

# FONTEDIT

version 2.13

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Alexander Walter

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## 1. Acknowledgments

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The run-time files BRUN45.EXE and MSHERC.COM are copyrighted by Microsoft and are distributed with this package in accordance with the QuickBasic 4.5 licensing agreement.

Portions © Copyright Genus Microprogramming, Inc. 1988-1991. This bit of legalese is required by Genus since **FONTEDIT** uses their PCX toolkit to support importing characters from PCX images.

## 2. Miscellany

This is version 2.13 of **FONTEDIT**. **FONTEDIT** is available by sending a \$30 check or money order to:

||| Alexander Walter  
||| 182 ILER Dr.  
||| Middletown, NJ. 07748

toll free phone support is available at (800) 262-0827 in USA only. Otherwise, call (908) 671-5080 or (908) 949-0507.

If you encounter any problems or bugs with **FONTEDIT**, please report them to the author along with a description of the steps that led up to it. If you have any suggestions for new features, pass them along. A version of **FONTEDIT** for the HP DeskJet printer is also available.

Section 5 of this manual is organized along the lines of the menu structure. Items which are submenu items will have a paragraph number which has one more digit than its parent menu item.

## 3. Requirements and Limitations

**FONTEDIT** requires a graphics display, CGA or higher. A Hercules graphics display can be used provided you run the MSHERC.COM TSR before running **FONTEDIT**.

**FONTEDIT** requires DOS 2.1 or above, and approximately 256K of available RAM, i.e., memory not used by DOS or TSRs. **FONTEDIT** can be run from one floppy disk drive; however, since HP font files can be large, hard disk usage is recommended.

The font file being edited with **FONTEDIT** must be of the HP LaserJet bitmapped format. This includes Series II and above. TrueType and Postscript font files are not supported. You cannot change the built-in Courier and TTY fonts of the laser printer.

Although **FONTEDIT** cannot edit TrueType fonts directly, it can edit bitmap renditions of TrueType fonts at given point sizes. When Windows 3.1 prints a document with a LaserJet driver, it will render the TrueType font(s) as bitmap fonts in the various point sizes used in the document and download them to the printer. If you print to a disk file rather than the printer, **FONTEDIT** will allow you to edit the bitmap renditions of those TrueType fonts. Registered users can obtain a program to strip out the non-font data from the file, leaving only the bitmap renditions of the TrueType fonts.

If you use any compression programs to reduce the size of font files stored on disk, they must be uncompressed before editing then with **FONTEDIT**. This does not pertain to the DblSpace disk compression that comes with MS-DOS version 6.0.

If you use the DOS access feature available by pressing ALT-D, be sure to include in your DOS PATH the directory containing **FONTEDIT**.

If you run **FONTEDIT** at a Windows 3.1 DOS prompt on a network, you won't be able to use the printer related functions such as downloading a font or printing something. However, you still will be able to edit a font on-screen.

## 4. Introduction and Features

**FONTEDIT** is a tool to view and edit laser printer soft font files for the Hewlett-Packard laser printer. Such a tool can be used to touch-up existing characters in a file, define special characters in a font file, or create an entirely new fontface. For example, using **FONTEDIT** you could add Greek characters to a font file you already have; you could define special characters such as the Gantt chart symbols used by Timeline and other project management software; or you could produce a stylized version of your company's name or logo.

**FONTEDIT** has a rich set of features for editing fonts:

- Can view and edit both portrait and landscape fonts, and convert one to the other.
- Handles both fixed-width and proportional fonts, and can convert one to the other.
- Automatically detects a mouse if present and uses it.
- Requires only CGA graphics. Will detect and use EGA or VGA if available.
- Maximum point size depends on display mode. Maximum 110 point (VGA); 80 point (EGA & Hercules); 44 point (CGA); or 88 point (AT&T video mode)
- Allows both pixel-level editing of individual characters and fill & clear area operations (rectangle, parallelogram, circle, ellipse, wedge, arbitrary polygon, Bezier curves).
- Can change font parameters, such as maximum height & width, baseline, symbol set, typeface value, and embedded font comment.
- Can resize the font up or down to any arbitrary point size, up to the maximum allowable for the display adaptor, and smooths characters while doing so.
- Can resize individual characters while smoothing and maintaining their original shape.
- Can perform special effects (drop shadow, mirror image, rotate, upside down, invert, hollow, thin, bolder, etc.) either one character at a time or font-wide.
- Has a clipboard to allow cutting and pasting portions of a character either within the same character, or to another character.
- Can insert or delete rows and columns of individual characters.
- Can import characters from black & white TIFF or PCX graphics.
- Can import characters from another font.
- Can import PrintShop icon graphics.
- Can change intercharacter spacing (kerning) of proportional fonts
- Can add and delete characters from a font.
- Zoom mode available for close-ups.
- Includes printer support within the **FONTEDIT** environment to see the effect of editing changes, or to do a graphics print screen.
- Handles font files which consist of several fonts grouped together.
- Menu-driven user interface, available at all times.
- Built-in DOS access.
- On some VGA monitors, the text colors can be customized.

## 5. Guide to Operation

To begin version 2.11 of **FONTEDIT**, simply type "fontedit" at the DOS prompt. You may follow it with the name of the font file to edit. If you don't, **FONTEDIT** will ask you to supply a font filename.

**FONTEDIT** requires only a CGA adaptor, but will automatically detect and use the higher resolution of a VGA, EGA, or AT&T adaptor if available. This can be overridden by including a switch either on the command line or when specifying the font filename to edit. For instance, if an EGA monitor is being used but you want to take advantage of the faster graphics and lower memory requirements of CGA mode, you can force CGA mode when beginning **FONTEDIT** by typing:

```
fontedit filename /cga
```

To force EGA mode while using a VGA adaptor, use "/ega".

To use a Hercules graphics board, run the MSHERC.COM TSR program before starting **FONTEDIT**. Make sure that your mouse driver (if any) is loaded before loading the MSHERC.COM program. MSHERC.COM is © by Microsoft, and is distributed here in accordance with the QuickBasic 4.5 licensing agreement.

If you see the message "Input run-time module path:" when you start **FONTEDIT**, quit with Ctrl-C, and make sure that the run time module BRUN45.EXE is in either the current directory, or a directory in your DOS PATH.

While you are prompted for a filename, **FONTEDIT** displays a message whether a mouse driver is installed or not. If you have a mouse but have forgotten to install the driver, you can exit **FONTEDIT** at this point by pressing ESC.

Either on the command line or when **FONTEDIT** asks for a filename, you may supply a filename containing wildcards (\*,?) and, optionally, a drive designator. **FONTEDIT** responds with a list of matching filenames from which you can point and shoot with a mouse. If a mouse is not installed, you can choose a filename by moving the reverse-video highlight with the arrow keys and pressing Enter. If a drive designator is not specified, the default drive is used. If you make a mistake in the wildcards, you can press Space Bar and reenter the wildcards or a filename.

When a font file has been chosen, **FONTEDIT** will create a backup copy of the font file, giving it the extension ".BAK".

If there is insufficient room left on the disk drive, **FONTEDIT** will give a caution and stop. The free space required on the disk with the font file must be at least as much as the original size of the font file. This is calculated after the backup file has been created.

If the overlay file HELV9B.EXE is not in the current directory or in one of the directories in your DOS PATH, you will be prompted to enter the pathname to it.

After loading the font file, if it contains multiple font definitions you will be asked which font you want to view and edit; after you answer you will see the main menu (described below). If the font file contains only one font definition, you will immediately be at the main menu. If ASCII 65 (capital "A") is defined for the font file you are editing, it will be displayed.

At any point after the file is loaded, you may temporarily escape to DOS by pressing Alt-D. Be sure that your path includes the **FONTEDIT** subdirectory when using the DOS access feature. You can also dump the screen to a laser printer by pressing Alt-P.

The section below describing the Main Menu describes how to select a character to view on screen, including those ASCII values that don't have a keyboard equivalent.

Upon completion of editing, saving of your work, and exiting **FONTEDIT**, you can download to your printer the newly edited font file. Normally, this is done by using whatever font downloading utilities you usually use. Optionally, while editing your font file you can download it to the laser printer from within **FONTEDIT**, and print either a text file from disk or echo keyboard input to the printer using the font. This is described further later.

## 5.1. Basic Screen Layout

The basic screen layout is a status line at the top; on the top right are the menu choices available via the Function Keys, RETURN, or ESC; on the middle right is information about the font being edited; and on the bottom right is information about the displayed character. In VGA mode, the lower right corner of the screen shows Alt-key definitions and the filename being edited. The rest of the screen is used to display a magnified version of the characters. At times the bottom line is used for messages.

The displayed character and the border around it is referred here as the character box. The character box is surrounded by a larger box which is referred here as the cell box. The cell box denotes the largest character size which any character in this font can be. The information area on the right of the screen shows the size of the cell box and character box. The size of the cell box can be changed under the Font Operators menu.

The magnification factor used to display the characters is automatically chosen at start-up to provide a size which fills up the screen as much as possible while maintaining a "pleasing" ratio of width to height. The character box is displayed with grid lines superimposed as an editing guide. If the magnification is such that the character box would become congested while the grid lines are displayed, the grid lines are suppressed.

If zoom mode is active (described in a subsequent section), the cell box is suppressed and the character box is displayed so that it takes up as much of the screen as possible.

## 5.2. Guidelines

Four guidelines are displayed for each character of portrait fonts when not in zoom mode. They are the baseline, x-height, M-height, and p-height. To help distinguish them, they are drawn with different line styles. The baseline is a more solid dashed line, the M-height is a less solid dashed line, and the x-height and p-height are dotted lines.

The M-height is drawn through the upper pixel row of the letter "M". If the letter "M" is not defined in the font, the height of the first upper case letter defined in the font is used. If there are no upper case letters in the font, no M-height is drawn.

The x-height is drawn through the upper pixel row of the letter "x". If the letter "x" is not defined in the font, the height of the first lower case letter without an ascender defined in the font is used. If there are no such letters in the font, no x-height is drawn. This guideline does not depend on the x-height field in the font header, which is ignored anyways by the LaserJet in a bitmapped font.

The p-height is drawn through the lowest pixel row of the letter "p". If the letter "p" is not defined in the font, the lowest row of one of the letters "g", "j", "q", or "y" is used. If none of these letters are defined in the font, no p-height is drawn.

The baseline is drawn through the pixel row indicated by the baseline field in the font header. This field can be changed under the Font Operations menu. When changing the baseline, it may be necessary to change the cell height first.

