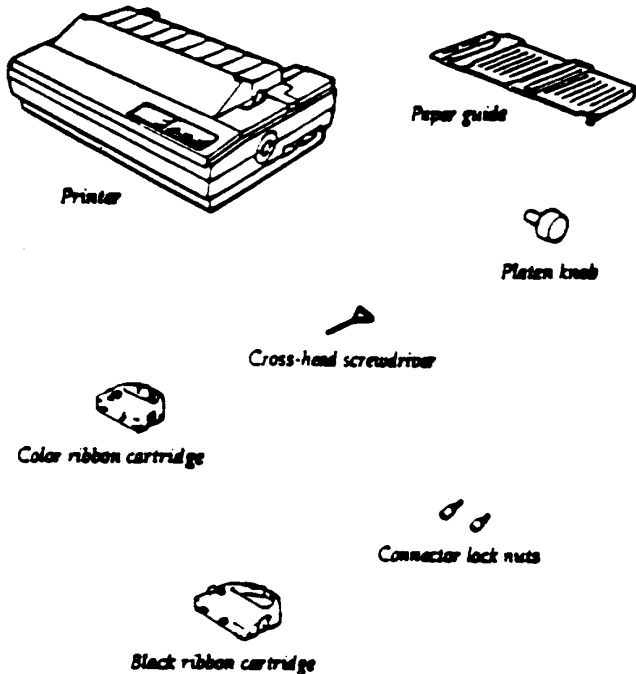




Printer Specifications

Printing

Print method: 24-pin impact dot matrix

Print speed:

Quality	Characters per inch	Characters/second/line
High-speed draft	10	300
Normal draft	10	246
	12	298
Letter Quality	10	62
	12	98

Printing direction: Bidirectional logic-seeking for text and graphics. Bidirectional for graphics. (Unidirectional can be selected with a DIP switch or by using the proper software command.)

Line spacing: 1/6 inch or programmable in increments of 1/360 inch

Buffer: 6KB or 0KB (panel button selectable)

Character fonts:

Font	Available sizes (Characters per inch)
High-speed draft	10
Normal draft	10, 12, 15, 17, 20, Proportional
Epson Roman	10, 12, 15, 17, 20, Proportional
Epson Sans Serif	10, 12, 15, 17, 20, Proportional

Characters:

96 standard ASCII character set (including italic characters)
14 international character sets
1 legal character set
Epson Extended Graphics character set

Paper

Paper feeding methods: Friction

Built-in push feed tractor with paper tension unit
Pull tractor (optional)
Single-bin or double-bin cut sheet feeder (optional)

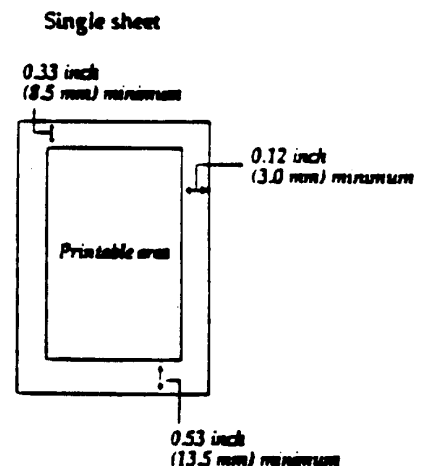
Paper width and length:

Paper	
Single sheet	width 7.2 to 10.1 inches (182 to 257 mm)
	length 7.2 to 14.3 inches (182 to 364 mm)
Continuous paper	width 4.0 to 10.0 inches (101 to 254 mm)
Envelopes	No. 6 8.54 x 3.62 inches (166 x 92 mm)
	No. 10 9.45 x 4.09 inches (240 x 104 mm)
Labels	2.5 x 0.94 inch (63.5 x 23.8 mm) minimum
	4 x 0.94 inch (101.6 x 23.8 mm) maximum

Printable columns:

