



Sfware

A Manual for the Shell and Other Utilities

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1. Introduction

The Sftware softfont utilities from Small Planet Software are MS-DOS programs distributed under a shareware license agreement. These utilities provide extensive font manipulation capabilities for HP LaserJet softfonts.

The Sftware utilities allow you to download, rotate, compress, expand, view, and perform special effects on softfonts. The effects provided include bold, fill, convert to fixed spacing, halftone, hollow, invert, mirror, outline, convert to proportional spacing, resize, reverse, shade, shadow, slant, stripe, three-d, hollow-three-d, and filled-three-d. The effects can be tailored and customized for any font with various parameters and shading patterns. All of these features are available from an integrated, easy-to-use menu interface. For situations when you would like to run these programs without human intervention (to download a selected group of fonts every morning, for example) every feature is available from a stand-alone utility. The standalone utilities are described in another manual—this manual documents the menu interface.

1.1. Getting Started

Sftware is “shareware,” and the author encourages archive maintainers to post Sftware for downloading; you may have received your copy from almost anywhere and almost anyone. Please make sure that you have a complete distribution before you try to install Sftware.

Hardware Requirements

In order to use Sftware, you will need a PC, PS/2, or close compatible with 150KB or so of free memory. A hard disk is recommended, but not required. A LaserJet+ or compatible printer is not actually *required*, but Sftware is probably a little pointless without one! Note: the original LaserJet printer does not have the ability to use softfonts; the Sftware utilities cannot help you use fonts with the original LaserJet printer.

If you want to use the SfShell program, you will need 300-400KB of *free* memory and either a hard disk, a ram disk, or sufficient expanded memory for swapping. You cannot use a removable (floppy) drive for swapping. The shell is not required for any of the features available in Sftware, but it does provide a user-interface for the Sftware utilities that is less intimidating than the command line.

If you are running a version of DOS prior to 3.30, read the configuration section carefully since you may have to do a little more work to get Sftware installed.

Software Requirements

In addition to Sftware, you must have at least one HP LaserJet softfont file.

1.3. Initial Configuration

Before you can use Sfware, you must run SfConfig to establish an initial configuration. Please follow the 'quick start' instructions in the **READ.ME** file or read the Configuration chapter before trying to run Sfware.

**Technically
Speaking**

Many chapters end with a “technically speaking” section. This section describes, more technically, what Sfware does. You don’t have to read it unless you want to. If you find the material in the technically speaking sections intimidating, just ignore it. On the other hand, if you find that something is not performing exactly the way that you thought it was supposed to, this section may help you figure out why Sfware is doing something other than what you expected.

Laser Printer

The Laser printer selection helps Sftware decide if font compression should be enabled. Later versions of Sftware may make more use of this option.

Printer Output

The most common selection for printer output is **LPT1**. However, you can select **LPT1-4**, **PRN**, or any valid file or device for printer output.

Font Directory

Most users keep all of their softfonts in one directory. If this is the case, you can tell Sftware always to look for fonts in that directory regardless of what directory you are currently in. This becomes the default font directory. However, even if you do select a default font directory, you can still override it and use any directory you want by selecting a new directory with **F4** in SfShell or by specifying a **fontdir** on the command line.

3.3. Format of the configuration file

The configuration file is a plain ASCII text file, and it should be edited with a program that will not insert extra formatting characters when the file is saved (I recommend Multi-Edit by American Cybernetics).

Each line of the configuration file is divided into three parts as follows:

```
programid parameter=value
```

The **programid** is separated from the **parameter** by one or more spaces and the **parameter** is separated from the **value** by an equal sign (=). The **programid** is optional but the **parameter** and the **value** are required (actually, the **value** can technically be empty or blank but that is exactly the same as not defining it at all).

Individual Sftware programs use the combination of **programid** and **parameter** as a key to lookup the default value of each parameter. Any configuration line that does not contain a **programid** automatically matches all **programid**'s for that parameter. Case is insignificant in the **programid** and **parameter**.

A simple example should make everything clearer. Given the following configuration file:

```
PROG APPLE=1
PROG ORANGE=2
APPLE=3
OTHER ORANGE=4
```

The value of **PROG APPLE** is 1, **PROG ORANGE** is 2, **ANYTHING-ELSE APPLE** is 3, **OTHER ORANGE** is 4, and **ANYTHING-ELSE ORANGE** is undefined (blank, or non-existent).

Each possible configuration parameter is described in the sections that follow. The section header lists only the **parameter** if the **programid** is the name of the utility program that uses it. For configuration parameters that make special use of the **programid**, both parts are listed. The parameters are listed in alphabetical order by **parameter**.

3.8. Esc

Usage: *program* **ESC=**YES or NO
Used by: SfDir

Controls how SfDir displays font information. If **ESC** is **YES**, escape sequences are displayed by default. Otherwise a readable, text description is displayed by default.

3.9. ExecOutput

Usage: *program* **EXECOUTPUT=**WINDOW or **FULLSCREEN**
Used by: SfShell

The individual Sftware utilities are run as “child tasks” from within SfShell to perform the actions. The **EXECOUTPUT** option controls how output is redirected from each utility. If **WINDOW** is used, the utilities are run within a window on the screen, if **FULLSCREEN** is used, the utilities run on a full DOS screen. The **WINDOW** selection looks better but it is an option so that the feature can be disabled if it causes problems with your version of DOS. If SfShell hangs your machine whenever you try to execute an action list, the first thing you should try is setting **EXECOUTPUT=FULLSCREEN**.

3.10. FontDir

Usage: *program* **FONTDIR=***directory*
Used by: SfShell, SfCmpr, SfFx, SfLoad, SfRotate, SfShow

Names the DOS subdirectory where HP LaserJet softfonts are located. This is the default input and output directory for Sftware utilities that read or write softfont files.

3.11. FontExtn

Usage: *program* **FONTXTN=***ext*
Used by: SfShell, SfCmpr, SfFx, SfLoad, SfRotate, SfShow

Names the default filename extension for softfont files. If you specify either an input softfont name or an output softfont name that does not include an extension, the Sftware utilities will append this extension to the filename. Note: it is possible to specify that a file should not have *any* extension by ending the filename with a period.

3.12. FontListSize

Usage: *program* **FONTLISTSIZE=***number*
Used by: SfShell

The size of the font list determines how many softfonts SfShell can place in the scrolling font window. Like the action list, this parameter can be very large but performance will be degraded if it is so large that it is written to disk.

The following table lists all of the graphics cards and the modes associated with them. In general, it is not necessary to specify a graphics mode since the highest resolution mode is selected by default:

| Card | Mode | Resolution | Palette |
|---------|------|--------------------|-----------|
| CGA | 0 | 320x200 | 0 |
| CGA | 1 | 320x200 | 1 |
| CGA | 2 | 320x200 | 2 |
| CGA | 3 | 640x200 | 3 |
| CGA | 4 | 640x200 (default) | 2 color |
| MCGA | 0 | 320x200 | 0 |
| MCGA | 1 | 320x200 | 1 |
| MCGA | 2 | 320x200 | 2 |
| MCGA | 3 | 320x200 | 3 |
| MCGA | 4 | 320x200 | 2 color |
| MCGA | 5 | 640x480 (default) | 2 color |
| EGA | 0 | 640x200 | 16 color |
| EGA | 1 | 640x350 (default) | 16 color |
| EGA64 | 0 | 640x200 | 16 color |
| EGA64 | 1 | 640x350 (default) | 4 color |
| EGAMONO | 3 | 640x350 (default) | 2 color |
| HERC | 0 | 720x348 (default) | 2 color |
| ATT | 0 | 320x200 | 0 |
| ATT | 1 | 320x200 | 1 |
| ATT | 2 | 320x200 | 2 |
| ATT | 3 | 320x200 | 3 |
| ATT | 4 | 640x200 | 2 color |
| ATT | 5 | 640x400 (default) | 2 color |
| VGA | 0 | 640x200 | 16 color |
| VGA | 1 | 640x350 | 16 color |
| VGA | 2 | 640x480 (default) | 16 color |
| PC3270 | 0 | 720x350 (default) | 2 color |
| IBM8514 | 0 | 640x480 | 256 color |
| IBM8514 | 1 | 1024x768 (default) | 256 color |

`sfshow refset=8u` would make SfShow print the reference characters with the 8U symbol set. You *must* select a symbol set that is available in your laser printer's line-printer font. If you don't want reference characters to be printed, use `sfshow refset=none`.

3.23. Replace

Usage: *program* `REPLACE=YES` or `NO`
Used by: SfCmpr, SfFx, SfLoad, SfRotate, SfShow

Each of the Sftware programs that can create new files use this flag to determine if existing files should be destroyed without warning. If you set this flag to `YES`, you can shoot yourself in the foot; if you leave it `NO`, the Sftware utilities will always make sure the safety is on!

