EPSON

Product Support Bulletin ▬▬▬▬▬▬▬

Subject: AP-3250 Commonly Asked Questions and Answers

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Page(s): 1 of 6   Originator: SLS/JV

This bulletin answers some commonly asked questions about the AP-3250 printer. The questions and answers are listed below.

QUESTIONS AND ANSWERS ON THE AP-3250

1. Q. What is the AP-3250 printer?

    A. The AP-3250 is Epson's first narrow carriage light duty printer specifically designed to meet the unique needs of the entry-level home computer user. Listed below are some of the key features of the AP-3250 printer:

    - Epson ESC/P 2 command set
    - Built-in paper cassette, holds up to 50 single sheets of letter size paper
    - Roman and Sans Serif fonts, scalable from 8 to 32 points
    - High resolution 360 x 360 DPI bit-image graphics
    - Convenient, easy-to-use two button control panel
    - Print Speed: 200 CPS Draft at 12 CPI
                         72 CPS Letter Quality at 12 CPI
    - Quiet operation, only 50 dB(A)
    - Built-in 11KB input buffer
    - Small size and small footprint
    - Epson's two year limited warranty with unlimited 800 number free technical support

2. Q. Is the AP-3250 printer a replacement or addition to the Epson printer line?

    A. The AP-3250 print is a replacement product. It replaces the AP-3000 / LQ-200 printer.

3. Q. What is the Epson ESC/P 2 command set?

    A. As the leading impact printer vendor, the Epson Standard Codes for
        Printers (ESC/P) has become a de facto standard for most dot matrix
        printers. Epson Standard Codes are featured by most other vendors as
        an immediate entry into a wide range of third party software. As the
        market continues to develop new requirements, Epson has moved to
        improve its standard by offering a version called ESC/P 2.

4. Q. What are the benefits of ESC/P 2?

    A. The features of ESC/P 2 are divided into two categories: Scalable Fonts,
        and Enhanced Graphics.

        SCALABLE FONTS: ESC/P 2 provided access to Scalable Roman and
        Sans Serif fonts. The Scalable Fonts are available in even increments
        from 8 to 32 points. In addition to these sizes, 10.5 and 21 point sizes are
        also available. Epson printers with ESC/P 2 perform the calculations
        necessary to scale the fonts. The Scalable Fonts are most easily selected
        within application software programs that provide ESC/P 2 printer drivers.

        ENHANCED GRAPHICS: ESC/P 2 also provides Enhanced Graphics
        capabilities in certain software applications supporting the raster graphics
        mode of ESC/P 2. Enhanced Graphics is defined as a finer, more
        accurate placement of printed dots leading to greater clarity of text and
        sharper more detailed graphics in graphical printing environments such as
        Microsoft Windows or Lotus 1-2-3. Enhanced Graphics also allows for
        true 360 horizontal DPI printing with a single pass of the print head,
        creating better print quality and faster print speeds than other dot-matrix
        printers.

5. Q. When printing multi-page documents, what would cause the AP-3250 to
        print the first page correctly but print too low on the following pages?

    A. This difference in print position is easy to adjust in most software
        application programs. Most application programs have a default page
        length of 66 lines per page when using 11" continuous paper. Since the
        AP-3250 uses single sheets of paper, it automatically provides a small top
        and bottom margin. Since these margins are non-printable area, the AP-
        3250's maximum number of lines per page when using 11" singe sheet
        paper is 61 lines. Most software application programs include an option to

adjust the maximum number of lines per page. Decreasing the program's maximum number of lines per page by 5 (e.g. 61 lines) should correct for this print position difference.

6. Q. Why is a ON-LINE/OFF-LINE or PAUSE button not present on the AP-3250's front panel?

    A. The AP-3250 printer was designed to be as easy to use as possible. Because of this, the AP-3250 was designed any unnecessary buttons. The AP-3250 automatically goes into a ready condition after being powered on. (See the question below for additional information.)

