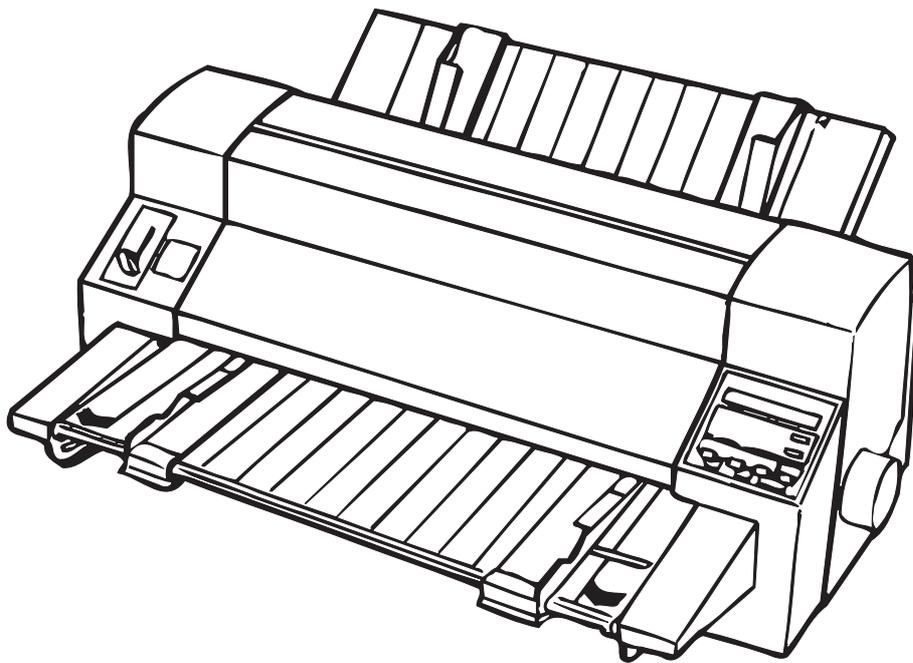**EPSON**

24-PIN DOT MATRIX PRINTER

EPSON DLQ-3000+

SERVICE MANUAL

SEIKO EPSON CORPORATION

4008259

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PRECAUTIONS

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

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

CAUTION   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.

WARNING

1. ALWAYS DISCONNECT THE PRODUCT FROM BOTH THE POWER SOURCE AND PERIPHERAL DEVICES PERFORMING ANY MAINTENANCE OR REPAIR PROCEDURES.

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.

CAUTION

1. REPAIRS ON EPSON PRODUCT SHOULD BE PERFORMED ONLY BY 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 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 MICROPROCESSORS AND CIRCUITRY, USE STATIC DISCHARGE EQUIPMENT, SUCH AS ANTI-STATIC WRIST STRAPS, WHEN ACCESSING INTERNAL COMPONENTS.

5. REPLACE MALFUNCTIONING COMPONENTS ONLY WITH THOSE COMPONENTS BY THE MANUFACTURE; 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 DLQ-3000+.

The instructions and procedures included herein are intended for the experience repair technician, and attention should be given to die precautions on the preceding page. The Chapters are organized as follows:

CHAPTER 1. GENERAL DESCRIPTION

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

CHAPTER 2. OPERATING PRINCIPLES

Describes the theory of printer operation.

CHAPTER 3. DISASSEMBLY AND ASSEMBLY

Includes a step-by-step guide for product disassembly and assembly.

CHAPTER 4. ADJUSTMENT

Includes a step-by-step guide for adjustment.

CHAPTER 5. TROUBLESHOOTING

Provides EPSON-approved techniques for troubleshooting.

CHAPTER 6. MAINTENANCE

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

APPENDIX

Describes connector pin assignments, circuit diagrams, circuit board component layout and exploded diagram.

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

REVISION SHEET

Revision	Issued Data	Contents
Rev. A	August 21 1997	First Release

TABLE OF CONTENTS

Chapter 1
Product Description

1.1 Features

The DLQ 3000+, equipped with a Bi-directional parallel interface, is the most advanced EPSON 24-pin impact-dot printer. It prints on continuous multi-part form as well as on single sheet, which makes the printer highly usable in office environment . The main features of this printer are:

❑ Used in Network environment with parallel interface supported
 ■ Memory
 ■ CSF paper quantity sensor
 ■ Paper jam detection

❑ Enhanced duplex printing
 ■ 1 original plus 6 duplications in the copy mode

❑ Wide printable area
 ■ 70 line / A4 (0 mm can be set for the top and bottom margins at single print mode.)

❑ Paper thickness detection function supported
 ■ Enables the auto and manual platen gap adjustment

❑ Fonts
 ■ Bitmap fonts: 9 LQ and 1 draft typefaces
 ■ Scalable fonts: 4 typefaces
 ■ Bar-code fonts: 8 typefaces

❑ Character tables
 ■ Standard version: 11 tables
 ■ NLSP version: 30 tables

❑ Control codes
 ■ ESC/P2
 ■ IBM 2391 Plus Emulation

❑ Input buffer
 ■ 128 K byte

❑ Interface
 ■ Bi-directional parallel interface (IEEE-1284 nibble mode supported)
 ■ Serial interface (EIA-232D)
 ■ Type-B interface level 2 (Optional)

❑ Reliability
 ■ Total print volume: 9 million lines
 ■ Printhead life: 200 million strokes
 ■ Ribbon life: 6 million characters