3.24. Sentence

Usage: *program* `SENTENCE=string`
Used by: SfShell, SfView, SfShow

Identifies the sentence to be displayed on graphical font preview screens and printed on the reference page. The default sentence is: The quick red fox jumped over the lazy brown dog. I said (very loudly), "THE QUICK RED FOX JUMPED OVER THE LAZY BROWN DOG!" How many times? 0, 1, 2, or 3456789 times.

3.25. SwitchChar

Usage: *program* `SWITCHCHAR=char`
Used by: SfShell, SfCmpr, SfFx, SfLoad, SfRotate, SfShow, SfView, SfInfo

Identifies the switch character. It must be set to either "/" or "-". Under MS-DOS, "/" is recommended. The switch character setting can be ignored by SfShell users. SfShell makes sure that the correct switch character is used when the utilities are invoked. For more information about the uses of the switch character, consult the "technically speaking" note at the end of the *Conventions for Describing the Standalone Utilities* chapter.

3.26. Style *name*

Usage: `STYLE name=number`
Used by: SfShell, SfShow, SfFx

The "style" of a softfont is one of the font parameters that is used to distinguish between two otherwise identical softfonts. The values defined by HP are "upright," "italic" and "oblique." Using SfFx to create variations on a font can potentially create two fonts that are indistinguishable from each other. For example, "hollowing" a softfont does not change *any* of its font characteristics. The `STYLE` parameter tells the SfFx what style value to use in the font header for each effect. In this way, the printer will always be able to tell the old and new fonts apart. The name of the style must be one of the following: `Bold`, `Fix`, `Fill`, `Fill13d`, `HalfTone`, `Hollow`, `Hollow3d`, `Invert`, `Mirror`, `OutLine`, `Prop`, `Resize`, `Reverse`, `Shade`, `Shadow`, `Stripe`, `Threed`, and `Tilt`. The style value can be any number between 0

3.30. Sample File

This is a sample configuration file. This sample does not contain all of the possible configuration variables because many require defaults that are system-specific (graphics cards, program filenames, etc.) and many repetitious lines have been deleted.

```
Device      = LPT1
FontDir     = .
FontExtn   = SFP
Replace    = No
Compress   = No
;
SfShow Sentence=The quick red fox jumped over the lazy brown dog.
;
SfShell CommandFile=SFSHELL.COMD
SfShell SwapFile=SFSHELL. $$$
SfShell MsgFile=SFSHELL.MSG
SfShell ExecOutput=Window
;
SfShell FontListSize = 35
SfShell ActionListSize = 35
;
; The Pattern and Style lines are for Sfx
;
Pattern DarkSaw      = 255/127/62/28/8/128/193/227/247
Pattern LightSaw     = 128/65/34/20/8/0/0/0
Pattern NarrowBackslash = 136/68/34/17
Pattern TightSaw     = $6B/$DD/$B6/$6B/$DD/$B6
Pattern DecoSlash    = $D2/$69/$B4/$5A/$2D/$96/$4B/$A5
Pattern Cross        = $11/$BB/$EE/$BB
;
; Styles defined by HP:
;
; 0 = Upright
; 1 = Italic
; 2 = Oblique
;
Style Fill          = 5
Style Halftone     = 15
Style Hollow       = 3
Style Invert       = 14
Style Mirror       = 13
```

3.31. Command Files

The standalone utilities, whether they are run from the command line directly or invoked automatically by SfShell, accept all of their input on the command line. Since this imposes a severe limit on the amount of input that can be provided, the utilities also accept input from a command file.

4. Running SfWare

There are two ways to use the Sftware package. First, the SfShell program provides an easy to use menu interface to all the utilities. This is the easiest way to become familiar with the Sftware utilities. However, if you have limited memory available, or if you want to run the Sftware utilities automatically (from a batch file, for example) you can run each utility separately. If you run the utilities individually, you must supply the parameters as command line options. If you use Sftware from within the shell, you will be prompted for each parameter.

The rest of this document assumes that you are using the shell. If you do not plan to use the shell, you should still skim this manual for a brief overview of Sftware's features. The reference to the individual Sftware utilities is in the files `SFUTILSO.PCL` and `SFUTILSE.PCL`.

To start the shell, go to[†] the Sftware subdirectory (or the Sftware floppy) and enter:

```
SFSHELL [fontdir] [/MONO] [/NOEMS]
```

When the shell is run, it will attempt to detect what kind of video adapter you have and adjust itself accordingly. If you find that SfShell makes the wrong decision, or you are using a computer with an LCD monitor and would prefer a simple black-and-white display, use the `/MONO` switch. If you do not want SfShell to use EMS memory for swapping, use the `/NOEMS` switch. The `/NOEMS` switch forces SfShell to swap to disk. The optional parameter *fontdir* selects what drive/directory and mask SfShell should use to scan for softfonts. The default *fontdir* is set in the configuration file.

4.1. Up and running

When run, SfShell will display a brief startup message. The startup message displays memory usage and indicates where various buffers are allocated.

[†] To “go to” the Sftware subdirectory, move to the drive that contains Sftware and use the `CHDIR` command to make the Sftware subdirectory the current directory (e.g. `D: CHDIR \SF`).

Performance may suffer noticeably if SfShell is forced to place one or more buffers on disk. It is probably better to make the buffers small enough to fit in main memory (or EMS, if it is available). Consult the configuration chapter for more information about buffers and memory usage.

After the startup message, SfShell will display its main title screen.

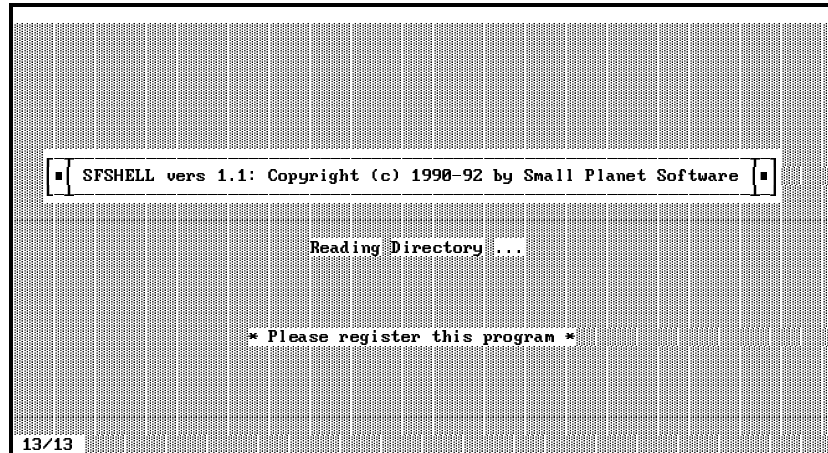


Figure 4.2. Main title screen

The numbers at the bottom left of the title screen will change as SfShell reads the font directory. The first number is the number of fonts that SfShell has found so far, and the second is the number of files that match the *fontdir* mask.

4.2. Main menu

After reading the font directory, SfShell will display the main menu. The main menu is the starting point for all further font actions. If there are no softfonts in the font directory, SfShell will present the “changing directories” prompt discussed below. If the number of fonts in the directory exceeds the size of the font list buffer, SfShell will print a message indicating that the main menu font list is incomplete.

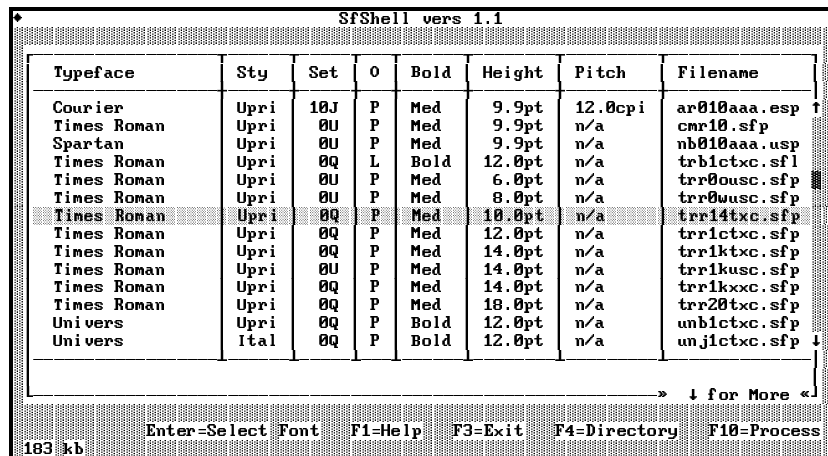


Figure 4.3. Main menu

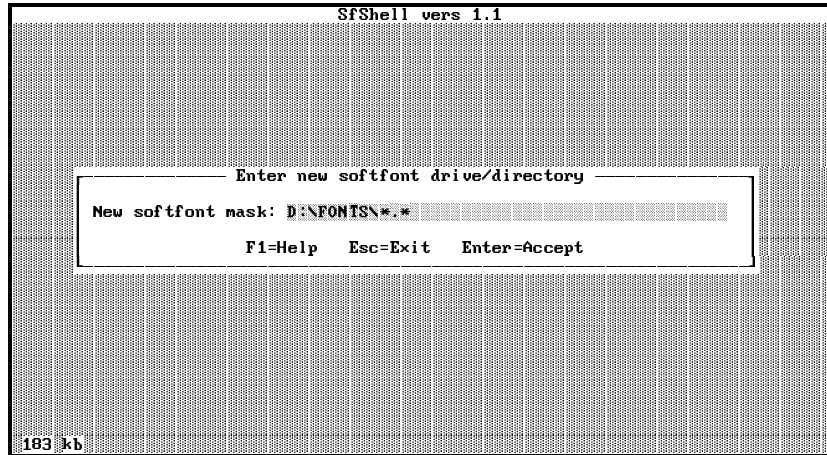


Figure 4.4. Changing font directories

The directory that you select must contain at least one font file. If no fonts match the *fontdir* mask that you enter, you will be returned to the directory prompt.

