

HP D640 Cut Sheet Printer Technical Reference Manual

Hewlett-Packard Company

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1 Introduction

This manual is a supplement to the complete Hewlett-Packard *PCL/PJL Technical Reference Library* (Part #5021-0330). Hewlett-Packard recommends you order this documentation package, as it will aid you while using the *D640 Technical Reference Manual*.

The *D640 Technical Reference Manual* describes differences between the D640's implementation of PJP and PCL and implementations on other HP printers. As such, it is not an exhaustive reference for those languages, but a supplement to these books:

- *PCL 5 Printer Language Technical Reference Manual*
- *Printer Job Language Technical Reference Manual*
- *PCL 5 Comparison Guide*
- *Printer Language Technical Quick Reference Guide*.

This manual was written for experienced users, such as application developers and technical support personnel. Before using the manual, programmers should be familiar with the reference manuals mentioned above.

Other D640 Manuals

The information in this manual supplements the following HP D640 documents:

- *Model D640 Installation Manual*
- *Model D640 User Manual*
- *Model D640 Enhanced Features Manual*
- *Model D640 Technical Reference Manual*
- *PostScript Emulation Manual for Model D640 Printers*

2

Printing Options

Custom Paper Sizes

The D640 supports custom paper sizes. Use the Media Eject Length command to specify a custom paper length and the Page Width command to specify a custom width. These dimensions are relative to the physical paper path, so it's possible to specify a width value larger than the length value.

The optional custom paper tray (C5634A) has infinitely adjustable guides, which can accommodate paper as small as 3.94 by 7.2 inches (100 by 182 mm) and as large as 11.7 by 17 inches (297 by 431.8 mm). You can use one to three custom trays in any of the tray positions, but all custom trays installed must contain the same paper size.

Note

Paper sizes longer than 215 mm in length feed at 21 pages per minute. Other sizes feed at 40 pages per minute.

To use custom size paper in a print job, there are several steps:

At the Control Panel

Step 1 For the custom tray location, set the PapSize tray setting to custom.

Step 2 Set the units in the Printing Menu to mm, or 1/100".

Step 3 Set the customsize settings in the Configuration Menu to the width and height of the paper.

The values for width and height are the width and height of the paper, expressed in the unit values specified in the units setting. For example, the customsize values for an 8.5 by 11 sheet would be 850 and 1100.

Step 4 Set any other settings, such as traylock, in the Configuration Menu.

In Your Print Job

- Step 1 Define the Media Eject Length (the size of the paper in the custom paper tray, left to right) by sending the PCL code: Media Eject Length (see below).
- Step 2 Define the paper width (the size of the paper in the custom paper tray, front to back) by sending the PCL code: Select Custom Size (see below).

Media Eject Length <ESC> & f # f/F

Sets the length of paper, as measured from the left edge to the right edge of the paper in the custom paper tray. Command arguments include:

Value(#) Media eject length in decipoints (1/720 inch)

Default Device dependent (should be taken from User Default Environment)

Range 0 to the maximum supported paper length (command is ignored for other values and the current paper length is retained)

Use this command to define the size of your paper when using the custom paper tray, with the selection of <ESC>&l101A.

The media eject length need not be the same as the physical page size defined by Page Size (<ESC>&l#A) or Page Length (<ESC>&l#P). If the media eject length is shorter than the physical page size, the physical page image will be clipped to fit the media eject size. If the media eject length is longer than the physical page size, the excess length will appear after the page image (to the bottom and right of the page image so the page image is placed at the upper left edge).

Page Width <ESC> & f # g/G

Designates the width of the logical page for a given CMI. Command arguments include:

Value(#) Logical page width in decipoints (1/720 inch)

Default Device dependent

Range 0 to the maximum supported page width. For other values, the command is ignored and the current paper length is retained. If a value of 0 is received, page width is set using the following criteria (in order of priority):

- Control Panel setting (if applicable)
- The physical page width (if it can be sensed)
- 8.5 inches portrait, 11 inches landscape orientation.

The page width remains in effect until a new Page Width command is received or the printer is restarted.

Note

Use this command in conjunction with the Media Eject Length command (<ESC>&f#F) to fully define a variable logical page size. Both the Media Eject Length and Page Width commands should be transmitted at the beginning of a page prior to any printable data. Otherwise, when the command is sent, the current page is closed and printed.

Select Custom Paper <ESC> & I 101A

Sets margins according to the physical size of the paper defined with the Media Eject Length and Page Width commands.

Paper Output Trays

The D640 printer currently has two output locations: the upper tray (standard) or the optional high capacity output stacker (HCO).

There are several differences between the upper tray and the output stacker. The upper tray holds up to 400 sheets, stacking them face-down only. There is no offset stacking. The HCO holds up to 3000 sheets, stacked face up or face down, and it supports offset stacking. Both output locations can use the job separation feature of the printer.

The default output is the top tray. You can specify that the jobs are separated by a special sheet of paper, usually of a different color or size. This feature allows effective job separation in the top tray.

Use the jobseparate setting from the Printing Menu. Alternatively, you can give the PJI command:

```
@ PJI DEFAULT SEPARATOR=TRAY3
(or tray2 or tray1 or HCI or OFF)
```

PCL and PJI Output Commands

See Table 6 on page 17 and Table 7 on page 17 for the PCL and PJI command definitions to select the output location and stacking direction.

Example Paper Handling Configurations

When you are using the MPE/iX network spooler, built into MPE/iX version 5.5 and above, printing defaults to these options:

- Landscape orientation
- Banner page printed from tray1 (top tray)
- File printed from tray2 (middle tray)
- 132 characters per line
- 60 lines per page

This table gives some examples of printer configurations for specific results and describes the Control Panel and `npconfig.pub.sys` settings to obtain them.

Table 1 Paper Handling Configuration Examples

Printer and Environment	Result	D640 Control Panel	npconfig.pub.sys
D640, no HCI Many users	- Duplex printing on plain paper - MPE/iX banner page at beginning and end of each job	intray = TRAY1 traylock.tray1 = UNLOCKED traylock.tray2 = UNLOCKED traylock.tray3 = UNLOCKED duplex = ON jamrecovery = ON jobseparate = NONE	jam recovery = TRUE banner_header = TRUE banner_trailer = TRUE data_intray = 1 banner_intray = 1
	- Duplex printing on plain paper - MPE/iX banner page at beginning of each job, printed on green paper. - No end banner.	intray = TRAY2 traylock.tray1 = LOCKED traylock.tray2 = UNLOCKED traylock.tray3 = UNLOCKED duplex = ON jamrecovery = ON jobseparate = NONE <i>Put green paper in tray1, white in tray2 and tray3</i>	jam recovery = TRUE banner_header = TRUE banner_trailer = FALSE data_intray = 4 banner_intray = 1
D640, HCI Many users	- Duplex printing on plain paper - Legal and Ledger paper available - MPE/iX banner page at beginning of each job, printed on blue paper - No end banner	intray = HCI traylock.tray1 = LOCKED traylock.tray2 = UNLOCKED traylock.tray3 = UNLOCKED duplex = ON jamrecovery = ON jobseparate = NONE <i>Put blue letter paper in tray1, ledger in tray2, legal in tray3, white letter in HCI</i>	jam recovery = TRUE banner_header = TRUE banner_trailer = FALSE data_intray = 5 banner_intray = 1
D640, one user, preprinted forms	- Simplex printing on pre-printed forms - No banner page at beginning or end - No job separation <i>Test alignment and verify that forms work before production run.</i>	intray = TRAY1 traylock.tray1 = UNLOCKED traylock.tray2 = UNLOCKED traylock.tray3 = UNLOCKED duplex = OFF jamrecovery = ON jobseparate = NONE <i>Put forms in trays face down, with top of form toward printer rear.</i>	jam recovery = TRUE banner_header = FALSE banner_trailer = FALSE data_intray = 1 banner_intray = 1

Edge to Edge Printing

Typically, the D640 printer enforces a 1/6" unprintable area around the edge of any page. This is the factory default and produces the best looking output. There may be some cases where you don't want this border. The D640 supports edge-to-edge printing which allows you to extend printing to the edge of the physical page.

Note

The print quality is not consistent within 1/6" of any edge. This is especially true for the trailing edge of the second side in duplex printing. For this reason, Hewlett-Packard cannot guarantee print quality within this 1/6" area. Your Hewlett-Packard warranty and service contract does not cover service calls related to printing within this 1/6" area.

The quality and squareness of the paper determine print quality when printing close to the physical paper edge. In general, you may experience degraded print quality within 0.25 inches of any paper edge. When printing in duplex you may need to compensate for shrinkage and curl that may occur when the first side is printed. Lighter weight and recycled papers tend to shrink more than heavier weight paper.

For edge-to-edge printing, first turn off the clip setting in the Configuration Menu or send the appropriate PJL command. Then, set the logical page size to the physical page size using PCL commands. (See example below.)

```
@PJL SET CLIP=OFF<EOL>      ;allow printing near edges
<ESC>%-12345X
<ESC>%-12345X@PJL ENTER LANGUAGE=PCL<EOL>
<ESC>E
<ESC>&l6A                    ;select ledger size
<ESC>&a10W                    ;define page to be edge-to-edge
0x00 0x00                    ;left offset is 0
0x00 0x00                    ;top offset is 0
0x01 0x00                    ;orientation is landscape
0x2F 0xD0                    ;width is 0x2FD0 decipoints
0x1E 0xF0                    ;height is 0x1EF0 decipoints
<ESC>&l0E                    ;set top margin to 0
<ESC>&a0L                    ;set left margin to 0
```

If you define text to start printing at location 0,0 it will print off of the logical page. This may or may not be on the physical page. Figure 1 describes the physical and logical page formats.

The following escape sequence allows you to define the logical page:

```
<ESC> & a # w[binary data]
```

Where # is the number of bytes of binary data following the terminator.

The default value for # is = NA.

The range for # is = 4,10.

The binary data describes the logical page format as shown below:

Table 2 Logical Page Format

Byte	15 (MSB)	8	7	0 (LSB)	Byte
0	Left Offset				1
2	Top Offset				3
4	Orientation		Reserved (0)		5
6	Width				7
8	Height				9

Left Offset Specifies (in integer decipoints) the location of the left edge of the logical page with respect to the left side of the physical page in the selected viewing orientation. The range of values is -32767 to 32767.

Top Offset Specifies (in integer decipoints) the location of the top edge of the logical page with respect to the top edge of the physical page in the selected viewing orientation. The range of values is -32767 to 32767.

Orientation This is the viewing orientation of the logical page with respect to the physical page. Values may be 0 (portrait), 1 (landscape), 2 (reverse portrait), or 3 (reverse landscape). All other values reset the logical page definition leaving the logical page as it was previously defined.

Reserved Byte A byte which must be present in the data stream and must be equal to zero.

Width Logical page width is defined in decipoints. A zero width causes the logical page definition to be ignored. The logical page may be larger than the physical page. The range of values is 1 to 65535.

Height Logical page height is defined in decipoints. A zero height causes the logical page definition to be ignored. The logical page may be larger than the physical page. The range of values is 1 to 65535.

Either 4 or 10 bytes of binary data defining values in the specified range must be downloaded with this command. If more than 10 bytes are received, the excess number is disregarded. If the number of bytes received is less than 10 and greater than 4, the left and top offsets are changed and the remaining bytes are ignored.

Upon receipt of a valid, 4-byte command, the current logical page definition is updated with the new left and top offsets. The margins, print direction, and current active position (CAP) are retained relative to the new position of the logical page. (The only change to the current logical page is that now it is offset relative to the physical page.)

Upon receipt of a valid command with 10 or more bytes of binary data, the current logical page definition is discarded and the new definition is installed. The following actions take place with a new definition:

- The macro overlay is disabled.
- Any current raster graphics are closed.
- The primary and secondary fonts are set for the selected orientation.
- Print direction is set to zero and the orientation is set appropriately.
- HMI, VMI, margins, and text length are set to their PCL defaults.
- CAP is moved to (0,0).
- CAP becomes floating.

The reference point used for tiling defaults to the upper-left corner of the current logical page. The tiles are printed based on the viewing orientation selected.

- The picture frame is defaulted to the logical page bounds and the anchor point is set to the upper left corner of the logical page.
- Any extra bytes specified with the command are disregarded.
- The positions stored in the CAP stack are not changed with an orientation change. Therefore, the positions are relative to the top left corner of the current orientation.

- The new logical page definition remains in effect until another logical page is defined, or the logical page is defaulted by receipt of a reset, an orientation change, a page length, or a paper size command. The current logical page definition (PCL default or user defined) is part of the user and overlay environments. A graphic mark will appear on the page if and only if it falls within the printable area and the logical page boundaries. For HP-GL/2 mode, graphics must also be within the defined picture frame and user defined window.

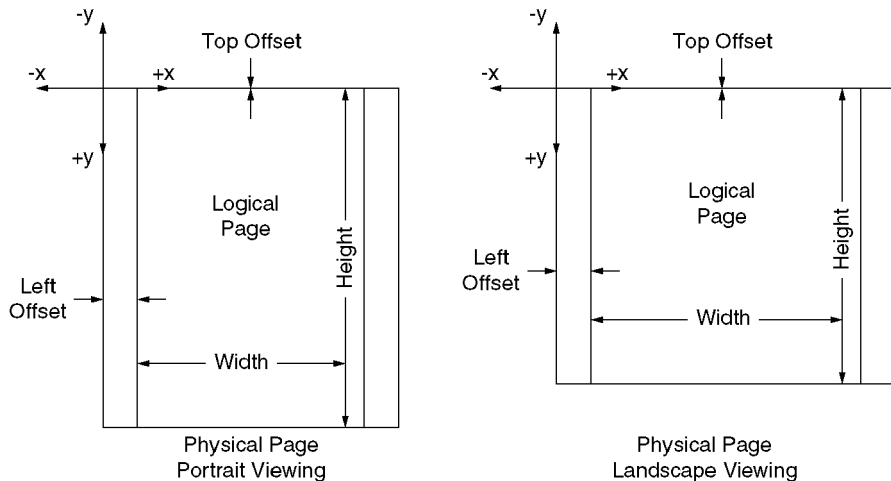


Figure 1 Physical Page Formats

Working with Multiple Copies

You can print multiple copies of a document using the following methods:

- setting the printer's control panel (Copies, Mopies, and Auto-collate)
- using commands in a print job

For more information on setting the printer's control panel to create multiple copies, see the *User Manual*.

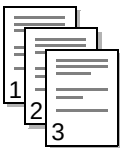
To specify multiple copies in a print job, use the following commands:

Table 3 Commands for Multiple Copies

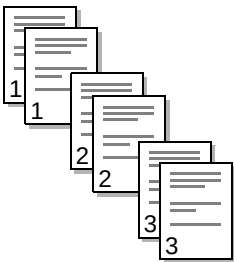
PJL SET COPIES = n Where n is the number of copies specified for each page of a document. Copies are created on a page-by-page basis. Each page is printed n times. See illustration below.

PJL SET QTY = m Where m is the number of collated copies (mopies) specified for the document. Copies are created on a document-by-document basis. A completed document is printed m times. See illustration below.

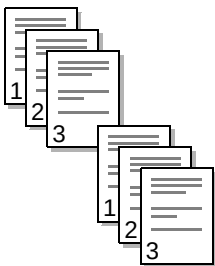
Multiple-page document



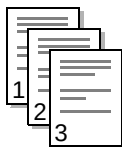
PJL SET COPIES = 2



PJL SET QTY = 2



If you combine the PJJL SET COPIES and PJJL SET QTY commands in the same print job (and the auto-collate setting on front of the printer is off), the result is multiplicative. See illustration below.



PJJL SET COPIES = 2
PJJL SET QTY = 3

3 sets of documents are created.
Each set has 2 copies of each page.



This combination of copies and mopies is useful if you're simulating a multi-part form on the printer and you want multiple copies of the form.

CCITT Groups 3 and 4 Decompression

The D640 printer supports CCITT Groups 3 and 4 image decompression, commonly used for faxing data and images. You can send the printer these printer-specific commands and data compressed using CCITT Groups 3 and 4. The printer decompresses and prints the data.

Three new modes for transfer raster data are supported:

<ESC>*b#M

- 6 - CCITT G3 one-dimensional (modified Huffman)
- 7 - CCITT G3 two-dimensional (modified Read)
- 8 - CCITT G4 two-dimensional (modified Read)

The first four bytes of this command are a 32-bit unsigned integer that specifies the number of pixels per row. If these bytes are inadvertently transposed, the image may appear to be one long row of pixels.

Most standard PCL5 raster image commands, excluding Y offset <ESC>*b#Y commands, work with the new printer-specific command extensions.

If possible, identify the compression method used on the data you'll be decompressing and printing. With this information, you can more accurately select values for the printer-specific commands. If you cannot identify the type of compressed data, you will have to experiment with the commands when trying to decompress and print the image.

You may encounter CCITT compressed data where the data is reversed. For example, the first four bytes of the data file should contain a value representing the width of the image in pixels per row. A typical value might be Ox: 00 00 01 98, indicating a width of 408 pixels. If the bytes were swapped into "little endian" order, they would appear as Ox: 01 98 00 00, which would indicate a very wide picture.

The D640 supports a resolution of 200 dpi, so images scanned at this resolution print at their normal size.

Image Position

The decompressed image will be placed within the PCL 5 default margins unless edge-to-edge printing is selected. Use the printer-specific edge-to-edge commands, along with the following cursor positioning command:

<ESC>*p0x0Y cursor position at 0, 0

Table 4 Image Position

Command	Action
<ESC>*r0F	presentation mode zero
<ESC>*t300R	300 dpi resolution
<ESC>*r800T	image height = 800
<ESC>*r1664S	image width = 1664
<ESC>&l00	portrait orientation
<ESC>*r1A	use current cursor position
<ESC>*b8M	use CCITT4 Group 4 (MMR) decompression mode
<ESC>*b9604W	raster block data length = 9604 bytes
<data>	raster data
<ESC>*rC	end raster image

LaserJet Compatibility

The D640 printer is unique and different from the Hewlett-Packard LaserJet family of printers in general, and from the LaserJet “Si” series in particular. While these two printer families share the same printer language (PCL and PJJL), there are a number of physical differences to their hardware.