When editing a letter upon which a guideline is based (e.g., normally "M", "p", and "x"), the guideline positions are updated as soon as the edited character is saved.

## 5.3. Main Menu

The status message at the top of the screen says "Press a character to display it." The main menu changes with pressing either the SHIFT or CTRL keys. This reflects how the F-key definitions change when SHIFT or CTRL is pressed. The available menu options are shown below.

NO SHIFT or CTRL	SHIFT only	CTRL only
F2 = Pixel Edit	F2 = VGA Text Colors <sup>3</sup>	F2 =
F3 = Zoom <sup>1</sup>	F3 = Exp. Factors	F3 =
F4 = Font Operators	F4 =	F4 =
F5 = Replicate	F5 =	F5 =
F6 = New Font <sup>2</sup>	F6 =	F6 =
F7 = Create New Char.	F7 =	F7 =
F8 = Delete Character	F8 =	F8 =
F9 = Printer Commands	F9 = ←Print Shop Icon	F9 =
F10= Import TIFF	F10= Import PCX	F10= Import Soft Font
RET=	RET=	RET= Pick ASCII
ESC= Quit	ESC= Quit	ESC= Quit

notes:

- || 1. If already in Zoom mode, this will say "Unzoom".
- || 2. This choice shown only if the font file defines more than one font.
- || 3. Shown only in VGA mode.

At this point you can either begin to operate on the character displayed, or press a letter key to display that character. If the ASCII value corresponding to the key you pressed is not defined in the font, there will be no response. There are two ways to display any ASCII characters defined in your font file, including those such as ASCII 127 which don't have an associated key on the keyboard. One way is to press and hold the ALT key, type the 3-digit ASCII value on the numeric keypad, then release the ALT key. Since some keyboards don't have a numeric keypad, another way to display a character which doesn't have a keyboard equivalent is to use the Pick ASCII menu choice (CTRL-Enter).

The right or down arrow keys can also be used to scroll to the next ASCII value in the font. The up or left arrow keys can be used to scroll to the previous ASCII value in the font. The selection will wrap at the first or last ASCII values.

Pressing ALT-Z (for zoom) at the Main Menu or the Pixel Edit menu can also be used to toggle zoom mode on and off.

### 5.3.1. Pixel Edit

Pixel Edit is a choice from the main menu, and operates on the character displayed. Upon entering the edit mode, the status message at the top of the screen says either:

"Pixel Editing. Left Button: Set Pixel Right Button: Clear Pixel"

if a mouse is installed, or:

"Pixel Editing. Use arrow keys to move crosshairs"

if no mouse is installed. The following menu choices are displayed:

NO SHIFT or CTRL	SHIFT only	CTRL only
F2 = Image Transforms	F2 =	F2 =
F3 = Area Operators	F3 =	F3 =



F4 = Clear Character	F4 =	F4 =
F5 = Row/Col Ins/Del <sup>3</sup>	F5 =	F5 =
F6 = Cut & Paste	F6 =	F6 =
F7 = Adjust Kerning <sup>1,3</sup>	F7 =	F7 =
F8 = New Offsets <sup>3</sup>	F8 =	F8 =
F9 =	F9 =	F9 =
F10= Quit & Save	F10=	F10=
RET= Toggle pixel <sup>2</sup>	RET=	RET=
ESC= Quit, no save	ESC= Quit, no save	ESC= Quit, no save

notes:

- ||| 1. This menu choice shown only for proportional fonts.
- ||| 2. This menu choice shown only if no mouse is installed.
- ||| 3. Shown only if not in Zoom Mode.

At this point, the mouse arrow cursor will be visible if a mouse is installed. If no mouse is installed, you will see a crosshair. Both the crosshair and mouse can be moved one pixel at a time with the arrow keys, or in larger increments by using the PgUp, PgDn, Tab, and Shift-Tab keys. You can begin editing individual pixels by either moving the mouse arrow and clicking, or by moving the crosshair and pressing RETURN to toggle the pixel underneath on or off.

If you experience erratic mouse behavior while pixel editing, you may need to update your mouse driver. **FONTEDIT** works fine with Microsoft mouse version 8.20a. This version of the mouse driver is available upon request by registered users.

At the Pixel Edit menu, zoom mode can be toggled on and off by pressing ALT-Z.

If zoom mode is not in effect, the character box can be moved around within the cell box by pressing Ctrl-Up, Ctrl-Down, Ctrl-Left, or Ctrl-Right. If your keyboard has two sets of arrow keys, the arrow keys on the numeric keypad must be used. As you move the character, the left offset and top offset are updated in the character information display.

### 5.3.1.1. Image Transforms

Image Transforms is a choice from the pixel edit menu, and performs a set of special effects on the character displayed. Upon entering Image Transforms, the status message at the top of the screen says:

"Image Transforms. Press SHIFT for more."

The following menu choices are displayed:

NO SHIFT or CTRL	SHIFT only	CTRL only
F2 = Invert	F2 = Resize <sup>3</sup>	F2 =
F3 = Hollow	F3 = Counterclockwise <sup>3</sup>	F3 =
F4 = Thinner	F4 = Bolder	F4 = Bold/Thin Option
F5 = Mirror Image	F5 = Smooth	F5 =
F6 = Upside-Down	F6 =	F6 =
F7 = Slant <sup>1</sup>	F7 =	F7 =
F8 = Tilt <sup>1</sup>	F8 =	F8 =
F9 = Drop Shadow <sup>1</sup>	F9 =	F9 =
F10=	F10=	F10=
RET= Toggle Pixel <sup>2</sup>	RET=	RET=
ESC= Pixel Edit Menu	ESC= Pixel Edit Menu	ESC= Pixel Edit Menu

notes:

- || 1. Slant, Tilt, and Drop Shadow choices shown only when not in zoom mode.
- || 2. This menu choice shown only if no mouse is installed.
- || 3. Resize & Counterclockwise choices shown only when not in zoom mode.

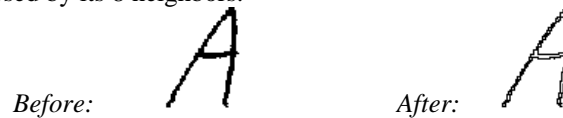
### 5.3.1.1.1. Invert.

This is chosen from the Image Transforms menu by pressing F2. It will change all "on" pixels to "off" pixels, and vice versa. It operates on the character presently displayed, including any editing changes already made up to that point.



### 5.3.1.1.2. Hollow.

This is chosen from the Image Transforms menu by pressing F3. It will hollow out a character, leaving behind a skeleton about one pixel wide. The hollow function is performed by deleting all pixels which are completely enclosed by its 8 neighbors.



### 5.3.1.1.3. Thinner.

This is chosen from the Image Transforms menu by pressing F4. It will delete a layer of pixels one pixel deep from the surface of the character. The surface it deletes from can be any combination of the top, bottom, left, or right surfaces, as controlled by the user. The surface(s) are controlled by the Bold/Thin Option, Ctrl-F4. The default value for the bold/thin option will cause a layer of pixels to be deleted from all four sides.

This function can be invoked repeatedly to make the character even thinner. However, the thinning algorithm is smart enough not to thin it beyond the point at which the character's basic shape changes. That is, you can thin a character to a 1-pixel wide skeletal stick figure, but it will still be recognizable as that character.



### 5.3.1.1.4. Mirror Image.

This is chosen from the Image Transforms menu by pressing F5. It will flip the character around the vertical axis, as if you were looking at it in a mirror.



### 5.3.1.1.5. Upside-Down

This is chosen from the Image Transforms menu by pressing F6. It will turn the character upside-down, flipping it around the horizontal axis.



### 5.3.1.1.6. Slant.

This is chosen from the Image Transforms menu by pressing F7. It will slant the top of the character left or right. Upon choosing this option, you will see a blinking parallelogram which indicates the amount of slant the new character will have. If this option is chosen without a mouse present, the height of the parallelogram can be disregarded. This option can be chosen only if not in zoom mode.

Slant and tilt are especially useful for straightening out an imported scanned image which may be slightly crooked, or for creating pseudo-italic characters, etc.



### 5.3.1.1.7. Tilt.

This is chosen from the Image Transforms menu by pressing F8. It will tilt the right side of the character up or down. Upon choosing this option, you will see a blinking parallelogram which indicates the amount of tilt the new character will have. If this option is chosen without a mouse present, the width of the parallelogram can be disregarded. This option can be chosen only if not in zoom mode.



### 5.3.1.1.8. Drop Shadow.

This is chosen from the Image Transforms menu by pressing F9. It will hollow out the character and place a shadow of the original character underneath it. This can be used to simulate a 3-dimensional character. Upon choosing this option you will see a blinking character box, which represents the placement of the shadowed image of the character. When the placement is OK, click the mouse (or press F10 if no mouse). This option can be chosen only if not in zoom mode.



### 5.3.1.1.9. Resize.

This is chosen from the Image Transforms menu by pressing Shift-F2. It will allow the character to be stretched or compressed both horizontally and vertically independently. The resized character will be smoothed to eliminate "jaggies". This option can be chosen only if not in zoom mode.

When this option is chosen, the character box will blink. You can use the mouse or arrow keys to change the size of the character box, and it will "rubber-band" while you do so. The upper left corner remains fixed, and only the lower right corner moves. F5 can be used to refresh the display. When the size is OK, click the mouse or press F10 to accept the new size. The character will be scaled to the new size.

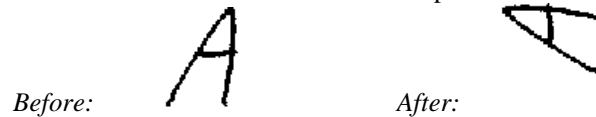
If you cannot make the character big enough by moving only the lower right corner, cancel the resizing and move the entire character with Ctrl-Up or Ctrl-Left, and then resize again.

After the character is resized, you may want ensure that the left offset, top offset, and kerning (if the font is proportional) are acceptable. You may also want to smooth it (Shift-F5 to smooth).



**5.3.1.1.10. Counterclockwise.**

This is chosen from the Image Transforms menu by pressing Shift-F3. It will turn the character 90 degrees counterclockwise. It can be repeatedly pressed, and pressing it 3 times is equivalent to turning the character 90 degrees clockwise. Using this option, you can simulate the ability to print both portrait and landscape on the same page at the same time on the LaserJet II. This option can be chosen only if not in zoom mode.



