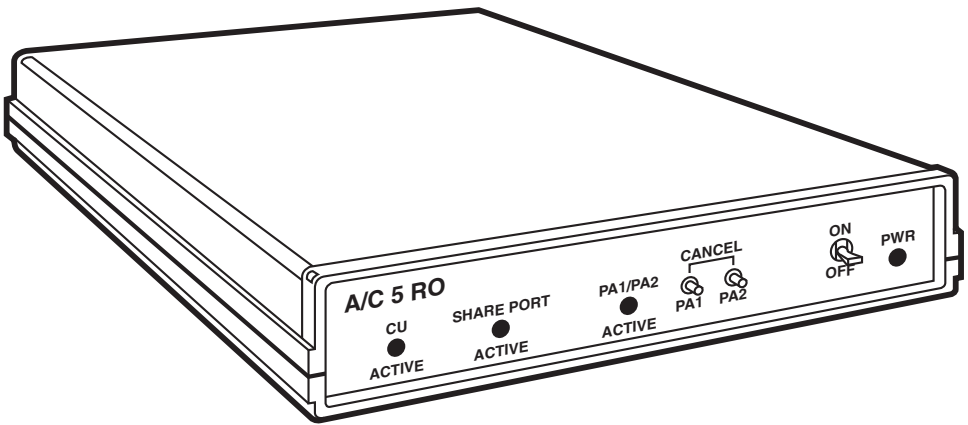




A/C 5 RO



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NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

Input Protocol —	IBM 3270 coax LU1 (Logical Unit 1) or LU3 (Logical Unit 3) and Centronics parallel
Output Protocol —	Centronics compatible parallel protocol
Receive Data Rate —	Maximum burst: 2.3587 million bits/second
Data Buffering —	4K coax communication buffer
Language Support —	Standard IBM 3174 controller language selections
Connectors —	Female BNC coax connector, 36-pin parallel connector for alternate host (PC) sharing, 25-pin IBM PC parallel output connector to the printer, and center-post power connector.
Indicators —	(4) LEDs: (1) green for communication status (CU); (1) green for power, (1) red for PA1/PA2, (1) yellow for shared port active
Switches —	Two push buttons: PA1 and PA2
Power —	115 VAC, 60 Hz, 15 watts
Size —	1.5"H x 6.25"W x 9.75"D (3.8 x 15.9 x 24.8 cm)
Weight —	2.5 lb. (1.1 kg)

2. Introduction

The A/C 5RO with PC auto parallel sharing port is an external protocol converter. It allows the direct connection of supported dot-matrix and laser printers to a coax type-A adapter of an IBM® 3174/3274/3276 Control Unit or IBM 3270 main-frame system. In addition, a Centronics® compatible port with auto switching allows a PC or alternate host to share the printer with the 3270 host, so you can get the most out of your printer.

The A/C 5 RO can emulate IBM 3287, 3268, 4214-1, and 4224 (non-IPDS) dot-matrix printers and IBM 3812 and 4028 (non-IPDS) laser printers. When the A/C 5 RO is connected to a laser printer, the Computer Output Reduction (COR) feature automatically reduces data-processing reports so they can be printed on letter-size paper. Also, custom Font IDs allow you to specify multiple fonts that will automatically be used in your documents.

The A/C 5 RO supports LU3 (DSC) and LU1 (SCS) mode printing. It has a large selection of user-definable setup selections (including IBM RPQ options) that can be changed and stored in non-volatile memory using commands imbedded in documents sent to the printer (downloaded from the host). A Command Pass-Thru (hex transparency) feature allows a user to access the special features of the printer directly from the coax host. The A/C 5 RO does not support coax host-controlled color printing options.

2.1 Opening the Package

Make sure the A/C 5 RO package includes all items listed below:

- A/C 5 RO.
- Wall mount transformer (12 VAC Output).
- IBM standard PC parallel cable for connecting to the printer.

2.2 LEDs

There are four LEDs on the front panel of the A/C 5 RO.

When the green CU LED is lit, the control unit is communicating with the A/C 5 RO. **When the green CU LED is off**, the control unit is not communicating with the A/C 5 RO.

When the red LED is lit, the Program Attention (PA) manual option (see Appendix A, command 35) is active. The printer received a request (from the host software) for a you to press the PA button so printing can continue. **If the red LED flashes twice**, you pressed and released both front panel buttons at the same time, which sends a "Cancel" message to the host.

If the red LED remains on after the A/C 5 RO is turned on, the A/C 5 RO had problems during the self-test. (The red LED should go off if the self-test was normal.)

If the yellow shared port LED comes on, the A/C 5 RO is receiving data into the PC shared port.

2.3 Front-Panel Pushbuttons

There are two pushbuttons on the front panel.

If you press the left button only, the following occurs:

- A PA1 response when the red LED is on.
- The A/C 5 RO prints out a page listing the current setup when this button is pressed and held for 2 seconds. If the coax cable is disconnected, then a RAM/ROM self-test is also performed and the results are printed.
- A YES response during push-button setup (see Appendix B).

If you press the right button only, the following occurs:

- A PA2 response when the red LED is on.
- Restoration of factory-default setup.
- A NO response during push-button setup (see Appendix B).

If you press both buttons, the following occurs:

- After turning on, if both buttons are pressed and released (for less than one second) a cancel signal is sent to the host. The red LED flashes twice to con-firm the cancel signal was sent.

NOTE

The printer will continue printing until its buffer is empty.

- After turning on, if both buttons are pressed and held more than two seconds, the A/C 5 RO enters the hexadecimal (buffer dump) diagnostic printing mode. The printer then prints **Buffer print is active** and the green LED blinks twice. Turn off the printer to exit this mode or press and hold both buttons for more than two seconds. (Also, see Command 42 in Appendix A for a download command)

3. Installation

The A/C 5 RO is small and light. It can be placed in any convenient location with the center-post barrel power connector from the wall-mounted transformer inserted into the opening on the back of the box. The PC parallel printer cable connects the 25-pin connector on the back of the Card to the 36-pin parallel connector on the printer.

The Centronics connector on the A/C 5 RO can be used for automatic alternate host (PC) sharing by using a parallel printer share cable.

The A/C 5 RO is supplied with default setup selections stored in its non-volatile memory. These default selections will suffice for many user requirements. Refer to Appendix A for a listing of the user-definable setup selections and custom features.

NOTE

Whenever the printer is powered off, the A/C 5 RO must also be powered off to assure that they stay in sync with each other.

Executing a Self-Test

Verify proper connection of the A/C 5 RO to the printer by performing a self-test. The self-test prints out the current setup selections.

1. Before testing the A/C 5 RO, perform a test of the printer to confirm that it is functional. Refer to instructions in the printer's manual. Do not proceed unless the printer is operational.
2. To test the A/C 5 RO, disconnect the coax and Centronics connectors from the unit and turn the printer and A/C 5 RO on. After the printer is ready, press the PA1 button on the A/C 5 RO and hold it for three seconds. Release the button and the self-test results are printed as well as a listing of the setup selections.
3. The printer prints out the self-test page if the A/C 5 RO is connected properly.
4. If nothing prints, the A/C 5 RO is not connected properly. Be sure the printer's parallel port is properly selected in its setup. You can perform a separate test of the A/C 5 RO by disconnecting the coax and Centronics connectors and repeating the self-test sequence. If the LED displays red for one-half second and then goes out, it indicates successful completion of the power on self-tests. If the red LED remains on, the self-tests found a problem with the A/C 5 RO.

4. Configuration

After connecting the A/C 5 RO to the printer and performing a self-test, the unit is ready to operate in most environments. The factory-default settings are satisfactory for most programs and applications. Be sure to check Command 60 on the self test print out to confirm that the A/C 5 RO is configured correctly for either a dot-matrix or laser printer.

All configuration selections can be changed by simply embedding commands (as defined in Appendix A) in a 3270 print job or print screen (hard copy) that is sent to the printer. These are called Host Download Commands. If the embedded command is sent correctly, the characters that create the command are not printed. If the command is printed, then the A/C 5 RO did not recognize the command because of a problem in the format of the command. Correct the problem and send the command again. If you wish to confirm the active setup selections for the printer, you can print a listing page by either pressing and holding the top button for 2 seconds or sending the **98,1** command to the A/C 5 RO.

Unless the **99,0** command is sent to save the active setup in non-volatile memory, the configuration commands change only the active setup values and are lost when the printer is turned off. By sending a **98,1** command immediately after turning on the printer, you can identify the selections that are stored in memory of the A/C 5 RO.

If a coax host is not available and basic setup selections need to be changed, the A/C 5 RO has the option of a push-button setup as defined in Appendix B. This option enables the basic features and RPQ options to be selected.

4.1 Restoring the Factory-Default Configuration

The factory default configuration selections can be restored to the memory of the A/C 5 RO by either sending a Host Download Command **98,0** or by turning on the printer when the coax cable is disconnected and performing the following steps:

1. Press and hold the right (PA2) button for more than two seconds and then release; the red and green LED begin to flash alternately.
2. Press and release the left (PA1) button; only the green LED flashes.
3. Press and release the right (PA2) button; the red LED flashes two times.
4. Sequence is complete. Factory defaults are restored to the memory of the A/C 5 RO.

4.2 Printer Feature Access Methods

This unit features three methods for accessing the special features of printer not normally available in the IBM printers being emulated:

- Command Pass-Thru
- Custom User Strings
- SCS Mode Transparent Data

Each of these methods is described below.

4.2.1 COMMAND PASS-THRU

The Command Pass-Thru (hex transparency) feature allows the user to access all of the built-in features of the printer whether or not these features can be accessed by the IBM host software. Command Pass-Thru provides a method of placing printer specific command sequences into the data sent to the printer from the host. The A/C 5 RO recognizes these special sequences and Passes the Command Thru to the printer. This feature lets you access all of the printer's features such as color printing, superscripts, and subscripts.

Command Pass-Thru is accomplished by converting the printer command sequence into a series of two digit Hexadecimal values. For example, an Escape has a decimal value of 27 and a Hexadecimal value of 1B. In Command Pass-Thru, an Escape is the character 1 followed by the character B. To allow the A/C 5 RO to recognize the sequence, it is preceded and followed by a delimiter sequence consisting of an ampersand (&), followed by a percent (%). Several commands may be contained within the enclosing **&%** pairs. Once the first **&%** is detected, the A/C 5 RO passes hexadecimal data to the printer until it receives the next **&%** or a character is received that is not in the hexadecimal range of 0-9 or A-F (upper case letters only).

In addition, you have the option of selecting a different delimiter sequence using setup command 40 (see Appendix A, command 40).

In order to highlight a passage in a document, you may wish to use an EPSON® printer command such as the emphasized mode. The printer command sequence for emphasized printing listed in your EPSON printer's manual is ESC E, or 1B 45 in hexadecimal, to begin empha-sized print, and ESC F, or 1B 46 in hexadecimal, to end emphasized print.

At the point in the document where emphasized printing is desired, the sequence **&%1B 45&%** should appear. When you wish to cancel emphasized printing, insert the sequence **&%1B 46&%**. If the document is viewed on a CRT terminal, these characters are displayed. During printing, however, these command sequences only start and stop emphasized mode. They do not appear on the paper and do not take up any space.

NOTE

In this example, the characters are separated by spaces for clarity. The spaces between each individual character must be removed from the actual command, but single spaces between pairs of hexa-decimal characters are permitted.

Rules for using Command Pass-Thru:

- Command Pass-Thru must begin with an **&%** or the alternate delimiter characters specified in Command 40.
- Hexadecimal values must be used in the command. These values represent ASCII data which is understood by the EPSON printer.
- Valid characters for hex codes are 0–9 and A–F (upper case letters only).
- No spaces are allowed in the command between the delimiter sequence **&%** and the first hexadecimal value.
- A single space is permitted, but not required, to separate pairs of hexadecimal letters (to aid in easier interpretation of the hex codes).
- If an error in formatting the command sequence occurs, the A/C 5 RO will resume printing at the point in the sequence where the error occurs.
- The data included in a Command Pass-Thru string can span print buffers. This allows transmission of long strings of hexadecimal data.
- During Command Pass-Thru, the A/C 5 RO ignores control codes (NL, LF, CR and FF) but honors the EM code.

4.2.2 CUSTOM USER STRINGS

Host download Command 55 (see Appendix A, Command 55) allows a user to permanently define six custom user strings that are frequently used (for example, a special font selection). The custom user string is activated by simply putting the delimiter (**&%**), a capital letter **U**, and the number of the desired custom user string in the text of a page: for example, **&%U3**. The custom user strings can be any combination of text or special commands for the printer, especially ones that are often used.

4.2.3 SCS MODE TRANSPARENT DATA

SCS transparent mode (SCS TRN code 35) provides a method for transparent data transmission when operating in LU1 mode. To use this method, you must be connected to a system using SNA protocol and be operating as a Logical Unit Type 1.