Hewlett-Packard has included features in the D640 printer to make it behave like a LaserJet 4Si, so your print jobs turn out like you would expect them to if you were printing to a 4Si. In many instances these features also provide compatibility with other LaserJet products such as the IIISi and/or 5Si.

This section covers the compatibility features associated with PCL commands.

Paper Input

The D640 has three paper input trays, while the LaserJet 4Si has two, and the LaserJet5Si has three.

The IIISi and 4Si printers have a high-capacity input (HCI) unit available as an option. Jobs set up for this environment use the PCL <ESC>&l4H command to select the HCI. The same command selects tray2 on the D640.

HCI selection compatibility is provided through the HCI-Alias Control Panel setting. HCI-Alias enables paper selection compatibility between a LaserJet IIISi (or 4Si) with an HCI and a D640 with an HCI. With HCI-Alias = tray2 (normally the LaserJet 4Si’s high capacity input) the PCL command <ESC>&l4H causes the D640 to pick paper from the HCI. You can also set HCI-Alias = HCI to pick paper from tray1, tray2, tray3, or the HCI in response to the PCL commands shown in Table 5.

Example Configuration

LaserJet III Si / 4Si

- UPPER TRAY contains paper for job separation.
- HCI TRAY contains white paper.

This configuration provides 500 sheets in the upper tray (<ESC>&l1H), and 1500 sheets in the HCI tray (<ESC>&l4H). To match this configuration on the D640, set up the D640 as follows:

- TRAY1 contains paper for job separation.
- HCI contains white paper.
- Set HCI-Alias = tray2.

This configuration provides 500 sheets in tray1 (<ESC>&l1H), and 3000 sheets in the HCI (<ESC>&l4H). You could also load paper for job separation in tray2 and tray3 to increase capacity to 1500 sheets.

If HCI-Alias is set to HCI, the values shown below in Table 5 are correct. If HCI-Alias is set to tray2, then you can send a job to either a 4Si or a D640.

Table 5 Tray Map for HCI-Alias = HCI

PCL	IIISi, 4Si	D640	5Si
<ESC>&l1H	upper tray	upper tray (tray1)	upper tray (tray2)
<ESC>&l4H	lower tray	middle tray (tray2)	lower tray (tray3)
<ESC>&l5H	n/a	High Capacity Input	High Capacity Input
<ESC>&l8H	n/a	lower tray (tray3)	fold out tray (tray1)

You can also set the default paper tray (used if there is no paper size or paper source command embedded in the print job) from the Control Panel or via PJL commands. Use the intray setting in the Printing Menu, or the PJL command:

@PJL SET MEDIASOURCE=TRAY1
(or TRAY2 or TRAY3 or HCI)

Paper Output

Refer to the tables below to convert jobs from the 4Si or 5Si to the D640.

Table 6 D640, 4Si, 5Si Output Paper Tray PCL Map

PCL	4Si	D640	5Si
<ESC>&l1G	top, face down	top, face down	top, face down
<ESC>&l2G	back, face up	HCO, face down	left side, face up (not with HCO)
<ESC>&l3G	n/a	HCO, face up	HCO, face up
<ESC>&l4G	n/a	N/A	HCO #1, face down
<ESC>&l5G	n/a	N/A	HCO #2, face down
<ESC>&l6G	n/a	N/A	HCO #3, face down

Table 7 D640, 4Si, 5Si Output Paper Tray PJL Map

PJL Outbin	4Si	D640	5Si
UPPER	top, face down	top, face down	top, face down
LOWER	back, face up	N/A	left side, face up (not with HCO)
HCO-D	n/a	HCO, face down	n/a
HCO-U	n/a	HCO, face up	n/a
OPTIONAL OUTPUTBIN1	n/a	N/A	HCO #1, face down
OPTIONAL OUTPUTBIN2	n/a	N/A	HCO #2, face down
OPTIONAL OUTPUTBIN3	n/a	N/A	HCO #3, face down

Internal Fonts

Each of the D640 internal fonts is almost identical to those used in the LaserJet 4Si. Due to advances in font technology since the development of the 4Si, some typefaces, treatments, and symbol sets are slightly different. (For example, if you print a very large question mark on each printer, you may notice differences in the shape.)

Each of the D640 printer's 56 virtual font cartridges is almost identical to the corresponding font cartridge sold for the LaserJet IIISi and 4Si printers.

See Chapter 6 for more information about D640 fonts and virtual font cartridges.

3 Working with TIFF Images

About TIFF Images

The D640 printer supports TIFF emulation which enables your printer to recognize and print bi-level, monochrome TIFF images. Previously, TIFF images had to be part of a larger PCL or PostScript (PS) document to be printed.

TIFF support for the D640 printer conforms to the specifications described in *TIFF Revision 6.0* published by Aldus Corporation, June 1992. The information in this chapter assumes you are familiar with *TIFF Revision 6.0*.

The D640 printer supports relevant parts of Baseline TIFF and selected elements of Extended TIFF. There are no private fields or values required by the printer.

Note

The TIFF standard does not contain any elements to indicate the termination of data. Therefore, termination of a TIFF file must be indicated by PJI universal escape sequences or the printer's I/O timeout configuration.

Printing TIFF Images

TIFF images can be printed using the following methods:

- setting the printer's control panel to recognize TIFF files (Emulation = TIFF or Auto). Auto is the recommended setting if you print files using more than one protocol (such as PCL or PS).
- using commands in a print job

Using the Control Panel

On the printer's control panel, you can explicitly select TIFF emulation. For details, see the *User Manual*.

When TIFF emulation is set, the following data items are valid:

- A new TIFF file, starting with a 4-byte sequence \$49492A00 or \$4D4D002A
- PJI commands

Any other type of data is treated as an error.

On the printer's control panel, you can also use the Auto emulation setting to implicitly recognize TIFF files.

If Auto emulation is set, the printer recognizes either of the following sequences as valid TIFF file headers and enters TIFF emulation mode automatically, if this sequence is at the start of the print job.

- \$49492A00 or \$4D4D002A

Using Commands in a Print Job

In addition to control panel settings, TIFF protocol can be selected by the PJI command:

```
@PJI ENTER LANGUAGE = TIFF
```

The following is a sample print job for a TIFF file:

```
<ESC>%-12345X@PJI JOB NAME="Sample.tif"<LF>
```

```
<ESC>%-12345X@PJI SET CLIP=OFF<LF>
```

```
<ESC>%-12345X@PJI ENTER LANGUAGE=TIFF<LF>
```

```
< tif file goes here >
```

```
<ESC><ESC><Bel>
```

```
<ESC>%-12345X@PJI<LF>
```

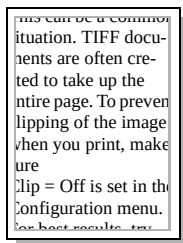
```
@PJI EOI NAME="Sample.tif"<LF>
```

```
<ESC>%-12345X
```

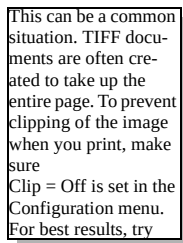
General Rules

The following are some general rules to describe how the D640 printer processes TIFF data.

- Each TIFF file is a self-contained unit, made up of one or more sub-files. Each sub-file describes a single rectangular image. The image may be a complete page, or it may be a part of a page. During TIFF emulation, the printer cannot switch into any other protocol, except at the boundaries of individual TIFF files.
- If a TIFF image contains multiple sub-files, the images contained in the sub-files are placed on separate pages in the order the sub-files appear in the TIFF data stream.
- If TIFF is the selected protocol:
 - Images are placed with respect to the physical page, with zero margins.
 - If a sub-file doesn't have positioning information, the image is placed at the edge of the page.
 - If a sub-file has positioning information, the commands are interpreted as absolute displacements from the edge of the physical page.
 - The Clip setting for the document determines if the image is printed to the edge of the page.



Clip = On

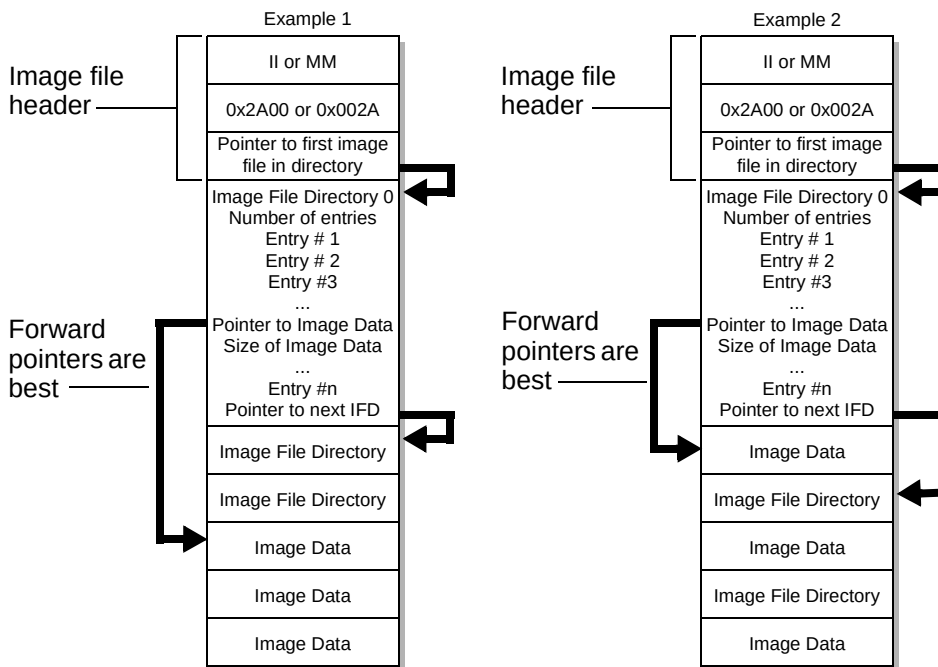


Clip = Off

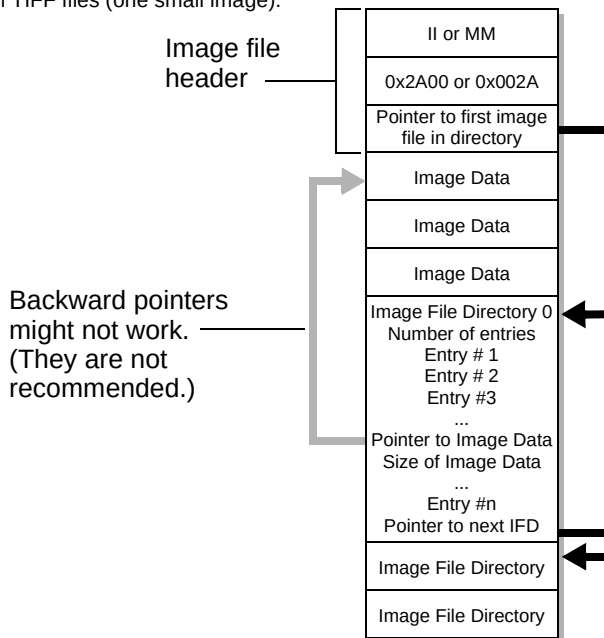
- TIFF was designed as a file structure for random-access devices. When used as a printer protocol, HP recommends the following ordering restrictions apply to allow sequential processing of the data. These include:
 - Offset values should be greater than the file position of the offset. For example, If an offset resides at file position A within the TIFF data, its value should be greater than A.
 - Within a file, all tag fields pertinent to the image should precede the image data.
 - The ordering of components within each sub-file should be:
 - Image file directory
 - Data values identified by directory entry offsets
 - Image data.

See page 23 for some example TIFF structures.

Preferred structure of a TIFF file: In Example 1 and Example 2, all the image file directories occur early in the file. This is a good structure for TIFF files sent to the D640 printer.



Alternative structure for a TIFF file: In the structure below, the image file directories appear after the image data. This file may not be printable because of the backward pointer. With this structure, the D640 printer can handle only small TIFF files (one small image).



Errors

Errors in the TIFF file header or in directory offset values are considered major errors. The remainder of the TIFF file is ignored and the print job is abandoned.

For other errors, the processing of the current sub-file continues, but no image is printed. Subsequent sub-files are processed normally.

The following are the main categories of errors:

- Absence of mandatory TIFF fields (directory entries)
- Duplicate occurrences of tags in one directory
- Wrong type for a significant TIFF field
- Wrong number of values for a significant TIFF field
- Value out of range for a significant TIFF field
- Offset values less than the file position of the offset (for a significant TIFF field)

If a TIFF field is not significant for the printer, its Type, Number, and Value are not checked for correctness.

The TIFF specifications (described in *TIFF Revision 6.0*) require TIFF fields to appear in ascending tag order. The D640 printer does not enforce this requirement.

Note

You can use the error report setting on the D640 printer to print a report of TIFF errors within a print job. See the *User Manual* for more information.

TIFF Structure and Fields

This section includes a full list of baseline and extended TIFF fields with comments on their interpretation by the D640 printer.

The following conventions are used to describe the TIFF fields.

- Fields marked with * are significant for the processing of image data by the printer.
- Fields marked with ** have no default value. These fields are mandatory. If any of these fields are missing from the TIFF data, an error occurs.
- The first line of the TIFF definition lists the name of the field. The second line provides the tag number in hex, the type of values, and the number values for the field. For example:

Name
Tag,Type,N

- Comments about the field are listed to the right of the field name.

Baseline TIFF

The following is a list of extended TIFF fields which are accepted by the D640 printer.

Table 8 Baseline TIFF Definitions

Structure

- Image File Header* Bytes 0-1 in the file can be either \$4949 indicating little-endian data format (Intel standard) or \$4D4D indicating big-endian data format (Motorola standard).
- Multiple IFDs* The D640 printer can read multiple IFDs and process multiple images. Each image is printed on a separate page.

Baseline fields

- Artist* Person who created the image.
013B,ASCII

Table 8 Baseline TIFF Definitions

<i>* BitsPerSample</i> <i>0102,Short,N</i>	Numbers of bits for individual color components. The D640 printer is monochrome. Therefore, N=1, and the value itself must be 1. Default = 1.
<i>CellLength</i> <i>0109,Short,1</i>	The length of the dithering or halftoning matrix used to create a dithered or halftoned bi-level file. The printer does not generate its own halftoning.
<i>CellWidth</i> <i>0108,Short,1</i>	The width of the dithering or halftoning matrix used to create a dithered or halftoned bi-level file.
<i>ColorMap</i> <i>0140,Short,3*2^bps</i>	A Red-Green-Blue color map for palette color images.
<i>* Compression</i> <i>0103,Short,1</i>	Compression scheme used for the image data. The following compression modes are supported by the D640 printer:

baseline TIFF

- 1 = No compression. Data packed tightly into bytes, but not spanning row boundaries. This is the default.
- 2 = CCCIT Group 3, 1-dimensional, modified Huffman run-length encoding.
- 32773 = PackBits compression. A byte-oriented, run-length encoding scheme.

extended TIFF

- 3 = T4-encoding (Group 3, 2-dimensional). CCITT T.4 bi-level encoding (Geneva: 1988).
- 4 = T6-encoding (Group 4). CCITT T.6 bi-level encoding (Geneva: 1988).

Copyright
8298,ASCII Copyright notice.

DateTime
0132,ASCII,20 Date and time in the following format: YYYY:MM:DD HH:MM:SS
A null (binary zero) terminates the string.

Table 8 Baseline TIFF Definitions

<i>ExtraSamples</i> <i>0152,Short,m</i>	Description of extra components.
<i>* FillOrder</i> <i>010A,Short,1</i>	The logical order of bits within a byte. Default =1 For value 1, pixels with low column values are stored in high-order bits of the byte. The most significant bit in a byte is the earliest in the raster line for uncompressed data as well as the earliest in compression code for compressed data. For value 2, pixels with low column values are stored in low-order bits of the byte. Both values are supported, but Hewlett-Packard recommends using FillOrder=1 for performance.
<i>FreeByteCounts</i> <i>0121,Long,1</i>	For each string of contiguous unused bytes in a TIFF file, the number of bytes in the string. The presence of unused bytes is not recommended.
<i>FreeOffsets</i> <i>0120,Long,1</i>	For each string of contiguous unused bytes in a TIFF file, the byte offset of the string.
<i>GrayResponseCurve</i> <i>0123,Short,2^bps</i>	For grayscale data, the optical density of each possible pixel value.
<i>GrayResponseUnit</i> <i>0122,Short,1</i>	The precision of the information contained in the GrayResponseCurve.
<i>HostComputer</i> <i>013C,ASCII</i>	The computer and/or operating system used to create the image.
<i>ImageDescription</i> <i>010E,ASCII</i>	A string that describes the subject of the image.
<i>** ImageLength</i> <i>0101,Short/Long,1</i>	The number of rows of pixels in the image.
<i>** ImageWidth</i> <i>0100,Short/Long,1</i>	The number of columns in the image (pixels per row).

Table 8 Baseline TIFF Definitions

Make The scanner manufacturer.
010F,ASCII

MaxSampleValue The maximum component value used.
0119,Short,Sampl/Pix

MinSampleValue The minimum component value used.
0118,Short,Samp/Pix

Model The scanner model name and number.
0110,ASCII

* *NewSubfileType* A general indication of the kind of data contained in this sub-file.
 00FE,Long,1

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---	---	---	---	---	---	---	---

Red = 1 Reduced-version of another image in the same file.

MP = 1 Page of multi-page document.

Tr = 1 Transparency mask of another image in the same file.

If either Red or Tr is set, the image is ignored by the printer.

Default = 0.

Table 8 Baseline TIFF Definitions

** Orientation* The orientation of the image with respect to the rows and columns.
0112,Short,1 Default = 1.



1 0th row is the visual top and 0th column is the visual left of the image.