**5.3.1.1.11. Bolder.**

This is chosen from the Image Transforms menu by pressing Shift-F4. It will add a layer of pixels one pixel deep to the surface of the character. The surface it adds to can be any combination of the top, bottom, left, or right surfaces, as controlled by the user. The surface(s) are controlled by the Bold/Thin Option, Ctrl-F4. The default value for the bold/thin option will cause a layer of pixels to be added to all four surfaces.

The bolding transformation will not change the number of rows and columns in the character box. You may find the look of the resulting bolded character more pleasing if you do the bolding in 3 steps: first, Expand the character to add blank rows around the sides (F2 from the Row/Col Ins/Del Menu); second, perform the Bolding,; third, then Trim the character (F3 from the Row/Col Ins/Del Menu) to delete the blank rows and columns around the sides.

This function can be invoked repeatedly, but it is smart enough to keep from completely filling up interior areas like the middle of the letter "O".



**5.3.1.1.12. Bold/Thin Option**

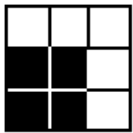
This is chosen from the Image Transforms menu by pressing Ctrl-F4. This controls a weight factor that is used by the bolding and thinning algorithms to control which of the four directions are emboldened or thinned. Once the weight factor is changed, it stays at that value for other characters until changed again. The weights and directions are shown below:

	Weight	Bold	Thin
	-----	----	----
	1	Right	Left
	2	Left	Right
	4	Down	Up
	8	Up	Down

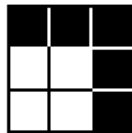
The weights can be combined. For instance, to embolden up and right, select a weight of 9. The default weight value is 15.

### 5.3.1.1.13. Smooth

This is chosen from the Image Transforms menu by pressing Shift-F5. It will try to smooth out small jagged edges that may result from importing a bitmapped image, resizing a character, or changing the font's point size. For each pixel, its 8 neighbors in a surrounding 3x3 grid are examined; a pixel is deleted if it and its neighbors match the first pattern below or 90 degree rotations of it. Likewise, a pixel will be filled in if it and its neighbors match the second pattern below or rotations of it



Center pixel will be deleted



Center pixel will be added

### 5.3.1.2. Area Operators

Area Operators is a choice from the Pixel Edit menu. It allows you to fill (turn "on") or clear (turn "off") a large group of pixels at once. Several types of shapes are available. Upon entering the edit mode, the status message at the top of the screen says:

"Area fill & Clear. Choose a shape with F keys."

The following menu choices are displayed:

- F3 = Polygon
- F4 = Rectangle
- F5 = Ellipse & Wedge
- F6 = Parallelogram
- ESC= Pixel Edit

At this point you can either choose one of the shapes shown, or escape back to pixel editing. Any area operations you have completed but now wish to undo must be undone by escaping to Pixel Editing, and then escaping from Pixel Editing back to the Main Menu. Caution - this will also undo any other unrelated editing changes for that character.

All area operations act on a character using the aspect ratios presently in use. For instance, if you choose a circular fill area operation (a special case of the ellipse fill), but the character is displayed such that it is wide and flat, the filled area will appear circular on screen. However, once it is printed, the filled area would appear more like a tall, upright ellipse rather than a circle. The default aspect ratio has been chosen to eliminate this potential problem.

### 5.3.1.2.1. Polygon Fill & Clear

Polygon fill and clear allows filling and clearing of areas of arbitrary, closed shape. The shape should be a polygon that does not loop onto itself such as a figure eight. For such a polygon, only one of the interior loops would be filled or cleared.

Upon entering Polygon Fill & Clear, the status message at the top of the screen says either:

"Polygon fill. Left Button: Mark vertex Right Button: Close Polygon"

if a mouse is installed, or simply:

"Polygon fill."

if no mouse is installed. The menu keys display the choices:

```
F10= Close Polygon1
RET= Mark vertex1
ESC= Cancel
```

notes:

|| 1. This menu choice shown only if no mouse is installed.

To begin marking the polygon to fill or clear, go to a vertex of it and either press the left mouse button (if using a mouse), or press RETURN (if not using a mouse). Then go to each succeeding vertex in order and either press the left mouse button or press RETURN. As you select where to place the vertex, the line segment will blink to show you how it would look if the vertex were placed there. After you place the vertex, the line segment will become solid and a partially drawn polygon will be superimposed on the character displayed. At any time you can cancel the polygon fill & clear operation by pressing ESC.

After the first vertex is marked, the menu choice "F2 = Bezier Curve" will appear. This choice allows a Bezier curve segment to be defined. This choice is described more fully below.

After you have marked each vertex, it is not necessary to go back to the first vertex; simply press the right mouse button (if using a mouse), or press F10 (if not using a mouse). The polygon will automatically be completed between the last vertex marked and the first vertex.

At this point, the character is temporarily suppressed, leaving displayed the outline of the character box and the polygon just marked. You now have the option of:

```
-----
Filling, or \ / polygon interior
Clearing, or >--- either the ---< or
XOR'ing / \ polygon exterior
-----
```

If a mouse is installed, the status line will read:

```
"Left Button: Fill      Right Button: Clear      Both: XOR"
```

The menu choices will show:

```
F3 = Fill1
F4 = Clear1
F5 = XOR1
F6 = Tiling2
ESC= Cancel
```

notes:

- ||| 1. This menu choice shown only if no mouse is installed.
- ||| 2. This menu choice shown only for very large fonts on a VGA, AT&T, or CGA display.

Move the mouse or crosshairs to either the interior or exterior of the polygon, and either click the mouse or press the function keys F3, F4, or F5. After a few seconds, the character will be redrawn with the affected pixels either filled, cleared, or exclusive-ORed (XOR'ed). You will be returned back to the Area Operations menu.

#### 5.3.1.2.1.1. Bezier Curve

This choice is enabled during Polygon Area Operations after the first point of a polygon has been chosen. Upon choosing the Bezier Curve option, you will be given the choices:

```
F2 = Set Endpoint
F3 = Set C1
F4 = Set C2
F10= Curve OK
ESC= Cancel
```

A Bezier curve is defined by four points: the start, the end, and two control points (C1 & C2). When the Bezier Curve option is chosen, the most recently defined polygon vertex is taken as the starting point. The other three points are chosen using the F2, F3, and F4 keys. As each point is chosen, the menu will change to read "Modify ...". For instance, after the endpoint is chosen, the menu will show "F2 = Modify Endpoint".

Once the three points are chosen, a Bezier curve will be drawn. The location of any of the three points can then be modified. While a point is being modified, the Bezier curve will "rubber-band" to show the effect of moving that point. The old location of the point will blink as a reminder of its location.

Once the three points have been satisfactorily set, press F10 to accept the Bezier curve. Polygon definition will continue from the ending of the Bezier curve.

#### 5.3.1.2.2. Rectangle Fill & Clear

Rectangle fill & clear allows filling of rectangular (including square) regions, and operates in a similar manner as polygon fill & clear, except that only the two diagonally opposite corners of the rectangle need to be marked. They can be either upper left - lower right, or lower left - upper right.

Upon entering Rectangle Fill & Clear, the status message at the top of the screen says either:

"Rectangle fill. Left Button: 1st corner Right Button: Opposite Corner"

if a mouse is installed, or simply:

"Rectangle fill."

if no mouse is installed. The menu keys display the choices:

RET= Mark Corner<sup>1</sup>  
ESC= Cancel

notes:

|| 1. This menu choice shown only if no mouse is installed.

To begin marking the rectangle to fill or clear, go to a corner of it and either press the left mouse button (if using a mouse), or press RETURN (if not using a mouse). The first corner will blink as a marker to you. Then go to the diagonally opposite corner and either press the right mouse button or press RETURN. At any time you can cancel the rectangle fill & clear operation by pressing ESC.

At this point, the character is temporarily suppressed, leaving displayed the outline of the character box and the rectangle just marked. You now have the option of:

```

-----
Filling, or      \                / rectangle interior
Clearing, or    >--- either the ---<          or
XOR'ing        /                \ rectangle exterior
-----
    
```

If a mouse is installed, the status line will read:

"Left Button: Fill Right Button: Clear Both: XOR"

The menu choices will show:

F3 = Fill<sup>1</sup>  
F4 = Clear<sup>1</sup>  
F5 = XOR<sup>1</sup>  
ESC= Cancel

notes:

|| 1. This menu choice shown only if no mouse is installed.

Move the mouse or crosshairs to either the interior or exterior of the rectangle, and either click the mouse or press the function keys F3, F4, or F5. After a few seconds, the character will be redrawn with the affected pixels either filled, cleared, or exclusive-ORed (XOR'ed). You will be returned back to the Area Operations menu.

### 5.3.1.2.3. Ellipse & Wedge Fill / Clear

Ellipse fill & clear allows filling of elliptical (including circular) regions, and operates in a similar manner as rectangle fill & clear, except that only the center of the ellipse and a point on it need to be marked.



Upon entering Ellipse Fill & Clear, the status message at the top of the screen says either:

```
"Ellipse fill.          Left Button: Center of ellipse"
```

if a mouse is installed, or:

```
"Ellipse fill.          Go to center of Ellipse & mark it."
```

if no mouse is installed. The menu keys display the choices:

```
F3 = Wider, Flatter
F4 = Taller, Thinner
F5 = Refresh Charac.
F6 = Bigger Wedge
F7 = Smaller Wedge
F8 = Move Clockwise
F9 = Move Counterclk
F10= Ellipse OK1
RET= Mark Corner1
ESC= Cancel
```

notes:

```
||| 1. This menu choice shown only if no mouse is installed.
```

After you mark the center of the ellipse it will blink as a marker to you. The status line will change to read:

```
"Ellipse fill.          Right Button: Ellipse OK"
```

if you are using a mouse, or:

```
"Arrow keys: Define size      F keys: Shape of Ellipse"
```

if no mouse is installed. Move the mouse cursor or crosshairs to define the size of the ellipse; as you move, the ellipse is continually redrawn to show you where it will go. The default shape is circular, but you can change the shape by repeatedly pressing the F3 and/or F4 keys.

The F6, F7, F8, and F9 keys allow you do define a wedge instead of a full ellipse.

At times, the redrawing process of ellipse may make it hard to make out the character underneath. If this becomes the case, press F5 to refresh the character display.

When you have made the ellipse the right size and shape, press the right mouse button (if using a mouse), or the F10 key (if not using a mouse). At this point, the character is temporarily suppressed, leaving displayed the outline of the character box and the ellipse just marked. You now have the option of:

```
-----
Filling, or \                / ellipse interior
Clearing, or >--- either the --<         or
XOR'ing     /                \ ellipse exterior
-----
```

If a mouse is installed, the status line will read:

```
"Left Button: Fill          Right Button: Clear          Both: XOR"
```

The menu choices will show:

F3 = Fill<sup>1</sup>  
F4 = Clear<sup>1</sup>  
F5 = XOR<sup>1</sup>  
ESC= Cancel

notes:

|| 1. This menu choice shown only if no mouse is installed.

