

CITIZEN

User's Manual  
MINI DOT MATRIX PRINTER  
MODEL **iDP-3540/3541**

Japan CBM Corporation  
Information Systems Div.

1995.09.04(10-DCL)1

## Declaration of Conformity

Manufacturer's Name : Japan CBM Corporation  
 Manufacturer's Address : 1-1-7, Okubo, Shinjuku-ku, Tokyo  
 169, Japan

### Declare the Product

Product Name : Dot Matrix Printer  
 Model Number (s) : iDP-3540, 3541 Series  
 (iDP3540R, iDP3540P, iDP3541R, iDP3541P)  
 (S.NO.50901072 - )

### Conform to the following Standards

LVD	: EN60950	:1992+A1+A2:1993
EMC	: EN55022	:1994 Class B
	: EN60555-2	:1987
	: EN50082-1	:1992
	: IEC801-2	:1991 4KV CD, 8KV AD
	: IEC801-3	:1984 3V/m, 27MHz-500MHz
	: IEC801-4	:1988 0.5KV Signal Line 1KV AC mains

### Supplementary Information

"The product complies with the requirements of the Low Voltage Directive 73/23/EEC, 93/68/EEC and the EMC Directive 89/336EEC, 92/31/EEC, 93/68EEC"

Place Tokyo, Japan

Signature

Date Sept.1995



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### Warning

This is a Class A products. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

This declaration is applied only for 230V model.

## IMPORTANT SAFETY INSTRUCTIONS

- ♦ Read all of these instructions and save them for later reference.
- ♦ Follow all warnings and instructions marked on the product.
- ♦ Unplug this product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- ♦ Do not use this product near water.
- ♦ Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.
- ♦ Slots and openings on the cabinet and the back or bottom are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
- ♦ This product should be operated from the type of power source indicated on the marking label. If you're not sure of the type of power available, consult your dealer or local power company.
- ♦ Do not allow anything to rest on the power cord. Do not locate this product where the cord will be walked on.
- ♦ In an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- ♦ Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
- ♦ Except as explained elsewhere in this manual, don't attempt to service this product yourself. Opening and removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing on those compartments to service personnel.
- ♦ Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - A. When the power cord or plug is damaged or frayed
  - B. If liquid has been spilled into the product.
  - C. If the product has been exposed to rain or water.
  - D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
  - E. If the product has been dropped the cabinet has been damaged.
  - F. If the product exhibits a distinct change in performance, indicating a need for service.

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ATTENTION : Please RESET the printer to clear the input buffer before getting started.  
(Ref. to Chapter 7-2)

## 1. Introduction

The iDP3540 is a dot impact printer which can be utilized for a wide range of applications, such as data communications terminals, P.O.S. terminals and kitchen printers. High speed performance is made possible by a bi-directional printing system and, since this printer is compact, lightweight and equipped with an abundance of functions, they can be easily employed for a variety of different tasks.

The iDP3541 has a built-in automatic cutter capable of performing a partial cut or full cut (one connecting point remaining).

Before using the printer, please read this manual carefully to be certain you have an adequate understanding of its operation.

### 1-1. Features

- 1) Desktop Compact Dot Impact Printer
- 2) High Speed Printing (Bi-directional Printing System)
- 3) Built-In Auto Cutter (Partial Cut / Full Cut) (iDP3541 only)
- 4) Black & Red 2 Color Printing or All Black or All Purple Printing
- 5) Paper End Detection Function
- 6) Input Buffer Back-up Function
- 7) Drawer Kick-out x 2
- 8) Low Power Consumption