4.5. Font actions (in brief)

After selecting a font with the highlight bar, press **Enter** (or **Return**, as appropriate). SFSHELL will respond by “popping up” the action menu.

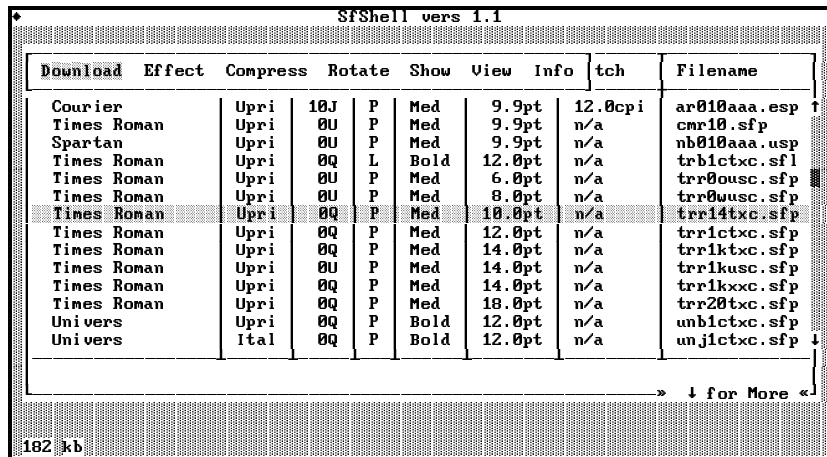


Figure 4.5. Action menu (overlying the main menu screen)

The action menu has seven choices. These seven choices correspond to seven of the utility programs that come with Sftware (actually, the **View** and **Info** choices are built-in, but corresponding utilities are provided). The action choices are described in detail in future chapters. You select an action by moving the highlight bar with the arrow keys and pressing **Enter** when the highlight bar is on the selection you wish to make. You can select more than one action per font.

5. Downloading Fonts

Downloading fonts “teaches” the LaserJet printer how to print a particular font. The actual downloading is performed by the SfLoad utility.

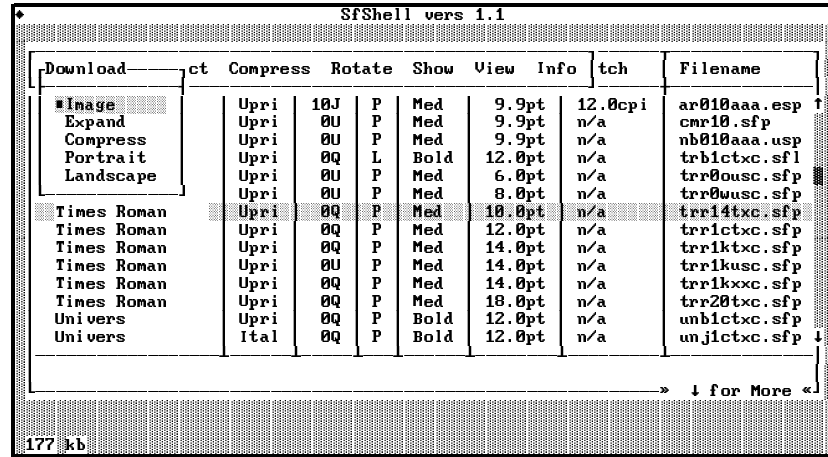


Figure 5.1. Download options

5.1. Options

As you can see, there are five additional options that can be selected for the download action. These options are described below. The option(s) that are selected are marked with a small square. The options that do not have a square are not selected. Use the Spacebar to toggle an option between selected and unselected.

Some combinations of options are not allowed (for example, you cannot select both **Compress** and **Expand** at the same time). When you select an option, other options that cannot be selected in combination with it will be unselected automatically.

Image

Downloading a softfont as an image has two advantages: first, it is the fastest method and second, it should work for softfont formats that the Sftware utilities are not otherwise equipped to handle. For example, if a new laserjet printer, the Series IV perhaps, is developed with a new kind of softfont, downloading will continue to work with that new printer as long as you select the image option. The image option is the default.

If the image option is so great, why would I use anything else? Good question. There are two possible reasons. First, softfonts, especially large softfonts, take up a lot of disk space. The LaserJet IIP, III, and IIIP printers all support softfont compression (which provides substantial disk space savings for large softfonts). However, the LaserJet Series II printer does not support compression. If you have a LaserJet Series II printer and you always use Sftware to download your softfonts, you can still take advantage of the substantial space savings of softfont compression: compress all of your softfonts on disk and expand them

6. Special Effects

Because they are many and varied, each special effect is described in its own chapter (later in this document). All of the effects are produced by the Sfx program. The effects are available from the following menu (and the appropriate submenus from this menu):

| Download | Effect | Compress | Rotate | Show | View | Info | tch | Filename |
|-----------|------------|----------|--------|------|------|--------|---------|--------------|
| Courier | Bold | | 10J | P | Med | 9.9pt | 12.0cpi | ar010aaa.esp |
| Times Rom | Fade/Mist | ▶ | 0U | P | Med | 9.9pt | n/a | cmr10.sfp |
| Spartan | Fill | | 0U | P | Med | 9.9pt | n/a | nb010aaa.usp |
| Times Rom | Halftone | | 0Q | L | Bold | 12.0pt | n/a | trb1ctxc.sfl |
| Times Rom | Hollow | | 0U | P | Med | 6.0pt | n/a | trr00usc.sfp |
| Times Rom | Invert | | 0U | P | Med | 8.0pt | n/a | trr00usc.sfp |
| Times Rom | Mirror | | 0Q | P | Med | 10.0pt | n/a | trr14txc.sfp |
| Times Rom | Outline | | 0Q | P | Med | 12.0pt | n/a | trr1ctxc.sfp |
| Times Rom | Resize | | 0Q | P | Med | 14.0pt | n/a | trr1ktxc.sfp |
| Times Rom | Reverse | | 0U | P | Med | 14.0pt | n/a | trr1kusc.sfp |
| Times Rom | Shade | | 0Q | P | Med | 14.0pt | n/a | trr1kxxc.sfp |
| Times Rom | Shadow | | 0Q | P | Med | 18.0pt | n/a | trr20txc.sfp |
| Univers | Slant/Tilt | ▶ | 0Q | P | Bold | 12.0pt | n/a | umb1ctxc.sfp |
| Univers | Spacing | ▶ | 0Q | P | Bold | 12.0pt | n/a | unj1ctxc.sfp |
| | Stripe | | | | | | | |
| | Three-D | ▶ | | | | | | |

177 kb

Figure 6.1. Effect options

Although you can select more than one effect for a given font, this *does not* apply the effects in sequence. In order to perform two effects in sequence, you must perform the first effect by selecting it and pressing **F10**, then perform the second effect on the font produced as output by the first effect.

In the following chapters, where each effect is discussed, there are no examples of the effects because it was necessary to limit the number of fonts used in this document. This reflects a limitation in some LaserJet printers that prohibits printing more than sixteen different fonts on a given page.

A second document called **EXAMPLES.PCL** is included in the Sftware distribution. This file contains examples of some of the effects that are possible. The corresponding document **EXAMPL16.PCL** is provided for those printers that cannot print more than sixteen fonts per page.

Technically, every character within a softfont is defined within a rectangle. The rectangle is subdivided into squares like a sheet of graph paper. Inside the rectangle, some of the squares are black and some are white. Because the squares are very small, the effect of printing them on a sheet of paper is that they form the lines and curves that make up each character. In the descriptions of effects that follow, it is sometimes necessary to describe the way that “squares” within the rectangle are manipulated. The region of the grid that defines the character (the black dots on the “graph paper”) is referred to as either the *black area* or the *foreground*, and the other “squares” are referred to as the *white area* or the *background*.

