) 333-5949

National Service
On-Site Service and Depot Repair Information
   1 (800) 268-4969   8:30 am–7:00 pm Eastern Time
Spare Parts Ordering and Information
   1 (905) 206-9234 x238   8:30 am–5:00 pm Eastern Time

Bulletin Board Service
1 (905) 206-0084

QMS in Japan

Sales
81-03-5421-4135
Fax 81-03-5421-4155

Customer Support
81-03-5421-4140
Fax 81-03-5421-4144

QMS in Europe, Middle East, Africa, India, Australia, and New Zealand

Australia	**Anitech** (61) 27491244 Fax (61) 35623880
Belgium	**QMS Service Center** (32) 52352377 Fax (32) 52352376
Denmark	**Berendsen Innovation A/S** (45) 39577300 Fax (45) 3957730
Egypt	**United Systems** (202) 3350157 Fax (202) 3609787
Finland	**Qtronic** (358) 06926099 Fax (358) 0674886
France	**Natis** (33) 148637575 Fax (33) 148637444
Germany	**DSI** (49) 21156040 Fax (49) 2115604278 **Printec** (49) 61827780 Fax (49) 618277882
Greece	**Micro-Tec** (30) 18835115-7 Fax (30) 18835118
Iceland	**Aco HF** (354) 627333 Fax (354) 5628622

India	Rolta India Limited
	(91) 228327708
	Fax (91) 228365992
Ireland	Gericmar
	(353) 16261666
	Fax (353) 16260131
Israel	M.A.G. Group
	(972) 35600650
	Fax (972) 35601327
Italy	Sipac
	(39) 258013366
	Fax (39) 258012029
Kuwait	Computers & Com. Concepts Co.
	(965) 4725053
	Fax (965) 4768062
Luxemburg	QMS Service Center
	(32) 52352377
	Fax (32) 52352376
The Netherlands	QMS Europe BV
	(31) 302414646
	Fax (31) 302414592
New Zealand	U-Bix
	(64) 93566145
	Fax (64) 93566001
Norway	Berendsen Data
	(47) 22676700
	Fax (47) 22680420
Poland	KP System
	(48) 22315379
	Fax (48) 22783601
Portugal	CSQ
	(351) 13645066
	Fax (351) 13643484

Russia	DPI
	(70) 952642853
	Fax (70) 952642946
Saudi Arabia	Nasco
	(966) 14771307
	Fax (966) 14774913
South Africa	Nashua Limited
	(27) 113134000
	Fax (27) 118054139
Spain	Gemática
	(34) 35807534
	Fax (34) 35807659
Sultanate of Oman	Electronics Co. LLC
	(968) 790191
	Fax (968) 790192
Sweden	Nexor Repair Center AB
	(46) 86293200
	Fax (46) 86293221
Switzerland	A Messerli AG
	(41) 18291111
	Fax (41) 18291348
United Kingdom	CRC Ltd
	(44) 1844261900
	Fax (44) 1844261677
United Arab Emirates	Luminous Path
	(971) 4525211
	Fax (971) 2393234

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Glossary

For more information about a term, check the index listings.

Application

A computer program designed to help people perform a certain type of work, for example, a word processing program, a page layout program, a programming language, or software that handles graphics and prints documents, spreadsheets, and/or forms.

Consumables

Supplies that are used up, like print media, toner, and developer.

Crown

A proprietary multitasking printer operating system, which allows QMS to adapt an advanced software code base to the evolving printing needs of users in many different operating environments. As implemented in the QMS Crown family of products, this modular, portable architecture provides advanced features as well as the capability to easily integrate new features

as they become available. A QMS Crown printer can process and print jobs simultaneously instead of sequentially (multi-task) because of advanced memory management techniques such as simultaneous interfacing, input buffering, job spooling, emulation sensing processing, compile-ahead technology, and compressed data formats.

Default

The values or settings built-in to a system or program. The default settings in this printer can be changed. See also *factory default*.

Emulation

The ability of the printer to respond to commands that are intended for a different type of printer. For example, when the printer is set for PostScript Level 2 emulation, it responds to the same commands that a PostScript Level 2 printer does.

Engine

The non-intelligent part of a printer where the paper is physically processed and printed.

ESP Technology

Emulation **S**ensing **P**rocessor Technology: technology that uses a form of artificial intelligence to analyze incoming file data from any of the printer's interfaces. ESP technology, which works with most popular commercially available applications, selects the appropriate printer emulation from those installed on the printer and processes the print job, freeing the user from having to change printer switch settings or send software commands to accommodate different printer emulations. ESP mode is an option for the printer's serial, and parallel interfaces.

Factory Default

The printer settings that are programmed into the printer at the factory. These settings can be changed through the printer control panel or overridden with printer commands sent through software. See also *default*.

Imageable Region

The areas of a page size a printer can access, determined by hardware limits (physical page size and margins required by the printer engine) and software constraints (amount of memory available for the full-page frame buffer). Also referred to as imageable area and printable region.

Interface

The place where a physical connection is made between components, such as a cable and printer, and communication or signals are passed back and forth.

Laser Paper

Paper designed for laser printing. Laser paper allows the richest color and black and white output and the most consistent coverage (especially for large areas of one color). It is best for prepress proofs. For laser paper printing, we recommend Hammermill Laser Print. Laser paper has a printable side and a non-printable side; usually, the printable side is indicated by an arrow on the side of the wrapping covering the media, and that side is slightly smoother. See also *plain paper*.

Manual Feed

Feeding single sheets of print media to the printer by hand (as opposed to letting the printer automatically pull sheets from a cassette).

Media

See *print media*.

Mode

One of several alternative conditions or methods of operation.

Network Administrator

See *system administrator*.

Option

In this manual, either a choice available in the printer's Configuration submenu, or an extra accessory you can purchase for your printer.

PDL

Page **D**escription **L**anguage: a programming language, such as PostScript or HP-GL, that translates messages from a computer to a printer. See also *PostScript*.

Plain Paper

Uncoated, general-purpose paper designed for photocopy printing, found in most offices. It is less expensive than laser paper, but does not offer the same output quality that laser paper does. This printer has plain paper

capability: it produces good output on documents such as reports and newsletters. See also *laser paper*.

PostScript

A page description language trademarked by Adobe Systems Inc. Post-Script Level 2 capabilities, among others, are implemented in the printer through a PostScript emulation developed by QMS. PostScript Level 2 emulation is the native language of your printer's controller. It describes text, graphics, and page images to the printer.

Print Media

The material on which the printer prints (for example, paper, transparencies, and labels).

Printer Driver

A file that enables the application to talk to the printer, translating computer data into a form understood by the printer. Usually, the printer driver is in the application.

Protocol

A set of procedures that control how data is transmitted between devices.

QCOLOR

A QMS-developed technology for automatically optimizing color printing from Windows and Macintosh applications. QCOLOR configures the printer for the best output quality based on the contents of the document (for example, text, line art, presentation graphics, photographs, or scans).

Resident

Permanent printer features.

SIO

Simultaneous **I**nterface **O**peration: a Crown function that allows printing to all three of the printer's concurrently active ports. See also *Crown*.

Software Loadable System (SLS)

Your printer offers a software loadable system, SLS, which allows you to add features and enhancements as they become available from QMS. This feature works through the parallel port via the control panel or PS Executive Series Utilities, and it makes it easier for you to keep up with the latest software changes.

System Administrator

The person in charge of operating a network; also called a network administrator.

Utility

Software, such as PS Executive Series Utilities, that performs a specific function of system management, such as maintaining disks and files or controlling a printer.

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