7. Q. Why does the AP-3250 produce two (2) long and two (2) short beeps when first power-on?

    A. The AP-3250 produces these beeps at power-on to indicate that it has completed its power-on initialization process and is ready to print.

8. Q. What are the product codes for AP-3250 options and supplies?

    A. Listed below are the product codes for the AP-3250 optional push tractor and ribbon cartridge.

         S015032   Fabric Ribbon Cartridge
         C800262   Push Tractor

9. Q. What is the advantage of purchasing an optional Push Tractor?

    A. The optional Push Tractor allows the AP-3250 to use continuous narrow carriage paper while still maintaining the ability to use the AP-3250's built-in single sheet paper cassette. When using the optional push tractor, the AP-3250 can accept a two part carbonless multi-part form with a total thickness up to 0.18mm.

10. Q. What interface does the AP-3250 come standard with?

    A. The AP-3250 comes standard with a built-in Centronics compatible parallel interface.

11. Q. How do I use the AP-3250 to operate with serial communications?

A. The AP-3250 only operates with parallel communications.

12. Q. If a printer driver selection is not shown for the AP-3250 in my application software programs, which printer driver selection should I choose?

A. The recommended printer driver selections for the AP-3250 are listed below in order from best to worst.

    AP-3250   BEST
    LQ-570/1070
    LQ-870/1170
    LQ-510
    LQ-860
    LQ-850
    LQ-200
    LQ-500
    LQ-2550
    LQ-2500
    LQ-800
    LQ-1500
    Generic Epson WORST

To take full advantage of the AP-3250's features, including ESC/P 2, choose one of the first three printers listed above. If none of these printer selections are available from within your application software, contact your software manufacturer to determine whether they offer a printer driver update or if they plan to make one available in the future.

13. Q. What are the AP-3250 printer's rated text mode print speeds?

A. The AP-3250 printer's print speeds are listed below

Characters/inch	Draft CPS	LQ CPS	Printable Columns
10	167	60	80
12	200	72	96
15	250	90	120
17.1	103	103	137
20	120	120	160

Note: CPS = Characters Per Second

14. Q. Does the AP-3250 use DIP switches?

   A. No, the AP-3250 does not use DIP switches. The various features settings are selected through use of the two buttons on the printer's front panel.

15. Q. Can the AP-3250 print on labels?

   A. Yes, the AP-3250 can print on labels. The optional pull tractor is used to load continuous labels.

16. Q. Can the AP-3250 print on envelopes?

   A. Yes, the AP-3250 can print on envelopes. The envelopes are loaded at the rear of the printer by using the printer's manual insertion slot. (Note: The printer must be placed in the upright position first.)

17. Q. Can the AP-3250 print on legal size paper?

   A. Yes, the AP-3250 can print on legal paper. Legal size paper is loaded at the rear of the printer by using the printer's manual insertion slot. (Note: The printer must be placed in the upright position first.)

18. Q. The AP-3250's User's Guide lists information on 120, 220 and 240 volt versions of this printer. How can I purchase a 220 or 240 volt version of this printer?

   A. The AP-3250 is available only in the 120 volt configuration in the U.S.A..

19. Q. Can the AP-3250 print in landscape orientation?

   A. Yes, but the AP-3250 requires the use of a software application program because landscape characters are not included in its built-in characters set. Two very popular software application programs for printing in the landscape mode are Sideways and Always.

20. Q. Why is the AP-3250's parallel cable connector located on the side of the printer instead of the rear like most other printers?

A. Since the AP-3250 may be operated in two different positions it was necessary to relocate the parallel cable connector to the side of the printer.

21. Q. Can different fonts be selected on the AP-3250's front panel?

A. Yes, different fonts may be selected from the AP-3250's front panel by using the font button. However, all font selections made from the front panel can be overridden by an software application program. The recommended method to select fonts is through the program that you are using to print. If the program does not provide font selection abilities, then the printer's font panel is very useful.

