

DOT MATRIX PRINTER
DP8340RC SERIES
[PARALLEL INTERFACE]
USERS MANUAL



**Federal Communications Commission
Radio Frequency Interference
Statement**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For compliance with the Federal Noise Interference Standard, this equipment requires a shielded cable.

This statement will be applied only for the printers marketed in U.S.A.

**Statement of
The Canadian Department of Communications
Radio Interference Regulations**

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

The above statement applies only to printers marketed in Canada.

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1. OUTLINE

The DP8340RC series of serial dot matrix printers is for use in ECR, POS, electronic instruments, banking machines and computer peripheral equipment.

The DP8340RC series include the following features;

- 1) 2 color printing (Red and Black)
- 2) High-speed bidirectional printing (2 line/sec, 29 or 44 columns per line)
- 3) 9-pin print head
- 4) Parallel interface (Centronics compatible)
- 5) Commands for expanded characters, inverted characters, emphasized characters, red and black printing, and 10CPI or 15CPI characters etc. are provided, which makes the printer very versatile.
- 6) Simultaneous Data Communication and Printing
- 7) 2 Peripheral Drivers
- 8) One line validation printing (Option)

Model Name Notation

DP8340 **R** **C** - **1** **2** **0** A

Voltage

None : None Power Supply Unit

100 : AC 100V

120 : AC 120V

220 : AC 220V

230 : AC 230V

240 : AC 240V

Interface

C : Parallel Interface

Printer Type

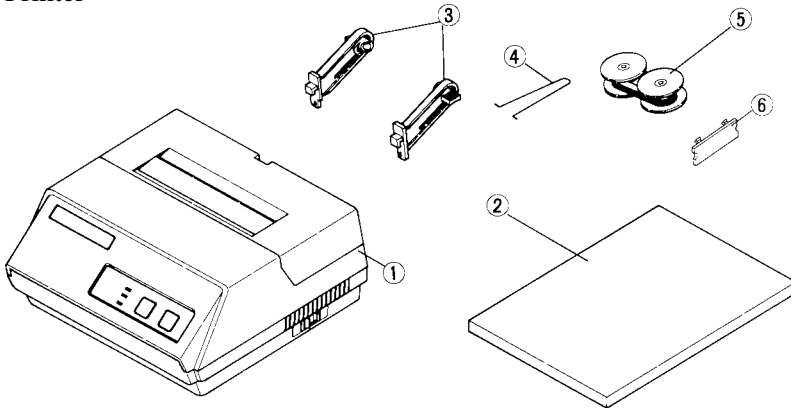
R : R Type Printer
(3.25 Inch Paper)

2. UNPACKING AND INSTALLATION

2-1. Unpacking

After opening the box, check if all necessary accessories are included.

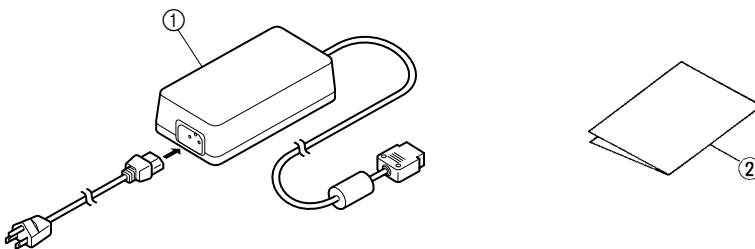
(A) Printer



- ① Printer
- ② User's Manual
- ③ Paper Holders

- ④ Re-Roll Prevention Guard
- ⑤ Ink Ribbon Cover
- ⑥ DIP Switch Cover

(B) Power Supply Unit



- ① Power Supply Unit
- ② User's Manual

Figure 2-1. Unpacking

2-2. Installation of Paper Holders and Re-Roll Prevention Guard

Install the Paper Holders in the intermost holes in the rear of the printer.

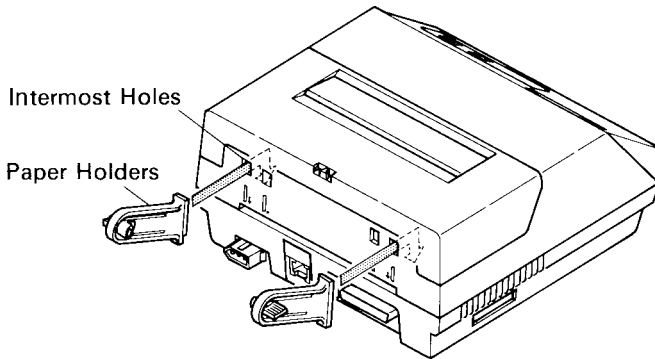


Figure 2-2. Installation of Paper Holders

Install the Re-Roll Prevention Wire in the holes of the printer cover. Twisting the Wire as shown in the figure below, will make the installation easier.

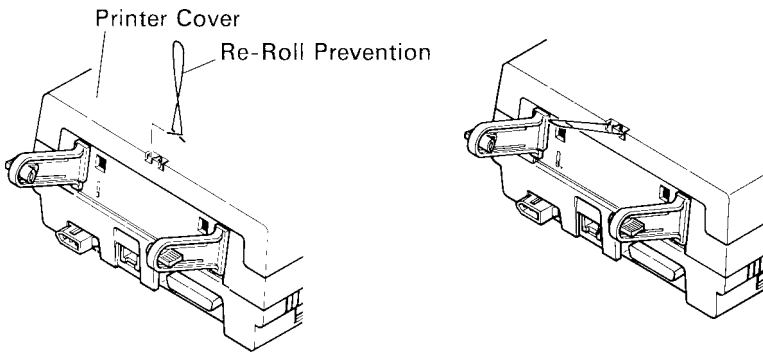


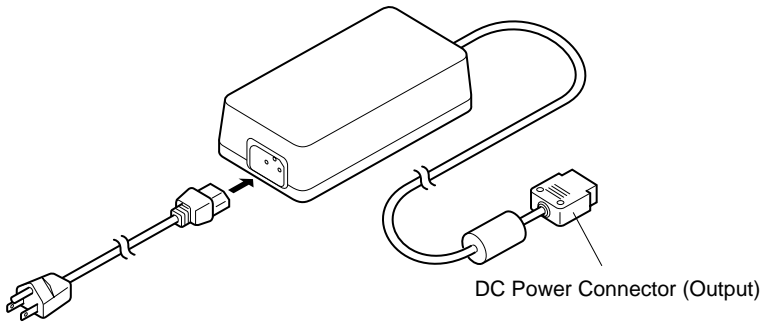
Figure 2-3. Installation of Re-Roll Prevention

2-3. Handling Notes

- (1) Install the printer near an easily accessible socket-outlet.
- (2) Place the unit on a flat and stable surface for operation.
- (3) Do not connect the AC Power Plug to the same outlet used for other noise generating devices (large motors, etc.).
- (4) Be careful not to drop paper clips, pins and other foreign objects into the unit.
- (5) Wipe off dirt with a soft cloth soaked in alcohol or benzine. Do not use Lacquer thinner, Trichlorethelene or Ketone solvents because they may damage plastic parts.
- (6) Use a soft brush, etc. for cleaning the printer mechanism and PCB.
- (7) Keep hands out of printer while power is on.
- (8) Do not attempt to print when there is no ink ribbon or paper in the unit. The print head life could be severely reduced.
- (9) If the paper is fastened tightly to the roll, the paper may not detach from the roll when the end is reached.
If this happens, the no paper detection function and paper feed will not operate.
- (10) Always keep the printer cover attached when printing to prevent paper jams, noise, and other problems.
- (11) Always turn the power off before opening the printer cover. (e.g. When renewing a ink ribbon)

3. PART IDENTIFICATION AND NOMENCLATURE

3-1. Power Supply Unit



Shape of AC Power plug will vary according to destinations.