### 1-2. Accessories

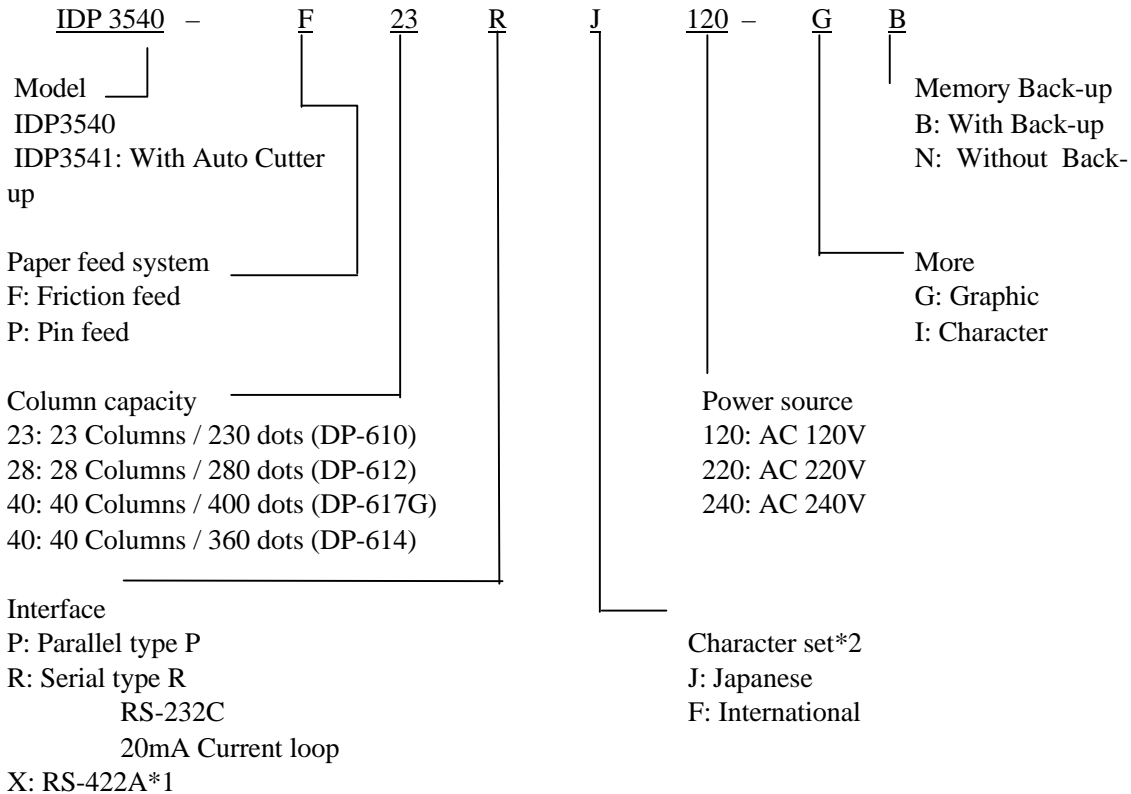
- |                    |                           |
|--------------------|---------------------------|
| 1) Paper Roll      | 1Pc. (Friction type only) |
| 2) Ribbon Cassette | 1Pc.                      |
| 3) User's Manual   | 1Pc.                      |

## 2. Basic Specifications

### 2-1. Type classifications

Printer types are classified according to the system shown below.

iDP 3540	F	23	P	J	120	G	B
	P	28	R	F	220		N
		40	X		240	I	
Idp 3541	F	↑	↑	↑	↑	↑	↑



\*1 RS-422A interface specifications are not included in this manual.

\*2 The difference is ROM version only.