7. Compressing Fonts

Compression, available in the LaserJet IIP and subsequent printers, allows you to keep softfonts in a compressed format on disk. For fonts with large point sizes, this can achieve a *very* significant space savings. The actual compression is performed by the SfCmpr utility.

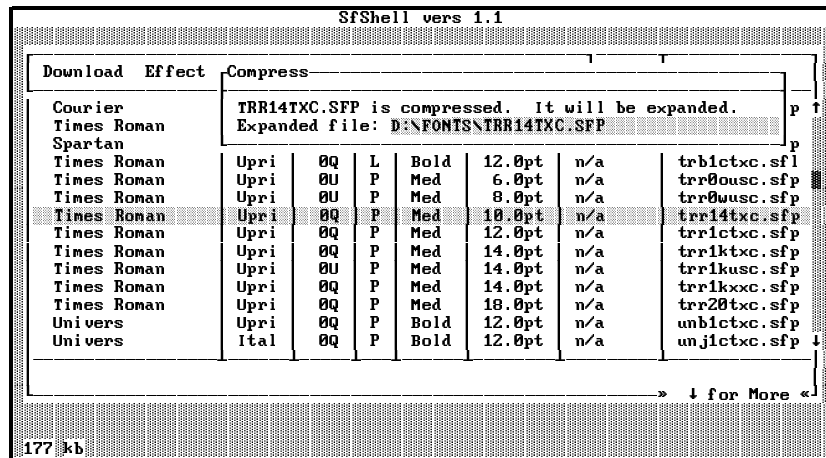


Figure 7.1. The Compress panel

The panel indicates the name of the current font and whether it will be compressed or expanded. You must enter the name of the font file which will be created to hold the new font. The default filename is the same as the original filename. In this case, the original file will be replaced by the compressed or expanded font.

9. Showing Fonts

Showing a font creates a reference page that displays every character in the font. The reference page includes all of the font characteristics, the font selection sequence and a chart of all of the characters in the font. This function is performed by the SfShow utility.

What's to Show?

Every softfont can contain up to 256 different characters numbered from 0 to 255. Most fonts don't define all 256 different characters. The character chart is a grid that has "spaces" for each of the possible characters. If there are some character positions in the font that are not used, the spaces for those characters will be blank in the chart.

For small fonts, the character chart is a 16x16 grid on a single page. If the font is larger than about 36pt (or has some very tall or very wide characters), the characters may be too large to fit into the spaces in a 16x16 grid. In this case, multiple reference pages may be printed for the font. When multiple reference pages are required, SfShell attempts to use the minimum number of pages.

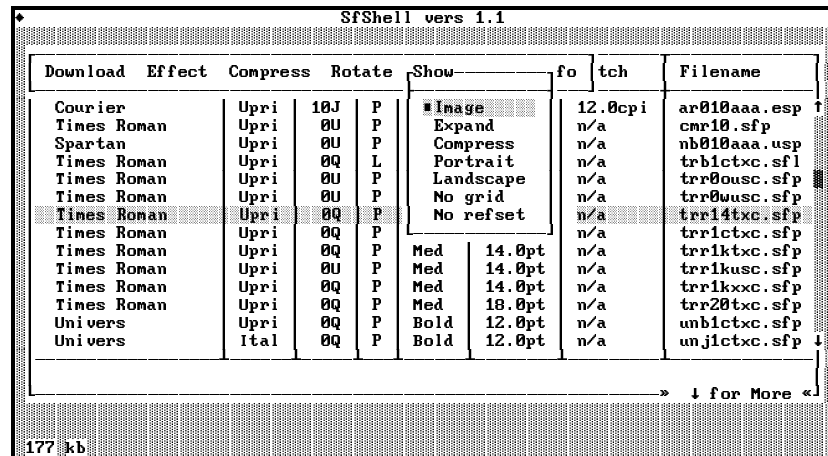


Figure 9.1. Show options

9.1. Options

As you can see, there are five additional options that can be selected for the download action. These options are described below. The option(s) that are selected are marked with a small square. The options that do not have a square are not selected. Use the Spacebar to toggle an option between selected and unselected.

Some combinations of options are not allowed (for example, you cannot select both **Compress** and **Expand** at the same time). When you select an option, other options that cannot be selected in combination with it will be unselected automatically.

10. Viewing Fonts

Viewing a font is the on-line equivalent of printing a reference page. Viewing displays every character in the font on a grid similar to the printed output created by showing a font. It can also display a sentence in the font. A graphics adapter is required to view fonts. The following adapters are supported at this time: CGA, MCGA, VGA, EGA, EGA (Mono), PC3270, IBM 8514, AT&T, and Hercules.

Selecting **View** switches to graphics mode and displays something like the following:

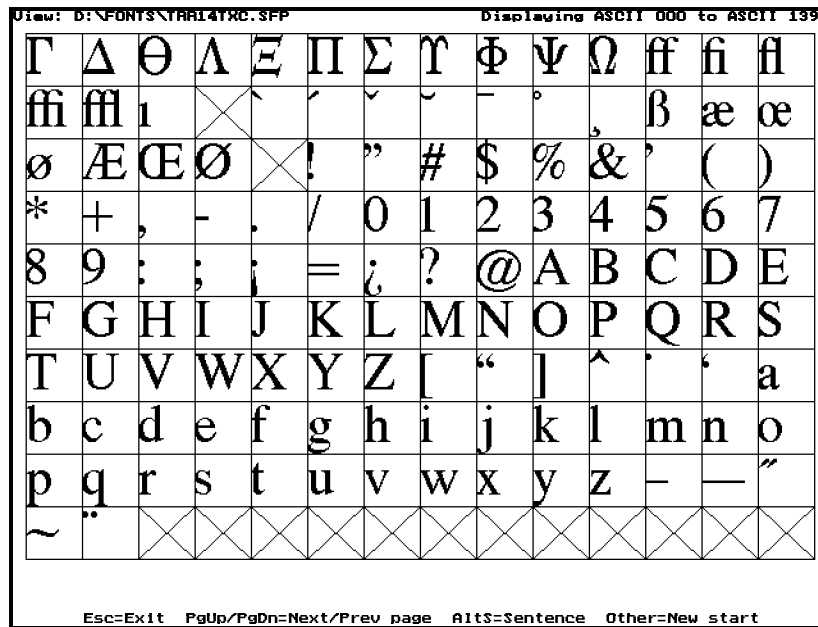


Figure 10.1. The view display

10.1. Running View

The keys described below allow you to change the range of characters displayed, the quality of the display, and the format of the display.

Esc

You can leave at any time by pressing **Esc**.

PgUp/PgDn

Pressing **PgDn** moves the range of characters displayed forward by one "screenfull." If ASCII 255 is currently in the display, pressing **PgDn** has no effect. Pressing **PgUp** moves the range of characters displayed backward by one screenfull. If ASCII 0 is currently in the display, pressing **PgUp** has no effect.

11. Softfont Information

If you have difficulty printing a particular font, SfInfo can help pinpoint the source of the problem. SfInfo displays the contents of the softfont header and the header of each character in the font. In addition, SfInfo examines the font looking for possible printer incompatibilities. New printers have a much more relaxed opinion about what constitutes a valid font. A font that works on a LaserJet III may not work on a Series II; SfInfo will be able to tell you why.

11.1. Running Info

Selecting **Info** displays a panel something like the following:

```
SfShell vers 1.1
« Softfont Information »

Font name: CG Times           Font filename: D:\FONTS\TRR14TXC.SFP
Orientation : Portrait       [ 0]      All distances are in PCL dots
Symbol Set  : 0Q, Name unknown
Spacing     : Proportional   [ 1]
Pitch      : 25.00cpi        [ 48, 0]
Height     : 10.00pt         [166,171]
Style      : Upright         [ 0]
Stroke weight: Medium        [ 0]
Typeface   : Times Roman     [ 5]
PCL5 Typeface: Times Roman  [4101]

          x
          |
          | Baseline=30
          | Xheight=19.00
          | Uline=8
          | Cell height=40
          |
          |
          | Cell width=43

Font selection : <ESC>(0Q<ESC>(s1p25h1v0s0b5T
PCL5 selection : <ESC>(0Q<ESC>(s1p25h1v0s0b4101T

F1=Help F4=Char Info F5=Addnl Desc F6=Warnings Esc=Exit

177 kb
```

Figure 11.1. Info Main Panel

F1

Pressing **F1** provides context-sensitive help for the **Info** panels.

Esc

You can leave at any time by pressing **Esc**.

F4

Pressing **F4** displays character information for the font. The dimensions of the largest character in the font are summarized and a scrolling list of the characters in the font is displayed.

12. The Bold Effect

Emboldening a font makes it appear darker on the page. Adding a large amount of boldness to a font will cause it to blur and become difficult to read. In professional typography, the characters in a bold version of a font have different shapes and proportions. This is beyond the ability of Sftware. A normal font made bolder with Sftware will not look the same (and probably will not look as good) as a real bold version of the original font.