22. Q. When printing high density (360 x 360 DPI) bit-image graphics why does ink smearing sometimes occur on the outside edges of the printout with certain print patterns?

A. The AP-3250 builds the graphic image by making multiple passes when printing high density graphics. Dependant upon the printed pattern and the ink absorption factor of the paper being used, ink smearing may occur on the edges of the printed pattern. This occurrence is much less noticeable when printing at resolutions lower than 360 x 360 DPI. Should this phenomenon be encountered, select a lower graphic resolution in your software program.

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Product Support Bulletin ————————

Subject: **Understanding and Using** ESCP/2 **Commands and Syntax**

Date: 12/4/91   **PSB No: P-0082**
Page(s): 1 of 14   **Originator: JW**

**This bulletin provides detailed explanations and illustrations for some of the more
commonly used printer commands used in ESC/P2 Listed below are the
commands discussed in this bulletin.**

Command	Command Name	PSB Page
ESC X m n1 n2	**Select Pitch and Point Size**	**2**
ESC (C m1 m2 n1 n1	**Set Page Length in Defined Units**	**5**
ESC(vm1 m2 n1 n2	**Set Relative Vertical Position**	**6**
ESC(Vm1 m2 n1 n2	**Set Absolute Vertical Position**	**8**
ESCtn	**Select Character Table**	**9**
ESC (t n1 n2 d1 d2 d3	**Assign Character Table**	**10**
ESC(^ n1 n2 d_1...d_2	**Print Data as Characters**	**14**

ESC X m n1 n2 (Select Pitch and Point Size)

ESC X m n1 n2 is the command for selecting pitch and point size where m, n1 and n2 are variables. The variable "m" is used to select the pitch which is the character spacing. The variable "n1" selects the point size and the variable "n2", at this time, will always be 0 (zero). The variables "m" and "n1" are explained below.

The values used for 'm' are 0,1,18,21,24,30,36,42,48,60, and 72. If "0" is used as the value for "m", there will be no change in pitch. If "1" is used as the value for "m", the character pitch will be proportional spacing. To determine the character pitch for all other values of "m", divide 360 by "m". For example, if m=60 then 360 divided by 60 equals 6 and the character pitch is 6 characters per inch. If m=30, the character pitch is 12 characters per inch.

For the Roman and Sans Serif fonts, the values used for "n1" are 0,16,20,21,24, 28,32,36,40,42,44,48,52,56,60 and 84. For all other fonts, the values used for "n1" are 0,21, and 42. The actual point size that will print is n1 divided by 2. For example, if n1=20, the point size is 10. If n1=48, the point size is 24. **NOTE: When selecting a point size larger than 24 (the value for n1 is greater than 48) select proportional spacing (m=1) for the character pitch.**

In the Basic programming language, the command would look like this.

LPRINT CHR$(27);"X";CHR$(1);CHR$(48);CHR$(0);"This is 24 point proportional spaced"

Chr$(27) is ESC, chr$(1) selects proportional spacing, chr$(48) selects 24 point character size. At this time, n2 is always zero (0).

```
10 INPUT "Point Size";A$
20 B=VAL(A$)*2
21 RESTORE 70
22 FOR X=1 TO 16
23 READY
24 IF B=Y THEN GOTO 30
25 NEXT X
26 CLS
27 PRINT A$ " is not a valid point size choice."
20 GOTO 10
30 C=VAL(A$)
40 LPRINT CHR$(27);"X";CHR$(1);CHR$(B);CHR$(0);"These are ";A$;" point
characters"
50 LPRINT CHR$(27);"(v";CHR$(2);CHR$(C);CHR$(C);CHR$(0)
60 GOTO 10
70 DATA   0,16,20,21,24,28,32,36,40,42,44,48,52,56,60,64
```

Line 10 - allows you to specify the point size desired.