Printer Cover

Ribbon Cartridge

Rear Paper Guide

Paper Thickness Adjust Lever

Control Panel

Power Switch

Knob

Left Guide Edge

Left Guide Edge Lock

Printhead

Paper Bail

Front Paper Guide

Right Guide Edge Lock

Right Guide Edge

Paper Support

Release Lever

Parallel Interface

Serial Interface

Tractor Unit
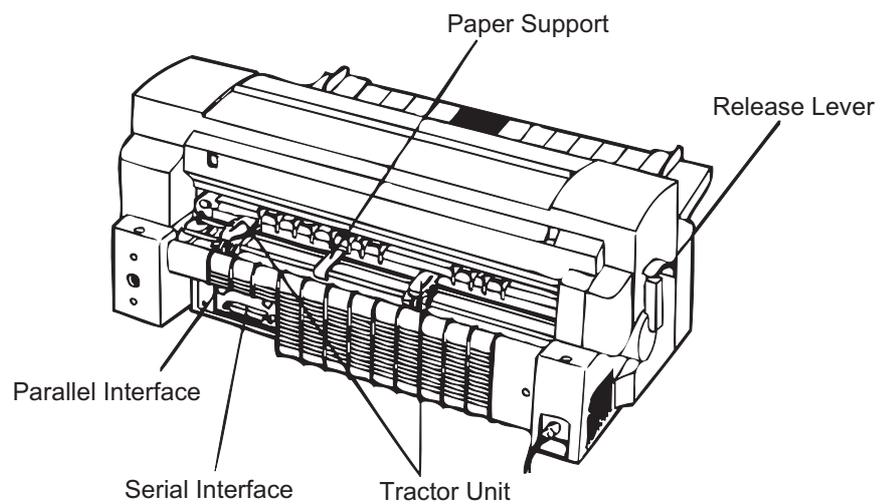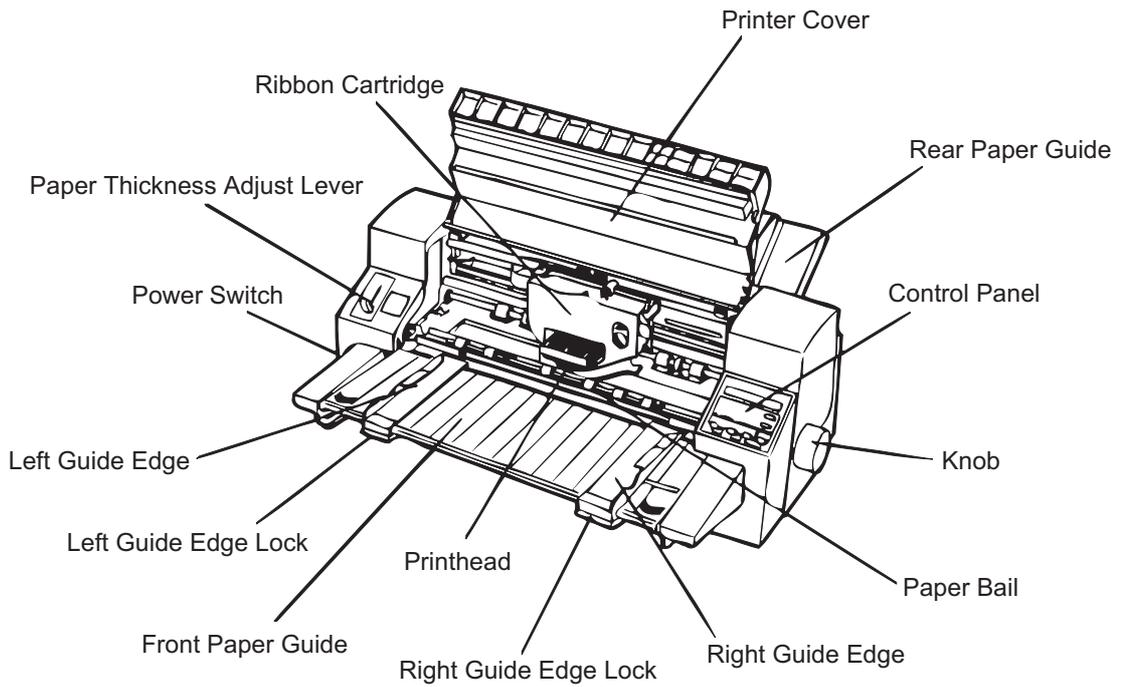
Figure 1-1. Exterior View of DLQ 3000+

1.2 Consumables and Options

Table 1-1. Accessories and Options

Part Number	Description
Consumable Supplies	
S015066	Ribbon cartridge (Black)
S015067	Ribbon cartridge (Color)
Optional Equipment	
C806830	Cut sheet feeder
C82307∗ / C82308∗	32KB intelligent serial I/F card
C82310∗ / C82311∗	32KB intelligent parallel I/F card
C82312∗	Localtalk™ card
C82313∗	32KB IEEE-488 I/F card
C82314∗	Coax I/F card
C82315∗	Twin-Ax I/F card
C82331∗	Ethernet I/F card
C82345*	IEEE-1284 parallel I/F card
C82346	Multi Protocol Ethernet I/F card
Accessory Equipment	
	Power supply cable *[2]

Note:
1. *Asterisk at the end of the part numbers replaces the last digit of the part number, which varies by the market.*
2. *Can be an accessory item according as market.*

1.3 Hardware Specification

1.3.1 printing Specification

❑ Print method   Impact-dot matrix
❑ Print pin arrangement   24-pin rhombus (See Figure 1-2.)
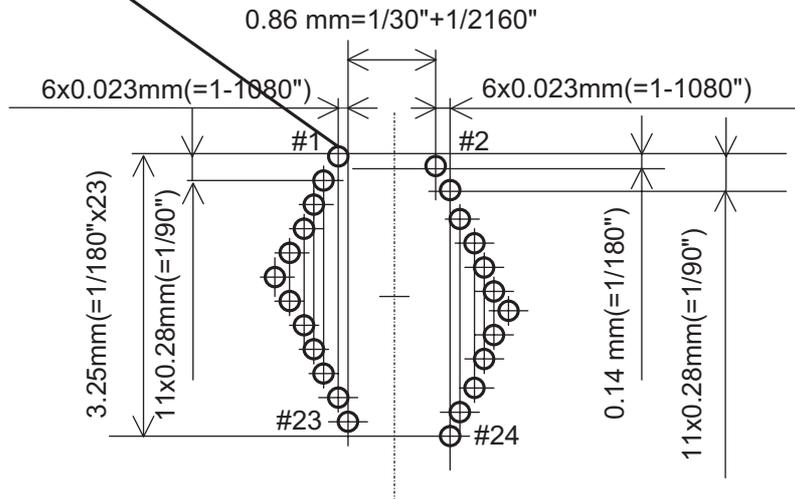
Figure 1-2. Pin Arrangement

❑ Printing direction   Bi-directional printing with logic seeking
❑ Resolution   See Table 1-2.

Table 1-2 .Printing Resolution

Printing Mode	Horizontal Density	Vertical Density	Adjacent Dot Print
High speed draft	90 dpi	180 dpi	No
Draft	120 dpi	180 dpi	No
Draft condensed	240 dpi	180 dpi	No
LQ	360 dpi	180 dpi	No
8-pin bit image	60, 80, 90 or 120 dpi	60 dpi	Yes
	120 or 240 dpi	60 dpi	No
24-pin bit image	60, 90, 120 or 180 dpi	180 dpi	Yes
	360 dpi	180 dpi	No
Raster graphics	180 or 360 dpi	180 or 360 * dpi	Yes

Note: When a color ribbon is installed, the printer can not print vertical 360 dpi graphics. In that case, the printer changes vertical density to 180 dpi.

❑ Printing speed   See Table 1-3.