An SCS TRN sequence begins with a one-byte binary count immediately following the TRN code. The count indicates the number of bytes, not including the count byte, of transparent data to follow. Up to 256 bytes of transparent data can be sent in each sequence.

SCS TRN data is user-defined and is not scanned for SCS control codes. However, to emulate the characteristics of the IBM 3287, non-printable characters (the control characters) are converted to hyphens. Data is translated to ASCII, with undefined characters printed as hyphens. The A/C 5 RO offers a configurable option to emulate the IBM 3287 or to pass the data without translation. Refer to Appendix A, Command 35.

Another method of Transparent Data Transmission is the SCS TRN code 36, defined by Xerox®. Generally accepted for use in laser-printer applications, this method is the same as the non-translate method above. Control-code sequence rules are the same for SCS code 36 as for code 35.

4.3 Alternate Host (PC) Auto Parallel Sharing

The A/C 5 RO has a Centronics parallel connector, which lets it automatically share the printer between the 3270 host and the alternate host (usually a personal computer). The A/C 5 RO periodically checks the 3270 host and the PC until it finds input data to be printed. The A/C 5 RO continues to print using data from the current source until the input data stops and no additional data is received for the period of time specified with Commands 50 or 51. (Factory defaults are 5 seconds for the parallel port and 10 seconds for the 3270 port.) The other source is then checked for the presence of data to be printed. The automatic checking for data from either sources is accomplished constantly when both hosts are idle. The host with the first data has printing priority until it has printed all of its data and remained idle for the interval specified in Commands 50 or 51.

The attached printer may have large print buffers, so the printer may not actually stop printing between print jobs, even through the A/C 5 RO pauses for the specified time period without passing data to the printer before changing to the other port. While the 3270 host is active, the parallel port accepts the first parallel byte and then goes busy. This lets the A/C 5 RO know that parallel data is waiting.

Conversely, while the parallel port is printing, the 3270 coax port will receive data and then send a busy signal to the host until the printer is available (the timeout period on the parallel port has expired with no additional data having been received). PC printing longer than 10-20 minutes may cause the 3270 host to drop communication with the printer.

Prior to printing a coax host document, if the previous document comes from the PC sharing port, the A/C 5 RO sends the coax port initialization string to the printer and restores the printer's format that was last specified by the coax host when switching to coax printing (see Appendix A, Command 57). Also, before printing an initial document from the PC Share port, the A/C 5 RO sends the user defined shared port initialization string (see Appendix A Command 56). The alternate (PC) host must send the printer all of the necessary formatting instructions and commands for correct printing.

4.4 Parallel Interface Specification

The A/C 5 RO provides a Centronics parallel data input port to allow automatic sharing of the printer between the 3270 host and an alternate PC host. The parallel interface was designed to be compatible with popular printer interfaces found on personal computers. Table 4-1 is a description of the parallel interface signals:

Table 4-1. Parallel Interface Signals.

SIGNAL PIN	PIN	RETURN SIGNAL	DIRECTION	DESCRIPTION
1	19	STROBE	IN	STROBE pulse to read data in. Pulse width must be more than 0.5 micro-seconds at the A/C 5 RO.
2 3 4 5 6 7 8 9	20 21 22 23 24 25 26 27	DATA1 DATA2 DATA3 DATA4 DATA5 DATA6 DATA7 DATA8	IN IN IN IN IN IN IN IN	These signals represent information in bits 1 to 8 of parallel data respectively. Each signal is HIGH when data is logical 1 and LOW when it is logical 0.
10	28	ACKNLG	OUT	A LOW pulse with a minimum length of 4 micro-seconds. A LOW indicates that data has been received and that the printer is ready to accept more data.
11	29	BUSY	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH in these cases: 1.Data entry, for each character. 2.When off line or in error state. 3.When a byte of parallel data is received from the 3270 host.
12	30	PE	OUT	HIGH when the printer is out of paper.
13		SLCT	OUT	Pulled up to +5V through a 3.3K ohm resistance.

Table 4-1 (continued). Parallel Interface Signals.

SIGNAL PIN	PIN	RETURN SIGNAL	DIRECTION	DESCRIPTION
14	—	AUTO	IN	This signal is NOT supported by the A/C 5 RO. Defined by older printers to add a LF to each CR. IBM protocol does not support this signal.
15	—	NC	—	Not used.
16	—	GND	—	Logic ground.
17	—	CGND	—	Chassis ground.
18	—	NC	—	Not used.
19–30	—	GND	—	Twisted pair ground returns.
31	—	INIT	IN	Defined to reset and clear the printer when low, the reset and clear are NOT supported as the IBM host cannot be interrupted by this signal. An ACKNLG is generated for handshaking.
32	—	ERROR	OUT	This signal goes low when the printer is in an error state such as out of paper.
33	—	GND	—	Logic ground.
34	—	NC	—	Not used.
35	—	HIGH	—	Pulled up to +5V through a 3.3K ohm resistance.
36	—	SLCTIN	—	Not supported.

NOTE

The standard Centronics 36-pin connector used is a DDK type DHA-36 or equivalent.

The column heading DIRECTION refers to the direction of signal flow as viewed from the A/C 5 RO.

RETURN denotes the twisted-pair return, to be connected at signal ground level. For the A/C 5 RO wiring, be sure to use twisted-pair cable for each signal and to complete the connection on the return side. The cable should be shielded and connected to the chassis of the host computer and printer.

All A/C 5 RO conditions are based on TTL levels. Both the rise and the fall times of each signal must be less than 0.2 microseconds.

Data transfer must be carried out by observing the ACKNLG or BUSY signals. Data transfer to the printer can be carried out only after receipt of the ACKNLG signal or when the level of the BUSY signal is LOW. (See Figure 4-1.)

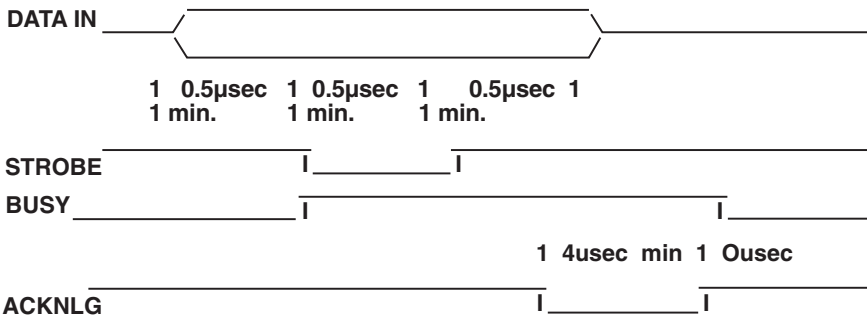


Figure 4-1. Data Transfer in the A/C 5 RO.

Data must be present a minimum of 0.5 microseconds before and after the minimum 0.5-microsecond STROBE pulse. BUSY goes high before the end of the STROBE signal and remains high until the end of an ACKNLG pulse. The ACKNLG pulse is a minimum of 4 microseconds. (See Figure 4-1.)

4.5 Laser Printer Capabilities

The setup summary pages that print out have various options for laser printers only. Command 32, Paper Size, lets you select whether letter, legal, or A-4 paper will be used. Carefully review the explanations in Appendix A to understand the options.

4.6 Computer Output Reduction (COR)

4.6.1 HP LASERJET EMULATION

The landscape printing capability of the HP® LaserJet® emulation enables the A/C 5 RO to automatically print traditional data-processing reports requiring 66 lines by 132 columns or 198 columns of data on 8.5" x 11" paper.

When Command 60 selects HP LaserJet protocol, APO is active (Command 61), and COR is selected for the paper source specified (Commands 62-64), 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.
- A half-inch blank area is provided on the top and left edge of the paper.
- The selected font is changed, as follows:
 - 10 pitch to 13.3 pitch
 - 12 pitch to 15 pitch
 - 15 pitch to 19 pitch
- For IBM PPDS laser printers, all COR printing is limited to 17 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 DSC, DSE, or LU1 (SCS) data streams.

Some data-processing applications will not allow you to insert the data-stream commands required to select orientation and format. Where the insertion of the required data stream commands is not possible, you can select the orientation and format by using the A/C 5 RO's default configuration settings. Use of the Write Control Character (WCC) in the DSC/DSE data streams for orientation and format selection is not recommended.

Using the HP LaserJet emulation, the COR feature lets you print 132-column by 66-line and 198-column by 66-line data processing reports on 8.5" x 11" paper in landscape orientation.

4.6.2 IBM PPDS LASER EMULATION

The IBM PPDS emulation enables the A/C 5 RO to print up to 173 columns x 66 lines in landscape orientation. The IBM PPDS emulation is limited to a 17.1-pitch resident font, so a maximum of 173 columns can be printed on an 8.5" x 11" page. The HP emulation is recommended for COR printing since it allows the horizontal spacing to be compressed. COR is enabled by the following:

1. Use Command 60 to select IBM PPDS emulation (value 0).
2. Select APO active with Command 61 (value 0).
3. Select COR for the paper source with Commands 62-64 (value 0).

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.
- A half-inch blank area is provided on the top and left edge of the paper.
- The select pitch is changed, as follows:
 - 10 pitch to 17.1 pitch
 - 12 pitch to 17.1 pitch
 - 15 pitch to 17.1 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 DSC, DSE, or LU1 (SCS) data streams.

Some data-processing applications will not let you insert the data-stream commands required to select orientation and format. Where such commands are not possible, you can select the orientation and format desired by using the A/C 5 RO's default configuration settings. Use of the Write Control Character (WCC) in the DSC/DSE data streams for orientation and format selection is not recommended.

4.7 Automatic Print Orientation

When Automatic Print Orientation (APO) is specified active (see Appendix A, Command 61), the A/C 5 RO notes the page format parameters of the print image and calculates the required print dimensions in inches. The page calculations are based on the following equations:

$$\text{Requested Print Width (in inches)} = \text{Characters per line (MPP)} \div \text{Characters per inch (CPI)}$$

$$\text{Requested Print Length (in inches)} = \text{Lines per page (MPL)} \div \text{Lines per inch (LPI)}$$

Example:

The printer calculates a 13.2" x 11" page size if:

Characters per line = 132
 Font = 10 pitch (CPI)
 Lines per page = 66
 Lines per inch = 6

Because the calculated paper size is larger than 8.5" x 11", the Paper Tray Orientation selection (see Appendix A, Commands 62-64) determines the orientation of the printing. See Figure 4-2.

In LU3 (DSC/DSE) mode, the values of the parameters used in the calculations are those specified by the A/C 5 RO's active configuration selections. In LU1 (SCS) mode, the values used are those specified in the data stream by the SCS controls. If a value has not been set in the SCS data stream, the A/C 5 RO's active configuration is used.

Understand that the A/C 5 RO does not supply automatic orientation based on the amount of incoming data from the host for each line or page. The values must be provided in the data stream or by use of the printer's configuration selections.

The Automatic Print Orientation (APO) feature also uses the requested print width and print length as specified above to determine the print orientation when the print dimensions are less than the 8.5" x 11" paper size. When the width is greater than the length and APO is active, the document prints in landscape regardless of whether the user specified a portrait font ID. You should be aware of the significance of the specified form size (as defined by the MPP and MPL) and select these values in accordance with your desired orientation when APO is active.

4.8 Page-Orientation Logic

The page-orientation logic is as shown in Figure 4-2 depending on whether APO in Command 61 is active and the Paper Tray Orientation selections made in Commands 62 to 64. The requested print length and width is important when APO is active as illustrated below.

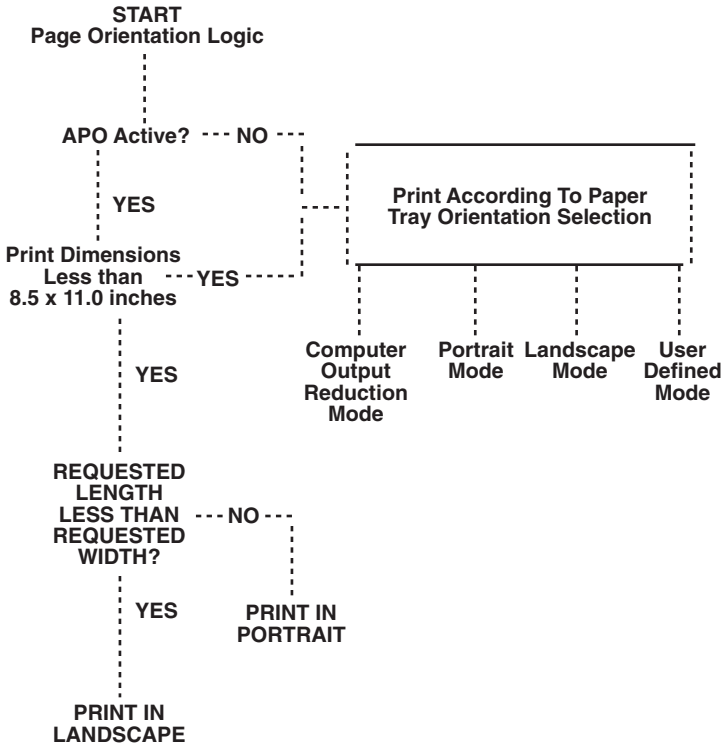


Figure 4-2. Page Orientation Logic.