Line 20 - computes the value for "n1" in the ESC X command.

tine 21 - check to ensure that a valid point size was input If the point size is
           valid, the program jumps to line 30. If the point size is not valid, the
           program prints a message on the screen and starts over again.

Line 30 - computes the value for "n1" for advancing paper using the ESC (v
           command.

Line 40 - sends the "Set Pitch and Point Size" command to the printer. (Note: The
           pitch is set for proportional spacing for all point sizes to ensure proper
           character spacing regardless of the point size.)

Line 50 - sends the "Set Relative Vertical Position" command to the printer. This
           command advances the paper in preparation for printing the next line.

Line 60 causes the program to start again at the beginning.

NOTE: To halt the program, hold down the "Ctrl" key and press the "C" key.

These are 8 point characters

These are 10 point characters

These are 10.5 point characters

These are 12 point characters

These are 14 point characters

These are 16 point characters

These **are** 18 **point** characters

These are 20 point characters

These are 21 point characters

These are 22 point characters

These are 24 point characters

These are 26 point characters

These are 28 point characters

These are 30 point characters

These are 32 point characters

ESC (C m1 m2 n1 n2 (Set Page Length in Defined Units

ESC (C m1 m2 n1 n2 is the command for setting the page length in units where ml, m2, n1 and n2 are variables. The "unit' is usually 1/360 of an inch unless defined otherwise by the "ESC (U" command. Currently, the values for m1 and m2 MUST be m1=2 and m2=0.

To determine the values for n1 and n2 perform the following steps.
1. Determine the desired page length in inches.
2 Multiply the page length by 360.
3. Divide the result by 256 using long division.
4. The remainder in the quotient from step 3 is the value for n1.
5. The whole number in the quotient from step 3 is the value for n2.

EXAMPLE
1. The page length is 8.5 inches.
2 8.5 x 360 = 3060
3. 3060 divided by 256 = 11 with a remainder of 244.
4. n1=244
5. n2=11

In the Basic programming language, the command would look like this.

LPRINT CHR$(27);"(C";CHR$(2);CHR$(0);CHR$(244);CHR$(11)

This command, as listed in the line above, will set the page length to 8.5 inches.

NOTE: The current line becomes the top of form. This command cancels any previously set top and bottom margin settings. If you wish to set the top and bottom margins via software command, the commands must be issued AFTER the "Set Page Length in Defined Units" command. The proper page length setting can be confirmed by issuing a "Form Feed" command, chr$(12), or by pressing the "FF button on the control panel while the printer is "Off Line".

ESC (v m1 m2 n1 n2 (Set Relative Vertical Position

ESC (v m1 m2 n1 n2 is the command for advancing the print position vertically in units where m1, m2, n1 and n2 are variables. The "unit" is usually 1/360 of an inch unless defined otherwise by the "ESC (U" command. Currently, the values for ml and m2 MUST be m1=2 and m2=0.

To determine the values for n1 and n2 perform the following steps.
1.   Determine the desired vertical motion distance in inches.
2   Multiply the distance by 360.
3.   Divide the result by 256 using long division.
4.   The remainder in the quotient from step 3 is the value for n1.
5.   The whole number in the quotient from step 3 is the value for n2

EXAMPLE
1.   The desired distance is 1 inch.
2   1 x 360 = 360
3.   360 divided by 256=1 with a remainder of 104.
4.   n1=104
5.   n2=1

In the Basic programming language, the command would look like this.

LPRINT CHR$(27);"(v";CHR$(2);CHR$(0);CHR$(104);CHR$(1)

This command, as listed in the line above, will feed the paper up 1 inch from the current line. The current print column (horizontal position) IS NOT changed.

'Reverse" paper feed less than 1/2 inch can be performed with this command. To accomplish "reverse" paper feeding requires the following steps.

1.   Determine the desired vertical motion dice in inches.
2   Multiply the distance by 360.
3.   Divide the result by 256 using long division.
4.   Subtract the remainder in the quotient computed in step 3 from 256.
5.   The result from step 4 is the value for n1.
6.   The value for n2 will always be 255.