Table 1-3. Printing Speed

Printing Mode	Character Size	Maximum Printing Speed				
		Mode 0	Mode 1	Mode 2	Mode 3	Mode 4
High speed draft	10 cpi	444	444	160	160	240
Draft	10 cpi	360	333	240	120	180
	12 cpi	432	400	288	144	216
	15 cpi	540	500	360	180	270
Craft condensed	17 cpi	309	286	206	103	154
	20 cpi	360	333	240	120	180
LQ	10 cpi	120	111	80	40	60
	12 cpi	144	133	96	48	72
	15 cpi	180	167	120	60	90
LQ condensed	17 cpi	206	190	137	68	103
	20 cpi	240	222	160	80	120
Raster (360 dpi)	10 cpi	20	20	20	20	20

Printing Speed Mode Selection

This printer is designed to control the printing speed according to the power supply voltage and printhead temperature. When the power supply voltage drops to the limit, the printer stops printing, then resumes the job at a slower speed to print the remaining data for the line. When the printhead temperature rises to the limit, the printer stops printing. Then it resumes printing at a slower speed if the printhead temperature recovers to the specified level. The printing speed mode is determined according to the flowchart shown in Page 1-6.
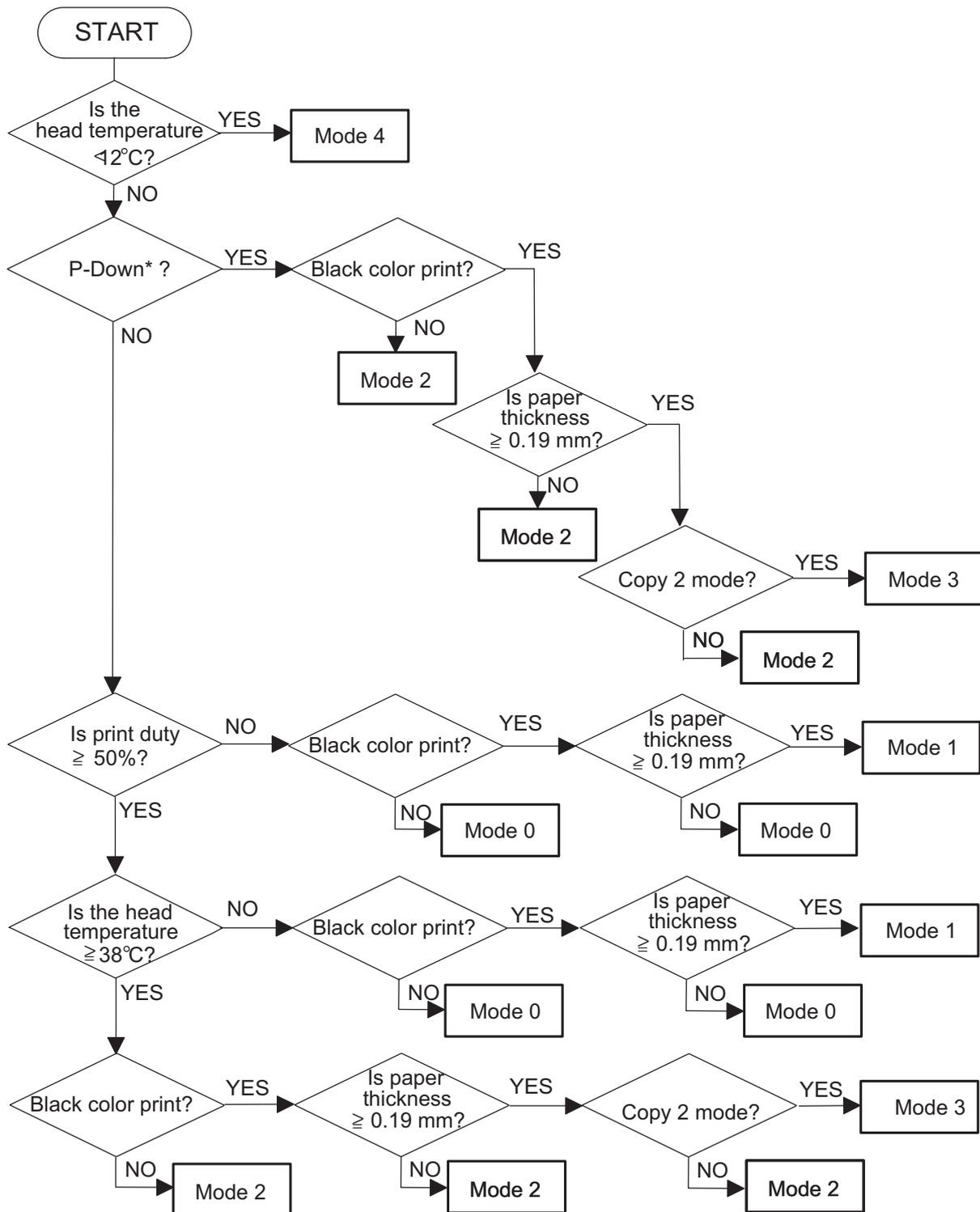
P-Down : Means that the line is the reprinted line after the power supply voltage drops. It is to prevent the printhead and the printer mechanism from being driven under the improper power supply voltage.

Figure 1-3. Printing Speed Selection Mode

1.3.2 Character Specifications and Control Codes

1.3.2.1 Coded Character Sets

❑ ASCII international and Legal international character sets *

USA	France	Germany	UK
Denmark 1	Sweden	Italy	Spain 1
Japan	Norway	Denmark 2	Spain 2
Latin America	Korea	Legal	

Note: The codes for the international and legal characters are as follows:
23H, 24H, 40H, 5BH, 5CH, 5DH, 5EH, 60H, 7BH, 7CH, 7DH, 7EH

❑ Standard version (11 character tables)

Italic table	PC437 (US, Standard Europe)
PC850 (Multilingual)	PC860 (Portuguese)
PC861 (Icelandic)	PC863 (Canadian French)
PC865 (Nordic)	Abicomp
BRASCII	Roman 8
ISO Latin 1	

❑ NLSP version (30 character tables)

Italic table	PC 437 (US, Standard Europe)
PC 850 (Multilingual)	PC 437 (Greek)
PC 852 (East Europe)	PC 853 (Turkish)
PC 855 (Cyrillic)PC 860	PC 857 (Turkish)
PC 866 (Russian)	PC 869 (Greek)
MAZOAWIA (Poland)	Code MJK (CSFR)
ISO 8559-7 (Latin, Greek)	ISO Latin 1T (Turkish)
Bulgaria (Bulgaria)	PC 864 (Arabic)
Estonia	PC 774 (LST 1283:1933)
ISO 8859-2	PC 866 LAT. (Latvian)
PC 860 (Portuguese)	PC 861 (Icelandic)
PC 865 (Nordic)	PCAPTEC (Arabic)
PC 708 (Arabic)	PC 720 (Arabic)
PCAR864 (Arabic)	Hebrew7 *[1]
Hebrew8 *[1]	PC862(Hebrew) *[1]

Note 1: Theses character tables are not selected in the SelecType mode.

