EPSON

EPSON TERMINAL PRINTER

LQ-850/1050
TECHNICAL MANUAL

Y45499901 0-A

PRECAUTIONS

Precautionary notations throughout the text are categorized relative to 1) personal injury, and 2) damage to equipment:

DANGER **Signals a precaution which, if ignored, could result in serious or fatal personal injury. Great caution should be exercised in performing procedures preceded by a DANGER headings.**

WARNING **Signals a precaution which, if ignored, could result in damage to equipment.**

The precautionary measures itemized below should always be observed when performing repair/maintenance procedures.

DANGER

1. **ALWAYS DISCONNECT THE PRODUCT FROM BOTH THE POWER SOURCE AND THE HOST COMPUTER BEFORE PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURE.**
2. **NO WORK SHOULD BE PERFORMED ON THE UNIT BY PERSONS UNFAMILIAR WITH BASIC SAFETY MEASURES AS DICTATED FOR ALL ELECTRONICS TECHNICIANS IN THEIR LINE OF WORK.**
3. **WHEN PERFORMING TESTING AS DICTATED WITHIN THIS MANUAL, DO NOT CONNECT THE UNIT TO A POWER SOURCE UNTIL INSTRUCTED TO DO SO. WHEN THE POWER SUPPLY CABLE MUST BE CONNECTED, USE EXTREME CAUTION IN WORKING ON POWER SUPPLY AND OTHER ELECTRONIC COMPONENTS.**

WARNING

1. **REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY AN EPSON CERTIFIED REPAIR TECHNICIAN.**
2. **MAKE CERTAIN THAT THE SOURCE VOLTAGE IS THE SAME AS THE RATED VOLTAGE, LISTED ON THE SERIAL NUMBER/RATING PLATE. IF THE EPSON PRODUCT HAS A PRIMARY-AC RATING DIFFERENT FROM THE AVAILABLE POWER SOURCE, DO NOT CONNECT IT TO THE POWER SOURCE.**
3. **ALWAYS VERIFY THAT THE EPSON PRODUCT HAS BEEN DISCONNECTED FROM THE POWER SOURCE BEFORE REMOVING OR REPLACING PRINTED CIRCUIT BOARDS AND/OR INDIVIDUAL CHIPS.**
4. **IN ORDER TO PROTECT SENSITIVE μP CHIPS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.**
5. **REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS RECOMMENDED BY THE MANUFACTURER; INTRODUCTION OF SECOND-SOURCE ICs OR OTHER NONAPPROVED COMPONENTS MAY DAMAGE THE PRODUCT AND VOID ANY APPLICABLE EPSON WARRANTY.**

PREFACE

This manual describes functions, theory of electrical and mechanical operations, maintenance, and repair of the LQ-850 and LQ-1 050.
The instructions and procedures included herein are intended for the experienced repair technician, and attention should be given to the precautions on the preceding page. The chapters are organized as follows:

Chapter 1 - Provides a general product overview, lists specifications, and illustrates the main components of the printer.

Chapter 2 - Describes the theory of printer operation.

Chapter 3 - Discusses the options

Chapter 4 - Includes a step-by-step guide for product disassembly, assembly, and adjustment.

Chapter 5 - Provides Epson-approved techniques for troubleshooting.

Chapter 6 - Describes preventive maintenance techniques and lists lubricants and adhesives required to service the equipment.

- The contents of this manual are subject to change without notice.

REVISION TABLE

REVISION	DATE ISSUED	CHANGE DOCUMENT
A	Aug. 31, 1987	1st issue

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1.1 FEATURES

The LQ-850/1050 printers are multifunctional, 24-pin printhead, impact dot matrix printers The main features of the these printers are:

- Upward compatibility with the LQ-800/1000
- A maximum print speed of 264 CPS in draft mode at 12 CPI and of 88 CPS in I-Q mode at 12 CPI
- Direct selection of font, pitch, and normal/condensed mode from the control panel
- Automatic paper-loading/ejecting function
- Low-noise acoustics
- Both 8-bit parallel and RS-232C serial interfaces
- Push and (optional) pull tractor feeding
- Advanced paper handling:
  - Auto backing of fanfold paper and autoloading of cut sheet paper
  - Auto ejecting of cut sheet paper and autoloading of fanfold paper
  - Printing of fanfold paper without removal of the cut sheet feeder (option)
- Optional interface for the EPSON 8100 series
- Optional low-priced, single-bin cut sheet feeder which contains envelope feeding capability

Figure 1-1 shows exterior views of the printers, Table 1-1 lists optional units available, and Table 1-2 lists the optional interface boards (refer to Chapter 3 for more detailed information) for the LQ-850/1050.