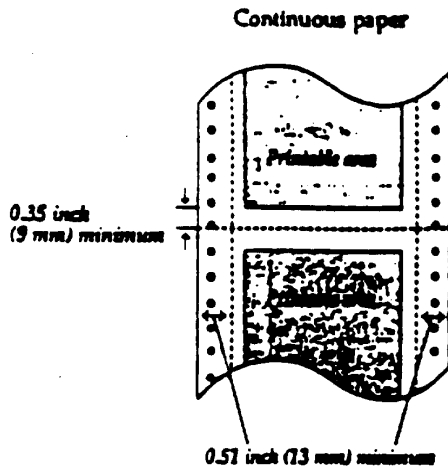
Character spacing	Maximum printed characters
10 cpi	80
10 cpi condensed	137
12 cpi	96
12 cpi condensed	160

Printable Area

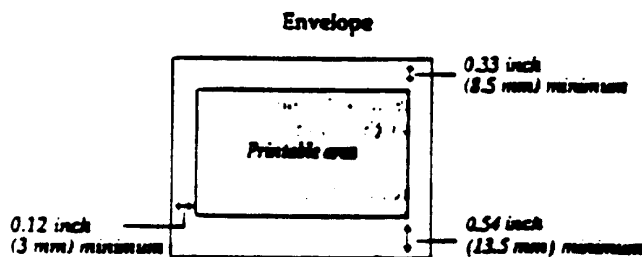


Note: Printing on paper from 9 to 10.1 inches wide increases the minimum right and left margins to 0.24 inches (6.0 mm).

LQ-860 DOT-MATRIX PRINTER



Notes: The minimum for the right and left margins increases to 0.98 inch (25.0 mm) when printing on 10-inch wide paper.



Note: Envelope printing is only available at normal operating conditions. Load the envelope with its long side horizontal.

Paper weight:	Single Sheet	14 lb to 24 lb
	Continuous	14 lb to 22 lb
	Multi-part forms	12 lb to 15 lb per sheet. Maximum number sheets = 4
	Envelope	12 lb to 24 lb

Paper thickness:	Single Sheet	0.0025 to 0.0055 inch (0.065 to 0.14 mm)
	Continuous	0.0025 to 0.012 inch (0.065 to 0.32 mm)
	Envelope	0.0063 to 0.0197 inch (0.16 to 0.52 mm)
	Label (plus base paper)	0.0063 to 0.0075 inch (0.16 to 0.19 mm)

Number of copies:	One original plus up to 3 copies (at normal temperature)
	One original plus up to 2 copies (all temperature ranges)
	Total thickness must not exceed 0.012 inch (0.32 mm)

Notes:

- The use of 24 lb paper is only available at normal temperature.
- Printing past the edge of envelopes, multi-part forms, labels, or paper that is thicker than normal can damage the print head.
- Labels with a pressure sensitive covering, either glued or tacked onto the backing sheet, can be printed under the conditions listed below. The total thickness may not exceed 0.0118 inch (0.3 mm).
 - The temperature range is 41° F to 95° F (5° C to 35° C).
 - The relative humidity is between 10 and 80 percent.

Mechanical

Ribbon:

Black ribbon cartridge #7762:

Life expectancy (in Letter Quality characters, at 48 dots/character)—
3 million characters

Color ribbon cartridge #7763:

Life expectancy (in Letter Quality characters, at 48 dots/character)

Black: 1.0 million characters
Cyan: 0.7 million characters
Magenta: 0.7 million characters
Yellow: 0.5 million characters

Film ribbon cartridge #7764:

Life expectancy (in Letter Quality characters)—0.1 million characters

MCBF:

For all components excluding print head:
5,000,000 lines

MTBF:

4000 power-on hours

Print head life:

200 million strokes/wire (fabric ribbon)
100 million strokes/wire (film ribbon)
100 million strokes (color ribbon)

Dimensions and weight:

Height	7.6 inches (194 mm)
Width	18.5 inches (469 mm)
Depth	15.7 inches (399 mm)
Weight	approx. 22.0 lb (10 kg)

Electrical

Voltage:

120 VAC $\pm$ 10%

Power consumption:

240 W maximum

Frequency:

49.5 to 60.5 Hz

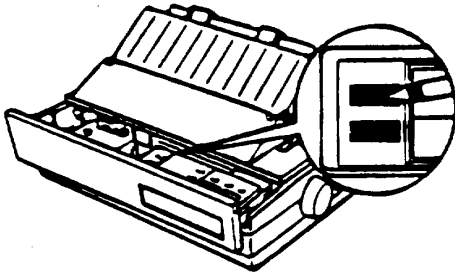
Insulation resistance:

10M ohms between AC power line and chassis

Dielectric strength (between AC line and chassis):

Can withstand 1.0 kV rms applied for one minute or 1.2 kV rms applied for one second

Setting the DIP Switches



DIP Switch 1

SW	Description	ON	OFF
1-1 1-2 1-3	International character set Code page table	See tables 1, 4	
1-4	Character table	Graphics	Tables
1-5	Print direction for graphics	Unidir.	BiDir.
1-6	High-speed draft	OFF	ON
1-7	Cut sheet feeder mode	ON	OFF
1-8	Skip over perforation	ON	OFF

DIP Switch 2

SW	Description	ON	OFF
2-1 2-2	Page length selection	See table 5	
2-3 2-4	Interface type/parity	See table 2	
2-5 2-6	Baud rate	See table 3	
2-7	Short tear-off mode	ON	OFF
2-8	Auto line feed	ON	OFF

Table 1 International character sets

Country	SW 1-1	SW 1-2	SW 1-3
USA	ON	ON	ON
France	ON	ON	OFF
Germany	ON	OFF	ON
UK	ON	OFF	OFF
Denmark I	OFF	ON	ON
Sweden	OFF	ON	OFF
Italy	OFF	OFF	ON
Spain I	OFF	OFF	OFF

See Selecting an International Character Set later in this chapter for other character sets.

International character sets are selectable only when DIP switch 1-4 is off.

Table 2 Interface/parity selection

Interface type	Parity	SW 2-3	SW 2-4
Parallel		OFF	OFF
Serial	Even	ON	OFF
Serial	Odd	OFF	ON
Serial	None	ON	ON

Table 3 Baud rate selection

Baud rate	SW 2-5	SW 2-6
9600 bps	OFF	OFF
19200 bps	ON	OFF
1200 bps	OFF	ON
300 bps	ON	ON

Table 4 Code page tables

Graphics type	SW 1-1	SW 1-2	SW 1-3
United States 437	ON	ON	ON
Multilingual 850	ON	ON	OFF
Portugal 860	ON	OFF	ON
Canada-French 863	ON	OFF	OFF
Norway 865	OFF	ON	ON

Code page tables are selectable only when the DIP switch 1-4 is on.

Table 5 Page length selection

Page length	SW 2-1	SW 2-2
11 inches	OFF	OFF
12 inches	ON	OFF
8.5 inches	OFF	ON
11.7 inches	ON	ON

Application Software

Because the family of Epson printers shares a great many commands, you can use an application program even if it does not list the LQ-860 on its printer selection menu. If the printer is not listed, choose one of the following printers. They are listed in order of preference.

LQ-2550
LQ-2500
LQ-850 (LQ-950, LQ-1050)
LQ-800 (LQ-1000)
LQ-510/LQ-500
LQ-1500

If you plan to print in color, choose the LQ-860, LQ-2550, or LQ-2500.

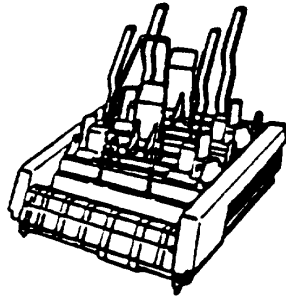
If none of these printers is listed, select the first one available on the following list: LQ, EX, FX, LX, RX, MX, JX, Epson printer, Standard printer, Draft printer.

To use all of the features of the printer, however, it is best to use a program with the LQ-860 on its menu. If your program does not list the printer, contact the software manufacturer to see if an update is available that supports your model.

The Cut Sheet Feeder

The optional cut sheet feeders make it possible to handle single-sheet paper more easily and more efficiently. Up to 150 sheets of standard bond paper can be fed automatically into the printer without reloading. You can also feed envelopes using the cut sheet feeder.