1.3.2.2 Type Faces

❑ Bitmap fonts (10 type faces)

Roman	Sans Serif	Courier	Prestige
Script	Script C	OCR B	
Orator	Orator S	Draft	

❑ Scalable fonts (4 type faces)

Roman	Sans Serif	Roman T	Sans Serif H

❑ Bar-code fonts (8 type faces)

EAN 13	EAN-8	Interleaved 2 of 5	UPC-A
UPC-E	Code 39	Code 128	POSTNET

1.3.2.3 Rendition

❑ ASCII

Double-width	Double-height	Condensed
Bolded	Double-strike	Italics
Super/subscript	Outlined	Shadowed

Underlined (Single, Double, Single-broken, Double-broken line)
Strike-through (Single, Double, Single-broken, Double-broken line)
Over-scored (Single, Double, Single-broken, Double-broken line)

1.3.2.4 Combination of character tables and typefaces

Table 1-4. Character Tables and Type Faces

	Character Tables	Bitmap Fonts	Scalable Fonts
Standard version *[1]	**Italic table** **PC 437 (US Standard Europe)** **PC 850 (Multilingual)** **PC 860 (Portuguese))** **PC 861 (Icelandic)** **PC 863 (Canadian-French)** **PC 865 (Nordic)** **BRASCII** Abicomp Roman 8 ISO Latin 1	EPSON Draft EPSON Roman EPSON Sans Serif EPSON Courier EPSON Prestige EPSON Script EPSON OCR-B EPSON Orator EPSON Orator-S Epson Script C	EPSON Roman EPSON Sans Serif EPSON Roman T EPSON Sans Serif H
NLSP version *[1]	**Italic table** **PC 437 (US Standard Europe)** **PC 850 (Multilingual)** **PC 860 (Portuguese)** **PC861 (Icelandic)** **PC 865 (Nordic)**	EPSON Draft EPSON Roman EPSON Sans Serif EPSON Courier EPSON Prestige EPSON Script EPSON OCR-B EPSON Orator EPSON Orator-S Epson Script C	EPSON Roman EPSON Sans Serif EPSON Roman T EPSON Sans Serif H
	PC 864 (Arabic)	EPSON Draft EPSON Roman	(Not supported)
	PC 437 (Greek) PC 852 (East Europe) PC 853 (Turkish) PC 855 (Cyrillic) PC 857 (Turkish) PC 866 (Russian) PC 869 (Greek) MAZOWIA (Poland) Code MJK (CSFR) ISO 8859-7 (Latin/Greek) ISO Latin 1T (Turkish) Bulgaria (Bulgaria) Estonia PC 774 (LST 1283:1993) ISO 8859-2 PC 866 LAT. (Latvian)	EPSON Draft EPSON Roman EPSON Sans Serif EPSON Courier EPSON Prestige EPSON Script	(Not supported)
	PCAPTEC (Arabic) PC 708 (Arabic) PC 720 (Arabic) PCAR864 (Arabic)	EPSON Draft (Arabic) EPSON Naskh (Roman) EPSON Kufi (Sans Serif)	(Not supported)
	Hebrew7 *[2] Hebrew8 *[2] PC862(Hebrew) *[2]	EPSON Draft (Hebrew) EPSON Miriam (Roman) EPSON David (Courier)	(Not supported)

Note:

1: ESC R command is effective on the character tables with bold weight.

2: These character tables are not selected in the SelecType mode.

1.3.2.5 Memory Size

❑ Input buffer   128 K byte or 1k byte
❑ Download memory   Approximately 10 K byte
❑ CG ROM   NLSP Version: 8 M bit,   Standard Version: 4 M bit

1.3.2.6 Character Size

❑ Character size
   • Bit map font   10.5 point
   • Scalable font   10.5 point
❑ Character matrixes   See Table 1-5.

Table 1-5. Character Matrixes

Character	Horizontal Dots	Vertical Dots
Draft 10 cpi	12	24
Draft 12 cpi	10	24
Draft 15 cpi	8	16
LQ 10 cpi	36	24
LQ 12 cpi	30	24
LQ 15 cpi	24	16
LQ proportional	48 (maximum)	24

Notes:

1. *The character matrixes for high speed draft 10 cpi characters are made from the draft 12 cpi matrixes.*
2. *The character matrixes for 15 cpi character are also used for superscript and subscript characters.*

1.3.2.7 Control Codes

❑ ESC/P2
❑ IBM 2391 Plus Emulation

1.3.3 Paper Feed Specification

1.3.3.1 Friction Feed (Cut sheet)

❑ Paper Path
- Single sheet, envelopes   Front and rear insertion (Manual/CSF insertion)
- Multi-part form   Rear entry (Manual/CSF insertion)

Notes:
1. *Set the release lever to "FRICTION".*
2. *Do not load continuous paper (including folding paper).*
3. *Set the longer side of the envelope horizontally.*
4. *When setting No.6 envelope, align the left sheet edge guide with the marked position.*

1.3.3.2 Tractor Feed (Continuous paper)

❑ Paper Path
- Rear entry push tractor feed with paper parking function

Notes:
1. *Set the release lever to "TRACTOR".*
2. *Do not perform reverse feed for more than 1/6 inch.*
3. *Set the left and right sheet edge guides to the right and left ends of the front paper guide, respectively.*

1.3.3.3 Paper Feed Speed and Accuracy

❑ Minimum feed length   1/360 inch (1/6, 1/8 or programmable with the increment of 1/360 inch)

❑ Feed speed
- 1/6 inch line feed   42 ms
- Continuous feed   6.0 IPS (inch/second)
                                        0.152 MPS (m/second)

1.3.4 Paper Specification

❑ **Cut sheet (Single sheet)**

Table 1-6. Cut sheet Specification : Single Sheet

		Minimum	Maximum
Width	Manual insertion	3.6 inch 92 mm	16.5 inch 420 mm
	CSF	3.9 inch 100 mm	16.5 inch 420 mm
Length	Manual insertion	3.5 inch 92 mm	16.5 inch 420 mm
	CSF	3.6 inch 92 mm	14.3 inch 364 mm
Thickness		0.0025 inch 0.065 mm	0.0047 inch 0.12 mm
Weight		52 g/m² 14 lb.	105 g/m² 27 lb.
Quality		Plain paper, Reclaimed paper	

Notes:
1. *Reclaimed paper can be used under condition of room temperatures only.*
2. *Ensure that the paper is not curled, folded or crumpled.*

❑ **Cut sheet (Multi-part form)**

Table 1-7. Cut sheet Specification : Multi-part Form

		Minimum	Maximum
Width	Manual insertion	3.6 inch 92 mm	16.5 inch 420 mm
	CSF	3.9 inch 100 mm	16.5 inch 420 mm
Length	Manual insertion	3.5 inch 92 mm	16.5 inch 420 mm [1]
	CSF	3.6 inch 92 mm	14.3 inch 364 mm [1]
Copies		1 original and 6 copies	
Thickness		0.0047 inch 0.12 mm	0.021 inch 0.53 mm
Weight (I sheet of a multi-part form)		40 g/m² 11 lb.	58 g/m² 15 lb.
Quality		Carbon-less multi-part paper	
Jointing		Line glue (top, right and left side)	