2 0th row is the visual top and 0th column is the visual right of the image.



3 0th row is the visual bottom and 0th column is the visual right of the image.



4 0th row is the visual bottom and 0th column is the visual left of the image.



5 0th row is the visual left and 0th column is the visual top of the image.



6 0th row is the visual right and 0th column is the visual top of the image.



7 0th row is the visual right and 0th column is the visual bottom of the image.



8 0th row is the visual left and 0th column is the visual bottom of the image.

*** PhotometricInterpretation* The color space of the image data. Only the two values below are accepted.
0106,Short,1

- 0 WhiteIsZero: 0 is imaged as white, 1 is imaged as black.
- 1 BlackIsZero: 0 is imaged as black, 1 is imaged as white.

PlanarConfiguration How the components of each pixel are stored.
011C,Short,1

** ResolutionUnit* The unit of measurement for XResolution and YResolution.
0128,Short,1 Default = 2.

- 1 No absolute unit of measurement.
- 2 Inch
- 3 Centimeter

Table 8 Baseline TIFF Definitions

<i>* RowsPerStrip</i> <i>0116,Short/Long,1</i>	The number of rows per strip. The default is the value given by ImageLength resulting in a single-strip image. Image data may be broken into a number of strips or bands. However, for the D640 printer, single strips are preferable. The value of RowsPerStrip together with the value of ImageLength determines the number of strips in the image: $\text{StripsPerImage} = \text{ImageLength} / \text{RowsPerStrip} \text{ (rounded up)}$ Default = ImageLength (single strip).
<i>*SamplesPerPixel</i> <i>0115,Short,1</i>	The number of components per pixel. Any value other than 1 is treated as an error. Default = 1.
<i>Software</i> <i>0131,ASCII</i>	Name and version number of the software package used to create the image.
<i>** StripByteCounts</i> <i>0117,Short/Long,StripsPerImage</i>	For each strip, the number of bytes in the strip after compression. This field is mandatory, except for uncompressed data, where it can be computed from ImageWidth and RowsPerStrip.
<i>** StripOffsets</i> <i>0111,Short/Long,StripsPerImage</i>	For each strip, the byte offset of that strip. As with other offsets, the offsets are specified with respect to the beginning of the TIFF file. For the D640 printer, HP recommends, they be in ascending sequence and do not have a value less than the file position of the offset.
<i>SubfileType</i> <i>00FF,Short,1</i>	An indication of the kind of data contained in this sub-file. Recognized but not used (obsolete).
<i>Thresholding</i> <i>0107,Short,1</i>	For black and white TIFF files that represent shades of gray, the technique used to convert gray to black and white pixels.

Table 8 Baseline TIFF Definitions

**** XResolution**
011A,Rational,1

The number of pixels per ResolutionUnit in the horizontal (ImageWidth) direction.

If the resolution specified is not the same as the currently selected printer resolution (200, 300, or 600 dpi), the image data may be scaled in the horizontal direction by the ratio of printer resolution to specified resolution.

For Group 3 and Group 4 compression modes (compression = 2, 3, or 4), scaling is performed for all ratios, whether scaling up (expanding the data) or scaling down (reducing the data).

For uncompressed data (compression = 1) or PackBits compression (compression = 32773), scaling down is not performed, and scaling up is confined to ratios 2, 3, 4, 6 and 8. Other ratios are treated as the nearest lower ratio. Ratios less than 2 are treated as 1 (no scaling).

**** YResolution**
011B,Rational,1

The number of pixels per ResolutionUnit in the vertical (ImageLength) direction.

If the resolution specified is not the same as the currently-selected printer resolution (200, 300, or 600 dpi), the image data is scaled in the vertical direction as described above for XResolution.

Extended TIFF

The following is a list of extended TIFF fields which are accepted by the D640 printer. The additional compression modes 3 and 4 are listed in the Baseline TIFF section on page 26.

Table 9 Extended TIFF Definitions

T4Options A vector of 32 flag bits which set parameters for T4-encoding.
0124,Long,1 Unused bits must be 0. Default =0.

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	---	---	---	---	---	---	---	---	---	---

2D = 0 1-dimensional coding is used.

2D = 1 2-dimensional coding is used. If more than one strip is specified, each strip must begin with a 1-dimensionally coded line.

Unc = 0 Uncompressed mode is not allowed.

Unc = 1 Uncompressed mode is allowed.

The D640 printer does not support uncompressed mode within compressed data. Setting of this bit is treated as an error.

Fill = 0 No fill bits.

Fill = 1 Fill bits have been added as necessary before EOL codes such that EOL always ends on a byte boundary.

T6Options A vector of 32 flag bits which set parameters for T6-encoding.
0125.Long,1 Unused bits must be 0.

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Unc	0
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		

Unc = 0 Uncompressed mode is not allowed.

Unc = 1 Uncompressed mode is allowed.

The D640 printer does not support uncompressed mode within compressed data. Setting of this bit is treated as an error.
Default = 0.

DocumentName The name of the document from which the image was scanned.
010D.ASCII.1

Table 9 Extended TIFF Definitions

<i>PageName</i> <i>011D,ASCII,1</i>	The name of the page from which the image was scanned.
<i>PageNumber</i> <i>0129,Short,2</i>	The page number of the page from which the image was scanned. PageNumber_0 is the page number, with the first page numbered 0. PageNumber_1 is the total number of pages in the document. If PageNumber_1=0, the total number of pages in the document is not available.
<i>* XPosition</i> <i>011E,Rational,1</i>	X offset in ResolutionUnits of the left side of the image (with respect to the left side of the page). Honored only when within the physical page.
<i>* YPosition</i> <i>011F,Rational,1</i>	Y offset in ResolutionUnits of the top of the image (with respect to the top of the page). Honored only when within the physical page.

Unsupported Functions

The D640 printer does not support:

- Grayscale images
- Palette-color images
- RGB full-color images
- Tiled images
- CMYK images
- HalfTone hints
- Alpha data handling
- Data sample format
- RGB image colorimetry
- YC_bC_r images
- JPEG compression
- CIE L*a*b* images

Introducing PCL Compression Method 10

The PCL Compression Method command (<ESC>*b#M) determines how raster data is interpreted for the Transfer Raster Data by Row/Block command (<ESC>*b#W). The selected compression method stays in effect until explicitly changed by another PCL Compression Method command (<ESC>*b#M) or until it is reset by an End Raster Data command (<ESC>*rC).

See table below for a list of compression methods.

Table 10 List of Compression Methods

0	Uncompressed (row-based)
1	Run-length encoding (row-based)
2	TIFF rev 4.0 "PackBits" encoding (row-based)
3	Delta row encoding (row-based)
4	Unencoded (block-based)
5	Adaptive encoding (block-based)
6	CCITT G3 one-dimensional encoding (block-based)
7	CCITT G3 two-dimensional encoding (block-based)
8	CCITT G4 encoding (block-based)
10	Tagged Image File Format (TIFF) rev 6.0 (block-based)

PCL Compression Method 10 is useful when you have a monochrome graphic you want to include as an illustration on a page with PCL text. The actual format of accepted data is described in "TIFF Structure and Fields" on page 25.

To include an illustration, transfer the entire TIFF file as a block, including the header. For example, if the TIFF file is 23,476 bytes in size, the raster transfer command would be <ESC>*b23476W.

The TIFF file can be little-endian (from a PC) or big-endian (from HP-UX).

Note

Only the first image from the TIFF data is printed, any others will be ignored.

The image is rendered as the TIFF file describes it, and then the image is clipped (not scaled) to the boundaries specified by the PCL commands for raster width and height. Further, the image will be treated just as any other PCL raster image when used with the Transparency Modes.

Transparency mode with TIFF

The D640 printer enables you to fill images and characters with any of the printer's predefined (or user-defined) shading or cross-hatch patterns and apply them to a destination TIFF image.

The following illustrations shows the effects of the source and pattern transparency modes on the final image.

Table 11 Effect of transparency mode on images

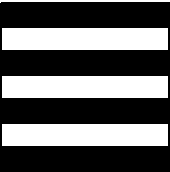
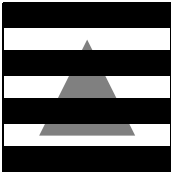
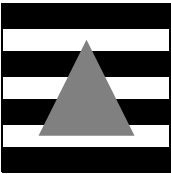
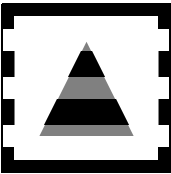
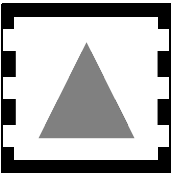
Images and patterns	Transparency mode settings	Results
 Pattern  Source  Destination	Source Transparency Mode = 0 (transparent) Pattern Transparency Mode = 0 (transparent)	
	Source Transparency Mode = 0 (transparent) Pattern Transparency Mode = 1 (opaque)	
	Source Transparency Mode = 1 (opaque) Pattern Transparency Mode = 0 (transparent)	
	Source Transparency Mode = 1 (opaque) Pattern Transparency Mode = 1 (opaque)	

Table 12 Effect of transparency mode on text, raster images, and area fill

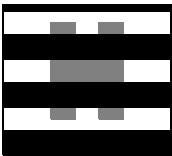
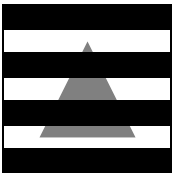
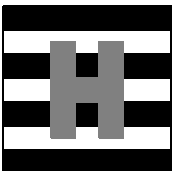
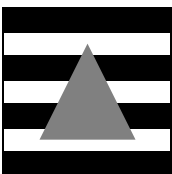
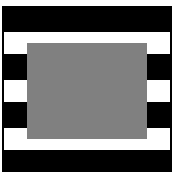
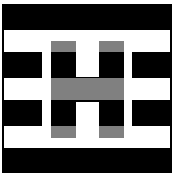
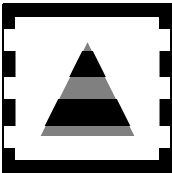
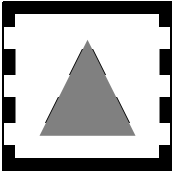
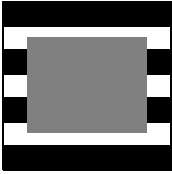
Source images	Transparency mode settings	Results
 Scaled Text  Raster  Area fill	Source Transparency Mode = 0 (transparent) Pattern Transparency Mode = 0 (transparent)	
		
		
	Source Transparency Mode = 0 (transparent) Pattern Transparency Mode = 1 (opaque)	
		
		

Table 12 Effect of transparency mode on text, raster images, and area fill

Source images	Transparency mode settings	Results
 Scaled Text  Raster  Area fill	Source Transparency Mode = 1 (opaque) Pattern Transparency Mode = 0 (transparent)	  
	Source Transparency Mode = 1 (opaque) Pattern Transparency Mode = 1 (opaque)	  

Example of PCL compression method 10

Step 1 To fill an image, use the following commands to output the destination TIFF data.

<ESC>&f0S	Push cursor (optional)
<ESC>*v0T	Current pattern is black
<ESC>*r#F	Raster graphics presentation mode 0 = print direction 3 = along width of page
<ESC>*t#R	Raster graphics resolution in dots per inch (75, 100, 150, 200, 300, or 600)
<ESC>*r#T	TIFF height in raster dots. Dot size is derived from the <ESC>*r#R command. # = number of units
<ESC>*r#S	TIFF width in raster units # = number of units
<ESC>*b10M	Compression method 10 (entire TIFF data follows, TIFF header and all data)
<ESC>*r#A	Start raster graphics # = mode
<ESC>*b#W	Transfer TIFF data by block <i>Important:</i> # = the size of the TIFF file in bytes
<copy TIFF data>	Fill in with TIFF data
<ESC>*rC	Exit raster mode
<ESC>&f1S	Pop cursor (optional, use with push cursor)

Step 2 Set the source transparency mode.

<ESC>*v#N

Step 3 Output the source raster data or text.

<ESC>*v#T Sets the current pattern (optional)

<include user raster_data or text>

Step 4 Reset the cursor and pattern.

<ESC>*v0T Sets the current pattern to
Black (optional)

<ESC>&f1S Pop cursor (optional)

4

Using the Printer's Hard Disk

Data Directories

The D640 contains an internal 1.2GB hard disk drive. It is pre-loaded with about 80 MB of files. This leaves over 1.1 GB available for the users.

The D640 has a set of disk and file operation commands that are compatible with similar commands on other LaserJet products. With these commands, you can download files containing fonts, macros, symbol-sets, or complete jobs. Refer to "Commands to Read/Write to Hard Disk" on page 43 for a detailed reference to these commands.

Printer Data Directories

The pre-loaded files on the hard disk are arranged in these directories.

USER_ADJ*	User adjustment files called out in the D640 User Manual
MAINT*	Maintenance tools and data for service purposes.
FONT*	Factory provided fonts for virtual font cartridges.

User Data Directories

These are preassigned user directories for your downloaded files.

\PCL5\USER*	User downloaded fonts, macros, softpatterns, and jobs.
\CRT*	Cartridge Definition (.CRT) files.
\PS\USER*	User downloaded PostScript related files.

File System Conventions

The D640 printer now includes the following file system conventions.

Long Filenames

The file system for the D640 printer supports a long filename convention similar (but not identical) to long filenames in MS Windows.

Long filenames can include any combination of the following:

- name stems longer than 8 characters (for example, `Longername.ext`)
- extensions longer than 3 characters (for example, `name.grp1`)
- names containing more than one extension or dot "." (for example, `name.rev21.tif`)
- names containing special characters (for example, `name:new.user` or `?name.+`)

Before you create files with long names, consider the following:

- HP strongly recommends that characters used in filenames be confined to the ASCII printing set – excluding characters used as punctuation symbols or wildcards.

The following printing characters are excluded in DOS and MS Windows:

Operating system	Excluded Characters
DOS	. " / \ [] : ; = , ? * + < >
Windows 95 or NT	" / \ : ? * < >

The D640 filing system does not enforce these restrictions. However, you may encounter problems when protocol commands refer to filenames with excluded characters.

- Files and directories with long filenames have an additional abbreviated name which is DOS-compatible (8.3 characters). In any context, files and directories may be specified by either the long name or the abbreviated name.
- The limit on a file or directory name (including all extensions) is 100 characters.
- There is an absolute upper limit of 255 characters on a complete pathname (including drive specifier).

- Other practical constraints, such as the size of fields on the printer's control panel and in directory listings, should also be considered.
- In terms of storage space and file access speed, long filenames are significantly less efficient than standard names.

Lowercase in Filenames

The D640 printer supports filenames that include both lowercase and uppercase letters. Filenames are no longer converted to uppercase.

As with MS Windows, case is not significant for matching names. Two strings which differ only in case are considered to be the same name. (For example, name .ext and NaME .Ext).

This rule applies to both standard and long filenames.

Default Drive

The default drive is now the printer's internal hard disk, C: (HDD), instead of the printer's floppy disk, A: (FDD).

However, this default should not be assumed. A drive specifier should always be included to indicate the internal hard drive. Otherwise, this might lead to incompatibility between printer protocol sent across the network and printer protocol executed from disk.

Commands to Read/Write to Hard Disk

You can read, write, and delete files on the printer's hard disk with PJI commands. Reading from mass storage is different for each emulation/personality.

Note

Currently, there are no security features built into the hard disk filing system. HP does not recommend storing sensitive files on the internal hard disk.

- Files may contain fonts, macros, symbol-sets, user-defined patterns, or ordinary print data.
- File names can contain up to 100 characters. See "File System Conventions" on page 42 for a detailed description.

- Some file extensions have special meaning on the printer. These include:

.HPG	HP GL2 file
.CRT	Cartridge definition file
.PCL	PCL file
.PS	PostScript file
.SFS	PCL Softfont in Intellifont form
.SFT	PCL Softfont in True Type form

Initialize

This command initializes a floppy diskette for use with the D640. Diskettes must already be formatted on the PC in IBM-PC compatible format.

```
@PJL FSINIT VOLUME = "volume name" <LF>
```

If a password has been set, it must have been given prior to issuing this command.

Make Directory on Disk

This command creates a new directory on the floppy diskette.

```
@PJL FSMKDIR NAME="pathname"<LF>
```

where pathname is a fully-qualified pathname.

For example:

```
@PJL FSMKDIR NAME= "C:\PCL5\USER\ACME" <LF>
```

- Only one subdirectory can be created at a time, starting at the highest level in the tree.
- Creating a directory doesn't make it your current working directory.

Store a PCL Print File on the Internal Hard Disk

This command stores a file on the printer's internal hard disk.

```
@PJL FSDOWNLOAD FORMAT:BINARY SIZE=<integer>
```

```
NAME="pathname"<EOL>
```

```
binary data<UEL>
```

All keywords must be supplied correctly. Thus an <ESC>E or <UEL> out of place is invalid (and does a reset).

White space may be present on either side of the = sign.

SIZE=integer

Integer is the number of bytes of binary data, expressed as ASCII digits.

Integer is an integer in the range of 2 to max-signed-int.

NAME="pathname"

Quotes are required to delimit pathname.

The pathname consists of a path (c:\pcl5\...) and a filename.

The pathname must be valid for the file to be stored. Follow DOS conventions and use .PCL for the extension.

- If a file exists already with the same name the user gives, and it is not a "delete-protected" file, the old file is overwritten.
- If the data stream gets cut off before the operation completes, then no file is created, and if there was a file of the same name it may no longer exist; an error could be returned.
- The <EOL> is required to indicate that the PJL command ends here and binary data starts in the following byte.
- The <UEL> is consumed by the FSDOWNLOAD command; it is not a job boundary, and it is not counted in the SIZE=integer count.

- The contents of binary data are not checked by the printer. It is up to you to send valid data. Binary data can contain any number of <UEL> and or <EOL> chars; they are not a job boundary during FSDOWNLOAD. If the data does contain <UEL> or <EOL> and SIZE is not specified correctly, the binary data is parsed as PJJ commands (which might not be desirable). You must make sure the SIZE is given correctly for the accompanying data stream. If the SIZE has been given correctly and there is more binary data supplied, the excess data is ignored. The next PJJ command starts after the first <UEL> command following the binary data.
- Once a file is stored on disk, it is available to all subsequent jobs for re-use.