EXAMPLE
1. The desired distance is 1/4 inch.
2. 1/4 x 360 = 90
3. 90 divided by 256 = 0 with a remainder of 90.
4. 256-90=166
5. n1=166
6. n2=255

In the Basic programming language, the command would look like this.

LPRINT   CHR$(27);"(v";CHR$(2);CHR$(0);CHR$(166);CHR$(255)

This command, as listed in the line above, will feed the reverse feed the paper 1/4 inch from the current line. The current print column (horizontal position) IS NOT changed.

ESC (V m1 m2 n1 n2 (Set Absolute Vertical Position)

ESC (V m1 m2 n1 n2 is the command for changing the print position vertically (with respect to the Top of Form position) in units where m1, m2, n1 and n2 are variables. The "unit" is usually 1/360 of an inch unless defined otherwise by the "ESC(U" command. Currently, the values for m1 and m2 MUST be m1=2 and m2=0.

To determine the values for n1 and n2 perform the following steps.
1.   Determine the desired vertical distance from the Top of Form in inches.
2 Multiply the distance by 360.
3.   Divide the result by 256 using long division.
4.   The remainder in the quotient from step 3 is the value for n1.
5.   The whole number in the quotient from step 3 is the value for n2

EXAMPLE
1.   The desired dice from the Top of Form is 1 inch.
2   1 x 360 = 360
3.   360 divided by 256= 1 with a remainder of 104.
4.   n1=104
5.   n2=1

In the Basic programming language, the command would look like this.

LPRINT CHR$(27);"(V";CHR$(2);CHR$(0);CHR$(104);CHR$(1)

This command, as listed in the line above, will position the paper 1 inch from the current Top of Form setting. For example, if the Top of Form setting is the top edge of the paper, the paper will be positioned so that the printer is ready to print 1 inch down from the top edge of the paper.

ESC t n (Select Character Table)

ESC t n is the command for selecting a character table to be used for printing where n is a variable. The following table lists the values for n and the character table associated with the value.

n	T a b l e
0	Italic
1	PC437 (US)
2	User-defined Characters
3	PC437 (US)

Table 1

NOTE: 1. Character tables other than those listed above can be assigned by using the ESC (t command (Assign Character Table).
2 The value used for n can be either the ASCII value OR the ASCII character (i.e. chr$(1) or "1").

In the Basic programming language, the command would look like this.

LPRINT CHR$(27);"t";CHR$(0);

CHR$(27) is ESC and CHR$(0) selects table #0 (italic).

ESC (t n1 n2 d1 d2 d3 (Assign Character Table)

E<u>SC (t n1 n2 d1 d2 d3 i</u>s the command for assigning character tables where n1, n2, d1,d2, and d3 are variables. Currently, variables, n1, n2 and d3 MUST be n1=3, n2=0, and d3=0. Variable d1 is a number corresponding to one of the four tables selectable with the ESC t n command. This is the table that will be replaced. Valid values for d1 are 0,1,2, and 3 (see Table 1 below). Variable d2 is a number corresponding to a registered table. This is the table that will replace the table indicated by Variable d1. Valid Values for d2 are 0, 1,3,7,8, and 9 (see Table 2 below).

d1	Selectable Table
0	Italic
1	PC437 (US)
2	User-defined Characters
3	PC437 (US)

Table 1

d2	Registered Table
0	Italic
1	PC437 (US)
3	PC850 (International)
7	PC860 (Portugal)
8	PC863 (Canada-French)
9	PC865 (Norway)