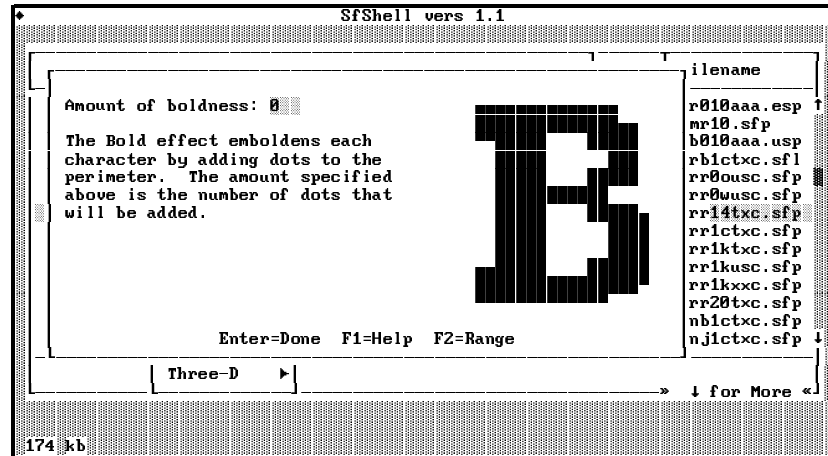


Figure 12.1. The Bold panel

12.1. Options

Amount of boldness

The amount of boldness controls how much darker the characters are made to appear. The larger the number, the darker the characters will be. For best results, the amount of boldness should be small with respect to the size of the font. It's difficult to define "small" in this context; one-tenth of the point size of the font (or less) is probably a good estimate. Experiment and see what looks most pleasing to the eye.

12.2. Technically Speaking

The bold effect locates "edge" pixels (that is, pixels that are on a border of the character) by scanning horizontally across each row of pixels. Every time a pixel position is found that is currently off and adjacent to, but not surrounded by, pixels that are on, the pixel is turned on. This has the effect of adding pixels to the border of the character. The appropriate font and character parameters are updated so that the original character shape (now surrounded by a border) prints in the same position as the original. In other words, the left offset is incremented by one, the baseline is incremented by one, and the character bounding box is expanded. If an amount of boldness greater than one is specified, the above algorithm is iterated to produce the correct amount of boldness.

14. The Fill Effect

Filling a font creates outlined characters filled with a user-specified pattern.

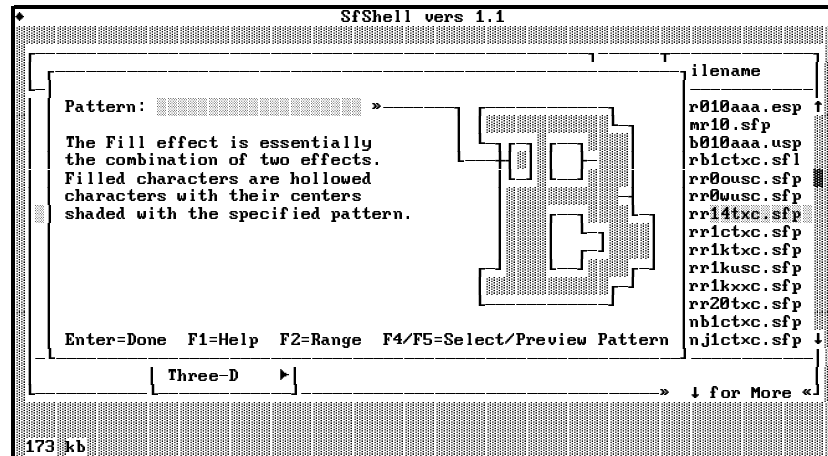


Figure 14.1. The Fill panel

14.1. Options

Pattern

Patterns can be specified directly or by using names defined in the configuration file. The *Patterns* chapter describes how to create patterns; the *Configuration* chapter describes how to save and name patterns.

14.2. Technically Speaking

Patterns are described in more technical detail in the *Patterns* chapter.

Invert start

The invert start specifies where the selected area begins. This value should be expressed as a percentage from the top of the tallest character in the font. For example, specifying 25 begins the selected area 1/4 of the way down from the top of the character, similarly, 50 selects a position halfway down the character and 67 selects a position 67% of the way down from the top of the character.

The panel refers to these areas as “top” and “bottom;” however, there is no reason why you cannot specify a selected region that forms a band across the middle of the character (e.g. from 33% to 66%).

Invert stop

By analogy with invert start, this option specifies where the select region ends. The invert stop value should be larger than the starting value. The area between the start position and the stop position is the “selected region” of the character.

Black bottom

The black bottom pattern replaces the foreground (black) area of the selected region.

White bottom

The white bottom pattern replaces the background (white) area of the selected region.

15.2. Technically Speaking

This effect forms the heart of several effects in SFX. For example, the “shade” effect is nothing more than the halftone effect applied to a selected region from 0% to 100% of the character! If you understand the concept of a pattern (discussed in the *Patterns* chapter), it shouldn’t be too difficult to understand the halftone effect.

Note: in any effect that changes the background pattern, it may be necessary to turn off “kerning” within the word processor or other program that you use to print the font. Normally, causing two characters to overlap by a small amount (for example a capital “T” followed by a lowercase “o”) is not noticeable because they only overlap in the “white” background. However, after you have changed the background to a pattern other than plain white, the effect of overlapping two characters by even a small amount may be undesirable.

17. The Hollow Effect

Hollowing a font produces an unfilled outline of each character.

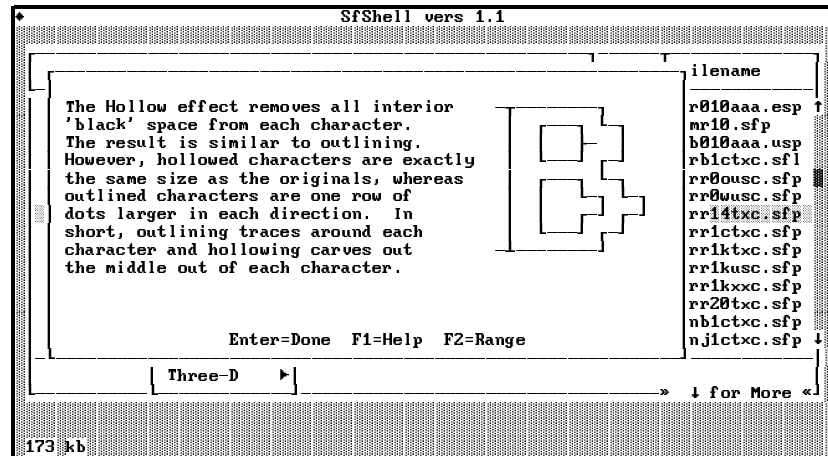


Figure 17.1. The Hollow panel

17.1. Options

The hollow effect has no options.

17.2. Technically Speaking

The hollow effect and the outline effect are very closely related. The only difference is the placement of the outline. In the hollow effect, the existing perimeter of each character is left in place and the interior is “scooped out”. For the outline effect, the entire character is erased and a new perimeter is added just around the character. In effect, an outlined character is a hollowed bold character (see the technically speaking section of the bold effect for more details).

It should also be noted that the hollow and fill effects are closely related. A hollowed character is a filled character with a pattern of 0.

19. The Mirror Effect

Mirroring a font creates characters that are upside down.

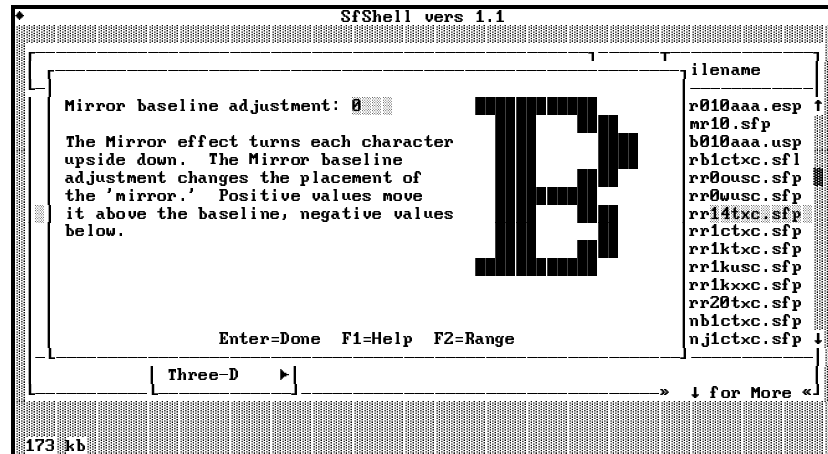


Figure 19.1. The Mirror panel

19.1. Options

Mirror baseline adjustment

The mirror baseline adjustment changes the relative position of the (virtual) mirror across which each character is rotated. A value of zero specifies that the mirror is on the baseline, values larger than zero move the mirror above the baseline, smaller values move it below.

