CAPELLA TECHNOLOGIES

Multi-Host Printing

Advanced Features Guide

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Preface

This advanced features guide provides supplemental information for using Multi-Host Printing (MHP) from Capella Technologies.

Advanced Features Guide Overview

This guide is organized into the following sections:

Chapter 1: SCS Advanced Features – Lists the advanced SCS features and how to use them with MHP.

Chapter 2: SCS Host Download Commands – Contains detailed descriptions and syntax for using host download commands for both 5250 and 3270.

Chapter 3: 3270 Advanced Features – Contains descriptions and usage instructions for the advanced features of SCS.

Chapter 4: ¬Q 5250 Font References – Contains a table listing laser printer resident fonts and available font cartridges available along with the font ID (FGID) number when using the ¬Q Font Change Command.

Chapter 5: ¬F 5250 Font References – Contains a table listing laser printer resident fonts and available font cartridges available along with the font ID (FGID) number when using the ¬F Font Change Command.

Throughout this guide, the following icons are used to denote important sections of text:

Highlights procedures that if not heeded, could damage the product or adversely affect the functionality.

Provides useful information relevant to the described feature or procedure.

Offers a tip, shortcut or useful information.

Chapter 1: SCS Advanced Features

This chapter describes the advanced SCS features and explains how to use them to further enhance MHP.

The 5250 SCS Printer Emulation session allows you to operate the HP LaserJet printer just as you would an IBM 3812 printer. The IBM 3812-1 printer is a laser-type printer that provides font changing capability, plus text rotation and compression features called Automatic Print Orientation (APO) and Computer Output Reduction (COR).

The 5250 SCS Printer Emulation provides bolding, underlining, super and subscripts by recognizing the host commands for these features in the document.

Command Pass-Thru™

The Command Pass-Thru™ feature allows access to all of the built-in features of the printer, even if these features aren't normally available through the host software. Command Pass-Thru™ lets you place printer-specific command sequences into the data sent to the printer. The 5250 SCS Printer Emulation session recognizes these special sequences and "passes the command through" to the printer.

The steps below describe how to use Command Pass-Thru™.

1. Find the command for the desired print feature in the printer's user's guide.

2. Convert the printer command to hexadecimal (ASCII).

3. Place &% (or the alternate CPT start delimiter), in the document at the point where the feature is to take effect. This signals the start of the print feature.

4. Enter the printer command, then enter &% or the alternate CPT end delimiter. A space may be entered between hexadecimal code pairs to make the command easier to read, but do not put spaces between the delimiter and the hexadecimal characters.

5. Move the cursor to the point in the text where the print feature ends. Enter &% or the alternate CPT start delimiter, followed by the ending printer command and then &% or the alternate CPT end delimiter again, into the document.

For example:

The command ESC &d0D begins underlining and ESC &d@ ends underlining on a HP LaserJet printer. First convert the start command to the hexadecimal 1B 26 64 30 44 and the ending command to 1B 26 64 40. If the delimiter is the default &% (hex 50 6C), then enter the commands as follows:

This is an &%1B26643044&%underlined&%1B266440&% word.

This will print on the printer as:

This is an underlined word.

ONLY CHARACTERS FROM 01 TO FF ARE RECOGNIZED (ALPHABETIC CHARACTERS MUST BE IN UPPER CASE).

ERRORS IN THE COMMAND PASS-THRU SEQUENCE WILL CAUSE THE 5250 SCS PRINTER EMULATION SESSION TO IGNORE THE COMMAND AND PRINTING WILL RESUME AT THE POINT THE ERROR OCCURRED.

COMMAND PASS-THRU MAY INVALIDATE HORIZONTAL SPACING.

Although the command is displayed on the screen the, 5250 SCS Printer Emulation session treats it as a command and does not print it. If part of the sequence is printed, an error has been made entering the codes. Check the document and make sure the correct format and EBCDIC hexadecimal characters are being used.

Avoid sending codes that would move the print position during Command Pass-Thru. Since the 5250 SCS Printer Emulation session does not process these commands, it cannot keep track of the print position changes. This may affect the position of characters that follow the command and the page layout.

Changing Typestyles

The typestyle number (FGID) selected determines the font to be used. The system operator selects a default typestyle when the printer is configured on the host, however, a word processing program may also have a default typestyle. Since the default typestyle can vary depending on the system setup, ask the system operator if you have questions about the default typestyle on the system. There are two ways to change typestyles:

- Select a typestyle number within the program or document
- Use Font Change commands in the document

Refer to the IBM program manuals (i.e. OfficeVision/400) to change typestyles in the program. Font Change commands are placed in the document by the user (see below). The four-character font command changes the text to the new font until another Font Change command is entered.

The host does not know that a font change has taken place, and may send the original font number to the printer at the beginning of each page. Therefore, the user may have to put a Font Change command at the beginning of each new page. If the pitch is changed, there may be formatting problems since the host is still formatting each line according to the pitch of the original typestyle number.

Font Change Commands

Font Change Commands allow fonts to be changed in the document without using host commands. The commands can be used in either data processing (RPG, Basic programs, etc.) or in word processing documents.

Two types of Font Change Commands exist. Both commands can be placed anywhere within a document. The command consists of the "logical not" (¬) symbol, and either a capitalized "Q" or "F" followed by the typestyle number corresponding to the desired font. The "^" symbol can be used in place of the "¬" for non-US applications.

The Font Change Command occupies space in the program or text, however, the command does not print.

- ¬Q - Font change commands using the capital letter "Q" allow the user to access a vast number of printer-resident and optional cartridge fonts. Appendix A shows the typestyle numbers assigned to the supported fonts. Each typestyle number describes a particular font with particular attributes. For example, typestyle number 88 represents Courier Bold, 12 pitch, 10 point.

  To change a font, insert a font change command at the beginning of the text where the change is to take place. For example, to bold the word "saves" in the following sentence (assuming the current font is Courier - 12 CPI or pitch, 10 point) type:

  Quality ¬Q88saves¬Q85 you time and money.

  Here's how the print will look:

  Quality **saves** you time and money.

The ¬Q85 following "saves" returns the printing back to the original font.

- ¬F - Font change commands using the capital letter "F" allow the user to access all of the scalable fonts available on a printer. Appendix B shows the typestyle numbers assigned to the supported fonts. Notice that unlike the typestyle numbers used with ¬Q commands, the typestyle numbers in Appendix B describe only the typestyle of the supported font. The size of the desired font is entered separately in the font change command. For example, to increase the size of the word "saves" in the following sentence to 30 points (assuming the current font is Arial, 12 point), type:

  Quality ¬F6199,30saves¬F6199,12 you time and money.

  Here's how the print will look:

  Quality saves you time and money.

The ¬F6199,12 following "saves" returns the printing back to the original font. The numbers following the comma (¬F6199,30 and ¬F6199,12) set

the point size of a proportional font (such as Arial) and the pitch size of a fixed pitch (such as Courier).

To print fonts that are not already supported through your 5250 SCS Printer Emulation session, refer to the Host Download Command No. 21 Font Strings.

Paper Output Bin Selection

The 5250 SCS Printer Emulation session allows you to direct host print jobs to any of the printer's available output bins. The HP LaserJet 5Si, for instance, can be equipped with the optional multi-bin mailbox, which offers 8 additional output bins.

To send a host job to a particular output bin, insert an output command on the first line (line 1, position 1) of the document/report. The output command consists of the "logical not" (¬) or the "caret" (^) symbol followed by a capital letter "O" (for Output) and two digits designating the destination bin. The two-digit number corresponds to the printer's PCL command for the particular output bin.

Once an output bin is selected, all host print jobs will be directed to that output bin. To send host print jobs to another output bin, insert a second command. ¬O00 causes the printer server to not send any output instructions to the printer. All print jobs will be directed to the output bin set through the printer's operator panel.

The output commands are as follows:

Command	Description	PCL Command
¬O00	Automatic Selection	ESC%I0G
¬O01	Selects output bin #1	ESC%I1G
¬O02	Selects output bin #2	ESC%I2G
¬O03	Selects output bin #3	ESC%I3G
¬O04	Selects output bin #4	ESC%I4G
¬O05	Selects output bin #5	ESC%I5G
¬O06 to 99	Selects output bin #6 to 99	(Not yet assigned)

Print Orientation

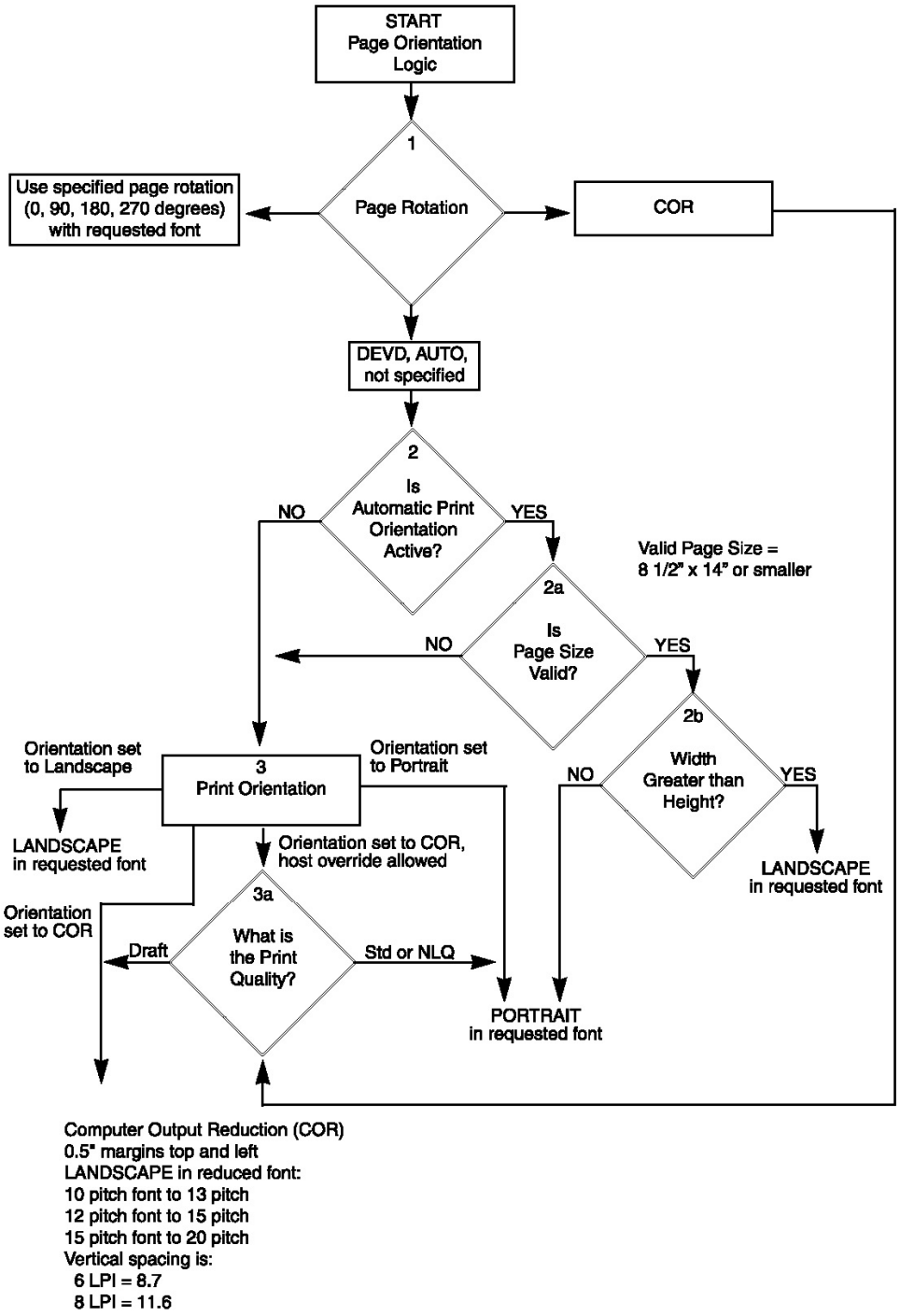
When operating the 5250 SCS Printer Emulation session in IBM 3812-1 emulation mode, the print orientation of the host document or report is determined by a variety of factors. These factors, in order of their impact on the final print orientation, are:

1. Page Rotation specified in the printer file of a data processing document or in the document format menu of a word processing document.

2. Automatic Print Orientation (APO) setting on the 5250 SCS Printer Emulation session.

3. Print Orientation setting on 5250 SCS Printer Emulation session.

Refer to the following COR Flowchart diagram as you read the description of the page rotation, automatic print orientation, and print orientation settings that illustrate the print orientation logic.



COR Flowchart

Changing Page Rotation Settings

Before changing page rotation settings, first verify the current settings. In Office Vision/400, page rotation settings can be viewed and changed in the following manner:

1. Press F20 "Format options."
2. Press 1 "Document options" then ENTER.
3. Press 1 "Document format" then ENTER.
4. Press 4 "Page layout/paper options" then ENTER.
5. Press Page Down to scroll to the second screen.
6. Locate "Rotate Paper .... option."
7. Move the cursor to the currently selected rotation setting and type in the desired selection.

To permanently change the page rotation setting for a data processing report the printer file must be changed. This should be done by a MIS staff member, since a changed printer file most likely affects many printers. The page rotation setting can be changed temporarily by overriding the printer file. The printer file must be changed or overridden before the host creates the print job. An overridden printer file applies only to print jobs created on the host session that was active when the printer file was overridden.

To view the current printer file settings, type CHGPRTF followed by a space and the name of the printer file on the command line of the host. Press F4. Do not change any settings unless authorized by the IS director.

To change the printer file:

1. Type CHGPRTF on the command line of the host, and press Enter.
2. Type in the name of the printer file to be changed.
3. Press F10 to display additional parameters.

4. Press Page Down (three or four screens depending on OS/400 version) and locate "Degree of page rotation ....." option.

5. Move the cursor to the beginning of the dashed line and enter the desired selection.

6. Press ENTER to activate the selection and exit the printer file menu.

To override the printer file:

1. Type OVRPRTF on the command line of the host, and press Enter.

2. Type the name of the printer file to be changed.

3. Press Page Down (three or four screens depending on OS/400 version) and locate "Degree of page rotation ....." option.

4. Move the cursor to the beginning of dashed line and enter the desired selection.

5. Press ENTER to activate the selection and exit the printer file menu.

Envelope Printing

To print envelopes, set the 5250 SCS Printer Emulation session to landscape orientation (Host Download command Reference No. 7) or activate the Auto Print Orientation feature (Host Download command Reference No. 8). The following example shows how to print envelopes from a word processing program, using the printer's optional envelope feeder.

1. Select line 1 as the first typing line.

2. Specify Envelope size in the program.

3. Select Feed Envelope in the program. Then choose the font desired.

4. Set the left margin to 1.

5. Type the return address, starting at line 1, column 1.

6. Type the mailing address. The appropriate space for the address will vary with the envelope size. For a Commercial 10 envelope, the address starts at about line 10, column 55.

7. Print the envelope.

This feature supports the following envelope sizes:

Monarch	3 7/8" x 7 1/2"
Commercial 10	4 1/8" x 9 1/2"
International DL	110 mm x 220 mm
International D5	162 mm x 229 mm

OfficeVision/400 Envelope Printing

A letter and an envelope can be printed from OfficeVision/400 in the same document by following this procedure:

1. Set the format for the letter and enter the letter file. On the first typing line, press CMD20 for Format options.

2. Select 1 for Document options, then another 1 for Document format. Select 3 for Typestyle/color.

3. Select the font ID Number for the letter, such as No. 11, 86, etc., then press ENTER.

4. From the Document Format screen, select option 4 for Page layout/paper options. Scroll to the second screen of these options and select a paper size of 8.5 (width) x 11 (length) inches and paper source 1. If the letter is more than one page, select paper source of 1 for the following pages. Press ENTER to return to the Document format screen, then CMD 12 to return to the Document options screen.

5. Now set up the Alternate Format for the envelope. Select 2 for Alternate format, then 3 for Typestyle/color. Select the font ID for the envelope and press ENTER to return to the Alternate Format screen.

6. Select 4, Page layout/paper options. Choose a first typing line of 1, then scroll down to the second screen of the options and choose a paper width of 7.5 (monarch size) or 9.5 (commercial, or #10 size) and a paper length of 4 inches. For a paper source, select 5 for Envelope Feed. Press ENTER to return to the Alternate Format screen.

7. Select option 1 for Margins and Tabs and make the left margin 1. Press ENTER and CMD3 until you are back in the document.

8. Type in the letter. When done, add in a page end by pressing ALT P.

9. Now load in the Alternate Format for the envelope. To do this, press the CMD5 key, Go to, and type in rf for Resetting Format. Press ENTER. Select option 4 on the Alternate Format screen, Begin Alternate Format. Press ENTER.

10. You will now be back in the document, with the Alternate Format. If these instructions have been followed, the cursor will be on the first

11. Typing line of 1, with the left margin of 1. Type in the envelope address, and send the file to print. The letter will print out first, followed by the envelope.

THE PRINTER MAY EJECT A BLANK PAGE WHEN PRINTING ORIENTATION HAS BEEN CHANGED. IF THE BUFFER AND READY LIGHT REMAIN STEADY, PRESS THE PRINT/CHECK BUTTON ON THE PRINTER'S OPERATOR PANEL TO EJECT THE LAST PAGE.

Duplex Printing

Some printers can perform both simplex (single sided) and duplex (double sided) printing. Duplex printing can be accomplished in four ways:

- In OfficeVision/400, select duplex printing in the print options menu for that document (*Type of page printing. . . Double- sided or Double-sided Tumble)

- In OS/400 V2 R3 and later, select duplex printing in the printer file (*Print on both sides. . . *Yes or *Tumble)

- Place Duplexing commands in the document

- Set the 5250 SCS Printer Emulation session to duplexing mode.

For most documents, select duplex printing through the host's print options menu (OfficeVision/400) or through the printer file (OS/400 V2 R3).

Duplexing commands are similar to the Font Change commands. These commands are placed on the first line of the document prior to any text (if not on the first line, the commands do not take effect until the second page of the document). The commands are:

¬D0 for simplex printing

¬D1 for duplex printing

¬D2 for duplex printing (tumble)

When the printer receives a duplexing command, it prints in that mode until another printing command is received. Place the simplex command at the end of the document to return the printer to simplex mode. Envelope printing between documents does not change the printer's mode.