Figure 3-1. Power Supply Unit

3-2. Printer

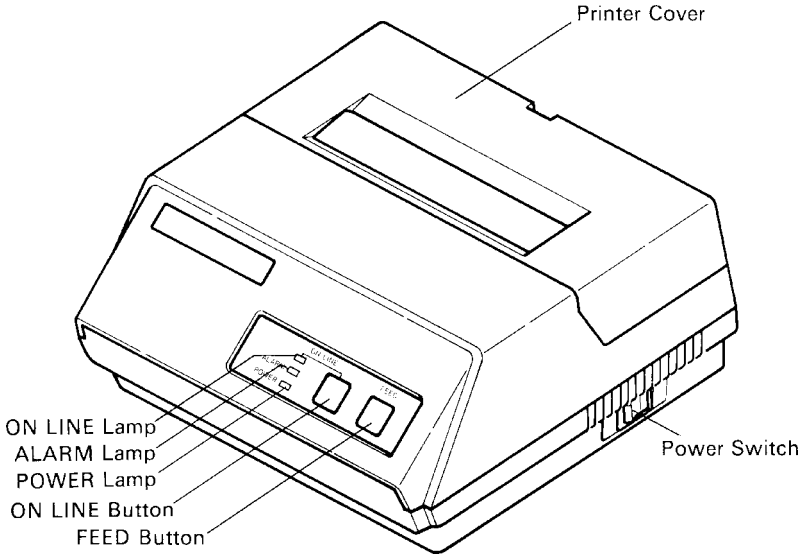


Figure 3-2. Printer: Front View

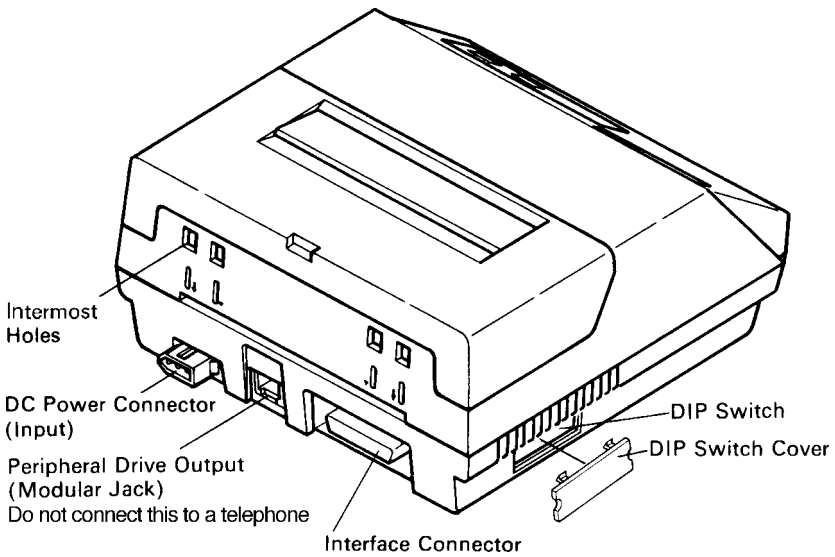


Figure 3-3. Printer: Rear View

3-3. Part Functional Description

- | | |
|------------------------------|--|
| (1) AC Power Plug | Connect to an outlet of the specified voltage. |
| (2) DC Power Outlet | Supplies DC 12V power to the printer. |
| (3) Printer Cover | Protects the printer against dust and reduces noise. |
| (4) POWER Lamp | Lights up (green LED) when power is on. |
| (5) ON LINE Lamp | Lights up (green LED) when the unit is in the online mode. |
| (6) ALARM Lamp | Lights up (red LED) when printer operation is not normal, or the printer is out of paper. It is necessary to install paper into the printer and press the ON LINE Button to recover from paper empty status. Turn off the printer power in order to recover from abnormal operation. |
| (7) ON LINE Button | Toggles between the on-line and off-line modes. The printer will go on-line after turning power on. |
| (8) FEED Button | Momentary operation of this button provides one line feed. Pressing this button continuously will cause continuous paper feed. If power is turned on while pressing this button, self printing*1 will be performed. |
| (9) Interface Connector | Connects the printer to host computers. Check that both computer and printer are off before connecting. |
| (10) DIP Switches | Allows for setting of various functions according to user requirements. |
| (11) Peripheral Drive Output | Connects the printer to the peripheral devices such as Cash Drawer, Paper Cutter and Paper Take-Up Device etc. to drive them. |

- *1 Self Printing This printer has another convenient function, the Automatic Test Printing. With the ink ribbon and paper properly installed in the printer, turn the power ON while holding down the Feed switch. Test printing will start and stop again automatically.

4. INSTALLATION OF INK RIBBON AND PAPER

4-1. Installation of Ink Ribbon

(1) Turn power off, lift the Printer Cover up and remove it.

Note: Be careful not to touch the print head immediately after printing, because it can get very hot.

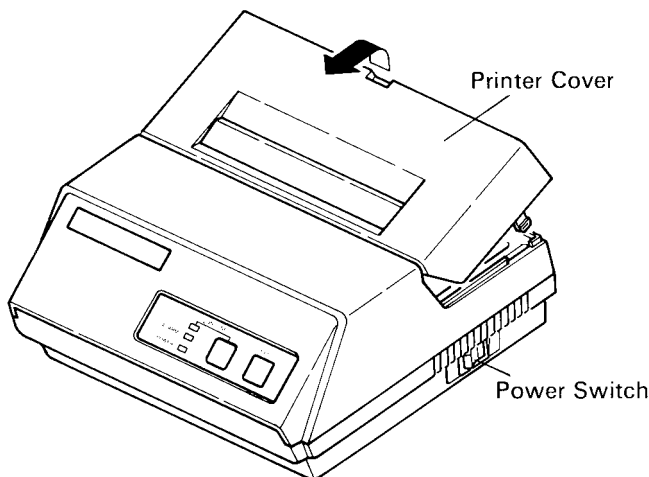


Figure 4-1. Printer Cover Removal

- (2) Unwind ribbon so that the spools are separated as shown in Figure 4-3. Hold the ribbon taut as shown with the drive pins facing down and slide the ribbon between the print head and the platen. While keeping the ribbon taut, wrap one side around the black ribbon guide on the end of the platen and drop one spool on the spool shaft. As you move the spool downwards, move the detecting lever aside to allow the spool to drop into place. Make sure the spool drive pins engage with the spool drive holes. As the spool drops into place there will be a click.
- (3) While continuing to hold the ribbon taut, install the remaining ribbon spool in a similar fashion.
- (4) Turn the spool that rotates freely to take up the ribbon slack.