19.2. Technically Speaking

If you plan to use a font and its mirror to create a special display effect (by placing one above the other), you may find that the descenders on the original font overlap the “descenders” (now ascenders!) on the mirrored font. This is where it is helpful to change the mirror baseline adjustment. By making the adjustment roughly equal to the number of pixels in the descenders of the original font, you can move the mirrored font “down” a little so that the mirrored descenders don’t overlap the descenders on the original font.

21. The Outline Effect

Outlining a font produces an unfilled outline of each character.

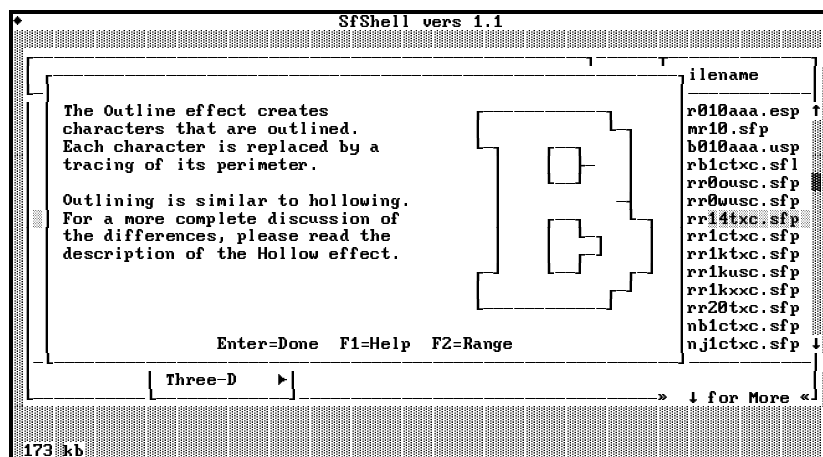


Figure 21.1. The Outline panel

21.1. Options

The outline effect has no options.

21.2. Technically Speaking

See the technical discussion of the hollow effect for more information.

23. The Resize Effect

Resizing a font creates characters that are larger or smaller than the same characters in the original font. The characters can be scaled uniformly (creating more or less accurate renditions of the original characters with the same proportions) or non-uniformly (creating elongated or widened characters).

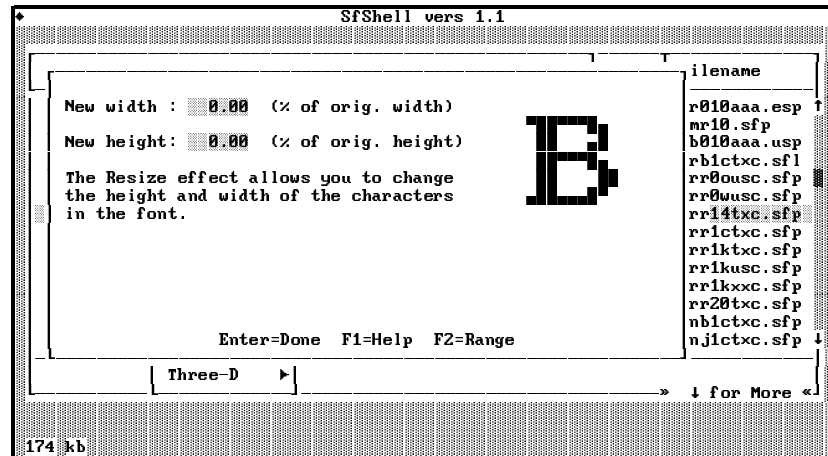


Figure 23.1. The Resize panel

23.1. Options

New Width

The new width specifies the width of each resized character as a percentage of its original size. Values less than 100 make the characters narrower, while values larger than 100 make them wider.

New Height

Like the width, the new height specifies the height of each resized character as a percentage of its original height.

23.2. Technically Speaking

In practice, this effect has few uses. Unlike more modern font scaling technology (which relies on mathematical descriptions of each character) SFX has only the bitmap description of each character to work with. As a result, gross changes in the size of a character create “jagged” edges and *very* poor quality letters. Making fonts larger generally works better than making them smaller. As a rule of thumb, you probably won’t like the results if you try to resize a font by more than a factor of two. If you hold one dimension constant (100%), it may be possible to stretch or compress the other dimension by a larger factor without significant loss of detail.

25. The Shadow Effect

Shadowing attempts to produce the effect that you would get if all you could see on the page were the shadows from an embossed image of the original character. It's a bit difficult to describe, but it is one of my favorite effects.

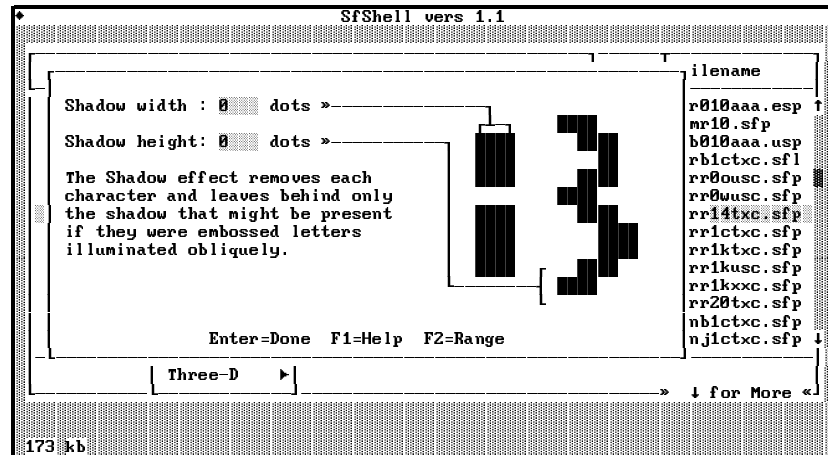


Figure 25.1. The Shadow panel

25.1. Options

Shadow Width

The shadow width controls the width (in dots) of the shadow to the right or left of the original character. Positive values create a shadow on the right hand side of the character, while negative values create a shadow on the left. This value should be small relative to the total width of the character.

Shadow Height

By analogy with the shadow width, the shadow height controls the height of the shadow above or below the character. Positive values create shadows below the character, negative values above. This value should be small relative to the total height of the character.

25.2. Technically Speaking

The effect is produced by moving a copy of the character over and down by the specified amounts and then removing all dots that fall within the original character (including all of the original character). For small offsets, this works fine; however when the offsets become larger than the widths of the strokes that make up the character, the effect falls apart.

27. The Slant Effect

Slanting is a poor-man's version of italics. In practice, italic fonts are not *just* slanted versions of the upright characters. But slanting will suffice in a pinch and it does allow you to produce oblique characters (slanted backwards), which are occasionally useful.

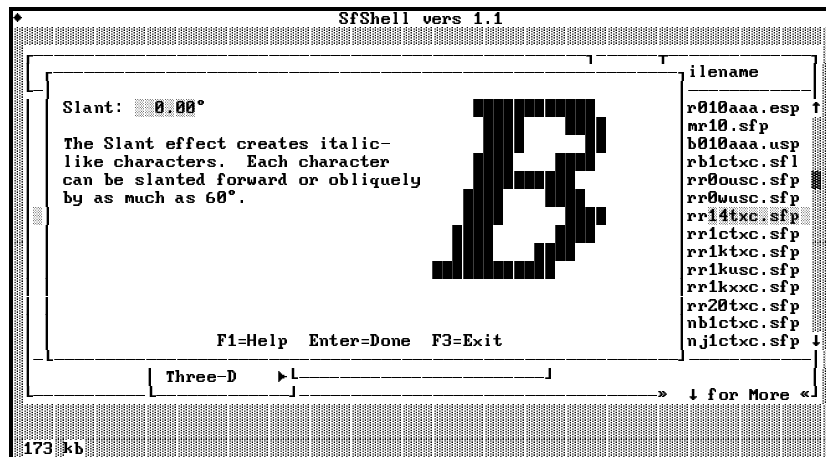


Figure 27.1. The Slant panel

27.1. Options

Slant

The slant specifies the amount of slant in degrees. A positive value causes the characters to slant toward the right. A negative value causes the characters to slant toward the left.

27.2. Technically Speaking

This effect is produced by calculating how far over each row of pixels must be moved in order to produce a slant of the requested angle. Using a little bit of trigonometry, it is easy to calculate how far over the top row must be moved. Each row below the top must be moved over some fraction of the total height of the character. Rows below the baseline must be moved in the opposite direction.

Considering that this algorithm does nothing more than slide rows of dots back and forth, it should be easy to see that large slant values may produce jagged, non-contiguous characters.