Both single-bin (C806271) and double-bin (C806281) cut sheet feeders are available. The double-bin sheet feeder has a front bin (bin 1) and a back bin (bin 2) in which you can store two different types of paper. You select the bin to feed from through the control panel or using a simple command.

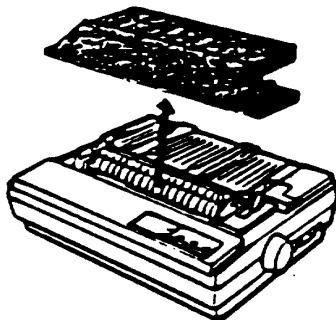


The Pull Tractor

The optional pull tractor (C800161) provides optimum continuous paper handling. The pull tractor is especially useful with continuous preprinted forms, multi-part forms, and labels. Use of the pull tractor is also recommended for obtaining the highest quality graphics. For best results, use the pull tractor along with the built-in push tractor as described in this section.

Installation

1. Turn off the printer and remove the paper guide cover.



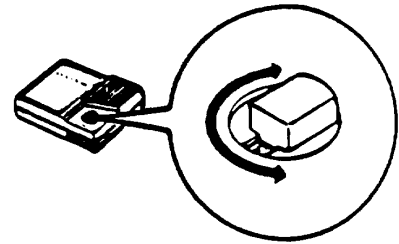
The Multi-Font Module

Installation

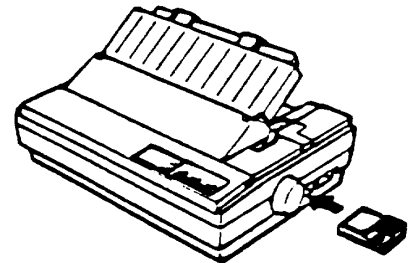


WARNING: Always turn off the printer before you insert or remove the module. Installing or removing the module while the power is on may damage the printer.

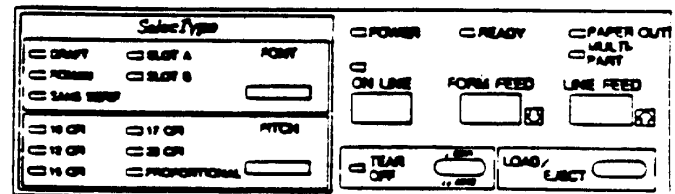
1. Make sure the printer is turned off.
2. Dial the rotary switch on the font module to select the font you want according to the table in the next section, Selecting a Font.



3. Hold the module with the rotary switch facing up, and insert the font module securely into slot A or B. If you install only one font module, insert it in slot A.



The Control Panel



Lights

POWER (green)

On when the POWER switch is on and power is supplied.

READY (green)

On when the printer is ready for input data. Flickers during printing.

PAPER OUT (red)

On when the printer is out of paper or when continuous paper is in the standby position.

ON LINE (green)

On when the printer is on line and ready to accept data.

MULTI-PART (orange)

On when the paper thickness lever is set to position 4 or higher. (For regular paper, this light should not be on.) When this light is blinking, you can use the micro-adjustment function.

TEAR OFF (orange)

On when the printer is in the tear-off mode.

Buttons

ON LINE

This button controls the printer's on line and off line status. Press this button to put the printer on line or to take it off line. When the printer is on line, the ON LINE light is on and the printer can receive and print data from the computer.

FORM FEED

When the printer is off line, press this button to eject a single sheet of paper or to advance continuous paper to the top of the next page.

LINE FEED

When the printer is off line, press this button to advance the paper one line, or hold it down to advance the paper continuously.

LOAD/EJECT

When the printer is off line, press this button to feed paper to the loading position or to eject paper that is already loaded. Paper is ejected forward if the paper release lever is set to the single-sheet position and backward (out of the paper path) if the release lever is set to the continuous paper position.

BIN 1/BIN 2

When the printer is on line, press this button to select either bin 1 or bin 2 of the double-bin cut sheet feeder. The beeper sounds once if you select bin 1 and twice if you select bin 2.

SelectType

TEAR OFF

Press this button to feed the perforation of continuous paper to the tear-off edge of the printer. After tearing off the paper, press this button again to feed the paper backward to the loading position.