Ribbon Life

Description	Ribbon life	
	Black	Red
SF-03BR (Fuji Kagakushi Kogyo Co., Ltd.)	Approx. 0.8 million characters	Approx. 0.4 million characters

Ribbon Life

Description	Ribbon life
	Black
SF-03B (Fuji Kagakushi Kogyo Co., Ltd.)	Approx. 0.8 million characters

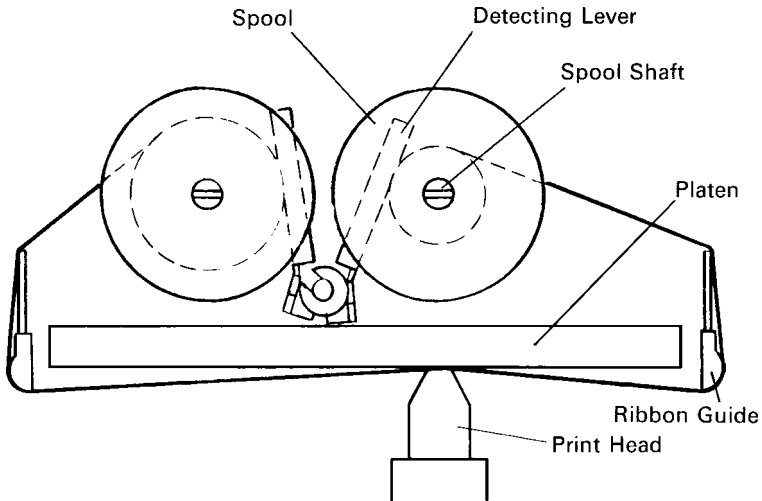


Figure 4-2. Installation of Ink Ribbon

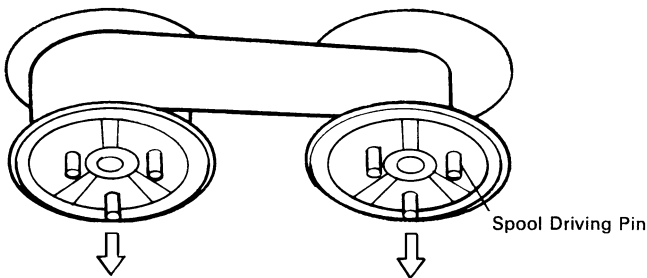


Figure 4-3. Ribbon Spools

4-2. Removal of Ink Ribbon

Hold the spool and lift gently, rotating it until the ribbon sags. Push the ribbon detecting lever out, lift the spool until it comes off the shaft. Remove the second spool in a similar manner.

(Do not apply excessive force when lifting spools.)

4-3. Paper Insertion

4-3-1. For Roll Paper

- (1) Cut the Roll Paper end straight and square. Hold the roll so that the paper comes from the bottom.
- (2) Attach the Roll Paper to the Holders Paper by slipping one side of the roll onto the Hub and pulling the other Hub out to allow the roll to slip in place.
- (3) Insert the paper evenly into the Paper Insertion Slot.
- (4) Turn the Power Switch “ON”, and press the FEED Button. The paper will be fed into the unit.

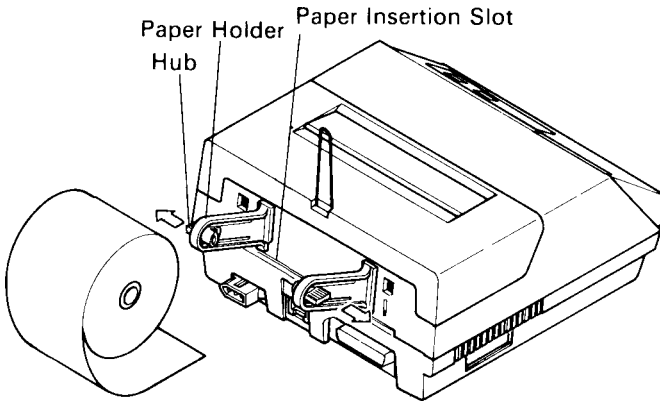


Figure 4-4. Paper Insertion (1)

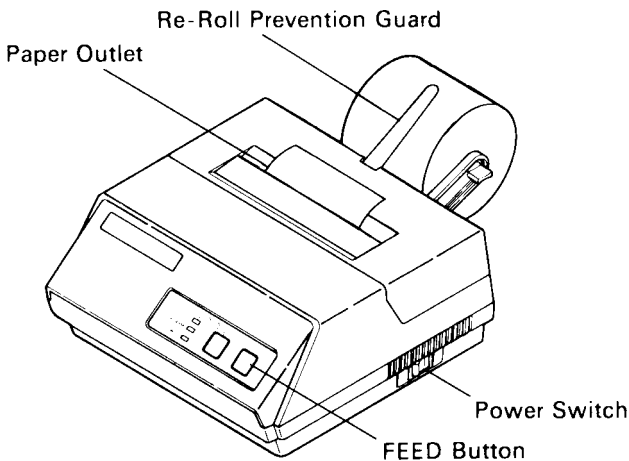


Figure 4-5. Paper Insertion (2)

4-3-2. Roll Paper Installation (When using the optional Printer Cover 8340R)

When installing roll paper with the optional “Printer Cover 8340R”, please use the following procedure.

(1) Turn power off, lift the Printer Cover up and remove it.

Note: Be careful not to touch the print head immediately after printing because it can get very hot.

(2) Insert paper into the printer, and feed the paper so it extends 3 inches or more above the top surface of the printer.

(3) Insert the paper into the slot in the “Printer Cover 8340R”.

(4) Install the “Printer Cover 8340R” on the printer.

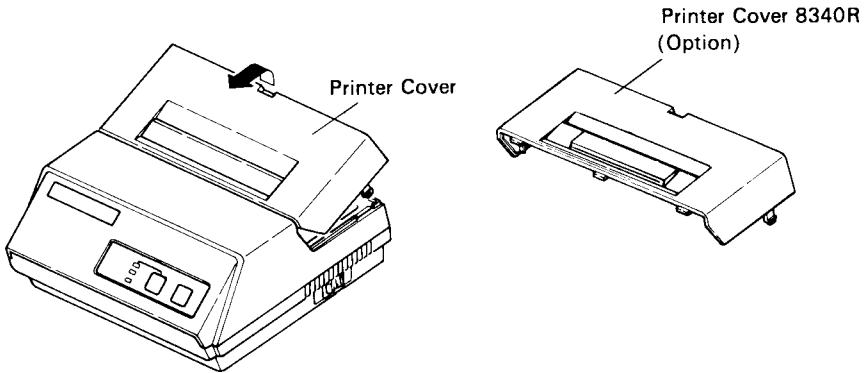


Figure 4-6. Replace the Printer Cover

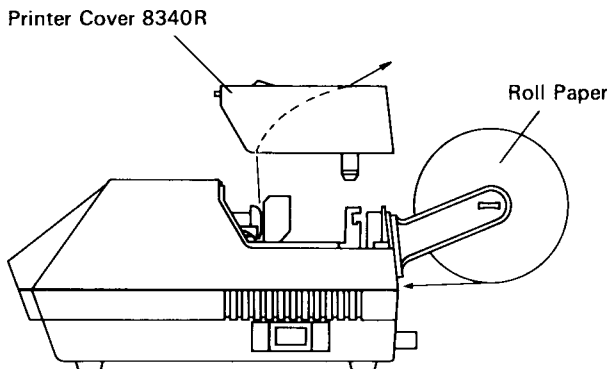


Figure 4-7. Printer Cover 8340R

4-3-3. Validation Option Installation

The validation printing requires the optional printer cover 8340R. Refer to item 4-3-2 for the installation.

- (1) Turn power ON.
- (2) Enter the printer the validation mode.
(Refer to the control code “GS” in Chapter 5.)
- (3) Insert the material to be validated against the right side of the slot in the Printer Cover 8340R.