Move the mouse or crosshairs to either the interior or exterior of the ellipse, and either click the mouse or press the function keys F3, F4, or F5. After a few seconds, the character will be redrawn with the affected pixels either filled, cleared, or exclusive-ORed (XOR'ed). You will be returned back to the Area operations menu.

#### **5.3.1.2.4. Parallelogram Fill & Clear**

Parallelogram fill & clear allows the filling and clearing of parallelogram areas in a manner similar to rectangle fill & clear. Two adjacent corners of the parallelogram are first marked, as directed by the instructions on screen. After the second corner is marked, move the crosshairs or mouse cursor to the third corner. An outline of the parallelogram will be "rubber banded" on screen to show the size. Mark the 3rd corner as directed by the instructions on screen. Move the mouse or crosshairs to either the interior or exterior of the parallelogram, and either click the mouse or press the function keys F3, F4, or F5. After a few seconds, the character will be redrawn with the affected pixels either filled or cleared. You will be returned back to the Area Operations menu.

#### **5.3.1.2.5. Pixel Edit**

This menu choice from the Area Operations menu allows you to return to pixel editing. While in pixel editing you can, for instance, do detailed pixel by pixel touch-up work of the areas worked on by the area operators. At the pixel edit menu, Alt-Z can be used to toggle zoom mode.

#### **5.3.1.3. Clear Character**

This function is chosen from the Pixel Edit menu. It allows you to "clear" (turn off) all pixels within the presently displayed character box.

#### **5.3.1.4. Row/Col Ins/Del**

Row/Col Ins/Del allows you to change the size of the character box by inserting or deleting rows and columns. Rows and columns are inserted or deleted under the current location of the mouse cursor or crosshairs. By moving the mouse or crosshairs you can insert or delete rows and columns anywhere in the character box. When individual rows and columns are inserted, the new row or column copies the pixels from the row or column immediately above or to the left of the cursor. Individual pixels can still be toggled on or off while in the Row/Col Insert/Delete mode.

Row/Column insert/delete acts upon the image of the character as displayed. Since landscape fonts are displayed sideways, deleting a row on the screen corresponds to deleting a column in the printed version of the character.

When inserting or deleting rows or columns, the upper left corner of the character box is anchored. The character box grows downward and/or to the right, and contracts upward and/or to the left. It will not grow beyond the limits of the cell box, and you cannot contract it to zero rows or columns. You can move the upper left corner of the character box by pressing Ctrl-Up, Ctrl-Down, Ctrl-Left, or Ctrl-Right. If your keyboard has two sets of arrow keys, the arrow keys on the numeric keypad must be used to move the character box.

When inserting rows or columns, the row or column under the mouse cursor or crosshairs will be replicated.

Upon entering row/column insert/delete, the status message at the top of the screen says:

```
"Insert & Delete Rows or Columns.      Go to row or column and use F keys."
```

The menu choices will show:

```
F2 = Trim
F3 = Expand
F5 = Insert Row
F6 = Delete Row
F7 = Insert Column
F8 = Delete Column
F10= Size OK
ESC= Cancel
```

Individual rows and columns are inserted and deleted as described above by pressing the F5, F6, F7, or F8 keys. When finished, press F10. If you decide not to accept the changes you made, press ESC. If you press ESC, the character will be restored to the size it had prior to beginning row/column insert/delete. Any editing changes made prior to beginning row/column insert/delete will also be restored.

#### **5.3.1.4.1. Trim**

The Trim function will trim blank rows and columns from the outside of a character. It is selected by pressing F3 from the Row/Col Insert/Delete menu. It will trim all four sides, and from each direction it will stop at the first black pixel it finds. Any blank rows or columns in the interior of the character will not be affected. Black pixels in the original character will still be in their same position relative to the cell box. The kerning is not changed. If a character is completely blank, the size of the character will not change.

The Trim function is also available on a font-wide basis by pressing Shift-F6 from the Font Operations menu.

#### **5.3.1.4.2. Expand**

The Expand function is selected by pressing F2 from the Row/Col Insert/Delete menu. The number of rows will be expanded to the limits given by the cell height. The rightmost column will be set to the right side of the cell box; the leftmost column will be set to the left side of the cell box unless there are some characters with negative left offsets. In this case, the leftmost column will be set to the same as the leftmost character of the font.

New rows and columns added with the Expand function will be blank. Any black pixels in the original character will still be in their same position relative to the cell box. The kerning is not changed.

The Expand function is also available on a font-wide basis by pressing Shift-F7 from the Font Operations menu.

Together, the Expand and Trim functions can conveniently add extra space to a character for editing, and then remove it to minimize the font's size and memory requirements in the printer.

### 5.3.1.5. Cut & Paste

This function is chosen from the Pixel Edit menu by pressing F6. It allows you to copy selected rectangular portions of a character to other parts of that same character, or to and from a clipboard. The clipboard allows you to transfer portions of a character to other characters. The copy can be made to cover-up, logical OR, logical AND, or logical XOR the underlying pixels. Optionally, you can delete the original portion of the character being copied.

An example of usage would be to move an accent over a character if you find it isn't placed correctly. Or, to make an umlaut (double dots over a character), you could copy the first dot, ensuring that both dots will be the same size.

Cutting a portion of a character can be done for any row and column magnification values (see section 5.3.12 for an explanation of changing the magnification values). However, when pasting from the clipboard, the magnification values must be the same as when the image was pasted into the clipboard. For cutting and pasting when NOT in Zoom mode, this will be transparent, since the same magnification values are used for each character. For Zoom mode, each letter is initially displayed with different magnification values based on its size. In this case, care should be taken to make sure the magnification values are the same, and if necessary change them using Shift-F3 from the Main Menu as described in section 5.3.12.

When entering Cut & Paste, if you have already placed something into the clipboard, and if the contents would fit within the character being edited, you will be asked if you want to use the clipboard's contents. The default answer is no. If you choose yes, the clipboard contents will be shown blinking, and you can continue placing the contents as described below.

If you answer no, or if the clipboard was empty, you will be asked to mark the first corner either by clicking the left mouse button (if using a mouse), or by pressing ENTER (if no mouse). This will be one corner of a rectangular area to be copied. Then as you move the mouse or crosshairs, a box will rubber-band showing the size of the rectangular area to be copied. Mark the diagonally opposite corner by pressing the right mouse button (or by pressing ENTER if no mouse). It is not necessary to try to click the mouse on the corner of a pixel. You can click anywhere in the pixels which are to be the corners. **FONTEDIT** will include that entire pixel.

Upon marking both corners, the status message at the top of the screen says either:

"Left Button: OR Copy      Right Button: Cover-Up Copy      Both: XOR Copy"

if a mouse is installed, or:

"Press F4, F5, or F6 when placement is OK."

if no mouse is installed. The menu keys display the choices:

```
F2 = Cut / Uncut
F4 = OR Copy1
F5 = Cover-Up Copy1
F6 = XOR Copy1
F7 = AND Copy1
F8 = To Clipboard
```

F9 = From Clipboard<sup>2</sup>  
ESC= Cancel

notes:

- ||| 1. This menu choice shown only if no mouse is installed.
- ||| 2. This menu choice shown only if something has already been copied to the clipboard.

The image being copied will blink. Use the mouse, or arrow keys and PgUp, PgDn, Tab, and Shift-Tab keys to position the copy. Pressing F2 toggles whether the original image is erased or kept. When the position is OK, choose the OR, Cover-Up, or XOR copy.

The OR copy copies the rectangular image such that the pixels underneath are turned "on" if they were "on" originally, or if the image being copied has that pixel turned "on".

The Cover-Up copy copies the rectangular image such that the pixels underneath become an exact replica of the rectangular image. Any pixels in the rectangular image which were "off" will stay "off" with the Cover-Up copy, regardless of whether the pixels underneath were "on" or "off".

The XOR copy copies the rectangular image such that the pixels underneath are eXclusive-ORed with the pixels in the image being copied. Any "on" pixels in the copy will reverse the on/off state of the pixel originally underneath. Any "off" pixels in the copy will not affect the pixel originally underneath.

The AND copy copies the rectangular image such that the pixels underneath are "on" only if both they originally were "on" and if the image from the clipboard has an "on" pixel in that location.

You can copy the image to the clipboard in case you want to paste it to another character. Or, if an image has previously been copied to the clipboard, you can substitute it for the image now blinking.

### 5.3.1.6. Adjust Kerning

This function is chosen by pressing F7 from the Pixel Edit menu. It allows you to adjust the character spacing for proportional fonts. This function will not be displayed or activated if the font is a fixed-width font, or if zoom mode is active.

When activated, a blinking line indicates the start of the next character when the displayed character is printed. Use either the mouse (if installed) or the arrow keys to move the line. The arrow keys will change the kerning value in increments of 4. Since the units of kerning is in terms of a quarter-pixel, each press of an arrow key is equivalent to one pixel. Since the LaserJet Series II printer rounds the kerning value to the nearest whole pixel anyways, a finer resolution on the arrow keys would be ineffective.

F10 or clicking the mouse accepts the new kerning value; ESC cancels the function.

### 5.3.1.7. New Offsets

This function is chosen by pressing F8 from the Pixel Edit menu. It allows you to move the character within the cell box faster than by using the Ctrl-Up, -Down, -Left, and -Right. This function will not be displayed or activated if zoom mode is active.

When activated, a blinking box indicates where to move the character. Use either the mouse (if installed) or the arrow keys, Tab, Shift-Tab, PgUp, or PgDn to move the box. F10 or clicking the mouse accepts the new

location; ESC cancels the function. If the new position is accepted, the left offset and top offset will change to reflect the new position.

Note that although it is possible to give a character a negative left offset by moving it to the left of the left side of the cell box, some clones of HP printers may be unable to print such characters in a soft font. For instance, the Brother HL8e "LaserJet II compatible" printer won't print such characters in a soft font. All HP printers that accept soft fonts are able to handle characters with negative left offsets.

Presently, **FONTEDIT** doesn't allow you to move a character farther left than the left edge of the screen, although HP printers are able to accept characters with negative left offsets of as much as -4200. If a font is saved with one or more characters abutting the left edge of the screen, then the next time you edit the font it will be displayed one pixel farther to the right; consequently you will be able to move it one pixel farther left.