Notes:
1. *Ensure that the paper is not curled, folded or crumpled.*
2. *The maximum length for the carbon-less multi-part paper is 297 mm with the left or right side of the form line-glued.*
3. *CSF does not feed paper which is glued by the right or left side.*

❑ **Envelopes**

Table 1-8. Envelope Specification

		Minimum	Maximum
Envelopes (No.6)	Width	6.5 inch/165 mm	
	Length	3.6 inch/92 mm	
Envelopes (No.10)	Width	9.5 inch/241 mm	
	Length	4.1 inch/105 mm	
Thickness		0.0063 inch 0.16 mm	0.021 inch 0.52 mm
Weight		45 g/m² 12 lb. /m²	91 g/m² 24 lb./m²
Quality		Bond paper, Plain paper Airmail paper without glue at a flap	

Notes:

1. Fold the flap of the envelope inside before loading at CSF or manual insertion.

2. Difference in thickness within the same printable area must be 0.0098 inch or less.

❑ **Continuous paper**

Table 1-9. Continuous Paper Specification : Single Paper/Multi-Part Form

		Minimum	Maximum
Width		4.0 inch 101.6 mm	16 inch 406.4 mm
		4.0 inch 101.6 mm	22.0 inch 558.8 mm
Length (1 page)		3.5 inch 92 mm	16.4 inch 420 mm *[1]
Copies		1 original and 6 copies	
Total Thickness	Single sheet	0.0025 inch 0.065 mm	0.047 inch 0.12 mm
	1 sheet of multi-part form	0.0047 inch 0.12 mm	0.021 inch 0.53 mm
Weight	Cut sheet	52.3 g/m² 14 lb.	105 g/m² 27 lb.
	1 sheet of multi-part form	40 g/m² 11 lb.	58 g/m² 15 lb.
Quality		Plain paper, Reclaimed paper Carbon-less multi-part form	
Jointing *[1]		Must be one of the followings: - Point glue on the both sides - Tape staple on the both sides - Point glue on one side and tape staple on the other side **Note:** *Do not use the paper which is glued by the side or stapled.*	

❑ **Labels**

Table 1-10. Label Specification

	Minimum	Maximum
Label size	See Figure 1-4.	
Base sheet width	4.0 inch	16.0 inch
	101.6 mm	406.4 mm
Base sheet length (1 page)	4.0 inch	22.0 inch
	101.6 mm	559 mm
Base sheet thickness	0.0028 inch 0.07 mm	0.0035 inch 0.09 mm
Total thickness	0.0063 inch 0.16 mm	0.0075 inch 0.19 mm
Label weight	64 g/m²/17 lb.	
Quality	Plain paper or equivalent	
	The base sheet must be continuous paper.	

Notes:

1. Use labels in the condition of the room temperature only.

2. Labels backed with the continuous base sheet can be used only.

3. When the label sheet whose base sheet is exposed around the labels, adjust the platen gap manually to the portion covered with the label using PG adjust lever.
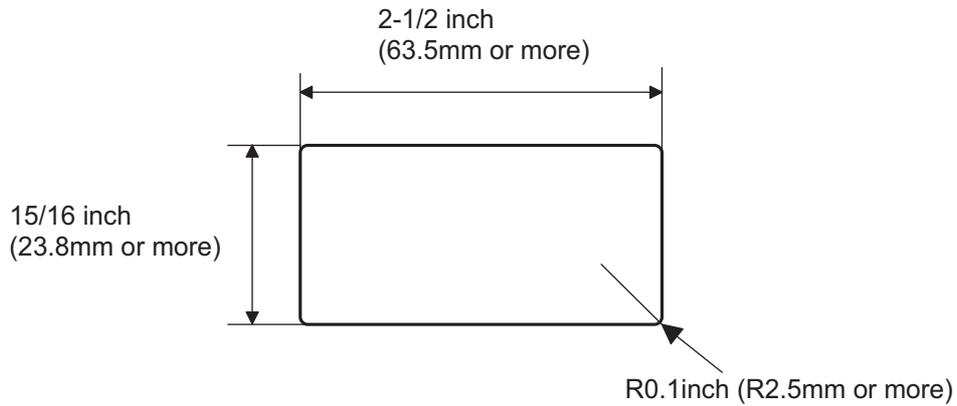
2-1/2 inch
(63.5mm or more)

15/16 inch
(23.8mm or more)

R0.1inch (R2.5mm or more)

Figure 1-4. Label Size

❏ **Pre-print paper**

Table 1-11. Pre-Print Paper Specification

	Minimum	Maximum
Width	4.0 inch	16.0 inch
	101.6 mm	406.4 mm
Length (1 page)	4.0 inch	22.0 inch
	101.6 mm	559 mm
Total thickness	0.0025 inch 0.065 mm	0.047 inch 0.12 mm
Quality	The paper printed with the color which has the reflective rate of less than 60 %, such as black.	

❏ **Continuous forms with labels**

Table 1-12. Continuous Forms with Labels Specification

	Minimum	Maximum
Base sheet width	4.0 inch	16.0 inch
	101.6 mm	406.4 mm
Base sheet length (1 page)	4.0 inch	22.0 inch
	101.6 mm	559 mm
Total thickness	– –	0.021 inch 0.53 mm
Quality	Plain paper or equivalent Airmail paper without glue at a flap	

Note:
When using the continuous forms with labels, the label position must be registered properly. It can be performed through the utility "Label Position Registering Utility".

❑ **Overlapping multi-part forms**

Table 1-13. Overlapping Multi-Part Form Specification

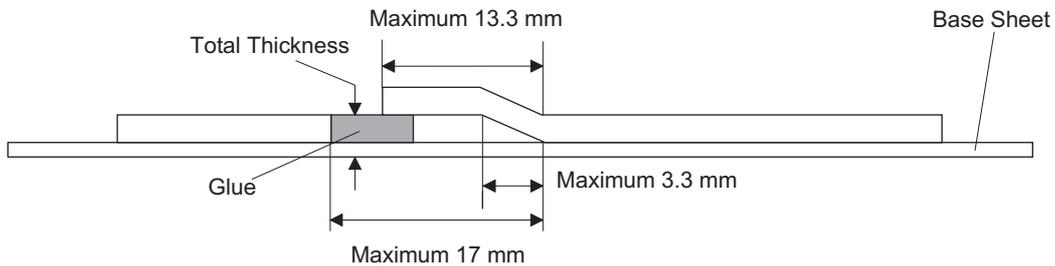|	Minimum	Maximum
Base sheet width	4.0 inch	16.0 inch
	101.6 mm	406.4 mm
Base sheet length (1 page)	4.0 inch	22.0 inch
	101.6 mm	559 mm
Total thickness	–	0.026 inch
	–	0.65 mm
Jointing	Multi-part forms :Point glue Joint for the base sheet and multi-part form :Point glue	