Table 2

After using the ESC (t command, the ESC t n command MUST be sent to select the table before printing from the new table. For example, the command ESC (t 3 0 1 3 0 is sent (assign Registered Table 3 (PC850) to Selectable Table 1 (PC437). In order to print the § character (ASCII 245), the command ESC t 1 must be sent. In the Basic programming language, the sequence would be as follows:

```
LPRINT   CHR$(27);"(T);CHR$(3);CHR$(0);CHR$(1);CHR$(3);CHR$(0);
LPRINT CHR$(27);"t";CHR$(1);
LPRINT  CHR$(245)
```

Some ESC/P2 documentation may illustrate as many as 22 different Registered Tables. The Registered Tables are a part of the character set, therefore, they are contained in the Character Generator ROM. The CG ROM differs based upon the destination country. For this reason, only the above Registered Tables are available on LQ-570, LQ-1070, LQ-870 and LQ-1170 printers sold for the U.S. market. Foreign Character Generator ROMs ARE NOT available in the United States. The following

page contains a print sample of the Registered Tables available in printers sold in the U.S. In order to print the first 31 characters in Tables 1 through 9, the ESC (^ command must be sent.

Listed below is a Basic language program and an explanation of the program that will print the output illustrated on page 13 of this bulletin.

```
10  FOR Z=1 TO 6
20   READ Y,Y$
30 LPRINT "Table";Y;" ";Y$
40   LPRINT  CHR$(27);"(t";CHR$(3);CHR$(0);CHR$(0);CHR$(Y);CHR$(0);
50   LPRINT  CHR$(27);"t";CHR$(0)
60   IF Y=0 THEN GOTO 100
70   LPRINT  CHR$(27);"(^";CHR$(31);CHR$(0);
80   FOR X=1 TO 255:LPRINT CHR$(X);:NEXT X
90   GOTO 120
100 FOR X=33 TO 126:LPRINT CHR$(X);:NEXT X
110 FOR X=161 TO 254:LPRINT CHR$(X);:NEXT X
120 LPRINT  CHR$(10):LPRINT  CHR$(10)
130 NEXT Z
140 DATA 0, Italic, 1, PC437 (US),3,PC850 (International),7,PC860 (Portugal)
150 DATA 8, PC863 (Canada-French),9,PC865 (Norway)
```

Program Description

10   Begin loop to print the 6 Registered Tables
20   Read Registered Table number and Table Name
30   Print Registered Table number and Table Name
40   Send the Assign Character Table command to the printer assigning the Registered Character Table read in line 20 to Selectable Character Table 0.
50   Send the Select Character Table command to the printer selecting Selectable Table number 0 as the current Character Table for printing.
60   If the Registered Character Table number is 0, do not execute commands in lines 70 through 90. This is because the Italic Character Table duplicates control codes and non-displayable characters in ASCII values 127 through 160. Program lines 100 and 110 prevent the attempted printing of this range of ASCII values.

Note: tines 70 through 90 will execute ONLY if the Registered Character Table to be printed is NOT table number 0. Refer to the conditional command in line 60.

70   If the Registered Character Table number is not 0, send the Print Data as Characters command to the printer. Specifically, this command, as listed, tells the printer to print the next 31 bytes as data, not control codes.

60   If the Registered Character Table number is not 0, print ASCII values 1 through 255 inclusive. Remember, line 70 allows the first 31 ASCII values to print as characters, not control codes.

90   If the Registered Character Table number is not 0, do not execute commands in lines 100 and 110.

100 If this Registered Character Table number is 0, sand ASCII values 33 through 126 to the printer.

110 If this Registered Character Table number is 0, send ASCII values 161 through 254 to the printer.

120 Send 2 line feed commands to the printer to provide separation between tables.

130 If program lines 20 through 120 have not executed 6 times, return to line 20 and start again.

140 Data that is read by line 20. This line and line 150 contain the Registered Table number and name that will be used by this program.

