7 Fonts

Introduction

A font is a group of symbols that have similar characteristics. A font is described by its **symbol set**, **spacing**, **height**, **pitch**, **style**, **stroke weight**, **typeface** and **orientation**.

A typical document is printed using several fonts. A large font may be used for the title and chapter headings of a document, a standard size font may be used for the body of the document, and key words or phrases may be highlighted, using a bold or italic font.

For example, this text is printed using a Century Schoolbook typeface; its **height** is 10 point, its style is upright, and its **stroke weight** is medium. Examples of different fonts are shown in Figure 7-1.

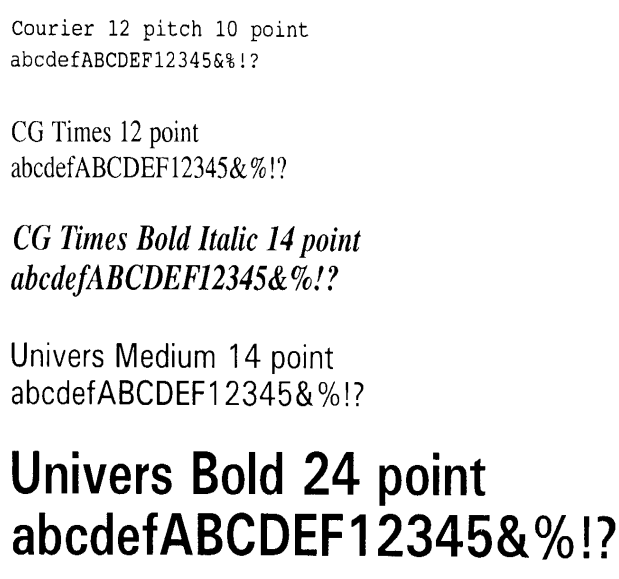

Figure 7-1 Font Samples

A font must be selected for printing by the user. One font is selected at a time. It is selected by identifying the specific characteristics of the font. Font selection commands identify font characteristics to the printer (refer to *Summary of Font Selection by Characteristic* for detailed font selection information).

PCL 5 printers feature scalable fonts. With the addition of this feature, the printer has two font formats available: bitmap and scalable. A bitmap font is available in its one, defined size only. A scalable font, on the other hand, can be selected (scaled) for a range of sizes (refer to “Bitmap Fonts and Scalable Typefaces” later in this chapter for additional information).

Font Sources

A number of fonts (and typefaces, as described later) are supplied with the printer. These fonts reside in permanent ROM (read only memory), and are referred to as **internal fonts**. Additional fonts can be added easily by inserting font cartridges or SIMM modules into the printer, or downloading them from the host computer.

A **cartridge font** plugs into a font cartridge slot on the printer. **SIMM font** modules plug into a printed circuit board inside the printer. These ROM-based fonts are always available (as long as the cartridge or SIMM module is installed). A variety of font products may be purchased from Hewlett-Packard or other vendors. Refer to your Hewlett-Packard Accessories and Supplies Brochure for a list of HP’s font products.

Soft fonts are supplied as files on flexible disk transferred (downloaded) into the printer’s user (RAM) memory. Once a soft font has been downloaded into the printer’s RAM, it may be selected for printing.

Symbol Set

Symbol set identifies the specific collection of symbols provided by a font. Each symbol set is defined with a specific application in mind. For example, the legal and math symbol sets were designed to support legal and scientific applications. The following figure shows two common symbol sets, PC-8 and Roman-8. The PC-8 symbol set contains some special symbols and line draw characters not included in the Roman-8 symbol set, while the Roman-8 set contains European characters not contained in the PC-8 symbol set.

Note User-defined symbol sets are supported by some HP LaserJet printers. See Chapter 10 for more information.