### 3. Specifications

#### 3-1. General Specifications

Item		iDP3540F	iDP3540P	iDP3541
1	Print Method	Bidirectional serial dot impact method		
2	Character composition	7 x 7 dots (incl. Half-dot)		
3	Character number per line	Printer DP-610: 23 columns 230 dots/line DP-612: 28 columns 280 dots/line DP-614: 40 columns 360 dots/line DP-617G: 40 columns 400 dots/line		
4	Print speed	Printer DP-610: 23 columns approx 4.0 line/sec. DP-612: 28 columns approx 3.0 line/sec. DP-614: 40 columns approx 3.0 line/sec. DP-617G: 40 columns approx 2.4 line/sec.		
5	Character size	Printer DP-610: 23 columns 1.8 x 2.4 mm DP-612: 28 columns 1.5 x 2.4 mm DP-614: 40 columns 1.36 x 2.4 mm DP-617G: 40 columns 1.2 x 2.4 mm		
6	Line pitch	Character type: 4.23 mm (1/6 inch.) Graphic type: 2.82 mm (1/9 inch.)		
7	Paper size	Paper roll 76 x 0.5 mm(W) x 80 mm(Dia.) 3.0 inch.(W) x 3.0 inch.(Dia.)	Fan fold paper 76 ~ 89 mm 3.0 ~ 3.5 inch.	Paper roll 76 x 0.5 mm(W) x 80 mm(Dia.) 3.0 inch.(W) x 3.0 inch.(Dia.)
8	Interface	P: Parallel interface (8 bit) R: Serial interface (RS-232C, 20mA current loop) X: Serial interface (RS-422A)		
9	Input buffer	7K bytes or 2 lines buffer*1		
10	Input buffer back-up	B type: Duration of back-up, More than 24 hours.*2 (after 10 minutes operation)N type: Without back-up		
11	Paper end detection	Buzzer and PE signal	None	Buzzer and PE signal
12	Ribbon cassette	Two color (Black and Red) IR-61R/B*3		
13	Auto cutter	Without		With cutter (Parallel cut / Full cut)
14	Cash drawer & Winder connector	Cash drawer: Use the drawer solenoid voltage 24V, register over 36 ohms. Winder: Use Model CBM-AW-3.		
15	Power voltage	120V ± 10% 60 Hz / 220V ± 10% 50/60 Hz / 240V ± 10% 50/60 Hz		
16	Power consump.	Max. 30W, Av. 10W		
17	Net weight	Approx. 2.8kg.		Approx. 3.0kg.
18	External dimensions	Refer to section 17		
19	Operation temp. & humidity	0 ~ 40°C / 32 ~ 104°F 10 ~ 85°RH		
20	Storage temp.	-20°C ~ 60°C		



\*1 Input buffer can be selected by setting the DIP switch.