Table 0   Italic
'#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_'abcdefghijklm
opqrstuvwxyz{¦}¯!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_
abcdefghijklmnopqrstuvwxyz{¦}¯

Table 1   PC437 (US)
♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
RSTUVWXYZ[\]^_'abcdefghijklmno
qrstuvwxyz{¦}ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜ¢£¥₧ƒáíóúñÑªº¿⌐¬½¼¡«»▒▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αβΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

Table 3   PC850 (International)
♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
RSTUVWXYZ[\]^_'abcdefghijklmno
qrstuvwxyz{¦}ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø×ƒáíóúñÑªº¿®¬½¼¡«»▒▓│┤ÁÂÀ©╣║╗╝¢¥┐
└┴┬├─┼ãÃ╚╔╩╦╠═╬¤ðÐÊËÈıÍÎÏ┘┌█▄¦Ì▀ÓßÔÒõÕµþÞÚÛÙýÝ¯´±‗¾¶§÷¸°¨·¹³²■

Table 7   PC860 (Portugal)
♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
RSTUVWXYZ[\]^_'abcdefghijklmno
qrstuvwxyz{¦}ÇüéâãàÁçêÊèÍÔìÃÂÉÀÈôõòÚùÌÕÜ¢£Ù₧ÓáíóúñÑªº¿Ò⌐¬½¼¡«»▒▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αβΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

Table 8   PC863 (Canada-French)
♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
RSTUVWXYZ[\]^_'abcdefghijklmno
qrstuvwxyz{¦}ÇüéâÂà¶çêëèïî_§ÉÈÊôËÏûù¤ÔÜ¢£Ù₧ƒ¦'óú¨³¯Î⌐¬½¾¡«»▒▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αβΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

Table 9   PC865 (Norway)
♥♦♣♠•◘○◙♂♀♪♫☼►◄↕‼¶§▬↨↑↓→←∟↔▲▼ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
RSTUVWXYZ[\]^_'abcdefghijklmno
qrstuvwxyz{¦}ÇüéâäàåçêëèïîìÄÅÉæÆôöòûùÿÖÜø£Ø₧ƒáíóúñÑªº¿⌐¬½¼¡«¤▒▓│┤╡╢╖╕╣║╗╝╜╛┐
└┴┬├─┼╞╟╚╔╩╦╠═╬╧╨╤╥╙╘╒╓╫╪┘┌█▄▌▐▀αβΓπΣσµτΦΘΩδ∞φε∩≡±≥≤⌠⌡÷≈°∙·√ⁿ²■

ESC (^ n1 n2 d₁ . . . d_k (Print Data as Characters)

ESC (^ n1 n2 d₁... d_k is the command for printing control codes as data where n1 and n2 are variables and $d_1...d_k$ represent the data that is to be printed as characters. The variables n1 and n2 tell the printer "the next xx ASCII codes are to be interpreted as characters instead of control codes". This command is used primarily to print displayable characters such as ASCII values 0 through 31 in Registered Tables 1 through 9 which are normally used as control codes (LF, FF, ESC, etc.)

To determine the values for n1 and n2 perform the following steps.
1. Determine how many ASCII codes will be sent sequentially immediately following n1 and n2
2. Using long division, divide the quantity of ASCII codes that will be sent sequentially immediately following n1 and n2 by 255.
3. The remainder in the quotient is the value for n1.
4. The whole number in the quotient is the value for n2

EXAMPLE
1. The symbols for the different suits of a card deck (hearts, diamonds, clubs, and spades - ♥, ♦, ♣, and ♠) are to be printed. These are each separate ASCII codes (ASCII codes 2, 3, 4, and 5 when using the PC437 Character table).
2. 4 divided by 255= 0 with a remainder of 4.
3. n1=4
4. n2=0

In the Basic programming language, the command would look like this.

LPRINT CHR$(27);"(^ ";CHR$(4);CHR$(0);CHR$(2);CHR$(3);CHR$(4);CHR$(5)

This command, as listed in the line above, will cause the printer to print the symbols for the different suits of a card deck (hearts, diamonds, clubs, and spades ♥, ♦, 4, and ♠). Another example of using the ESC (^ command is illustrated in the explanation of the ESC (t (Assign Character Table) command.