The 5250 SCS Printer Emulation session can also be set to duplexing mode through Host Download command 33. The options are:

0 = Simplex

1 = Duplex

2 = Duplex(tumble) printing

Using Host Download Command, type &%Z33,1 or &%Z33,2 into the document or on the screen and print the document or the screen to set the 5250 SCS Printer Emulation session to duplex printing. To return to simplex printing, type and print &%Z33,0.

On some duplex printing, if the last page is single sided, the last page may remain in the printer. The form feed light remains on. When the next print job is sent, this page will be ejected. To manually eject the last page, take the printer off-line by pressing the ONLINE button, and then press the FORM FEED button to eject the last page. Put the printer back on-line by pressing the ONLINE button once more.

Other Printer Commands

The table below is a summary list of special commands that the laser printer emulation will obey if they are imbedded in a user's document.

Command	Function
¬E	Sends an ASCII ESC command to the printer
¬TY	Enables true 6 LPI printing
¬TN	Disable true 6 LPI printing
¬I	Ignores all host formatting commands
¬S	Stops ignoring host formatting commands

The ¬E command allows an "Esc" command to be sent to the printer to control the printing. Simple "escape" commands eliminate the need for putting in hex codes using Command Pass-Thru. These commands allow use of some of the special features of the laser printer.

Check the printer's manual or any optional technical manual for a description of the feature and the escape commands needed to access the feature. For example, ¬E(s3B would begin bold printing on an HP LaserJet printer.

The 5250 SCS Printer Emulation session will slightly compress line spacing to fit 66 lines onto the page. This may be undesirable (such as when using pre-printed forms that must align correctly). In these cases, the ¬TY command prevents the printer from compressing the line spacing.

Use the ¬I and ¬S commands to remove unwanted host commands from a printer file. For example, when printing with electronic forms software, these files are recognized by the host as text files, which causes the host to format the files with unwanted carriage returns and line feeds. Placing the ¬I at the end of a line and ¬S at the front of the next line causes the 5250 SCS Printer Emulation session to remove the host carriage return and line feed commands and send only the data to the printer.

Printing Bar Codes Using the Bar Code Feature

The bar code feature will allow you to create various bar codes and embed them in your printed output.

Using the bar code feature, the following bar codes can be easily printed:

Type	Bar code
1	Code 3 of 9
2	Code 128
3	Interleaved 2 of 5
4	Post Net
5	UPC A
6	EAN 8
7	EAN 13
8	UPC A with number system characters

To print any of these bar codes, use the following format:

¬B<type>,<height>,<width>,<hr>,<chkd>,<ast>,<data>¬B

The bar code command string must contain all of these parameters, even if the parameter is irrelevant for the type of bar code being printed. For example, POSTNET comes in only one size, therefore, any height or width specifications are ignored.

- **¬B** Identifies the strings as a bar code command string. ¬B must be placed at the beginning and at the end of the string.
- **<type>** Specifies the bar code type according to the table shown above.
- **<height>** Specifies the height of the bar code. Height is expressed in multiples of 2.5 mm (approximately 1/10 inch). The height of the bar code can range from 1 (2.5 mm) to 9 (22.5 mm) inclusive.

Height values are ignored if a POSTNET bar code is being printed, since POSTNET uses one standard height. However, a valid value (1-9) must be entered for the height parameter to ensure the bar code command string is complete.

- **<width>** Specifies the width of a bar code module. A module is defined as a specific combination of bars and spaces used to represent a human readable character. By changing the width parameter, you can determine the width of the module and the thickness of the bars and spaces.

Width parameters can range from 1 to 9.

To determine the total length of the bar code, simply multiply the module length (found in the table on the following page) with the number of bar code characters.

For example, using Code 3 of 9, you want to bar code the word "PRINTERS." Assume the 5250 SCS Printer Emulation session also generates a check digit and the start/stop characters. Setting the width parameter to 2 will yield a total bar code length of approximately 4 cm or about 1.5 inches.

Number of characters: 11 (8 letters (PRINTERS) + 2 start/stop characters + 1 check digit)

Module width (from table below:) 3.6 mm (.14 inches) Calculation: 11 x 3.6 mm = 39.6 mm = 3.96 cm; or 11 x .14 in = 1.54 inches

Width parameters are ignored when printing POSTNET bar codes, since POSTNET uses one standard width. However, a valid value (1-9) must be entered for the width parameter to ensure the bar code command string is complete.

Module Width in mm (inches) - PCL Laser									
Width	1	2	3	4	5	6	7	8	9
Code 3 of 9	2.6 (.1)	3.6 (.14)	4.5 (.18)	5.5 (.22)	6.5 (.25)	7.5 (2.9)	8.4 (3.3)	9.4 (.37)	10.4 (.41)
Code 128	2.2 (.09)	3.1 (.12)	3.9 (.15)	4.7 (.19)	5.6 (.22)	6.4 (.25)	7.3 (.29)	8.1 (.32)	8.9 (.35)
Interleaved 2 of 5	2.3 (.09)	3.2 (.12)	4 (.16)	4.9 (.19)	5.8 (.23)	6.6 (.26)	7.5 (.3)	8.4 (.33)	9.3 (.36)
Post Net	5.7 (.23)								
EAN-13	1.5 (.06)	2 (.08)	2.5 (.1)	3.1 (.12)	3.6 (.14)	4.2 (.16)	4.7 (.18)	5.2 (.20)	5.8 (.23)
EAN-8	1.7 (.07)	2.3 (.09)	2.9 (.11)	3.6 (.14)	4.2 (.16)	4.8 (.19)	5.4 (.21)	6.1 (.24)	6.7 (.26)
UPC A	1.6 (.06)	2.2 (.08)	2.8 (.11)	3.4 (.13)	4 (.16)	4.6 (.18)	5.2 (.2)	5.8 (.23)	6.4 (.25)

Module width in mm (inches) - Epson or IBM Dot-Matrix			
Width	1	2	3
Code 3 of 9	2.7 (.11)	5.4 (.22)	8.1 (.32)
Code 128	2.5 (.1)	5 (.2)	7.6 (.3)
Interleaved 2 of 5	2.2 (.9)	4.4 (.18)	6.6 (.26)
POSTNET	6.5 (.25)		
EAN 13	1.5 (.06)	3.1 (.12)	4.6 (.18)
EAN 18	1.8 (.07)	3.6 (.14)	5.5 (.21)
UPC A	1.8 (.07)	3.6 (.14)	5.5 (.21)

BE AWARE THAT THE TABLE GIVES ROUNDED VALUES ONLY.

- **<hr>** Identifies whether human readables are printed or not. Human readables are printed underneath the bar code. Valid values are:

0 = Do not print human readables.

1 = Print human readables.

9 = Do not print human readables and do not line feed.

- **<chkd>** Indicates whether the 5250 SCS Printer Emulation session automatically calculates and causes a check digit to be printed. The following bar codes require a check digit, therefore, the 5250 SCS Printer Emulation session automatically generates and adds a check digit to the bar code data: Code 128, POSTNET, UPC A, EAN 8, and EAN 13.

If any of the bar codes listed above has been selected, the <chkd> selection is ignored by the interface. However, one of the following values must be entered to ensure the bar code command string is complete and valid. The options for the <chkd> parameter are:

0 = Do not calculate and add a check digit.

1 = Calculate and add a check digit to the bar code data.

- **<ast>** Specifies whether start/stop characters are automatically generated or manually added. This parameter only applies to bar code type Code 3 of 9. For all other bar code types, the 5250 SCS Printer Emulation session automatically generates the start/stop characters and input for the <ast> parameter is ignored. However, one of the following values must be entered to ensure the bar code command string is complete and valid. The options for the <ast> parameter are:

0 = Do not automatically add start/stop characters.

1 = Automatically add start/stop characters.

IF VALUE 0 IS SELECTED, YOU MUST MANUALLY ENTER START/STOP CHARACTERS (ASTERISKS) TOGETHER WITH THE DATA. FAILURE TO ADD THE ASTERISKS WILL CAUSE AN INVALID BAR CODE TO BE PRINTED (I.E. A BAR CODE WITHOUT START/STOP CHARACTERS). IF HUMAN READABLES ARE BEING PRINTED, THE ASTERISKS WILL ALSO PRINT AS HUMAN READABLES.

IF VALUE 1 IS SELECTED, YOU MUST NOT ADD ASTERISKS AS START/STOP CHARACTERS TO THE DATA. FAILURE TO OMIT ASTERISKS WILL CAUSE AN INVALID BAR CODE TO BE PRINTED (I.E. A BAR CODE WITH A START/STOP CHARACTER PAIR IN THE BEGINNING AND A START/STOP CHARACTER PAIR IN THE END),

- **<data>** The data to be printed as a bar code. Some bar codes require a certain number of characters. Others only allow alphanumeric or numeric characters. Before the 5250 SCS Printer Emulation session processes the data string, it will check the complete data string and verify that it is valid. This is why the ¬B at the end is so important. If an invalid data string has been entered, the 5250 SCS Printer Emulation session will print "Invalid Data" in the place of the bar code.

Notes on using the Barcode Feature

The following points should be kept in mind when using the Barcode Feature:

1. Valid values must be entered for each of the parameters specified above, even if the parameter is irrelevant for the type of bar code being printed.

2. If an invalid parameter value (other than invalid data) has been entered, the 5250 SCS Printer Emulation session will process the bar code command up to that point and then reject any information it receives after the incorrect value.

For example, a bar code command string has been entered, however, an invalid <hr> value of 3 has been specified.

¬B2,6,6,3,0,0,code128¬B

The 5250 SCS Printer Emulation session would cause all characters after the invalid value 3 to be printed:

,0,0,code128

This helps quickly identify where the mistake occurred.

3. Spaces in the bar code command string are invalid and will lead to the same result as mentioned in Step 2.

4. 4. If invalid data (either too many characters or the wrong type of characters) is entered, the 5250 SCS Printer Emulation session will print the error message: ** Invalid Data **

5. Allow for sufficient vertical spacing when printing text data beneath the bar code.

For example, when the bar code command sting is entered on line 1 of the document with a bar code height specified as 5 (approximately 1/2 inch or 3 lines at 6 LPI), and text is then entered on line 2 as follows,

¬B5,7,1,0,0,0,1234567890¬B

This data overrun by barcode

This will cause the bar code to overlap the text in the second line:

TO AVOID OVERLAPPING BAR CODES WITH TEXT, ALWAYS ALLOW FOR SUFFICIENT VERTICAL LINE SPACING (E.G. LINE FEEDS) TO ACCOMMODATE THE HEIGHT OF THE BAR CODE.

6. When text data is entered to the right of the bar code command sting, the printed text will appear immediately to the right of where the bar code print ends.

Overview and Examples

The following examples give an overview of the supported bar code types. Note that the "maximum number of data characters" does not include start/stop characters and check digits.

Code 3 of 9

Maximum number of data characters:	30
Valid numeric characters:	0-9
Valid alphanumeric characters:	A-Z
Valid other characters:	space $ % + - . / *

Example: **¬B1,4,1,1,1,1,0123456789¬B**

POSTNET

Maximum number of data characters:	30
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: **¬B4,1,1,1,1,0,0123456789¬B**

UPC A

Required number of data characters: 10 + number system character which is placed in the 1st position of the data character parameter

Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: **¬B5,5,1,1,1,0,0123456789¬B**

EAN 8

Required number of data characters:	7
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: **¬B6,3,1,1,1,0,0123456¬B**

EAN 13

Required number of data characters:	12
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: **¬B7,3,1,1,1,0,012345678912¬B**

Interleaved 2 of 5

Maximum number of data characters:	30
Valid numeric characters:	0-9
Valid alphanumeric characters:	N/A
Valid other characters:	N/A

Example: **¬B3,3,1,1,1,0,0123456789¬B**

SINCE INTERLEAVED 2 OF 5 SYMBOLS ARE CREATED FROM DATA CHARACTER PAIRS, THE NUMBER TO BE ENCODED MUST HAVE AN EVEN NUMBER OF DIGITS. IF AN ODD NUMBER OF DATA CHARACTERS (INCLUDING THE OPTIONAL CHECK DIGIT) IS ENTERED, THE 5250 SCS PRINTER EMULATION SESSION ADDS AN "0" TO THE BEGINNING OF THE BAR CODE. IF AN EVEN NUMBER OF DATA CHARACTERS (INCLUDING THE OPTIONAL CHECK DIGIT) IS ENTERED, THE 5250 SCS PRINTER EMULATION SESSION PRINTS THE BAR CODE EXACTLY AS IT IS INPUT.

Code 128

Maximum number of data characters:	30 (includes special characters)
Valid characters:	Differs with selected code set, see table on following pages

Example:

¬B2,3,2,1,1,0,BABCDEFGHIJKLMNOPQRSTUVWXYZ¬B

Code 128 has three unique character subsets (code A, B, and C) shown in the table on the following pages. When entering data representing Code 128 bar code, follow these two steps:

1. Define which code set you want to use. For example, type "A" to represent code A; type "B" to represent Code B; and type "C" to represent code C.

2. If you are using code set B, enter the data characters directly. The ~ character and other special characters are represented by the Symbol Character Value found in the left column of the table on the following pages.

If you are using code set A or C, enter the Symbol Character Value found in the left column of the table. Each character is represented by two digits or a ~ followed by a digit. For example, to bar code the character "&" using Code Set A, type 06.

To show how multiple character sets are used, study the following data string. Height, width and other parameters were omitted in this example to focus your attention on the data string. Please note that this example is for illustration purposes only, and is not a recommended way of bar coding.

The following data string is a fairly complex way of bar coding 10PrintBoxes10 .

¬B2,...,A1716~6PrintBoxes~510¬B

The following is an explanation of the above data string:

A:	selects code set A
17:	selects the number 1 from code set A
16:	selects the number 0 from code set A
~6:	switches from code set A to code set B
PrintBoxes:	selects the characters PrintBoxes from code set B
~5:	switches from code set B to code set C
10:	selects the number 10 from code set C

Symbol Character Value	Data Character		
	Code A	Code B	Code C
00	SP	SP	00
01	!	!	01
02	"	"	02
03	#	#	03
04	$	$	04
05	%	%	05
06	&	&	06
07	'	'	07
08	(	(	08
09	)	)	09
10	*	*	10
11	+	+	11

12	,	,	12
13	-	-	13
14	.	.	14
15	/	/	15
16	0	0	16
17	1	1	17
18	2	2	18
19	3	3	19
20	4	4	20
21	5	5	21
22	6	6	22
23	7	7	23
24	8	8	24
25	9	9	25
26	:	:	26
27	;	;	27
28	<	<	28
29	=	=	29
30	>	>	30
31	?	?	31
32	@	@	32
33	A	A	33
34	B	B	34
35	C	C	35
36	D	D	36
37	E	E	37
38	F	F	38
39	G	G	39
40	H	H	40
41	I	I	41
42	J	J	42
43	K	K	43
44	L	L	44
45	M	M	45
46	N	N	46

47	O	O	47
48	P	P	48
49	Q	Q	49
50	R	R	50
51	S	S	51
52	T	T	52
53	U	U	53
54	V	V	54
55	W	W	55
56	X	X	56
57	Y	Y	57
58	Z	Z	58
59	[	[	59
60	\	\	60
61	]	]	61
62	^	^	62
63	_	_	63
64	NUL	`	64
65	SOH	a	65
66	STX	b	66
67	ETX	c	67
68	EOT	d	8
69	ENQ	e	69
70	ACK	f	70
71	BEL	g	71
72	BS	h	72
73	HT	i	73
74	LF	j	74
75	VT	k	75
76	FF	l	76
77	CR	m	77
78	So	n	78
79	S	o	79
80	DLE	p	80
81	DC1	q	81

82	DC2	r	82
83	DC3	s	83
84	DC4	t	84
85	NAK	u	85
86	SYN	v	86
87	ETB	w	87
88	CAN	x	88
89	EM	y	89
90	SUB	z	90
91	ESC	{	91
92	FS	|	92
93	GS	}	93
~1	US	DEL	95
~2	FNC3	FNC3	96
~3	FNC2	FNC2	97
~4	SHIFT	SHIFT	98
~5	CODE C	CODE C	99
~6	CODE B	FNC4	CODE B
~7	FNC4	CODE A	CODE A
~8	FNC1	FNC1	

Graphics Language™

Graphics Language™ (IOGL) is a language that allows the user to enhance printed output from their IBM host with such graphics elements as pie charts, line charts, rotated text, circles, boxes, lines, etc. In order to use IOGL, the attached ASCII printer must be a PCL5 compatible laser or inkjet printer.

IOGL is independent of other features, such as internally generated bar codes or font change commands. This means that if a font change command is followed by an IOGL command to rotate text, the text would print in the specified font. IOGL is also independent of regular text data. This allows text data to be overlaid by a graphical element, such as a shaded box.

Graphics Language Overview™

The following table is a listing of the IOGL command strings.

Graphical Elements	IOGL Command String
Line	¬GL<line width>;<x start>;<y start>;<x end><y end>
Box	¬GB<line width>;<x start>;<y start>;<x end><y end>;<% shading>
Circles	¬GC<line width>;<x center>;<y center>;<radius>;<% shading >
Arc	¬GA<line width>;<x start>;<y start>;<x end>;<y end>;<angle of rotation>
Shading/Color	¬GS<# of values>;<color 1>;<% shading 1>;<color 2>;<% shading 2>;…
Pie Chart	¬GP<line width>;<x center>;<y center>;<radius>;<# of segments>; <segment value 1>;<segment value 2>;…
Bar Chart (Histogram)	¬GH<line width>;<x start>;<y start>;<x increment>;<y increment >; <bar width>;<# of entries>;<value 1>;<value2>;…
Run (Line) Chart	¬GR<line width>;<x start>;<y start>;<x increment>;<y increment>; <# of entries>;<value 1>;<value2>;…
Text Rotation	¬GT<x start>;<y start>;<angle of rotation>;<'text'>
Comments	¬GX<'text'>

The following table is a listing of the command parameters used in the IOGL strings.