### **5.3.1.8. Quit & Save**

This function saves your editing changes to this character, terminates Pixel Editing, and returns you to the main menu.

### **5.3.1.9. Toggle Pixel**

This function can be chosen only if using **FONTEDIT** without a mouse. It allows you to toggle the pixel underneath the crosshairs either on or off.

### **5.3.1.10. Quit, no Save**

This function terminates Pixel Editing and returns you to the main menu without saving any of your changes to the character displayed.

## **5.3.2. Zoom / Unzoom**

The zoom function enlarges the displayed character by suppressing the display of the cell box, and expanding the character box to as large a size as possible without regard to maintaining any particular ratio of width to height. While in zoom mode, the character box cannot be moved within the cell box, kerning cannot be adjusted, and several of the image transformations listed earlier in the paragraph describing the "Image Transformations" menu cannot be used. All other editing functions can be used in zoom mode. Zoom mode can also be toggled by pressing ALT-Z.

If already in zoom mode, the menu will instead say "Unzoom". Unzooming restores the display of the cell box and re-enables editing functions disabled during zoom mode.

## **5.3.3. Font Operators**

This selection allows changing parameters of the entire font. The transformations selected using the CTRL and Shift keys work very similarly to the same choices under the Pixel Edit - Image Transformation menu, except that the transformation will now be done for each character in the font. For instance, CTRL-F5 will

make a mirror image of each character. Once these transformations have begun, they can be stopped midway by pressing Escape, but characters which have already been transformed will remain transformed. If you do stop in the middle, you can control what ASCII value to restart from by using the "start ASCII" parameter described below.

Global transformations can be sped up by selecting a smaller size for the row & column expansion values. They are changed by pressing Shift-F3 from the Main Menu, and will make the displayed character smaller on the screen. It does not change the size of the font when printed on paper. By making the character smaller on the screen, there are fewer bytes that need to be shuffled around the VGA memory, and the graphic algorithms that perform the image transformations will run faster.

Upon selection of Font Operators, the following menu choices will be available:

NO SHIFT or CTRL	SHIFT only	CTRL only
F1 =	F1 =	F1 = Counterclockwise
F2 = New Cell Width	F2 = New Symbol Set	F2 = Invert
F3 = New Cell Height	F3 = New Typeface	F3 = Hollow
F4 = Create New Font	F4 = New Font Comment	F4 = Thinner
F5 = Make Landscape <sup>1</sup>	F5 = Bold/Thin Option	F5 = Mirror Image
F6 = Make Fixed Width <sup>2</sup>	F6 = Trim All	F6 = Upside-Down
F7 = New Pitch (HMI)	F7 = Expand All	F7 = Slant
F8 = New VMI	F8 = Resize All	F8 = Tilt
F9 = New Point Size	F9 = Smooth All	F9 = Drop Shadow
F10= Move Baseline	F10=	F10= Bolder
RET= Move Underline	RET=	RET= Start ASCII
ESC= Main Menu	ESC= Main Menu	ESC= Main Menu

notes:

- || 1. If the font is already landscape, this will say "Make Portrait".
- || 2. If font is already fixed width, this will say "Make Propor."

### 5.3.3.1. New Cell Width

This function is chosen by pressing F2 from the Font Operations Menu. This changes the cell width, which is the maximum width a character in the font can have. The allowable values for the new cell width are presented as a range; the lower bound is determined by the maximum character width and offset for all of the defined ASCII values in the font. The maximum depends on screen resolution. Note that if the new cell width is chosen very wide for a portrait font (>187 for CGA, >331 for EGA, >459 for VGA), you won't be able to convert the font to landscape using **FONTEDIT**.

### 5.3.3.2. New Cell Height

This function is chosen by pressing F3 from the Font Operations Menu. This changes the cell height, which is the maximum height a character in the font can have. The allowable values for the new cell height are presented as a range; the lower bound is determined by the maximum character height and offset for all of the defined ASCII values in the font. The maximum is a function of screen resolution. Note that if the new cell height is chosen very tall for a landscape font (>187 for CGA, >331 for EGA, >459 for VGA), you won't be able to convert the font to portrait using **FONTEDIT**. Similarly, if the cell height of a portrait font is made >467, you won't be able to convert the font to landscape.

When **FONTEDIT** downloads a font to the printer, **FONTEDIT** will automatically set the line spacing equal to the cell height. Thus any characters, such as line draw characters, which extend fully from top to bottom of the cell box should touch from line to line when printed out on paper.

### 5.3.3.3. Create New Font

This function is chosen by pressing F4 from the Font Operations Menu. This creates a new font from scratch. You will be led through a series of questions to establish the following font parameters:

- Cell Width
- Cell Height
- Baseline
- Orientation (portrait/landscape)
- Spacing (fixed/proportional)
- Default Horizontal Motion Index, HMI
- Point Size
- Underline Distance

### 5.3.3.4. Make Landscape / Make Portrait

This function is chosen by pressing F5 from the Font Operations Menu. This option from the Main menu will convert the entire font to landscape (if presently portrait) or to portrait if presently landscape. The entire process can take several minutes. Once begun, this process cannot be halted. A status of the percentage completed is displayed at the top.

### 5.3.3.5. Make Fixed Width / Make Propor.

This function is chosen by pressing F6 from the Font Operations Menu. This converts a font between fixed width and proportional. If it is being made proportional, the kerning for each character is automatically set to two pixels beyond the right of each character. If being made fixed-width, you may need to change the font's pitch (HMI), as discussed in the next section; otherwise characters may overlap or be too far apart.

### 5.3.3.6. New Pitch (HMI)

This function is chosen by pressing F7 from the Font Operations Menu. This changes the default HMI, which is the horizontal motion (pitch) the printer makes when printing a fixed-width font, or when it tries to print a character not defined in the font. For instance, ASCII 32 (the space character) is usually not defined in a font. The pitch is defined in units of a quarter-pixel, 1200 per inch.

### 5.3.3.7. New VMI

This function is chosen by pressing F8 from the Font Operations Menu. This changes the default VMI field in the font header, which may be used by some programs supporting soft fonts to set the vertical motion the printer makes when it goes to a new line. The VMI is defined in units of a quarter-pixel, 1200 per inch. When converted to points (1/72nd of an inch), this is a common measure of the size of a font. The printer's line spacing can be set to different values than what is specified in the VMI field.

When **FONTEDIT** downloads a font to the printer, it instead uses the cell height to set the line spacing. Changing the VMI will not change the line spacing when **FONTEDIT** downloads it.



Choosing this option will not automatically scale the existing characters in the font. That is done using the "New Point Size" option described below.

### **5.3.3.8. New Point Size**

This function is chosen by pressing F9 from the Font Operations Menu. New Point Size is a choice from the Main Menu. It allows you to change the point size of the entire font, either bigger or smaller. An attempt is made to smooth the characters and reduce the "jaggies" that would otherwise result. Each new character is displayed on the screen as it is processed.

The larger the point size, the longer the process takes. Once begun, the process cannot be halted. However, when you are initially asked to supply a new point size, you can cancel this function by pressing ESC or by inputting the present font size as displayed in the Font Information area at the middle right of the screen. When it is done, you may want to Smooth All (Shift-F9).

### **5.3.3.9. Move Baseline**

This function is chosen by pressing F10 from the Font Operations Menu. This option moves the baseline. The allowable values for the new baseline are presented as a range; the bounds are determined by a combination of character height, width, left offset, and top offset for all of the defined ASCII values in the font. If some characters in the font such as an underscore (ASCII 95) occupy the last row of the cell box, and other characters such as "|" occupy the top row of the character box, the baseline cannot be moved without first changing the offsets for those characters or resizing the cell box.

### **5.3.3.10. Move Underline**

This function is chosen by pressing RETURN from the Font Operations Menu. It will move the position of the underlining. It is not related to the underscore character, ASCII 95, so if a program using the font implements underlining by using underscores, this function will not change that underline.

### **5.3.3.11. Main Menu**

This returns you to the Main Menu.

### **5.3.3.12. New Symbol Set**

This function is chosen by pressing Shift-F2 from the Font Operations Menu. This only changes the symbol set defined in the font header. It does not actually change any of the bitmaps for the characters in the font. Since the LaserJet uses the symbol set for its highest priority match when selecting which downloaded font to use when printing, changing the symbol set will require your application software (i.e., word processors, etc.) to use the correct symbol set when selecting this font.

The new symbol set is chosen numerically, but the prompt will show the fragment of the PCL sequence corresponding to this numeric value.

### **5.3.3.13. New Typeface**

This function is chosen by pressing Shift-F3 from the Font Operations Menu. This only changes the typeface defined in the font header. It does not actually change any of the bitmaps for the characters in the font. Changing the typeface may require your application software (i.e., word processors, etc.) to be aware of the new typeface value when selecting this font. When the LaserJet selects a font to use, the typeface value is given a lower priority than the symbol set.

When installing a bitmapped font with Windows 3.1 (see section 6.3), the name for the font that Windows uses is derived from this typeface field.

The mapping of typeface number to typeface name (i.e., 4=Helvetica, 5=Times Roman, 7=Script, etc.) is given in Table B-3 of the PCL 5 Comparison Guide, available from Hewlett-Packard. There are at least 463 typefaces assigned. This list is also available by me, Alexander Walter, upon special request to registered users of the enhanced version of **FONTEDIT**.

### **5.3.3.14. New Font Comment**

This function is chosen by pressing Shift-F4 from the Font Operations Menu. This allows you to change up to 40 characters of the font comment embedded in the font header.

### **5.3.3.15. Bold/Thin Option**

This function is chosen by pressing Shift-F5 from the Font Operations Menu. It selects the direction(s) that the bolding and thinning algorithms will do their job, and it works exactly as described under the Image Transformations Menu.

### **5.3.3.16. Trim All**

This function is chosen by pressing Shift-F6 from the Font Operations Menu. It applies on a font-wide basis the Trim function described under the Row/Col Ins/Del paragraph.

### **5.3.3.17. Expand All**

This function is chosen by pressing Shift-F7 from the Font Operations Menu. It applies on a font-wide basis the Expand function described under the Row/Col Ins/Del paragraph.

### **5.3.3.18. Resize All**

This function is chosen by pressing Shift-F8 from the Font Operations Menu. This changes the size of all characters by a fixed number of pixels horizontally and/or vertically. The amount of change in the two directions is controlled independently. The font can be globally resized by up to +/- 20 pixels at a time for each character. A positive change is down or right; a negative change is up or left.