4.9 Print Position and Page Length

Table 4-2 outlines the PMPP (Physical Maximum Print Position) and PMPL (Physical Maximum Page Length) for letter, legal, and A4 paper.

Table 4-2. Print Position and Page Length.

Paper Size	PMPP				PMPL AT			
	10 CPI	12 CPI	15 CPI	17.1 CPI	6 LPI	8 LPI	TRUE 6 LPI	TRUE 8 LPI
Letter								
Portrait	80	96	120	136	66	88	63	84
Landscape	105	126	157	178	50	67	48	64
COR, HP	136	154	201	201	66	89	—	—
COR, PPDS	176	176	176	176	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	62

4.10 Font Identifier Codes

When Command 60 of the A/C 5 RO is used to select HP LaserJet or IBM PPDS Laser emulation, you can change fonts by simply including the font identifier ID code in the text of the document being printed. Note that there are two separate tables for font assignments. Table 4-3 is for standard HP LaserJet printers and printers emulating a LaserJet Printer. Table 4-4 is for IBM 4029/4019 printers in either the IBM mode or HP mode of operation as selected in Command 60.

Tables 4-3 and 4-4 provide a summary listing of the font identifier codes for the printer's resident fonts and the optional font cartridges. The code consists of the delimiter characters (&% or alternate delimiters) plus the letter P or L depending on whether you want portrait or landscape printing, and the font ID number.

If the font you want to use is not listed with a font ID number, it is simple to assign the font command to a custom user string and access the font by using the user string command.

Example: Code **&%L086** identifies a landscape Prestige 12 CPI font. If the font cartridge is not installed, then the printer automatically selects an alternate "best fit" landscape font and uses it to print the document.

You can make multiple font changes in a document as long as all fonts are specified in the same orientation. A change in orientation (portrait or landscape) automatically ejects the page. A blank page at the first of a document is often caused by a change in orientation. A font ID must be at the first position on the very first line of the page when it specifies a change in orientation from the previously printed page, or a blank page is ejected.

Table 4-3. Typestyle Reference for HP LaserJet Printers.

Typeface	Symbol Set	Orientation	Pitch, Point Size	Typestyle Number
RESIDENT FONTS				
HP Laserjet Internal Resident Fonts				
Courier	R-8	P/L	10, 12	11
Line Printer	R-8	P/L	15, 9	223
Line Printer	R-8	P/L	17.1, 8.5	254
Line Printer	R-8	P/L	19, 8	282
Line Printer	R-8	P/L	13.33, 9.5	201
LaserJet IID, III, IIID, Printers also have:				
Courier	R-8	P/L	10, 12	46
Courier	R-8	P/L	10, 12	85
Courier italic	R-8	P/L	10, 12	18
Courier bold	R-8	P/L	10, 12	88
Courier	R-8	P/L	12, 10	89
HP CARTRIDGE FONTS				
General Cartridge & Download Fonts				
Times	R-8	P	Prop., 8	157
Times	R-8	P	Prop., 10	158
Times Bold	R-8	P	Prop., 10	159
Times Italic	R-8	P	Prop., 10	155
Helvetica Bold	R-8	P	Prop., 14.4	34126
Courier Bold	R-8	P/L	10, 12	46
Courier Italic	R-8	P/L	10, 12	18
Prestige	R-8	P/L	12, 10	86
Prestige Bold	R-8	P/L	12, 10	111

Table 4-3 (continued). Typestyle Reference for HP LaserJet Printers.

Typeface	Symbol Set	Orientation	Pitch, Point Size	Typestyle Number
Prestige Italic	R-8	P/L	12, 10	112
Letter Gothic	R-8	P/L	12, 12	87
Letter Gothic Bold	R-8	P/L	12, 12	110
Letter Gothic Italic	R-8	P/L	12, 10	112
Helvetica	ASCII	P	Prop., 6	181
Helvetica	ASCII	P	Prop., 8	183
General Cartridge and Download Fonts				
Helvetica Bold	ASCII	P	Prop., 8	182
Helvetica Bold	ASCII	P	Prop., 10	185
Helvetica Bold	ASCII	P	Prop., 12	188
Helvetica Bold	ASCII	P	Prop., 14	190
Tax Line Draw	LinDrw-7	P	10, 12	34
Letter Gothic	R-8	P	10, 14.4	40
Letter Gothic	R-8	P	17.1, 9.4	255
OCR-A 10N	OCR-A	P	10, 12	19
OCR-B 10N	OCR-B	P	10, 12	3
Code 3-9 4.6N	3 of 9	P	4.6, 12	240
Code 3-9 9.3N	3 of 9	P	9.3, 12	61
EAN/UPC Bold Bar Code	UPC	P	Prop., 12	171
EAN/UPC Bar Code	UPC	P	Prop., 12	170
Procollection Cartridge				
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	85
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, 12	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
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

Table 4-3 (continued). Typestyle Reference for HP LaserJet Printers.

Typeface	Symbol Set	Orientation	Pitch, Point Size	Typestyle Number
Prestige Elite Bold	Legal	P	12, 10	98
Prestige Elite Italic	Legal	P	12, 10	99
Procollection Cartridge				
Letter Gothic	ASCII	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	ASCII	P	Prop., 14	190
Helvetica Bold	Legal	P	Prop., 14	191
WordPerfect® Cartridge				
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
WordPerfect Cartridge				
CG Times	DskTop	P	Prop., 10	4687
CG Times Bold	DskTop	P	Prop., 10	4707
CG Times Italic	DskTop	P	Prop., 10	4815

Table 4-3 (continued). Typestyle Reference for HP LaserJet Printers.

Typeface	Symbol Set	Orientation	Pitch, Point Size	Typestyle Number
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
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
Microsoft® Cartridge				
Helv	R-8	P	Prop., 8	34102
Helv	R-8	P	Prop., 10	34103
Helv Bold	R-8	P	Prop., 10	34123
Helv Italic	R-8	P	Prop., 10	34231
Helv	R-8	P	Prop., 12	34104
Helv Bold	R-8	P	Prop., 12	34124
Helv Italic	R-8	P	Prop., 12	34232
Helv Bold	R-8	P	Prop., 14	34125
TmsRmn	R-8	P	Prop., 8	5686
TmsRmn	R-8	P	Prop., 10	5687
TmsRmn Bold	R-8	P	Prop., 10	5707
TmsRmn Italic	R-8	P	Prop., 10	5815
TmsRmn	R-8	P	Prop., 12	5688
TmsRmn Bold	R-8	P	Prop., 12	5708
TmsRmn Italic	R-8	P	Prop., 12	5816
TmsRmn Bold	R-8	P	Prop., 14	5709
Line Printer	R-8	P/L	15, 8.5	223
Polished Worksheets Cartridge				
Prestige Elite	R-8	P/L	15, 7	221
Prestige Elite	R-8	P/L	12, 10	86
Prestige Elite Bold	R-8	P/L	12, 10	111
Prestige Elite Italic	R-8	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	R-8	P/L	27, 3.6	290
Letter Gothic	R-8	P/L	12, 12	87

Table 4-3 (continued). Typestyle Reference for HP LaserJet Printers.

Typeface	Symbol Set	Orientation	Pitch, Point Size	Typestyle Number
Letter Gothic Bold	R-8	P/L	12, 12	110
Letter Gothic Italic	R-8	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
Presentation Bold	ASCII	P/L	8.1, 16	434
Presentation Bold	Legal	P/L	8.1, 16	431
Persuasive Presentations Cartridge				
Letter Gothic	ASCII	P/L	10, 14	39
Letter Gothic	Legal	P/L	10, 14	38
Presentation Bold	ASCII	P/L	10, 14	6
Presentation Bold	Legal	P/L	10, 14	7
Presentation Bold	ASCII	P/L	8.1, 16	434
Presentation Bold	Legal	P/L	8.1, 16	431
Presentation Bold	ASCII	P/L	6.5, 18	435
Presentation Bold	Legal	P/L	6.5, 18	432
Presentation Bold	ASCII	P/L	5.7, 24	436
Presentation 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
Persuasive Presentations Cartridge				
Line Draw	LinDrw	P/L	10, 14	31
PC Line Bold	PcLin	P/L	10, 14	32
Forms, Etc Cartridge				
Univers	R-8	P/L	Prop., 6	33101
Univers	R-8	P/L	Prop., 8	33102
Univers Bold	R-8	P/L	Prop., 8	33122
Univers Bold	R-8	P/L	Prop., 10	33123
Univers Bold	R-8	P/L	Prop., 12	33124
Univers Bold	R-8	P/L	Prop., 14	33125
Helv. Cond. Black Bold	TaxNum	P/L	Prop., 24	33128
OCR-A	OCR-A	P	Prop., 12	19
Tax Line Draw	TaxLinDrw	P/L	Prop., 12	30

Table 4-3 (continued). Typestyle Reference for HP LaserJet Printers.

Typeface	Symbol Set	Orientation	Pitch, Point Size	Typestyle Number
Bar Codes & More Cartridge				
Letter Gothic	R-8	P/L	15, 9.5	230
Letter Gothic	R-8	P/L	12, 12	87
Letter Gothic	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
Text Equations				
Prestige Elite	R-8	P	15, 7	221
Prestige Elite	R-8	P	17.1, 7	256
Prestige Elite	R-8	P	12, 10	86
Prestige Elite Bold	R-8	P	12, 10	111
Prestige Elite Italic	R-8	P	12, 10	112
CG Times	R-8	P	Prop., 8	157
CG Times	R-8	P	Prop., 10	158
CG Times Bold	R-8	P	Prop., 10	159
CG Times Italic	R-8	P	Prop., 10	155
Global Test Cartridge				
CG Century Schoolbook	R-8	P/L	Prop., 8	16950
CG Century Schoolbook	R-8	P/L	Prop., 10	16951
CG Century Schlbk Bld	R-8	P/L	Prop., 10	16971
CG Century Schlbk Itl	R-8	P/L	Prop., 10	17079
CG Triumvirate	R-8	P/L	Prop., 10	33335
CG Triumvirate Bold	R-8	P/L	Prop., 14	33357
Pretty Faces Cartridge				
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

Table 4-3 (continued). Typestyle Reference for HP LaserJet Printers.

Typeface	Symbol Set	Orientation	Pitch, Point Size	Typestyle Number
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
Resident Fonts				
Courier	CP850		10, 12	11
Courier Bold	CP850		10, 12	46
Courier	CP850		10, 12	85
Courier	CP850		Prop., 12	159
Courier	CP850		17.1, 8.5	254
Courier	CP850		17.1, 8.5	223
Courier Outline	CP850		Prop., 6	416
(scalable fonts are only in the IBM 4029)	CP850		Prop., 8	426
	CP850		Prop., 10	436
	CP850		Prop., 12	446
	CP850		Prop., 14	456
	CP850		Prop., 18	466
	CP850		Prop., 24	476
	CP850		Prop., 30	486
Courier Bold Outline	CP850		Prop., 6	420
	CP850		Prop., 8	430
	CP850		Prop., 10	440
	CP850		Prop., 12	450
	CP850		Prop., 14	460
	CP850		Prop., 18	470
	CP850		Prop., 24	480
	CP850		Prop., 30	490
Courier Italic Outline	CP850		Prop., 6	424
	CP850		Prop., 8	434
	CP850		Prop., 10	444
	CP850		Prop., 12	454
	CP850		Prop., 14	464
	CP850		Prop., 18	474
	CP850		Prop., 24	484
	CP850		Prop., 30	494

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Resident Fonts			
Courier Bold Italic Outline	CP850	Prop., 6	428
	CP850	Prop., 8	438
	CP850	Prop., 10	448
	CP850	Prop., 12	458
	CP850	Prop., 14	468
	CP850	Prop., 18	478
	CP850	Prop., 24	488
	CP850	Prop., 30	498
Helvetica Outline	CP850	Prop., 6	2304
	CP850	Prop., 8	2314
	CP850	Prop., 10	2324
	CP850	Prop., 12	2334
	CP850	Prop., 14	2344
	CP850	Prop., 18	2354
	CP850	Prop., 24	2364
	CP850	Prop., 30	2374
Helvetica Bold Outline	CP850	Prop., 6	2305
	CP850	Prop., 8	2315
	CP850	Prop., 10	2325
	CP850	Prop., 12	2335
	CP850	Prop., 14	2345
	CP850	Prop., 18	2355
	CP850	Prop., 24	2365
	CP850	Prop., 30	2375
Helvetica Ital Outline	CP850	Prop., 6	2306
	CP850	Prop., 8	2316
	CP850	Prop., 10	2326
	CP850	Prop., 12	2336
	CP850	Prop., 14	2346
	CP850	Prop., 18	2356
	CP850	Prop., 24	2366
	CP850	Prop., 30	2376