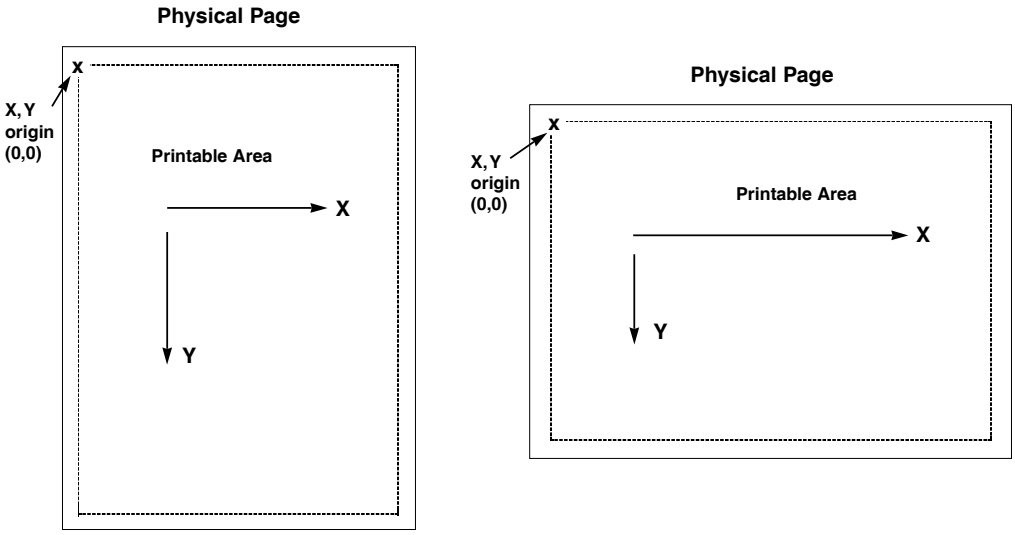
Parameter	Description	Units of Measurement	Valid Values
'text'	text to be rotated or to be included in the IOGL program as a comment	N/A	any printable character
% shading	percentage of shading	percentage	0-100, integers
# of segments	number of segments to be printed in pie chart	each	1 to 9, integers
# of entries	number of values to be printed in bar or run (line) chart	each	1 to 12, integers
angle of rotation	angle of rotation of arc or text	degrees	arc: 0 to 360 integers text: 0, 90, 180, 270

Parameter	Description	Units of Measurement	Valid Values
bar width	width of a bar in a bar chart	n/300 inch	positive integers
color n	color code to select color of pie or bar chart segments	Color Command Numbers	00 to 16
line width	width of any printed line (in line, box, arc, circle, chart)	mm	any positive number
radius	radius of a circle or pie chart	n/300 inch	Positive integers
segment value n	value to be represented by a pie chart segment	integer	0 to 100
value n	a value to be represented by a bar in a bar chart or a point in a line chart	any positive integer	any positive integer
x start	x coordinate of start position for lines and boxes	n/300 inch	positive integers; incl. 0
x end	x coordinate of end position for lines and boxes	n/300 inch	positive integers: incl. 0
x center	x coordinate of center point of circle, arc, or pie chart	n/300 inch	positive integers: incl. 0
x increments	horizontal movement before next bar (bar chart) or value (run chart) is printed	n/300 inch	positive integers: incl. 0
y center	y coordinate of center point of circle, arc, or pie chart	n/300 inch	positive integers: incl. 0
y start	y coordinate of start position for lines and boxes	n/300 inch	positive integers: incl. 0
y end	y coordinate of end position for lines and boxes	n/300 inch	positive integers: incl. 0
y increment	height of one unit of the value to be printed in bar or run (line) chart	n/300 inch	positive integers: incl. 0

Helpful Hints

- All xy values (start, end, center, increment) are measured in n/300 of an inch. The origin of the xy coordinate system is the top left hand corner of the printable area of the page, as seen in the figure below.

  The printable area of the page may vary with the printer model and paper size being used. Refer to your printer's user's guide for specific information.



- The complete command string must be entered as shown below. Incomplete command strings and command strings with invalid values (such as spaces) will cause the 5250 SCS Printer Emulation session to print the string at the place the error occurred.

  For example, a line command string has been entered. However, an invalid <x start> value has been specified.

  ¬GL30;A;1;1;600

  IOGL would cause all characters, including the invalid value "A" to be printed:

A;1;1;600

- As an alternative to using the semi-colon ";" as a separator between parameters, you may also enter a comma "," or a forward slash "/".

- Do not enter numeric values with commas (i.e. 50,000). The 5250 SCS Printer Emulation session will interpret the " ," to be the end of the parameter (i.e. 50,000 would be interpreted as two values: value 1 = 50, value 2 = 000).

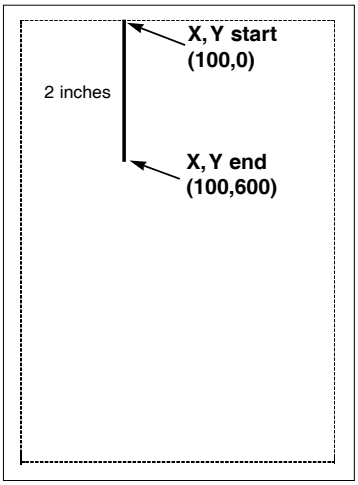
International users should also be aware that a decimal value used to specify line width (in mm) such as "1,5" (i.e. 1 1/2) is also interpreted as two separate values (i.e. value 1 = 1, value 2 = 5). To enter a valid decimal line width use the period "." (i.e. 1.5 mm).

Basic Description

- **Lines:** ¬GL<line width>;<x start>;<y start>;<x end>;<y end>

Draws a line from the specified xy start to xy end. <Line width> is specified in mm.

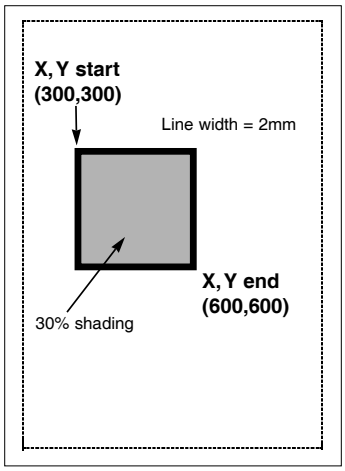
For example: ¬GL2;100;0;100;600 draws a 2 mm wide, vertical (<x start> = <x end>) line of 2 inches in length (<y-end> - <y-start> = 600/300" = 2")



- **Boxes:** ¬GB<line width>;<x start>;<y start>;<x end>;<y end>;<% shading>

Draws a box from the specified xy start to the xy end. The box cannot be rotated.<line width> is specified in mm, <% shading> can range from 0 to 100.

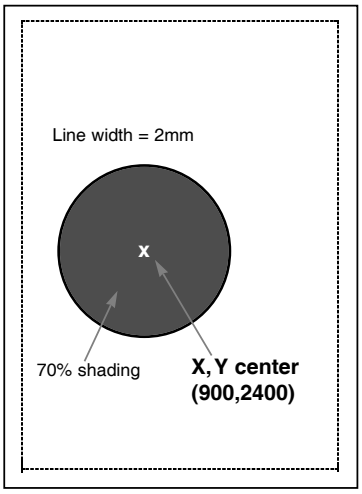
For example: ¬GB2;300;300;600;600;30 draws a box with 2 mm wide border and 30% shading



- **Circle:** ¬GC<line width>;<x center>;<y center>;<radius>;<% shading>

Draws a circle with the specified radius (in n/300 inches) and line width (in mm) around the xy center.

For example: ¬GC2;900;2400;300;70 draws a circle with a radius of 1 inch (300/300 inches)

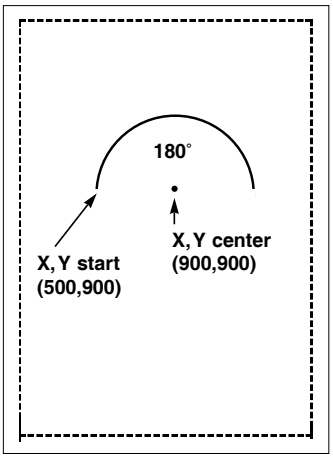


TO AVOID CUTTING OFF PART OF THE CIRCLE, MAKE SURE THAT THE RADIUS AND THE X,Y CENTER VALUES ARE SUCH THAT THE COMPLETE CIRCLE WILL FIT INTO THE PRINTABLE AREA OF THE PAGE.

- **Arc:** ¬GA<line width>;<x start>;<y start>;<x center>;<y center>;<angle of rotation>

Draws an arc around the xy center, starting at xy start and ending when the angle of rotation is completed. (Angle is measured from theoretical line xy center to xy start and rotates clockwise.)

For example: ¬GA1;500;900;900;900;180 draws an arc (semi-circle since rotation is 180 degrees).



- **Color/Shading:** ¬GS<# of values>;<color 1>;<% shading 1>;<color 2>;<% shading 2>;. . . .

Defines the color and shading of the pie chart and bar chart segments. The first value entered in the pie and bar chart commands will be printed in color 1 with shading 1. The second value entered in the pie and bar chart commands will be printed in color 2 with shading 2.

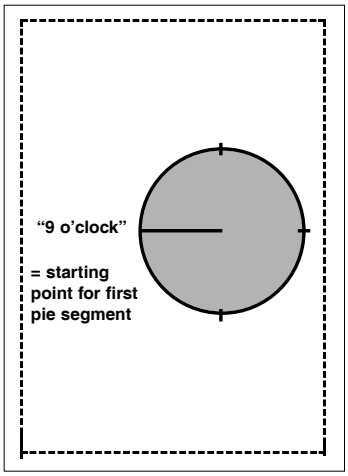
Colors are entered as numeric values 0-16 (corresponding to color command scheme). Shading is entered as a numeric value from 0-100 (% of shading). If the attached printer is not capable of recognizing PCL color commands, all printing will be black. Refer to pie and bar charts for an example.

- **Pie Chart:** ¬GP<line width>; <x center>;<y center>;<radius>;<# of segments>;<segment value 1>;<segment value 2>;....

Draws a pie chart around the xy center with the specified radius (in n/300 inches), number of segments (maximum of 9), and segment values. Segment values are entered as numeric and converted to percentages. Segment values can range from 0 to 100.

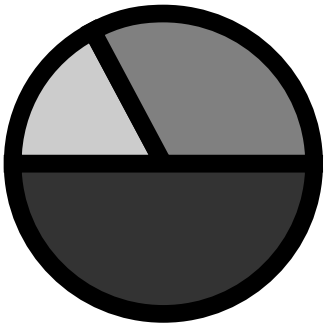
Each segment will have the color and/or shading as specified in the shading command (pie chart value 1 will get color/shading value 1,...).

<line width> is specified in mm. The first pie segment starts at "9 o'clock", meaning on the far left of the circle



For example: ¬GS3;01;20;02;50;04;80 ¬GP5;900;2400;600;3;10;20;30 draws a three-segment pie chart. If the attached printer is a PCL color printer, the first segment will be blue (01), the second segment will be red (02), and the third segment will be green (04). The segments will be shaded at 20%, 50%, and 80% respectively.

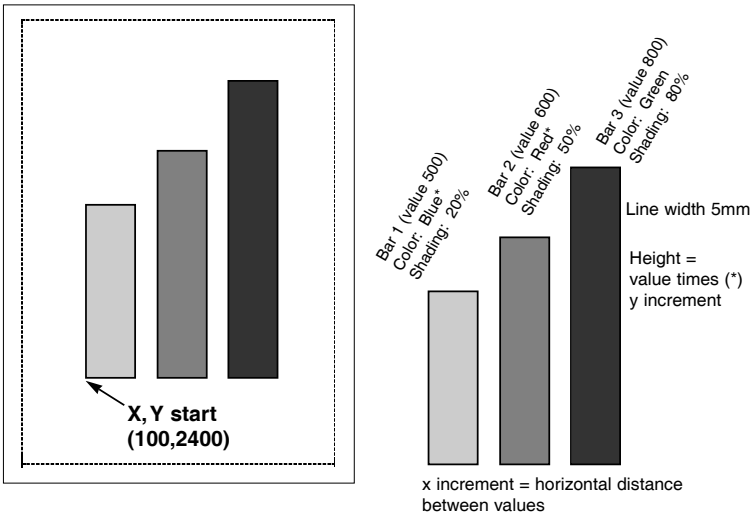
The first segment (value 10) will be 1/6 of the complete circle (10/(10+20+30)=10/60=1/6), the second segment (value 20) will be 2/6 of the complete circle (20/60), and the third segment will be 3/6 of the complete circle



- **Bar Chart (Histogram):** ¬GH<line width>;<x start>;<y start>;<x increment>;<y increment>;<bar width>;<# of entries>; <value 1>;<value 2>; ...

Draws a bar chart. xy start specifies the bottom left hand corner of the first bar (the origin on the chart's xy-scale). The x increment specifies the horizontal movement before the next bar is printed. The y increment (in n/300 inches) determines the height of the bar (multiplied by the value). The bar width (in n/300 inches) specifies the width of the bar. Bar chart values can range from 0 to 3,000. Each bar will have the color and/or shading as specified in the shading command (bar 1 is color/shading value 1,...). A maximum of 12 bars can be printed.

For example: ¬GS3;01;20;02;50;04;80 and ¬GH1;100;2400;300;1;100;3;500;600;800 draws three bars. If the attached printer is a PCL color printer, the first bar will be blue, the second red, and the third green. The bars will be shaded 20%, 50%, and 80% respectively



Each bar is 1/3 inch wide (100/300 inch). The distance from the left side of one bar to the left side of the next bar is one inch (300/300). This allows other bars to be added through a separate command.

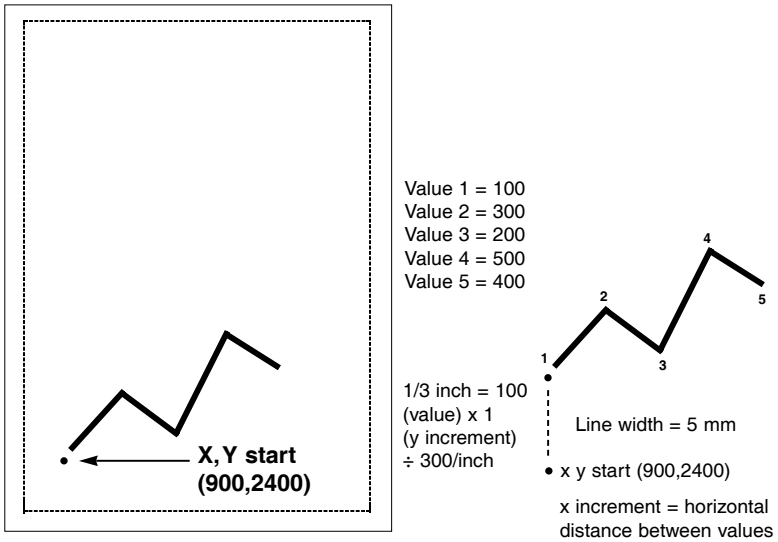
Bar 1 will be 1 2/3 inches (500 x 1/300 inch) high, bar 2 will be two inches high (600 x 1/300 inch), and bar 3 will be 2 2/3 inches high (800 x 1/300 inch).

THE Y-INCREMENT DETERMINES THE SCALING. ONLY INTEGERS (I.E. 1, 2, 3, 4, ETC.) ARE VALID. IF YOU ARE CHARTING SALES FIGURES IN THOUSANDS OF DOLLARS, THE Y-INCREMENT SHOULD BE SMALL (FOR EXAMPLE, 1). IF YOU ARE CHARTING THE NUMBER OF CUSTOMER COMPLAINTS PER PERIOD THE Y-INCREMENT SHOULD BE HIGH (FOR EXAMPLE, 100 OR MORE). BE AWARE THAT THE BAR HEIGHT MUST NOT EXCEED THE TOTAL PRINTABLE AREA OF THE PAGE.

- **Run Chart:** ¬GR<line width>;<x start>;<y start>;<x increment>;<y increment>;<# of entries>;<value 1>;<value 2>; ...

Draws a run (line) chart. The xy start specifies the origin of the chart's xy scale (xy axes are not drawn). The x increment specifies the horizontal movement before the next value is printed. The y increment determines the height of the line (multiplied by the value).

For example: ¬GR3;900;2400;150;1;5;100;300;200;500;400 draws a run (line) chart

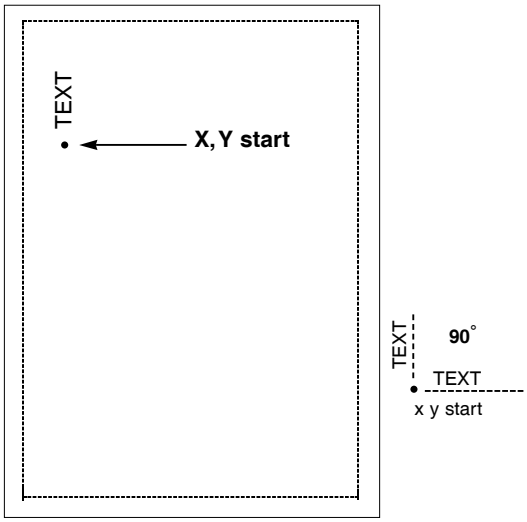


THE Y-INCREMENT DETERMINES THE SCALING. ONLY INTEGERS (I.E. 1, 2, 3, 4, ETC.) ARE VALID. IF YOU ARE CHARTING SALES FIGURES IN THOUSANDS OF DOLLARS, THE Y-INCREMENT SHOULD BE SMALL (FOR EXAMPLE, 1). IF YOU ARE CHARTING THE NUMBER OF CUSTOMER COMPLAINTS PER PERIOD THE Y-INCREMENT SHOULD BE HIGH (FOR EXAMPLE, 100 OR MORE).

- **Text:** ¬GT<x start>;<y start>;<angle of rotation>;<'text'>

Prints the text ('text') in the active font, with the specified rotation and specified xy start. Text will be rotated counter clockwise.

For example: ¬GT1000;1000;90;'TEXT' prints the word "TEXT" in the active font with 90 degree rotation.



- **Comments:** ¬GX<'text'>

Allows text to be added to IOGL commands for documentation. Comments will not print out.

For example: ¬GX'Pie chart with 3 elements' can be used to document an IOGL pie chart command.

Graphic Language™ (IOGL) in Action

General Steps

Graphics Language™ (IOGL) can be used in many different ways. It can enhance the appearance of standard host reports through a few simple graphical elements such as lines, boxes, and circles; or it can be used to present pertinent data through charts. IOGL can even be used to create sophisticated electronic forms. However, to utilize IOGL all applications have the following in common:

1. Determine which IOGL elements are needed to create the desired output (i.e. the bar chart shown below uses four different IOGL elements).