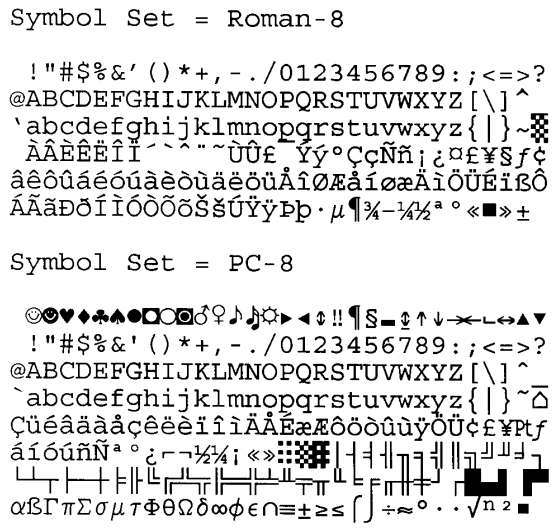

Figure 7-2 Symbol Sets

Spacing

Another characteristic that differentiates fonts is spacing. Fonts have either fixed or proportional spacing. Fixed-spaced fonts (Figure 7-3) are those in which the inter-character spacing is constant. Proportionally-spaced fonts (Figure 7-4) are those in which the inter-character spacing varies with the natural shape of a character.

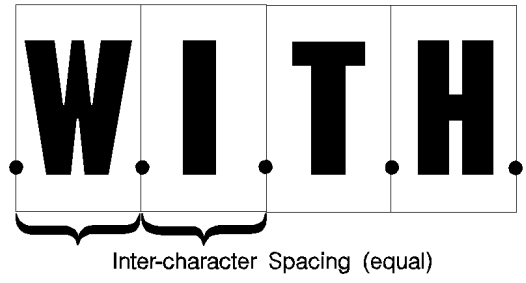

Figure 7-3 Fixed Spacing

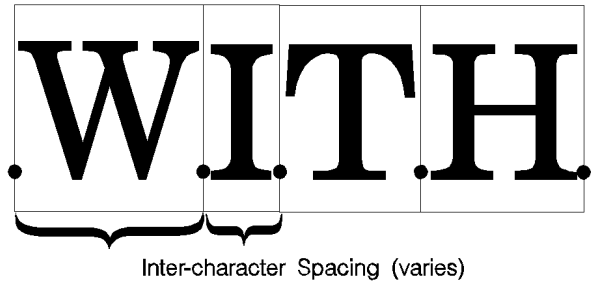

Figure 7-4 Proportional Spacing

Pitch

Pitch describes the number of characters printed in a horizontal inch. Pitch only applies to fixed-spaced fonts, since the number of characters per inch varies for proportional fonts.

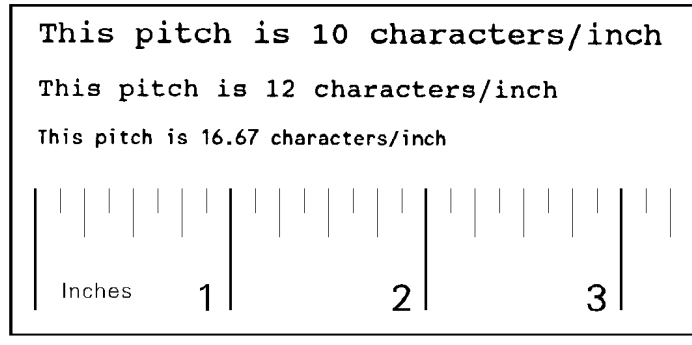

Figure 7-5 Pitch

Height

The height of a font is the measurement of the body of the type in PCL points. A PCL point is 1/72 inch in bitmap fonts, and approximately 1/72 inch in scalable fonts. The body of the type is slightly larger than the distance from the bottom of a descender to the top of an unaccented capital letter.

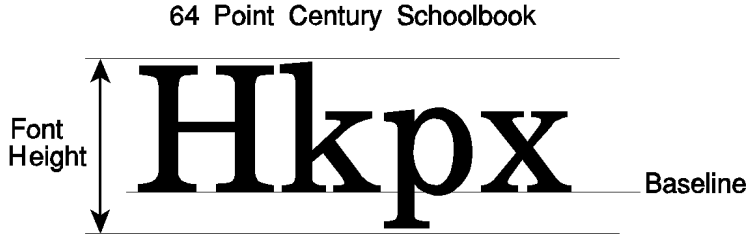

Figure 7-6 Height

This loose measure from near the bottom of a descender to just above the top of an unaccented capital letter is sometimes referred to as the “Em.”