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Resident Fonts			
Helvetica Bold Italic Outline	CP850	Prop., 6	2307
	CP850	Prop., 8	2317
	CP850	Prop., 10	2327
	CP850	Prop., 12	2337
	CP850	Prop., 14	2347
	CP850	Prop., 18	2357
	CP850	Prop., 24	2367
	CP850	Prop., 30	2377
Times New Roman Outline	CP850	Prop., 6	2308
	CP850	Prop., 8	2318
	CP850	Prop., 10	2328
	CP850	Prop., 12	2338
	CP850	Prop., 14	2348
	CP850	Prop., 18	2358
	CP850	Prop., 24	2368
	CP850	Prop., 30	2378
Times NR Bold Outline	CP850	Prop., 6	2309
	CP850	Prop., 8	2319
	CP850	Prop., 10	2329
	CP850	Prop., 12	2339
	CP850	Prop., 14	2349
	CP850	Prop., 18	2359
	CP850	Prop., 24	2369
	CP850	Prop., 30	2379
Times NR Italic Outline	CP850	Prop., 6	2310
	CP850	Prop., 8	2320
	CP850	Prop., 10	2330
	CP850	Prop., 12	2340
	CP850	Prop., 14	2350
	CP850	Prop., 18	2360
	CP850	Prop., 24	2370
	CP850	Prop., 30	2380

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Resident Fonts			
Times NR Bold Italic Outline	CP850	Prop., 6	2311
	CP850	Prop., 8	2321
	CP850	Prop., 10	2331
	CP850	Prop., 12	2341
	CP850	Prop., 14	2351
	CP850	Prop., 18	2361
	CP850	Prop., 24	2371
	CP850	Prop., 30	2381
Font Cartridge Assignments			
Universal 1255800			
Prestige Elite	CP850A	12, 10	86
Prestige Elite Ital	CP850A	12, 10	112
Courier Ital	CP850A	10, 12	18
Presenter	CP850A	10, 14	25
Letter Gothic	CP850A	12, 12	87
Letter Gothic Ital	CP850A	12, 12	109
Letter Gothic Symbol	CP899	12, 12	80
Times Roman	CP850A	Prop., 10	5687
Times Roman Bold	CP850A	Prop., 10	5707
Times Roman Ital	CP850A	Prop., 10	5815
Helvetica	CP850A	Prop., 10	34103
Helvetica Bold	CP850A	Prop., 10	34123
Helvetica Ital	CP850A	Prop., 10	34231
Letter Gothic Symbol	CP899	12, 12	88
Italic 1255801			
Courier Ital	CP850	10, 12	18
Courier Symbol	CP899	10, 12	8
Courier Ital	CP850	12, 10	92
Courier	CP850	15, 9	223
Boldface Ital	CP850	Prop., 12	155
Courier Symbol	CP899	10, 12	13

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Prestige 1255802			
Prestige Pica	CP850	10, 12	12
Prestige Elite	CP850	12, 10	86
Prestige Elite Bold	CP850	12, 10	111
Prestige Elite Italic	CP850	12, 10	112
Prestige	CP850	17.1, 8.5	256
Prestige	CP850	Prop., 12	164
Prestige Elite Symbol	CP899	12, 10	89
Letter Gothic 1255803			
Letter Gothic	CP850	10, 14	36
Letter Gothic	CP850	10, 12	87
Letter Gothic Bold	CP850	12, 12	110
Letter Gothic Italic	CP850	12, 12	109
Letter Gothic Symbol	CP899	12, 12	88
Delegate 1255804			
Delegate	CP850	10, 12	2
Adjutant	CP850	12, 10	95
Modern	CP850	Prop., 12	158
Essay	CP850	Prop., 12	160
Essay Ital	CP850	Prop., 12	162
Script/OCR			
Script	CP850	10, 12	84
Olde World	CP850	12, 10	96
Title	CP850	Prop., 12	157
API	CP909	12, 10	76
OCR A	CP896	10, 12	19
OCR B	CP877	10, 12	3
APT/TN	CP310	12, 10	77
Orator 1255806			
Orator Bold	CP850A	8.1, 16	434
Orator Bold	CP850A	6.5, 18	435
Orator	CP850a	10, 14	5

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Compressed 1255807			
Prestige	CP850	15, 9	221
Letter Gothic	CP850	15, 9	222
Letter Gothic	CP850	17.1, 8.5	255
Letter Gothic	CP850	20, 7.5	281
Letter Gothic	CP850	25, 6	285
Light Italic	CP850	12, 10	91
Press Roman 1255808			
Press Roman	CP850	Prop., 10	186
Press Roman Bold	CP850	Prop., 10	187
Press Roman Italic	CP850	Prop., 10	188
Press Roman Bold Italic	CP850	Prop., 10	189
Press Roman Symbol	CP899	12, 10	185
Foundry 1255809			
Foundry	CP850	Prop., 10	190
Foundry Bold	CP850	Prop., 10	191
Foundry Italic	CP850	Prop., 10	194
Foundry Bold Italic	CP850	Prop., 10	195
Foundry Symbol	CP899	Prop., 10	192
Testimonial 1255820			
Testimonial	CP850A	Prop., 12	5943
Testimonial	CP850A	Prop., 14	5944
Testimonial	CP850A	Prop., 18	5945
Engravers' Old English 1255821			
Engravers' Old English	CP850A	Prop., 12	37431
Engravers' Old English	CP850A	Prop., 14	37432
Engravers' Old English	CP850A	Prop., 18	37433
Times Roman 1255822			
Times Roman	CP850A	Prop., 12	5688
Times Roman Bold	CP850A	Prop., 14	5709
Times Roman Bold	CP850A	Prop., 18	5710

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Times Roman 1255823			
Times Roman	CP850A	Prop., 6	5685
Times Roman	CP850A	Prop., 8	5686
Times Roman Bold Italic	CP850A	Prop., 10	5835
Times Roman	CP850A	Prop., 10	5687
Times Roman Bold	CP850A	Prop., 10	5707
Times Roman Italic	CP850A	Prop., 10	5815
Combo (Data Stream) 1255824			
Prestige Elite	CP850	12, 10	86
Helvetica	CP850A	Prop., 14	34105
Orator	CP850	10, 14	5
OCR A	CP876	10, 12	19
OCR B	CP437A	10, 12	3
Helvetica 1255825			
Helvetica	CP850A	Prop., 12	34104
Helvetica Bold	CP850A	Prop., 14	34125
Helvetica Bold	CP850A	Prop., 18	34126
Helvetica 1255826			
Helvetica	CP850A	Prop., 6	34101
Helvetica	CP850A	Prop., 8	34102
Helvetica Bold Italic	CP850A	Prop., 10	34251
Helvetica	CP850A	Prop., 10	34103
Helvetica Bold	CP850A	Prop., 10	34123
Helvetica Ital	CP850A	Prop., 10	34231
Cursive 1255827			
Cursive	CP850A	Prop., 12	41783
Cursive	CP850A	Prop., 14	41803
Cursive	CP850A	Prop., 18	41804
Palatino 1255828			
Palatino	CP850A	Prop., 12	6200
Palatino	CP850A	Prop., 14	6219
Palatino	CP850A	Prop., 18	6220

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Palatino 125582			
Palatino	CP850A	Prop., 6	6197
Palatino	CP850A	Prop., 8	6198
Palatino	CP850A	Prop., 10	6199
Palatino Bold	CP850A	Prop., 10	6218
Palatino Italic	CP850A	Prop., 10	6327
Palatino Bold Italic	CP850A	Prop., 10	6347
Optima 1255830			
Optima	CP850A	Prop., 12	33336
Optima Bold	CP850A	Prop., 14	33356
Optima Bold	CP850A	Prop., 18	33357
Optima 1255831			
Optima	CP850A	Prop., 6	33333
Optima	CP850A	Prop., 8	33334
Optima	CP850A	Prop., 10	33335
Optima Bold	CP850A	Prop., 10	33355
Optima Italic	CP850A	Prop., 10	33463
Optima Bold Italic	CP850A	Prop., 10	33483
Century Schoolbook 1255832			
Century Schoolbook	CP850A	Prop., 12	16952
Century Schoolbook Bold	CP850A	Prop., 14	16972
Century Schoolbook Bold	CP850A	Prop., 18	16973
Century Schoolbook 1255833			
Century Schoolbook	CP850A	Prop., 6	16949
Century Schoolbook	CP850A	Prop., 8	16950
Century Schoolbook	CP850A	Prop., 10	16951
Century Schoolbook Bold	CP850A	Prop., 10	16971
Century Schoolbook Italic	CP850A	Prop., 10	17079
Century Schoolbook Bold Italic	CP850A	Prop., 10	17099
Goudy Old Style 1255834			
Goudy Old Style	CP850A	Prop., 12	4920
Goudy Old Style Bd	CP850A	Prop., 14	4940
Goudy Old Style Bd	CP850A	Prop., 18	4941

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

IBM Mode Font	Symbol Set	Pitch, Point Size	Typestyle Number
Goudy Old Style 1255835			
Goudy Old Style	CP850A	Prop., 6	4917
Goudy Old Style	CP850A	Prop., 8	4918
Goudy Old Style	CP850A	Prop., 10	4919
Goudy Old Style Bold	CP850A	Prop., 10	4939
Goudy Old Style Italic	CP850A	Prop., 10	5047
Goudy Old Style Bold Italic	CP850A	Prop., 10	5067
Baskerville 1255836			
Baskerville	CP850A	Prop., 12	8504
Baskerville	CP850A	Prop., 14	8524
Baskerville	CP850A	Prop., 18	8525
Baskerville 1255837			
Baskerville	CP850A	Prop., 6	8501
Baskerville	CP850A	Prop., 8	8502
Baskerville	CP850A	Prop., 10	8503
Baskerville Bold	CP850A	Prop., 10	8523
Baskerville Italic	CP850A	Prop., 10	8631
Baskerville Bold Italic	CP850A	Prop., 10	8651
Futura 1255838			
Futura Book	CP850A	Prop., 12	33592
Futura Heavy	CP850A	Prop., 14	33602
Futura Heavy	CP850A	Prop., 18	33603
Futura 1255839			
Futura Book	CP850A	Prop., 6	33589
Futura Book	CP850A	Prop., 8	33590
Futura Book	CP850A	Prop., 10	33591
Futura Heavy	CP850A	Prop., 10	33601
Futura Book Italic	CP850A	Prop., 10	33719
Futura Heavy Italic	CP850A	Prop., 10	33729

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

HP Mode Font (IBM 4029/4019)	Symbol Set	Pitch, Point Size	Typestyle Number
Resident Fonts			
Courier	RM 8	10, 12	11
Courier Bold	RM 8	10, 12	46
Courier	RM 8	15, 8.5	223
Courier	RM 8	17.1, 8.5	254
Font Cartridge Assignments Combo 1255824			
OCR-A	CP1048	10, 12	19
OCR-B	CP1049	10, 12	3
Prestige Elite	CP437B	12, 10	86
Orator	CP437B	10, 14	5
Courier	CP437B	12, 10	85
Helvetica	CP437B	Prop., 14	34105
Supports M 1255841			
Prestige Elite	RM8	12, 10	86
Prestige Elite Bold	RM8	12, 10	111
Prestige Elite Italic	RM8	12, 10	112
Supports R 1255842			
Orator Bold	CP1054	6.5, 18	435
Orator Bold	CP1054	8.1, 16	434
Orator Bold	CP1054	10, 14	38
Letter Gothic	CP1054	10, 14	40
Lines I	CP1056	10, 14	31
Lines II	CP1055	10, 14	32
Supports U/V 1255843			
Swiss 721	RM8	Prop., 6	34101
Swiss 721	RM8	Prop., 8	34102
Swiss 721 Bold	RM8	Prop., 10	34123
Swiss 721 Bold	RM8	Prop., 12	34124
Swiss 721 Bold	RM8	Prop., 14	34125
Letter Gothic	RM8	16.7, 9.5	230

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

HP Mode Font (IBM 4029/4019)	Symbol Set	Pitch, Point Size	Typestyle Number
Supports Z 1255844			
Press Roman	RM8	Prop., 8	185
Press Roman	RM8	Prop., 10	186
Press Roman Bold	RM8	Prop., 10	187
Press Roman Italic	RM8	Prop., 10	188
Press Roman	RM8	Prop., 12	189
Press Roman Bold	RM8	Prop., 12	190
Press Roman Italic	RM8	Prop., 12	191
Press Roman Bold	RM8	Prop., 14	192
Letter Gothic	RM8	116.7, 8.5	255
Supports Z 1255845			
Swiss 721	CP850A	Prop., 10	34103
Swiss 721 Italic	CP850A	Prop., 10	34231
Swiss 721	CP850A	Prop., 12	34104
Swiss 721 Italic	CP850A	Prop., 12	34232
Swiss 721	CP850A	Prop., 8	34102
Swiss 721 Bold	CP850A	Prop., 10	34123
Swiss 721 Bold	CP850A	Prop., 12	34124
Swiss 721 Bold	CP850A	Prop., 14	34125
Letter Gothic	CP850	17.1, 8.5	255
Supports Resident 1255846			
Courier	RM8	10, 12	11
Courier Bold	RM8	10, 12	46
Courier Italic	RM8	10, 12	18
Courier Bold	RM8	12, 10	108
Courier Italic	RM8	12, 10	92
Courier	RM8	16.7, 8.5	252
Courier	RM8	12, 10	85

Table 4-4 (continued). Typestyle Reference for IBM 4029/4019 Laser Printers.