2. Determine the printable area of the page.

3. Determine the positioning of the graphical elements relative to the top left hand corner of the printable area.

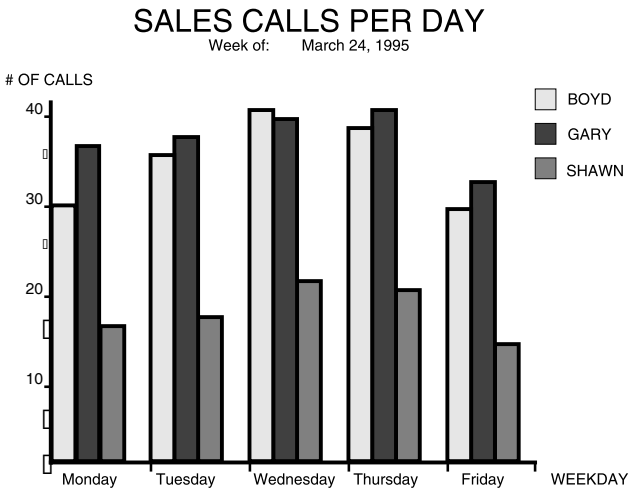
4. PCL color printer only. Determine the order in which to print the graphical elements. The lines of the last IOGL element will overlap (and cover) the previous IOGL elements.

5. Design the graphical output, one element at a time.

6. Link the graphical output with your host application.

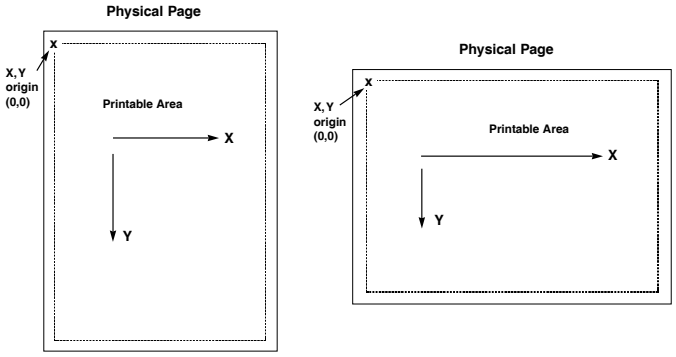
Tutorial

The following example shows how multiple IOGL elements interact to create a bar chart.

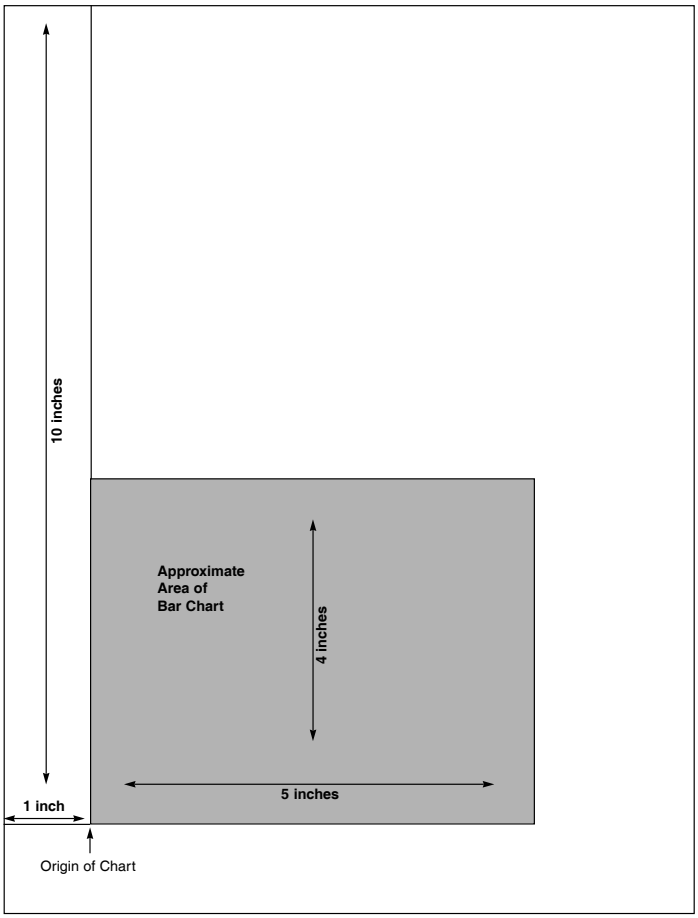


1. Following the above-mentioned general steps, we first determined the makeup of this bar chart. The example consists of four IOGL elements: bar charts, lines, boxes, and text.

2. To determine the printable area of the paper, we printed a box using 0;0 as the x;y -start coordinates. This was done by typing ¬GB1;0;0;300;300;50 on the screen and sending it to the printer. The top left corner of the printed box marks the top left corner of the printable area of the page. For reference, we drew the printable area on the blank sheet of paper. All references to distances are made in respect to the printable page, not the actual physical page.



3. Determine where the chart should be placed (always in relation to the top left hand corner of the printable area). In the example, the bar chart is on the bottom half of a letter size page. The origin of the chart is one inch away from the left margin and 10 inches away from the top margin



Next, determine the approximate maximum height and width of the chart. In the example, 40 was the expected maximum number of calls. We chose to represent 10 calls by one inch, resulting in a total maximum height of four inches (not including the title and subtitle.) Similarly, each day was represented by one inch, resulting in a total maximum width of five inches (not including the space needed for the label "WEEKDAY").

4. If the chart is being printed on a black and white PCL printer, the order in which these elements are created is irrelevant. However, if you are printing on a PCL color printer, the lines of the last element will

always overlay (and cover) the element previously printed. In the example, the elements creating the x and y-axes should be entered last when printing on a PCL color printer.

5. Create the separate IOGL elements based on the order determined in Step 4. In the example, the bar charts were created first. Recall the IOGL formula for the bar chart and the preceding shading/color command string:

¬GS<# of values>;<color 1>;<% shading 1>;<color 2>;<% shading 2>;...

¬GH<line width>;<x start>;<y start>;<x increment>;<y increment>;<bar width>;<# of entries>;<value 1>;<value 2>; ...

The bar chart was created using the following parameters:

- **Bar Chart for Boyd**

Shading/Color: Boyd's calls were plotted for each day of the business week, so the number of values is five. Since we printed to a black and white laser printer, the color parameters were irrelevant. The shading was set to 10%.

Bar Chart (Histogram): The line width was set to 1 mm. The x;y-start parameters defined the bottom left corner of the bar which is identical with the origin of the chart. Remember that the origin was one inch from the left margin, and 10 inches from the top margin of the printable area. The resulting values were 300 (=1 inch x 300/inch) for <x start> and 3000 (= 10 inches x 300/inch) for <y start.>.

The bar representing Boyd's calls for Tuesday was to be printed one inch to the right of Monday's bar. The resulting <x increment> was 300 (= 1 inch x 300/inch). Since the maximum height of a bar was specified at four inches, the resulting value for <y increment> was 30 (= 4 inches/40 max. calls x 300/inch).

To aid in readability, extra space was left between the last bar of day one and the first bar of the next day. To determine the <bar width> divide the available one inch (<x increment>) into four equal sections (three bars and one space). The resulting value was 75 (= 300/4). Next, count the <# of entries> (5) and enter the respective values. The parameters are:

¬GX'bar chart Boyd
¬GS5;01;10;01;10;01;10;01;10;01;10
¬GH1;300;3000;300;30;75;5;30;34;39;37;28

- **Bar Chart for Gary**

The bars representing Gary's calls were to be printed directly to the right of Boyd's. The resulting horizontal start value <x start> was:

300	(Boyd's)
+ 75	(Bar width)
375	

With the exception of the actual calls, the other parameters for Gary's bar chart were identical to Boyd's. The parameters are:

¬GX'bar chart Gary
¬GS5;02;75;02;75;02;75;02;75;02;75
¬GH1;375;3000;300;30;75;5;35;36;38;39;31

- **Bar Chart for Shawn**

Shawn's bar chart was to be printed directly to the right of Gary's. The resulting horizontal starting position <x start> was:

375	(Gary's)
+ 75	(Bar width)
450	

The parameters are:

¬GX'bar chart Shawn
¬GS5;04;50;04;50;04;50;04;50;04;50

X and Y Axes

The x-axis (Weekday) and the y-axis (# of calls), along with the increments, were created through a series of separate lines. Notice that the line width of the axis is the same as the line width of the bars.

The parameters are shown below:

¬GX'X-Axis with increments'
¬GL1;300;3000;1850;3000
¬GL.5;600;3000;600;3019
¬GL.5;900;3000;900;3019
¬GL.5;1200;3000;1200;3019
¬GL.5;1500;3000;1500;3019
¬GL.5;1800;3000;1800;3019
¬GC'Y-Axis with increments'
¬GL1;300;3000;300;1750
¬GL.5;281;2700;300;2700
¬GL.5;281;2400;300;2400
¬GL.5;281;2100;300;2100
¬GL.5;281;1800;300;1800

Labels/Title/Subtitle/Legend

All text was created through text rotation command strings. Text was always printed in the selected font. In the example, Universe Medium was used in different point sizes (¬Q...). The legend consists of three separate boxes followed by text rotation commands.

The parameters are shown below:

```
¬GX'Font Change Command' Q4808
¬GX'Labels X-Axis'
¬GT300;3100;0;'Monday'
¬GT600;3100;0;'Tuesday'
¬GT900;3100;0;'Wednesday'
¬GT1200;3100;0;'Thursday'
¬GT1500;3100;0;'Friday'
¬GT1800;3100;0;'WEEKDAY'

¬GX'Labels Y-Axis' GT200;2700;0;'10'
¬GT200;2400;0;'20'
¬GT200;2100;0;'30'
¬GT200;1800;0;'40'

¬GX'Legend (boxes with text)' GT200;1650;0;'# OF CALLS'
¬GB1;1700;1650;1750;1700;10
¬GT1760;1700;0;' = BOYD'
¬GB1;1700;1750;1750;1800;75
¬GT1760;1800;0;' = GARY'
¬GB1;1700;1850;1750;1900;50
¬GT1760;1900;0;' = SHAWN'

¬GX;Font Change Command' Q4813
¬GX'Title'
¬GT500;1500;0;'SALES CALLS PER DAY'

¬GX'Font Change Command' Q4808
¬GX'Subtitle'
¬GT600;1550;0;'Week of:'
¬GT900;1550;0;'March 24, 1995'
```

Linking Graphical Output to a Host Application

There are several ways to link the graphical output to a host application. One method is to simply add the IOGL commands to the application code. This means that whenever the application is used and sent to the printer, the IOGL commands are also sent.

Another method is to design a separate subroutine that sends the IOGL output to the printer as a macro. The IOGL macro will only be sent to the printer once and resides in the printer's active memory until the printer is powered down. The application code requires only a macro call and does not require the complete graphic to be downloaded when a report is printed.

To store the IOGL output as a printer macro, begin the IOGL routine with a PCL command that begins a macro by typing: ¬E&f#y0X

Substitute the # symbol with a number that identifies the macro. Make sure this command precedes all IOGL commands. Also, be aware that PCL is case sensitive.

At the end of the IOGL routine, stop the macro and save it permanently (until the printer is powered down) in the printer's memory. To end the macro type: ¬E&f#y1X

To save the macro permanently (until the printer is powered down) type:

¬E&f#y10X. Store this macro in the printer's memory by "printing it."

A call for this macro can be used in your application by embedding the following PCL command in the application code:

¬E&f#y3X

Another command that can be used to prevent overloading the printer's memory is ¬E&f#y8X. This command deletes the macro ID # that currently resides in the printer's memory.

Printing Images From The Host

It is often advantageous to include images such as company logos or signatures with printed output. Logos and other images can be stored on printer cartridges, SIMMs, DIMMs or CompactFlash. These products are offered through the printer manufacturer and/or various third party vendors. The stored image is assigned a macro ID number that must be called up by the application when the image is to be printed. Please refer to the documentation supplied with the cartridge, SIMM, DIMM or CompactFlash for instructions on how to store an image.

Generally, a macro stored in non-volatile memory is called up by sending the command ¬E&f#y3X where # is the macro ID.

A PCL command used to reposition the stored image on a page is ¬E&l#u#Z where the first # (l#u) specifies the "Left Offset Registration" or horizontal movement in n/720 inch and the second # (#Z) specifies the "Top Offset Registration" or vertical movement of the image in n/720 inch.

The repositioning command must precede the macro call. To return to the original position, type ¬E&l0u0Z immediately after the macro call.

Color Printing

The 5250 SCS Print Emulation session allows printing of color on PCL5C - compatible printers such as the HP Color LaserJet, DeskJet 1200C, or 1600C printer. Simply insert the color command in front of the text that you want to colorize. Return to the "normal" black color by inserting C00. The color commands are:

¬C00 - Black
¬C01 - Blue
¬C02 - Red
¬C03 - Magenta
¬C04 - Green
¬C05 - Turquoise/Cyan
¬C06 - Yellow
¬C07 - White
¬C08 - Black
¬C09 - Dark Blue
¬C10 – Orange
¬C11 – Purple
¬C12 - Dark Green
¬C13 - Dark Turquoise
¬C14 – Mustard
¬C15 – Grey
¬C16 – Brown

For example, to print the work "red" in the color red in the following sentence, type:

This prints ¬C02red¬C00 in red.

Alternately, you can select a color through the Typestyle/color menu of Office Version/400 (V3R1 or later).This menu is accessed by selecting F20 (Format Options),1 (Document Options),1 (Document Format),and finally 3 (Typestyle/color).

You can also create one or more additional colors using the User-Defined String feature.

To print a customized color, you need to follow these steps:

1. Set up a color palette.
2. Define the color.
3. Print the color.

For detailed information on this process, consult HP's PCL5 Color Technical Reference Manual. Here is a quick overview on how to define and print colors using the User-Defined Command String feature.

1. To set up a color palette, send the following string to the printer (using the Host/PC download command 04).

   &%Z04,0(1B 2A 76 36 57 00 00 08 08 08)

THE &%Z04,0(..)STORES THE ACTUAL COMMAND STRING (1B 2A ..)IN THE 5250 SCS PRINTER EMULATION SESSION AND ASSIGNS IT THE MACRO IDENTIFIER U0.

2. To define and print a color send the following string to the printer:

   &%Z04,1(1B 2A 76 30 61 30 62 30 63 31 69 31 53)

THE FIRST 30 (PRECEDING THE VALUE 61) IDENTIFIES THE AMOUNT OF RED OFTHE COLOR. VALUES CAN RANGE FROM 0 (HEX 30)TO 255 (HEX 32 35 35).

The second 30 (preceding the value 62) identifies the amount of green. The third 30 (preceding the value 63) identifies the amount of blue you are adding to the color. Mixing these three colors (red, blue, and green) creates the color of your choice. The number 31 (preceding the value 69) assigns your customized color the value 1.The second 31 (preceding the value 52) calls up this number again and prints it.

3. Once you have sorted the color command strings in memory as described above, you can switch to the defined color any time by simply inserting the commands &%U0 (to set up the color palette) and &%U1 (to print the color) in the data stream.

For example:

1. To define the color red and store the customized "red" command in the 5250 SCS Printer Emulation session under the macro name U3 type the following:

   &%Z04,0(1B 2A 76 36 57 00 00 08 08 08)

   This string sets up the color palette.

   &%Z04,3(1B 2A 76 32 35 35 61 30 62 30 63 31 69 31 53)

   This command defines and prints the color red. Notice that the defined color consists of red (255) only. Green and blue components have been given the value 0 (hex 30).

2. To print the word "red" in this sentence red, type:

3. To print the word&%U0 &%U3"red"¬C08 in this sentence red, type:

THE ¬C08 IN THE ABOVE EXAMPLE RETURNS THE PRINT COLOR BACK TO BLACK.

Chapter 2: SCS Host Download Commands

This chapter contains detailed descriptions and syntax for using host download commands for both 5250 and 3270.

5250 Commands

Host Download commands are placed in an IBM host document, report, program or on the screen. The document or screen print is then sent to the print device assigned to the 5250 SCS Printer Emulation session . As part of the TN5250e data stream processing, the 5250 SCS Printer Emulation session monitors the data stream and filters out Host Download commands. These commands will not print, but will be used to configure the 5250 SCS Printer Emulation session.

Host Download commands sent to the 5250 SCS Printer Emulation session take effect immediately and stay only in the printer's active memory. To save the changed configuration beyond the end of the printer session, Host Download command Z99,0 must be sent.

Host download command Z99,0 is required if you want these host download commands saved for future print sessions.

The following steps describe how to enter a Host Download Command.

1. Type the Command Pass-Thru (CPT) delimiter &% (or the alternate CPT start delimiter) in the document, program, report or on the screen at the point where the command is to take effect.

2. Type an upper case Z.

3. Type the number for the command to be used, as shown in the table below. Always use two digits for the command number (i.e. &%Z05,1).

4. Type a comma.

5. Type the value representing the desired selection. No spaces are allowed. A space or invalid character in a command causes the 5250

SCS Printer Emulation session to ignore the command and resume printing from the point the error occurred.

6. A space or control character (i.e. NL, FF, CR, LF) signals the end of the Host Download command.

7. Multiple commands can be chained together by using a slash (/) or backslash (\) to separate the commands (no spaces are allowed).

   For example, to set the Default Print Quality (Command 22) to NLQ (Value 1), Draft Printing (Command 23) to Fast Draft (Value 1), and the Wrap/Truncate Text selection (Command 26) to Truncate (Value 1), type:

   &%Z22,1/Z23,1/Z26,1.

Invalid commands are ignored and printed. The last valid setting will be unchanged.

IN THE DESCRIPTION OF EACH HOST DOWNLOAD COMMAND, ASTERISKS (*) IDENTIFY FACTORY DEFAULT SETTINGS.

Command No. 01: CPT Start Delimiter

Replaces the default Command Pass-Thru™ (CPT) start delimiter "&%". This delimiter is also the Host Download delimiter. It may be one or two characters long. The first character may be any printable character.

Value	Description
&%	Default CPT delimiter
New characters	New CPT start delimiter
Two spaces	Deletes CPT start delimiter
Example:	&%Z01,#@ This creates the CPT start delimiter of #@.