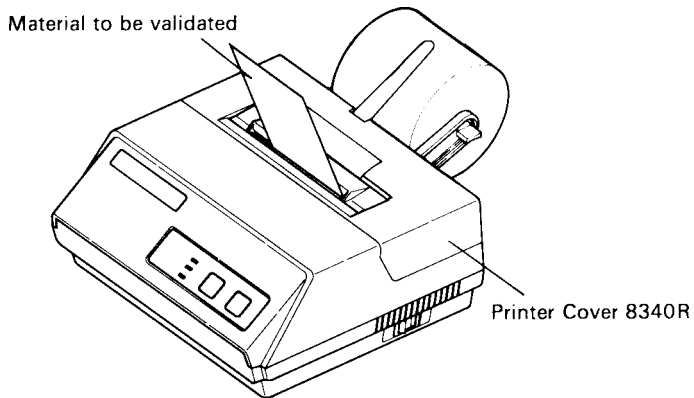


Figure 4-8. Insertion of Material to be validated

4-4. Roll Paper Removal

Cut the paper close to the slot and use the feed button until paper has passed completely through the printer.

Note: Do not try to remove the paper by hand as it could become crooked and get jammed inside the printer.

5. CONTROL CODES

CODE

LF
(0A)_H

FUNCTION

Print and line feed instruction

OUTLINE

The LF code causes the data in the line buffer to be printed, followed by a single line feed. When the line buffer is empty, only the feed takes place.

CODE

CR
(0D)_H

FUNCTION

Print and line feed instruction

OUTLINE

Same function as of LF code.
However, when the DIP switch 3 is ON, the CR code becomes invalid.

CODE

SO
(0E)_H

FUNCTION

Expanded character instruction

OUTLINE

This code causes the printer to print expanded characters twice as wide as the regular ones. This remains in effect until a DC4 code is received.

CODE

DC4
(14)_H

FUNCTION

Release from expanded characters

OUTLINE

The expanded character instruction is released by the DC4 code, and the succeeding data is printed as regular width characters.

CODE

ESC-1
(1B)_H (2D)_H (01)_H or (1B)_H (2D)_H (31)_H

FUNCTION

Underline mode selection

OUTLINE

All data received after this code is underlined until a ESC-0 is received.

CODE

ESC-0
(1B)_H (2D)_H (00)_H or (1B)_H (2D)_H (30)_H

FUNCTION

Release from underline mode

OUTLINE

The underline mode selection is released by this code.

CODE

SI
(0F)_H

FUNCTION

Inverted print instruction

OUTLINE

This function causes the printing to be inverted. This code must be received at the beginning of a line. If this code is received anywhere other than at the beginning of a line, it is disregarded. Accordingly, normal characters and inverted characters, can not be mixed on the same line.

CODE

DC2
(12)_H

FUNCTION

Release from inverted print instruction

OUTLINE

The inverted print instruction is released by this code. This code must be received at the beginning of a line.

CODE

ESC E
(1B)_H (45)_H

FUNCTION

Emphasized print mode instruction

OUTLINE

Data following this command is printed with emphasized characters.
In this mode, characters are printed in a single direction.

CODE

ESC F
(1B)_H (46)_H

FUNCTION

Release from emphasized print instruction

OUTLINE

Emphasized print is released.

CODE

ESC 4
(1B)_H (34)_H

FUNCTION

Red character print instruction

OUTLINE

This command causes subsequent data to be printed with red characters.
The instruction is released by the code, ESC 5.
Red and black characters may be intermixed.
This command is ignored when DIP SW 5 is OFF.

CODE

ESC 5
(1B)_H (35)_H

FUNCTION

Release from red character print instruction

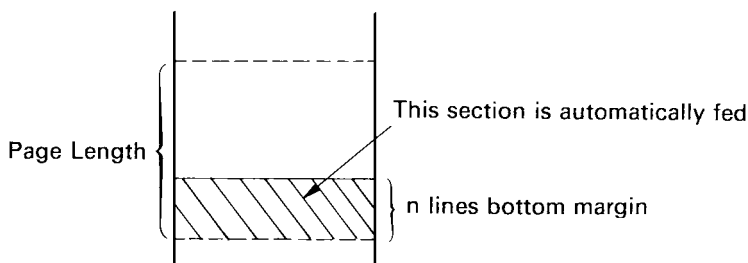
OUTLINE

The red character print instruction is released by this code.

CODE	ESC a n (1B) _H (61) _H n
FUNCTION	n-line feed
OUTLINE	After printing the data in the current line, n lines are fed by this code. The value of n ranges from 1 to 120.

CODE	ESC C n (1B) _H (43) _H n
FUNCTION	Sets page length in lines
OUTLINE	This code sets the length of a page to n lines. The value of n ranges from 1 to 120. On initialization, the page length default condition will be 42 lines. The line feed pitch is one-sixth inch.

CODE	ESC Nn (1B) _H (4E) _H n
FUNCTION	Sets bottom margin in lines
OUTLINE	Upon receiving this code, the bottom margin is set to n lines. $0 \leq n \leq 120$; Default Value $n = 0$



CODE	ESC O (1B) _H (4F) _H
FUNCTION	Cancels bottom margin.
OUTLINE	Upon input of this code, bottom margin setting is cleared.

CODE	FF (0C) _H
FUNCTION	Form feed
OUTLINE	The FF code prints the data in the current line and transports the paper to the start of the next page.

CODE

ESC @
(1B)_H (40)_H

FUNCTION

Printer initialization

OUTLINE

All printing conditions except ESC BEL n1 n2, the line buffer and data buffer are set to the power on default condition.

CODE

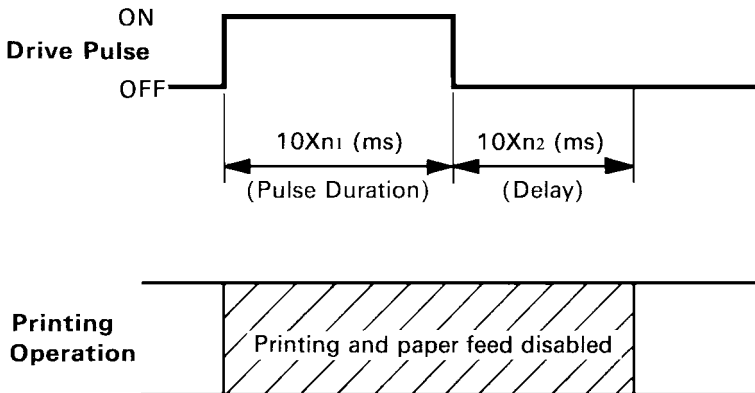
ESC BEL n1 n2
(1B)_H (07)_H n1 n2

FUNCTION

Sets peripheral unit drive 1 pulse duration.

OUTLINE

This command sets the pulse duration for peripheral unit drive (Paper Cutter, Take-Up Device, cash drawer, etc.)
Pulse Duration = 10 × n1 (ms)
Delay = 10 × n2 (ms)
1 ≤ n1 ≤ 127; 1 ≤ n2 ≤ 127
Default value: n1 = n2 = 20



Executed by BEL code and FS code after printing.

CODE

BEL
(07)_H

FUNCTION

Trigger peripheral unit drive 1 (Deferred)

OUTLINE

Causes a peripheral drive 1 pulse to be generated. This code is normally stored in the buffer and is performed as it is received from the data queue.

CODE FS
(1C)_H

FUNCTION Trigger peripheral unit drive 1 (immediate)

OUTLINE Causes a peripheral drive 1 pulse to be generated immediately

CODE SUB
(1A)_H

FUNCTION Trigger peripheral unit drive 2 (immediate)

OUTLINE This command causes a peripheral unit drive 2 pulse to be generated.
Pulse Duration : 200ms (fixed)
Delay : 200ms (fixed)

REMARKS It is impossible to drive peripheral devices 1 and 2 at the same time.

CODE CAN
(18)_H

FUNCTION Clears print buffer

OUTLINE Upon input of this code the data buffer and line buffer are cleared.