Note

Do not store a font or macro with a PCL ID number embedded in it. The ID number should be assigned by the job stream when it retrieves the macro from disk.

Recommended Contents of Binary Data

Font PCL soft font format, starting with <ESC>)s#W. It is up to the application to download fonts using the header format appropriate to the D640.

Macro PCL macro, starting with <ESC>&f0X (start macro) and ending with <ESC>&f1X (stop macro). The printer will not append these PCL commands to the data stream.

Symbol-set A user defined symbol set, starting with <ESC>*c#R (symbol set ID Code). Although this is the recommendation, the ID Code could be defined in the job, which would mean that the data should start with <ESC>(f#W (define symbol set).

Soft pattern A user defined pattern, starting with <ESC>*c#W (user defined pattern).

Delete a File From Disk

This command removes a file from the printer's hard disk.

```
@PJJ FSDELETE NAME="pathname" <EOL>
```

Some notes about this command include:

- White space can be present around the equal sign.
- Quotes must be provided to delimit pathname.
- The pathname is full pathname. No default.
- If the file is a "delete-protected" file, it is not deleted.

Using a Disk File in a PCL Job

The Alphanumeric ID command reads a file stored on the hard disk or floppy disk. With this command, the D640 reads the file into memory and treats this information as if it was part of the original print job. The result is similar to an “include” statement in a high-level programming language.

The D640 does not do any special processing of the file, see “Recommended Contents of Binary Data” on page 46.

The format of the Alphanumeric ID command is as follows:

```
<ESC> & n # W [ file identification data ]
```

The number of bytes of data that follow the capital W. A value must be supplied.

[file identification data]

Byte	Content
1	Operation Byte (UB)
2 ... #	File Identifier Name (ASCxx)

Operation Byte (UB) – The Operation Byte is an unsigned byte, which may have a value 0 through 5. The LaserJet family of printers uses this byte to indicate whether the file contents are treated as a font or as a macro. The D640 does not use this byte, but requires the value to be within the range specified. (The values 0 to 5 are control codes <SOH>, <STX>, <ETX>, <EOT>, and <ENQ>.)

File Identifier Name (ASCxx) – The File Identifier Name is ASCII data. The D640 requires the full pathname of the file, including the volume name. Files and directories can contain the letters A..Z, a..z, and the numerals 0..9. For example: C:\PCL5\USER\MyFile.pcl. Do not use quotation marks around the filename.

Volume	Physical Device
c: or C:	The internal hard drive
a: or A:	The floppy drive

The PCL commands to manage fonts, macros, patterns, and symbol sets only act on objects in memory. The disk file can be removed only with the @PJL FSDELETE command.

In the examples below, <LF> is a line feed, <CR> is carriage return, <ESC> is the Escape character, and → means that the line is continued.

Example 1:

Storing a Macro on Disk and Using it in a Print Job

Step 1 Write the macro to the hard disk. For example:

```
<ESC>%-12345X@PJL JOB NAME = "Simple Macro"<LF>
<ESC>%-12345X@PJL FSDOWNLOAD FORMAT:BINARY SIZE=30→
NAME = "C:\PCL5\USER\Macro"<LF>
<ESC>&f0XThis is a test line.<ESC>&f1X<ESC>%-12345X→
<ESC>%-12345X@PJL E0J NAME = "Simple Macro"<LF>
```

Step 2 Use the macro in a print job. For example:

```
<ESC>%-12345X@PJL JOB NAME = "Use Simple Macro"<LF>
<ESC>%-12345X@PJL ENTER LANGUAGE = PCL<LF>
<ESC>E<ESC>&f95Y<ESC>&n19W<0x04>c:\PCL5\USER\Macro→
<ESC>&f9XCall the macro:<ESC>&f95y3X:After the macro→
<ESC>E →
<ESC>%-12345X@PJL E0J NAME = "Use Simple Macro"<LF>
```

The printed result will be:

Call the macro:This is a test line.:After the macro

Step 3 Delete the macro from the disk. For example:

```
<ESC>%-12345X@PJL JOB NAME = "Cleanup"<LF>
<ESC>%-12345X@PJL FSDELETE→
NAME = "c:\PCL5\USER\Macro"<LF>
<ESC>%-12345X@PJL E0J NAME = "Cleanup"<LF>
```

Example 2: Creating a Virtual Font Cartridge

Suppose you have several PCL soft fonts you want to include in a virtual font cartridge on the D640 printer. The PCL soft font files are:

Filename	Size (in bytes)
bc120r04.sfp	46448
cr100i12.pcp	27136
fuj00m8o.sfs	10090
ggi00pmo.sfs	56469
lp085r16.pmp	18688

To create a virtual font cartridge:

- Step 1 Create a directory on the printer's hard disk and place the font files in that directory.
- Step 2 Create a cartridge definition file and place it in the C:\CRT directory on the printer's hard disk.
- Step 3 Cycle power on the printer to make the new cartridge available for selection.

Example:

```
<ESC>%-12345X@PJL<LF>
<ESC>%-12345X@PJL JOB NAME="ACMET00L"<LF>
<ESC>%-12345X@PJL RDYMSG DISPLAY="Writing ACMET00L Fonts"<LF>
<ESC>%-12345X@PJL USTATUS DEVICE=VERBOSE<LF>
<ESC>%-12345X@PJL FSMKDIR NAME="C:\PCL5\USER\ACME"<LF>
<ESC>%-12345X@PJL FSDOWNLOAD FORMAT:BINARY SIZE=46448→
NAME="C:\PCL5\USER\ACME\bc120r04.sfp"<LF>
< copy the contents of bc120r04.sfp here ><ESC>%-12345X→
<ESC>%-12345X@PJL FSDOWNLOAD FORMAT:BINARY SIZE=27136→
NAME="C:\PCL5\USER\ACME\cr100i12.pcp"<LF>
< copy the contents of cr100i12.pcp here ><ESC>%-12345X→
<ESC>%-12345X@PJL FSDOWNLOAD FORMAT:BINARY SIZE=10090→
NAME="C:\PCL5\USER\ACME\fuj00m8o.sfs"<LF>
< copy the contents of fuj00m8o.sfs here ><ESC>%-12345X→
<ESC>%-12345X@PJL FSDOWNLOAD FORMAT:BINARY SIZE=56469→
NAME="C:\PCL5\USER\ACME\ggi00pmo.sfs"<LF>
< copy the contents of ggi00pmo.sfs here ><ESC>%-12345X→
<ESC>%-12345X@PJL FSDOWNLOAD FORMAT:BINARY SIZE=18688→
NAME="C:\PCL5\USER\ACME\lp085r16.pmp."<LF>
```

```

< copy the contents of lp085r16.pmp here ><ESC>%-12345X→
<ESC>%-12345X@PJL  FSDOWNLOAD  FORMAT:BINARY  SIZE=215→
      NAME="C:\CRT\ACMET00L.CRT"<LF>
<ESC>Z.FILE.FONT  \PCL5\USER\ACME\bc120r04.sfp<CR><LF>
<ESC>Z.FILE.FONT  \PCL5\USER\ACME\cr100i12.pcp<CR><LF>
<ESC>Z.FILE.FONT  \PCL5\USER\ACME\fuj00m8o.sfs<CR><LF>
<ESC>Z.FILE.FONT  \PCL5\USER\ACME\ggi00pmo.sfs<CR><LF>
<ESC>Z.FILE.FONT  \PCL5\USER\ACME\lp085r16.pmp<CR><LF>
<ESC>%-12345X→
<ESC>%-12345X@PJL  RDYMSG→
      DISPLAY="Press buttons 1,3,5 for 2 seconds"<LF>
<ESC>%-12345X@PJL  E0J  NAME="ACMET00L"<LF>
<ESC>%-12345X

```


Utilities

The following is a list of utilities included with the D640 function code. These utilities are located on your printer's hard disk in the C:\Maint\Util directory. Use these utilities only when directed by your support representative.

Table 13 List of Utilities

Name	Description
LASERSET.xx	For support use only.
ALL_EDGE.xx	Shows edge-to-edge printing capability for the selected media source.
FILECHK.PCL	Searches the hard disk and lists any duplicate files found in the same directory. Files with names that differ only by case are considered duplicates (for example, Font2a.TIF and FONT2A.TIF). This utility is useful for locating files that cannot be recognized by the printer's new file system.
CAPTURE.100	Sets a 100-Mbyte limit for capturing files on the printer's hard disk. This is the default for a captured file. (For more information on capturing files, see the <i>User Manual</i> .)
CAPTURE.1_4	Sets a 1.4-Mbyte limit for capturing files on the printer's hard disk. This utility is useful for creating small capture files to copy to the printer's floppy disk.
CAPTURE.C2A	Copies all captured files (*.dat) from the printer's hard disk to the floppy disk. No more than 1.4 Mbytes can be copied to the floppy disk. Insert a blank, formatted floppy disk before selecting.
EVENTLOG.C2A	Performs the following sequence: • prints a Maintenance Report • updates the eventlog.pcl file on the printer's hard disk • copies the file to the floppy disk. The eventlog.pcl file is a plain-text file located in the C:\MAINT directory. The file contains an ongoing record of printer events. Insert a blank, formatted floppy disk before selecting.
Reports & Eventlog.C2A	A utility that: • prints a Setup and Maintenance Report • copies a print file of the Setup Report and the Maintenance Report to floppy disk • copies the eventlog.pcl file to floppy disk. This utility is useful for sending complete information to your service provider. Insert a blank, formatted floppy disk before selecting.

5 Control Codes

This chapter includes charts that compare control codes for the D640 printer with control codes for other LaserJet printers. For further details on PCL and PJP control codes, see the following manuals:

- *PCL 5 Printer Language Technical Reference Manual*
- *Printer Job Language Technical Reference Manual*
- *PCL 5 Comparison Guide*
- *Printer Language Technical Quick Reference Guide*

All are available as part of the *PCL/PJP Technical Reference Library*, HP part number 5021-0330.

PCL Comparison

General rules about these charts include:

1. Where only a number symbol (#) is shown, and no specific values are given, all values defined in Reference 2 are supported.
2. Where specific values are shown, the various printers support only the values shown.
3. A “Y” value means the command is supported, followed by (default value).
4. A “No” value means the command is not supported.
5. Color commands are not included in this document.
6. Commands supported only by DeskJet series printers are not shown in this document.

Table 14 Miscellaneous

Function	Command	4Si	4MV	D640
Configuration (Apple Talk)	<ESC>&b#W[data]	Y	Y	No

Table 15 Job Control

Function	Command	4Si	4MV	D640
Universal Exit Language/ Start of PJL (UEL)	<ESC>%-12345X	Y	Y	Y
Reset	<ESC>E	Y	Y	Y
Number of Copies	<ESC>&l#X	Y	Y	Y
Simplex/Duplex	<ESC>&l#S	Y	No	Y
Left (Long-Edge) Offset Registration	<ESC>&l#U	Y	Y	Y
Top (Short Edge) Offset Registration	<ESC>&l#Z	Y	Y	Y
Unit of Measure	<ESC>&u#D	Y	Y	Y

Table 16 Page Control

Function	Command	4Si	4MV	D640	Comments
Page (Job) Size	<ESC>&l#A				
Executive (1)		Y	Y	Y	
Letter (2)		Y	Y	Y	
Legal (3)		Y	Y	Y	
Ledger (6)		No	Y	Y	
Ledger (11)				No	
A4 (26)		Y	Y	Y	
A3 (27)		No	Y	Y	
JIS B5 Paper (45)		No	Y	Y	
JIS B4 Paper (46)		No	Y	Y	
Monarch Envelope (80)		Y	Y	No	
Comm. 10 Envelope (81)		Y	Y	No	
Intl. DL Envelope (90)		Y	Y	No	

Table 16 Page Control

Function	Command	4Si	4MV	D640	Comments
Intl. C5 Envelope (91)		No	Y	No	
Intl. B5 Envelope (100)		Y	Y	No	
Custom (101)		No	Y	Y	special tray
Hagaki Postcard (71)		No	Y	No	
Oufuku-Hagaki Postcard (72)		No	Y	No	
Orientation	<ESC>&l#O	Y	Y	Y	
Page Side Selection / Conditional Page Eject	<ESC>&a#G	Y	Y	Y	
Job Separation	<ESC>&l1T	No	No	Y	PJL preferred
Paper Source	<ESC>&l#H				
Eject Page (0)		Y	Y	Y	
Main Paper Source (1)		Y	Y	Y, upper tray	
Manual Feed (2)		Y	Y	No	
Manual Envelope Feed (3)		Y	Y	No	
Alternate Paper Source (4)		Y	Y	Y, middle tray	
Optional Large Source (5)		Y	Y	Y, HCI	
Envelope Feeder (6)		Y	No	No	
Third Source (8)		No	No	Y, lower tray	
Output Bin	<ESC>&l#G				
(1)		Y ^a	No	Y ^a	Use “separate” at operator panel for blank separator sheet. HCO required to do jogging.
(2)		Y ^b	No	Y ^c	HCO is optional equipment
(3)		No	No	Y ^d	HCO is optional equipment
Print Direction	<ESC>&a#P	Y	Y	Y	
Character Text Path Direction	<ESC>&c#T	No	Y	No	
Left Margin	<ESC>&a#L	Y	Y	Y	
Right Margin	<ESC>&a#M	Y	Y	Y	

Table 16 Page Control

Function	Command	4Si	4MV	D640	Comments
Clear Horizontal Margins	<ESC>9	Y	Y	Y	
Top Margin	<ESC>&l#E	Y	Y	Y	
Text Length	<ESC>&l#F	Y	Y	Y	
Perforation Skip	<ESC>&l#L	Y	Y	Y	
Horizontal Motion Index	<ESC>&k#H	Y	Y	Y	
Vertical Motion Index	<ESC>&l#C	Y	Y	Y	
Line Spacing	<ESC>&l#D	Y	Y	Y	

^a Top of the printer, face down

^b Back of printer, face up

^c HCO, face down

^d HCO, face up

Table 17 Cursor Positioning

Function	Command	4Si	4MV	D640
Horizontal Position (column)	<ESC>&a#C	Y	Y	Y
Horizontal Position (dot)	<ESC>*p#X	Y	Y	Y
Horizontal Position (decipoint)	<ESC>&a#H	Y	Y	Y
Vertical Position (row)	<ESC>&a#R	Y	Y	Y
Vertical Position (dot)	<ESC>*p#Y	Y	Y	Y
Vertical Position (decipoint)	<ESC>&a#V	Y	Y	Y
Half Line Feed	<ESC>=	Y	Y	Y
Line Termination	<ESC>&k#G	Y	Y	Y
Push/Pop Position	<ESC>&f#S	Y	Y	Y

Table 18 Font Selection^a

Function	Command	4Si	4MV	D640
Symbol Set	<ESC>(ID	Y	Y	Y
Spacing	<ESC>(s#P	Y	Y	Y
Pitch	<ESC>(s#H	Y	Y	Y
Height	<ESC>(s#V	Y	Y	Y
Style	<ESC>(s#S	Y	Y	Y
Stroke Weight	<ESC>(s#B	Y	Y	Y
Typeface	<ESC>(s#T	Y	Y	Y
Font Selection by ID Number	<ESC>(#X	Y	Y	Y
Select Default Font	<ESC>(3@	Y	Y	Y
Underline Start	<ESC>&d#D	Y	Y	Y
Underline Stop	<ESC>&d@	Y	Y	Y
Transparent Print Data	<ESC>&p#X[data]	Y	Y	Y
Text Parsing Method	<ESC>&t#P	No	Y	No

^a Primary font commands are shown. Use "(" for secondary font.