Command No. 02: CPT End Delimiter

Replaces the default delimiter and creates an alternate CPT end delimiter "&%" as in Command 01. This delimiter cannot be used as a Host Download delimiter.

Value	Description
&%	Default CPT delimiter
New characters	New CPT start delimiter
Two spaces	Deletes CPT start delimiter

Command No. 04: User-Defined Strings

Creates up to two user-defined strings to send to the printer. This feature should be used to avoid re-keying of frequently used printer commands (which appear as hex values imbedded in Command Pass-Thru delimiters). When using Host Download commands, place the hex codes representing the desired printer command inside the parentheses (up to 25 hex pairs). Spaces between hex pairs are allowed to aid in readability. Consult the printer's user's guide for proper hex codes. The user-defined string is stored in memory under the selected value number (0 to 1). To activate the command, place an &%UX (where X is the value number) in the document.

Value	Description
0 to 1 (hex codes)	Assigns the hex command to a one digit delimiter (0-9)
0 to 1()	Deletes the specified user-defined string from memory.
Example:	&%Z04,3(1B26643044) This creates a user-defined string for a PCL Laser printer to start underlining. The string is represented by the value 3. To use this function, place &%U3 in the document.

Command No. 05: Host Language

Selects the host language to be used by the twinax host, when the command "Use Default Language" is received.

Value	Description
00	Multinational
*01	USA/Canada
02	Austria/Germany
03	Belgium
04	Brazil
05	Canada/French
06	Denmark/Norway
07	Finland/Sweden
08	France
09	Italy
10	Japan
11	Japan (U.S.)
12	Portugal
13	Spain
14	Spanish speaking
15	United Kingdom

Example: &%Z05,00

This selects the multinational character set.

Command No. 07: Print Orientation

Determines the print orientation if it is not already determined through the host's selection or the 5250 Printer Emulation's Automatic Page Orientation (APO) feature (Command No. 08).

Value	Description
*0	COR, host overrides using its Print Quality setting
1	Portrait
2	Landscape
3	COR

Example: &%Z07,2

This selects landscape.

For a more detailed description of Automatic Print Orientation (APO), refer to the Laser Printer Operation – Print Orientation section of the SCS Printing Operation chapter.

Command No. 08: Automatic Print Orientation

Selects or deselects Automatic Print Orientation (APO).

Value	Description
0	APO Off
*1	APO On

Example: &%Z08,1

This turns the Automatic Print Orientation on.

For a more detailed description of Automatic Print Orientation (APO), refer to the Laser Printer Operation – Print Orientation section of the 5250 SCS Printing Operation chapter.

Command No. 09: Paper Size / Bin Selection

Selects paper size settings if the printer attached is a laser or selects which input tray will be used on an Epson DFX dot-matrix printer.

With the default "Paper size specified", the 5250 SCS Printer Emulation session will automatically look for and recognize the paper sizes mentioned below:

Letter Paper	8.5x11 in. (215.9 x 279.4mm)
A4 Paper	8.27 x 11.69 in. (210x297mm)
Legal Paper	8.5 x 14 in. (215.9 x 355.6mm)
Executive Paper	7.25 x 10.5 in. (184.2 x 266.7mm)

If the host sends one of these paper sizes, the 5250 SCS Printer Emulation session will request that the attached printer load the respective paper. Otherwise, it will instruct the printer to load the previously used paper size or, if the host print job is the first after power up, it will request letter size paper.

With "A4 size paper" selected, the 5250 SCS Printer Emulation session will always instruct the printer to load A4 size paper.

If the "Paper size selected through printer's front panel" option is chosen, the 5250 SCS Printer Emulation session will not send any paper requests and the paper size selected through the printer's front panel will be used.

If the printer attached is an Epson DFX dot-matrix printer with multiple-bins for different input paper paths, this command will either allow the bin commands to be passed onto the printer, or suppress those commands.

Value	Laser Printers	Epson DFX Dot-Matrix Printers
*0	Paper size specified	Bin commands sent to the printer by the host
1	A4 size paper	No bin commands are sent to the printer
2	Paper size selected through printer's front panel	

Example: &%Z09,1

This Host Download command selects A4 size paper

Command No. 10: LPI

Selects compressed or true LPI (lines per inch) printing. By default LPI is compressed allowing 66 lines to be printed onto a letter sized paper when 6 LPI is requested by the host. If you are using an electronic forms package or print on pre-printed forms, you should select true LPI.

Value	Description
*0	Compressed LPI
1	True LPI
2	XPoint Twinax Controller Compatible Mode

Example: &%Z10,1

This Host Download command selects true LPI printing.

Command No. 13: IBM Drawer 1

Assigns the host's Paper Drawer 1 command to a physical paper source on the printer. On the host, the available paper sources are called Source Drawer (in the printer file) or Paper Drawer (in OfficeVision). On the printer, the actual paper sources are usually called input trays or bins.

Since input tray selections have been implemented differently from printer to printer, the 5250 SCS Printer Emulation session uses the unique numeric value found in the printer's PCL escape code for the particular input tray. For example, the 500 sheet Cassette of an HP LaserJet 4 Plus printer can be selected through the PCL escape code: ESC&l5H. By assigning the numeric value 5 to the IBM Drawer 1 command, the 5250 SCS Printer Emulation session would cause paper to be drawn from the 500 sheet Cassette whenever the eServer i5, iSeries or AS/400 sends the Drawer 1 request. Refer to your printer's User's Guide for information on the PCL codes.

Value	Description
01 to 254	Numeric identifier for paper trays available on the printer
*01	Default
Example:	&%Z13,5 This Host Download command assigns the host's Paper Drawer 1 command to pull paper from the printer's input bin associated with the PCL command ESC&l5H. On a HP LaserJet 4Plus, this would be the 500 sheet Cassette.

Command No. 14: IBM Drawer 2

Matches the host's IBM Drawer 2 command with a physical paper source from the printer. When the host sends a command to the printer to feed from paper drawer 2, the printer will feed from the paper source assigned to paper drawer 2. Consult the printer's user's guide for the available paper sources and respective numbers.

Value	Description
01 to 254	Paper sources available on the printer
*04	Default
Example:	&%Z14,05 This Host Download command assigns the optional 500-sheet cassette on a HP LaserJet 4 Plus to the host's paper drawer 2 command.

Command No. 15: IBM Drawer 3

Matches the host's IBM Drawer 3 command with a physical paper source from the printer. When the host sends a command to the printer to feed from paper drawer 3, the printer will feed from the paper source assigned to paper drawer 3. Consult the printer's user's guide for the available paper sources and respective numbers.

Value	Description
01 to 254	Paper sources available on the printer
*05	Default
Example:	%Z15,04 This Host Download command assigns the multi-purpose tray on a HP LaserJet 4 Plus to the host's paper drawer 3 command.

Command No. 16: Override Host Format

Allows operator settings on the printer's front panel to override format commands coming from the host.

Value	Description
*0	No, do not override IBM format commands
1	Yes, override all IBM format commands
2	Yes, override NLQ commands
3	Yes, override CPI commands
Example:	&%Z16,1 This Host Download command enables the front panel to override all IBM format commands.

Command No. 17: Character Set

Selects which character set will be used when both are available for the desired font. The character set selected is used as the underlying ASCII table for EBCDIX to ASCII translations. Consult the printer's user's guide to verify that the printer also uses the font and character set selected.

Value	PCL Laser Printers
0	Latin 1 Euro
*1	CP 850

Example: &%Z17,0
Selects the Latin 1 character set that includes the Euro symbol.

THE EURO SYMBOL IS SUPPORTED IN CODE PAGE LATIN 1 EURO CHARACTER SET FOR LASER PRINTERS.

Command No. 18: Vertical Margin

Adjusts the upper left corner starting vertical position for printing on the page in 1/60 of an inch.

Value	Description
-127 to 127	Adjustment of vertical position in 1/60 of an inch
*0	Default

Example: &%Z18,-20

Moves printing on the page up 1/3 inch or 2 lines at 6 LPI.

Command No. 19: Horizontal Margin

Adjusts the upper left corner starting horizontal position for printing on the page in 1/60 of an inch.

Value	Description
-127 to 127	Adjustment of horizontal position in 1/60 of an inch
*0	Default
Example:	&%Z19,12 Moves printing on the page 1/5 inch right or 2 characters at 10 CPI.

Command No. 21: Font Strings

Assigns a font ID to a font. The first number (0-1) is one of two available strings, the second number (0-65535) is the host font number. The characters shown in parentheses are sent to the printer when the host font number is received. Refer to the printer's user's guide or the documentation accompanying the font cartridge /SIMM/DIMM/Soft font for a list of available fonts and their respective strings. Use the < character to indicate the Escape character.

Value	Description
0-1,	One of two available strings
0-65535	Host font number
(ASCII Char.)	Up to 25 ASCII characters representing the desired font
Example:	&%Z21,3,12345(<(12U<(s0p12h10v1s3b6T) This Host Download command selects the third font string to be font #12345 and selects for a HP LaserJet or Lexmark Laser printer: (<(12U = code page 850 <(s0p = fixed spacing 12h = 12 pitch 10v = 10 point 1s = italic 3b = bold 6T) = letter gothic

FONT IDS ASSIGNED THROUGH THIS FONT STRING FEATURE CANNOT BE USED WITH THE F FONT CHANGE COMMAND. SEE THE ADVANCED FEATURES IN THE SCS PRINTING OPERATION CHAPTER.

Command No. 30: IBM Drawer 4

Matches the host's Paper Drawer 4 command with a physical paper source from the printer. When the host sends a command to the printer to feed from paper drawer 4, the printer will feed from the paper source assigned to paper drawer 4. Consult the printer's user's guide for the available paper sources and respective numbers.

Value	Description
01 to 254	Paper sources available on the printer
*01	Default
Example:	&%Z30,05 This Host Download command assigns the optional 500-sheet cassette on a HP LaserJet 4 Plus to the host's paper drawer 4 command.

Command No. 31: IBM Drawer 5

Matches the host's Paper Drawer 5 command with a physical paper source from the printer. When the host sends a command to the printer to feed from paper drawer 5, the printer will feed from the paper source assigned to paper drawer 5. Consult the printer's user's guide for the available paper sources and respective numbers.

Value	Description
01 to 254	Paper sources available on the printer
*01	Default
Example:	&%Z31,05 This Host Download command assigns the optional 500-sheet cassette on a HP LaserJet 4 Plus to the host's paper drawer 5 command.

Command No. 33: Duplex Printing

Sets the 5250 SCS Printer Emulation session duplexing mode.

Value	Description
*0	Off
1	Duplexing
2	Duplexing-Tumble
Example:	&%Z33,2 This Host Download command instructs the 5250 SCS Printer Emulation session to duplex and tumble all host print jobs.

Command No. 35: Process L Margin Before/After Cmnd. Pass-Thru

This command is used in certain special applications where an end user desires to send Command Pass-Thru commands at the beginning of a line after the left margin. This command allows the left margin to be positioned either before or after the Command Pass-Thru (CPT) command. Normally at the beginning of a line the left margin is inserted after the CPT command. However, if a customer were to use a &%1B&% as the Escape command at the beginning of a command string such as &%1B&%k0S, the Escape command 1B would be sent first, then a left margin, and then the rest of the command string k0S as text. This would result in no escape command being acted upon and the string k0S being printed. To keep the CPT and the string together, use option 1 to cause the left margin to be inserted prior to the CPT and its associated string.

Value	Description
0*	Left margin positioned after the CPT command (normal functioning)
1	Left margin positioned before the CPT command.
Example:	&%Z35,1 Inserts the left margin before the CPT command.

Command No. 42: EBCDIC Hex Dump

After receiving a start command the 5250 SCS Printer Emulation session, beginning with the next buffer received, all host data is directly sent to the printer in EBCDIC hexadecimal format until the print session is ended. Embedding this command in the data stream enables the user to print only the section of the document that is in question in EBCDIC hex dump format.

Value	Description
1	Start EBCDIC hex dump
Example:	&%Z42,1 This Host Download command starts hex dump printing.

Command No. 43: ASCII Hex Dump

After receiving a start command the 5250 SCS Printer Emulation session, starting with the next buffer received, translates all host data from EBCDIC into ASCII and then prints the ASCII data in hexadecimal form. The ASCII hex dump prints until the printer session is ended or Host Download command Z43,0 is received by the 5250 SCS Printer Emulation session.

Value	Description
*0	Stop ASCII Hex Dump
1	Start ASCII Hex Dump
Example:	&%Z43,1 This Host Download command starts ASCII hex dump printing.

Command No. 44: Default Command Pass-Thru

Enables or disables the default Command Pass-Thru (CPT) and host download. When CPT is disabled, the default delimiters are not recognized as flags, but are treated as regular printed characters.

Value	Description
*0	CPT disabled
1	CPT enabled
Example:	&%Z44,1 Enables the default Command Pass-Thru.

COMMAND Z44,0 DISABLES ALL SUBSEQUENT HOST DOWNLOAD COMMANDS AND TREATS ANY STRING OF TEXT RECEIVED WITH &% AS PRINTABLE CHARACTERS AND PASSES THEM ON TO THE PRINTER. THIS MAY BE DESIRED WHEN CERTAIN TEXT STRINGS NEED TO BE PASSED TO A PRINTER EQUIPPED WITH MICR CAPABILITY OR OTHER FUNCTIONALITY. BE AWARE THAT COMMANDS 1 AND 2 ALLOW THE SELECTION OF ALTERNATE CPT START AND END CHARACTERS THAT MAY AFFECT THIS COMMAND'S USE.

Command No. 98: Restore Defaults

This command will restore the factory default configuration selections returning all Host Download Commands to the settings identified herein with the asterisks(*).

Value	Description
0	Restores the factory default selections
1	Prints out the active configuration selections
Example:	&%Z98,1 Prints out the active setup selections for review.

Command No. 99: Save Current Settings

This command causes the 5250 SCS Printer Emulation to save all Host Download Commands. (Front panel commands are not saved with this command as they are saved by the printer's menu system.)

Value	Description
0	Causes the settings to be saved.
Example:	&%Z99,0 This command causes the settings to be saved.

3270 Commands

Host Download commands are placed in a Host document or on the screen. The document or screen print is then sent to the printer. As part of the 3270 data stream processing, the 3270 SCS Printer Emulation monitors the data stream and filters out Host Download commands. These commands will not print, but will be used to configure the 3270 SCS Printer Emulation session.

Host Download commands sent to the 3270 SCS Printer Emulation session take effect immediately and stay only in the printer's temporary or active memory. To save the changed configuration beyond a power off, Host Download command &%Z99,0 must be sent.

Take the following steps to enter a host download command.

1. Type the Command Pass-Thru (CPT) delimiter &% (or the alternate CPT start delimiter) in the document or on the screen at the point where the command is to take effect.

2. Type an upper case Z.

3. Type the command number for the command to be used, as shown in the table below. Always use two digits for the command number (i.e. &%Z05,1).

4. Type a comma.

5. Type the value representing the desired selection. No spaces are allowed. A space or invalid character in a command causes the Print Server to ignore the command and resume printing from the point the error occurred.

6. A space or control character (i.e. NL, FF, CR, LF) signals the end of the Host Download command.

7. Multiple commands can be chained together by using a slash (/) or backslash (\) to separate the commands (no spaces are allowed).

For example, to set the characters per inch, line spacing, and form length (commands 3, 4, and 5) in one command string, place &%Z3,15/Z4,2/Z5,70 followed by a space, in the document. This selects 15 CPI, double spacing, and 70 lines.

Commands take effect immediately unless noted otherwise. Any errors cause the 3270 SCS Print Emulation session to ignore the command and continue printing. For a command to be permanently stored in permanent memory, the command Z99,0 must be used. RPQs are only active in LU3 (non-SCS) mode.

IN THE DESCRIPTION OF EACH HOST DOWNLOAD COMMAND, ASTERISKS (*) IDENTIFY FACTORY DEFAULT SETTINGS.

Command 2: Lines Per Inch

Selects default LPI. This default emulates the front panel selection on an IBM printer. The IBM host can control the LPI unless Command 36 is used to override the host LPI commands.

Value	Description
3	3 LPI
4	4 LPI
*6	6 LPI
8	8 LPI
Example:	&%Z2,8
	Sets the printer to 8 LPI default

Command 3: Characters Per Inch

Selects default CPI. The IBM host can control CPI unless Command 36 is used to select override of host CPI commands.

Value	Description
0	No default sent to printer
*10	10 CPI
12	12 CPI
15	15 CPI
16	16.7 CPI
Example:	&%Z3,15
	Sets the printer to 15 CPI default

Command 4: Line Spacing

Selects default Line Spacing

Value	Description
*1	Single Space
2	Double Space
Example:	&%Z4,2
	Sets the printer to double space default

Command 5: Form Length

Selects default Form Length (MPL = Maximum Print Lines). The 000 value enables the front panel selection on the printer to control the form length when Command 25 is set to value 0.

Value	Description
000	No form length control
001	Set form length in number of lines up to 255
*066	Factory Default
Example:	&%Z5,70
	Sets form length to 70 lines for A4 paper

Command 6: Maximum Print Position

Selects current and default Maximum Print Position, the maximum number of characters that can be printed on each line.

Value	Description
000	Infinite line length
001 to 255	Set MPP of characters
*80	Factory Default
Example:	&%Z6,63
	Sets MPP to 63 characters

NORMAL VALUES ARE 80, 132, OR 198 CHARACTERS. THIS DEFAULT EMULATES THE FRONT PANEL SELECTION ON AN HP PRINTER.

MPP AND THE CURRENT POSITION WILL NOT BE CHANGED BY CHANGES IN CPI.

THE INFINITE LINE LENGTH WILL PLACE NO LIMITS ON THE NUMBER OF CHARACTERS THAT CAN BE SENT TO THE PRINTER ON A SINGLE LINE.

Command 7: Print Case

Selects default print case. This default only affects LU3 printing.

Value	Description
0	Mono case
*1	Dual case
Example:	&%Z7,0
	Sets default to mono case

Command 8: LU1 Language

Selects default LU1 language.