Figure 1-5. Overlapping multi-part Form Specification

❑ **Overlapping multi-part forms with labels**

Table 1-14. Overlapping Multi-Part Form with Labels Specification

	Minimum	Maximum
Base sheet width	4.0 inch	16.0 inch
	101.6 mm	406.4 mm
Base sheet length (1 page)	4.0 inch	22.0 inch
	101.6 mm	559 mm
Total thickness	–	0.026 inch
	–	0.65 mm
Jointing	Multi-part forms :Point glue Joint for the base sheet and multi-part form :Point glue	

Note: When using overlapping multi-part forms with labels, the label position must be registered properly. It can be performed through the utility "Label Position Registering Utility".
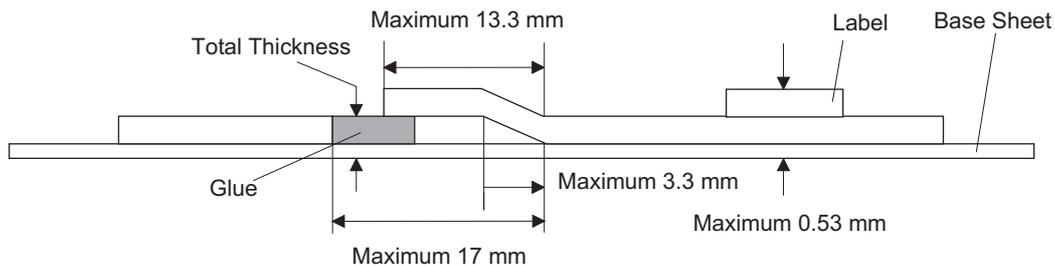

Figure 1-6. Overlapping multi-part Form with Labels Specification

1.3.5 Printable Area

This section describes printable area for various types of paper.
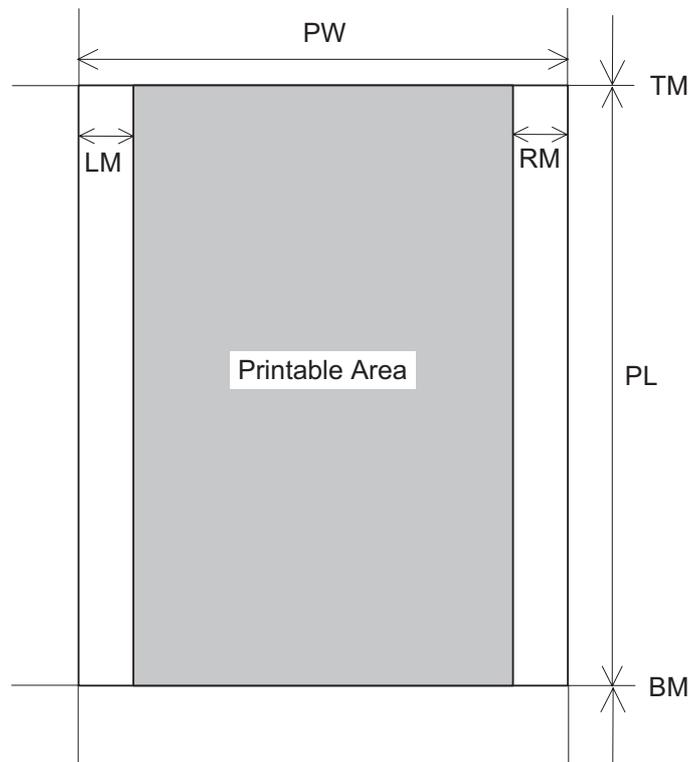
❑ **Cut sheet**

Figure 1-7. Printable Area for Cut Sheet

Table 1-15. Printing Area for Cut sheet

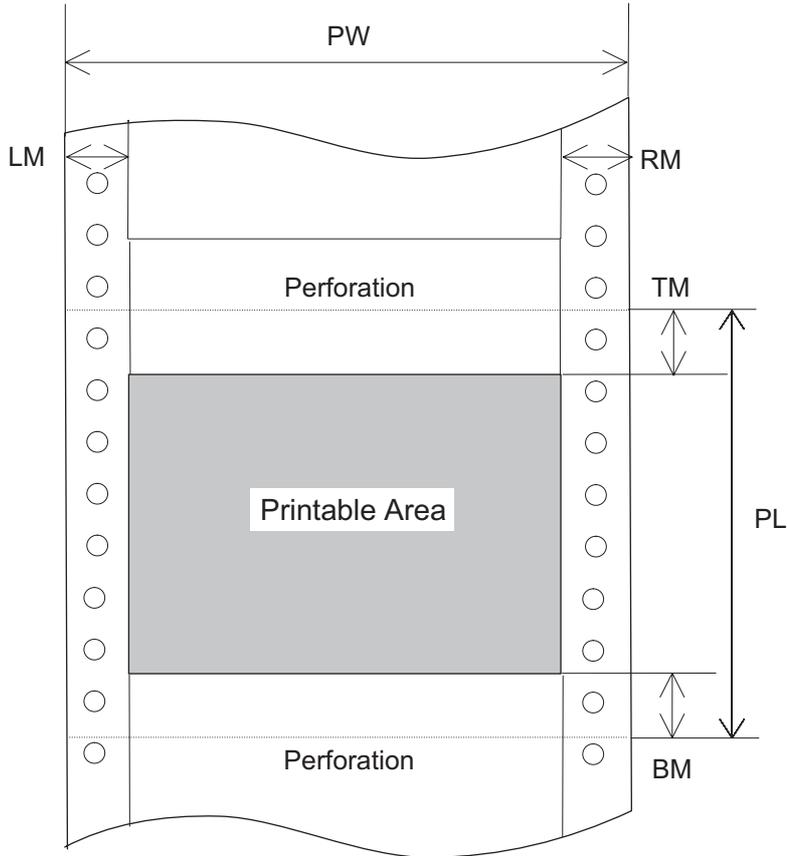|		Single cut sheet	Multi-part cut sheet
Paper width	(PW)	Refer to Section 1.3.4.	Refer to Section 1.3.4.
Paper length	(PL)	Refer to Section 1.3.4.	Refer to Section 1.3.4.
Left margin	(LM)	3 mm (0.118") or more	3 mm (0.118") or more
		[A3 landscape] 31 mm (1.22") or more	[A3 landscape] 31 mm (1.22") or more
Right margin	(RM)	3 mm (0.118") or more	3 mm (0.118") or more
		[A3 landscape] 20 mm (0.78") or more	[A3 landscape] 20 mm (0.78") or more
Top margin	(TM)	0 mm (0") or more	0 mm (0") or more
Bottom margin	(BM)	0 mm (0") or more	0 mm (0") or more
Width of printing area (WPA)		Maximum 346 mm (13.62")	Maximum 346 mm (13.62")