FONT

Press this button to select LQ ROMAN, LQ JARVIS SERIF, DRAFT mode, or a cartridge font (if installed). The indicator light shows the font you select. See Selecting Typstyles later in this chapter.

PITCH

Press this button to select the character spacing. You can choose 10 CPI, 12 CPI, 15 CPI, 17 CPI, 20 CPI, or PROPORTIONAL spacing. The orange indicator light shows the spacing you select. You cannot select proportional spacing with draft mode. (Draft mode overrides proportional spacing.)

Other Control Panel Features

Self test: Both a draft and Letter Quality self test function are built into the printer. The self test printout lets you check the current DIP switch settings and operating status of the printer. You can start the printer's self test by holding down the LINE FEED button (for draft mode) or the FORM FEED button (for Letter Quality mode) while turning on the printer. See Running the Self Test in Chapter 1 for more information.

Micro-adjustment:

By pressing the FORM FEED or LINE FEED button immediately after loading paper or when using short tear-off, you can make fine adjustments to the loading and short tear-off positions. These positions can only be adjusted while the MULTI-PART light is blinking. See Adjusting the Loading Position and Using Short Tear-off later in this chapter.

Data dump:

By holding down both the LINE FEED and FORM FEED buttons while you switch on the printer, you turn on the data dump mode. This feature allows advanced users to locate the source of communications problems between the computer and printer. See Using the Data Dump Mode later in this chapter for more information.

Input buffer control:

To enable or disable the input buffer, press the LOAD/EJECT button while you turn on the power. The beeper sounds once if the input buffer is disabled and twice if it is enabled.

Commands In Numerical Order

ASCII	Dec.	Hex.	Description	Page
BEL	7	07	Beeper	9-12
BS	8	08	Backspace	9-20
HT	9	09	Tab Horizontally	9-21
LF	10	0A	Line Feed	9-15
VT	11	0B	Tab Vertically	9-17
FF	12	0C	Form Feed	9-13
CR	13	0D	Carriage Return	9-12
SO	14	0E	Select Double-wide Mode (one line)	9-26
SI	15	0F	Select Condensed Mode	9-25
DC1	17	11	Select Printer	9-8
DC2	18	12	Cancel Condensed Mode	9-26
DC3	19	13	Deselect Printer	9-9
DC4	20	14	Cancel Double-wide Mode (one line)	9-27
CAN	24	18	Cancel Line	9-12
DEL	127	7F	Delete Character	9-9
ESC SO	14	0E	Select Double-wide Mode (one line)	9-27
ESC SI	15	0F	Select Condensed Mode	9-26
ESC EM	25	19	Control Cut Sheet Feeder	9-10
ESC SP	32	20	Set Intercharacter Space	9-33
ESC !	33	21	Master Select	9-23
ESC #	35	23	Cancel MSB Control	9-11
ESC \$	36	24	Set Absolute Print Position	9-20
ESC %	37	25	Select User-defined Set	9-37
ESC &	38	26	Define User-defined Characters	9-36
ESC (-	40	28	Select Score	9-31