Value	Description
*01	English (U.S.) EBCDIC
03	Austrian/German
04	Belgian
05	Brazilian
06	Canadian (French)
07	Danish/Norwegian
08	Danish/Norwegian (alt.)
09	Finnish/Swedish
10	Finnish/Swedish (alt.)
11	French
12	French – Alternate (same as 11)
13	Austrian/German (alt.)
14	International Set 5
15	Italian
16	Japanese (English)
19	Spanish
20	Spanish (alt.)
21	Spanish Speaking
22	English (U.K.)
23	Norwegian (same as 07)

Value	Description
24	Swedish (same as 09)
25	EBCDIC – Alternate (same as 01)
26	Norwegian - Alternate (same as 08)
27	Swedish - Alternate (same as 10)
28	Portuguese
29	Canadian Bilingual (same as 06)
30	French 105 character AZERTY (same as 11)
31	Swiss German (same as 14)
32	Swiss French (same as 14)
Example:	&%Z8,04
	Sets LU1 language to Belgian

THIS COMMAND, ALONG WITH COMMAND Z99,0, CHANGES THE DEFAULT LU1 LANGUAGE SELECTION IN THE PERMANENT MEMORY OF THE INTERFACE. THE COMMAND VALUE SHOULD MATCH THE LANGUAGE NUMBER USED IN IBM CU CONFIGURATION SEQUENCE NUMBER 121.

Command 11: Paper Path

Selects default paper path for the Page Presentation Media (PPM) command.

Value	Description
0	Ignore the host PPM command and select the paper tray through the printer's front panel
*2	Cut sheet feeding from primary bin is default
3	Cut sheet feeding from alternate bin 1 is default
4	Envelope feeder default
5	Manual sheet feed default
6	Manual envelope feed default
9	Cut sheet feeding from alternate bin 2 is default
Example:	&%Z11,5
	Selects manual sheet feed as the default source of paper

THIS COMMAND DEFINES THE DEFAULT PAPER SOURCE FOR THE PAGE PRESENTATION MEDIA (PPM) COMMAND IN SCS MODE. IF THE PPM COMMAND IS RECEIVED FROM THE HOST, THE INTERFACE ALWAYS SENDS THE PAPER SOURCE TO THE PRINTER UNLESS VALUE 0 IS SELECTED.

IF THE PRINTER DOES NOT HAVE A SECONDARY PAPER BIN OR AN ENVELOPE FEEDER, IT IGNORES THE COMMAND, BUT IT WILL BE USED FOR COMMANDS 62-64 LOGIC. THE PRINTER IGNORES THE COMMAND IF IT DOES NOT HAVE A SECONDARY PAPER BIN OR AN ENVELOPE FEEDER.

A MANUAL SHEET FEED COMMAND IN THE SCS PPM CAUSES THE PRINTER TO WAIT FOR THE OPERATOR TO INSERT PAPER IN THE MANUAL FEED TRAY. THIS COMMAND TAKES EFFECT IMMEDIATELY IF PLACED ON THE FIRST POSITION OF THE PAGE (LINE 1, POSITION 1); OTHERWISE, IT TAKES EFFECT ON THE NEXT PAGE.

Command 12: Form Feed Before Local Screen Print

Specifies whether a form feed is performed before doing local screen print.

Value	Description
*0	No form feed before local screen dump
1	Form feed before local screen dump
Example:	&%Z12,1
	Performs a FF before local screen dump

THIS COMMAND ONLY AFFECTS THE LOCAL SCREEN COPY FUNCTION, NOT THE HOST-INITIATED LOCAL COPY PRINTING, AND FUNCTIONS ONLY IN LU3 (NON-SCS) OPERATIONS.

Command 13: Form Feed After Local Screen Copy

Specifies whether a form feed is performed after a local screen hard copy.

Value	Description
*0	No Form Feed after local screen dump
1	Form Feed performed after local screen dump
Example:	&%Z13,1 Performs a FF after local screen dump

TO USE THIS FUNCTION, THE RPQ SHOULD BE:

IBM 3268 RPQ SC9508
IBM 3287 RPQ MC3750
IBM 4214 OPT 20=3

THIS COMMAND ONLY AFFECTS THE LOCAL SCREEN COPY, NOT THE HOST-INITIATED LOCAL COPY PRINTING, AND FUNCTIONS ONLY IN LU3 (NON-SCS) OPERATIONS.

Command 14: LU3 Print Image (Non-SCS Mode)

Selects Null Line Suppression or True Screen Image in LU3 printing mode.

Value	Description
*0	Null line suppression in local copy and non-SCS print
1	Null line suppression in non-SCS print and true screen image in local copy
2	True screen image in non-SCS print and null line suppression in local copy
3	True screen image in non-SCS print and true screen image in local copy
Example:	&%Z14,3 Prints true screen image in non-SCS print and local copy

TO USE THIS FUNCTION, THE RPQ SHOULD BE:

IBM 3268 RPQ SC9505
IBM 3287 RPQ SC3741
IBM 4214 OPT 18=2

AVAILABLE ONLY IN LU3 (NON-SCS) OPERATIONS
0 AND 1 ARE ONLY FUNCTIONAL FROM CUT TERMINALS.

Command 15: CR at MPP + 1

Sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
*0	First print position (PP) of next line
1	First PP of current line
Example:	&%Z15,1
	Prints first PP of current line as the next PP when a CR is received at MPP+1

TO USE THIS FUNCTION, THE RPQ SHOULD BE:

IBM 3268 RPQ SC9501
IBM 3287 RPQ S30219
IBM 4214 OPT 15=1

AVAILABLE ONLY IN LU3 (NON-SCS) OPERATION.

Command 16: NL at MPP + 1

Sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
*0	First PP of current line + 2 lines
1	First PP of next line
Example:	&%Z16,1
	Performs first PP of next line as the next PP when an NL is received at MPP+1

TO USE THIS FUNCTION, THE RPQ SHOULD BE:

IBM 3268 RPQ SC9502
IBM 3287 RPQ S30219
IBM 4214 OPT 15=1

AVAILABLE ONLY IN LU3 (NON-SCS) OPERATION.

Command 17: Valid FF Followed By Data

Sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
*0	Second print position of first line on next form
1	First print position (PP) of first line on next form
Example:	&%Z17,1 Performs first PP of first line on next form as the next PP when a valid FF is not positioned at the end of an IBM print buffer

FOR THE VALUE 1 SELECTION, THE RPQ WOULD BE:

IBM 3268 RPQ SC9503
IBM 3287 RPQ N/A
IBM 4214 OPT 16=2

AVAILABLE ONLY IN LU3 (NON-SCS) OPERATION.

Command 18: Valid FF at End Of Print Buffer

Sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
0	First PP of second line on next form
*1	First PP of first line on next form
Example:	&%Z18,1 Performs first PP of first line on next form as the next PP when a valid FF is received at the end of an IBM print buffer

TO USE THIS FUNCTION, THE RPQ SHOULD BE:

IBM 3268 RPQ SC9504
IBM 3287 RPQ SC3749
IBM 4214 OPT 17=2

AVAILABLE ONLY IN LU3 (NON-SCS) OPERATION.

Command 19: FF Valid Location

Sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
*0	FF is valid only at the first print position or at position MPP+1
1	FF is valid anywhere it occurs
Example:	&%Z19,1
	Makes FF valid anywhere it occurs

TO USE THIS FUNCTION, THE RPQ SHOULD BE:

IBM 3268 RPQ SC9506
IBM 3287 RPQ SC3739
IBM 4214 OPT 19=1

AVAILABLE ONLY IN LU3 (NON-SCS) OPERATION.

Command 20: Automatic Function at End of Job

Sets the printer in accordance with the RPQ installed in the control unit.

Value	Description
*0	NL is automatically executed after the buffer is completed (unless a FF, NL, or CR was last in the buffer)
1	FF is automatically executed after the print buffer is completed (unless a FF was last in the buffer)
Example:	&%Z20,1
	Sets the printer to issue a FF automatically at the end of the print buffer

TO USE THIS FUNCTION, THE RPQ SHOULD BE:

IBM 3268 RPQ SC9507
IBM 3287 RPQ SC3740
IBM 4214 OPT 20=2

AVAILABLE ONLY IN LU3 (NON-SCS) OPERATION.

DO NOT PRESS THE FORM FEED OR LINE FEED BUTTONS ON THE FRONT OF THE PRINTER. THIS WILL CAUSE THE HOST AND PRINTER TO LOSE SYNCHRONIZATION OF PAPER POSITION. THIS COMMAND REDUCES THE NEED TO ADVANCE THE PAPER.

Command 25: Form Feed Usage

Enables a Forms Feed from the host system to be converted to the required number of line feeds (beneficial when forms length is controlled by the Print Server).

Value	Description
*0	Pass FF from host to the printer
1	Count the lines in Command 5 and send multiple line feeds to the printer in place of the host FF
2	Ignore all IBM Motion Commands
Example:	&%Z25,1
	Sets the printer to count the lines specified in Command 5

Command 26: Suppress Empty Forms

Suppresses blank printout pages caused by form feed commands that occur at the top of a form.

Value	Description
*0	No, do not suppress empty forms
1	Yes, suppress empty forms
Example:	&%Z26,1
	Sets the interface to suppress empty forms

IF SELECTED, THE INTERFACE IGNORES FORM FEED COMMANDS LOCATED AT THE TOP OF FORM POSITION.

THIS COMMAND AFFECTS PRINTING IN BOTH DSC AND SCS MODES. THIS DIFFERS FROM THE IBM 3287, WHICH SUPPRESSES FORM FEED ONLY IN DSC MODE.

Command 27: FF After Timeout

Sends a Form Feed if unprinted data remains in the print buffer for the specified coax port timeout interval in Command 51.

Value	Description
*0	No extra FF is sent
1	Send FF after timeout value
Example:	&%Z27,1
	Sends a FF after time delay selected by command 51 (default = 5 sec.) when unprinted data remains in the print buffer

IN MOST CASES, THE HOST APPLICATION GENERATES A TERMINATION FF AND THERE IS NO NEED TO CHANGE THIS COMMAND FROM THE DEFAULT.

Command 30: Override of Formatting Commands

Enables the printer's front panel selections to control how a job is printed.

Value	Description
*0	Normal operation (disabled)
1	Formatting commands are not sent to the printer (enabled)
Example:	&%Z30,1
	Sets override of formatting commands

WHEN ACTIVE, THIS COMMAND OVERRIDES THE PRINT SERVER'S DEFAULT SELECTIONS FOR CPI, LPI, FONT, ORIENTATION, BIN SELECTION, PAPER SIZE, COR AND LINE COMPRESSION.

A RESET COMMAND IS SENT TO THE PRINTER BEFORE A 3270 PRINT JOB IN ORDER TO RESTORE THE PRINTER'S FRONT PANEL DEFAULT SELECTIONS.

THIS COMMAND HAS NO EFFECT ON THE SPECIAL FEATURES COMMAND PASS-THRU, USER STRINGS, INITIALIZATION STRINGS AND 3270 HOST RPQS.

Command 31: Truncate/Wrap Select

Selects whether the interface truncates or wraps the text if the maximum print position is exceeded.

Value	Description
*0	Allow text to print on next line when maximum print position is exceeded
1	Truncate text beyond the maximum print position
Example:	&%Z31,1
	Causes text that exceeds the maximum print position to be truncated (not printed)

Command 32: Paper Size

Value	Description
*0	Selects 8 1/2" x 11" letter paper
1	Selects A4 (210mm x 297mm, 8.27" x 11.69") paper
2	Selects 8 1/2" x 14" legal paper
Example:	&%Z32,1
	Selects A4 paper

Command 34: Intervention Required (IR) Timeout

Sets the time interval before an intervention-required signal is sent to the host after a printer error occurs. Note that the Print Server's setup switch #4 must be set to "0" (enabled).

Value	Description
000	Never send an IR
001 to 255	IR is sent (value *5) seconds after printer error occurs
*120	Default, send IR after ten minutes
Example:	&%Z34,036
	Sets IR time interval to 3 minutes (=6 *5/60)

Command 36: Suppress IBM Control Codes (Host Commands)

This function is used to select suppression of all or some IBM control codes sent from the host system.

Value	Description
*0	Obey all IBM control codes (Supp None)
1	Suppress all IBM control codes (Supp All)
2	Suppress LPI, CPI, MPP and MPL control codes (Supp CPI/LPI)
3	Suppress CPI and MPP control codes (Supp CPI)
4	Suppress LPI and MPL control codes (Supp LPI)
5	Suppress print quality specified in the PPM command (Supp Quality)
Example:	&%Z36,2
	No LPI, CPI, MPP or MPL commands are sent to the printer. The document prints using the printer's defaults

IF THIS COMMAND IS SET TO 1, DOCUMENTS NEED TO BE FORMATTED BY SENDING TRANSPARENT CONTROL CODES TO THE PRINTER USING COMMAND PASS-THRU OR SCS MODE TRANSPARENT DATA.
IF VALUE 2 IS SELECTED, THE SCS PITCH (CPI), LINE DENSITY (LPI), SHF (MPP), AND SVF (MPL) COMMANDS WILL BE SUPPRESSED (NOT SENT TO THE PRINTER).

Command 37: Vertical Channel Select (VCS)

Specifies vertical channel select (VCS) emulation. Functions similarly to a vertical tab, except the 3287 does LF only.

Value	Description
0	3287 VCS emulation
*1	3268/4214/4224 VCS emulation
Example:	&%Z37,0
	Selects 3287 VCS emulation

Command 38: True LPI Spacing

Because laser printers have a non-printable border around the edge of single sheet pages, 6 LPI and 8 LPI spacing is compressed slightly to enable 66 lines and 88 lines to be printed on 11-inch long paper. This can occasionally cause a problem, especially when using preprinted forms that must align precisely. Command 38 enables a user to override the laser printer LPI compression.

Value	Description
0	Compress the vertical LPI spacing
*1	Print using true 6 and 8 LPI spacing
Example:	&%Z38,1
	Specifies that vertical spacing prints using true 6 and 8 LPI

IF TRUE LPI IS SELECTED, THE USER NEEDS TO ADJUST THE DOCUMENT FORMATS TO ALLOW FOR THE REDUCED NUMBER OF LINES THAT CAN BE PRINTED PER PAGE, OR THE EXTRA LINES MAY PRINT ONTO ANOTHER SHEET OF PAPER.

Command 39: CPT Ending Delimiter Characters

Specifies the two characters to be used for the ending delimiter characters or Command Pass-Thru.

Value	Description
XXYY	XX is the ASCII hexadecimal value of the first character and YY is the ASCII hexadecimal value of the second character
Example:	&%Z39,253F Specifies the %? characters as the alternate ending delimiter characters (% ASCII hex value is 25 and ? ASCII hex value is 3F)

If an ending delimiter is not selected with this command, the delimiter selected with Command 40 will be used as a default.

The default delimiter will no longer be active if the command is used to change it. If Command 39 and Command 40 are both entered, Command 39 must be sent after Command 40 in order to be active.

One delimiter character can be specified instead of two by entering the hex code for the character followed by two zeros (e.g., &%Z39,2500 selects & as the delimiter).

A hex code that starts with “00” is invalid.

Command 40: CPT Start Delimiter Characters

Specifies the two characters to be used for the beginning delimiter characters for Command Pass-Thru.

Value	Description
XXYY	XX is the ASCII hexadecimal value of the first character and YY is the ASCII hexadecimal value of the second character
Example:	&%Z40,253F Specifies the %? characters as the beginning delimiter characters (% ASCII hex value is 25 and ? ASCII hex value is 3F)

HOST DOWNLOAD COMMANDS USE THE CPT BEGINNING DELIMITER CHARACTERS AS WELL. THE NEW CHARACTER(S) REPLACE THE &% IN FRONT OF THE Z.

IF YOU DO NOT SELECT AN ENDING DELIMITER WITH COMMAND 39, THE DELIMITER SELECTED WITH THIS COMMAND WILL BE USED AS THE DEFAULT ENDING DELIMITER.

THE DEFAULT BEGINNING DELIMITER WILL NO LONGER BE ACTIVE IF YOU USE THIS COMMAND TO CHANGE IT.

ONE DELIMITER CHARACTER CAN BE SPECIFIED INSTEAD OF TWO BY ENTERING THE HEX CODE FOR THE CHARACTER FOLLOWED BY TWO ZEROS (E.G., &%Z40,2500 SELECTS & AS THE DELIMITER).

A HEX CODE THAT STARTS WITH 00 IS INVALID.

Command 41: Command ID Character

Specifies the character that is used for the command identifier that follows the delimiter characters.

Value	Description
00	Deletes the previously selected character
ZZ	ZZ is the ASCII HEX value of the command ID character
Example:	&%Z41,59 Specifies "Y" as the command ID character

THE CHARACTER SELECTED MUST NOT BE 0 THROUGH 9 OR A THROUGH F (VALID HEX VALUES), OR L, P, U.

Command 42: Start and Stop EBCDIC Hex Dump

After receiving a start command the coax interface, starting with the next buffer received, sends all host data directly to the printer as hexadecimal printing until the printer is powered off.

Value	Description
*0	No action taken
1	Start EBCDIC hex dump
2	Stop EBCDIC hex dump
Example:	&%Z42,1
	Starts buffer hex dump printing

THIS COMMAND ENABLES THE USER TO PRINT ONLY THE SECTION OF THE DOCUMENT THAT IS IN QUESTION IN BUFFER HEX DUMP FORMAT. HEX PRINTING STARTS WITH THE BUFFER AFTER THE START COMMAND.

Command 43: Start/Stop ASCII Hex Dump

After receiving a start command, the interface, starting with the next buffer received, translates all host data into ASCII (from EBCDIC) and then causes the ASCII data to print in hexadecimal form. The ASCII hex dump is performed until the printer is powered off.

Value	Description
*0	No action taken
1	Start ASCII Hex Dump
2	Stop ASCII Hex Dump
Example:	&%Z43,1
	Starts ASCII hex dump printing

Command 45: SCS TRN Translate

Specifies how transparent data sent using SCS code 35 is handled.

Value	Description
0	Binary Transparent
*1	Emulate IBM 3287 Printer
Example:	&%Z45,0
	All SCS Code 35 data is sent to the printer as binary codes without translation

VALUE 1 CAUSES VALID GRAPHIC CHARACTERS TO BE PRINTED NORMALLY (I.E., CONVERTED FROM EBCDIC TO ASCII), WHILE CONTROL CODES AND INVALID GRAPHICS ARE PRINTED AS HYPHENS, AND NORMAL PAGE FORMATTING IS MAINTAINED.