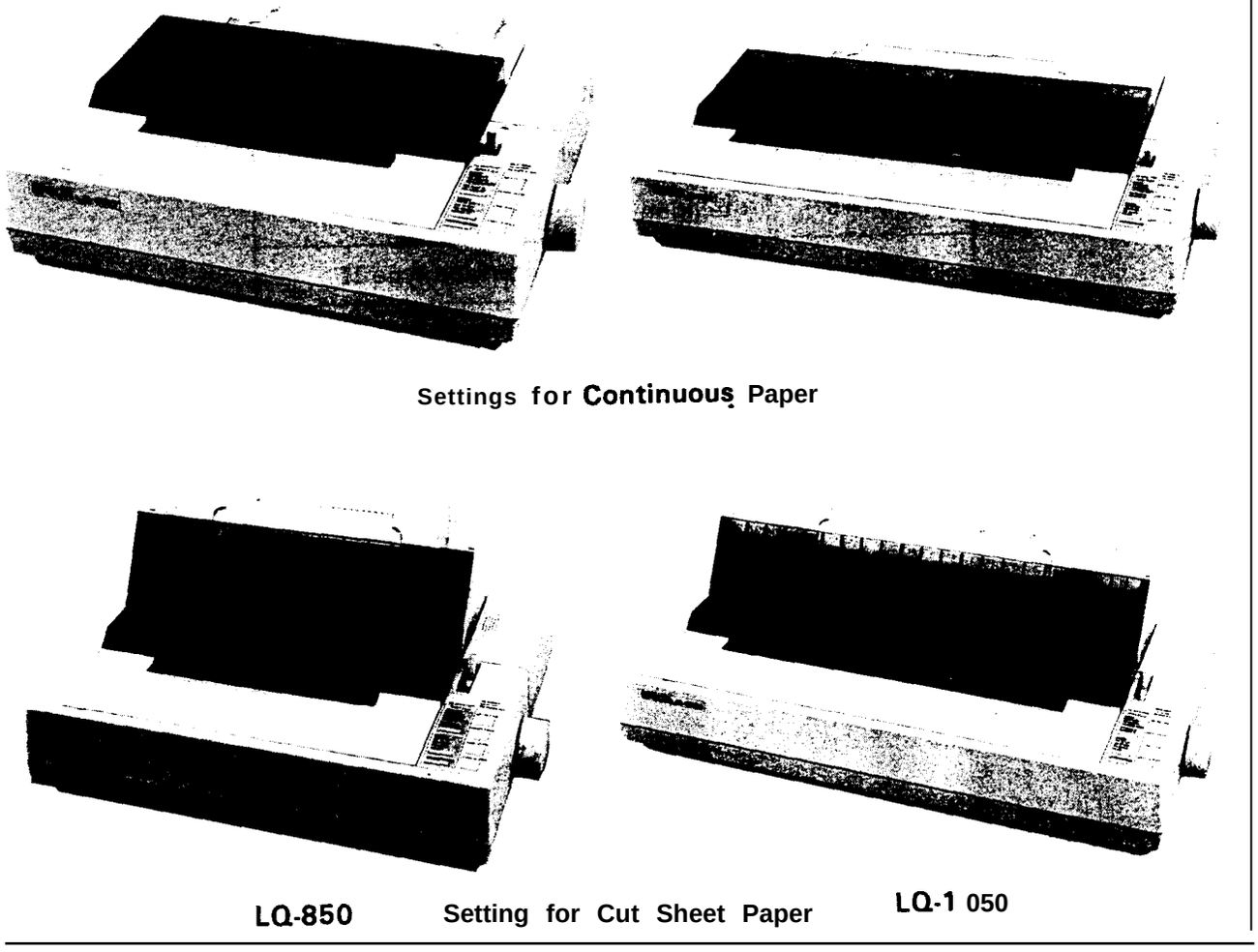


Fig. 1-1. Exterior Views of the LQ-850/1050

Table 1-1. Optional Units

No.	Name	LQ-850	LQ-1 050
#73 11	Tractor unit	o	
#731 2	Tractor unit		o
#7339	Cut sheet feeder (single-bin)	o	
#7340	Cut sheet feeder (single-bin)		o
#7753	Ribbon cartridge	o	
#7754	Ribbon cartridge		o
#7400	Courier font-module	o	
#7401	Prestige font-module	o	
#7402	Script font-module	o	
#7403	OCR-B font-module	o	

Table 1-2. Optional Interface Boards

No.	Name
#8143	New serial interface
#8 145	RS-232C current loop interface type II
#8148	Intelligent serial interface
#8 149	Intelligent serial interface type II
#8 149M	Intelligent serial interface type III
#816 1	IEEE-488 interface
#8 165	Intelligent IEEE-488 interface
#8 172	32 K-byte buffer parallel interface
#81 72M	128K-byte buffer parallel interface

1.2 SPECIFICATIONS

The LQ-850/ 1050 communicates with a wide variety of host computers, with aid of the optional Identity Module.

However, this section describes the specifications for the printer without the Identity Module option. Specifications not affected by firmware (hardware specifications) are the same whether or not the Identity Module is installed.

1.2.1 Hardware Specifications

Printing Method	Serial, impact dot matrix
Pin Configuration	See Figure 1-2 (12X 2 staggered, diameter: 0.2 mm).

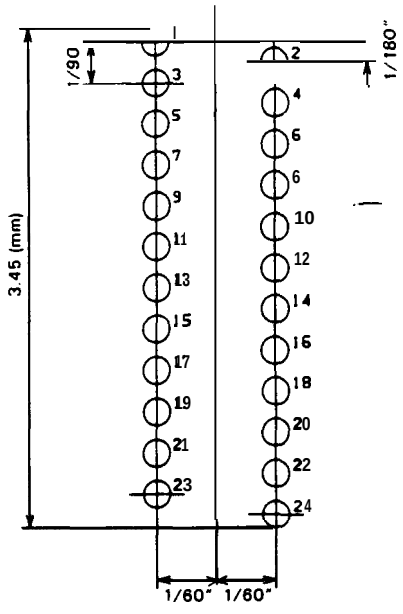


Fig. 1-2. Printhead Pin Configuration

Feeding Method	Friction feed
	Tractor feed (push: standard, pull: optional)

NOTES: 1. When using friction feed:

- Use the paper tension unit.
- Do not use fanfold paper.
- Do not perform any reverse paper feed operations within the top 8.5 mm and bottom 22 mm area of the paper.
- Do not perform reverse feed beyond than 1/6 inches after the paper end has been detected.
- Do not use multi-part, single-sheet forms.

2. When using tractor feed:

- Release the friction feed mechanism.
- Multiple copies for printing must be finished by pasting them together at the line or dots.
- Copy paper must be a carbonless multi-part paper.

a) When using push tractor feed:

- Use the paper tension unit.

- Do not perform reverse feeding for more than 1/6 inches.
- Because accuracy of paper feed cannot be assured, do not perform reverse feeding after the paper end has been detected.

b) When using pull tractor feed:

- Remove the paper tension unit and mount the pull tractor unit.
- Use the paper path when a single sheet is inserted.

c) When using push-pull tractor feed:

- Remove the paper tension unit and mount the pull tractor unit.
- Do not loosen the paper between the platen and the pull sprocket.
- Precisely the horizontal position of the pull sprocket and push tractor.
- Do not perform reverse feeding for more than 1/6".
- Do not perform reverse feeding after the paper end has been detected.

Paper Loading Directions

Fanfold paper	Inserted from the rear side
Cut sheet paper	Inserted from the up side

Line Spacing 1/6" or programmable (min. 1/180")

Line Feed Speed See Table 1-3

Table 1-3. Line Feed Speeds

Feeding Method	1/6" Line Spacing [ins/line]	Continuous [IPS]
Friction w/o CSF	60	3.0
Friction w/ CSF	65	2.7
Tractor	65	2.7

Paper specifications

Cut sheet paper Refer to Table 1-4.

Table 1-4. Cut Sheet Paper Specified Conditions

	LQ-850	LQ-1 050
Width [mm]	182-257 (7.2 - 10.1")	182-364 (7.2 - 14.4")
Length [mm]	182 - 305 (7.2 - 12.0")	
Thickness [mm]	0.065 -0.10 (0.0025 - 0.004")	
Weight [lb]	14 -22 (52 -82 g/m²)	
Quality	Plain paper	
Copies	Not available	