29. The Three-D Drop Shadow Effect

Three-D drop shadows create a patterned shadow-image of each character that appears to be below the original. It is possible to change the apparent “distance” of the shadow by changing the offsets used to create it.

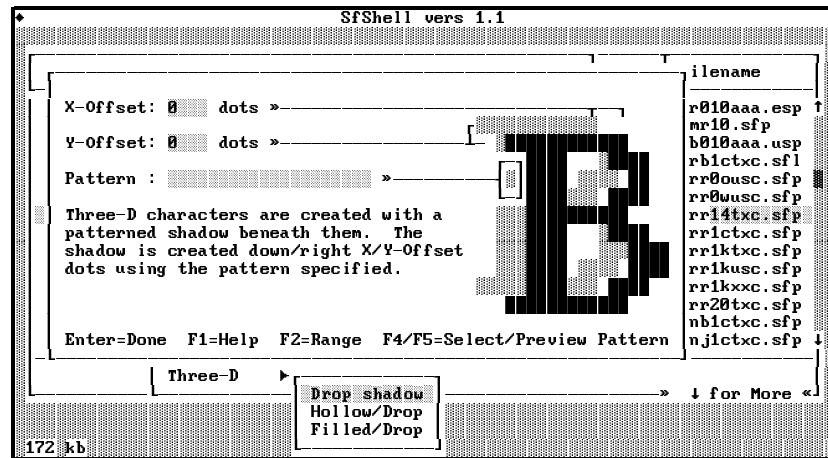


Figure 29.1. The Three-D Drop Shadow panel

29.1. Options

X-Offset

The x-offset controls the distance (in dots) of the shadow to the right or left of the original character. Positive values create a shadow on the right hand side of the character, negative values create a shadow on the left.

Y-Offset

By analogy with the x-offset, the y-offset controls the distance of the shadow above or below the character. Positive values create shadows below the character, negative values above.

Pattern

The pattern specified is applied to the areas used in the shadow.

29.2. Technically Speaking

The original character is moved left or right and up or down by the distances specified. If necessary the character cell is enlarged to accommodate the new character. The character is then shaded with the specified pattern and the original character is painted back into the character cell at its original position.

31. The Hollow Three-D Drop Shadow Effect

Hollow Three-D drop shadows are simply a combination of the three-d drop shadow effect and the hollow effect. It is a limitation of the algorithms used to create the three-d drop shadow effect that it is not possible to hollow a three-d character. This effect is provided to circumvent that limitation.

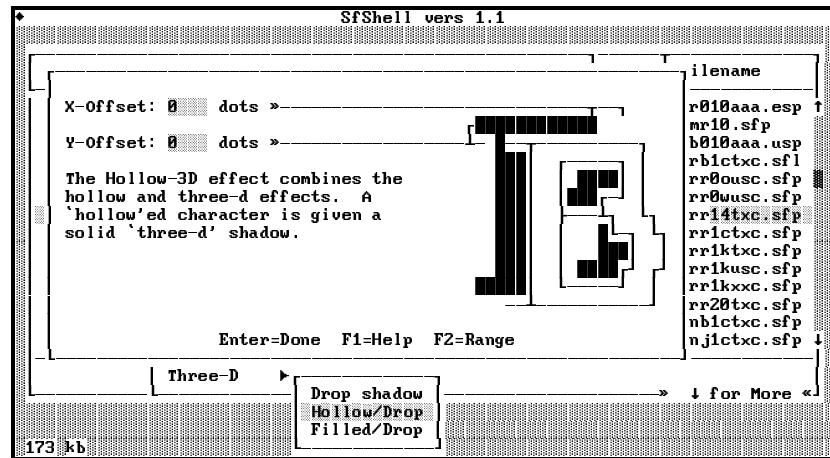


Figure 31.1. The Hollow Three-D Drop Shadow panel

31.1. Options

X-Offset

The x-offset controls the distance (in dots) of the shadow to the right or left of the original character. Positive values create a shadow on the right hand side of the character, negative values create a shadow on the left.

Y-Offset

By analogy with the x-offset, the y-offset controls the distance of the shadow above or below the character. Positive values create shadows below the character, negative values above.

31.2. Technically Speaking

This option is exactly the same as the three-d drop shadow effect except that the shadow is always solid black and instead of painting the original character back into the cell, a hollowed version of the original character is painted back in.

33. The Vertical Fade/Mist Effect

Fading a font with this effect “smudges” out the top or bottom edge of each character.

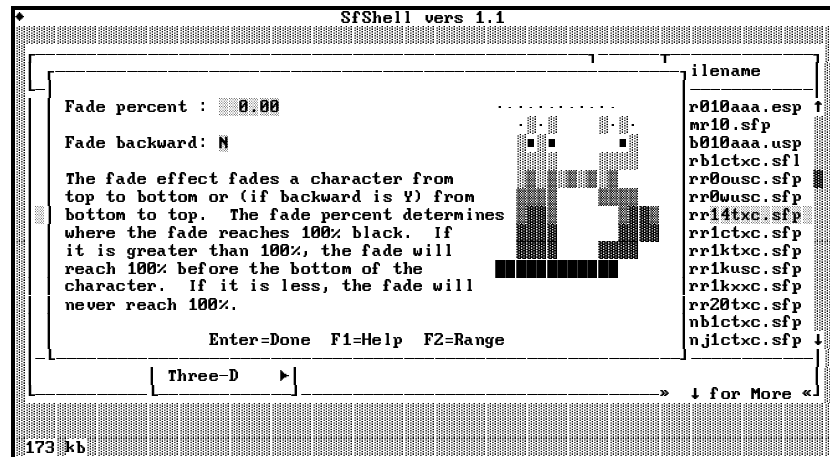


Figure 33.1. The Vertical Fade panel

33.1. Options

Fade Percent

The fade percent determines what percentage of the character is faded out. A fade factor of 100% applies the fade all the way down each character so that 100% black saturation is achieved in the last row of pixels. Fade factors below 100% apply the fade more rapidly so that a 100% black saturation is achieved before the bottom of the character. Conversely, fade factors above 100% draw the fade out so that it never reaches saturation.

Fade Backward

By default, a vertical fade begins with 0% black on the top row of the character and proceeds towards 100% on the bottom row (at a rate determined by “fade percent.” See above). If backwards fading is selected, the fade begins with 0% black on the bottom row of the character and proceeds towards 100% on the top row.

33.2. Technically Speaking

See the technically speaking section for the Horizontal Fade/Mist effect. The vertical fade algorithm is a natural analog of the horizontal fade algorithm.

Round to 8-dots

The region used to generate the pattern must be an even multiple of eight dots wide. Repeat the smallest region to the right until it is a multiple of eight dots wide. You must repeat the entire pattern (for example, if the region is 6 dots wide, you will have to repeat it until it is 24 dots wide). In this case the smallest region a multiple of eight dots wide is this:

| | | | | | | | |
|---|---|--|---|--|---|--|---|
| | | | | | | | |
| | * | | | | * | | |
| | * | | * | | * | | * |
| * | | | * | | | | |

Use zeros and ones

Redraw the pattern using zeros for “off” dots and ones for “on” dots. If the pattern is more than eight dots wide, write the zeros and ones of each row in groups of eight as you copy the pattern. In our example, the result is this:

| | | | | | | | | | |
|---|---|--|---|--|---|--|---|---|----------|
| | | | | | | | | = | 00000000 |
| | * | | | | * | | | = | 00100010 |
| | * | | * | | * | | * | = | 01010101 |
| * | | | * | | | | | = | 10001000 |

Convert to number

Treat each group of eight digits in each row like a binary number. Using a calculator or a conversion chart (there is a conversion chart in the online help facility for SfShell), change each eight digit binary number into a decimal number. If the rows have more than one group of eight digits, separate the resulting decimal numbers with commas. Our example becomes:

00000000 = 0
00100010 = 34
01010101 = 85
10001000 = 136

Rewrite

Use the decimal numbers to create the pattern command. Optionally, you may wish to add the pattern to the configuration file (as described below). The decimal numbers for each row are separated by commas and the rows are separated by semicolons. The pattern we set out to create can be specified as follows:

0;34;85;136

Remember that you can use preview to look at the pattern before creating a font with it. This is a good way to check that you did the conversion correctly.

35. Softfont Directory Listings

The softfont directory program, SfDir, is not integrated into SfShell. This chapter describes the standalone SfDir program. The SfShell main menu contains most of the features of the standalone program.

The SfDir program provides a useful alternative to the standard DOS DIR command for softfonts. SfDir prints the font characteristics of each softfont that matches the *fontmask*.