Style

Style is defined by three characteristics: posture (upright, italic), width (condensed, normal, expanded, etc.), and structure (solid, outline, shadow etc.). Examples of upright and italic styles are shown.

Figure 7-7 Style

Stroke Weight

Stroke weight describes the thickness of the strokes that compose characters. Examples of medium and bold stroke weights are shown in the figure below.

Figure 7-8 Stroke Weight

Typeface Family

Typeface identifies the design of the symbols of the font. Each typeface family has unique and distinguishing design characteristics. The following example shows typefaces from various typeface families.

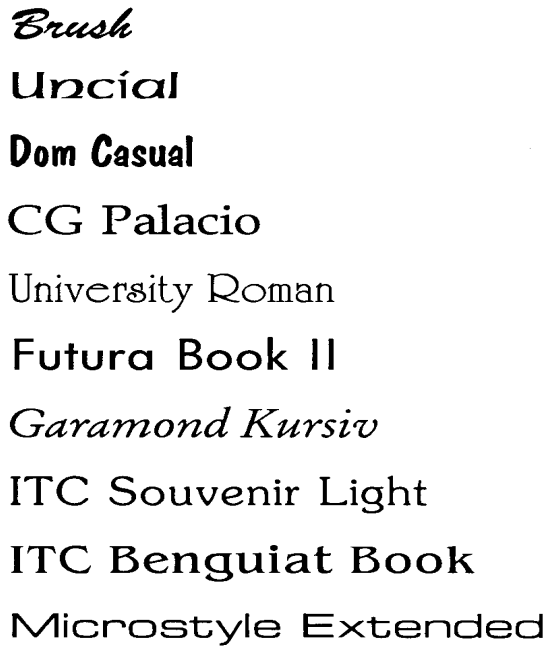

Figure 7-9 Typeface

Orientation

Orientation defines the position of the logical page with respect to the physical page as shown in Figure 7-10.

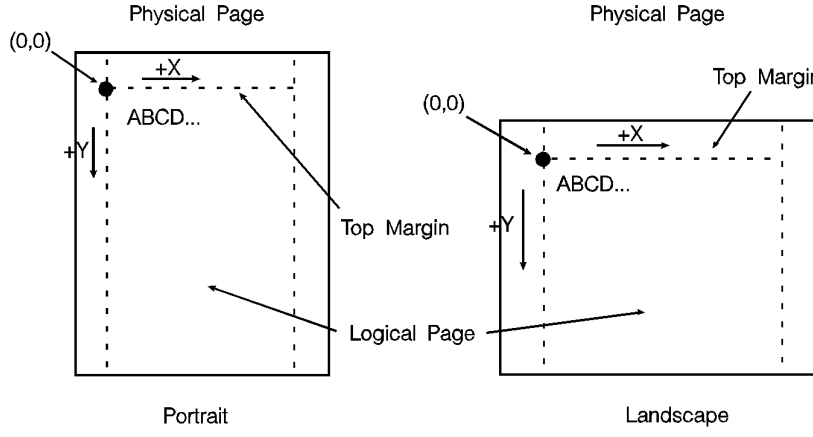

Figure 7-10 Orientation

The HP LaserJet IID, IIP, 2000, and all PCL 5 LaserJet printers automatically rotate fonts to the current orientation (all fonts are available in all four orientations). (Earlier printers required fonts in the orientation which matched the orientation of the page. Thus, orientation is not as important as it once was.)

The orientation of a font is still a consideration when the amount of user memory (RAM) is a concern. Internal and other ROM-based fonts consume very little user memory. On some printers, downloaded fonts, scaled fonts, and rotated fonts are stored entirely in RAM. For bitmap fonts, selecting a font with the current logical page orientation saves RAM space on some printers.