CODE ESC P
(1B)_H (50)_H

FUNCTION Select 10 CPI

OUTLINE This code causes the printer to print at 10 CPI. The number of columns per is 29.

CODE ESC M
(1B)_H (4D)_H

FUNCTION Select 15 CPI

OUTLINE This code causes the printer to print at 15 CPI. The number of columns per line is 44. When the power is turned on, the 15 CPI mode is selected.

CODEGS
(1D)_H**FUNCTION**

Validation printing instruction

OUTLINE

This code causes the printer to perform validation printing of a maximum of 32 subsequent characters (at 15 CPI, from the thirteenth to the forty-fourth column).

After the GS code is received, a maximum of 32 characters should be input, followed by the LF code which indicates the end of the validation printing data.

(At this time, control codes except FS, ENQ, CAN and SUB codes, or any character received beyond the limit of 32 characters are ignored.)

When the printer enters the validation mode, the ribbon is shifted up and the ON-LINE lamp blinks. (This lamp goes on and off at a 0.5-second interval until the end of the validation mode.) After the material to be validated is inserted, and the LF button is pressed, the validate line is printed, followed by a single line feed. When the check is removed and the ON-LINE button is pressed, the printer returns to regular mode and is set to ON-LINE status.

REMARKS

- 1) The print settings by commands (such as emphasized mode and underline mode) are invalid only during validation printing.
- 2) When the CAN code is received in the validation mode, the printer returns to regular mode, and the mechanism is initialized.
- 3) If the FS or SUB codes is received in the validation mode, these codes are executed just after the printer returns to regular mode.
- 4) In the validation mode, the LF button and the ON-LINE button do not work except the above behavior.
- 5) If the printer has a Red black ribbon installed, the validate line will be printed in red.

Character Code List

Character		Code	Function
1	LF	(0A)H	Print and line feed instruction
2	CR	(0D)H	Print and line feed instruction (same as LF)
3	SO	(0E)H	Expanded character instruction
4	DC4	(14)H	Expanded character release
5	ESC-1	(1B)H (2D)H(01)H (1B)H (2D)H (31)H	Underline instruction
6	ESC-0	(1B)H (2D)H(00)H (1B)H (2D)H (30)H	Underline release
7	SI	(0F)H	Inverted print instruction
8	DC2	(12)H	Inverted print release
9	ESC E	(1B)H (45)H	Emphasized print instruction (one-way printing)
10	ESC F	(1B)H (46)H	Emphasized print release
11	ESC 4	(1B)H (34)H	Red character print instruction
12	ESC 5	(1B)H (35)H	Red character print release
13	ESC a n	(1B)H (61)H n	n-line feed instruction
14	ESC C n	(1B)H (43)H n	Sets page length in lines $1 \leq n \leq 120$ (default $n = 42$)
15	ESC N n	(1B)H (4E)H n	Set bottom margin in lines $0 \leq n \leq 120$ (default $n = 0$)
16	ESC O	(1B)H (4F)H	Cancel Bottom margin
17	FF	(0C)H	Form feed
18	ESC @	(1B)H (40)H	Printer initialization instruction
19	ESC BEL n1 n2	(1B)H (07)H n1 n2	Set peripheral unit drive 1 pulse duration $1 \leq n1 \leq 127, 1 \leq n2 \leq 127$ (default $n1 = n2 = 20$)
20	BEL	(07)H	Trigger peripheral unit drive 1 (Deferred)
21	FS	(1C)H	Trigger peripheral unit drive 1 (Immediate)
22	SUB	(1A)H	Trigger peripheral unit drive 2 (Immediate)
23	CAN	(18)H	Clears print buffer
24	ESC P	(1B)H (50)H	Select 10 CPI
25	ESC M	(1B)H (4D)H	Select 15 CPI (Default value)
26	GS	(1D)H	Validation printing instruction

6. GENERAL SPECIFICATIONS

Printing method	Serial impact dot matrix printing, 9 wires	
Number of print columns	29 columns (10CPI), 44 columns (15CPI)	
Print speed	Approx. 2 lines/sec	
Print direction	Bi-directional	
Line spacing	1/6 inch	
Paper feed method	Friction Feed	
Paper feed speed	Approx. 12 lines/sec	
Character set	ASCII	96 characters
	Special	64 characters
	Block graphics*	64 characters
	Katakana (Japanese)	64 characters
Font configuration	10CPI Ordinary characters	5 × 9 dots
	Block graphics*	6 × 6 dots
	15CPI Ordinary characters	7 × 9 half dots
	Block graphics*	5 × 6 dots

* Graphic Feed Not Available

Character size	10CPI	2.00 (H) × 2.42 (V) mm
	15CPI	1.32 (H) × 2.42 (V) mm
Character spacing	10CPI	2.55 mm (1/10 inch)
	15CPI	1.70 mm (1/15 inch)
Dot spacing	10CPI	H=0.425 mm V=0.353 mm
	15CPI	H=0.340 mm V=0.353 mm
Gross dot	10CPI	174 dots/wire/line
	15CPI	220 dots/wire/line
Print area	10CPI	73.53 mm
	15CPI	74.46 mm
Print Buffer	Approx. 1.5 KB	
Interface	Parallel Interface (Centronics compatible)	
Peripheral drive	2 outputs (each 1A max. at 12V. Both cannot operate at the same time.)	
External dimensions (Printer)	202(W) × 200(D) × 98(H) mm (without paper holder, DC Power Connector)	
	(Power supply unit)	60(W) × 120(D) × 36(H) mm (without AC cable)
Weight	(Printer)	Approx. 1.9 kg
	(Power supply unit)	Approx. 0.4 kg (without AC cable)

Power supply unit

Four supplies available with following ratings

Input	Output
AC 100 – 240 V 47Hz – 63 Hz 0.8 A Max	DC 12.0 V \pm 5% 2.0 A

Paper specification

Paper type	Ordinary and carbonless copy paper
Size Paper width	82.55 \pm 0.5mm (3.25 inches)
Roll diameter	80 mm outer diameter (Max)
Thickness (single)	0.07 mm (52.3 g/m ²) to 0.09 mm (64g/m ²)
(2 copy)	One copy and one original (max 0.13 mm)
Paper end	Paper should not be attached to the core
One line validation	Check (Refer to Fig. 6-2) Paper width 70 to 90 mm Thickness 0.1 to 0.15 mm * Requires the optional Printer Cover 8340R

Ink ribbon specification

Color	Black and red / Black only
Ribbon material	Nylon (#40 denier)
Ribbon size	13mm \times 6m
Spool	13mm (width), 35mm in diameter (two spool)
Recommended ribbon	SF-03BR (Black and red), SF-03B (Black) (manufactured by Fuji Kagakushi Kogyo Co., Ltd.) or approved equivalent.