Product Support Bulletin

Subject: Quick Reference for Current Dot-Matrix Printer Print Speeds

Date: 10/9/92
Page(s): 1 of 1

PSB No: P-0030C
Originator: SLS

9-PIN PRINTERS

Model	Draft 12 CPI	High-Speed Draft 10 CPI	NLQ 10 CPI	NLQ 12 CPI	
AP-2250	**200** CPS	240 CPS	n/a	**40** CPS	**48** CPS
LX-810	**200** CPS	240 CPS	n/a	**40** CPS	**48** CPS
FX-870/1170	285 CPS	342 CPS	380 CPS	57 CPS	68 CPS
DFX-5000	400 CPS	480 CPS	533 CPS	80 CPS	96 CPS
DFX-8000	800 CPS	960 CPS	1066 CPS	160 CPS	192 CPS

24-PIN PRINTERS

Model	Draft 10 CPI	Draft 12 CPI	High-Speed Draft 10 CPI	LQ 10 CPI	LQ 12 CPI
AP-3250	167 CPS	200 CPS	n/a	**60** CPS	72 CPS
LQ-570/1070	210 CPS	252 CPS	**225** CPS	**70** CPS	**84** CPS
LQ-860	**246** CPS	295 CPS	**300** CPS	**82** CPS	98 CPS
LQ-870/1170	**275** CPS	330 CPS	300 CPS	92 CPS	110 CPS
LQ-2550	**333** CPS	400 CPS	n/a	111 CPS	133 CPS

GLOSSARY OF TERMS
CPI: Characters Per Inch
CPS: Characters Per Second
Draft: Draft uses a minimum number of dots per character for high-speed printing.
Elite: 12 Characters Per Inch (12 CPI)
Pica: 10 Characters Per Inch (10 CPI)
LQ: Letter Quality reduces the print speed and increases the number of dots per character to increase the print quality. (24-pin printers only)
NLQ: Near Letter Quality reduces the print speed and increase the number of dots per character to increase the print quality. NLQ printing requires two passes per character. (9-pin printers only)

EPSON

Product Support Bulletin ———————

Subject: Quick Reference for 9/24 Pin Printer Paper Specifications

Date: 10/9/92   PSB No: P-0022D
Page(s): 1 of 1   Originator: SLS

This PSB provides a quick reference for the paper specifications on Epson's current line of Q-pin and 24-pin dot-matrix printers when using continuous paper. The 'Maximum No. of Copies" is the maximum allowable number of copies when using continuous multi-part carbonless paper. The "Total" number is the maximum allowable number of copies including the original. The 'Maximum Total Thickness" is the maximum allowable total thickness including the original plus any copies.

9-PIN PRINTERS

Model	Orig. + Maximum No. of Copies		Total	Maximum Total Thickness
AP-2250 *	1	2	3	0.0098" (0.25mm)
LX-810	1	2	3	0.0098" (0.25mm)
FX-870/1170	1	3	4	0.0126" (0.32mm)
DFX-5000 (Front Tractor) (Rear Tractor)	1 1	5 3	6 4	0.018" (0.46mm) 0.012" (0.30mm)
DFX-8000 (Front Tractor) (Rear Tractor)	1 1	5 3	6 4	0.018" (0.46mm) 0.012" (0.30mm)

24-PIN PRINTERS

Model	Orig. + Maximum No. of Copies		Total	Maximum Total Thickness
AP-3250 *	1	1	2	0.0071" (0.18mm)
LQ-570/1070	1	3	4	0.0126" (0.32mm)
LQ-860	1	3	4	0.0126" (0.32mm)
LQ-870/1170	1	3	4	0.0126" (0.32mm)
LQ-2550	1	5	6	0.018" (0.46mm)

* Note: The AP-2250 and AP-3250 require an optional push tractor to use continuous paper.