HP Mode Font (IBM 4029/4019)	Symbol Set	Pitch, Point Size	Typestyle Number
Supports N 1255847			
Letter Gothic	RM8	12, 12	87
Letter Gothic Bold	RM8	12, 12	110
Letter Gothic Italic	RM8	12, 12	109
Supports T 1255848			
Swiss 721	CP1054	Prop., 6	34101
Swiss 721	CP1054	Prop., 8	34102
Swiss 721 Bold	CP1054	Prop., 10	34123
Swiss 721 Bold	CP1054	Prop., 12	34124
Swiss 721 Bold	CP1054	Prop., 14	34125
Swiss 721 Bold	CP1054	Prop., 8	34122
Tax Line Draw	Lin Dw	10, 12	30
OCR-A	OCR-A	10, 12	19

Appendix A: Host Download Commands

This appendix defines the configuration commands which may be used to select setup values for the A/C 5 RO. These commands may be sent to the printer as part of a normal 3270 coax print job or hard-copy print screen. The commands can also be sent to the A/C 5 RO via the parallel PC sharing port. The A/C 5 RO will identify the commands and obey their instructions without printing the text of the command. If the text of a command prints, check that the format of the command is correct.

The format for all configuration commands is:

&%Z'Command Number','Value and/or data' 'space or control character'

The &% characters are defined as the default delimiter characters, and the upper case Z is the default command ID character. It is possible to specify alternate values for the delimiter characters (see Command 40). The upper case Z (or alternate command character, see Command 41) precedes all command numbers.

Chaining multiple commands is permitted by using a slash (/) or backslash (\) to separate the commands with no spaces allowed. Each command string must be preceded by an &% and terminated by at least one space or a control character (LF, NL, CR, or FF) which is not sent to the printer. 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, into the document. This selects 15 CPI, double spacing and 70 MPL.

Commands are used by the A/C 5 RO and sent to the printer immediately upon receipt from the host. Commands chained together with slashes and located on the first line and first position take effect immediately on the page where they are located. Otherwise they take effect on the next page.

NOTE

The asterisk (*) character identifies factory-default selections.

All commands have im-mediate effect unless noted otherwise.

For a command to be permanently stored in nonvolatile memory, the command 99,0 must be used.

An error causes the A/C 5 RO to exit download mode and print from the point of error.

The RPQs are only active in LU3, non-SCS mode.

Commands labeled LASER have no effect when a dot- matrix printer protocol is selected.

Command 1: Buffer Size

Selects logical default buffer size.

Value	Description
1	960 characters
2*	1920 characters
3	2560 characters
4	3440 characters
5	3564 characters

This command, along with the **99,0** command, changes the logical buffer size selection in the non-volatile memory of the A/C 5 RO. The logical buffer size is only reported to the host the next time the unit is powered up. The physical buffer size is permanently set at 4K.

Example: &%Z1,3 Sets logical buffer size to 2560 characters.

Command 2: Lines Per Inch

Selects default LPI.

Value	Description
3	3 LPI
4	4 LPI
6*	6 LPI
8	8 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 select override of host LPI commands.

Example: &%Z2,8 sets the printer to 8 LPI default

Command 3: Characters Per Inch

Selects default CPI.

Value	Description
10*	10 CPI
12	12 CPI
15	15 CPI
16	16.7 CPI

The IBM host controls CPI unless Command 36 is used to select override of host CPI commands.

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).

Value	Description
000	No Form Length Control
001	Set Form Length in to number of lines
254	
066*	Factory Default

This default emulates the front- panel selection on an IBM printer.

The 000 value enables the front- panel selection on the printer to control the forms length when Command 25 is set to value 0.

Example: &%Z5,72 sets form length to 72 lines for A-4 paper.

Command 6: Maximum Print Position

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

Value	Description
000	Infinite Line Length.
001	Set MPP in number of to characters.
254	
132*	Factory Default.

Normal values are 80, 132, or 198 characters. This default emulates the front panel selection on an IBM printer. MPP and the current position will not be changed by changes in CPI. The infinite line length places no limits on the number of characters that can be sent to the printer on a single line.

Example: &%Z6,80 sets MPP to 80 characters.

Command 7: Print Case

Selects default Print Case.

Value	Description
0	Mono case
1*	Dual case

Mono case is for upper-case characters only. Dual case is for both upper- and lower-case characters. This default affects only LU3 printing

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	(same as 11) French (alt.)
13	Austrian/German (alt.)
14	International Set 5
15	Italian
16	Japanese (English)
17	French (alt.)
19	Spanish
20	Spanish (alt.)
21	Spanish Speaking
22	English (U.K.)
23	(same as 07) Norwegian
24	(same as 09) Swedish
25	(same as 01) EBCDIC (alt.)
26	(same as 08) Norwegian (alt.)
27	(same as 10) Swedish (alt.)
28	Portuguese
29	(same as 06) Canadian (Bilingual)
30	(same as 11) French AZERTY (105 character)
31	(same as 14) Swiss German
32	(same as 14) Swiss French

This command, along with Command 99,0, changes the default LU1 language selection in the nonvolatile memory of the A/C 5 RO. The number of the command value should agree with the language number used in IBM CU configuration sequence number 121.

Example: &%Z8,04 sets LU1 language to Belgian.

Command 9: Font Select (Matrix Printer)

Selects default font when EPSON dot matrix printer protocol is selected in Command 60. This command is not functional when PPDS matrix, preprinter, or laser-printer protocol is selected.

Value	Description
*1	Draft Print Quality
2	Roman, NLQ
3	Sans Serif, NLQ
4	Courier, NLQ (Font Cartridge Required)
5	Prestige, NLQ (Font Cartridge Required)
6	Script, NLQ (Font Cartridge Required)
7	OCR-B, NLQ (Font Cartridge Required)
8	OCR-A, NLQ (Font Cartridge Required)
9	Orator, NLQ (Font Cartridge Required)
10	Orator-S, NLQ (Font Cartridge Required)
11	Script C, NLQ (Font Cartridge Required)

Example: **&%Z9,2** selects near-letter-quality (Roman) as the default.

Command 11: Paper Path

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

Value	Description
0	Ignore the host PPM Command; paper tray selection determined by use of the printer's front panel.
1	Tractor Feed or only one paper source used (Ignore the Host PPM).
*2	Cut-Sheet Feeding from primary bin is default.
3	Cut-Sheet Feeding from alternate bin is default.
4	Envelope Feeder default.
5	Manual Sheet Feed default.
6	Manual Envelope Feed default.

This command defines the default paper source for the Page Presentation Media (PPM) Host command in SCS mode. If the PPM command is received from the host, the A/C 5 RO always sends the SCS mode paper source command to the printer unless values 0 or 1 are 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.

If manual sheet feed is specified in the SCS PPM command and no paper is installed in the manual feed slot, the printer waits for you to insert the paper before printing continues.

If this command is placed as the first printable data on the page, (line 1, position 1) the specified paper path will take effect immediately. If the command is placed at any other position on the page, the change will have effect on the next page.

Example: &%Z11,5 selects manual sheet feed default source for paper.

Command 12: Form Feed Before Local Screen Copy

Specifies whether a Form Feed is performed before doing local screen hard copy.

Value	Description
0*	No Form Feed before local screen hard copy.
1	Form Feed performed before local screen hard copy.

This command affects only the local screen copy function, not the host-initiated local copy printing.

This Commands functions only in non-SCS operations.

Example: &%Z12,1 performs a FF before local screen copy.

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 hard copy.
1	Form Feed performed after local screen hard copy.

To use this function, the RPQ should be:

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

This command affects only the local screen copy, not the host-initiated local copy printing.

This command functions only in non-SCS operations.

Example: &%Z13,1 performs a FF after local screen copy.

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

Value Description

- 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

To use this function, the RPQ should be:

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

This Command is available only in non-SCS operation. Values 0 and 1 are functional only from CUT terminals.

Example: &%Z14,3 prints true screen image in non-SCS print and local copy.

Command 15: CR at MPP + 1

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

Value Description

- 0* First PP of next line.
- 1 First PP of current line.

To use this function, the RPQ should be:

- IBM 3268 RPQ SC9501
- IBM 3287 RPQ 530219
- IBM 4214 OPT 15=1

This command is available in only non-SCS operation.

Example: &%Z15,1 prints first PP of current line as the next PP when a CR is received at MPP+1.

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. |

To use this function, the RPQ should be:

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

This command is available only in non-SCS operation.

Example: &%Z16,1 performs first PP of next line as the next PP when an NL is received at MPP+1.

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 of first line on next form. |

For the Value 1 selection, the RPQ would be:

IBM 3268 RPQ SC9503
 IBM 3 2 8 7 RPQ N/A
 IBM 4214 OPT 16=2

This command is available only in non-SCS operation.

Example: &%Z17,1 performs first PP of first line on next form as the next PP when a valid FF (positioned anywhere but the end of an IBM print buffer) is received.

Command 18: Valid FF at the 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. |

To use this function, the RPQ should be:

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

This command is available only in non-SCS operation.

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.

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+l.
- 1 FF is 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

This command is available only in non-SCS operation.

Example: &%Z19,1 makes FF valid anywhere it occurs.

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).

To use this function, the RPQ should be:

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

This command is available only in 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.

Example: &%Z20,1 sets the printer to issue an FF automatically at the end of the print buffer.

Command 21: Print Quality (Fast Draft)

This command is for the IBM PPDS dot-matrix protocol. It selects the printer's print quality for host data processing output in PPDS Fast Draft or normal draft quality. This command is only available in 10 CPI and 12 CPI, and does not affect NLQ unless value 4 is selected.

Value Description

- 0* The Page Presentation Media (PPM) commands control the following:
 DP Quality (01) = Fast- Draft .
 DP Text Quality (02) = normal draft.
- 1 All DP draft output is printed FastDraft.
- 2 All DP draft output is printed normal draft.
- 3 Value 0 reversed: 01 = normal and 02 = Fast Draft.
- 4 NLQ.

Example: &%Z21,1 selects all DP output as Fast Draft printing.

Command 25: Form Feed Usage

Enables a Form Feed from the host system to be converted to the required number of line feeds (beneficial when forms length is controlled by the A/C 5 RO).

Value Description

- 0 Pass FF from host to the printer (Laser Printer default).
- 1* Count the 1 lines in Command 5 and send multiple line feeds to the printer in place of the host FF.

Example: &%Z25,1 sets the printer to count the lines specified in Command 5.

Command 26: Suppress Empty Forms

Blank printout pages caused by Form Feed commands that occur at the top of a form can be suppressed.

Value Description

- 0* No, do not suppress empty forms.
- 1 Yes, suppress empty forms.

If selected, the A/C 5 RO ignores Forms 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 Feeds only in DSC mode.

Example: &%Z26,1 sets the interface to suppress empty forms

Command 27: FF After Time Elapse

Sends a Form Feed if unprinted data remains in the print buffer for the specified port time-out interval in Command 51.

Value Description

- 0* No extra FF is sent.
- 1 Send FF after timeout value.

The time-out value is the same as the time-out used to switch between host and alternate host printer sharing. (See Command 51.)

Generally, the host application generates a termination FF, and there is no need to change this command from the default.

In duplex printing, the last page is ejected.

Example: &%Z27,1 sends FF after time delay selected by command 51 (default = 5 sec.) when unprinted data remains in the print buffer.

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 to the printer are not sent (enabled).

Overrides the A/C 5 RO's default selection for CPI, LPI, font, orientation, bin selection, paper size, COR, and line compression.

A reset command to the printer from the A/C 5 RO restores the printer's front-panel default selections prior to coax printing.

Has no effect on Command Pass-Thru, User Strings, Initialization Strings, and coax host RPQ's.

Example: &%Z30,1 Prevents the sending of formatting commands from the interface to the printer.