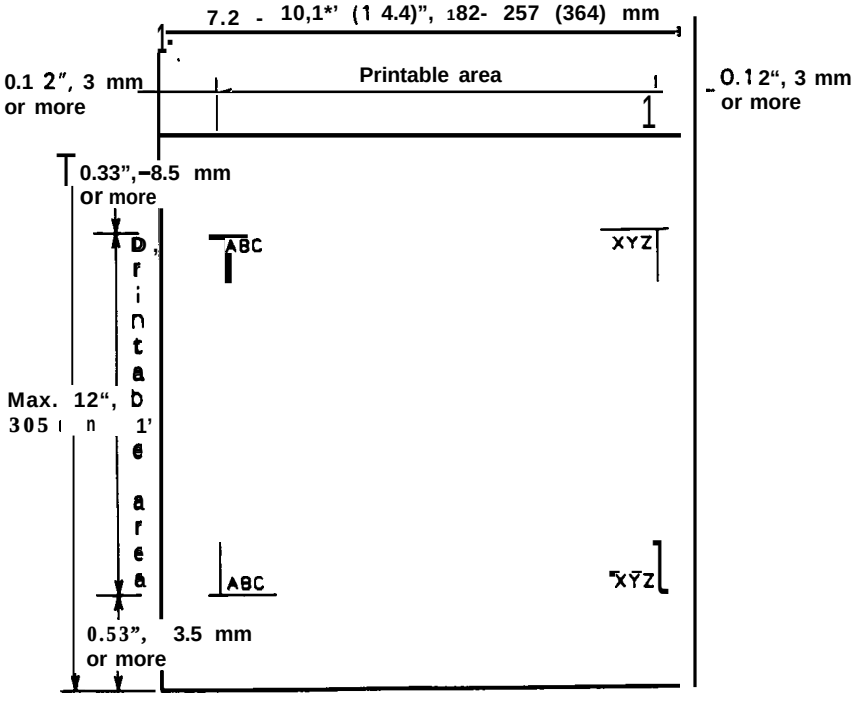
Fanfold paper Refer to Table 1-5,

Table 1-5. Fanfold Paper Specified Conditions

	LQ-850	LQ-1 050
Width [mm]	101 - 254 (4.0 - 10. O")	101 - 406 (4.0 - 16.0")
Copies [sheet]	4 (1 original + 3) at normal temperature 3 (1 original + 2) at all temperature range	
Quality	Plain paper	
Total Thickness [mm]	0.06 - 0.32 (0.0023 -0.01 2")	
Weight [lb]	1 sheet .....14 - 22 (52 - 82 g/m²) 4 sheets .....12 - 15 (40 - 58.2 g/m²) for each	

Printable Area

— Cut sheet paper See Figure 1-3.



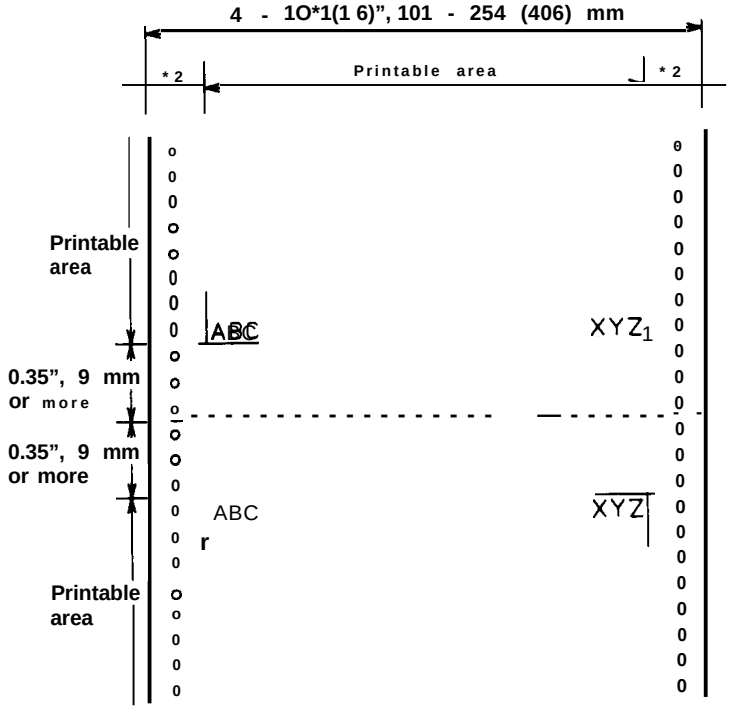
NOTES: 1. Values in the parentheses apply to the LQ-105O.

2. Printing is possible for approximately 42 mm after the bottom edge of a page has been detected. Thus, the value 13.5 mm (lowest print position) is given for reference only. Paper feed accuracy cannot be assured in the area approximately 22 mm (0.87") from the bottom edge of the page.

Fig. 1-3. Cut Sheet Paper Printable Area

REV.-A

Fanfold paper See Figure 1-4.



NOTE: 1. Values in the parentheses are apply to LQ-105O.

2. 0.47", 12 mm or more when the 101 to 242 mm (4 to 9.5") width paper is used.
   0.98", 25 mm or more when the 254 mm (1 O") width paper is used.

Fig. 1-4. Fanfold Paper Printable Area

Envelopes

Size	No. 6 (166 X 92 mm), No. 10 (240 X 104 mm)
Quality	Bond paper, xerographic copier paper, airmail paper
Thickness	0.16 - 0.52 mm (0.0063 -0.01 97")

NOTE: Differences in thickness within printing area must be less than 0.25 mm (0.0098").

Weight	121 - 241 lb (45 -91 g/m²)

NOTES: 1. Envelope printing is only available at normal temperature.
2. Keep the longer side of the envelope horizontally at setting.
3. Set the left of No. 6 envelope at the setting mark of the sheet guide.

Label

Size	2 1/2 X 15/1 6", 4 X 15/16", 4 X 17/16"
Thickness	O.19 mm (0.0075) max.

NOTE: Thickness excluding the base paper must be less than or equal to O.12 mm (0.0075").

NOTES: 1. Printing of labels is only available at normal temperature.
2. Labels must be fanfold.
3. Labels with pressure-sensitive paper must be jointed by pasting along the dots or lines, and the total thickness must be less than or equal to 0.3 mm (O. 11 8“) to be printed out under conditions that must be between 5 to 35 “C and 20 to 80% RH.
4. Examples of labels: AVERY CONTINUOUS FROM LABELS
AVERY MINI-LINE LABELS

Lever Adjustment See Figure 1-5 and Table 1-6.

Table 1-6. Lever Adjustment

Lever Position	Paper Thickness [mm]
2nd	0.06 - 0.12
3rd	0.13 -0.17
4th	0.18 -0.25
5th	0.26 -0.32

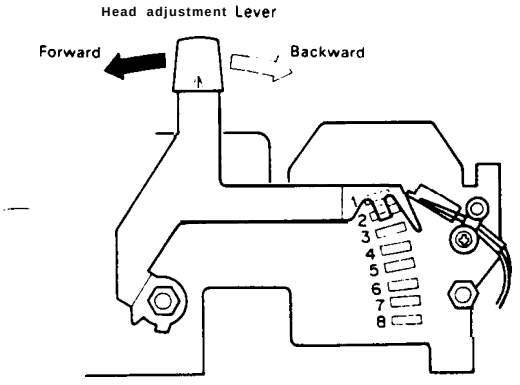


Fig. 1.5. Head Adjustment Lever Posisitioning

NOTES: 1. When printing density becomes lighter, set the head adjustment lever one position lower.
2. When using thicker paper than shown in the above table, set the head adjustment lever to the 6th or higher appropriate position by performing the self-test operation.