Operating conditions

Temperature	+5°C — +40°C
Humidity	10% — 80%RH

Storage conditions

Temperature	-20°C — +70°C
Humidity	5% — 95%RH (+40°C)

Head life

70 million characters

Printer reliability

5.0 million lines MCBF (except head life)

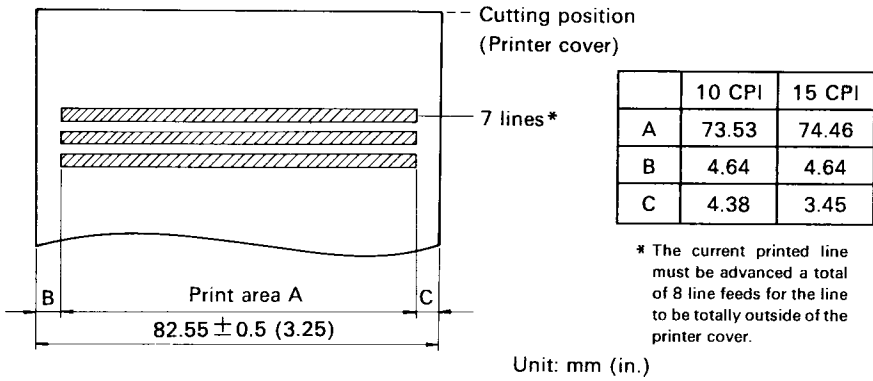


Figure 6-1. Roll Paper and Print Area

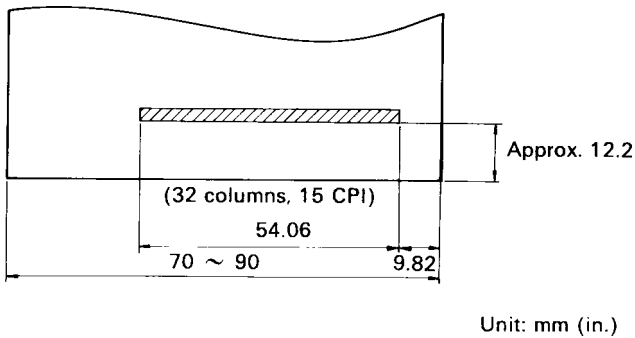


Figure 6-2. Material to be validated and One Line Validation Printing

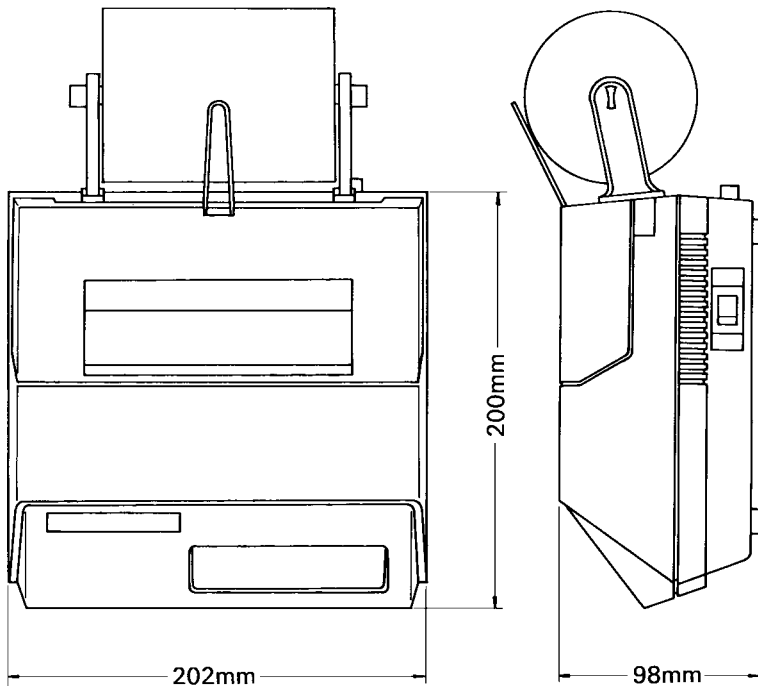
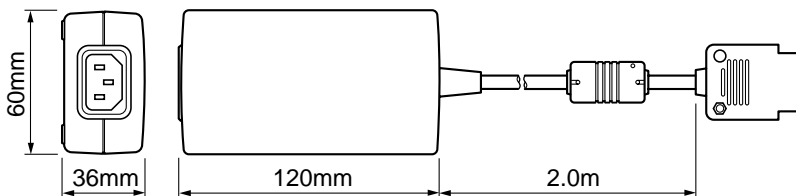


Figure 6-3. External Dimensions (Printer)



Shape of AC Power plug will vary according to destinations.

Figure 6-4. External Dimensions (Power Supply Unit)

7. INTERFACE

7-1. Interface Specifications

This printer has a parallel interface to communicate with the computer. The operating specifications of the parallel interface are as follows.

- (1) Data transfer rate 1000 to 6000 characters per second
- (2) Synchronization Via externally supplied STROBE pulses
- (3) Handshaking ACK and BUZY signals
- (4) Logic level Compatible with TTL level

7-2. Interface Timing

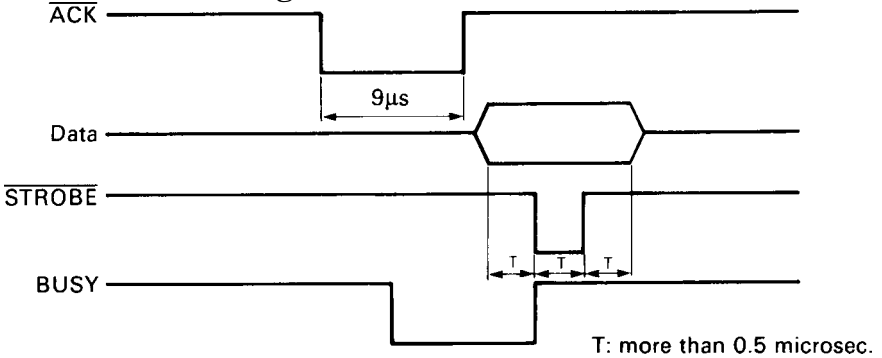


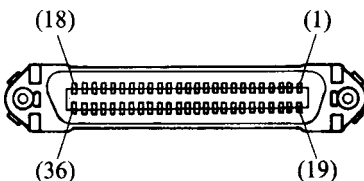
Figure 7-1. Interface Timing Diagram

Signal Name	Circuit Example
DATA1-DATA8 (To Printer)	<div style="display: flex; justify-content: space-between;"> 4.7kΩ 74HC Compatible </div>
<u>STROBE</u> (To Printer)	<div style="display: flex; justify-content: space-between;"> 4.7kΩ 74HC Compatible </div>
BUZY, <u>ACK</u> (From Printer)	<div style="display: flex; justify-content: space-between;"> 4.7kΩ 74LS Compatible </div>

Figure 7-2. Typical Interface Circuit

7-3. Connectors and Signals

Pin No.	Signal Name	IN/OUT	Function
1	$\overline{\text{STROBE}}$	IN	Signals when data is ready to be read. Signal goes from HIGH to LOW (for at least 0.5 microsec.) when data is available.
2-9	DATA1-8	IN	These signals provide the information of the first to eighth bits of parallel data. Each signal is at HIGH level for a logical 1 and at a LOW level for a logical 0.
10	$\overline{\text{ACK}}$	OUT	A 9 microsecond LOW pulse acknowledges receipt of data.
11	BUSY	OUT	When this signal goes LOW, the printer is ready to accept data. When the printer is in one of the conditions below, "HIGH" is set. 1. Data being entered. 2. Off line. 3. Error condition.
12	PAPER OUT	OUT	This signal is normally LOW. It will go HIGH if the printer runs out of paper.
13	SELECTED	OUT	This signal is HIGH when the printer is online.
14-15	N/C		Unused
16	SIGNAL GND		Signal ground.
17	CHASSIS GND		Chassis ground, isolated from logic ground.
18	N/C		Unused
19-30	GND		Twisted pair return signal ground level.
31	$\overline{\text{RESET}}$	IN	When this signal goes LOW, the printer is reset to its power-on condition.
32	$\overline{\text{ERROR}}$	OUT	This signal is normally HIGH. This signal goes LOW to signal that the printer cannot print due to an error condition. Refer to Item 7-6 Emergency Suspension.
33	EXT GND		External ground.
34-36	N/C		Unused.



This connector mates with an Amphenol 57-30360 connector.