Command 31: Truncate/Wrap Select

You can select whether the A/C 5 RO 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 which exceeds the maximum print position to be lost.

Command 32: Paper Size, Laser

Specifies the paper size used for printing.

Value	Description
0*	Selects 8.5" X 11" letter paper.
1	Selects 210mm X 297mm (8.27" X 11.69") A-4 paper.
2	Selects 8.5" X 14" legal paper.
3	Selects that No paper size is specified by the A/C 5 RO to the printer. (Front-panel selection is used.)

Example: &%Z32,1: The Card tells the printer to use A-4 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.

Value	Description
000	Never send an IR.
001	Send IR after the value to times 5 seconds when a 255 printer error occurs.
120*	(Send IR after ten minutes).

Example: &%Z34,036 sets IR time interval to 3 minutes.

Command 35: Program Attention (PA) Response

The IBM host software can send a program attention (PA) request to the printer, causing the printer to stop printing until a PA1 or PA2 response from the printer is sent to the host software. The A/C 5 RO can be set to either automatically return a PA1 response upon receiving a PA request or stop and wait (with red LED on) until the operator presses one of the two pushbuttons on the interface card.

Value	Description
0*	Printer stops and waits for operator to press a PA1 or PA2 push button before sending the PA response to the host.
1	The unit automatically responds with a PA1 if a PA request is received from the host.

Use this command to install special forms, colored paper, legal paper, etc. in the printer before the PA pushbutton is pressed.

Example: &%Z35,1: Printer automatically responds with a PA1 response.

Command 36: Suppress IBM Control Codes

Use this command to select suppression of all or some IBM control codes sent from the host system in LU1 printing.

Value Description

- 0* Obey all IBM control codes.
- 1 Suppress all IBM control codes.
- 2 Suppress only LPI and CPI control codes.
- 3 Suppress only CPI control codes.
- 4 Suppress only LPI control codes.
- 5 Suppress print quality specified in the PPM command.

If this command is set to 1, documents will have to be formatted by sending transparent control codes to the printer using Command Pass-Thru or SCS mode transparent data.

If this command is set to 2, the SCS pitch (CPI) and line density (LPI) commands are suppressed (not sent to the printer).

Example: &%Z36,2: No LPI or CPI commands are sent to the printer. The printer prints using the user specified selections.

Command 37: Vertical Channel Select (VCS)

Specifies vertical channel select (VCS) emulation.

Value Description

- 0 3287 VCS emulation.
- 1* 3268/4214/4224 VCS emulation.

Functions similar to a vertical tab except the 3287 does Line Feeds only.

Example: &%Z37,0 selects 3287 VCS emulation.

Command 38: True LPI Spacing (Laser Printers)

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 cause a problem with preprinted forms. Command 38 lets you override the normal laser-printer LPI compression.

Value Description

- 0* Compress the vertical LPI spacing.
- 1 Print using true 6 and 8 LPI spacing.

If true LPI is selected, you need to adjust the document formats to allow for the reduced number of lines that can be printed per page. Otherwise, blank pages are ejected by the laser printer because of blank line feeds that do not fit on the reduced page size. (Refer to the laser printer's operator's manual.)

Example: &%Z38,1 specifies that vertical spacing prints using true 6 and 8 LPI. For an 11" page, 63 lines at 6 LPI or 84 lines at 68 LPI are the maximum that fit on a page

Command 40: Alternate Delimiter Characters

Specifies two characters in addition to &% which can be used for the delimiter characters for Command Pass-Thru and Host Download Commands.

Value Description

0000	Deletes previously selected alternate characters	2625	Makes &% the alternate characters
XXYY	XX is the ASCII HEXADECIMAL value of the first character and YY is the ASCII HEX value of the second character.		

Example: &%Z40,253F specifies the %? characters as the alternate delimiter characters. The ASCII hex value of %is 25 and the ASCII hex value of ? is 3F in this example.

Command 41: Command ID Characters

Specifies the character to be used for the command identifier which follows the Lead In characters.

Value Description

5A	Makes Z the command character.
ZZ	ZZ is the ASCII HEX value of the command ID character.

The character selected must not be 0-9 or A-F (valid hex values) or L, P, and U.

Example: &%Z41,59 specifies Y as the alternate command ID character.

Command 42: Start and Stop Buffer Hex Dump

Upon receipt of a start command, the A/C 5 RO, starting with the next character received, sends all host data directly to the printer as hexadecimal printing until a stop command is received or the printer is powered off.

Value Description

0*	No Action Taken.
1	Start Buffer Hex Dump.
2	Stop Buffer Hex Dump.

This is alternative to pressing both push buttons on the A/C 5 RO and holding them for three seconds to activate Buffer Hex Dump.

This command lets you print only the section of the document that is in question in Buffer Hex Dump Format. Hex printing starts with the buffer following the start command and stops with the buffer following the stop command.

Example: &%Z42,1 starts Buffer Hex Dump Printing; *&%Z42,2* Stops Buffer 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.

Value 1 causes valid graphic characters to be printed normally (converted from EBCDIC to ASCII), control codes and invalid graphics to be 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.

Example:&%Z45,0: All SCS Code 35 data is sent to the printer as binary codes without translation.

Command 50: Parallel Port Time Out

Selects the time interval that the A/C 5 RO waits for receipt of additional data from the alternate (PC) host before automatically switching to check for data from the coax host.

Value Description

- 01 Time interval in number of to seconds.
- 60
- 5* Factory Default is 5 seconds.

The A/C 5 RO sends a reset command to the printer and restores the coax host defined format commands (LPI, CPI, MPL, MPP) prior to printing data from the coax host after having printed data from the shared parallel port.

Because the printer is being shared between the parallel port and the 3270 host, set up the PC so jobs are not automatically terminated when the printer is busy.

Setting the PC timer to OFF by writing **mode lpt1:,,p** (in the case of an LPT1 printer) in DOS.

Use of the DOS PRINT command or a spooling program for the PC is recommended.

Example: &%Z50,10 sets the time interval to 10 seconds.

Command 51: Coax Port Time Out

Selects the time interval that the A/C 5 RO waits for receipt of additional data from the coax host before automatically switching to check for data from the alternate (PC) host.

Value Description

- | | |
|-----|--|
| 00 | The A/C 5 RO never checks for parallel port data (parallel shared port is disabled). |
| 01 | Time interval in number of seconds. |
| 60 | |
| 10* | Factory Default is 10 seconds. |

The alternate (PC) host is responsible for sending any needed format commands required by the printer prior to sending printable data.

Example: **&%Z51,05** sets the time interval to 5 seconds.

Command 55: Custom User Strings

Lets you define up to six custom user strings, of up to 25 bytes each, which are stored in the memory of the A/C 5 RO and sent to the printer whenever the **two-letter delimiter, letter U, and number of the string** appears in the text of the document; for example, **&%U3**.

Value Description

- | | |
|---|---|
| 1 | Following the value number, insert |
| 2 | a parenthesis, followed by |
| 3 | the hex bytes included in |
| 4 | the user string, and then a parenthesis to end. |

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 entire old string is automatically erased.

To delete a custom user string from the memory, simply put nothing between the parenthesis.

Example: **&%Z55,3(1B 01)** defines the **&%U3** custom user string to send an ESC and SOH (1B and 01 hex) to the printer. This is the EPSON Double-Width, One Line, ON command.

Example: &%Z55,4(0F) Defines the &%U4 custom command to send SI (shift in, 0F hex) to the printer wherever the &%U4 command appears in the text. This turns the Epson condensed printing on.

Example: &%Z55,5(12) defines the &%U5 custom command to send DC2 (Device Control 2, 12 hex) to the printer. This is the Epson condensed printing OFF command.

Example: &%Z55,1() deletes from memory any hex string that had been previously defined for the &%U1 custom command.

Command 56: Shared Port Initialization String

Lets you define an initialization string of up to 25 bytes which are stored in the memory of the A/C 5 RO and sent to the printer at the beginning of any printing received from the alternate shared port.

Value	Description
--------------	--------------------

- | | |
|---|--|
| 1 | Following the value number, insert a parenthesis, followed by the hex bytes included in the command string, and then a parenthesis to end. |
|---|--|

To aid in readability, a single space is allowed between hex bytes but is not included in the string.

The string could specify a special font-selection command or other custom command to be sent directly to the printer prior to the data that is received from the parallel shared port.

To change the initialization string simply input the new command values. The entire old string is automatically erased.

To delete the initialization string from the memory, simply put nothing between the parenthesis.

Example: &%Z56,1() deletes any hex string that had been previously defined for the parallel port initialization string.

Command 57: Coax Port Initialization String

Lets you define an initialization string of up to 25 bytes. This string is stored in the memory of the A/C 5 RO and is sent to initialize the printer for coax port printing after printing from the shared parallel port has occurred. The A/C 5 RO also sends commands after the initialization string to restore the default or host-defined page-format parameters prior to coax port printing.

Value Description

- 1 Following the value number, insert a parenthesis, followed by the hex bytes included in the command string, and then a parenthesis to end.

To aid in readability, a single space is allowed between hex bytes but is not included in the string.

The coax port initialization string is sent to the printer only when you turn the printer on and after printing by the shared parallel port has occurred. Host SCS commands and download commands have priority over the initialization string instructions.

To change the initialization string, simply input the new command values. The entire old string is automatically erased.

To delete the initialization string from memory, simply put nothing between the parentheses.

Example: &%Z57,1() deletes from memory any hex string that had been previously defined for the coax port initialization string.

Command 60: ASCII Printer Protocol

Specifies the type of ASCII printer protocol instructions that the A/C 5 RO will use when converting from the 3270 coax cable commands.

Value Description

- 0 IBM PPDS dot-matrix protocol.
- 1 EPSON ESC/P2 dot-matrix protocol.
- 2* HP LaserJet PCL4 laser protocol.
- 3 IBM PPDS mode laser protocol.
- 4 IBM laser in HP mode protocol.
- 5 IBM Proprinter II protocol.
- 6 EPSON FX and LQ dot matrix protocol.

HP LaserJet protocol automatically uses the Roman 8 character set and IBM PPDS and EPSON ESC/P2 require that you select the Code Page 850 character set through printer front-panel selections.

Changes to this command will automatically adjust the character-set selection in Command 65 as appropriate.

The laser protocols support the ability to specify cartridge fonts by simply including a font ID command in the document.

A change in this command is not active until it is saved to memory using an **&%99,0** and the unit is turned off and then on again.

When laser protocol is selected, the default for Command 25 changes to the form feed option.

IBM 4226, 2380, 2391 printers should use Value 0 and IBM 4029 and 4019 printers should use Value 3 or 4.

Example: &%Z60,0 selects use of the IBM PPDS dot-matrix protocol.

Command 61: Automatic Print Orientation (APO), Laser Printers

Laser printers automatically control page orientation if the user decides to activate auto print orientation (APO).

Value	Description
--------------	--------------------

- | | |
|----|---|
| 0* | Auto Print Orientation (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 | Auto Print Orientation (APO) is NOT ACTIVE. Print orientation is controlled by the orientation selections specified in Commands 62, 63, and 64. |

APO active is the recommended selection.

You can manipulate the page dimensions using SCS commands to control the orientation of the printing as long as the page size required is 8.5" X 11" or smaller.

Example: &%Z61,1: APO is not active.

Command 62: Primary Paper Tray Orientation, Laser

The SCS (LU1) PPM command, which specifies the source for the paper, assigns a printing orientation to the primary paper tray. Refer to the page-orientation logic chart in Section 4.6. 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 | PORTRAIT orientation will occur using the active font when the primary tray is specified. |
| 2 | LANDSCAPE orientation printing occurs 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, Laser Printer

This command functions identically to Command 62, except it controls the orientation for printing that specifies (SCS,LU1) the alternate tray for the paper source.

Values are the same as Command 62, except substitute "alternate tray" for "primary tray" in the descriptions.

Even if the printer does not have an alternate paper tray and defaults to the primary tray, if the SCS (LU1) host specifies the alternate tray, the A/C 5 RO prints the document in accordance with the selection in Command 63.

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.

Example: **&%63,2** specifies that landscape orientation will be used for all printing in which the SCS (LU1) PPM code specifies the alternate paper tray be used.

Command 64: Manual-Feed Tray Orientation, Laser

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.

Values are the same as Command 62 except substitute "manual-feed tray" in place of "primary tray" in the descriptions.

A laser printer, when it receives the manual-feed tray command, does not proceed with printing until paper is placed in the manual feed slot. You can then insert special forms, a letter head, or colored paper into the manual feed slot.

Example: **&%64,1** specifies all printing performed using paper from the manual feed slot be printed in portrait orientation.

Command 65: Character Set Selection

Lets you make a special selection of the ASCII character set that is used in the conversion from EBCDIC (SCS/LU1) or DSC (LU3) to ASCII. This is the character set that the printer uses in printing. It must be selected at the printer by using the front panel or DIP switches of the printer. Changing the protocol selection in Command 60 automatically changes the character set as required. This command can override the automatic selection.