Ribbon Cartridge See Table 1-7.

Table 1-7. Ribbon Cartridge Specification

Ribbon Model No.	#7753	#7754
Printer	LQ-850	LQ-1 050
Color	Black	
Life [characters]	2 million (LQ, self-test)	
Dimension [mm] (W) X (h) X (d)	290 X 34 X 71	468 X 34 X 80

Dimensions See Table 1-8 (Details are shown in Figures A-45 and 46.)

Weight See Table 1-8.

Table 1-8. Dimensions and Weight

	Width [mm]	Height [mm]	Depth [mm]	Weight [Kg]
LQ-850	430	142	360	10
LQ-1 050	605	142	360	12

NOTE: Excluding paper feed knob and paper guide.

Electrical Specifications See Table 1-9.

Table 1-9. Electrical Specifications

	120 V Version	220/240 V Version
Voltage [V AC]	108 - 132	198 - 264
Frequency range [Hz]	49.5 - 60.5	
Rating current [A]	2	
Insulation resistance [M ohm] min. (between AC line and chassis)	10	
Dielectric strength [V AC, rms] (1 minute, between AC line and chassis)	1250	3750

Environmental Conditions Refer to Table 1-10.

Table 1-10. Environmental Conditions

	Storage	Operating
Temperature [“C]	–30 - 65	5 - 35
Humidity [% RH]	5 - 85	10- 80
Resistance to shock [G] (within 1 ms)	2	1
Resistance to Vibration [G] (55 Hz, max.)	0.50	0.25

Reliability

MCBF 5 million lines (excluding printhead)
(MCBF... Mean Cycles Between Failure)

MTBF LQ-850: 4000 POH (duty 25%)
LQ-105O: 6000 POH (duty 25%)

Printhead life 200 million strokes/wire

Safety Approvals

Safety standards	UL478 (U.S.A. version)
	CSA22.2#I 54
	VDE0806(TUV) (Europe an version)
Radio Frequency (RFI)	FCC class B (U.S.A. version)
Interference	VDE871 (self-certification) (Europe version)

1.2.2 Firmware Specifications

Control Code	ESC/P-83
Printing Direction	
Text	Bidirectional with logic seeking
Bit-image	Unidirectional
Character Code	8 bits
Character Set	96 ASCII and 13 international character sets
Family	Roman: No. O
	Sansserif: No. 1
Font	Roman: 10, 12, 15, Proportional
	Sansserif: 10, 12, 15, Proportional
	Draft: 10, 12, 15, Proportional
Printing Mode	Printing quality (Draft/LQ)
	Character pitch (10, 12, 15 CPI or Proportional)
	Condensed
	Double-width
	Double-height
	Emphasized
	Double-strike
	Italic
	Underlined

NOTE: A condensed mode for 15 CPI characters is not available.

Print Speed	Refer to Table 1-11.
Print Columns	Refer to Table 1-11.

Table 1-11. Printing Mode

Print Pitch	Con-densed	Empha-sized	Double Width	Charac-ter Pitch	Printing Speed [CPS]		Printable Columns	
				[cPI]	Draft	LQ	LQ-850	LQ-1 050
0	0	0	0	10	220	73	80	136
			1	5	110	36	40	68
		1	0	10	110	73	80	136
			1	5	55	36	40	68
	1	x	o	17.1	188	125	137	233
			1	8.5	94	62	58	116
I 2	0	0	0	12	264	88	96	163
			1	6	132	44	48	81
		1	0	12	132	88	96	163
			1	6	66	44	48	81
	1	x	o	20	220	146	160	272
			1	10	110	73	80	136
I 5	0	0	0	15	330	110	120	204
			1	@ 7 <	165	55	120	204
		1	0	7.5	165	110	60	102
			1	7.5	82	55	60	102
	1	x	x	Ignored				
‘proportional	o	x	o	8.6	—	62	Max. 68	Max. 116
				20		146	Min. 160	Min. 272
			1	4.3	—	31	Max. 34	Max. 58
				10	—	73	Min. 80	Min. 136
	1	x	o	17.1	—	125	Max. 137	Max. 233
				40	—	293	Min. 320	Min. 544
			1	8.6	—	68	Max. 68	Max. 116
				20	—	146	Min. 160	Min. 272
Proportional S uper/ Subscript	0	x	o	12.8	—	94	Max. 102	Max. 174
				30	—	220	Min. 240	Min. 408
			1	6.4	—	47	Max. 51	Max. 87
				15	—	110	Min. 120	Min. 204
	1	x	o	25.7	—	188	Max. 204	Max. 174
				60	—	440	Min. 480	Min. 816
			1	12.8	—	94	Max. 102	Max. 87
				30	—	220	Min. 240	Min. 204

NOTES: 1. Max. means the value when the maximum width characters are printed.
2. Min. means the value when the minimum width characters are printed.
3. “-” means that LQ character set is automatically selected when proportional pitch is specified.