35.1. Example

```
Directory of D:\FONTS\*. *
AB010AAA ESP Port 10J Fix 12.00cpi 9.96pt Up Medium Courier
CMR10 SFP Port 0U Pro 9.96pt Up Medium Times Roman
NB010AAA USP Port 0U Pro 9.96pt Up Medium Spartan
TR01CTXC SFL Land 0Q Pro 12.00pt Up Bold Times Roman
TR000USC SFP Port 0U Pro 6.00pt Up Medium Times Roman
TR00WUSC SFP Port 0U Pro 8.00pt Up Medium Times Roman
TRR14TXC SFP Port 0Q Pro 10.00pt Up Medium Times Roman
TRR1CTXC SFP Port 0Q Pro 12.00pt Up Medium Times Roman
TRR1KTXC SFP Port 0Q Pro 14.00pt Up Medium Times Roman
TRR1KUSC SFP Port 0U Pro 14.00pt Up Medium Times Roman
TRR1KXXC SFP Port 0Q Pro 14.00pt Up Medium Times Roman
TRR20TXC SFP Port 0Q Pro 18.00pt Up Medium Times Roman
UNB1CTXC SFP Port 0Q Pro 12.00pt Up Bold Univers
UNJ1CTXC SFP Port 0Q Pro 12.00pt It Bold Univers
UNR00USC SFP Port 0U Pro 6.00pt Up Medium Univers
UNR0WUSC SFP Port 0U Pro 8.00pt Up Medium Univers
UNR14USC SFP Port 0U Pro 10.00pt Up Medium Univers
UNR1CTXC SFP Port 0Q Pro 12.00pt Up Medium Univers
UNR1KUSC SFP Port 0U Pro 14.00pt Up Medium Univers
VGA20 SFP Port 10U Fix 20.00cpi 1.68pt Up Medium Courier
VGA20SH SFP Port 10U Fix 20.00cpi 1.68pt 14 Medium Courier
21 Font(s) 288505 bytes
```

35.2. Usage

SFDIR *fontmask* [[*options*]]

35.3. Options

/esc

If SfDir is run with the */esc* option, it prints the LaserJet escape sequence required to select each font instead of a textual description of the font characteristics. In the escape sequence, a raised dot is used to represent the ESC character (ASCII 27d).

/noesc

With the */noesc* option, SfDir prints a textual description of the font characteristics for each font that matches the *fontmask*. This is generally the default.

36. Sftware Registration

The software registration program, SPS-Reg, is not integrated into SfShell. This chapter describes the standalone SPS-Reg program. Registering shareware is an investment. Your registration will provide the support and encouragement required to continue the development of Sftware. The Sftware utilities represent an investment of more than two years of my time and effort. You get the results of this toil for a fraction of what a commercial package would cost. Plus, you get the benefits of a try-before-you-buy license agreement. If you continue to use the Sftware utilities, you are required to register them.

Return the enclosed order form with your check or money order today!

36.1. Usage

The SPS-Reg registration program requires key information that will be mailed to you when you register the Sftware utilities. You cannot make any use of the program until you mail in your registration.

Sftware is provided under a lifetime registration policy. Your registration contributes directly to the future growth of Sftware. Every registration is good for all future versions of Sftware. Register once. Register now!

38. Glossary

| | |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ASCII | ASCII stands for the American Standard Code for Information Interchange. Text files are usually referred to as being “plain ASCII” if they contain no additional formatting information. The CONFIG.SYS and AUTOEXEC.BAT files on your boot disk are examples of a plain ASCII files. The spreadsheets, database files, or word processing documents produced by large application programs are generally <i>not</i> plain ASCII. |
| baseline | The baseline is an imaginary line upon which each character rests. Characters that appear next to each other are (usually) lined up so that their baselines are on the same level. Some characters extend below the baseline (“g” and “j”, for example) but most rest on it. |
| bitmap | <p>A bitmap is an array of dots. If you imagine a sheet of graph paper with some squares colored in, a bitmap is a compact way of representing to the computer which squares are colored and which are not.</p> <p>In the context of softfonts, the dots are always black and white. In a bitmapped softfont, every character is represented as a pattern of dots in a bitmap. The dots are so small (300 dots-per-inch, usually) that they are indistinguishable on the printed page.</p> |
| bounding box | Every character in a bitmapped softfont is represented as a pattern of dots in a rectangular grid. The bounding box is an imaginary box just large enough to hold the character. The box is as wide as the widest row of dots and as tall as the tallest column of dots. |
| character | A character is an individual symbol in a font. The letter “A” is a character. So is a period. All of the printed symbols that can appear in a font are characters. They can also be called glyphs. |
| child process | When one program directly runs another program (as when SfsShell runs SffX to perform a requested special effect), the program that is run (SffX in this case) is called the child and the program that did the running (SfsShell) is called the parent. |
| command line | When you type a command at the DOS prompt, you are entering information on “the command line.” Command line parameters and command line options are things that you type after the name of the command. For example, if you type “ edit letter.txt ”, “ edit ” is the command and “ letter.txt ” is a command line parameter. |
| decimal | Decimal refers to the number base composed of ten symbols (0-9). Normal, ordinary math is performed in decimal (which can also be referred to as base 10). |
| device | A device is a special piece of hardware that exists (either physically or logically) and can send and/or receive data. Your printer is a device. So is your modem. Your computer also includes several logical devices (for example, the NUL device which is an infinite sink and an empty source—that means you can always write to it (it never fills up) and you can never read from it (you always get “end-of-file”)). |
| download | Downloading is the process of transferring information from one device to another. This transferral is called downloading when the transfer flows from a device of (relatively) more |

| | |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| memory, extended | Extended memory is memory above the 1 megabyte boundry in your computer. Sftware cannot directly use extended memory. Many programs exist which map extended memory as expanded memory. For more information about expanded memory, see <i>EMS</i> . |
| memory, main | Main memory is the DOS memory below 640K in your computer. This is the area where normal DOS programs run. The DOS <code>chkdsk</code> program, for example, reports the amount of main memory that is free. |
| octal | Octal refers to the number base composed of eight symbols (0-7). Octal is sometimes called base 8. |
| pathname | A pathname is a filename (please consult your DOS reference for more information about what constitutes a valid DOS filename) with its associated drive and path. For example, if <code>tr100.sfp</code> is the name of a file in the directory <code>\fonts</code> on drive <code>d:</code> , then <p style="text-align: center;"><code>d:\fonts\tr100.sfp</code></p> is the pathname of <code>tr100.sfp</code> . |
| scalable font | A scalable font, unlike a bitmapped font, is defined mathematically and can be rendered at any requested size (within reason). Sftware can download and show scalable fonts but other manipulations (including on-screen previewing) are not possible (at this time). |
| selection sequence | Your laser printer can print many different fonts. Some of the fonts are built in, some may come from a cartridge and many can be downloaded. In order to tell the laser printer which font you want text to be printed in, you must send it a selection sequence. The selection sequence describes, in a well defined, precise manner, the typeface, symbol set, height, width, style, and degree of boldness that you want. |
| softfont | A softfont is a bitmapped or scalable description of a typeface or font. They can be downloaded to your printer and used just like any other printer font. Unlike built-in and cartridge fonts, softfonts use memory inside your printer. Downloading a lot of softfonts may reduce the printers ability to construct complex pages. |
| symbol set | The symbol set of a font describes the relative positions of individual characters within the font. Since there can only be 256 characters in any font, and there are well over 256 different characters used in professional document preparation, there needs to be some way to map characters into positions within the font. The symbol set serves this purpose. It identifies the “map” used to position characters within the font. |
| typeface | A typeface is generic term for a collection of symbols with a similar style. Times Roman and Helvetica are typefaces. Contrast with font. |

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Sfware Order Form

Name: _____ Phone: (_____) _____-

Company: _____ Email: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Please pay by check or money order, do not send cash through the mail. Make all checks payable to Norman Walsh.

| Individual utilities: | Quantity | Price Each | Total |
|---------------------------------------------------------------|----------|---------------|-------|
| _____ SFFx (softfont special effects) | _____ | \$25 | _____ |
| _____ SFCmpr (softfont compression) | _____ | \$10 | _____ |
| _____ SFLoad (download fonts) | _____ | \$10 | _____ |
| _____ SFRotate (landscape/portrait conversion) | _____ | \$10 | _____ |
| _____ SFShow (print summary page) | _____ | \$10 | _____ |
| _____ SFView (preview font on screen) | _____ | \$10 | _____ |
| _____ SFDir (directory enhancement for fonts) | _____ | \$ 5 | _____ |
| _____ SFInfo (complete font information) | _____ | \$ 5 | _____ |
| Utility bundles: | | | |
| _____ SFShell (menu interface shell) and <i>all</i> utilities | _____ | \$60 | _____ |
| _____ All of the utilities (without SFShell) | _____ | \$40 | _____ |
| _____ Any three utilities (excluding SFFx, select above) | _____ | \$20 | _____ |

Subtotal: _____

Massachusetts residents, please add appropriate sales tax: _____

Total: _____

Complete this form and return it with your payment to:

Norman Walsh
#42I Southwood Apts
Amherst, MA 01002