Characters cannot be globally resized to fewer than 5 rows or columns. If resizing an individual character, the Tab, Shift-Tab, PgUp, PgDn keys, or the mouse, can be used to resize to fewer than 5 rows or columns. A character also cannot be resized beyond the boundaries of the cell box, so if the global resizing would expand a particular character beyond this limit, that character will be resized only as far as possible.

After choosing this function, you will first be asked to provide a horizontal change in the range of +/- 20 pixels. You can press Escape to abort. After entering the horizontal change, you will be asked to input the vertical change. When you press Enter, the global resizing will commence. As usual, the top left corner of the character is anchored, and the bottom and right sides will change. When it is done, you may want to Smooth All (Shift-F9).

### **5.3.3.19. Smooth All**

This function is chosen by pressing Shift-F9 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

### **5.3.3.20. Counterclockwise**

This function is chosen by pressing Ctrl-F1 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

An example of when you would want to rotate a font this way is to be able to print in columns from top to bottom, instead of rows left to right.

### **5.3.3.21. Invert**

This function is chosen by pressing Ctrl-F2 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

### **5.3.3.22. Hollow.**

This function is chosen by pressing Ctrl-F3 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

### **5.3.3.23. Thinner.**

This function is chosen by pressing Ctrl-F4 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an

ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

#### **5.3.3.24. Mirror Image.**

This function is chosen by pressing Ctrl-F5 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

#### **5.3.3.25. Upside-Down**

This function is chosen by pressing Ctrl-F6 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

#### **5.3.3.26. Slant.**

This function is chosen by pressing Ctrl-F7 from the Font Operations Menu. This works similarly to its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

Since a character after slanting cannot extend outside the cell box, the sizes of all characters at and above the start ASCII value will be checked to see what the maximum allowable slant would be. The desired amount of slant in units of pixels is entered numerically, with positive numbers being a rightward slant, and negative numbers being a leftward slant. If the allowable amount of slant is not enough, try increasing the font's cell width and/or cell height.

#### **5.3.3.27. Tilt.**

This function is chosen by pressing Ctrl-F8 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

Since a character after tilting cannot extend outside the cell box, the sizes of all characters at and above the start ASCII value will be checked to see what the maximum allowable tilt would be. The desired amount of tilt in units of pixels is entered numerically, with positive numbers being a downward tilt, and negative numbers being an upward tilt. If the allowable amount of tilt is not enough, try increasing the font's cell width and/or cell height.

#### **5.3.3.28. Drop Shadow.**

This function is chosen by pressing Ctrl-F9 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

For guidance on entering the horizontal and vertical offsets, see the discussion above for slant and tilt.

### 5.3.3.29. Bolder.

This function is chosen by pressing Ctrl-F10 from the Font Operations Menu. This works just like its counterpart under the Image Transformations menu, except that this will operate on all characters having an ASCII value equal to or greater than the start ASCII parameter described below. The default value for start ASCII is 0.

### 5.3.3.30. Start ASCII

This displays the current value of the starting ASCII variable, and allows you to change it. This variable defines the starting ASCII value for which the font transformations will be applied. Some ASCII values are 48 for "0", 65 for "A", and 97 for "a".

The inputted number is interpreted as decimal by default. To input a hexadecimal number, prefix it with "&h", and to input an octal number, prefix it by "&o". For instance, to choose "A" (65 decimal, 41 hex, or 101 octal), enter either "65", "&h41", or "&o101".

During global transformations, if you want to stop the processing at a particular ASCII value instead of letting it run to the end of the font, simply press Escape while **FONTEdit** is transforming the last character you want to have transformed.

### 5.3.4. Replicate

This function replicates the currently displayed character to another ASCII value. The new ASCII value must be one which is currently undefined. If necessary, first delete the ASCII character to be overwritten by using F8 from the Main Menu.

Upon choosing the Replicate function, you will be presented a list of unused ASCII characters. When you choose one, the ASCII character which was displayed prior to choosing Replicate will be copied to the new ASCII value, and you will be in Pixel Edit mode for the new character.

### 5.3.5. New Font

New Font is a choice made from the Main Menu, and can be made only if the the font file being edited contains multiple font definitions. If it does and you select New Font, you will be presented a list of the available fonts along with their point size and orientation (portrait or landscape). Make your choice by number. You will be returned to the Main Menu, and if "A" is defined in the new font, it will be displayed.

### 5.3.6. Create New Char.

Create New Character is a choice from the Main Menu. It allows you to define characters for ASCII values which previously had no symbol in the font. All members of the LaserJet family can print characters with ASCII values from 32 - 127, and 160 - 255 inclusive. Additionally, the LaserJet Series II and above can print characters with ASCII values from 1 - 6, 16 - 26, and 28 - 255 inclusive. **FONTEdit** supports the creation and editing of all of these ASCII values.

When you choose the Create New Character option, you will be presented a list of the available, unused ASCII values in the font. To pick, point and shoot with the mouse, or else if no mouse is installed, move the reverse-video highlight with the arrow keys and press ENTER. As a shortcut, you can press the character's button rather than click on the ASCII value. For instance, if you want to create the digit "1" (assuming it doesn't already exist), you can either click on the ASCII value of 49, or you can press the "1" on your keyboard when you see the list of ASCII values. Press ESC at any time to cancel back to the Main Menu.

After you pick an ASCII value to define, **FONTEdit** will create a blank character with a default size of half the cell box width and half the cell box height. You will then be put into Pixel Editing mode, where all the pixel editing tools, including resizing the character box and moving it around within the cell box, are available to you. When you are done, exit from Pixel Editing as usual, and you will be at the Main Menu.

If at this point you change your mind about defining a new character, you can delete it using the Delete Character option described below.

### 5.3.7. Delete Character

Delete Character is a choice from the Main Menu. It allows you to delete the definition of a character from the font after confirmation from the user. The definition of the character is removed from the font file, and the font file will become smaller. The deleted ASCII value becomes available to the Create New Character option.

### 5.3.8. Printer Support

This selection allows you to print either text files or text echoed from the keyboard, using either the soft font being edited or one of the built-in fonts in the LaserJet. All printer output is directed to the DOS device PRN. Upon choosing this option, the Status Line will read:

"Download Font & Other Printer Functions"

the menu choices will read:

```
F2 = Download Font
F3 = Print File
F4 = Echo Text
F5 = Page Eject
F6 = Select Font ID1
F7 = Built-in Fonts
ESC= Main Menu
```

notes:

|| 1. Shown only if there is no font ID already embedded in the font file.

#### 5.3.8.1. Download Font

This downloads the font to the printer and automatically selects it until further notice for subsequent text to be printed. Font ID 1 is automatically assigned unless a font ID is already embedded within the font.

When downloading, **FONTEDIT** will automatically set the line spacing equal to the cell height. Thus any characters, such as line draw characters, which extend fully from top to bottom of the cell box should touch from line to line when printed out on paper.

### **5.3.8.2. Print File**

This prints a text file from disk using the latest font selected, either the downloaded font or a built-in font. Wildcards can be used when selecting the file.

### **5.3.8.3. Echo Text**

This will echo text from the keyboard to the printer using the latest font selected, either the downloaded font or a built-in font. Each line is sent to the printer only when RETURN is pressed. A page will not be ejected until F5 is pressed or until the page is full.

### **5.3.8.4. Eject Page**

This sends a form feed character (ASCII 12) to the printer.

### **5.3.8.5. Select Font ID**

This allows a font ID to be chosen for use when downloading the font to the printer. This choice is seen only if there is no font ID already embedded in the font. The new font ID can be chosen from the range 1 to 99, with a default value of 1. It is not necessary to specify a font ID before downloading; "1" will be used by default if no other font IDs have been issued.

### **5.3.8.6. Built-in Fonts**

This choice will allow selecting one of the following fonts, the first 6 of which are internal to the LaserJet:

- Portrait Courier
- Bold Portrait Courier
- Portrait TTY
- Landscape Courier
- Bold Landscape Courier
- Landscape TTY
- Previous soft font (only if one has already been downloaded)

Note that switching between a landscape and a portrait font will cause the LaserJet to eject a page.

### 5.3.9. Import TIFF

This selection allows TIFF graphics to be imported to unused ASCII values. If necessary, first delete the old character using the "Delete Char." option from the Main Menu. Note that PCX is the preferred format for importing from a graphics image.

The TIFF image must be black and white; color images aren't supported. The image can be uncompressed or packed (Huffman coded), but FAX compression isn't supported.

After specifying the TIFF filename from which to import, you will then see a list of unused ASCII values in the current font being edited. Choose which one will receive the imported character. As a shortcut, you can press the character's button rather than click on the ASCII value. For instance, if you want to import the TIFF graphics to the digit "1", you can either click on the ASCII value of 49, or you can press the "1" on your keyboard when you see the list of ASCII values.

If the image is smaller than the cell box, it will be imported immediately and centered in the cell box.

If the image is larger than the cell box width or height, a portion of it must be chosen for importing. In this case, the image will be displayed on the screen. If it is too tall to display using the present display mode (>187 for CGA, >331 for EGA, >459 for VGA), the bottom will be clipped off. Also, if the image is less than 638 pixels across, it will be displayed as is. However, if it is wider than this, you will be presented a compressed image in which each pixel displayed represents an average of 8 adjacent pixels on that row.

In any event, if the TIFF image is larger than the cell box width or height, a blinking box will appear. If the TIFF width is less than 638 pixels, the blinking box represents the cell box size, and can be moved anywhere around the image using the mouse or arrow keys.

If the TIFF width is greater than 638 pixels, the blinking box represents which subportion of the TIFF image should be expanded for further examination; the box is sized to represent how much of the image can be shown uncompressed on the screen. The message at the top will direct you to press F3 when the box is positioned correctly. Upon pressing F3, that portion of the compressed image will be uncompressed to its full screen size, and the blinking box will be resized to represent the cell box size.

The compressed image may not display reliably in EGA mode. If there are any problems in EGA mode, try using CGA mode. This is forced by using the "/cga" switch when starting **FONTEDIT**.

When you have positioned the box over the portion of the TIFF image to import, click the mouse or press F10. If the cell box is too small to cover the portion of the image you want to import, you can either cancel and go to the Font Operators menu to change the Cell Width or Cell Height, or you can shrink the image using any paint software you have.