Character Matrix **See Figure 1-6 and Table 1-12.**

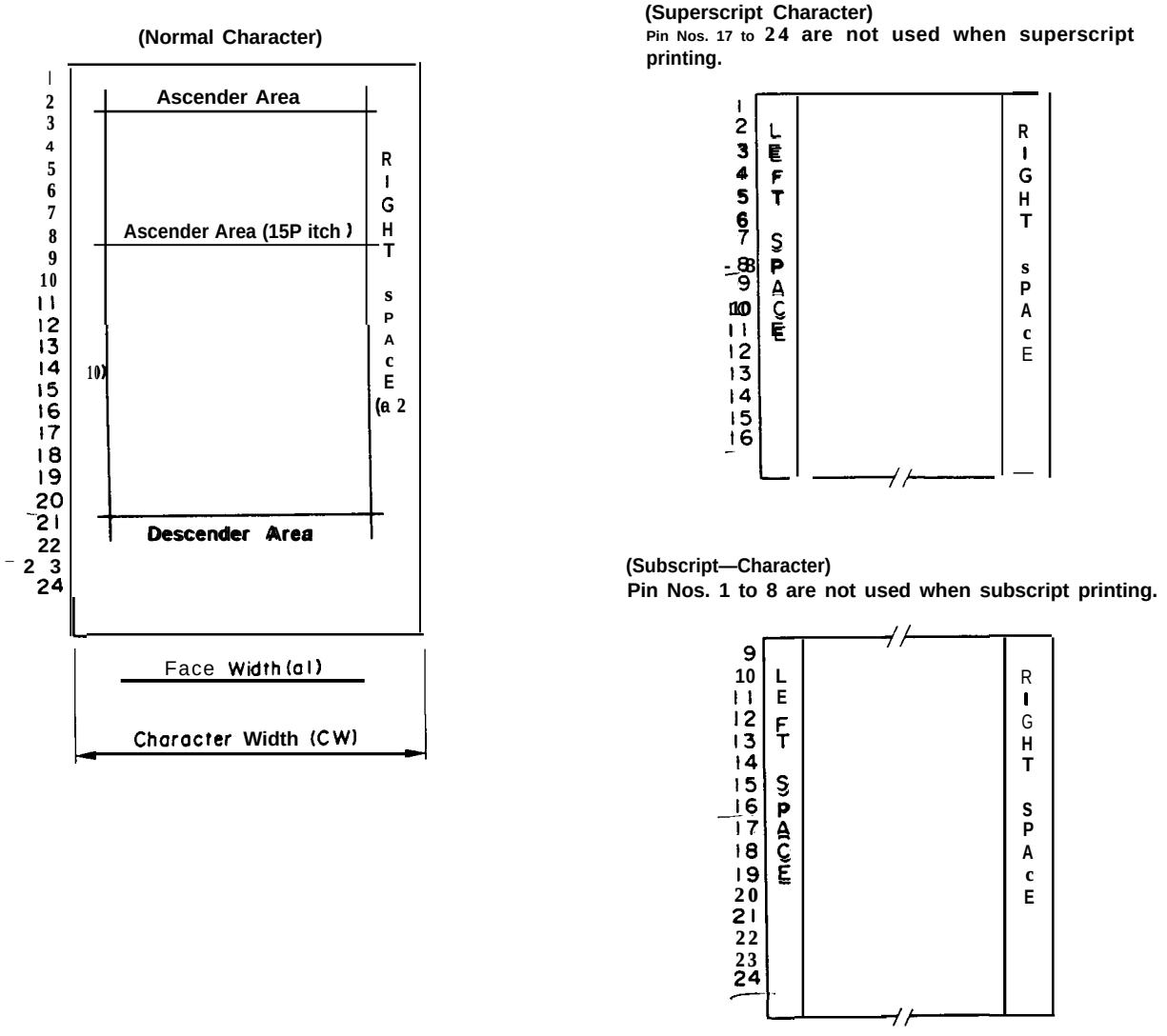


Fig. 1-6. Character Matrix

Character Size See Table 1-12.

Table 1-12. Character Matrix and Character Size

Printing Mode	Face Matrix	HDD	Character Size H. x V. (mm)	Unit ESC sp
DRAFT, 10 pitch	9 X 23	120	1.9 X 3.2	120
DRAFT, 12 pitch	9 X 23	120	1.9 X 3.2	120
DRAFT, 15 pitch	9 X 16	120	1.0 X 2.3	120
DRAFT, 10 pitch, condensed	...	240	....	240
DRAFT, 12 pitch, condensed	...	240	. . .	240
LQ, 10 pitch	29 X 23	360	2.0' X 3.2	180
LQ, 12 pitch	29 X 23	360	2.0 X 3.2	180
LQ, 15 pitch	15 X 16	360	1.0 X 2.3	180
LQ, 10 pitch, condensed	..	360	...	360
LQ, 12 pitch, condensed	...	360	...	360
LQ, proportional	max. 39 X 23	360	2.6 X 3.2	180
	min. 18 X 23	360	1.0 X 3.2	
LQ, proportional, condensed	...	360	...	360
	...	360	...	
LQ, proportional, super/subscript	max. 28 X 16	360	1.8 X 2.3	. 180
	min. 12 X 16	360	0.7 X 2.3	
LQ, proportional, super/subscript, condensed	...	360	...	360
	...	360	...	

NOTES : 1. "HDD" means the Horizontal dot density, and the "Unit" shows the number of dots per inch.

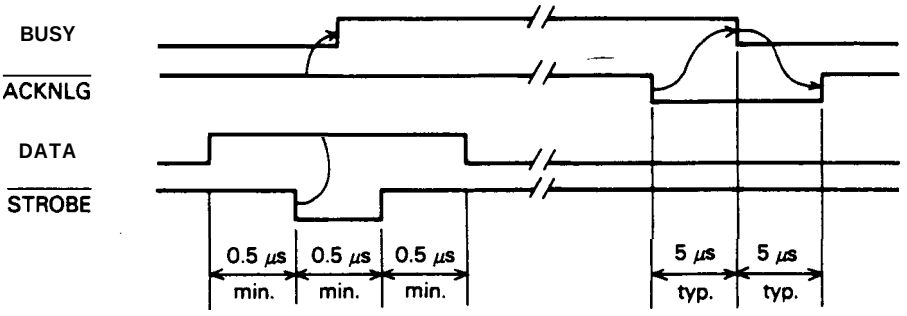
2. "Face matrix" and "character size" indicate the size of maximum characters and this value will be changed with condition of paper.
3. "Unit ESC sp" indicates the minimum length which is added to the right of the character that can be specified with ESC sp control code.
4. "..." indicates that the character matrix is reformed by printer firmware. Character width becomes half of a non-condensed character.

1.3 INTERFACE OVERVIEW

The LQ-850/1050 has both 8-bit parallel interface and RS-232C serial interface as standard. They can be selected by DIP switches 2-3 and 2-4 respectively. (This detail of DIP switch settings, refer to Table 1-17.)

1.3.1 8-bit Parallel Interface Specifications

Data Transmission Mode	**8-bit pallarel**
Synchronization	**By $\overline{\text{STROBE}}$ pulse**
Hand Shaking	**By BUSY and $\overline{\text{ACKNLG}}$ (either or both)**
Logic Level	**TTL compatible**
Data Transmission Timing	**See Figure 1-7.**
Connector	**57-30360 (AMPHENOL) or equivalent (See Figure 1-8.)**



NOTE: Transmission time (rising and falling time) of every input signal must be less than 0.2 μs.

Fig. 1-7. Data Transmission Timing of 8-bit Parallel Interface

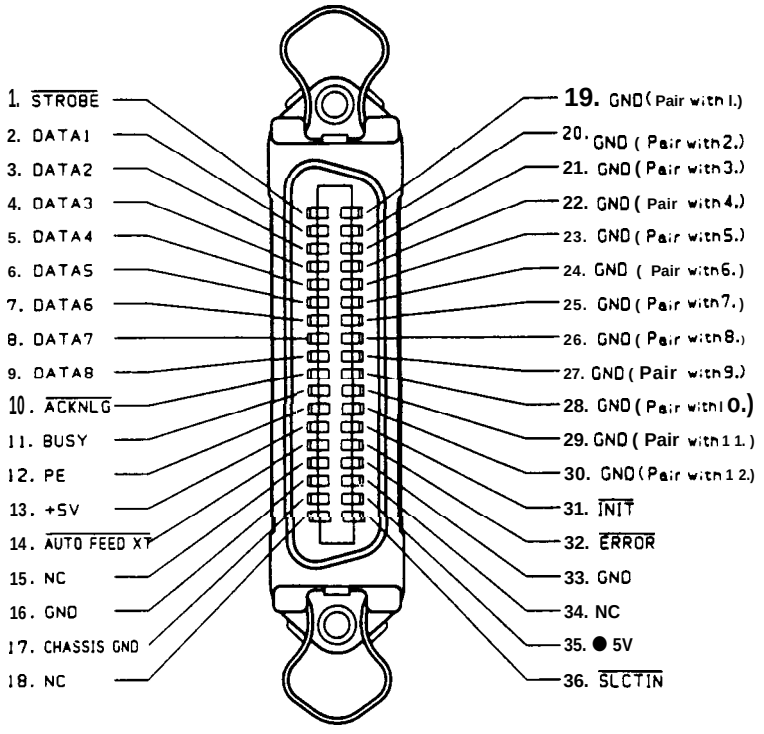


Fig. 1-8. 36-Pin 57-30360 Connector

1.3.2 RS-232C Serial Interface Specifications

Data Transmission Mode	RS-232C serial
Synchronization	Asynchronous
Handshaking	By DTR (REV) signal or X-ON/OFF protocol Refer to Table 1-13 and Figure 1-9.