VALUE 0 CAUSES THE 8-BIT BINARY CODES TO BE SENT DIRECTLY TO THE PRINTER JUST AS THEY ARE RECEIVED FROM THE HOST.

SCS CODE 36 FUNCTIONS THE SAME AS CODE 35.

AVAILABLE IN SCS (LU1) MODE ONLY.

Command 55: Custom User Strings

Allows the user to define up to two custom user strings, of up to 25 bytes each, which are stored in the memory of the interface and sent to the printer whenever the character delimiter, letter U, and number of the string appears in the text of the document (i.e. &%U3).

Value	Description
0-1(value)	Defines the custom user string (max. 25 bytes of ASCII hex code)
0-1()	Deletes custom user string
Example:	&%Z55,1(1B01)
	Defines the &%U3 custom user string to send an "Escape and SOH" (1B and 01 hex) to the printer which is the double wide command)

A MAXIMUM OF 25 BYTES OF ASCII HEX CODE MAY BE ENTERED.

TO AID IN READABILITY, A SINGLE SPACE IS ALLOWED BETWEEN HEX BYTES, BUT IS NOT INCLUDED IN THE STRING. THE STRINGS COULD SPECIFY A SPECIAL FONT SELECTION COMMAND OR OTHER CUSTOM COMMAND TO BE SENT DIRECTLY TO THE PRINTER.

THIS COMMAND, IF PLACED AS THE FIRST PRINTABLE DATA AT THE TOP OF THE PAGE (POSITION 1, LINE 1), WILL BE SENT TO THE PRINTER PRIOR TO THE DATA.

TO CHANGE A CUSTOM USER STRING, SIMPLY INPUT THE NEW CUSTOM USER STRING VALUES; THE OLD STRING IS AUTOMATICALLY ERASED.

Command 61: Automatic Print Orientation (APO)

Laser printers have the ability to automatically control page orientation if the user decides to activate Auto Print Orientation (APO). Refer to the 3270 page orientation logic chart in the Computer Output Reduction section of this manual.

Value	Description
*0	APO is ACTIVE. The page dimensions of a document are checked to determine if the data should be printed in landscape because the width is greater than the length
1	APO is NOT ACTIVE. Print orientation is controlled the orientation selections specified in Commands 62, 63, and 64
Example:	&%Z61,1 Disables APO

APO ACTIVE IS THE RECOMMENDED SELECTION. A USER CAN MANIPULATE THE PAGE DIMENSIONS USING SCS COMMANDS TO CONTROL THE ORIENTATION OF THE PRINTING AS LONG AS THE PAGE SIZE REQUIRED IS 8 1/2 X 11" OR SMALLER.

Command 62: Primary Paper Tray Orientation

The SCS (LU1) PPM command specifying the source for the paper can have a printing orientation assigned to the paper tray that is assigned. Refer to the page orientation logic chart in the Computer Output Reduction section of the manual. This command duplicates the IBM 3812 and 4028 printer's feature with the additional selection of option 3 below.

Value	Description
*0	Computer Output Reduction (COR) Mode is active when paper is specified to be selected from the primary tray
1	Prints PORTRAIT orientation using the active font when the primary tray is specified
2	Prints LANDSCAPE orientation using the active font when the primary tray is specified
3	User Defined mode. Documents are printed using the fonts and orientation that the user specifies through use of the &% font ID commands
Example:	&%Z62,3
	Specifies that the document is printed as formatted when the primary paper tray is specified as the paper source

Command 63: Alternate Paper Tray Orientation

This command functions identically to Command 62 except it controls the orientation for printing that specifies the alternate tray for the paper source.

Even if the printer does not have an alternate paper tray, the SCS (LU1) host specifies the alternate tray, and the interface prints the document in accordance with this selection.

Value	Description
*0	Computer Output Reduction (COR) Mode is active when paper is specified to be selected from the alternate tray
1	Prints PORTRAIT orientation using the active font when the alternate tray is specified
2	Prints LANDSCAPE orientation using the active font when the alternate tray is specified
3	User Defined mode. Documents are printed using the fonts and orientation that the user specifies through use of the &% font ID commands
Example:	&%Z63,2 Specifies that landscape orientation will be used for all printing in which the SCS (LU1) PPM code specifies the alternate paper tray be used

THE VALUE 3 IS AN EXCELLENT CHOICE WHEN COR IS NOT REQUIRED, SINCE THE USER CAN DECIDE THE FONTS AND ORIENTATION HE DESIRES BY USING &% FONT ID COMMANDS.

Command 64: Manual Paper Tray Orientation

This command functions identically to Command 62 except it controls the orientation for printing when the PPM Command specifies the manual feed tray for the paper source.

Value	Description
*0	Computer Output Reduction (COR) Mode is active when paper is specified to be selected from the manual feed tray
1	Prints PORTRAIT orientation using the active font when the manual feed tray is specified
2	Prints LANDSCAPE orientation using the active font when the manual feed tray is specified
3	User Defined mode. Documents are printed using the fonts and orientation that the user specifies through use of the &% font ID commands
Example:	&%Z64,1
	Specifies all printing using paper from the manual feed slot be printed in portrait orientation

The laser printer will, upon receipt of the manual feed tray command, not print until paper is placed into the manual feed slot. This allows the user to insert special forms, letterhead or colored paper into the manual feed slot.

Command 65: Character Set Selection

Enables the user to select the ASCII character set that is used in the conversion from EBCDIC (SCS/LU1) or DSC (LU3) to ASCII.

Value	Description
1	Roman 8 character set
*2	Code Page 850 character set
Example:	&%Z65,2
	Selects the Code Page 850 character set

The character set substitution defined in Commands 70 and 71 must be adjusted if the ASCII character set is changed.

All previously-defined substitutions are lost from NV memory when the character set selection is changed.

Refer to the character set summary tables at the end of the self test to confirm which ASCII character is printed for each of the 3270 Hex codes. Both the EBCDIC and DSC tables are provided.

Command 70: Overwrite EBCDIC (SCS/LU1) Translation Table

Custom substitutions defined by this command and stored in permanent memory are written into the EBCDIC (SCS/LU1) to ASCII translation table.

Value	Description
XX	The EBCDIC character to be changed (in hex)
YY	The substitute ASCII character for the EBCDIC character above
Example:	&%Z70,7B,40/Z99,0 Prints a 40 ASCII hex (a @ symbol) when the interface receives an EBCDIC 7B (a # symbol). The command is followed by a command Z99,0 which stores the active setup selections in permanent memory

Previously stored substitutions are automatically changed to the new selection when the same hex location is specified in the EBCDIC table.

Previously-stored substitutions are cancelled if an ASCII hex sequence of “00” is specified.

Command Z99,0 must be used to store the substitutions in permanent memory for them to be effective when the printer is next turned on. The active EBCDIC (SCS/LU1) translation table prints out at the end of the interface self-test summary.

Command 71: Overwrite DSC (LU3) Translation Table

Custom substitutions defined by this command, and stored in the permanent memory, are overwritten into the DSC (LU3) to ASCII translation table.

THIS COMMAND FUNCTIONS SIMILARLY TO COMMAND 70 EXCEPT THE SUBSTITUTIONS ARE APPLICABLE TO THE DSC (LU3) TRANSLATION TABLE. REFER TO THE COMMAND 70 INSTRUCTIONS.

THE ACTIVE DSC (LU3) TRANSLATION TABLE PRINTS OUT AT THE END OF THE INTERFACE SELF-TEST SUMMARY.

Command 98: Restore Defaults or Print Configuration

Restores the factory default configuration selections, prints out a copy of the active configuration selections, or restores the permanent memory selections to the active setup status.

Value	Description
0	Restores the factory setup
1	Prints out the active setup selections
2	Restores the setup selections stored in the permanent memory to active status
Example:	&%Z98,1
	Prints out the active setup selections for review

IF A DOCUMENT IS PRINTED USING TEMPORARY HOST DOWNLOAD COMMANDS (COMMANDS NOT STORED USING THE Z99,0 COMMAND), VALUE 2 WILL RESTORE THE PERMANENT MEMORY SELECTIONS.

PUT A &%Z98,2 AT THE END OF THE DOCUMENT TO RESTORE THE STANDARD SETUP PARAMETERS FOR THE NEXT USER OF THE PRINTER.

THE ACTIVE SETUP AND PERMANENT MEMORY SETUP SELECTIONS ARE THE SAME AFTER A COMMAND Z99,0 OR A COMMAND Z98,2 IS SENT TO THE PRINTER.

Command 99: Store Configuration in Permanent Memory

Send this command after all desired host download configuration commands have been sent to the interface. It stores the active setup in the permanent memory of the interface so it will be in effect whenever the printer is powered on. Otherwise, active configuration commands are lost when the printer is turned off.

Value	Description
0	To complete the command, the value 0 must be used
Example:	&%Z99,0 Stores the currently active setup selections in the permanent memory of the interface

HOST DOWNLOAD SELECTIONS FOLLOWED BY A COMMAND Z99,0 WILL BE STORED IN PERMANENT MEMORY AND ACTIVE WHEN THE PRINTER IS TURNED ON. ONLY USE COMMAND Z99,0 WHEN THE HOST DOWNLOAD SELECTION NEEDS TO BE PERMANENTLY STORED IN THE MEMORY OF THE INTERFACE.

Chapter 3: 3270 Advanced Features

The 3270 SCS Printer Emulation emulates a 3287, 3262, 3268, 3812-1, 4028, 4214 or 4224 SCS printer on your 3270-type host system.

Selecting Fonts

You can select a printer resident font or a font from an optional font cartridge in the printer by entering a font change command in the document. The font change commands take the following format: &%[P or L][font ID]. The &% (or the alternate beginning delimiter selected with command 40) is the delimiter that signals the Print Server that the information following is a command. The letter P (portrait) or L (landscape) controls the orientation of the printing. The font ID number (5 digits) selects the font to be used for printing. Refer to ***Appendix B: ¬Q 5250 Font References*** for a list of fonts and their font IDs.

For example: &%L00086 selects Prestige 12 CPI font in landscape orientation. The font ID number must select a font available in the printer or in the installed cartridge. If the proper cartridge is not installed, or the font does not exist on the cartridge, then the printer will automatically select an alternate landscape font for printing. Multiple font changes can be made in a document as long as all fonts are in the same orientation. Changes in orientation (portrait or landscape) automatically eject the page. A font ID that changes the orientation from the previous page must be on the first line and first position of the page or a blank page will be ejected. A blank page at the first of a print job is often caused by a change in orientation.

Computer Output Reduction (COR)

Computer Output Reduction (COR) is an IBM printer feature that automatically rotates data processing reports to landscape orientation and compresses the text to fit 198 columns x 66 lines on the page. COR is enabled by doing the following:1. Select APO active with command 61 (value 0).2.

Select COR for the paper source with commands 62-64 (value 0). When COR is enabled, the following format changes are automatically made to data processing reports:

- The page is printed in landscape orientation.
- Vertical line height is 70% of that specified.
- An 0.5-inch blank area is provided on the top and left edge of the paper.
- The selected pitch is changed: 10 pitch to 13.3 pitch; 12 pitch to 15 pitch; 15 pitch to 19 pitch

A combination of control codes in the printer data stream and the settings in the configuration are used to determine page orientation when processing SCS or DSC (LU1 or LU3) data streams. Some applications will not allow the user to insert the data stream commands required to achieve orientation and format selection. Where the insertion of the required data stream commands is not possible, the user can select the orientation and format desired by using the printer configuration settings. Use of the Write Control Character (WCC) in the DSC data streams for orientation and format selection is not recommended.

Automatic Print Orientation (APO)

When Automatic Print Orientation (APO) is activated (command 61, value 0), the Print Server notes the format of the print image and calculates the required print dimensions. The following illustration shows how the page size determines the orientation for COR. If a calculated paper size is larger than 8 1/2" x 11", the paper tray orientation selection (commands 62-64) determines the orientation.

In DSC (LU3) mode, the values used in the calculations are specified by the Print Server's active configuration selections. In SCS (LU1) mode, the values are specified in the data stream by the SCS controls. If a value has not been set in the SCS data stream, the Print Server's active configuration is used instead.

The APO feature also uses the calculated print width and length to determine the print orientation when the dimensions are less than 8 1/2" x

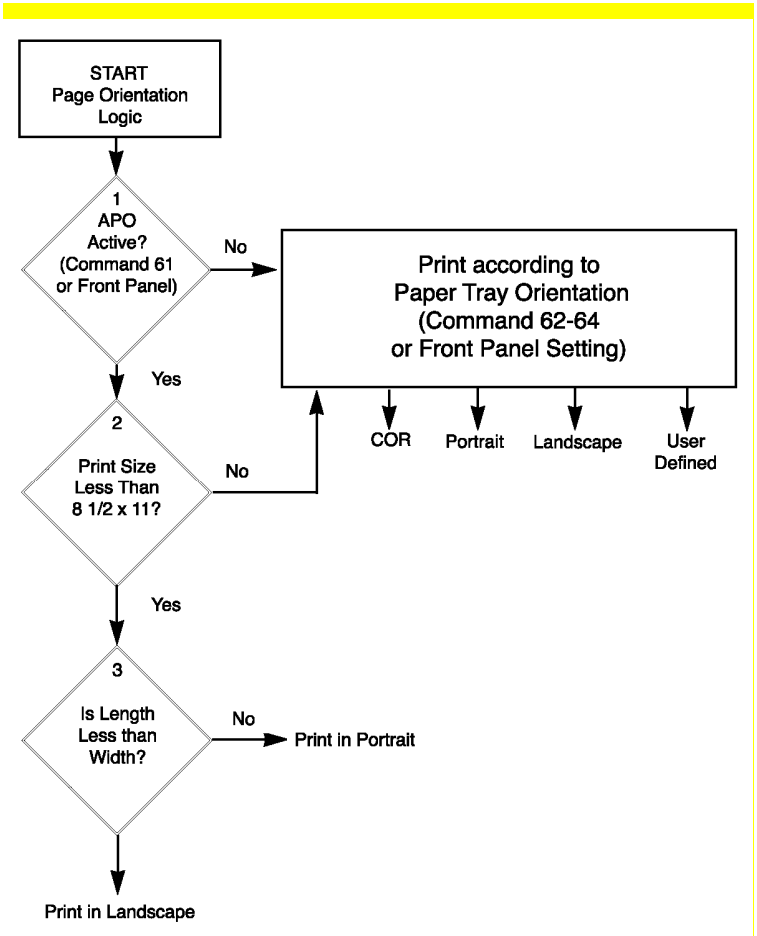
11". When the width is greater than the length and APO is active, the document prints in landscape, even if the font is specified as portrait.

The steps below describe printing with the APO feature (refer to the illustration on the following page).

1. If APO is not active (command 61, value 1), the Print Server uses the paper source selections (commands 62-64) to control orientation in the active font. If APO is active, the report continues to block 2.

2. The Print Server calculates the page size. If the page size is more than 8 1/2" x 11" the Print Server uses the paper source selections to control the orientation in the active font. If the report is less than 8 1/2" x 11" it continues to block 3.

3. At block 3, the Print Server checks the length and width. If the report is longer than it is wide, it prints in portrait. If the report is wider than it is long, the report prints in landscape.



Print Position and Page Length

The table below outlines the PMPP (Physical Maximum Print Position) and PMPL (Physical Maximum Page Length) for letter, legal, and A4 size paper.

Paper Size	PMPP at				PMPL at			
	10 CPI	12 CPI	15 CPI	17.1 CPI	6 LPI	8 LPI	True 6 LPI	True8 LPI
Letter								
Portrait	80	96	120	136	66	88	63	84
Landscape	105	126	157	178	50	87	48	84
COR	136	154	201	201	66	89	--	--
Legal								
Portrait	80	96	120	136	84	112	81	108
Landscape	135	162	202	230	50	67	48	64
A4								
Portrait	78	93	117	133	70	93	67	89
Landscape	112	134	167	191	49	66	47	

Chapter 4: ¬Q 5250 Font References

The following chart lists the laser printer resident fonts and available font cartridges that are available along with the font ID (FGID) number used to select the font when using the ¬Q Font Change Command. The fonts listed in this Appendix can be used in two ways:

1. Enter the Font ID (FGID) number in the Typestyle/Color menu of OfficeVision/400.

2. Embed the Font ID (FGID) number preceded by ¬Q in your host document or report.

For more information, consult the Font Change section of the 5250 SCS Printing Operation chapter.