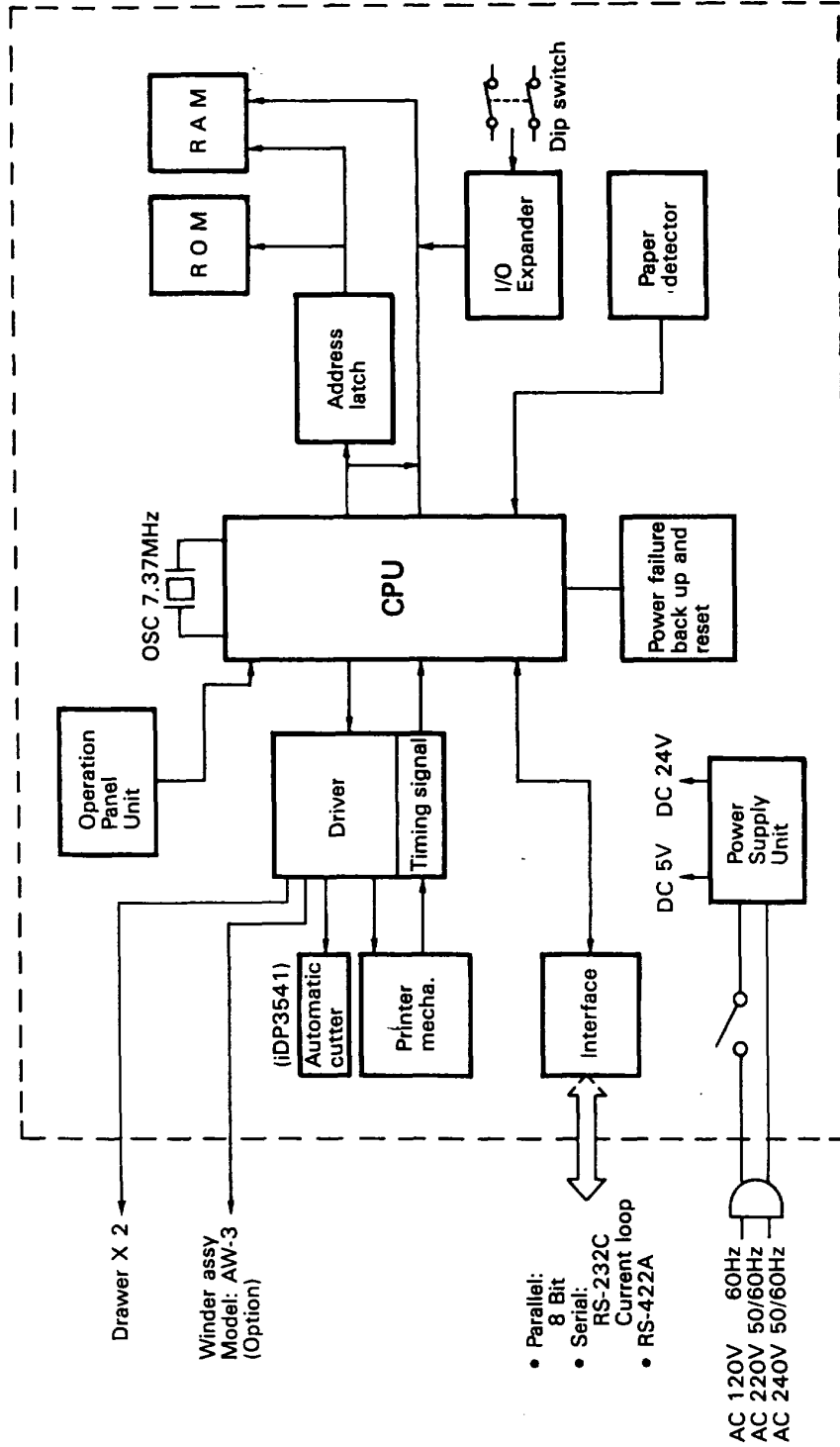
\*2 However, when the input buffer is set for two lines, back-up of graphic data is not possible.

\*3 Single color cassette ribbon is available as option.

Black print: IR-61B

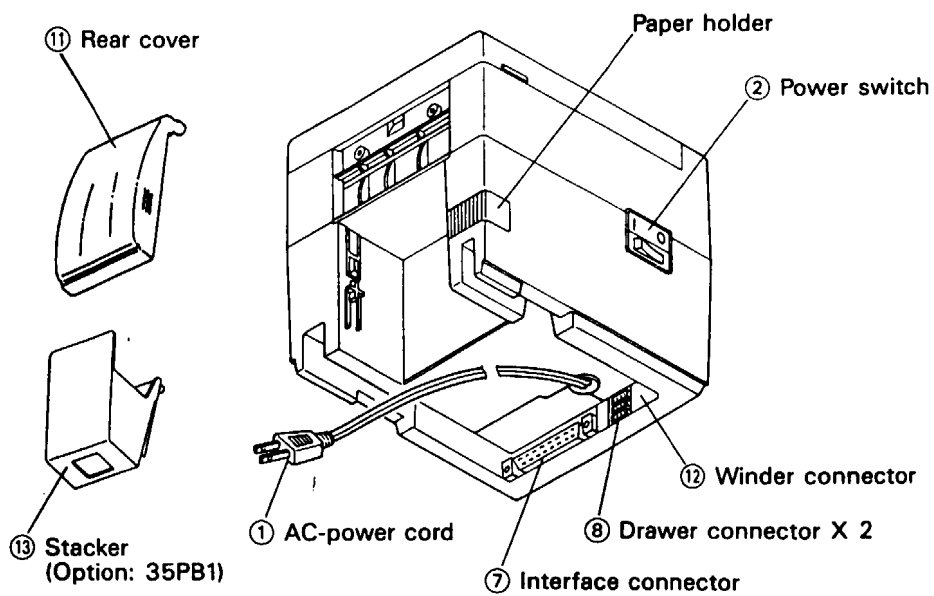
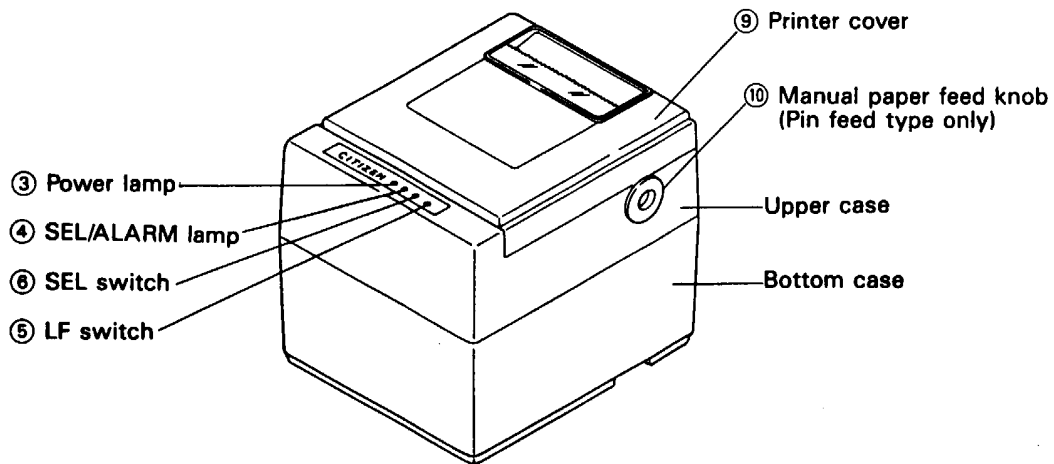
Purple print: IR-61P