Table 19 Font Management

Function	Command	4Si	4MV	D640
Assign Font ID Number	<ESC>*c#D	Y	Y	Y
Font Control	<ESC>*c#F	Y	Y	Y

Table 20 User-Defined Symbol Set

Function	Command	4Si	4MV	D640
Symbol Set ID Code	<ESC>*c#R	Y	Y	Y
Define Symbol Set	<ESC>(f#W[data]	Y	Y	Y
Symbol Set Control	<ESC>*c#S	Y	Y	Y

Table 21 Soft Font Creation

Function	Command	4Si	4MV	D640
Font Descriptor	<ESC>)s#W[data]	Y	Y	Y
Softfont header format part of [data]				
PCL Bitmap (0)		Y	Y	Y
Res. Specified Bitmap (20)		Y	Y	Y
Intellifont Bound Scal. (10)		Y	Y	Y
Intellifont Unbound Sca. (11)		Y	Y	Y
TrueType Scalable (15)		Y	Y	Y
Universal Font Header (16)		No	Y	No
Character Code	<ESC>*c#E	Y	Y	Y
Download Character	<ESC>(s#W[data]	Y	Y	Y

Table 22 Macros

Function	Command	4Si	4MV	D640
Macro ID Number	<ESC>&f#Y	Y	Y	Y
Macro Control	<ESC>&f#X			
Start macro (0)		Y	Y	Y
Stop macro (1)		Y	Y	Y
Execute macro (2)		Y	Y	Y
Call macro (3)		Y	Y	Y
Enable for auto overlay (4)		Y	Y	Y
Disable auto overlay (5)		Y	Y	Y
Delete all macros (6)		Y	Y	Y
Delete temporary macros (7)		Y	Y	Y
Delete macro (8)		Y	Y	Y
Make macro temporary (9)		Y	Y	Y
Make macro permanent (10)		Y	Y	Y

Table 23 Print Model Imaging

Function	Command	4Si	4MV	D640
Source Transparency Mode	<ESC>*v#N	Y	Y	Y
Pattern Transparency Mode	<ESC>*v#O	Y	Y	Y
Area Fill ID	<ESC>*c#G	Y	Y	Y
Select Current Pattern	<ESC>*v#T			
Solid black (0)		Y	Y	Y
Solid white (1)		Y	Y	Y
HP shading (2)		Y	Y	Y
Cross-hatch (3)		Y	Y	Y
User-defined (4)		Y	Y	Y
Logical Operation	<ESC>*l#O	No	Y	No
Pixel Placement	<ESC>*l#R	No	Y	No

Table 24 User-Defined Pattern

Function	Command	4Si	4MV	D640
Define Pattern	<ESC>*c#W[data]	Y	Y	Y
Set Pattern Reference Point	<ESC>*p#R	Y	Y	Y
User-defined Pattern Control	<ESC>*c#Q	Y	Y	Y

Table 25 Raster Graphics

Function	Command	4Si	4MV	D640
Resolution (dots per inch)	<ESC>*t#R			
(75)		Y	Y	Y
(100)		Y	Y	Y
(150)		Y	Y	Y
(200)		Y	Y	Y
(300)		Y	Y	Y
(600)		Y	Y	Y
Graphic Presentation Mode	<ESC>*r#F	Y	Y	Y
Raster Height (Source)	<ESC>*r#T	Y	Y	Y
Raster Width (Source)	<ESC>*r#S	Y	Y	Y
Start Raster Graphics at	<ESC>*r#A			
Logical page left limit (0)		Y	Y	Y
CAP (1)		Y	Y	Y
Raster Y offset	<ESC>*b#Y	Y	Y	Y
Set Compression Mode	<ESC>*b#M			
Unencoded (0)		Y	Y	Y
Run-length encoded (1)		Y	Y	Y
TIFF encoded (2)		Y	Y	Y
Delta row encoded (3)		Y	Y	Y
Adaptive compression (5)		Y	Y	Y
fax CCITT G3 1d (6)		No	No	Y
fax CCITT G3 2d (7)		No	No	Y
fax CCITT G4 (8)		No	No	Y
Transfer Raster Row/Block	<ESC>*b#W[data]	Y	Y	Y
End Raster Graphics				
version B	<ESC>*rB	Y	Y	Y
version C	<ESC>*rC	Y	Y	Y

Table 26 Rectangular Area Fill

Function	Command	4Si	4MV	D640
Horizontal Rectangle Size (dots)	<ESC>*c#A	Y	Y	Y
Horizontal Rectangle Size (decipoints)	<ESC>*c#H	Y	Y	Y
Vertical Rectangle Size (dots)	<ESC>*c#B	Y	Y	Y
Vertical Rectangle Size (decipoints)	<ESC>*c#V	Y	Y	Y
Pattern ID (Area Fill ID)	<ESC>*c#G			
1-100 for shading		Y	Y	Y
1-6 for cross-hatch		Y	Y	Y
0-32767 for user-defined		Y	Y	Y
Fill Rectangle Area	<ESC>*c#P			
solid black (0)		Y	Y	Y
solid white/erase (1)		Y	Y	Y
shaded gray (2)		Y	Y	Y
cross-hatch pattern (3)		Y	Y	Y
user-defined pattern (4)		Y	Y	Y
current pattern (5)		Y	Y	Y

Table 27 Status Readback

Function	Command	4Si	4MV	D640
Set Status Readback Location Type	<ESC>*s#T	Y	Y	Y
Set Status Readback Location Unit	<ESC>*s#U	Y	Y	Y
Inquire Status Readback Entity	<ESC>*s#I	Y	Y	Y
Free Space	<ESC>*s1M	Y	Y	Y
Flush All Pages	<ESC>&r#F	Y	Y	Y
Echo	<ESC>*s#X	Y	Y	Y
Obsolete status checking	<ESC>?	No	No	Y

Table 28 Picture Frame (for vector graphics)

Function	Command	4Si	4MV	D640
Picture Frame Horiz. Size	<ESC>*c#X	Y	Y	Y
Picture Frame Vert. Size	<ESC>*c#Y	Y	Y	Y
Set Picture Frame Anchor Pt.	<ESC>*c0T	Y	Y	Y
HP-GL/2 Horiz. Plot Size	<ESC>*c#K	Y	Y	Y
HP-GL/2 Vert. Plot Size	<ESC>*c#L	Y	Y	Y
Enter HP-GL/2 <ESC>%#B				
Previous HP-GL (0)		Y	Y	Y
Current PCL CAP (1)		Y	Y	Y
Enter PCL Mode	<ESC>%#A	Y	Y	Y

Table 29 Programming Hints

Function	Command	4Si	4MV	D640
Display Functions On	<ESC>Y	Y	Y	Y
Display Functions Off	<ESC>Z	Y	Y	Y
End-of-Line Wrap	<ESC>&s#C	Y	Y	Y

HP-GL/2 Graphics (Vector Graphics)

Table 30 Palette Extensions

Function	Command	4Si	4MV	D640
Number of Pens	NP	Y	Y	Y
Transparency Mode	TR	Y	Y	Y
Screened Vectors	SV	Y	Y	Y

Table 31 Vector Group

Function	Command	4Si	4MV	D640
Arc Absolute	AA	Y	Y	Y
Arc Relative	AR	Y	Y	Y
Absolute Arc Three Point	AT	Y	Y	Y
Bezier Absolute	BZ	Y	Y	Y
Bezier Relative	BR	Y	Y	Y
Circle	CI	Y	Y	Y
Plot Absolute	PA	Y	Y	Y
Plot Relative	PR	Y	Y	Y
Pen Down	PD	Y	Y	Y
Pen Up	PU	Y	Y	Y
Relative Arc Three Point	RT	Y	Y	Y
Polyline Encoded	PE	Y	Y	Y

Table 32 Polygon Group

Function	Command	4Si	4MV	D640
Fill Rectangle Absolute	RA	Y	Y	Y
Fill Rectangle Relative	RR	Y	Y	Y
Edge Rectangle Absolute	EA	Y	Y	Y
Edge Rectangle Relative	ER	Y	Y	Y
Fill Wedge	WG	Y	Y	Y
Edge Wedge	EW	Y	Y	Y
Polygon Mode	PM	Y	Y	Y
Fill Polygon	FP	Y	Y	Y
Edge Polygon	EP	Y	Y	Y

Table 33 Character Group

Function	Command	4Si	4MV	D640
Select Standard Font	SS	Y	Y	Y
Select Alternate Font	SA	Y	Y	Y
Absolute Direction	DI	Y	Y	Y
Relative Direction	DR	Y	Y	Y
Absolute Character Size	SI	Y	Y	Y
Relative Character Size	SR	Y	Y	Y
Character Slant	SL	Y	Y	Y
Extra Space	ES	Y	Y	Y
Standard Font Definition	SD	Y	Y	Y
Alternate Font Definition	AD	Y	Y	Y
Character Fill Mode	CF	Y	Y	Y
Label Origin	LO			
1-9/11-19		Y	Y	Y
21		Y	Y	Y
Label	LB	Y	Y	Y
Define Label Terminator	DT	Y	Y	Y
Character Plot	CP	Y	Y	Y
Transparent Data	TD	Y	Y	Y
Define Variable Text Path	DV	Y	Y	Y

Table 34 Line and Fill Attributes Group

Function	Command	4Si	4MV	D640
Line Type	LT	Y	Y	Y
Line Attributes	LA	Y	Y	Y
Pen Width	PW	Y	Y	Y
Pen Width Unit Selection	WU	Y	Y	Y
Select Pen	SP	Y	Y	Y
Symbol Mode	SM	Y	Y	Y
Fill Type	FT			
Odd/Even		Y	Y	Y
Non-Zero Winding		Y	Y	Y
Anchor Corner	AC	Y	Y	Y
Raster Fill Definition	RF	Y	Y	Y
User Defined Line Type	UL	Y	Y	Y

Table 35 Configuration and Status Group

Function	Command	4Si	4MV	D640
Scale	SC	Y	Y	Y
Input Window	IW	Y	Y	Y
Input P1 and P2	IP	Y	Y	Y
Input Relative P1 and P2	IR	Y	Y	Y
Default Values	DF	Y	Y	Y
Initialize	IN	Y	Y	Y
Rotate Coordinate System	RO	Y	Y	Y

Table 36 Technical Graphics Extension

Function	Command	4Si	4MV	D640
Merge Control	MC	No	Y	No
Pixel Placement	PP	No	Y	No

PJL Commands

For further details, refer to the *Printer Job Language Technical Reference Manual*.

Table 37 PJL

Function	4Si	4MV	D640	Comments
PJL	Y	Y	Y	@PJL<LF>

Table 38 Kernel Commands

Function	4Si	4MV	D640
UEL	Y	Y	Y
COMMENT	Y	Y	Y
ENTER LANGUAGE=PCL	Y	Y	Y
ENTER LANGUAGE=POSTSCRIPT	Y	Y	Y

Table 39 Job Separation Commands

Function	4Si	4MV	D640
JOB	Y	Y	Y
(optional) NAME=“ <i>job name</i> ”	Y	Y	Y
(optional) START= <i>first page</i>	Y	Y	Y
(optional) END= <i>last page</i>	Y	Y	Y
(optional) PASSWORD= <i>number</i>	Y	Y	Y
EOJ	Y	Y	Y
(optional) NAME=“ <i>job name</i> ”	Y	Y	Y

Table 40 Environment Commands

Function	4Si	4MV	D640
DEFAULT	Y	Y	Y
(optional) LPARM: <i>personality</i>	Y	Y	Y
SET	Y	Y	Y
(optional) LPARM: <i>personality</i>	Y	Y	Y
INITIALIZE	Y	Y	Y ^a
RESET	Y	Y	Y

^a PjL INITIALIZE on the D640 will leave the following settings unchanged: INTRAY1SIZE, INTRAY2SIZE, INTRAY3SIZE, INTRAY4SIZE (PjL variables and operator panel settings), DENSITY (PjL variable and operator panel setting), operator panel settings for paper tray alignment with the print engine.

Table 41 Status Readback Commands

Function	4Si	4MV	D640	Comments
INQUIRE	Y	Y	Y	
(optional) LPARM: <i>personality</i>	Y	Y	Y	
DINQUIRE	Y	Y	Y	
(optional) LPARM: <i>personality</i>	Y	Y	Y	
ECHO	Y	Y	Y	
INFO ID	Y	Y	Y	HP5000/D640
INFO CONFIG	Y	Y	Y	
INFO MEMORY	Y	Y	Y	
INFO PAGECOUNT	Y	Y	Y	
INFO STATUS	Y	Y	Y	
INFO VARIABLES	Y	Y	Y	
INFO USTATUS	Y	Y	Y	
USTATUS DEVICE=ON	Y	Y	Y	
USTATUS DEVICE=VERBOSE	Y	Y	Y	
USTATUS DEVICE=OFF	Y	Y	Y	
USTATUS JOB=ON	Y	Y	Y	
USTATUS JOB=OFF	Y	Y	Y	

Table 41 Status Readback Commands

Function	4Si	4MV	D640	Comments
USTATUS PAGE=ON	Y	Y	Y	
USTATUS PAGE=OFF	Y	Y	Y	
USTATUS TIMED=5 to 300	Y	Y	Y	seconds
USTATUS TIMED=0	Y	Y	Y	
USTATUSOFF	Y	Y	Y	

Table 42 Device Attendance Commands

Function	4Si	4MV	D640
RDYMSG	Y	Y	Y*
OPMSG	Y	Y	Y*
STMSG	Y	Y	No
* The Display text will be mapped according to a special symbol set, designated "REPORT 2Q", which provides all the symbols needed to display a variety of languages. To see the mapping for symbol set 2Q, which is unique to the D640 printer, select symbol set 2Q at the operator panel and then print a "table" listing. This listing is reproduced in "D640 Operator Panel Symbol Set 02Q" on page 69.			

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0			0	@	P	'	p	Õ	õ	Ø	ø	Ó	Ð	ó	ð	
1			!	1	A	Q	a	q	À	à	À	à	Á	Á	á	á
2			"	2	B	R	b	r	Ã	ã	ñ	ñ	Â	Â	â	â
3			#	3	C	S	c	s	Ä	ä	Ł	ł	Å	Å	å	å
4			\$	4	D	T	d	t	Æ	æ	Œ	œ	Ä	Ä	ä	ä
5			%	5	E	U	e	u	È	è	Ł	ł	Ł	Ł	ł	ł
6			&	6	F	V	f	v	Ê	ê	Ś	ś	Ć	Ć	ć	ć
7			'	7	G	W	g	w	Ù	ù	Š	š	Ç	Ç	ç	÷
8			(	8	H	X	h	x	Ô	ô	Ğ	ğ	Č	Č	č	č
9			)	9	I	Y	i	y	Ì	ì	Š	š	É	É	é	é
A			*	:	J	Z	j	z	Ĭ	ĭ	Ş	ş	Ę	Ę	ę	ę
B			+	;	K	[	k	{	Ÿ	ÿ	Ť	ť	Ě	Ě	ě	ě
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F			/	?	O	_	o	×	Ò	ò	Ž	ž	Đ	Đ	đ	'

Figure 2 D640 Operator Panel Symbol Set 02Q

PJL Environment Variables and Commands

For further details, refer to the *Printer Job Language Technical Reference Manual*.

General rules about these charts includes:

1. RO=Read Only
2. Y*=Refer to the footnotes in Appendix A of the *Printer Job Language Technical Reference Manual*.
3. LANG is the human language for the display and status messages, not the print language.

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/Dinquire	Name	Values	4Si	4MV	
		Inq/Dinq	AUTOCONT	(OFF)	RO	RO	RO
		Inq/Dinq	AUTOCONT	ON	RO	RO	RO
Default	Set	Inq/Dinq	BINDING	(LONGEDGE)	Y	No	Y
Default	Set	Inq/Dinq	BINDING	SHORTEGE	Y	No	Y
		Inq/Dinq	CLEARABLE-WARNINGS	JOB	RO	RO	RO
		Inq/Dinq	CLEARABLE-WARNINGS	(ON)	RO	RO	RO
Default	Set	Inq/Dinq	COPIES	(1) to 999	Y	Y	Y,..32767
Default	Set	Inq/Dinq	CLIP	(ON)	No	No	Y
Default	Set	Inq/Dinq	CLIP	OFF	No	No	Y
Default		Inq/Dinq	CPLOCK	(OFF)	Y	Y	Y
Default		Inq/Dinq	CPLOCK	ON	Y	Y	Y
Default	Set	Inq/Dinq	DENSITY	1 TO 5 (3)	No	No	Y, 1..15
Default		Inq/Dinq	DISKLOCK	(OFF)	No	Y	Y
Default		Inq/Dinq	DISKLOCK	ON	No	Y	Y
Default	Set	Inq/Dinq	DUPLEX	(OFF)	Y	No	Y
Default	Set	Inq/Dinq	DUPLEX	ON	Y	No	Y

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/ Dinquire	Name	Values	4Si	4MV	
Default	Set	Inq/Dinq	ECONOMODE	(OFF)	No	Y	Y
Default	Set	Inq/Dinq	ECONOMODE	ON	No	Y	Y
Default	Set	Inq/Dinq	FORMLINES	5 to 128 (60)	Y	Y	Y
		Inq/Dinq	INTRAY1	(UNLOCKED)	RO	RO	RO
		Inq/Dinq	INTRAY1	LOCKED	RO	RO	RO
		Inq/Dinq	INTRAY2	(UNLOCKED)	RO	RO	RO
		Inq/Dinq	INTRAY2	LOCKED	RO	RO	RO
		Inq/Dinq	INTRAY3	(UNLOCKED)	No	RO	RO
		Inq/Dinq	INTRAY3	LOCKED	No	RO	RO
		Inq/Dinq	INTRAY4	(UNLOCKED)	No	No	RO (HCl)
		Inq/Dinq	INTRAY4	LOCKED	No	No	RO (HCl)
INTRAY1SIZE is size of paper in multi-purpose tray (upper tray for 4Si)							
		Inq/Dinq	INTRAY1SIZE	(LETTER)	RO	RO	RO
		Inq/Dinq	INTRAY1SIZE	LEGAL	RO	RO	RO
		Inq/Dinq	INTRAY1SIZE	A4	RO	RO	RO
		Inq/Dinq	INTRAY1SIZE	EXECUTIVE	RO	RO	RO
		Inq/Dinq	INTRAY1SIZE	LEDGER	No	RO	RO
		Inq/Dinq	INTRAY1SIZE	A3	No	RO	RO
		Inq/Dinq	INTRAY1SIZE	JISB4	No	RO	RO
		Inq/Dinq	INTRAY1SIZE	JISB5	No	RO	RO
		Inq/Dinq	INTRAY1SIZE	A5	No	No	RO
		Inq/Dinq	INTRAY1SIZE	CUSTOM	No	RO	RO
		Inq/Dinq	INTRAY1SIZE	COM10	No	RO	No
		Inq/Dinq	INTRAY1SIZE	MONARCH	No	RO	No
		Inq/Dinq	INTRAY1SIZE	C5	No	RO	No
		Inq/Dinq	INTRAY1SIZE	DL	No	RO	No