Value Description

- | | |
|---|--|
| 1 | Roman 8 character set. |
| 2 | Code Page 850 character set. |
| 3 | EPSON Graphics (PC Set 2) character IBM PC Extended (Code Page 437). |

The custom character set substitutions defined in Commands 70 and 71 are lost from 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.

Example: &%Z65,2 selects the Code Page 850 character set.

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

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

Value Description

- XX The hex location in the EBCDIC table that sends the following ASCII hex sequence.
- YY The ASCII hex sequence that is overwritten in the EBCDIC translation table.

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 99,0 must be used to store the substitutions in 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 A/C 5 RO self-test summary.

Example: &%Z70,7B,40/99,0 overwrites the ASCII hex output for the EBCDIC 7B (a # symbol) to send a 40 ASCII hex which will print a @ symbol instead. The command is followed by a command 99,0 which stores the change in memory.

Command 71: Overwrite DSC (LU3) Translation Table

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

This command functions identically to Command 70 except that 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 A/C 5 RO 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 memory selections to the active configuration status.

Value Description

- | | |
|---|--|
| 0 | Restores the factory defaults to the memory of the A/C 5 RO. (Must power unit off and on to activate the defaults.) |
| 1 | Prints out the active setup selections for review by the user. |
| 2 | Restores the setup selections stored in the memory to active status of the A/C 5 RO. (Will affect only the following page or job.) |

The active setup selections are the same as the memory selections if no host download commands have been sent to the printer since it was turned on.

Value 2 is a quick way, after having printed a document using special setup selections, to return the A/C 5 RO to the normal selections. Put a **&%Z98,2** at the end of the special document to restore the standard setup parameters for the next coax user of the printer.

The active setup and memory setup selections are the same after a command 99,0 or a Command 98,2 is sent to the printer.

Example: &%Z98,1 prints out the active setup selections for review.

Command 99: Store Configuration In Memory

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

Value Description

- | | |
|---|---|
| 0 | To complete the command format, the value 0 must be used. |
|---|---|

Only host download selections which have been followed by a Command 99,0 will be stored in memory and restored to the active setup when the printer is turned on.

Only use Command 99,0 when the host download selection needs to be permanently stored in the memory of the A/C 5 RO.

Example: &%Z99,0 stores the currently active setup selections in the memory of the A/C 5 RO.

Appendix B: Push-Button Setup

Push-button setup is another method for selecting the basic configuration. The push-button setup options are similar to the host download commands, except the selections are made by pushing the PA1 or PA2 push-buttons. During the setup, press the PA1 button to answer **Yes** to an option choice, and press the PA2 button to answer **No**. The recommended method for setup is to use host download through either the coax or PC parallel port. Use push-button setup only if you can't use the host download commands.

B.1 Entering Push-Button Setup

Perform a self-test of the A/C 5 RO: Disconnect the coax cable, and after the box and printer are powered on, press the PA1 button for longer than 3 seconds and release. At the end of the self test, the last line of printing asks, **Do you want to do push-button set up?** To continue, you must do the following:

1. Press the PA1 push button to answer **Yes** and enter the push-button setup. The **Yes** answer prints, followed by current choice for the first option.
2. If you don't want the push-button setup, power the A/C 5 RO off, attach the coax cable, and power up with the A/C 5 RO on the coax host.

B.2 Making Push-Button Setup Selections

The push-button setup operations are limited to the basic emulation configuration. Each option has choices that are selected by answering **Yes** or **No** to each choice.

After entering the setup, the current choice for an option is printed, followed by the question **Do you want this changed?** If you answer **No**, that choice is selected and the setup continues to the next option; if you answer **Yes**, the next choice for this option prints. The choices for each option cycle through until select one by answering No.

On a laser printer, the printing is not visible until a page is ejected—you must press the Print Buffer button on the printer's front panel. This process requires a lot of paper. If you know that the selection you want is about ten steps into the sequence, you can press PA2 (NO) about eight times before you eject the paper.

As an example, here's how to change the buffer size of the A/C 5 RO:

1. Enter the push-button setup as described in Section B.1. After you enter the setup, the current choice for the first option, buffer size, prints.

1920 = Logical Buffer Size
Do you want this changed? (Y / N)

2. If you want to select the current choice for the buffer size, answer No by pressing the PA2 button. The setup will continue to the next option. If you don't want the current choice for the buffer size, answer Yes by pressing the PA1 button, and the next choice for buffer size prints.

2560 = Logical Buffer Size
Do you want this changed? (Y / N)

3. Continue to answer **Yes** with the PA1 button until the choice you want is printed. Answer **No** with the PA2 button to the choice you want for buffer size. Notice that the setup cycles through the choices for an option as long as the answer is Yes, and doesn't continue to the next option until a No answer selects a choice.

You can scroll through the options by answering No (PA2) until the current choice of the option you want to change is printed. This lets you skip through the options and only change the one that needs to be changed. The setup also asks, **Do you want to end?** several times during the setup to let you make the selections needed and exit the setup without having to go through all the options. Answer **Yes** to exit and save the setup, or **No** to continue the setup.

At the end of the setup, the question **Save Current Settings?** prints. You must answer **Yes** to exit the setup and save the settings. A message **Selections stored, power off units** prints. Turn the printer off and then back on to return to normal operation with the new selections active. If you answer **No** to this question, the setup begins again at the first option.

Table B-1 lists each push-button option and the choices for the option. An * indicates the factory default. Descriptions of the Command Numbers are listed in Appendix A.

Table B-1. Push-Button Options.

Option	Refer To	Choices
Printer Protocol	Command 60	HP LaserJet PCL*, IBM PPDS mode laser, IBM HP mode laser, IBM Proprinter® II, EPSON FX and LG dot matrix, IBM PPDS dot-matrix, EPSON Esc/P dot-matrix.
Buffer Size	Command 1	1920*, 2560, 3440, 3564, 960
Default LPI	Command 2	6*, 8, 4, 3
CPI	Command 3	10*, 12, 15, 16.7
Line Spacing	Command 4	Single*, Double
Form Length-MPL	Command 5	66*, 72, 84
Maximum Print Position	Command 6	132*, 198, 255, infinite, 80
Print Case	Command 7	Dual*, Single
Language	Command 8	US English*, Austrian/German, Belgian, Brazilian, Canadian/French, Danish/Norwegian, Finnish/Swedish, French, International, Italian, Japanese (English), Spanish, Spanish Speaking, English (UK), Portuguese
End Setup?		Yes/No
Form Feed (FF) Before Local Screen Copy	Command 12	No FF*, FF
Form Feed (FF) After Local Screen Copy	Command 13	No FF*, FF
Null Line Suppression	Command 14	LU3 and local copy*, LU3, Local copy, or No

Table B-1 (continued). Push-Button Options.

Option	Refer To	Choices
CR at MPP + 1	Command 15	Next line*, Current line
NL at MPP + 1	Command 16	Current line +2*, Next line
Print Position After Valid FF	Command 17	2nd PP*, 1st PP
Print Position After Valid FF At End-Of-Buffer	Command 18	Line 1*, Line 2
Ff Valid Location	Command 19	FF valid at 1st PP or MPP+1, FF valid anywhere.
Automatic Function At End-Of-Buffer	Command 20	NL*, FF
End Setup?		Yes/No
Print Quality	Command 21	DP = FastDraft, Text = Draft, FastDraft; Draft; DP = Draft, Text = FastDraft; NLQ
Form Feed Usage	Command 25	Multi LF*, FF
Suppress Empty Forms	Command 26	Suppress empty forms*, Do not suppress empty forms
FF After Time-Out	Command 27	Do not FF*, Do FF
Override of Formatting Cards	Command 30	Disable*, Enable
Truncate/Wrap	Command 31	Wrap*, Truncate
Paper Size	Command 32	Letter*, A-4, Legal, Front-panel selection

Table B-1 (continued). Push-Button Options.

Option	Refer To	Choices
Intervention Required (IR) Timeout	Command 34	10 min.*, 20 min., 5 sec., 30 sec., 60 sec., 3 min.
PA1 Response	Command 35	Manual PA1/PA2*, Auto PA1
Suppress IBM Control Codes	Command 36	No*, CPI, LPI, CPI/LPI, Print Quality, All
Vertical Channel Select (VCS)	Command 37	3268/4224*, 3287
SCS Command 35 Translation	Command 45	3287*, Binary Transparent Data
Parallel Port Timeout	Command 50	5*, 10, 20, 30, 60 (seconds)
Coax Port Timeout	Command 51	10*, 20, 30, 60 (seconds)
End Setup?		Yes/No
APO	Command 61	APO Active*, APO Not Active
COR = Primary Paper Tray	Command 62	COR*, Portrait, Landscape, User Defined
COR = Secondary Paper Tray	Command 63	COR*, Portrait, Landscape, Defined
COR = Manual Paper Tray	Command 64	COR*, Portrait, Landscape, Defined
Character Set	Command 65	Roman 8, Code Page 850, IBM PC Extended/EPSON PC Set 2
End Setup?		Yes, No ("No" selection returns to the beginning of the setup.)

Appendix C: Typestyle Reference Chart

The following charts list the IBM typestyle numbers (font IDs) and font change commands used to change fonts within a document. For information on changing fonts, refer to Chapter 5.

IBM PPDS Mode Fonts			
Font	Pitch	Point Size	IBM Font ID Number
Resident Fonts			
Courier	10	12	11
Courier bold	10	12	46
Courier	12	10	85
Courier	Prop.	12	159
Courier	17.1	8.5	254
Universal Cartridge 125580			
Prestige Elite	12	10	86
Prestige Elite italic	12	10	112
Courier italic	10	12	18
Presentor	10	14	25
Letter Gothic	12	12	87
Letter Gothic italic	12	12	109
Letter Gothic symbol	12	12	80
Times Roman	Prop.	10	5687
Times Roman bold	Prop.	10	5707
Times Roman italic	Prop.	10	5815
Helvetica	Prop.	10	34103
Helvetica bold	Prop.	10	34123
Helvetica italic	Prop.	10	34231
Letter Gothic symbol	12	12	88

Font	Pitch	Point Size	IBM Font ID Number
Italic Cartridge 1255801			
Courier italic	10	12	18
Courier symbol	10	12	8
Courier italic	12	10	92
Courier	15	9	223
Boldface italic	Prop.	12	155
Courier symbol	10	12	13
Prestige Cartridge 1255802			
Prestige Pica	10	12	12
Prestige Elite	12	10	86
Prestige Elite bold	12	10	111
Prestige Elite italic	12	10	112
Prestige	17.1	8.5	256
Prestige	Prop.	12	164
Prestige Elite symbol	12	10	89
Letter Gothic Cartridge 1255803			
Letter Gothic	10	14	36
Letter Gothic	12	12	87
Letter Gothic bold	12	12	110
Letter Gothic italic	12	12	109
Letter Gothic symbol	12	12	88
Delegate Cartridge 1255804			
Delegate	10	12	2
Adjutant	12	10	95
Modern	Prop.	12	158
Essay	Prop.	12	160
Essay italic	Prop.	12	162

Font	Pitch	Point Size	IBM Font ID Number
Script/OCR Cartridge 1255805			
Script	12	10	84
Olde World	12	10	96
Title	Prop.	12	157
APL	12	10	76
OCR A	10	12	19
OCR B	10	12	3
APT/TN	12	10	77
Orator Cartridge 1255806			
Orator bold	8.1	16	434
Orator bold	6.5	18	435
Orator	10	14	5
Compressed Cartridge 1255807			
Prestige	15	9	221
Letter Gothic	15	9	222
Letter Gothic	17.1	8.5	255
Letter Gothic	20	7.5	281
Letter Gothic	25	6	285
Light italic	12	10	91
Press Roman Cartridge 1255808			
Press Roman	Prop.	10	186
Press Roman bold	Prop.	10	187
Press Roman italic	Prop.	10	188
Press Roman bd it	Prop.	10	189
Press Roman symbol	12	10	185

Font	Pitch	Point Size	IBM Font ID Number
Foundry Cartridge 1255809			
Foundry	Prop.	10	190
Foundry bold	Prop.	10	191
Foundry italic	Prop.	10	194
Foundry bold italic	Prop.	10	195
Foundry symbol	Prop.	10	192
Testimonial Cartridge 1255820			
Testimonial	Prop.	12	5943
Testimonial	Prop.	14	5944
Testimonial	Prop.	18	5945
Engravers' Old English Cartridge 1255821			
Engravers' Old English	Prop.	12	37431
Engravers' Old English	Prop.	14	37432
Engravers' Old English	Prop.	18	37433
Times Roman Cartridge 1255822			
Times Roman	Prop.	12	5688
Times Roman bold	Prop.	14	5709
Times Roman bold	Prop.	18	5710
Times Roman Cartridge 1255823			
Times Roman	Prop.	6	5685
Times Roman	Prop.	8	5686
Times Roman bd it	Prop.	10	5835
Times Roman	Prop.	10	5687
Times Roman bold	Prop.	10	5707
Times Roman italic	Prop.	10	5815