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Line Printer	L1/R8/850	P/L	13.33	8.5	204
Line Printer	L1/R8/850	P/L	15	8.5	223
Line Printer	L1/R8/850	P/L	17.1	8.5	254
Line Printer	L1/R8/850	P/L	19	8.5	281
Courier	L1/R8/850	P/L	10	12	11
Courier Bold	L1/R8/850	P/L	10	12	46
Courier Italic	L1/R8/850	P/L	10	12	18
Courier	L1/R8/850	P/L	12	10	85
Courier Bold	L1/R8/850	P/L	12	10	88
Courier Italic	L1/R8/850	P/L	12	10	89
Letter Gothic	L1/R8/850	P/L	12	12	87
CG Times	L1/R8/850	P/L	Prop.	6	4605
	L1/R8/850	P/L	Prop.	8	4606
	L1/R8/850	P/L	Prop.	10	4607
	L1/R8/850	P/L	Prop.	12	4608
	L1/R8/850	P/L	Prop.	14	4609
	L1/R8/850	P/L	Prop.	18	4611
	L1/R8/850	P/L	Prop.	24	4614
	L1/R8/850	P/L	Prop.	30	4617
CG Times Bold	L1/R8/850	P/L	Prop.	6	4625
	L1/R8/850	P/L	Prop.	8	4626
	L1/R8/850	P/L	Prop.	10	4627
	L1/R8/850	P/L	Prop.	12	4628
	L1/R8/850	P/L	Prop.	14	4629
	L1/R8/850	P/L	Prop.	18	4631
	L1/R8/850	P/L	Prop.	24	4634
	L1/R8/850	P/L	Prop.	30	4637
CG Times Italic	L1/R8/850	P/L	Prop	6	4645
	L1/R8/850	P/L	Prop	8	4646

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
	L1/R8/850	P/L	Prop	10	4647
	L1/R8/850	P/L	Prop	12	4648
	L1/R8/850	P/L	Prop	14	4649
	L1/R8/850	P/L	Prop	18	4651
	L1/R8/850	P/L	Prop	24	4654
	L1/R8/850	P/L	Prop	30	4657
CG Times Bold Italic	L1/R8/850	P/L	Prop.	6	4665
	L1/R8/850	P/L	Prop.	8	4666
	L1/R8/850	P/L	Prop.	10	4667
	L1/R8/850	P/L	Prop.	12	4668
	L1/R8/850	P/L	Prop.	14	4669
	L1/R8/850	P/L	Prop.	18	4671
	L1/R8/850	P/L	Prop.	24	4674
	L1/R8/850	P/L	Prop.	30	4677
Univers Medium	L1/R8/850	P/L	Prop.	6	4805
	L1/R8/850	P/L	Prop.	8	4806
	L1/R8/850	P/L	Prop.	10	4807
	L1/R8/850	P/L	Prop.	12	4808
	L1/R8/850	P/L	Prop.	14	4809
	L1/R8/850	P/L	Prop.	18	4811
	L1/R8/850	P/L	Prop.	24	4812
	L1/R8/850	P/L	Prop.	30	4813
Univers Med Italic	L1/R8/850	P/L	Prop.	6	4825
	L1/R8/850	P/L	Prop.	8	4826
	L1/R8/850	P/L	Prop.	10	4827
	L1/R8/850	P/L	Prop.	12	4828
	L1/R8/850	P/L	Prop.	14	4829
	L1/R8/850	P/L	Prop.	18	4831
	L1/R8/850	P/L	Prop.	24	4834
	L1/R8/850	P/L	Prop.	30	4837
Univers Med Condensed	L1/R8/850	P/L	Prop.	6	4845
	L1/R8/850	P/L	Prop.	8	4846
	L1/R8/850	P/L	Prop.	10	4847
	L1/R8/850	P/L	Prop.	12	4848
	L1/R8/850	P/L	Prop.	14	4849
	L1/R8/850	P/L	Prop.	18	4851
	L1/R8/850	P/L	Prop.	24	4854
	L1/R8/850	P/L	Prop.	30	4857
Univers Med Cond. Italic	L1/R8/850	P/L	Prop.	6	4865
	L1/R8/850	P/L	Prop.	8	4866
	L1/R8/850	P/L	Prop.	10	4867
	L1/R8/850	P/L	Prop.	12	4868
	L1/R8/850	P/L	Prop.	14	4869
	L1/R8/850	P/L	Prop.	18	4871
	L1/R8/850	P/L	Prop.	24	4876
	L1/R8/850	P/L	Prop.	30	4877
Univers Bold	L1/R8/850	P/L	Prop.	6	4905
	L1/R8/850	P/L	Prop.	8	4906
	L1/R8/850	P/L	Prop.	10	4907
	L1/R8/850	P/L	Prop.	12	4908
	L1/R8/850	P/L	Prop.	14	4909

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
	L1/R8/850	P/L	Prop.	18	4911
	L1/R8/850	P/L	Prop.	24	4914
	L1/R8/850	P/L	Prop.	30	4917
Univers Bold Italic	L1/R8/850	P/L	Prop.	6	4925
	L1/R8/850	P/L	Prop.	8	4926
	L1/R8/850	P/L	Prop.	10	4927
	L1/R8/850	P/L	Prop.	12	4928
	L1/R8/850	P/L	Prop.	14	4929
	L1/R8/850	P/L	Prop.	18	4931
	L1/R8/850	P/L	Prop.	24	4934
	L1/R8/850	P/L	Prop.	30	4937
Univers Bold Condensed	L1/R8/850	P/L	Prop.	6	4945
	L1/R8/850	P/L	Prop.	8	4946
	L1/R8/850	P/L	Prop.	10	4948
	L1/R8/850	P/L	Prop.	12	4949
	L1/R8/850	P/L	Prop.	18	4951
	L1/R8/850	P/L	Prop.	24	4954
	L1/R8/850	P/L	Prop.	30	4957
Univers Bold Cond. Italic	L1/R8/850	P/L	Prop.	6	4965
	L1/R8/850	P/L	Prop.	8	4966
	L1/R8/850	P/L	Prop.	10	4967
	L1/R8/850	P/L	Prop.	12	4968
	L1/R8/850	P/L	Prop.	14	4969
	L1/R8/850	P/L	Prop.	18	4971
	L1/R8/850	P/L	Prop.	24	4974
	L1/R8/850	P/L	Prop.	30	4977
ITC Zapf Dingbats	14L	P/L	Prop.	6	4985
	14L	P/L	Prop.	8	4986
	14L	P/L	Prop.	10	4987
	14L	P/L	Prop.	12	4988
	14L	P/L	Prop.	14	4989
	14L	P/L	Prop.	18	4991
	14L	P/L	Prop.	24	4994
	14L	P/L	Prop.	30	4997

Optional fonts as originally found in ProCollection Cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Line Printer	ASCII	P/L	17.1	8.5	253
Courier Bold	ASCII	P/L	10	12	45
Courier Italic	ASCII	P/L	10	12	17
Courier	ASCII	P/L	12	10	84
Courier Bold	ASCII	P/L	12	10	108
Courier Italic	ASCII	P/L	12	10	92
Courier	Legal	P	10	12	51
Courier Bold	Legal	P	10	12	52
Courier Italic	Legal	P	10	10	53
Courier	Legal	P	12	10	93
Courier Bold	Legal	P	12	10	94
Courier Italic	Legal	P	12	10	95
Prestige Elite	ASCII	P/L	15	7	220

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Prestige Elite	ASCII	P/L	12	10	83
Prestige Elite Bold	ASCII	P/L	12	10	113
Prestige Elite Italic	ASCII	P/L	12	10	114
Prestige Elite	Legal	P	15	7	219
Prestige Elite	Legal	P	12	10	97
Prestige Elite Bold	Legal	P	12	10	98
Prestige Elite Italic	Legal	P	12	10	99
Letter Gothic	ACSII	P/L	27	3.6	291
Letter Gothic	ASCII	P/L	19	6	281
Letter Gothic	ASCII	P/L	17.1	9.5	257
Letter Gothic	ASCII	P/L	12	12	66
Letter Gothic Bold	ASCII	P/L	12	12	69
Letter Gothic Italic	ASCII	P/L	12	12	68
Times Roman	ASCII	P	Prop.	8	163
Times Roman	ASCII	P	Prop.	10	164
Times Roman Bold	ASCII	P	Prop.	10	165
Times Roman Italic	ASCII	P	Prop.	10	166
Times Roman	ASCII	P	Prop.	12	167
Times Roman Bold	ASCII	P	Prop.	12	168
Times Roman Italic	ASCII	P	Prop.	12	169
Times Roman	Legal	P	Prop.	8	173
Times Roman	Legal	P	Prop.	10	174
Times Roman Bold	Legal	P	Prop.	10	175
Times Roman Italic	Legal	P	Prop.	10	176
Times Roman	Legal	P	Prop.	12	177
Times Roman Bold	Legal	P	Prop.	12	178
Times Roman Italic	Legal	P	Prop.	12	179
Helvetica	ASCII	P	Prop.	8	183
Helvetica	ASCII	P	Prop.	10	184
Helvetica Bold	ASCII	P	Prop.	10	185
Helvetica Italic	ASCII	P	Prop.	10	186
Helvetica	ASCII	P	Prop.	12	187
Helvetica Bold	ASCII	P	Prop.	12	188
Helvetica Italic	ASCII	P	Prop.	12	189
Helvetica Bold	ACSII	P	Prop.	14	190
Helvetica Bold	Legal	P	Prop.	14	191

Optional font as originally found in WordPerfect cartridge:

Typeface	Symbol Set	Orient	Pitch	Point	FGID
CG Times	DskTop	P	Prop.	6	4685
CG Times	DskTop	P	Prop.	8	4686
CG Times Bold	DskTop	P	Prop.	8	4706
CG Times Italic	DskTop	P	Prop.	8	4814
CG Times	DskTop	P	Prop.	10	4867
CG Times Bold	DskTop	P	Prop.	10	4707
CG Times Italic	DskTop	P	Prop.	10	4815
CG Times	DskTop	P	Prop.	12	4688
CG Times Bold	DskTop	P	Prop.	12	4708
CG Times Italic	DskTop	P	Prop.	12	4816
CG Times	DskTop	P	Prop.	14	4689

Typeface	Symbol Set	Orient	Pitch	Point	FGID
CG Times Bold	DskTop	P	Prop.	14	4709
CG Times Italic	DskTop	P	Prop.	14	4817
CG Times Bold	DskTop	P	Prop.	18	4711
CG Times Bold	DskTop	P	Prop.	24	4714
Univers	DskTop	P	Prop.	14	4789
Univers	DskTop	P	Prop.	18	4791
Univers	DskTop	P	Prop.	24	4794

Optional fonts as originally found in Microsoft cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Helvetica	L1/R8	P	Prop.	8	34102
Helvetica	L1/R8	P	Prop.	10	34103
Helvetica Bold	L1/R8	P	Prop.	10	34123
Helvetica Italic	L1/R8	P	Prop.	10	34231
Helvetica	L1/R8	P	Prop.	12	34104
Helvetica Bold	L1/R8	P	Prop.	12	34124
Helvetica Italic	L1/R8	P	Prop.	12	34232
Helvetica Bold	L1/R8	P	Prop.	14	34125
TmsRmn	L1/R8	P	Prop.	8	5686
TmsRmn	L1/R8	P	Prop.	10	5687
TmsRmn Bold	L1/R8	P	Prop.	10	5707
TmsRmn Italic	L1/R8	P	Prop.	10	5815
TmsRmn	L1/R8	P	Prop.	12	5688
TmsRmn Bold	L1/R8	P	Prop.	12	5708
TmsRmn Italic	L1/R8	P	Prop.	12	5816
TmsRmn Bold	L1/R8	P	Prop.	14	5709
Line Printer	L1/R8	P	Prop.	835	223

Optional fonts as originally found in Polished Worksheet cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Prestige Elite	L1/R8/850	P/L	15	7	221
Prestige Elite	L1/R8/850	P/L	12	10	86
Prestige Elite Bold	L1/R8/850	P/L	12	10	111
Prestige Elite Italic	L1/R8/850	P/L	12	10	112
Prestige Elite	Legal	P/L	15	7	219
Prestige Elite	Legal	P/L	12	10	97
Prestige Elite Bold	Legal	P/L	12	10	98
Prestige Elite Italic	Legal	P/L	12	10	99
Letter Gothic	L1/R8/850	P/L	27	3.6	290
Letter Gothic	L1/R8/850	P/L	12	12	87
Letter Gothic Bold	L1/R8/850	P/L	12	12	110
Letter Gothic Italic	Legal	P/L	12	12	109
Letter Gothic	Legal	P/L	27	3.6	292
Letter Gothic	Legal	P/L	12	12	90
Letter Gothic Bold	Legal	P/L	12	12	107
Letter Gothic Italic	Legal	P/L	12	12	106
Presentational Bold	ASCII	P/L	8.1	16	434
Presentational Bold	Legal	P/L	8.1	16	431

Optional fonts as originally found in Persuasive cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Letter Gothic	ASCII	P/L	10	14	39
Letter Gothic	Legal	P/L	10	14	38
Presentational Bold	ACSII	P/L	10	14	6
Presentational Bold	Legal	P/L	10	14	7
Presentational Bold	ACSII	P/L	8.1	16	434
Presentational Bold	Legal	P/L	8.1	16	431
Presentational Bold	ACSII	P/L	6.5	18	435
Presentational Bold	Legal	P/L	6.5	18	432
Presentational Bold	ACSII	P/L	5.7	24	436
Presentational Bold	Legal	P/L	5.7	24	433
Helv Outline	ASCII	P/L	Prop.	24	34115
Helv Outline	Legal	P/L	Prop.	24	34116
Serifa	ASCII	P/L	Prop.	24	34215
Serifa	Legal	P/L	Prop.	24	34216
Line Draw	LinDrw	P/L	10	14	31
PC Line Bold	PCLin	P/L	10	14	32

Optional fonts as originally found in forms, etc. cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Univers	L1/R8/850	P/L	Prop.	6	33101
Univers	L1/R8/850	P/L	Prop.	8	33102
Univers Bold	L1/R8/850	P/L	Prop.	8	33122
Univers Bold	L1/R8/850	P/L	Prop.	10	33123
Univers Bold	L1/R8/850	P/L	Prop.	12	33124
Univers Bold	L1/R8/850	P/L	Prop.	14	33125
Helv Cond. Black Bold	TXNum	P/L	Prop.	24	34128
OCR-A	OCR-A	P	10	12	19
Tax Line Draw	Taxlin Drw	P/L	10	12	30

Optional fonts as originally found in Bar Codes & More cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Letter Gothic	L1/R-8	P/L	15	9.5	230
Letter Gothic	L1/R-8	P/L	112	12	87
Letter Gothic	L1/R-8	P/L	10	14	40
OCR-A	OCR-A	P	10	12	19
OCR-B	OCR-B	P	10	12	3
Code 3 of 9	3 of 9	P	8.1	12	60
Code 3 of 9	3 of 9	P	4.6	12	240
EAN/UPC 10 Mil	UPC	P	Prop.	12	170
EAN/UPC 13 Mil Bold	UPC	P	Prop.	12	171
USPS Zip	ZIP	P/L	Prop.	12	172
Line Draw	LinDrw	P/L	10	12	33

Optional fonts as originally found in Text Equations cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Prestige Elite	L1/R-8	P	15	7	221
Prestige Elite	L1/R-8	P	17.1	1	256
Prestige Elite	L1/R-8	P	12	10	86
Prestige Elite Bold	L1/R-8	P	12	10	111
Prestige Elite Italic	L1/R-8	P	12	10	112
CG Times	L1/R-8	P	Prop.	8	157
CG Times	L1/R-8	P	Prop.	10	158
CG Times Bold	L1/R-8	P	Prop.	10	159
CG Times Italics	L1/R-8	P	Prop.	10	155

Optional fonts as originally found in Global Text cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
CB Century Schoolbook	L1/R-8/850	P/L	Prop.	8	16950
CB Century Schoolbook	L1/R-8/850	P/L	Prop.	10	16951
CD Century Schlbk Bold	R-8	P/L	Prop.	10	16971
CD Century Schlbk Italic	R-8	P/L	Prop.	10	17079
CG Triumvirate	L1/R8	P/L	Prop.	10	33335
CG Triumvirate Bold	L1/R8	P/L	Prop.	14	33357

Optional fonts as originally found in Pretty Faces cartridge:

Typeface	Symbol Set	Orientation	Pitch	Point	FGID
Microstyle	ASCII	P	Prop.	18	5910
Microstyle Bold	ASCII	P	Prop.	36	5920
Hobo Medium	ASCII	P	Prop.	30	5930
Hobo Medium	ASCII	P	Prop.	14	5940
Thunderbird	ASCII	P	Prop.	54	5950
Signet Roundhand	ASCII	P	Prop.	18	5960
Signet Roundhand	ASCII	P	Prop.	14	5970
ITC Dingbats	ITC	P	Prop.	36	5980
ITC Dingbats	ITC	P	Prop.	18	5990

Chapter 5: ¬F 5250 Font References

The following chart lists the laser printer scalable resident fonts that are available along with the font ID (FGID) number used to select the font when using the ¬F Font Change Command. The fonts listed in this Appendix can be used in two ways:

1. Enter the Font ID (FGID) number in the Typestyle/Color menu of OfficeVision/400.

2. Embed the Font ID (FGID) number and desired point side preceded by ¬F in your host document or report.

For more information, consult the Font Change section of the 5250 SCS Printing Operation chapter.

Font	FGID
Letter Gothic	410
Letter Gothic Bold	420
Letter Gothic Italic	430
Courier	460
Courier Bold	470
Courier Italic	480
Courier Bold Italic	490
Symbol	3400
Symbol PS	3450
Wingdings	3500
Dingbats	3600
CG Omega	4919
CG Omega Bold	4939
CG Omega Italic	5047
CG Omega Bold Italic	5067
CG Times	5687
CG Times Bold	5707
CG Times Italic	5815
CG Times Bold Italic	5835
Arial	6199
Arial Bold	6219
Arial Italic	6327
Arial Bold Italic	6347
Garamond Antique	8503
Garamond Halbfett	8523
Garamond Kursiv	8631
Garamond Kursiv Halbfett	8651
Coronet	8759
Clarendon Condensed	8779

Font	FGID
Marigold	8887
Albertus Medium	12855
Albertus Extra Bold	12875
Times New	16951
Times New Bold	16971
Times New Italic	17079
Times New Bold Italic	17099
Antique Olive	33335
Antique Olive Bold	33355
Antique Olive Italic	33463
Univers Medium Condensed	33591
Univers Bold Condensed	33601
Univers Medium Condensed Italic	33719
Univers Bold Condensed Italic	33729
Univers Medium	34103
Univers Bold	34123
Univers Medium Italic	34231
Univers Bold Italic	34251
Helvetica	33103
Helvetica Bold	33123
Helvetica Oblique	33231
Helvetica Oblique Bold	38251
Helvetica Narrow	31103
Helvetica Narrow Bold	31123
Helvetica Narrow Oblique	31231
Helvetica Narrow Oblique Bold	31251
Palatino Roman	6099
Palatino Bold	6119
Palatino Italic	6227
Palatino Bold Italic	6247
ITC Avant Garde Gothic Book	32591
ITC Avant Garde Gothic Demi	32601
ITC Avant Garde Gothic Book Oblique	32719
ITC Avant Garde Gothic Demi Oblique	32729
ITC Bookman Light	4909
ITC Bookman Demi	4929
ITC Bookman Light Italic	5037
ITC Bookman Demi Italic	5057
New Century Schoolbook Roman	16941
New Century Schoolbook Bold	16961
New Century Schoolbook Italic	17069
New Century Schoolbook Bold Italic	17089

3812 font numbers which use the CG Times Typeface

Font	FGID
Sonoran-Serif	751
Sonoran-Serif	1051
Sonoran-Serif Bold	1053
Sonoran-Serif Italic	1056
Sonoran-Serif	1351
Sonoran-Serif Bold	1653
Sonoran-Serif Bold	2103