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/ Dinquire	Name	Values	4Si	4MV	
		Inq/Dinq	INTRAY1SIZE	B5	No	RO	[Custom]
		Inq/Dinq	INTRAY1SIZE	JPOST	No	RO	No
		Inq/Dinq	INTRAY1SIZE	JPOSTD	No	RO	No
INTRAY2SIZE is size of paper in standard tray (lower tray for 4Si)							
		Inq/Dinq	INTRAY2SIZE	(LETTER)	RO	RO	RO
		Inq/Dinq	INTRAY2SIZE	LEGAL	RO	RO	RO
		Inq/Dinq	INTRAY2SIZE	A4	RO	RO	RO
		Inq/Dinq	INTRAY2SIZE	EXECUTIVE	RO	No	RO
		Inq/Dinq	INTRAY2SIZE	LEDGER	No	RO	RO
		Inq/Dinq	INTRAY2SIZE	A3	No	RO	RO
		Inq/Dinq	INTRAY2SIZE	A5	No	No	RO
		Inq/Dinq	INTRAY2SIZE	JISB4	No	RO	RO
		Inq/Dinq	INTRAY2SIZE	JISB5	No	RO	RO
		Inq/Dinq	INTRAY2SIZE	CUSTOM	No	RO	RO
INTRAY3SIZE is size of paper in optional tray (envelope feeder for 4Si)							
		Inq/Dinq	INTRAY3SIZE	(LETTER)	No	RO	RO
		Inq/Dinq	INTRAY3SIZE	LEGAL	No	RO	RO
		Inq/Dinq	INTRAY3SIZE	A4	No	RO	RO
		Inq/Dinq	INTRAY3SIZE	EXECUTIVE	No	No	RO
		Inq/Dinq	INTRAY3SIZE	LEDGER	No	RO	RO
		Inq/Dinq	INTRAY3SIZE	A3	No	RO	RO
		Inq/Dinq	INTRAY3SIZE	A5	No	No	RO
		Inq/Dinq	INTRAY3SIZE	JISB4	No	RO	RO
		Inq/Dinq	INTRAY3SIZE	JISB5	No	No	RO
		Inq/Dinq	INTRAY3SIZE	CUSTOM	No	No	RO
		Inq/Dinq	INTRAY4SIZE	(COM10)	No	No	No
		Inq/Dinq	INTRAY4SIZE	MONARCH	No	No	No
		Inq/Dinq	INTRAY4SIZE	C5	No	No	No

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/ Dinquire	Name	Values	4Si	4MV	
		Inq/Dinq	INTRAY4SIZE	DL	No	No	No
		Inq/Dinq	INTRAY4SIZE	B5	No	No	No
		Inq/Dinq	INTRAY4SIZE	(LETTER)	No	No	RO (HCI)
		Inq/Dinq	INTRAY4SIZE	A4	No	No	RO (HCI)
Default		Inq/Dinq	IOBUFFER	ON	No	Y	(No)
Default		Inq/Dinq	IOBUFFER	OFF	No	Y	No
Default		Inq/Dinq	IOBUFFER	AUTO	No	Y	No
Default		Inq/Dinq	IOSIZE	10 to <i>maxavail</i> memory	No	Y	No
Default	Set	Inq/Dinq	JOBOFFSET	OFF	Y	No	Y
Default	Set	Inq/Dinq	JOBOFFSET	(ON)	Y	No	Y
Default	Set	Inq/Dinq	LANG	DANISH	No	No	No
Default	Set	Inq/Dinq	LANG	GERMAN or DEUTSCH	No	No	Y
Default	Set	Inq/Dinq	LANG	ENGLISH	No	No	Y
Default	Set	Inq/Dinq	LANG	SPANISH	No	No	Y
Default	Set	Inq/Dinq	LANG	FRENCH or FRANCAIS	No	No	Y
Default	Set	Inq/Dinq	LANG	ITALIAN	No	No	Y
		Inq/Dinq	LOWTONER	(ON)	No	No	No
		Inq/Dinq	LOWTONER	OFF	No	No	No
		Inq/Dinq	LOWTONER	(CONTINUE)	RO	RO	RO
		Inq/Dinq	LOWTONER	STOP	RO	RO	RO
Default	Set	Inq/Dinq	MANUALFEED	(OFF)	Y	Y	No
Default	Set	Inq/Dinq	MANUALFEED	ON	Y	Y	No
Default	Set	Inq/Dinq	MEDIASOURCE	TRAY1	No	No	Y
Default	Set	Inq/Dinq	MEDIASOURCE	TRAY2	No	No	Y
Default	Set	Inq/Dinq	MEDIASOURCE	TRAY3	No	No	Y
Default	Set	Inq/Dinq	MEDIASOURCE	HCI	No	No	Y

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/Dinquire	Name	Values	4Si	4MV	
		Inq/Dinq	MPTRAY	MANUAL	No	RO	No
		Inq/Dinq	MPTRAY	CASSETTE	No	(RO)	No
		Inq/Dinq	MPTRAY	FIRST	No	RO	No
Default	Set	Inq/Dinq	ORIENTATION	(PORTRAIT)	Y	Y	Y
Default	Set	Inq/Dinq	ORIENTATION	LANDSCAPE	Y	Y	Y
Default	Set	Inq/Dinq	ORIENTATION	REVPORTRAIT	No	No	Y
Default	Set	Inq/Dinq	ORIENTATION	REVLANDSCAPE	No	No	Y
Default	Set	Inq/Dinq	OUTBIN	(UPPER)	Y	No	Y, top tray
Default	Set	Inq/Dinq	OUTBIN	LOWER	Y	No	No
Default	Set	Inq/Dinq	OUTBIN	HCO-D	No	No	Y
Default	Set	Inq/Dinq	OUTBIN	HCO-U	No	No	Y
Default	Set	Inq/Dinq	PAGEPROTECT	OFF	(Y)	No	No
Default	Set	Inq/Dinq	PAGEPROTECT	LETTER	Y	No	No
Default	Set	Inq/Dinq	PAGEPROTECT	LEGAL	Y	No	No
Default	Set	Inq/Dinq	PAGEPROTECT	A4	Y	No	No
Default	Set	Inq/Dinq	PAGEPROTECT	ON	No	Y	No
Default	Set	Inq/Dinq	PAGEPROTECT	AUTO	No	(Y)	No
Default	Set	Inq/Dinq	PAPER	LETTER	(Y)	Y	Y
Default	Set	Inq/Dinq	PAPER	LEGAL	Y	Y	Y
Default	Set	Inq/Dinq	PAPER	A4	Y	Y	Y
Default	Set	Inq/Dinq	PAPER	LEDGER	No	Y	Y
Default	Set	Inq/Dinq	PAPER	A3	No	Y	Y
Default	Set	Inq/Dinq	PAPER	JISB4	No	Y	Y
Default	Set	Inq/Dinq	PAPER	JISB5	No	Y	Y
Default	Set	Inq/Dinq	PAPER	EXECUTIVE	Y	Y	Y
Default	Set	Inq/Dinq	PAPER (env)	COM10	Y	Y	No
Default	Set	Inq/Dinq	PAPER	A5	No	No	Y

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/ Dinquire	Name	Values	4Si	4MV	
Default	Set	Inq/Dinq	PAPER (env)	MONARCH	Y	Y	No
Default	Set	Inq/Dinq	PAPER (env)	C5	No	Y	No
Default	Set	Inq/Dinq	PAPER (env)	DL	Y	Y	No
Default	Set	Inq/Dinq	PAPER (env)	B5	No	Y	No
Default	Set	Inq/Dinq	PAPER	CUSTOM	No	Y	Y
Default	Set	Inq/Dinq	PAPER (postcard)	JPOST	No	Y	No
Default	Set	Inq/Dinq	PAPER (postcard)	JPOSTD	No	Y	No
Default		Inq/Dinq	PASSWORD	(0) to 65535	Y	Y	Y
Default	Set	Inq/Dinq	PERSONALITY	AUTO	(Y)	(Y)	Y
Default	Set	Inq/Dinq	PERSONALITY	PCL	Y	Y	Y
Default	Set	Inq/Dinq	PERSONALITY	POSTSCRIPT	Y	Y	Y
Default	Set	Inq/Dinq	POWERSAVE	ON	Y	Y	Y
Default	Set	Inq/Dinq	POWERSAVE	OFF	Y	Y	Y
Default	Set	Inq/Dinq	POWERSAVE-TIME	15 (minutes)	Y	Y	Y
Default	Set	Inq/Dinq	POWERSAVE-TIME	30	Y	(Y)	(Y)
Default	Set	Inq/Dinq	POWERSAVE-TIME	60	(Y)	Y	Y
Default	Set	Inq/Dinq	POWERSAVE-TIME	120	Y	Y	Y
Default	Set	Inq/Dinq	POWERSAVE-TIME	180	Y	Y	Y
Default	Set	Inq/Dinq	RESOLUTION	200 (dots/inch)	No	No	Y
Default	Set	Inq/Dinq	RESOLUTION	300 (dots/inch)	Y	Y	Y
Default	Set	Inq/Dinq	RESOLUTION	600	(Y)	(Y)	(Y)
Default		Inq/Dinq	RESOURCE- SAVE	ON	RO	Y	No

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/ Dinquire	Name	Values	4Si	4MV	
Default		Inq/Dinq	RESOURCE- SAVE	OFF	RO	Y	No
Default		Inq/Dinq	RESOURCE- SAVE	AUTO	RO	Y	No
Default		Inq/Dinq	RESOURCE- SAVESIZE	0 to <i>maxavail</i> memory (100 KB increments)	Y	Y	No
Default	Set	Inq/Dinq	RET	OFF	Y	Y	No
Default	Set	Inq/Dinq	RET	LIGHT	No	Y	No
Default	Set	Inq/Dinq	RET	MEDIUM	No	(Y)	No
Default	Set	Inq/Dinq	RET	DARK	No	Y	No
Default	Set	Inq/Dinq	RET	ON	(Y)	No	No
Default	Set	Inq/Dinq	SEPARATOR	OFF	No	No	Y
Default	Set	Inq/Dinq	SEPARATOR	TRAY1	No	No	Y
Default	Set	Inq/Dinq	SEPARATOR	TRAY2	No	No	Y
Default	Set	Inq/Dinq	SEPARATOR	TRAY3	No	No	Y
Default	Set	Inq/Dinq	SEPARATOR	HCI	No	No	Y
Default	Set	Inq/Dinq	TIMEOUT	5 to 300 (15 sec)	Y	Y	Y
LPARM:PCL							
Default	Set	Inq/Dinq	FONTSOURCE	(I)	Y	Y	Y
Default	Set	Inq/Dinq	FONTSOURCE	Mn (SIMM 1-4)	Y	Y	No
Default	Set	Inq/Dinq	FONTSOURCE	C	No	No	No
Default	Set	Inq/Dinq	FONTSOURCE	C1	Y	No	Y
Default	Set	Inq/Dinq	FONTSOURCE	C2	Y	No	Y
Default	Set	Inq/Dinq	FONTSOURCE	S (perm softfont)	Y	Y	Y
Default	Set	Inq/Dinq	FONTNUMBER	(0) to <i>maxnum</i>	Y	Y	Y
Default	Set	Inq/Dinq	PITCH	0.44 to 99.99 (10.00)	Y	Y	Y
Default	Set	Inq/Dinq	PTSIZE	4.00 to 999.75 (12.00)	Y	Y	Y

Table 43 PjL Commands and Environment Variables

PjL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/ Dinquire	Name	Values	4Si	4MV	
Default	Set	Inq/Dinq	SYMSET	DESKTOP	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO4	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO6	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO11	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO15	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO17	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO21	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO60	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISO69	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISOL1	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISOL2	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ISOL5	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	LEGAL	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	MATH8	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	MSPUBL	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PC8	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PC850	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PC852	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PC8DN	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PC8TK	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PIFONT	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PSMATH	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	PSTEXT	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	ROMAN8	(Y)	Y	(Y)
Default	Set	Inq/Dinq	SYMSET	VNINTL	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	VNMATH	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	VNUS	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	WIN30	Y	Y	Y

Table 43 PJL Commands and Environment Variables

PJL Commands			Environment Variable		LaserJet Printers		D640 Printer
Default	Set	Inquire/Dinquire	Name	Values	4Si	4MV	
Default	Set	Inq/Dinq	SYMSET	WINL1	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	WINL2	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	WINL5	Y	Y	Y
Default	Set	Inq/Dinq	SYMSET	WIN31J	No	Y	No
Default	Set	Inq/Dinq	SYMSET	MACINTOSH	No	No	Y
Default	Set	Inq/Dinq	CARTRIDGE1	"none" or <i>cartridge-name</i>	No	No	Y
Default	Set	Inq/Dinq	CARTRIDGE2	"none" or <i>cartridge-name</i>	No	No	Y
LPARM:POSTSCRIPT							
Default	Set	Inq/Dinq	JAMRECOVERY (OFF)		Y	Y	Y
Default	Set	Inq/Dinq	JAMRECOVERY ON		Y	Y	Y
Default	Set	Inq/Dinq	PRTPSERRS (OFF)		Y	Y	Y
Default	Set	Inq/Dinq	PRTPSERRS ON		Y	Y	Y

PJL Error Codes

For further details, refer to the *Printer Job Language Technical Reference Manual*.

Table 44 PJL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
These codes are informational messages, not errors. They are useful for reporting printer status back to the Control Panel display.	10001	Printer is ready & online	Ready and Online
	10002	Printer is ready & offline	Ready and Offline
	10003	Printer is warming up	Warming up
	10004	Self test 04 in progress	Running Selftest
	10005	Hard Reset in progress	
	10006	Printer is low on toner	Toner is low
	10010	Status buffer overflow **	Status buffer overflow
	10011	Aux i/o or MIO not ready	Interface not ready
	10013	Self test 05 in progress	
	10014	Printing test in progress	
	10015	Typeface list printing	
	10016	Engine Test in progress	
	10017	Demo Page printing	
	10018	Menu reset	
	10019	Reset active I/O	
	10020	Reset all I/O	
	10021	Cold Reset	
	10022	Config page printing	
One paper tray is empty, but another source is available. Printer is online.	11xyy	Background paper loading **	

Table 44 PJL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
PJL Parser Error Entire command line is ignored.	20001	Generic syntax error (entire PJL command ignored)	Generic syntax error
	20002	Unsupported Command	Unsupported command
	20004	Unsupported personality/system	Unsupported personality
	20005	PJL command buffer overflow	
	20006	Illegal character or line terminated by the UEL command	Illegal character
	20007	Whitespace or CRLF missing after closing quotes	Terminator missing after closing quote
	20008	Invalid value in an alphanumeric value	Invalid character in an alphanumeric value
	20009	Invalid value in a numeric value	Invalid character in a numeric value
	20010	Invalid character at the start of a string, alphanumeric value, or numeric value	Invalid character at start of a value
	20011	String missing closing double-quote character	Missing closing double quote
	20012	Numeric value starts with a decimal point	Numeric value starts with a decimal point
	20013	Numeric value does not contain any digits	Numeric value does not contain any digits
	20014	No alphanumeric value after command modifier	No alphanumeric value after command modifier
	20015	Option name and equal sign encountered, but the value field is missing	Value field is missing after an equal sign
	20016	More than one command modifier	More than one command modifier

Table 44 PJL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
	20017	Command modifier must precede option	Command modifier encountered after option
	20018	Command not an alphanumeric value	Command not an alphanumeric value
	20019	Numeric value encountered when an alphanumeric value was expected	Numeric value encountered when an alphanumeric value was expected
	20020	String encountered when an alphanumeric value expected	String encountered when an alphanumeric value expected
	20021	Unsupported command modifier	Unsupported command modifier
	20022	Command modifier missing	Command modifier missing
	20023	Option missing	Option missing
	20024	Extra data received after option name (used for commands like SET that limit the number of options supported)	
	20025	Two decimal points in a numeric value	Two decimal points in a numeric value

Table 44 PjL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
PjL Parser Errors Only part of the command is ignored.	25001	Generic warning error (PjL command partially ignored)	Generic warning error (PjL command partially ignored)
	25002	PjL prefix missing	
	25003	Alphanumeric value too long	Alphanumeric value too long
	25004	String too long	String too long
	25005	Numeric value too long	Numeric value too long
	25006	Unsupported option name	Unsupported option name
	25007	Option name requires a value, which is missing	Option name requires a value, which is missing
	25008	Option name requires a value of a different type	Option name requires a value of a different type
	25009	Option name received with a value, but this option does not support values	Option name received with a value, but this option does not support values
	25010	Same option name received more than once	
	25011	Ignored option name due to value underflow or overflow	Ignored option name due to value underflow or overflow
	25012	Value for option experienced data loss due to data conversion (truncation or rounding)	Fractional part of number was ignored
	25013	Value for option experienced data loss due to value being out of range; the value used was the closest supported limit	Value out of range, value used was closest supported limit
	25014	Value is of the correct type, but is out of range (value ignored)	Value out of range, value ignored
	25016	Option name received with an alphanumeric value, but this value is not supported	Unknown alphanumeric value for option
	25017	String empty, option ignored	String empty, option ignored

Table 44 PJL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
PJL Semantic Errors	27001	Generic semantic error	Generic semantic error
	27002	EOJ command encountered without a previously matching JOB command.	EOJ command encountered without a previously matching JOB command.
	27004	Cannot modify the value of a read-only variable.	Cannot modify the value of a read-only variable.
	27005	SET is not allowed with this variable	
	27023	none	Password privilege violation
Autocontinue	30010	Status buffer overflow	
	30016	Memory overflow	
	30017	Print overrun	
	30018	Error (40)	
	30027	I/O Configuration error	
	30034	41.x error	
	30035	68 error	
	30036	68 service	
	30072	49 remove page	
	30076	personality memory overflow/ out of memory	

Table 44 PJL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
Operator intervention <i>may</i> be required.	35029	W1 IMAGE ADAPT	
	35031	W2 INVALID PERSONALITY	
	35037	W3 JOB ABORTED	
Printer stays online, maybe with reduced capabilities; data may be lost.	35039	W9 JOB 600/LTR	
	35040	W0 JOB 600/A4	
	35041	W8 JOB 600/OFF	
	35042	W7 JOB 300/LGL	
	35043	W5 JOB 300/LTR	
	35044	W6 JOB 300/A4	
	35045	W4 JOB 300/OFF	
	35073	Check Memory Management	
	35074	Memory Management not available	
	35075	User Maintenance Requested	
	35076	WM <i>personality</i> MEM FULL	
	35078	Entered powersave mode (00 POWERSAVE)	
	35081	WM JOB 300	
	35082	WD DISK NOT INIT	
	35084	WM JOB 600/LGL	
	35085	WM JOB 600/A3	
	35086	WM JOB 600/11x17	
	35087	WM JOB 300/A3	
	35088	WM JOB 300/11x17	

Table 44 PJL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
Operator intervention is required.	40000	Sleep mode, printer is waiting for data (no error).	
	40005	designjet only	
	40010	designjet only	
	40011	designjet only	
	40020	NO MICR TONER	
	40021	A cover is open "CLOSE COVER"	
	40022	A paper jam has occurred "xxx JAM"	
	40024	FE CARTRIDGE	
	40026	PC INOTALL	
	40038	16 LOW TONER	
	40046	FI INOERT CART	
	40047	FR REMOVE CART	
	40048	[PJL OPMSG]	
	40049	[PJL STMSG]	
	40050	50 SERVICE	
	40051	51 ERROR	
	40052	52 ERROR	
	40053	53-XY-ZZ ERROR	
	40054	54 ERROR	
	40055	55 ERROR	
	40056	56 ERROR	
	40057	57 SERVICE	
	40058	58 SERVICE	
	40059	59 ERROR	
	40061	61.X SERVICE	
	40062	62.X SERVICE	
	40063	63 SERVICE	
	40064	64 SERVICE	

Table 44 PJL Error Codes

Status Category	Error Code Number	Meaning (LJ 4 Series)	D640
Operator Intervention is required, cont.	40065	65 SERVICE	
	40067	67 SERVICE	
	40068	69 SERVICE	
	40069	70 ERROR	
	40070	71 ERROR	
	40071	72 SERVICE	
	40079	Printer has been manually taken offline.	
	40080	EE INCOMPATIBLE or LC INCOMPATIBLE	
	40083	FS DISK FAILURE	
Paper is out and there is no other source available. Printer is offline.	41xyy	Foreground Paper Loading	
Hardware errors. Fatal print engine errors. Printer is offline and probably needs repair.	50000	General Hardware Failure	
	50001	ROM Error	
	50002	RAM Error	
	50003	Engine Fuser Error	
	50004	Engine Beam Detect Error	
	50005	Engine Scanner Error	
	50006	Engine Fan Error	
	50007	Engine Communication Error	
	505xx	Firmware Error Cycle power to fix	
	50599	Processor Error Cycle power to fix	

6 Printer Fonts

Built-In Fonts

The Model D640 printer comes with built-in fonts and virtual font cartridges. Table 45 below lists the built-in fonts.