Table 1-13. Serial Interface Handshaking

DTR Signal	X-ON/OFF protocol	Description
MARK	X-OFF (13H)	When the number of bytes remaining in the input buffer reaches 256 or less, the signal level goes to MARK, or a X-OFF code is sent out to the host computer. This indicates that the printer is not ready to receive data.
SPACE	X-ON (1 1 H)	When the number of bytes remaining in the input buffer reaches 512 or more, the signal level goes to SPACE, or a X-ON code is sent out to the host computer. This indicates that the printer is ready to receive data.

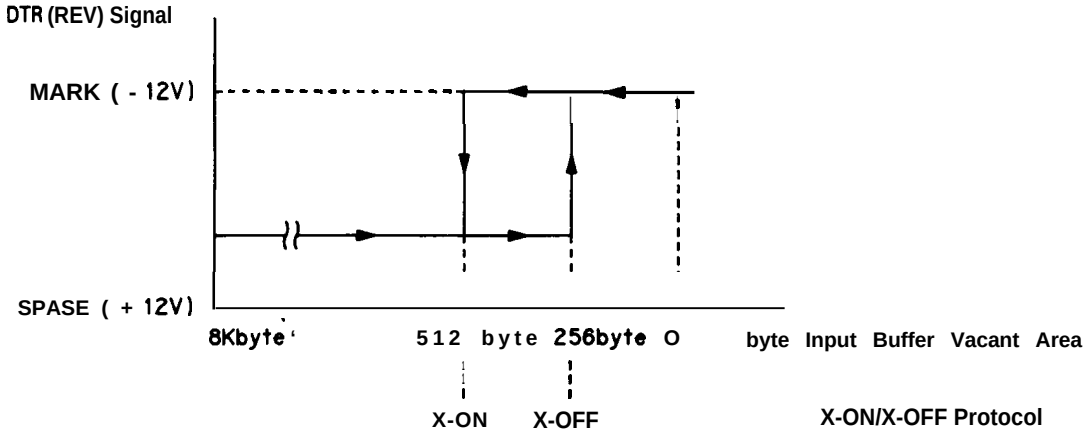
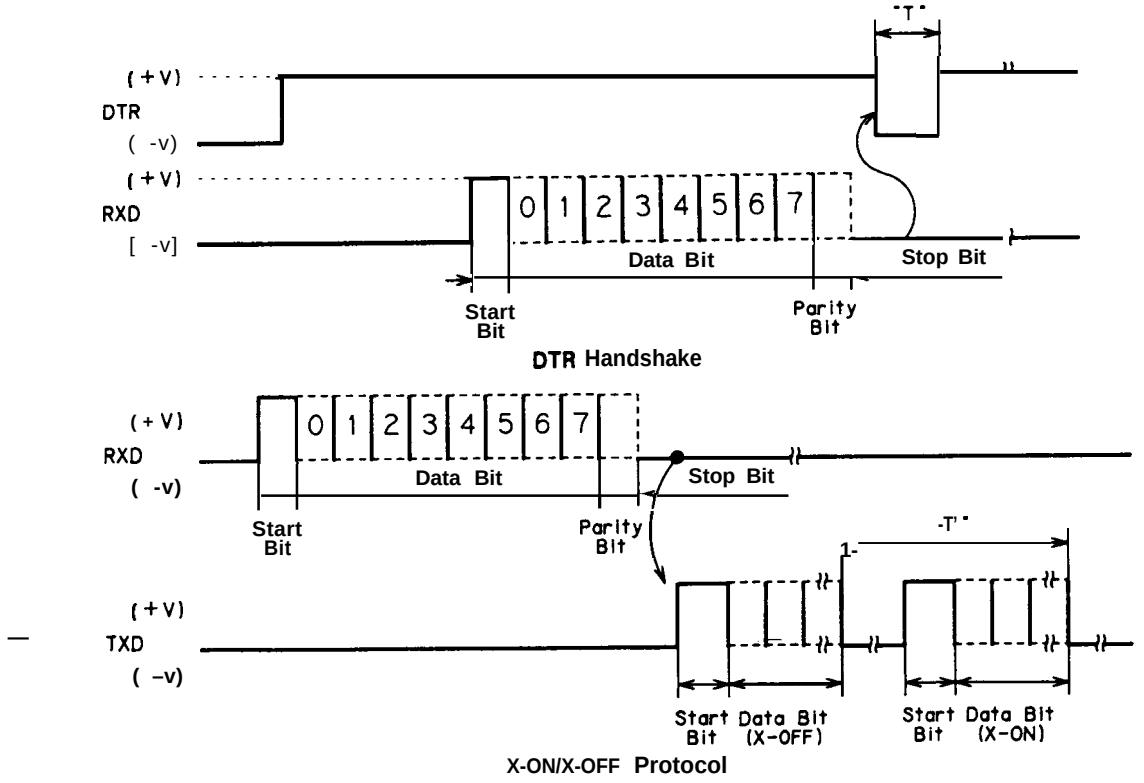


Fig. 1-9. Hand Shaking of RS-232C Interface

Word Length		
	Start bit	1
	Data bit	8
	Parity bit	Odd, Even, or none (selectable by DIP switches 2-3 and 2-4)
	Stop bit	1 bit or more
Bit Rate		300, 1200, 4800, or 9600 BPS (selectable by DIP switches 2-5 and 2-6)
Logic Level		EIA level, MARK: logical 1 (–3 - –27 V) SPACE: logical O (+3 - +27 V)
Data Transmission Timing		See Figure 1-10.



NOTES: 1. The value of "T" varies according to the input data.