Bitmap Fonts and Scalable Typefaces

There are two basic formats of fonts used by HP PCL 5 printers: bitmap (Figure 7-11) and scalable (Figure 7-12). Earlier HP LaserJet printers supported only bitmap fonts. Bitmap fonts have a fixed bit-pattern for each character. The size of the character is fixed, depending on the bit-pattern. Scalable typefaces, on the other hand, provide an “outline” for the characters. This “outline” can be scaled by the PCL 5 printers to produce a large range of character sizes.

There is a difference, between a scalable typeface and a scalable font. A bound, **scalable font** is a group of “outline” characters limited to one specific symbol set. For a scalable font, the symbol set, spacing, style, stroke weight, and typeface characteristics are all fixed, and size is variable (since it is scalable). A s**calable typeface**, on the other hand, is a grouping of “outline” characters of a specific typeface which can produce multiple symbol sets. For a scalable typeface, spacing, style, stroke weight, and typeface characteristics of the font are all fixed, symbol set and size are variable.

Note Scalable fonts and scalable typefaces are selected for printing in the same manner as bitmap fonts; no additional selection is required (refer to Summary of Font Selection by Characteristic for font selection information).

Some scalable typefaces are provided with the printer (for example: CG Times and Univers). Additional scalable typefaces can be obtained on disk, cartridge or SIMM modules.

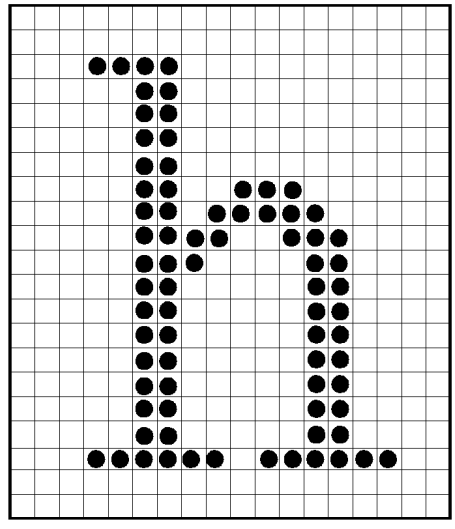

Figure 7-11 Bitmap Character

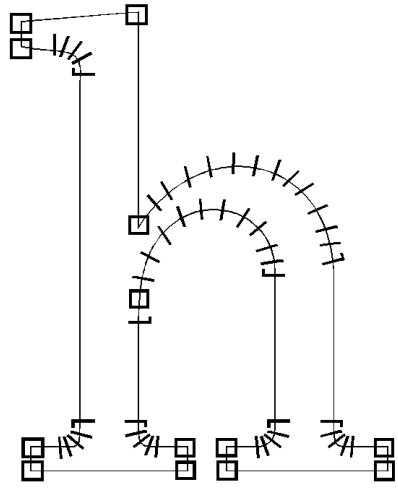

Figure 7-12 Scalable Character

Internal Fonts

Internal fonts are those fonts that are provided with the printer. Both internal bitmap and scalable font formats are provided. Internal bitmap and scalable fonts and symbol sets for current models of HP LaserJet family printers are listed in Chapter 2 of the *PCL 5 Comparison Guide*. Font and symbol set listings for earlier printer models can be found in the *User's Manual* for each printer.

Special Effects

HP PCL 5 printers allow you to create special effects when printing characters. These effects are achieved through the use of the print model feature, or through the use of HP-GL/2 vector graphics (refer to Chapter 13, *The PCL Print Model* or to the HP-GL/2 information in Chapters 17-23).

The print model provides a simple means for printing patterned or shaded characters using the printer's predefined cross-hatch/shading patterns, or user-defined patterns. HP-GL/2 vector graphics provide the additional ability to print characters in any direction (angle) on a page, and to print outlined characters. HP-GL/2 also allows anisotropic (non-linear) scaling of scalable fonts which produces characters that are stretched in one direction.