Figure 7-3. Parallel Interface Connector (Printer side)

7-4. Setting of the DIP Switches

Factory settings : all ON

Switch	Function	ON	OFF
1	Character Table	U.S.A. & Europe	Japan
2	Unused		
3	CR cord	Disable	Enable
4	Unused		
5 (*1)	Ink Ribbon	2-color	Monochrome
6	International Character Set (See below)		
7			
8			

(*1) DIP Swich 5 should be set to ON when you use a 2-color ribbon for 2-color printing.

It should be set to OFF when a monochrome ribbon is used.

International Character Set

SW NO.	USA	France	Germany	England	Denmark	Sweden	Italy	Spain
6	ON	OFF	ON	OFF	ON	OFF	ON	OFF
7	ON	ON	OFF	OFF	ON	ON	OFF	OFF
8	ON	ON	ON	ON	OFF	OFF	OFF	OFF

Note: When DIP Switches 1 is set to OFF, the printer always selects the Japan international character set regardless of the status of DIP Switches 6, 7 and 8.

When DIP Switches 1 is otherwise set, the printer selects the character set determined by DIP Switches 6, 7 and 8.

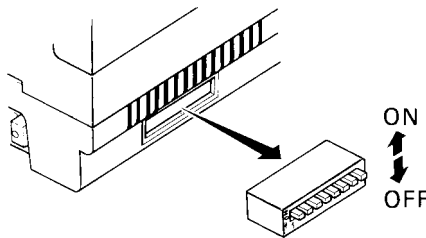


Figure 7-4. DIP Switch Setting

7-5. Peripheral Unit Drive Circuit

The Control Board of this printer is equipped with a circuit for driving peripheral units (Paper Cutter, Take-Up Device, Cash Drawer, etc.)

The 6P Modular Jack is used as the Drive Circuit. When using this circuit, connect the peripheral unit cable to the 6P Modular Jack (cable is not included).

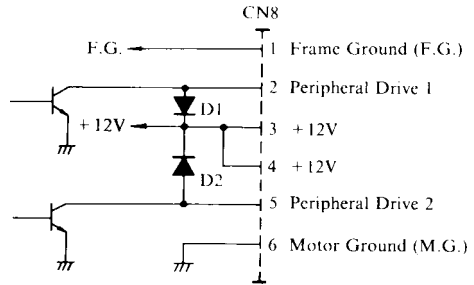
Note: Peripheral unit drive circuit connector only connects to peripheral units such as cash drawers, etc. Do not connect it to a telephone.

1. Drive Circuit

Drive Output	12V, MAX. 1A
--------------	--------------

Absolute Ratings (Ta = 25°C)		
D1	Voltage Breakdown	100V
D2	Peak Forward Current	1A

Note: It is impossible to drive peripheral devices 1 and 2 at the same time



[Printer side]

Figure 7-5. Drive Circuit

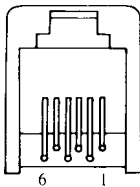


Figure 7-6. 6P Modular Jack Connector

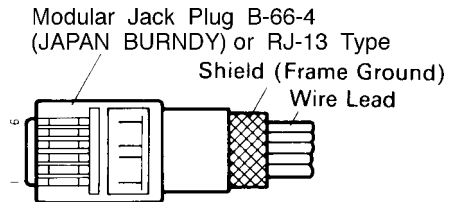


Figure 7-7. Recommend Cable

Note: Make sure that the metal structural parts of the peripheral device are connected to frame Ground (Pin 1) to provide a static drain path.

2. Control code

Codes for Drive Circuit control are ESC BEL n1 n2, BEL, FS and SUB.

Refer to the Control Codes in Section 5.

7-6. Error Condition Alarm Mode

If an error condition is detected during operation, the printer will stop printing and cause the $\overline{\text{ERROR}}$ signal to go Low. All solenoids & motors will be de-energized. It is necessary to turn the printer power off and on again in order to recover from the alarm mode.

The printer can detect the following error conditions:

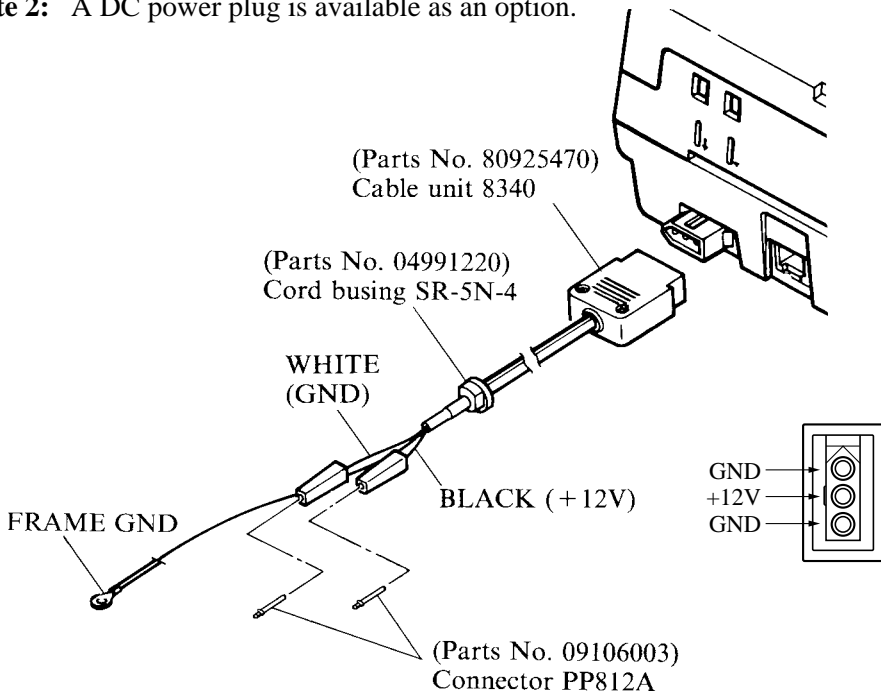
- Motor Lock
- Defective timing detector
- Micro-processor out of program sequence

8. WHEN POWER IS SUPPLIED BY THE USER

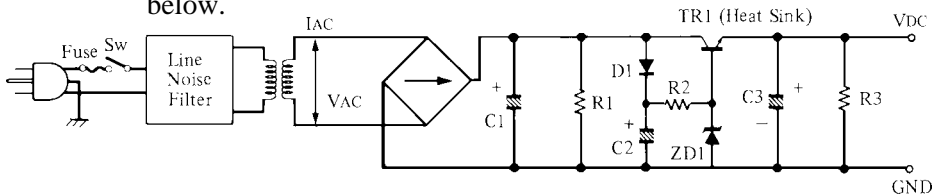
When printer power is supplied by the user rather than through the accessory power source unit, please be careful of the following points.

Note 1: The power supply must be $+12V_{-5\%}^{+10\%}$ 2A or above. An electrolytic capacitor ($C = 4700\mu F/25V$ to $6800\mu F/25V$) must be connected across the output of the power supply.

Note 2: A DC power plug is available as an option.



Reference: Design the power supply referring to the power supply circuit shown below.



Note: A line noise filter must be used to prevent line transients from passing through power supply. Filter design to be determined by environmental noise requirements.

VAC	14V	C2	100 ~ 200 μ F/25V
VDC	12V $\begin{smallmatrix} +10\% \\ -5\% \end{smallmatrix}$	ZD1	VZD = 14V (1W)
IAC	2 ~ 3A	C3	4700 ~ 6800 μ F/25V
C1	6800 μ F/25V	TR1	2SD633 (TOSHIBA)

Other parameters may be determined by user.