2. The word structure of serial data is 1 start bit + 8 data bits + parity (Odd, Even, or none) + 1 or more stop bit.

Fig. 1-10. Serial Data Transmission Timing

Error Detection	**Parity error: "*" is printed.**
	Overrun error: Ignored
	Framing error: Ignored
Connector	**6-pin DIN connector (See Figure 1-1 1.)**

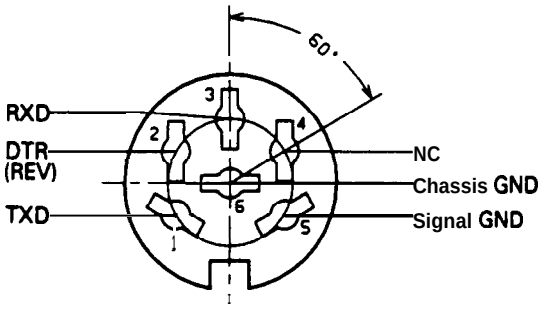


Fig. 1-11. Serial Interface Connector

1.4 DIP Switch and Jumper Settings

The DIP switches that users can set are SW1 and SW2. These switches are positioned at the rear of the printer, and have the functions as shown in Tables 1-14 through 1-18, (note that the status of the DIP switches are read only when the printer power on or an INIT signal is input.)

Table 1-14. DIP Switch 1 Settings

DIP SW.	Function	ON	OFF
1-1	International characher set	See Table 1-15.	
1-2			
1-3			
1-4	Table select	Graphic	Italic
1-5	Not used	—	—
1-6	Not used	—	—
1-7	CSF mode	Valid	Invalid
1-8	Input buffer	None	6K-byte

Table 1-15. International Character Set Designation

Country	1-1	1-2	1-3
U.S.A.	ON	ON	ON
France	ON	ON	OFF
Germany	ON	OFF	ON
U. K.	ON	OFF	OFF
Denmarkl	OFF	ON	ON
Sweden	OFF	ON	OFF
Italy	OFF	OFF	ON
Spain 1	OFF	OFF	OFF

NOTE: The above settings can be changed to any country's characters set by inputting ESC R control codes.

Table 1-16. DIP Switch 2 Settings

DIP SW.	Function	ON	OFF
2-1	Page length	12“	11“
2-2	1“ skip-over perforation	Valid	Invalid
2-3	Interface selection	See Table 1-17.	
2-4			
2-5	Baud rate selection	See Table 1-18.	
2-6			
2-7	Tear off mode	Valid	Invalid
2-8	Auto LF	Valid-	Invalid

Table 1-17. Interface Selection

2-3	2-4	Function
OFF	OFF	Parallel
ON	OFF	Serial, Even parity
OFF	ON	Serial, Odd parity
ON	ON	Serial, None parity

Table 1-18. Baud Rate Selection

2-5	2-6	Function
OFF	OFF	9600
ON	OFF	4800
OFF	ON	1200
ON	ON	300

Fiugre 1-12 shows the factory settings for DIP switches SW-1 and SW-2.

Country	SW1-	1	2	3	4	5	6	7	8	SW2-	1	2	3	4	5	6	7	8
U. S. A., Southeast Asia, Middle and Near East	ON				■	■	■	■	■	ON	■	■	■	■	■	■	■	■
	OFF	■	■	■						OFF								
Germany, Northern Europe	ON		■		■	■	■	■	■	ON		■	■	■	■	■	■	■
	OFF	■		■						OFF	■							
U. K., Australia	ON		■	■	■	■	■	■	■	ON	■	■	■	■	■	■	■	■
	OFF	■								OFF								
France, Itary, Spain	ON					■	■	■	■	ON	■	■	■	■	■	■	■	■
	OFF	■	■	■	■					OFF								

White areas indicate the setting.

Fig. 1-12. DIP switches 1 and 2 Factory Settings

Jamper Setting See Table 1-19.

Table 1-19. Jumper Setting

No.	Type					Location
	1 M-bit	256 K-bit			64 K-bit	
	Mask-ROM		P-ROM	PS-RAM	ST-RAM	
J1	B2	N.C.	+ 5	B1	N.C.	CG1
J2	**B1**	B1	B1	WR	WR	
J3	B3	RD	RD	RD	RD	
J4	ROM	ROM	ROM	RAM	ROM	
	4M-bit	2M-bit	1 M-bit	256 K-bit		
	Mask-ROM					
J5	RD	**RD**	B3	RD		CGO
J6	B4	B4	+ 5	+ 5		
	LQ-850		LQ-1 050			—
J7	80		136			
	27256		27512			
J8	256		512			PROG
	$\overline{\text{SICTIN}}$ enable		**$\overline{\text{SLCTIN}}$** disable			—
J9	SLIN		GND			

Bold indicates the factory settings.