After the image is imported, you are put into Pixel Edit mode. You can clean up the image, delete rows or columns, etc. Very commonly with images from a hand scanner, the image will be slightly crooked since it is hard to hold the scanner for a perfectly straight and level scan. In this case, you can use the Slant and Tilt options from the Image Transforms menu to help fix the image. You will not be allowed to quit from pixel editing without saving the character. If you truly want to discard the imported character, you can choose the "Delete Char." option from the Main Menu.

### 5.3.10. Quit

Quit is a choice from the main menu. It allows you to exit from **FONTEDIT**, and in the enhanced version of **FONTEDIT** it will write the changes you made to the font file.



### 5.3.11. VGA Colors

If you are using a VGA display, you can customize the colors used to display graphics and text by pressing Shift-F2 from the Main Menu. The default startup color is light green on dark blue.

The foreground color is used for screen text, "on" pixels, and gridlines. The background color is used for "off" pixels and the rest of the screen's background. When you select this function from the Main Menu, you initially will be changing the foreground colors. F6 toggles between controlling the foreground and background colors.

The foreground and background colors are specified by their red, green, and blue (RGB) components. The components can be changed in two ways. The first way is to press the appropriate F key and enter a number from 0 to 63 directly.

The second way is to notice that one of the RGB components has a small arrow next to it. This defines the selected component. To change the selected component's value, press the up or down arrows. To change which RGB component is the selected component, press the left or right arrows.

**FONTEDIT** saves your color preferences in the file "fontedit.cfg", and these colors will be used next time you start up **FONTEDIT**.

### 5.3.12. Exp. Factors

Direct control of the magnification values can be obtained by pressing Shift-F3 from the Main Menu. Magnification is used to change the size of the characters displayed on the screen. Normally, it will not be necessary to use this option, since **FONTEDIT** will automatically choose magnification factors which fill up the screen as much as possible while maintaining a "pleasing" ratio of width to height.

The smaller the magnification factor, the smaller the character display will be, and vice versa. This feature could be used to approximate on screen how the printed character will look, although because of the screen's resolution it is not possible to duplicate the 300 dot per inch resolution of the printer.

When Shift-F3 is used, **FONTEDIT** will display the present magnification factors and prompt you for new factors. The factors are displayed in the form X,Y. This means that every pixel in the character is composed of "X" rows and "Y" columns of pixels on the screen. Magnification factors of 1,1 are the smallest that can be displayed; the largest depends on the cell width and cell height of the font being displayed, and upon the display adaptor used.

Magnification factors are inputted in the form X,Y including comma. If either X or Y is omitted, the present value of the missing X or Y is used. Pressing Return without supplying X or Y will keep the present values.

### 5.3.13. <Print Shop Icon

This option allows you to import a Print Shop icon. These are not the same as a Print Shop graphics file. After specifying the filename to import, choose by number which icon within the file should be imported.

### 5.3.14. Import PCX

This selection is made by pressing Shift-F10 from the Main Menu, and allows PCX graphics to be imported to unused ASCII values. It is similar to the Import TIFF function, except that the source image is in the PCX format. Only binary (black & white) images can be imported.

When the PCX picture is bigger than the screen, the Import PCX function works slightly differently than the Import TIFF function. In this situation, at first there is no blinking box, and the screen is filled as much as possible by the upper left portion of the PCX picture. If the part of the PCX picture you want to import is off-screen, use the arrow keys, PgUp, PgDn, Home, or End keys to scroll the picture until the portion you want to import is visible, then press Enter. Once you press Enter, a blinking box appears to show which part of the PCX picture will be imported. Move the blinking box with the arrow keys, PgUp, PgDn, Tab, or Shift-Tab keys. The dimensions of the blinking box are controlled by the font's cell width and cell height. If the blinking box is not big enough, it can be made bigger by increasing the cell width and cell height from the Font Operations menu.

Once the blinking box covers the part you want to import, press F10 or click the mouse to import it. You will then be taken into pixel edit mode for the new character where you can trim off extra rows and columns or delete stray pixels, etc.

If you see the error message "Couldn't read PCX header" for a file you know is a valid PCX file, this may be caused by an interaction with DOS's SHARE.EXE program. Try rebooting your PC without SHARE.EXE, and restart **FONTEdit**.

If you see the error message "Error loading *filename* to virtual buffer", this may be caused by trying to load a large PCX picture without any EMS memory available. Make sure that in your CONFIG.SYS file loads the memory manager (i.e., himem.sys or qemm386.sys) **without** a parameter such as "NOEMS".

### 5.3.15. Import Soft Font

This selection is made by pressing CTRL-F10 from the Main Menu, and allows a character from another soft font to be imported to unused ASCII values. Upon choosing this option and supplying the name of the font file to import, you will be presented a list of ASCII values from that soft font. The character to import can be chosen either by its ASCII value, or by pressing its keyboard button. For instance, if you want to import the digit "1", you can either click on the ASCII value of 49, or you can press the "1" on your keyboard when you see the list of ASCII values.

After picking which ASCII character to import, you will then see a list of unused ASCII values in the current font being edited. Choose which one will receive the imported character. Again, as a shortcut, you can press the character's button rather than click on the ASCII value.

After choosing the destination ASCII value, importing the character proceeds exactly like importing a character from a TIFF graphics image.

### 5.3.16. Pick ASCII

This menu choice allows you to select an ASCII character to display. This may be needed when running **FONTEdit** on PCs without numeric keypads, since the conventional way of displaying a character without an associated key on the keyboard is to press and hold the ALT key, type the 3-digit ASCII value on the numeric keypad, then release the ALT key. Without a numeric keypad, use the Pick ASCII menu choice instead.

The inputted number is interpreted as decimal by default. To input a hexadecimal number, prefix it with "&h", and to input an octal number, prefix it by "&o". For instance, to choose "A" (65 decimal, 41 hex, or 101 octal), enter either "65", "&h41", or "&o101".

## 6. Tips

Below are a few tips for using **FONTEdit**, based on interest from user feedback.

### 6.1. Scanning and Importing Graphics

In this version of **FONTEdit**, .PCX is the preferred import format since it is much faster than .TIF support, and you can scroll .PCX images which are bigger than your screen. You won't be limited to importing from the "top" of a .PCX image, whereas you will still have this limitation with .TIF images.

When importing from .TIF graphics, characters must be selected from the "top" of the image. "Top" varies with the graphics mode; it varies from the top 459 lines in VGA mode, down to the top 187 lines in CGA mode. If your graphics is wider than 637 pixels, you will first be shown a compressed image. Note that at 300 dpi, a scan of 459 x 637 pixels is roughly 1.5" H x 2" W. When possible, try to crop the .TIF image so that it is as small as possible.

If using a scanner, set your scanner's resolution to 300 dots per inch (dpi) will match the Laserjet's 300 dpi resolution, making your new characters the same physical size as your sample notes. Otherwise, you may need to use the Resize Character option (Shift-F2 from the Image Transform Menu).

Graphic images must be black & white line art, not color. If possible, set color scanners to black & white mode. Gray scale images may or may not work.

To create characters from a scanned image where the upper and lower case characters are similar (for instance "X" and "x", or "C" and "c"), first import the upper case version and clean it up. Then create the lower case version by copying it to the new ascii value and resizing it. It is easier to create a clean lower case character this way than trying to import it, since the scanned image may be full of stray pixels.

### 6.2. Very Large Point Sizes

Very large point sizes use a lot of RAM, both in **FONTEdit** and within the printer. The tips below will help deal with these memory requirements when working with very large point sizes (around 100 point). For all other situations, no special precautions should be necessary.

Before starting **FONTEdit**, make sure you have as much RAM free as possible. Do this by removing nonessential TSRs from your autoexec.bat, and device drivers from config.sys. Or as an alternative, use an expanded memory manager (such as HIMEM.SYS or QEMM.SYS) to load these items high. Don't reduce the number of "FILES=" in your config.sys to less than 10 to 15 or so.

The amount of working RAM needed when resizing a font depends on the point size of both the starting size and desired size. So it will take less RAM to resize from a smaller size to a very big size, compared to resizing from a big size to an even bigger size.

The size of the file will grow by about the square of the change in point size, so make sure you have enough free disk space available. For instance, if you double the point size, the file will roughly quadruple in size. **FONTEdit** will also need working space on the hard disk equal to the size of the new font file.

Delete any unnecessary characters from the font before you resize it. Not only will **FONTEDIT** be able to resize the font faster because there is less work to do, but you will also save memory in your printer when you download the font.

In the remaining characters, check whether any have blank rows or columns around the edges. If so, delete these blank rows/columns by using the Ins/Del Row/Col option or the Trim option from the pixel edit menu. If you get an error 7 when using Trim, this is caused by running out of memory - try deleting some blank rows first and then using Trim.

Move the remaining characters higher in the cell box by decreasing the baseline position (F10 from the Font Operations Menu). Then make the font's cell width and cell height as small as possible. These are changed via F2 and F3 from the Font Operations Menu.

After deleting unnecessary characters and changing the cell width and height, you may find it more accurate to calculate the point size directly from the number of pixel rows in a character rather than relying on the original point size of the font. Since the LaserJet prints at 300 pixels per inch, and in typography 1 inch equals 72 points, there are 4.167 pixels per point size, or conversely 0.24 points per pixel. For instance, a font of 110 point size should have a vertical size of 458 pixels.

Once you have successfully resized the font, save your intermediate results by immediately quitting **FONTEDIT** and copying the file. Then you can restart **FONTEDIT** and edit the characters to touch them up.

Certain functions while pixel editing will require more RAM. These include the Image Transform functions EXCEPT for Invert and Upside-Down. Avoid the rest of the Image Transforms if you can.

To reiterate, these suggestions should only be necessary for very large point sizes. For most other application, no special steps should be necessary.

### 6.3. Using Bitmapped Printer Fonts with Windows 3.1

You can use bitmapped printer fonts with Microsoft Windows 3.1. Below is a step-by-step procedure for installing a bitmapped printer font:

- ||| 1. Copy the font to a subdirectory on your hard disk (say for this example, "c:\fonts").
- ||| 2. From the Windows Program Manager, double-click on the Main Group icon.
- ||| 3. Double-click on the Control Panel icon.
- ||| 4. Double-click on the Printers icon.
- ||| 5. Highlight a LaserJet printer if it isn't already highlighted. Click on the Setup button.
- ||| 6. Click on the Fonts button.
- ||| 7. Click on the Add Fonts button.
- ||| 8. Type in the drive and directory of your hard disk where you copied the bitmapped font you want to install, then press Enter (the drive & directory should agree with step 1 above, i.e., "c:\fonts").
- ||| 9. Windows will now scan all the files in the directory you specified, and will list in a box on the right side of the window all the bitmapped fonts it found. Note that the description of the font in the box is derived from the Typeface field in the font header, not from the font's filename. Highlight the font you want to install, and click on the Add button.
- ||| 10. Windows will ask you if it can copy the font to a directory, usually "\pclfnts". Click on the OK button.
- ||| 11. The font is now installed. Back out of all the windows by clicking on the OK, Close, or Cancel buttons as appropriate.