❑ **Continuous paper**

Figure 1-8. Printable Area for Continuous Paper

		Continuous paper
Paper width	(PW)	Refer to Section 1.3.4.
Paper length	(PL)	Refer to Section 1.3.4.
Left margin	(PM)	9 mm (0.354") or more
Right margin	(LM)	9 mm (0.354") or more
Top margin	(TM)	4.2 mm (0.165") or more
Bottom margin	(BM)	4.2 mm (0.165") or more

Notes:

1. In the top 75 mm are, the paper feeding pitch may be irregular.
2. Forms-override printing is available for 2 lines after the paper end is detected.(Paper feeding pitch is not guaranteed.) The end of the printable area is 4.2 m or more apart from the bottom edge of the paper.
3. When the page width is 16 inches, note the followings:
   - LM is 18 mm or more with the left tractor set at the farthest side toward the 136th column.
   - RM is 18 mm or more with the right tractor set at the farthest side toward the 1st column.
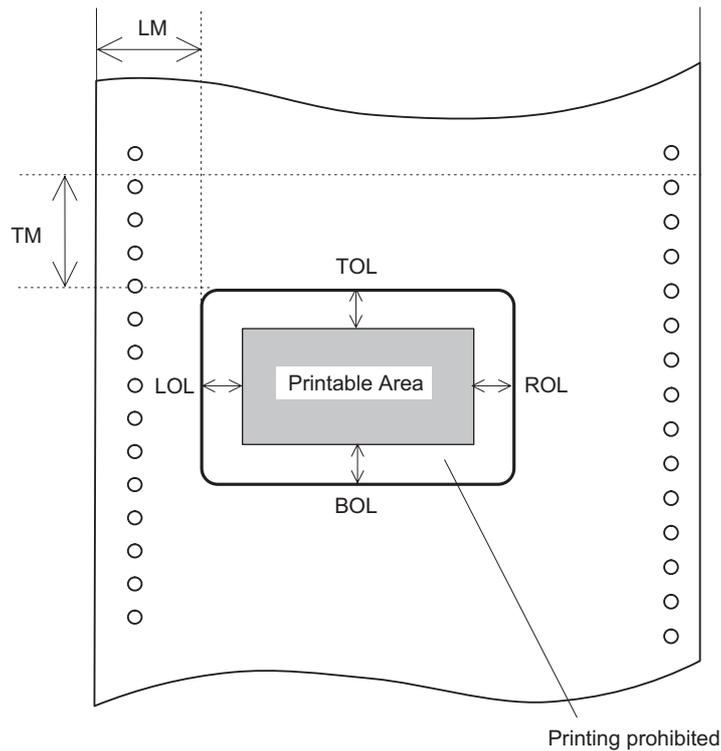
❑ Labels

Figure 1-9. Printable Area for Labels

Table 1-16. Printable Area for Labels

		Continuous paper
Paper width	(PW)	Refer to Section 1.3.4.
Paper length	(PL)	Refer to Section 1.3.4.
Left margin	(LM)	12 mm (0.472") or more
Top margin	(TM)	1.2 mm (0.0472) or more
Left margin on label	(LOL)	3 mm (0.118") or more
Right margin on label	(ROL)	3 mm (0.118") or more
Top margin on label	(TOL)	3 mm (0.118") or more
Bottom margin on label	(BOL)	3 mm (0.118") or more

Notes:
1. Do not feed paper backward.
2. Use only the specified paper path for continuous paper.
3. The paper feeding pitch in the top 75 mm (2.9") may be irregular.
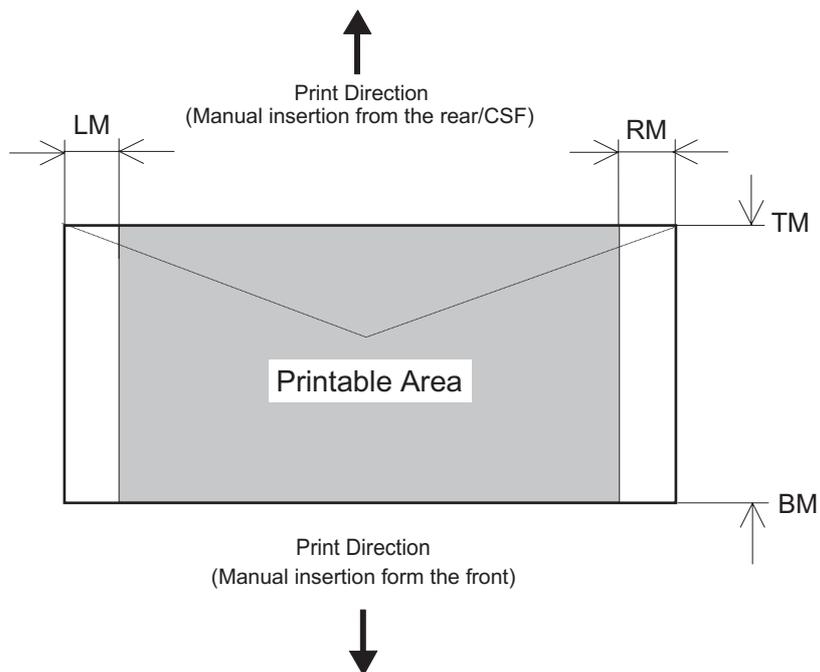
❑ **Envelops**

Figure 1-10. Printable Area for Envelopes

Table 1-17. Printable Area for Envelops

		Continuous paper
Paper width	(PW)	Refer to Section 1.3.4.
Paper length	(PL)	Refer to Section 1.3.4.
Left margin	(LM)	3 mm(0.118") or more
Right margin	(RM)	3 mm(0.118") or more
Top margin	(TM)	0 mm (0") or more [1]
Bottom margin	(BM)	0 mm (0") or more