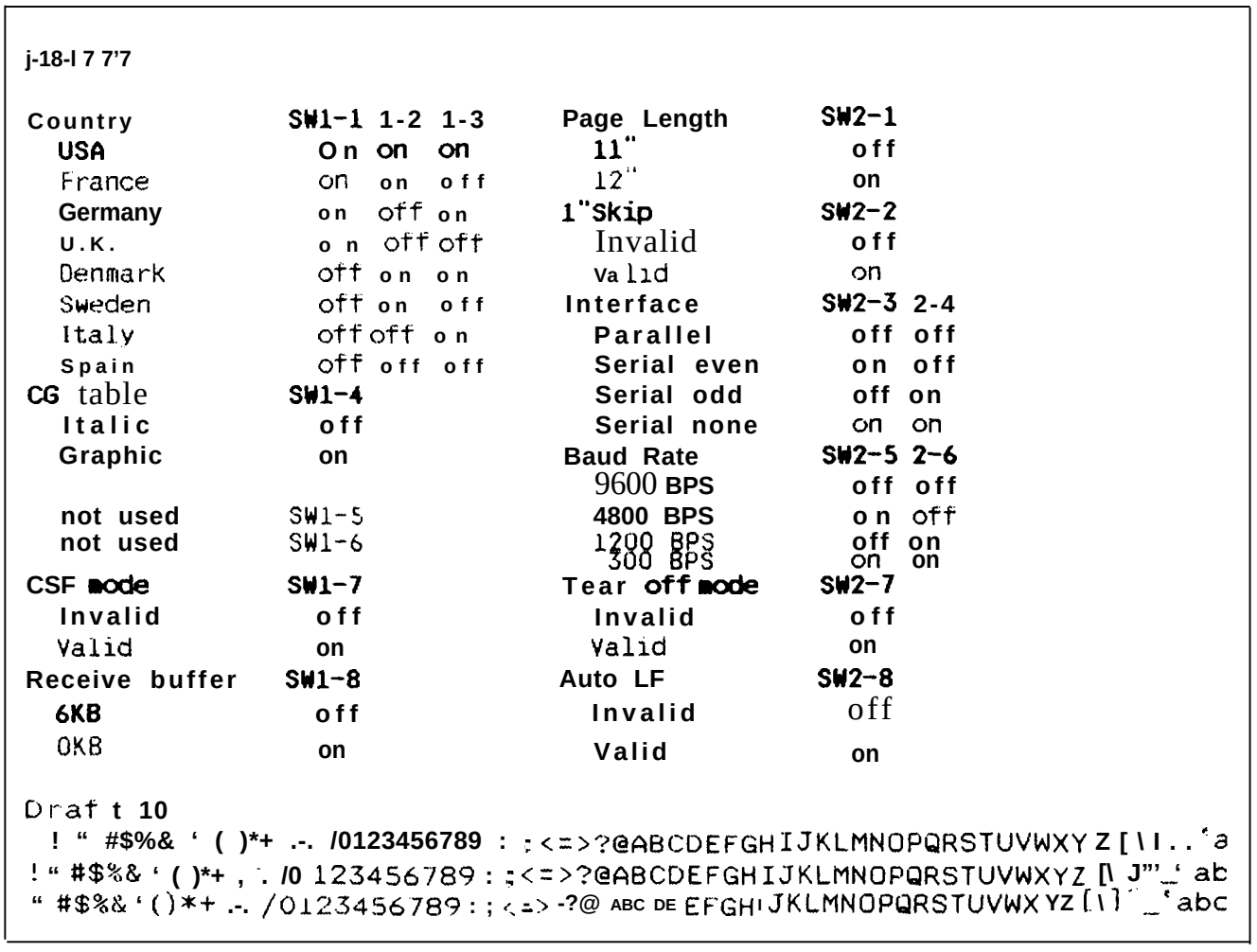
1.5 SELF-TEST OPERATION

The LQ-850/1050 printer has the following self-test operation. The control ROM version No. and the DIP switch settings also printout when the self-test is performed.

Table 1-20 lists the self-test operating instructions and Figure 1-13 shows the self-test printing.

Table 1-20. Self-Test Operation

Type-face	Start	stop
Draft	Turn the power ON while pressing the LINE-FEED switch.	Push the ON-LINE switch, and turn the power OFF.
LQ (Roman)	Turn the power OFF while pressing the FORM-FEED switch.	



Bold indicates the current DIP switch settings.

Fig. 1-13. Self-Test Printing

1.6 HEXADECIMAL DUMP FUNCTION

In hexadecimal dump mode, the printer prints out the data it receives in hexadecimal format. The printer prints a column of 16 hexadecimal values, followed by a column containing the 16 corresponding ASCII characters. If there is no corresponding printable character for a value (e.g., a control code, such as a carriage return or line feed), a period (.) is printed in the ASCII column in the position of the code. Each line of the dump contains 16 values, printed in the order they were received, and any remaining data (less than 16 values on the final line) can be printed by operating the ON-LINE switch. Table 1-21 shows the hexadecimal dump operation and Figure 1-14 shows printout of the operation.

Table 1-21. Hexadecimal Dump Operation

Function	Operation	stop
Hexadecimal dump mode	Turn the power on while pressing both the LF and FF switches.	Turn the power off.

Data Dump Mode

31	2E	31	20	46	45	41	54	55	52	45	53	OD	0A	0D	0A
54	68	65	20	4C	51	2D	38	35	30	2F	31	30	35	30	20
70	72	69	6E	74	65	72	73	20	61	72	65	20	6D	75	6C
74	69	66	75	6E	63	74	69	6F	6E	61	6C	2C	20	32	34
2D	70	69	6E	20	70	72	69	6E	74	68	65	61	64	2C	20
69	6D	70	61	63	74	20	64	6F	74	2D	OD	0A	6D	61	74
72	69	78	20	70	72	69	6E	74	65	72	73	2E	20	54	68
65	20	6D	61	69	6E	20	66	65	61	74	75	72	65	73	20
6F	66	20	74	68	65	20	74	68	65	73	65	20	70	72	69
6E	74	65	72	73	20	61	72	65	3A	20	OD	0A	OD	0A	2E
20	55	70	77	61	72	64	20	63	6F	6D	70	61	74	69	62
69	6C	69	74	79	20	77	69	74	68	20	74	68	65	20	4C
51	2D	38	30	30	2F	31	30	30	30	OD	0A	2E	20	41	20
6D	61	78	69	6D	75	6D	20	70	72	69	6E	74	20	73	70
65	65	64	20	6F	66	20	32	36	34	20	43	50	53	20	69
6E	20	64	72	61	66	74	20	6D	6F	64	65	20	61	74	20

```
1.1 FEATURES. . .
The LQ-850/1050
printers are mul
tifunctional, 24
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impact dot-. mat
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e main features
of the these pri
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 Upward compatib
ility with the L
Q-800/1000. . .A
maximum print sp
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n draft mode at
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Fig 1-14. Hexadecimal Dump List

1.7 PRINTER INITIALIZATION

There are two initialization methods: hardware initialization and software initialization.

1.7.1 Hardware Initialization

This type of initialization occurs when printer power is turned on or when the printer receives the INIT signal from the host via the 8-bit parallel interface.
When printer is initialized in this way, it performs the following actions:

- **Initializes printer mechanism**
- **Clears downloaded character set**
- **Clears the input data buffer**
- **Clears the image buffer**
- **Sets printer selections to their default values**

1.7.2 Software Initialization

This type of initialization occurs when the printer receives command (ESC@) via software.
When the printer is initialized in this way, it performes the following actions:

- **Clears the image buffer**
- **Sets printer selections to their default values.**

NOTE: The printer's default values are as follows:

Page Position	**Preset paper position becomes top of form position**
Left and Right Margin	**Released**
Line Spacing	**1/6 inches**
Vertical Tab Position	**Cleared**
Horizontal Tab Position	**Every 8 characters (relative)**
VFU Channel	**Channel O**
Family Number of Type Style	**Roman (Family Number O)**
Downloaded Characters	**Deselected: Software initialize**
	Cleared: Hardware initialize
Justification	**Left justification**
Character Per Inch	**10**
Bit Image Mode Assignment	**ESC K = ESC *0, ESC L = ESC *1, ESC = ESC * 2,**
	ESC Z = ESC *3
Printing Effects	**Cleared**

1.8 BUZZER OPERATION AND ERROR CONDITIONS

This section describes the buzzer operation and error conditions of the printer.

1.8.1 Buzzer Operation

The buzzer ring as follows:

. When a BEL code is sent to the printer, the buzzer sounds for 0.5 seconds

. When an error has occurred

Carriage Trouble: Sounds 5 times (rings for 0.5 seconds with 0.5 seconds interval.)

Paper End: Sounds 3 times (rings for 0.1 seconds with 0.1 seconds interval.)

- When a panel setting is accepted, the buzzer sounds for 0.1 seconds (Refer to Section 1.9.4 for further information concerning control panel settings.)

1.8.2 Error Conditions

If any of the following errors occur, the printer automatically enters the OFF-LINE mode.

- Home position is not detected at printer mechanism initialization.
- Home position is detected during printing.
- The OFF-LINE switch is pressed, causing the printer to enter OFF-LINE mode.
- Paper-out is detected when forms-override is finished.
- A paper-out signal is detected and forms-override is finished.
- A paper-out signal is detected after the printer has performed a paper-loading operation with the cut sheet feeder enabled.

For information concerning the status of the interface signals, refer to Section 2.3.2.