Font	Pitch	Point Size	IBM Font ID Number
Combo (Data Stream 1) Cartridge 1255824			
Prestige Elite	12	10	86
Helvetica	Prop.	14	34105
Orator	10	14	5
OCR A	10	12	19
OCR B	10	12	3
Helvetica Cartridge 1255825			
Helvetica®	Prop.	12	34104
Helvetica bold	Prop.	14	34125
Helvetica bold	Prop.	18	34126
Helvetica Cartridge 1255826			
Helvetica	Prop.	6	34101
Helvetica	Prop.	8	34102
Helvetica bold italic	Prop.	10	34251
Helvetica	Prop.	10	34103
Helvetica bold	Prop.	10	34123
Helvetica italic	Prop.	10	34231
Cursive Cartridge 1255827			
Cursive	Prop.	12	41783
Cursive	Prop.	14	41803
Cursive	Prop.	18	41804
Palatino Cartridge 1255828			
Palatino®	Prop.	12	6200
Palatino	Prop.	14	6219
Palatino	Prop.	18	6220

Font	Pitch	Point Size	IBM Font ID Number
Palatino Cartridge 1255829			
Palatino	Prop.	6	6197
Palatino	Prop.	8	6198
Palatino	Prop.	10	6199
Palatino bold	Prop.	10	6218
Palatino italic	Prop.	10	6327
Palatino bold italic	Prop.	10	6347
Optima Cartridge 1255830			
Optima	Prop.	12	33336
Optima bold	Prop.	14	33356
Optima bold	Prop.	18	33357
Optima Cartridge 1255831			
Optima	Prop.	6	33333
Optima	Prop.	8	33334
Optima	Prop.	10	33335
Optima bold	Prop.	10	33355
Optima italic	Prop.	10	33463
Optima bold italic	Prop.	10	33483
Century Schoolbook Cartridge 1255832			
Century Schoolbook	Prop.	12	16952
Century Schoolbook bd	Prop.	14	16972
Century Schoolbook bd	Prop.	18	16973

Font	Pitch	Point Size	IBM Font ID Number
Century Schoolbook Cartridge 1255833			
Century Schoolbook	Prop.	6	16949
Century Schoolbook	Prop.	8	16950
Century Schoolbook	Prop.	10	16951
Century Schoolbook bold	Prop.	10	16971
Century Schoolbook italic	Prop.	10	17079
Century Schoolbook bd it	Prop.	16	17099
Goudy Old Style Cartridge 1255834			
Goudy Old Style	Prop.	12	4920
Goudy Old Style bold	Prop.	14	4940
Goudy Old Style bold	Prop.	18	4941
Goudy Old Style Cartridge 1255835			
Goudy Old Style	Prop.	6	4917
Goudy Old Style	Prop.	8	4918
Goudy Old Style	Prop.	10	4919
Goudy Old Style bold	Prop.	10	4939
Goudy Old Style italic	Prop.	10	5047
Goudy Old Style bold italic	Prop.	10	5067
Baskerville Cartridge 1255836			
Baskerville	Prop.	12	8504
Baskerville bold	Prop.	14	8524
Baskerville bold	Prop.	18	8525

Font	Pitch	Point Size	IBM Font ID Number
Baskerville Cartridge 1255837			
Baskerville	Prop.	6	8501
Baskerville	Prop.	8	8502
Baskerville	Prop.	10	8503
Baskerville bold	Prop.	10	8523
Baskerville italic	Prop.	10	8631
Baskerville bold italic	Prop.	10	8651
Futura Cartridge 1255838			
Futura Book	Prop.	12	33592
Futura Heavy	Prop.	14	33602
Futura Heavy	Prop.	18	33603
Futura Cartridge 1255839			
Futura Book	Prop.	6	33589
Futura Book	Prop.	8	33590
Futura Book	Prop.	10	33591
Futura Heavy	Prop.	10	33601
Futura Book italic	Prop.	10	33719
Futura Heavy italic	Prop.	10	33729
HP4029 Mode Fonts			
Resident Fonts			
Courier	10	12	11
Courier bold	10	12	46
Courier	15	8.5	223
Courier	17.1	8.5	254
Courier	20	8.5	281

Font	Pitch	Point Size	IBM Font ID Number
Combo Cartridge 1255824			
OCR-A	10	12	19
OCR-B	10	12	3
Prestige Elite	12	10	86
Orator	10	14	5
Courier	12	10	85
Helvetica	Prop.	14	34105
Supports M Cartridge 1255841			
Prestige Elite	12	10	86
Prestige Elite bold	12	10	111
Prestige Elite italic	12	10	112
Supports R Cartridge 1255842			
Orator bold	6.5	18	435
Orator bold	8.1	16	434
Orator bold	10	14	38
Letter Gothic	10	14	40
Lines I	10	14	31
Lines II	10	14	32
Supports U/V Cartridge 1255843			
Swiss 721	Prop.	6	34101
Swiss 721	Prop.	8	34102
Swiss 721 bold	Prop.	10	34123
Swiss 721 bold	Prop.	12	34124
Swiss 721 bold	Prop.	14	34125
Letter Gothic	15	9.5	230

Font	Pitch	Point Size	IBM Font ID Number
Supports Z Cartridge 1255844			
Press Roman	Prop.	8	185
Press Roman	Prop.	10	186
Press Roman bold	Prop.	10	187
Press Roman italic	Prop.	10	188
Press Roman	Prop.	12	189
Press Roman bold	Prop.	12	190
Press Roman italic	Prop.	12	191
Press Roman bold	Prop.	14	192
Letter Gothic	17.1	8.5	255
Supports Z Cartridge 1255845			
Swiss 721	Prop.	10	34103
Swiss 721 italic	Prop.	10	34231
Swiss 721	Prop.	12	34104
Swiss 721 italic	Prop.	34232	
Swiss 721	Prop.	8	34103
Swiss 721 bold	Prop.	10	34123
Swiss 721 bold	Prop.	12	34124
Swiss 721 bold	Prop.	14	34125
Letter Gothic	17.1	8.5	255
Supports Resident Cartridge 1255846			
Courier	10	12	11
Courier bold	10	12	46
Courier italic	10	12	18
Courier bold	12	10	108
Courier italic	12	10	92
Courier	16.7	8.5	252
Courier	12	10	85

Font	Pitch	Point Size	IBM Font ID Number
Supports N Cartridge 1255847			
Letter Gothic	12	12	87
Letter Gothic bold	12	12	110
Letter Gothic italic	12	12	109
Supports T Cartridge 1255848			
Swiss 721	Prop.	6 34101	
Swiss 721	Prop.	8	34102
Swiss 721 bold	Prop.	10	34123
Swiss 721 bold	Prop.	12	34124
Swiss 721 bold	Prop.	14	34125
Swiss 721 bold	Prop.	8	34122
Tax Line Draw	10	12	30
OCR-A	10	12	19

HP Laser Fonts (PLC4 Mode)					
HP Laser Fonts	Symbol	Orient.	Pitch	Point	Font ID
Resident Fonts					
Courier	R-8	P/L	10	12	11
Courier bold	R-8	P/L	10	12	46
Line Printer	R-8	P/L	13.3	8.5	201
Line Printer	R-8	P/L	15	8.5	223
Line Printer	R-8	P/L	17.1	8.5	254
Line Printer	R-8	P/L	19	8.5	282
ProCollection Cartridge®					
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	12	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	
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	ASCII	P/L	27	3.6	291
Letter Gothic	ASCII	P/L	19	6	

HP Laser Fonts	Symbol	Orient.	Pitch	Point	Font ID
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	ASCII	P	Prop.	14	190
Helvetica bold	Legal	P	Prop.	14	191
WordPerfect Cartridge®					
CG Times	DskTop	P	Prop.	6	4685
CG Times	DskTop	P	Prop.	8	4688
CG Times Bold	DskTop	P	Prop.	8	4706
CG Times italic	DskTop	P	Prop.	8	4814
CG Times	DskTop	P	Prop.	10	4687

HP Laser Fonts	Symbol	Orient.	Pitch	Point	Font ID
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
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
Microsoft® Cartridges					
Helvetica	R-8	P	Prop.	8	34102
Helvetica	R-8	P	Prop.	10	34103
Helvetica bold	R-8	P	Prop.	10	34123
Helvetica italic	R-8	P	Prop.	10	34231
Helvetica	R-8	P	Prop.	12	34104
Helvetica bold	R-8	P	Prop.	12	34124
Helvetica italic	R-8	P	Prop.	12	34232
Helvetica bold	R-8	P	Prop.	14	34125
Times Roman	R-8	P	Prop.	8	5686
Times Roman	R-8	P	Prop.	10	5687
Times Roman bold	R-8	P	Prop.	10	5707
Times Roman italic	R-8	P	Prop.	10	5815
Times Roman	R-8	P	Prop.	12	5688
Times Roman bold	R-8	P	Prop.	12	5708
Times Roman italic	R-8	P	Prop.	12	5816
Times Roman bold	R-8	P	Prop.	14	5709
Line Printer	R-8	P/L	15	8.5	223

HP Laser Fonts	Symbol	Orient.	Pitch	Point	Font ID
Polished Worksheets® Cartridge					
Prestige Elite	R-8	P/L	15	7	
Prestige Elite	R-8	P/L	12	10	86
Prestige Elite bold	R-8	P/L	12	10	111
Prestige Elite italic	R-8	P/L	12	10	112
Prestige Elite	Legal	P/L	15	7	
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	R-8	P/L	27	3.6	290
Letter Gothic	R-8	P/L	12	12	87
Letter Gothic bold	R-8	P/L	12	12	110
Letter Gothic italic	R-8	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
Presentation bold	ASCII	P/L	8.1	16	434
Presentation bold	Legal	P/L	8.1	16	431
Persuasive Presentations® Cartridges					
Letter Gothic	ASCII	P/L	10	14	39
Letter Gothic	Legal	P/L	10	14	38
Presentation bold	ASCII	P/L	10	14	5
Presentation bold	Legal	P/L	10	14	7
Presentation bold	ASCII	P/L	8.1	16	434
Presentation bold	Legal	P/L	8.1	16	431
Presentation bold	ASCII	P/L	6.5	18	435
Presentation bold	Legal	P/L	6.5	18	432
Presentation bold	ASCII	P/L	5.7	24	436
Presentation bold	Legal	P/L	5.7	24	433
Helvetica outline	ASCII	P/L	Prop.	24	34115
Helvetica outline	Legal	P/L	Prop.	24	34116

HP Laser Fonts	Symbol	Orient.	Pitch	Point	Font ID
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
Forms Etc.® Cartridge					
Univers	R-8	P/L	Prop.	6	33101
Univers	R-8	P/L	Prop.	8	33102
Univers bold	R-8	P/L	Prop.	8	33122
Univers bold	R-8	P/L	Prop.	10	33123
Univers bold	R-8	P/L	Prop.	12	33124
Univers bold	R-8	P/L	Prop.	14	33125
Helvetica cond. black	TaxNum	P/L	Prop.	24	34128
OCR-A	OCR-A	P	10	12	19
Tax Line Draw	LinDrw	P/L	10	12	30
Bar Codes & More® Cartridge					
Letter Gothic	R-8	P/L	15	9.5	230
Letter Gothic	R-8	P/L	12	12	87
Letter Gothic	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

HP Laser Fonts	Symbol	Orient.	Pitch	Point	Font ID
Text Equations Cartridge					
Prestige Elite	R-8	P	15	7	221
Prestige Elite	R-8	P	17.1	7	256
Prestige Elite	R-8	P	12	10	86
Prestige Elite bold	R-8	P	12	10	111
Prestige Elite italic	R-8	P	12	10	112
CG Times	R-8	P	Prop.	8	157
CG Times	R-8	P	Prop.	10	158
CG Times bold	R-8	P	Prop.	10	159
CG Times italic	R-8	P	Prop.	10	155
Global Text Cartridge					
CG Century Schoolbook	R-8	P/L	Prop.	8	16950
CG Century Schoolbook	R-8	P/L	Prop.	10	16951
CG Century Schoolbook bd	R-8	P/L	Prop.	10	16971
CG Century Schoolbook it	R-8	P/L	Prop.	10	17079
CG Triumvirate	R-8	P/L	Prop.	10	33335
CG Triumvirate bold	R-8	P/L	Prop.	14	33357
Pretty Faces Cartridges					
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 Zapf Dingbats®	ITC	P	Prop.	36	5980
ITC Zapf Dingbats	ITC	P	Prop.	18	5990



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