Note 1: *At CSF insertion:* 4.2 mm (0.16") or more

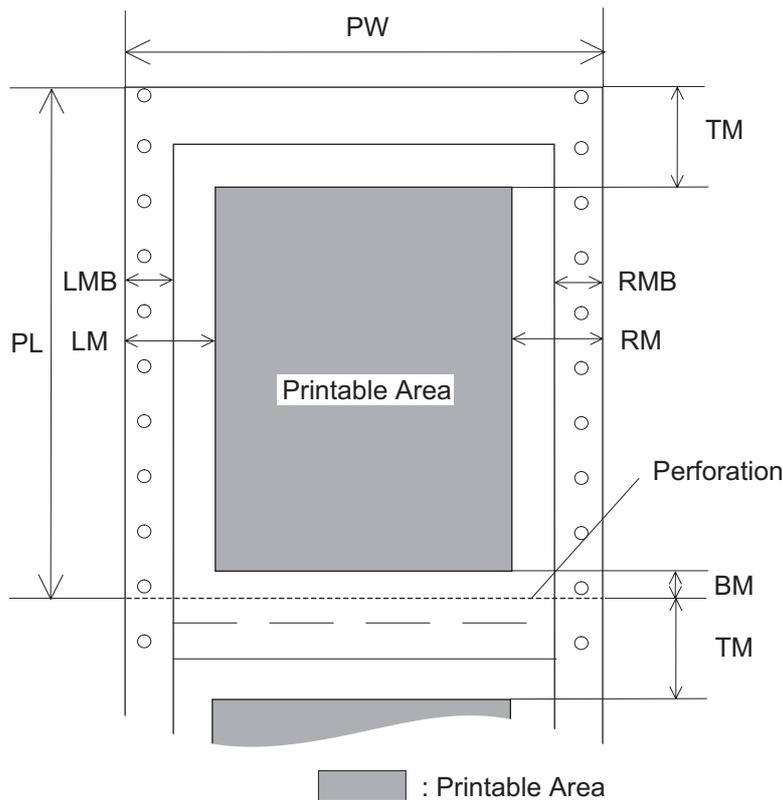❑ **Overlapping multi-part forms**

: Printable Area

Figure 1-11. Printing Area for Overlapping Multi-part Forms

Table 1-18. Printing Area for Overlapping Multi-part Forms

		Continuous paper
Paper width	(PW)	Refer to Section 1.3.4.
Paper length	(PL)	Refer to Section 1.3.4.
Left margin	(LM)	19 mm (0.748") or more
Right margin	(RM)	19 mm (0.748") or more
Top margin	(TM)	21.2 mm (0.835") or more
Bottom margin	(BM)	4.2 mm (0.165") or more
Left margin from the multi-part form to the base sheet (LMB)		13 mm (0.512") ± 3 mm (0.118")
Right margin from the multi-part form to the base sheet (RMB)		13 mm (0.512") ± 3 mm (0.118")

Notes:

1. Do not feed paper backward.

2. Use only the specified paper path for continuous paper.

3. The paper feeding pitch in the top 75 mm (2.9") may be irregular.

4. Forms-override printing is available for 2 lines after the paper end is detected. The end of the printable area is 4.2 mm or more apart from the bottom edge of the paper.
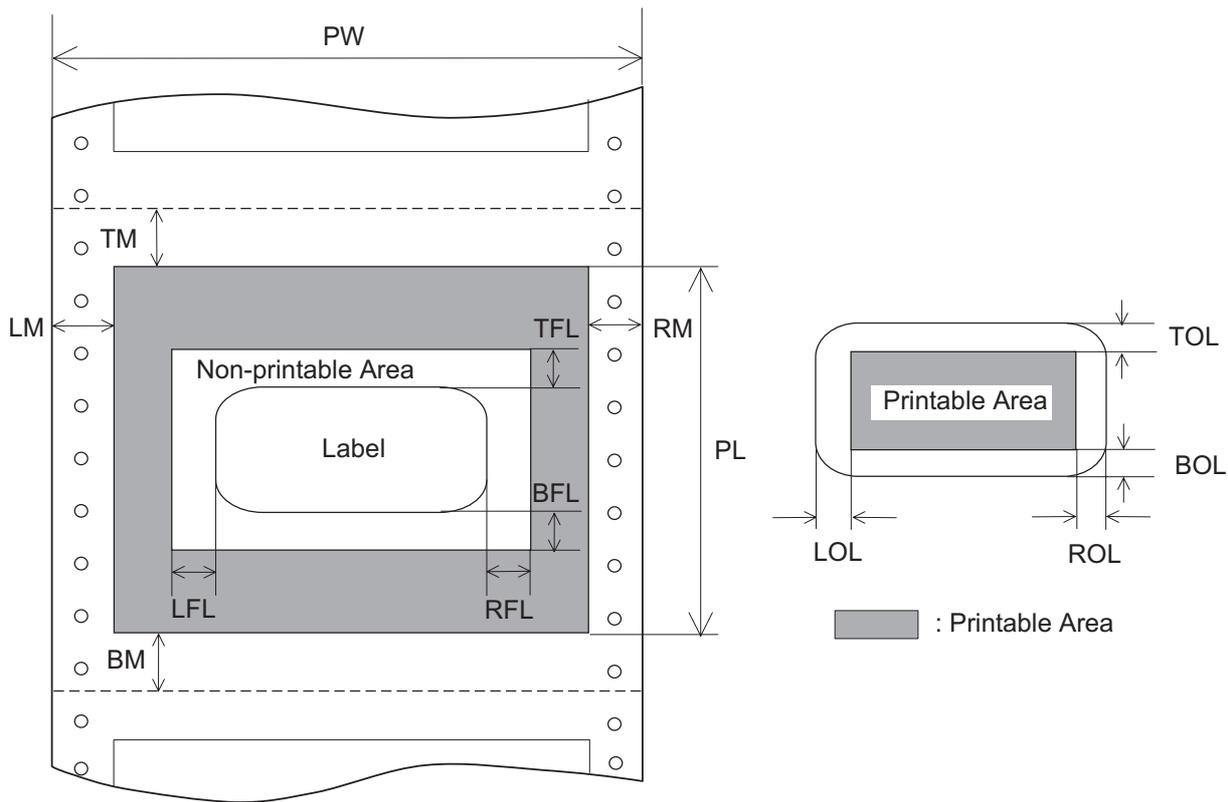
❑ **Continuous forms with labels**

Figure 1-12. Printable Area for Continuous Forms with Labels

Table 1-19. Printable Area for Continuous Forms with Labels

		Continuous paper
Paper width	(PW)	Refer to Section 1.3.4.
Paper length	(PL)	Refer to Section 1.3.4.
Left margin	(LM)	9 mm (0.354") or more
Right margin	(RM)	9 mm (0.354") or more
Top margin	(TM)	4.2 mm (0.165") or more
Bottom margin	(BM)	4.2 mm (0.165") or more
Left margin for label	(LFL)	45 mm (1.77) or more
Right margin from label	(RFL)	45 mm (1.77) or more
Top margin from label	(TFL)	25 mm(0.984") or more
Bottom margin from label	(BFL)	25 mm(0.984") or more
Left margin on label	(LOL)	3 mm (0.118") or more
Right margin on label	(ROL)	3 mm (0.118") or more
Top margin on label	(TOL)	3 mm (0.118") or more
Bottom margin on label	(BOL)	3 mm (0.118") or more

Notes:

1. *Do not feed paper backward.*
2. *Use only the specified paper path for the continuous paper.*
3. *The paper feeding pitch in the top 75 mm (2.9") may be irregular.*
4. *Forms-override printing is available for 20 lines after the paper end is detected. (Paper feeding pitch is not guaranteed.) The end of the printable are is 4.2 mm or more apart from the bottom edge of the paper.*