Table 45 Built-In Fonts

Typeface and Treatment	IIISi	4Si	D640
Line Printer Med.	bitmap	bitmap	bitmap
Courier Med., Italic, Bold, Bold Italic	bitmap	Intellifont	Intellifont
Letter Gothic Med., Italic, Bold	nr	Intellifont	Intellifont
Arial Med., Italic, Bold, Bold Italic	nr	TrueType	TrueType
Symbol Med.	nr	TrueType	TrueType
Times New Roman Med., Italic, Bold, Bold Italic	nr	TrueType	TrueType
Wingdings Med.	nr	TrueType	TrueType
Albertus ExtraBold	nr	Intellifont	Intellifont
Albertus Med.	nr	Intellifont	Intellifont
Antique Olive Med., Italic, Bold	nr	Intellifont	Intellifont
CG Omega Med., Italic, Bold, Bold Italic	nr	Intellifont	Intellifont
CG Times Med., Italic, Bold, Bold Italic	Intellifont	Intellifont	Intellifont
Clarendon Condensed Bold	nr	Intellifont	Intellifont
Coronet	nr	Intellifont	Intellifont
Garamond Antiqua	nr	Intellifont	Intellifont
Garamond Halbfett	nr	Intellifont	Intellifont

Table 45 Built-In Fonts

Garamond Kursiv	nr	Intellifont	Intellifont
Garamond Kursiv Halbfett	nr	Intellifont	Intellifont
Marigold.	nr	Intellifont	Intellifont
Univers Condensed Med., Italic, Bold, Bold Italic	Intellifont	Intellifont	Intellifont
Univers Med., Italic, Bold, Bold Italic	Intellifont	Intellifont	Intellifont
ITC Zapf Dingbats	Intellifont	nr	nr ^a

a. ITC Zapf Dingbats are available on the D640 Decorative Words built-in cartridge.

Virtual Font Cartridges

In addition to built-in fonts, the D640 printer includes a set of “virtual” font cartridges. Modeled after the font cartridges available on other LaserJet products, these virtual fonts cartridges are stored on the printer’s hard disk. (For details, see “List of Font Cartridges” on page 89.)

Activating a Font Cartridge Using PJJ

The following table gives an example of using PJJ commands to activate a virtual font cartridge on the D640 printer.

```
@PJJ JOB ...  
  
@PJJ LPARAM:PCL SET CARTRIDGE1="MULTIBAR"  
  
/* The name must match the name in the printer/*  
  
@PJJ LPARAM:PCL SET CARTRIDGE2="NONE"  
  
/*Make sure cartridge 2 is empty/*  
  
...PCL data ...  
  
@PJJ E0J...
```

Creating Your Own Font Cartridge

You can create additional font cartridges and store them on the printer’s hard disk. See “Example 2: Creating a Virtual Font Cartridge” on page 49 for more information.

List of Font Cartridges

This section lists the virtual font cartridges available on the D640 printer. It includes the fonts available in each cartridge.

Arabic

B3428AA #ARG D640 name: "Arabic"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Times	Normal, Bold	prop	scale	08V Arabic-8 09V Windows 3.1 Latin/Arabic 10V PC-Latin/Arabic
KOUFI Letter Gothic	Normal, Bold	fixed	scale	08V Arabic-8 09V Windows 3.1 Latin/Arabic 10V PC-Latin/Arabic
NAKSH Courier	Normal, Bold	fixed	scale	08V Arabic-8 09V Windows 3.1 Latin/Arabic 10V PC-Latin/Arabic

Cyrillic

B3428AA #ACB D640 name: "Cyrillic"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Times	Bold Italic	prop	scale	03R PC Cyrillic
CG Times	Normal, Bold, Italic	prop	scale	03R PC Cyrillic 0N ISO 8859/5 Latin/Cyrillic
Courier	Normal, Bold, Italic, Bold Italic	fixed	scale	03R PC Cyrillic 10N ISO 8859/5 Latin/Cyrillic
Univers	Normal, Bold, Italic	prop	scale	03R PC Cyrillic 10N ISO 8859/5 Latin/Cyrillic

Greek

B3428AA #AB7 D640 name: "Greek"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Times	Normal, Bold, Italic, Bold Italic	prop	scale	12G PC-8 Latin/Greek 12N ISO 8859/7 Latin/Greek
Courier	Normal, Bold, Italic, Bold Italic	fixed	scale	12G PC-8 Latin/Greek 12N ISO 8859/7 Latin/Greek
Letter Gothic	Normal, Bold, Italic, Bold Italic	fixed	scale	12G PC-8 Latin/Greek 12N ISO 8859/7 Latin/Greek
Univers	Normal, Bold, Italic, Bold Italic	prop	scale	12G PC-8 Latin/Greek 12N ISO 8859/7 Latin/Greek

Hebrew

D640 name: "Hebrew"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
David	Normal, Bold	prop	scale	00H Hebrew-7 08H Hebrew-8 15H PC-862 Latin/Hebrew
Hebrew Courier	Normal, Bold, Italic	fixed	scale	0H Hebrew-7 08H Hebrew-8 15H PC-862 Latin/Hebrew
Miryam	Normal, Bold, Italic	prop	scale	00H Hebrew-7 08H Hebrew-8 15H PC-862 Latin/Hebrew
Miryam Fix	Normal, Bold, Italic	fixed	scale	00H Hebrew-7 08H Hebrew-8 15H PC-862 Latin/Hebrew
Narkis Tam	Normal, Bold	prop	scale	00H Hebrew-7 08H Hebrew-8 15H PC-862 Latin/Hebrew

Latin 2

B3428AA #AKG D640 name: "Latin_2"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Times	Normal, Bold, Italic, prop Bold Italic	prop	scale	02N ISO 8859/2 Latin 2 17U PC-852, Latin 2
Courier	Normal, Bold, Italic, fixed Bold Italic	fixed	scale	17U PC-852, Latin 2
Letter Gothic	Normal, Bold, Italic	fixed	scale	02N ISO 8859/2 Latin 2 17U PC-852, Latin 2
Univers	Normal, Bold, Italic, prop Bold Italic	prop	scale	02N ISO 8859/2 Latin 2 17U PC-852, Latin 2

Latin 5

B3428AA #AB8 D640 name: "Latin_5"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Times	Normal, Bold, Italic	prop	scale	05N ISO 8859/9 Latin 5 09T PC-8 Turkish
Courier	Normal, Bold, Italic, fixed Bold Italic	fixed	scale	05N ISO 8859/9 Latin 5 09T PC-8 Turkish
Letter Gothic	Normal, Bold, Italic	fixed	scale	05N ISO 8859/9 Latin 5 09T PC-8 Turkish
Univers	Normal, Bold, Italic	prop	scale	05N ISO 8859/9 Latin 5 09T PC-8 Turkish

Barcodes 3 of 9 OCR-A

92286W1 36596A #0W1 D640 name: "OCRA"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Letter Gothic [09.5 pt, 14 pt]	Medium Upright	fixed	bitmap	00E Roman extensions 08U Roman-8 00U ISO6: ASCII
Barcode 3 of 9 [08.1 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
Barcode 3 of 9 [4.6 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
OCR-A [10 pitch, 12 pt]	Medium Upright	fixed	bitmap	00O OCR A
Line Draw (Line Prtr) [12 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7

Barcodes & More

C2053A #C06 36596A #C06 D640 name: "BARCMORE"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Barcode 3 of 9 [04.6, 08.1 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
EAN/UPC [10 mil]	Medium Upright	prop	bitmap	08Y UPC/EAN Barcode
EAN/UPC [13 mil]	Bold	prop	bitmap	08Y UPC/EAN Barcode
OCR-A	Medium Upright	fixed	bitmap	00O OCR A
OCR-B	Medium Upright	fixed	bitmap	01O OCR B
USPS ZIP [12 pt]	Medium Upright	prop	bitmap	15Y USPS Zip
Letter Gothic [09.5, 12, 14 pt]	Medium Upright	fixed	bitmap	08U Roman-8
Line Draw (Line Prtr) [12 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7

Brilliant Presentations I, Compelling Publications II

C2050C #C80 36596A #CP2 D640 name: "COMPUB2"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Bodoni	Bold, Bold Italic, Book, Book Italic	prop	scale	See Table 46 on page 93.
CG Omega	Bold, Bold Italic, Book, Book Italic	prop	scale	
Cooper Black	Upright Black	prop	scale	
Garamond Antiqua	Medium Upright	prop	scale	
Garamond Halbfett	Bold	prop	scale	
Garamond Kursiv	Italic	prop	scale	
Garamond Kursiv Halbfett	Bold Italic	prop	scale	
ITC Benguiat	Bold, Bold Italic, Book, Book Italic	prop	scale	
ITC Bookman	Demi Bold, Demi Bold Italic, Light, Light Italic	prop	scale	
Revue Light	Upright Light	prop	scale	
Shannon	Bold, Book, Book Oblique, Extra Bold	prop	scale	

Table 46 Supported Symbol Sets

00N	ISO 8859/1 Latin 1 (ECMA-94)	08U	Roman-8
00U	ISO 6: ASCII	09U	Windows 3.0 Latin 1
01U	Legal	10J	PS Text
05M	PS Math	10U	PC-8 Code Page 437
06J	Microsoft Publishing	11U	PC-8 D/N (Danish/Norwegian)
06M	Ventura Math	12U	PC-850 Multilingual
07J	DeskTop	13J	Ventura International
08M	Math-8	14J	Ventura US
15U	Pi Font		

CG Times Scalable

C2050A #D01 36596B #D01 D640 name: "CGTIMES"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Times	Bold, Bold Italic, Italic Medium	prop	scale	See Table 46 on page 93.

CG Triumvirate Condensed

C2050A #D16 36596B #D16 D640 name: "CGTRMVCD"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Triumvirate Cond	Bold, Bold Italic, Italic Medium	prop	scale	See Table 46 on page 93.

Courier 1

92286A 36596A #00A D640 name: "COURIER1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [12 pt]	Bold, Italic	fixed	bitmap	08U Roman-8
Line Printer (landsc) [08.4 pt]	Light	fixed	bitmap	08U Roman-8

Courier Document 1

92290S1 36596A #0S1 D640 name: "COURDOC1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian
Courier [12 pt]	Italic	fixed	bitmap	00N ISO 8859/1 Latin 1 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian

Courier Portrait & Landscape

92286L 36596A #00L D640 name: "COURPOLA"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [12 pt]	Bold Italic	fixed	bitmap	08U Roman-8
Line Printer [08.4 pt]	Medium Upright	fixed	bitmap	08U Roman-8

Decorative Words I

C2050A #D84 36596B #D84 D640 name: "DECWORD1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Brush	Bold Italic	prop	scale	See Table 46 on page 93.
Cooper Black	Upright Black	prop	scale	
Dom Casual	Medium Upright	prop	scale	
ITC Zapf Dingbats	Medium Upright	prop	scale	09L Ventura ITC Zapf Dingbats 10L PS ITC Zapf Dingbats 11L ITC Zapf Dingbats Series 100 12L ITC Zapf Dingbats Series 200 13L ITC Zapf Dingbats Series 300
Park Avenue	Italic	prop	scale	See Table 46 on page 93.
Revue Light	Upright Light	prop	scale	
Revue Shadow	Upright	prop	scale	
Uncial	Medium	prop	scale	
University Roman	Medium Upright	prop	scale	

Distinctive Documents I, Compelling Publications I

C2050B #C80 36596A #CP1 D640 name: "COMPUB1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Antique Olive	Bold, Book, Italic	prop	scale	See Table 46 on page 93.
Antique Olive Compact	Ultra Black	prop	scale	
CG Century Schoolbook	Bold, Bold Italic Italic, Medium Upright	prop	scale	
CG Palacio	Bold, Bold Italic, Italic, Medium Upright	prop	scale	
ITC Souvenir	Demi Bold Italic Demi Bold Upr Light Italic Light Upright	prop	scale	09L Ventura ITC Zapf Dingbats 10L PS ITC Zapf Dingbats 11L ITC Zapf Dingbats Series 100 12L ITC Zapf Dingbats Series 200 13L ITC Zapf Dingbats Series 300
ITC Zapf Dingbats	Medium Upright	prop	scale	
Stymie	Bold, Bold Italic, Italic, Medium Upright	prop	scale	
Univers Condensed	Bold, Bold Italic, Italic, Medium Upright	prop	scale	

EAN/UPC/OCR-B

92286X 36596A #00X D640 name: "OCRB"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
EAN/UPC [10 mil]	Medium Upright	prop	bitmap	08Y UPC/EAN Barcode
EAN/UPC [13 mil]	Bold	prop	bitmap	08Y UPC/EAN Barcode
OCR-B [12 pt]	Medium Upright	fixed	bitmap	01O OCR B
OCR-B extended [12 pt]	Medium Upright	fixed	bitmap	03Q OCR B extended
Letter Gothic [09.5 pt]	Medium Upright	fixed	bitmap	00E Roman extensions
Letter Gothic [09.5 pt]	Medium Upright	fixed	bitmap	08U Roman-8
Letter Gothic [09.5 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII
Letter Gothic [14 pt]	Medium Upright	fixed	bitmap	00E Roman extensions
Letter Gothic [14 pt]	Medium Upright	fixed	bitmap	08U Roman-8
Letter Gothic [14 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII
Line Draw (Line Prtr) [12 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7

Forms Landscape

92286V 36596A #00V D640 name: "FORMSLSC"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Helvetica2 [06 pt, 08 pt]	Medium Upright	prop	bitmap	00E Roman extensions 08U Roman-8
Helvetica2 [10 pt, 12 pt, 14 pt]	Bold	prop	bitmap	00E Roman extensions 08U Roman-8
Letter Gothic [09.5 pt]	Medium Upright	fixed	bitmap	00E Roman extensions 08U Roman-8
Line Draw (Line Prtr) [12 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7

Forms Portrait

92286U 36596A #00U D640 name: "FORMSPOR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Helvetica2 [06 pt, 08 pt]	Medium Upright	prop	bitmap	00E Roman extensions 08U Roman-8
Helvetica2 [10 pt, 12 pt, 14 pt]	Bold	prop	bitmap	00E Roman extensions 08U Roman-8
Letter Gothic [09.5 pt]	Medium Upright	fixed	bitmap	00E Roman extensions 08U Roman-8
Line Draw (Line Prtr) [12 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7

Forms, Etc.

C2053A #C05 36596A #C05 D640 name: "FORMSETC"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
OCR-A	Medium Upright	fixed	bitmap	00O OCR A
Helvetica Condensed [24 pt]	Black	prop	bitmap	05Q Tax Number
Line Draw (Line Prtr) [12 pt]	Bold	fixed	bitmap	02L Tax Line Draw
^a Univers [06 pt, 08 pt]	Medium Upright	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 12U PC-850 Multilingual
Univers [08, 10, 12, 14 pt]	Bold	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 12U PC-850 Multilingual

a. The D640 has a scalable font and the cartridge has a bitmap. Some applications may print differently.

Garamond Scalable

C2050A #D14 36596B #D14 D640 name: "GARAMOND"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Garamond Antiqua	Medium Upright	prop	scale	See Table 46 on page 93.
Garamond Halbfett	Bold	prop	scale	
Garamond Kursiv	Italic	prop	scale	
Garamond Kursiv Halbfett	Bold Italic	prop	scale	

Great Start

D640 name: "GRTSTART"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
^a CG Times [11 pt]	Bold, Italic, Medium Upright	prop	bitmap	00N ISO 8859/1 Latin 1 07J DeskTop 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Letter Gothic [03.6 pt]	Medium Upright	fixed	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Letter Gothic [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 07J DeskTop 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual

a. The D640 has a scalable font and the cartridge has a bitmap. Some applications may print differently.