You can now print documents on your LaserJet with this font. However, you won't be able to see the font on screen as you type; Windows will substitute the closest font in terms of point size, weight, etc.

When you want to format a document with this font, select the font by the name reported in step 9 above. You will only be able to use it in the point size installed, but of course you can use **FONTEDIT** to create fonts of other point sizes. If you change the point size of the bitmapped font you installed, you should install it again.

## 7. Troubleshooting

This section presents a few troubleshooting hints for error conditions that might arise when using **FONTEDIT**. This doesn't include problems related to font design.

### 7.1. Before Starting FONTEDIT

Below are some error conditions or messages you may encounter when starting **FONTEDIT**, and remedies. Also, your "config.sys" file should allow at least 10 files to be opened (i.e., it should include the statement "FILES=10"). More than 10 is OK, too.

- *"Input Run-Time Module Path:"* Quit **FONTEDIT** with a Ctrl-C, and make sure that the run time module "brun45.exe" is in either the current directory or a directory in your DOS Path.
- *The font is not recognized as a valid font file:* Make sure the name was spelled correctly. Make sure the font is bitmapped, not TrueType, ATM, Postscript, or other scalable format.
- *FONTEDIT won't start, and returns you to MS-DOS:* Make sure that no executable compressor such as *pklite* or *lzexe* has been used on the files "brun45.exe" or "helv9b.exe". However, the DoubleSpace compressor in MS-DOS 6.0 should cause no problem.
- *"Enter path to file HELV9B.EXE :"* **FONTEDIT** was unable to find the overlay file "helv9b.exe". Enter the directory where this file can be found. In the future, make sure "helv9b.exe" is in either the current directory or a directory in your DOS Path.

### 7.2. While Running FONTEDIT

- *When Pixel Editing, the mouse behaves erratically, such as toggling pixels far removed from where the mouse was clicked:* Your mouse driver may be old. **FONTEDIT** works fine with Microsoft mouse driver version 8.20a and higher. This mouse driver version is available by calling **FONTEDIT** technical support at the number listed in section 2.
- *When printing a document more than a few pages long, you get a "Printer not ready" error, even though it has enough paper, is on-line, etc.:* Make sure that your "autoexec.bat" file has in it the command:

```
mode lpt1:, ,p
```

This tells the PC to use infinite retry when printing. Normally, PC will send printable material to the printer faster than it can print it. This command will make sure the PC will wait long enough for the printer to catch up.

- *Can't select ASCII 224, 240, or 253 for editing using the Alt-Numeric-Keyboard method:* This is a known compiler bug, not a bug of **FONTEDIT**. If you try to select ASCII 240 by holding down the Alt key and pressing "240" from the numeric keypad, the PC will seem to freeze until you press Ctrl-C.

If you try to select ASCII 224 or 253 from the numeric keypad, the compiler bug causes these two ASCII characters to be ignored. To select them, use Ctrl-Return from the Main Menu, or use the arrow keys to scroll through characters.

- *"Couldn't read PCX header" when trying to import from a known valid PCX file:* This is probably caused by an interaction with DOS's SHARE.EXE program. Remove share from your autoexec.bat file, reboot, and restart **FONTEDIT**.
- *"Error loading filename to virtual buffer" when importing from a large PCX picture:* This may be caused by trying to load a large PCX picture without any EMS memory available. Make sure that in your CONFIG.SYS file loads the memory manager (i.e., himem.sys or qemm386.sys) **without** a parameter such as "NOEMS".

### 7.3. Error Codes

For common error conditions, such as trying to print while the printer is off-line or out of paper, **FONTEDIT** will return an informative error message. For less common error conditions, only an error code may be returned. Below are the less common error codes that may occur while using **FONTEDIT**. If any of these occur, call technical support at the number(s) listed in section 2.

Code	Meaning and Remedy	Code	Meaning and Remedy
5	Illegal function call	55	File already open
6	Overflow	57	Device I/O error
7	Out of memory. Try unloading TSRs and otherwise freeing up memory in the lower 640K. Also see section 6 on handling very large point sizes with <b>FONTEDIT</b> .	61	Disk full. The edited font file has not been completely written to disk and thus may be corrupted. Discard and use the backup copy of the font after creating more free disk space.
9	Subscript out of range	62	Input past end of file
11	Division by zero	63	Bad record number
14	Out of string space.	67	Too many files. Try increasing the number of files in your "config.sys".
19	No resume	71	Disk not ready
20	Resume without error	72	Disk media error
51	Internal error	75	Path/File access error
52	Bad file name or number	76	Path not found.
54	Bad file mode		

## 8. Sample Session

Two sample sessions are included below as a way of demonstrating how to use **FONTEDIT**. They will create 1) a Gantt milestone character (Δ); and 2) a registered trademark symbol (®).

### 8.1. Gantt Milestone Character

The objective of this sample session will be to create a special symbol used when printing Gantt timing charts. The symbol we will create is ASCII 127. This symbol is a hollow, upward-pointing triangle and is used by the on-screen display of Timeline to signify a milestone. However, most font files do not include this character, so we must either make do with a substitute or define our own. When printing a Gantt file to disk, Timeline uses ASCII 127 as the milestone character, so we will edit ASCII 127.

Start up **FONTEDIT** and choose your font file. When you get to the main menu, try displaying ASCII 127. Since it is not represented by a key on the keyboard, you will have to hold down the ALT key, press 127 on

the numeric keypad, and then let go of the ALT key. If nothing happens on the screen, this means ASCII 127 is not defined in the font file. You will have to Create a New Character. If so, choose F7 from the main menu. Highlight "127" from the list you see and either click the mouse or press ENTER. You will now be in Pixel Edit mode for ASCII 127.

If ASCII 127 already exists in your font file, press F2 from the Main Menu to begin editing it.

In Pixel Edit mode, perform the following steps to create a hollow, upward pointing triangle. At all times we will be choosing from the menu options displayed along the top and top right of the screen.

- Press F4 to clear the character entirely.
- Press F3 to begin Area Operations.
- Press F3 to choose a polygon shape.
- Go to the top of the character box and mark this as the apex (top) of the triangle by either pressing the left mouse button (if a mouse is installed), or by pressing RETURN (if no mouse is installed).
- Go to the lower left corner of the character box and mark it as the lower left corner of the triangle by pressing either the left mouse button or RETURN.
- Go to the lower right corner of the character box and mark it as the lower right corner of the triangle by pressing either the left mouse button or RETURN.
- Complete the triangle by pressing either the right mouse button (if using a mouse), or F10 (if not using a mouse).
- Move the mouse cursor or crosshairs to the interior of the triangle and press F3 to Fill it.

We now have a solid, upward pointing triangle on screen. But we want a hollow triangle. So we will repeat the process above for a smaller triangle within the solid triangle, but instead of filling it we will clear it.

- Press F3 to choose a polygon shape.
- Go to a point about 4 pixels below the apex of the solid triangle and press the left mouse button or RETURN.
- Go to a point about 4 pixels above and to the right of the lower left corner of the character box and mark it as the lower left corner of the triangle by pressing either the left mouse button or RETURN.
- Go to a point about 4 pixels above and to the left of the lower right corner of the character box and mark it as the lower right corner of the triangle by pressing either the left mouse button or RETURN.
- Complete the triangle by pressing either the right mouse button (if using a mouse), or F10 (if not using a mouse).
- Move the mouse cursor or crosshairs to the interior of the triangle and press F4 to Clear it.
- Press ESC to go to Pixel Editing. You can do pixel-by-pixel touchup of the character if you wish.
- Press F10 to save your changes

At this point we should now have displayed and saved a hollow, upward pointing triangle. We could continue to define new characters, but lets stop; this is enough for a demonstration.

- Press ESC to quit. When prompted for confirmation, press "Y".

Your font file has now been edited to define ASCII 127 as a hollow, upward pointing triangle. Download it to your laser printer as usual, and whenever you print a document using this font, all ASCII 127s will be displayed as a hollow, upward pointing triangle, similar to this:  $\Delta$ .

## 8.2. Registered Trademark Symbol

A registered trademark symbol is often represented by a small capital "R" within a circle; however, this character is seldom included in a font. Use **FONTEEDIT** to make our own!

The discussion below will assume that ASCII 200 will become the new symbol, and that ASCII 200 doesn't already exist in the font.

At the Main Menu, press "R" to display a capital R. Then perform the following steps:

- Press F5 to copy it to ASCII 200
- You are now in Pixel Edit mode for ASCII 200. Make sure you are not in Zoom mode. If you are in Zoom mode, unzoom by pressing ALT-Z.
- From the Pixel Edit menu, choose F2, Image Transforms
- From the Image Transforms menu, press Shift-F2 to Resize.

The blinking box now represents the outline of the character box after the character is resized. Resize it to have about half its former width and height. Once it has the proper size, click the mouse or press F10 to accept. Then continue with the following steps:

- Press ESC to return to the Pixel Edit menu.
- Use Ctrl-Up, -Down, -Left, or -Right to center the character approximately in the middle of the cell box.
- Press F5 to choose Row/Col Ins/Del, then press F3 to expand the character by adding blank rows and columns around the edges. Press F10 to return to the Pixel Edit Menu.
- Press F3 for Area Operations
- Press F5 for Ellipse & Wedge.
- Completely enclose the small capital "R" in a circle, and make sure the "R" is centered in the circle. Make sure there is still room on all sides between the circle and the character box. When the circle is OK, either click the mouse or press F10 to accept. Use the fill option to fill everything outside the circle.
- Draw a second circle with the same center as the first, but slightly larger so that it completely encloses the first. Again, make sure there is still room on all sides between the second circle and the character box. When the second circle is OK, use the clear option to clear everything outside the second circle.
- Press ESC to return to the Pixel Edit menu.
- Press F5 to choose Row/Col Ins/Del, then press F2 to trim the blank rows and columns from around the edges. Press F10 to return to the Pixel Edit Menu, and press F10 again to save the new character and return to the Main Menu.

You will now see the registered trademark symbol. Press ESC to return to the Pixel Edit menu, then press F10 to accept the new character. It should look something like this: ®.