Figure 8-1. Power Supply Reference Circuit

9. CHARACTER CODE LIST

1) U.S.A. & Europe (DIP SW1: ON)

Hexa-decimal	0	1	2	3	4	5	6	7
0	0	16	SP	0	@	P	'	p
	0	16	32	48	64	80	96	112
1	1	17	!	1	A	Q	a	q
	1	17	33	49	65	81	97	113
2	2	DC2	"	2	B	R	b	r
	2	18	34	50	66	82	98	114
3	3	19	#	3	C	S	c	s
	3	19	35	51	67	83	99	115
4	4	DC4	\$	4	D	T	d	t
	4	20	36	52	68	84	100	116
5	5	21	%	5	E	U	e	u
	5	21	37	53	69	85	101	117
6	6	22	&	6	F	V	f	v
	6	22	38	54	70	86	102	118
7	BEL	23	'	7	G	W	g	w
	7	23	39	55	71	87	103	119
8	CAN	24	(	8	H	X	h	x
	8	24	40	56	72	88	104	120
9		25	)	9	I	Y	i	y
	9	25	41	57	73	89	105	121
A	LF	SUB	*	:	J	Z	j	z
	10	26	42	58	74	90	106	122
B		ESC	+	;	K	[	k	{
	11	27	43	59	75	91	107	123
C	FF	FS	,	<	L	\	l	|
	12	28	44	60	76	92	108	124
D	CR	GS	-	=	M	]	m	}
	13	29	45	61	77	93	109	125
E	SO		.	>	N	^	n	~
	14	30	46	62	78	94	110	126
F	SI		/	?	O	_	o	⌘
	15	31	47	63	79	95	111	127

(SP: Space)

Hexa- decimal	8	9	A	B	C	D	E	F
0	SP 128	┘ 144	Ä 160	é 176	ù 192	ā 208	▣ 224	┐ 240
1	┘ 129	┘ 145	Ö 161	è 177	ū 193	â 209	▣ 225	┘ 241
2	▣ 130	■ 146	Ü 162	ē 178	û 194	° 210	▣ 226	┘ 242
3	┘ 131	■ 147	β 163	ê 179	ϣ 195	°C 211	▣ 227	┘ 243
4	▣ 132	■ 148	§ 164	ÿ 180	¿ 196	°F 212	⊕ 228	┘ 244
5	┘ 133	■ 149	à 165	ı 181	Ñ 197	Ω 213	┘ 229	┘ 245
6	▣ 134	┘ 150	ó 166	ı 182	ñ 198	μ 214	┘ 230	┘ 246
7	┘ 135	┘ 151	f 167	ı 183	Ē 199	Σ 215	┘ 231	▣ 247
8	▣ 136	▣ 152	∅ 168	î 184	∅ 200	σ 216	▣ 232	▣ 248
9	┘ 137	▣ 153	½ 169	ö 185	ı 201	ā 217	⊗ 233	▣ 249
A	▣ 138	┘ 154	N T 170	ó 186	Ā 202	T _L 218	┘ 234	▣ 250
B	┘ 139	┘ 155	T X 171	ò 187	φ 203	X 219	← 235	▣ 251
C	┘ 140	┘ 156	¥ 172	õ 188	θ 204	∞ 220	↑ 236	▣ 252
D	▣ 141	┘ 157	¼ 173	ô 189	ā 205	± 221	→ 237	┘ 253
E	┘ 142	▣ 158	Ā 174	ú 190	á 206	÷ 222	↓ 238	┘ 254
F	┘ 143	▣ 159	ë 175	ú 191	à 207	π 223	┘ 239	┘ 255

(SP: Space)

2) JAPAN (DIP SW1: OFF)

Hexa-decimal	0	1	2	3	4	5	6	7
0			SP	0	@	P	'	p
	0	16	32	48	64	80	96	112
1			!	1	A	Q	a	q
	1	17	33	49	65	81	97	113
2		DC2	"	2	B	R	b	r
	2	18	34	50	66	82	98	114
3			#	3	C	S	c	s
	3	19	35	51	67	83	99	115
4		DC4	\$	4	D	T	d	t
	4	20	36	52	68	84	100	116
5			%	5	E	U	e	u
	5	21	37	53	69	85	101	117
6			&	6	F	V	f	v
	6	22	38	54	70	86	102	118
7	BEL		'	7	G	W	g	w
	7	23	39	55	71	87	103	119
8		CAN	(	8	H	X	h	x
	8	24	40	56	72	88	104	120
9			)	9	I	Y	i	y
	9	25	41	57	73	89	105	121
A	LF	SUB	*	:	J	Z	j	z
	10	26	42	58	74	90	106	122
B		ESC	+	;	K	[	k	{
	11	27	43	59	75	91	107	123
C	FF	FS	,	<	L	¥	l	|
	12	28	44	60	76	92	108	124
D	CR	GS	-	=	M	]	m	}
	13	29	45	61	77	93	109	125
E	SO		.	>	N	^	n	~
	14	30	46	62	78	94	110	126
F	SI		/	?	O	_	o	•
	15	31	47	63	79	95	111	127

(SP: Space)

Hexa- decimal	8	9	A	B	C	D	E	F
0	SP 128	┌ 144	SP 160	ー 176	タ 192	ミ 208	■ 224	┐ 240
1	┌ 129	┌ 145	。○ 161	ア 177	チ 193	ム 209	■ 225	─ 241
2	─ 130	■ 146	┌ 162	イ 178	ツ 194	メ 210	■ 226	─ 242
3	┌ 131	■ 147	┌ 163	ウ 179	テ 195	モ 211	■ 227	─ 243
4	─ 132	■ 148	、 164	エ 180	ト 196	ヤ 212	+	┌ 244
5	┌ 133	■ 149	・ 165	オ 181	ナ 197	ユ 213	┌ 229	┌ 245
6	─ 134	／ 150	ヲ 166	カ 182	ニ 198	ヨ 214	┌ 230	┌ 246
7	┌ 135	＼ 151	ア 167	キ 183	ヌ 199	ラ 215	┌ 231	■ 247
8	─ 136	▲ 152	イ 168	ク 184	ネ 200	リ 216	■ 232	■ 248
9	┌ 137	▲ 153	ウ 169	ケ 185	ノ 201	ル 217	■ 233	▲ 249
A	─ 138	┌ 154	エ 170	コ 186	ハ 202	レ 218	┌ 234	▲ 250
B	┌ 139	┌ 155	オ 171	サ 187	ヒ 203	ロ 219	← 235	＝ 251
C	┐ 140	┐ 156	ヤ 172	シ 188	フ 204	ワ 220	↑ 236	|| 252
D	─ 141	┌ 157	ユ 173	ス 189	ヘ 205	ン 221	→ 237	┌ 253
E	┌ 142	◆ 158	ヨ 174	セ 190	ホ 206	〃 222	↓ 238	┌ 254
F	┐ 143	× 159	ツ 175	ソ 191	マ 207	。○ 223	┌ 239	┌ 255

(SP: Space)

International Character Sets

Hexadecimal	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.A.	#	\$	@	[	\	\]	^	'	{	|	}	~
France	#	\$	à	°	ç	š	^	'	é	ù	è	¨
Germany	#	\$	š	Ä	Ö	Ü	^	'	ä	ö	ü	ß
England	£	\$	@	[\]	^	'	{		}	~
Denmark	#	\$	@	Æ	Ø	Å	^	'	æ	ø	å	~
Sweden	#	¤	é	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì
Spain	₠	\$	@	í	ñ	¿	^	'	¨	ñ	}	~
Japan	#	\$	@	[¥]	^	'	{		}	—



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