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ASCII	Dec.	Hex.	Description	Page	ASCII	Dec.	Hex.	Description	Page
ESC *	42	2A	Select Graphics Mode	9-39	ESC q	113	71	Select Character Style	9-32
ESC +	43	2B	Set π /360-inch Line Spacing....	9-15	ESC r	114	72	Select Printing Color	9-28
ESC -	45	2D	Turn Underline Mode		ESC t	116	74	Select Character Table	9-34
			On/Off	9-32	ESC w	119	77	Turn Double-high Mode	
ESC /	47	2F	Select Vertical Tab Channel	9-18				On/Off	9-28
ESC 0	48	30	Select 1/8-inch Line Spacing	9-15	ESC x	120	78	Select Letter Quality or Draft ...	9-22
ESC 2	50	32	Select 1/6-inch Line Spacing	9-16					
ESC 3	51	33	Set π /180-inch Line Spacing....	9-16					
ESC 4	52	34	Select Italic Mode	9-34					
ESC 5	53	35	Cancel Italic Mode	9-35					
ESC 6	54	36	Enable Printable Characters	9-37					
ESC 7	55	37	Enable Upper Control Codes	9-37					
ESC :	58	3A	Copy ROM to RAM	9-36					
ESC <	60	3C	Select Unidirectional Mode						
			(one line)	9-9					
ESC =	61	3D	Set MSB to 0	9-11					
ESC >	62	3E	Set MSB to 1	9-11					
ESC ?	63	3F	Reassign Graphics Mode	9-40					
ESC ●	64	-40	Initialize Printer	9-8					
ESC A	65	-41	Set π /60-inch Line Spacing....	9-16					
ESC B	66	-42	Set Vertical Tabs	9-17					
ESC C	67	-43	Set Page Length in Lines	9-13					
ESC C 0	67	-43	Set Page Length in Inches	9-14					
ESC D	68	-44	Set Horizontal Tabs	9-22					
ESC E	69	-45	Select Emphasized Mode	9-28					
ESC F	70	-46	Cancel Emphasized Mode	9-29					
ESC G	71	-47	Select Double-strike Mode	9-29					
ESC H	72	-48	Cancel Double-strike Mode	9-29					
ESC J	74	-4A	Perform π /180-inch Line Feed..	9-17					
ESC K	75	-4B	Select Single-density Graphics						
			Mode	9-38					
ESC L	76	-4C	Select Double-density Graphics						
			Mode	9-38					
ESC M	77	-4D	Select 12 CPI	9-24					
ESC N	78	-4E	Set Skip Over Perforation	9-14					
ESC O	79	-4F	Cancel Skip Over Perforation...	9-14					
ESC P	80	530	Select 10 CPI	9-24					
ESC Q	81	531	Set Right Margin	9-19					
ESC R	82	532	Select an International						
			Character Set	9-35					
ESC S 0	83	533	Select Superscript Mode	9-30					
ESC S 1	83	533	Select Subscript Mode	9-30					
ESC T	84	534	Cancel Superscript/Subscript						
			Mode	9-30					
ESC U	85	535	Turn Unidirectional Mode						
			On/Off	9-10					
ESC W	87	537	Turn Double-wide Mode						
			On/Off	9-27					
ESC Y	89	539	Select High-speed Double-density						
			Graphics Mode	9-38					
ESC Z	90	53A	Select Quadruple-density						
			Graphics Mode	9-39					
ESC \	92	53C	Set Relative Print Position	9-21					
ESC a	97	53E	Select Justification	9-33					
ESC b	98	53F	Set Vertical Tabs in Channels...	9-18					
ESC g	103	537	Select 15 CPI	9-24					
ESC k	107	53B	Select Typestyle Family	9-23					
ESC l	108	53C	Set Left Margin	9-19					
ESC p	112	530	Turn Proportional Mode						
			On/Off	9-25					

Installation/Support Tips

Short Tear Off

To activate the short tear-off feature on the printer, first turn DIP switch 2-7 to the on position. To control it through the software, send a form feed command at the end of each page. After sending a form feed, do not send it any more data for a 3-second interval.

Single-Sheet Loading

When loading single sheets, make sure that the paper lever is set to single sheets, not tractor paper. The paper can be loaded via the auto load. Before attempting to load in the paper, wait for the platen to lock in place after changing the paper lever.

Setting up the Page Length

The page length has to be adjusted for using single sheets and for using tractor paper. When your software asks you to set up the number of lines/page, single sheets require a shorter page length than does tractor paper. Set the page length to 61 lines for single sheets (also when using the cut-sheet feeder) and 66 lines for tractor paper.

Software

The type of printer installed on your system must be identified for each software package. This is usually done through a setup menu. If the LQ-860 is not listed in the software package, any Epson 24-pin driver will be compatible.

DIP Switch Settings

The default settings will usually work for most applications, but they should be checked before using the printer. This will avoid unexpected results.

Information Reference List

Engineering Change Notices

None.

Product Support Bulletins

None.

Related Documentation

TM-LQ860 4000121		LQ-860 Service Manual LQ-860 User's Manual
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