HP Global Text

C2053A #C08 36596A #C08 D640 name: "HPGLOTEXT"

^a PCL Typeface	Treatment	Spacing	Format	Symbol Set
CG Century Schoolbook [08 pt]	Medium Upright	prop	bitmap	07J DeskTop 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
CG Century Schoolbook [10 pt]	Bold, Italic, Medium Upright	prop	bitmap	07J DeskTop 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
CG Triumvirate[10 pt]	Medium Upright	prop	bitmap	07J DeskTop 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
CG Triumvirate[14 pt]	Bold	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual

a. The D640 has a scalable font and the cartridge has a bitmap. Some applications may print differently.

HP Pretty Faces

C2053A #C09 36596A #C09 D640 name: "HPPTYFAC"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
a)TC Zapf Dingbats [18, 36 pt]	Medium Upright	prop	bitmap	10L PS ITC Zapf Dingbats
Hobo [14 pt, 30 pt]	Medium Upright	prop	bitmap	00U ISO6: ASCII 12U PC-850 Multilingual
Microstyle [18 pt]	Medium Upright	prop	bitmap	00U ISO6: ASCII 12U PC-850 Multilingual
Microstyle Extended [36 pt]	Bold	prop	bitmap	00U ISO6: ASCII 12U PC-850 Multilingual
Signet Roundhand [14 pt, 18 pt]	Italic	prop	bitmap	00U ISO6: ASCII 12U PC-850 Multilingual
Thunderbird Xt. Cond. [54 pt]	Bold	prop	bitmap	00U ISO6: ASCII 12U PC-850 Multilingual

a. The D640 has a scalable font and the cartridge has a bitmap. Some applications may print differently.

Interleave 2 of 5 Barcode

N/A 36596A #689 D640 name: "ILV25BAR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Interleave 2 of 5	Medium Upright	fixed	bitmap	0Q

International 1

92286C 36596A #00C D640 name: "INTERNL1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00D ISO 60: Danish/Norwegian 00E Roman extensions 00F ISO 25: French 00G HP German 00I ISO 15: Italian 00S ISO 11: Swedish for Names 00U ISO6: ASCII 01E ISO 4: United Kingdom 01S HP Spanish 08U Roman-8
Line Printer [08.4 pt]	Medium Upright	fixed	bitmap	00D ISO 60: Danish/Norwegian 00E Roman extensions 00F ISO 25: French 00G HP German 00I ISO 15: Italian 00S ISO 11: Swedish for Names 00U ISO6: ASCII 01E ISO 4: United Kingdom 01S HP Spanish 08U Roman-8

International Collection

92286 IC 36596A #0IC D640 name: "INTRCOLL"

PCL Typeface ^a	Treatment	Spacing	Format	Symbol Set
CG Times [08 pt]	Medium Upright	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
CG Times [10 pt]	Bold, Italic, Medium Upright	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
CG Times [14 pt]	Bold	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Courier[12 pt]	Italic	fixed	bitmap	00N ISO 8859/1 Latin 1 07J DeskTop 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual

PCL Typeface^a	Treatment	Spacing	Format	Symbol Set
Letter Gothic [3.6,6, 9.5 pt]	Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 07J DeskTop 00U ISO6: ASCII 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Letter Gothic[12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 07J DeskTop 00U ISO6: ASCII 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Letter Gothic[14 pt]	Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 07J DeskTop 00U ISO6: ASCII 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Prestige Elite[10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 07J DeskTop 00U ISO6: ASCII 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Univers[06 pt]	Medium Upright	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Univers[08 pt]	Bold, Medium Upright	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Univers[10,12 pt]	Bold, Italic, Medium Upright	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Univers[14 pt]	Bold	prop	bitmap	08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual

a. The D640 has a scalable font and the cartridge has a bitmap. Some applications may print differently.

ITC Avant Garde

C2050A #D08 36596B #D08 D640 name: "ITCAVTGR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
ITC Avant Garde Gothic	Bold Italic, Bold Upright, Book Italic, Book Upright	prop	scale	

ITC Lubalin Graph

C2050A #D07 36596B #D07 D640 name: "ITCLUBGR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
ITC Lubalin Graph	Bold Italic, Bold Upright, Medium Italic, Medium Upright	prop	scale	

Legal Courier

92286H 36596A #00H D640 name: "LGLCOUR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal
Line Draw [12 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7
Prestige Elite [07 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal

Legal Elite

92286G 36596A #00G D640 name: "LGLELITE"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Line Draw (Line Prt)[12 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7
Prestige Elite [07 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal
Prestige Elite [10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal

Letter Gothic

92286E 36596A #00E D640 name: "LTRGOTH"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Letter Gothic [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00E Roman extensions 00U ISO6: ASCII 08U Roman-8

Letter Gothic Portrait and Landscape

92286N 36596A #00N D640 name: "LTRGPOLA"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Letter Gothic [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	08U Roman-8

Math Elite

92286J 36596A #00J D640 name: "MTHELITE"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Prestige Elite [07 pt]	Medium Upright	fixed	bitmap	00E Roman extensions 00Q Math-8A 00U ISO6: ASCII 01Q Math-8B 08M Math-8 08U Roman-8
Prestige Elite [10 pt]	Bold	fixed	bitmap	00E Roman extensions 00U ISO6: ASCII 08U Roman-8
Prestige Elite [10 pt]	Medium Upright	fixed	bitmap	00A Math-7 00E Roman extensions 00Q Math-8A 00U ISO6: ASCII 01Q Math-8B 02Q Pi Font-A 08M Math-8 08U Roman-8 15U Pi Font

Math Times Roman

92286K 36596A #00K D640 name: "MTHTMRM"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Times Roman [08 pt]	Medium Upright	prop	bitmap	00E Roman extensions 00Q Math-8A 00U ISO6: ASCII 01Q Math-8B 08M Math-8 08U Roman-8
Times Roman [10 pt]	Bold, Italic	prop	bitmap	00E Roman extensions 00U ISO6: ASCII 08U Roman-8
Times Roman [10 pt]	Medium Upright	prop	bitmap	00A Math-7 00E Roman extensions 00Q Math-8A 00U ISO6: ASCII 01Q Math-8B 02Q Pi Font-A 08M Math-8 08U Roman-8 15U Pi Font

Memo 1

92286Q 36596A #00Q D640 name: "MEMO1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [12 pt]	Bold, Italic	fixed	bitmap	08U Roman-8
Letter Gothic [12 pt]	Bold, Medium Upright	fixed	bitmap	08U Roman-8

Microsoft

C2053A #C02 36596A #C02 D640 name: "MSOFT"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Helvetica [08 pt]	Medium Upright	prop	bitmap	00U ISO6:ASCII 08U Roman-8 11Q ECMA-94
Helvetica [10 pt, 12 pt]	Bold, Italic, Medium Upright	prop	bitmap	00U ISO6: ASCII08U Roman-811Q ECMA-94
Helvetica [14 pt]	Bold	prop	bitmap	00U ISO6: ASCII
Line Printer [08.4 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII08U Roman-8
Times Roman [08 pt]	Medium Upright	prop	bitmap	00U ISO6: ASCII08U Roman-8
Times Roman [10 pt, 12 pt]	Bold, Italic, Medium Upright	prop	bitmap	00U ISO6: ASCII
Times Roman [14 pt]	Bold	prop	bitmap	00U ISO6: ASCII

Microsoft 1A

92286Z 36596A #00Z D640 name: "MSOFT1A"

This cartridge is identical to the Microsoft cartridge listed above.

Multi-Barcode

N/A 36596A #741 D640 name: "MULTIBAR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Barcode 128 [04.35 pitch]	Medium Upright	fixed	bitmap	02Y Matrix 2 of 5 Barcode
Barcode 128 [08.33 pitch]	Medium Upright	fixed	bitmap	02Y Matrix 2 of 5 Barcode
Barcode 3 of 9 [03.37 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
Barcode 3 of 9 [06.25 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
Barcode 3 of 9 [08.11 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
Barcode 3 of 9 [2.68 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
Barcode 3 of 9 [4.69 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Barcode 3 of 9 [9.38 pitch]	Medium Upright	fixed	bitmap	00Y 3 of 9 Barcode
CODABAR [5.00 pitch]	Medium Upright	fixed	bitmap	09Y
EAN/UPC [10 mil]	Medium Upright	prop	bitmap	08Y UPC/EAN Barcode
EAN/UPC [13 mil]	Bold	prop	bitmap	08Y UPC/EAN Barcode
Interleaved 2of5 [4.23 pitch]	Medium Upright	fixed	bitmap	04Y Interleaved 2 of 5 Barcode
MSI/Plessey [04.69 pitch]	Medium Upright	fixed	bitmap	06Y MSI/Plessey Barcode
MSI/Plessey [05.77 pitch]	Medium Upright	fixed	bitmap	06Y MSI/Plessey Barcode
MSI/Plessey [07.50 pitch]	Medium Upright	fixed	bitmap	06Y MSI/Plessey Barcode
MSI/Plessey [10.71 pitch]	Medium Upright	fixed	bitmap	06Y MSI/Plessey Barcode
OCR-A [10 pitch]	Medium Upright	fixed	bitmap	00O OCR A
OCR-B [12 pt]	Medium Upright	fixed	bitmap	01O OCR B
USPS ZIP [12 pt]	Medium Upright	prop	bitmap	15Y USPS Zip

PC Courier 1

92286Y 36596A #00Y D640 name: "PCCOUR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	08QPC-8 subset 09QPC-8 subset B
Line Printer [08.5 pt]	Medium Upright	fixed	bitmap	08QPC-8 subset 09QPC-8 subset B

Persuasive Presentations

C2053A #C04 36596A #C04 D640 name: "PERSPRES"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Helvetica Outline [24 pt]	Black	prop	bitmap	00U ISO6: ASCII 01U Legal
Letter Gothic [14 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal
Line Draw (Line Prtr) [14 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7 04Q PC Line
Presentations [14, 16, 18, 24 pt]	Bold	fixed	bitmap	00U ISO6: ASCII 01U Legal
Serifa [24 pt]	Black	prop	bitmap	00U ISO6: ASCII 01U Legal

Polished Worksheets

C2053A #C03 36596A #C03 D640 name: "POLIWORK"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Letter Gothic [03.6 pt]	Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 01U Legal 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian 12U PC-850 Multilingual
Letter Gothic [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 01U Legal 08U Roman-8 10 U PC-8 Code Page 437 11 U PC-8 Danish/Norwegian 12 U PC-850 Multilingual
Presentations [16 pt]	Bold	fixed	bitmap	00N ISO 8859/1 Latin 1 01U Legal 08U Roman-8
Prestige Elite [10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00N ISO 8859/1 Latin 1 01U Legal 08U Roman-8 10 U PC-8 Code Page 437 11 U PC-8 Danish/Norwegian 12 U PC-850 Multilingual

Premiere Collection

C2054B #ABA 36596B #ABA D640 name: "PREMCOLL"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Brush	Bold Italic	prop	scale	See Table 46 on page 93.
CG Times	Bold, Bold Italic, Italic, Medium Upright	prop	scale	all
Dom Casual	Medium Upright	prop	scale	See Table 46 on page 93.
Park Avenue	Italic	prop	scale	
Uncial	Medium	prop	scale	
Univers	Bold, Bold Italic, Italic, Medium Upright	prop	scale	all

Presentations 1

92286R 36596A #00R D640 name: "PRESENT1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Letter Gothic [14 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal
Line Draw (Line Prtr) [14 pt]	Medium Upright	fixed	bitmap	00B Line Draw-7
PC Line (Line Prtr) [14 pt]	Bold	fixed	bitmap	04Q PC Line
Presentations [14 pt, 16 pt, 18 pt]	Bold	fixed	bitmap	00U ISO6: ASCII 01U Legal

Prestige Elite

92286D 36596A #00D D640 name: "PRESTIGE"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Prestige Elite [10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00E Roman extensions 08U Roman-8

Prestige Portrait and Landscape

92286M 36596A #00M D640 name: "PRESPOLA"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Prestige Elite [10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	08U Roman-8

Pro Collection

92286PC 36596A #0PC D640 name: "PROCOLLE"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier [10 pt, 12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal
Helvetica [08 pt]	Medium Upright	prop	bitmap	00U ISO6: ASCII
Helvetica [10 pt, 12 pt]	Bold, Italic, Medium Upright	prop	bitmap	00U ISO6: ASCII
Helvetica [14 pt]	Bold	prop	bitmap	00U ISO6: ASCII 01U Legal
Letter Gothic [03.6 pt, 6 pt, 9.5 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII
Letter Gothic [12 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00U ISO6: ASCII
Line Printer [08.5 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII
Prestige Elite [07 pt]	Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal
Prestige Elite [10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	00U ISO6: ASCII 01U Legal
Times Roman [08 pt, 10 pt, 12 pt]	Bold, Italic, Medium Upright	prop	bitmap	00U ISO6: ASCII 01U Legal

Scalable Courier

N/A 36596B #433 D640 name: "SCALCOUR"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Courier	Bold, Bold Italic, Italic, Medium	fixed	scale	

Tax 1

92286T 36596A #00T D640 name: "TAX1"

PCL Typeface ^a	Treatment	Spacing	Format	Symbol Set
Helvetica [06 pt]	Medium Upright	prop	bitmap	00U ISO6: ASCII
Helvetica [08 pt]	Bold, Medium Upright	prop	bitmap	00U ISO6: ASCII
Helvetica [10 pt, 12 pt, 14 pt]	Bold	prop	bitmap	00U ISO6: ASCII
Line Draw [12 pt]	Semi Bold	fixed	bitmap	00B Line Draw-7

a. The D640 has a bold font, the cartridge has semi-bold. Some applications may print differently.

Text Equations

C2053A #C07 36596A #C07 D640 name: "TEXTEQUA"

PCL Typeface ^a	Treatment	Spacing	Format	Symbol Set
(CG Times [08 pt]	Medium Upright	prop	bitmap	08M Math-8 08U Roman-8
(CG Times [10 pt]	Bold, Italic, Medium Upright	prop	bitmap	08U Roman-8
(CG Times [10 pt]	Medium Upright	prop	bitmap	00A Math-7 08M Math-8 15U Pi Font
Prestige Elite [07 pt]	Medium Upright	fixed	bitmap	08M Math-8 08U Roman-8
Prestige Elite [10 pt]	Bold, Italic, Medium Upright	fixed	bitmap	08U Roman-8
Prestige Elite [10 pt]	Medium Upright	fixed	bitmap	00A Math-7 08M Math-8 00U Pi Font

a. The D640 has a scalable font and the cartridge has a bitmap. Some applications may print differently.

Times Roman Helvetica Report 1

92290S2 36596A #0S2 D640 name: "TRHLVRP1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Helvetica [14 pt]	Bold	prop	bitmap	00N ISO 8859/1 Latin 1 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian
Times Roman [08 pt]	Medium Upright	prop	bitmap	00N ISO 8859/1 Latin 1 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian
Times Roman [12 pt]	Bold, Italic, Medium Upright	prop	bitmap	00N ISO 8859/1 Latin 1 08U Roman-8 10U PC-8 Code Page 437 11U PC-8 Danish/Norwegian

Times Roman Portrait and Landscape

92286P 36596A #00P D640 name: "TMSRPOLA"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Times Roman [10 pt]	Bold, Italic, Medium Upright	prop	bitmap	08U Roman-8

Times Roman Proportional 1

92286B 36596A #00B D640 name: "TMSRMN1"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Helvetica [14.4 pt]	Bold	prop	bitmap	00U ISO6: ASCII
Line Printer [08.4 pt]	Light	fixed	bitmap	08U Roman-8
Times Roman [08 pt]	Semi Light	prop	bitmap	00U ISO6: ASCII
Times Roman [10 pt]	Bold, Italic, Medium Upright	prop	bitmap	00U ISO6: ASCII

Times Roman Proportional 2

92286F 36596A #00F D640 name: "TMSRMN2"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Helvetica [14.4 pt]	Bold	prop	bitmap	00E Roman extensions 00U ISO6: ASCII 08U Roman-8
Line Printer [08.4 pt]	Medium Upright	fixed	bitmap	00E Roman extensions 00U ISO6: ASCII 08U Roman-8
Times Roman [08 pt]	Medium Upright	prop	bitmap	00E Roman extensions 00U ISO6: ASCII 08U Roman-8
Times Roman [10 pt]	Bold, Italic, Medium Upright	prop	bitmap	00E Roman extensions 00U ISO6: ASCII 08U Roman-8

Word Perfect

C2053A #C01 36596A #C01 D640 name: "WORDPERF"

PCL Typeface ^a	Treatment	Spacing	Format	Symbol Set
(CG Times [06 pt]	Medium Upright	prop	bitmap	07J DeskTop
(CG Times [08, 10, 12, 14 pt]	Bold, Italic, Medium Upright	prop	bitmap	07J DeskTop
(CG Times [18 pt]	Bold	prop	bitmap	07J DeskTop
(Univers [14, 18, 24 pt]	Medium Upright	prop	bitmap	07J DeskTop

a. The D640 has a scalable font and the cartridge has a bitmap. Some applications may print differently.

Word Perfect Scalable

C2050D 36596A #WPS D640 name: "WPSCAI"

PCL Typeface	Treatment	Spacing	Format	Symbol Set
Albertus	ExtraBold	prop	scale	See Table 46 on page 93.
CG Century Schoolbook	Bold, Bold Italic, Italic, Medium Upright	prop	scale	
CG Palacio	Bold, Bold Italic, Italic, Medium Upright	prop	scale	
Dom Casual	Medium Upright	prop	scale	
Futura II	Bold, Bold Italic, Book, Book Italic	prop	scale	
ITC Galliard Roman	Bold, Bold Italic, Italic, Medium Upright	prop	scale	
ITC Zapf Chancery	Italic	prop	scale	
Microstyle	Bold	prop	scale	
Park Avenue	Italic	prop	scale	
Univers Condensed	Bold, Bold Italic, Italic, Medium Upright	prop	scale	

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