4. Block Diagram

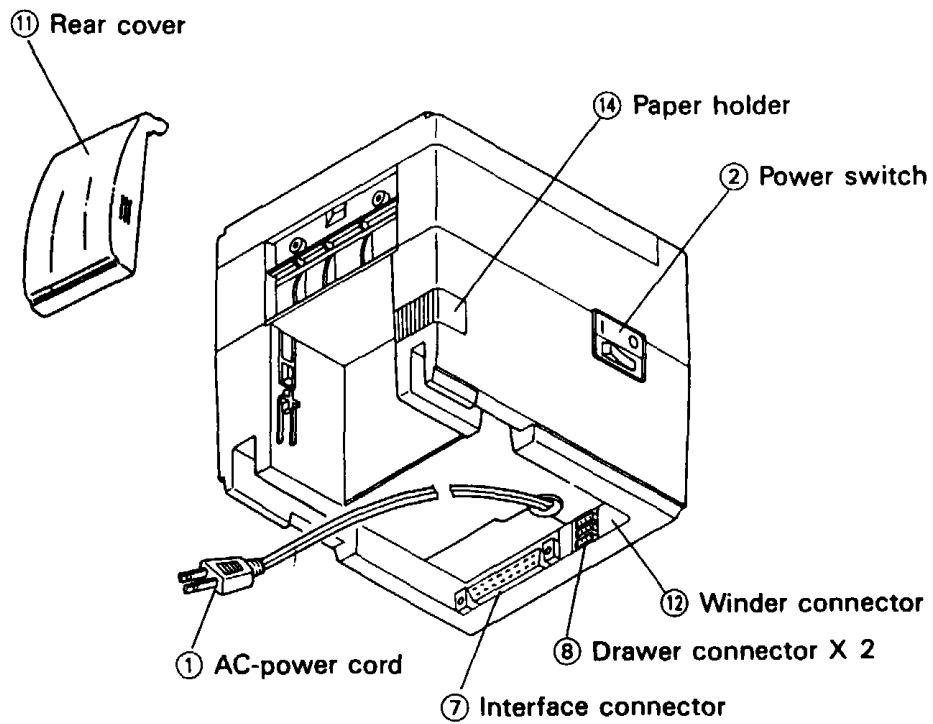
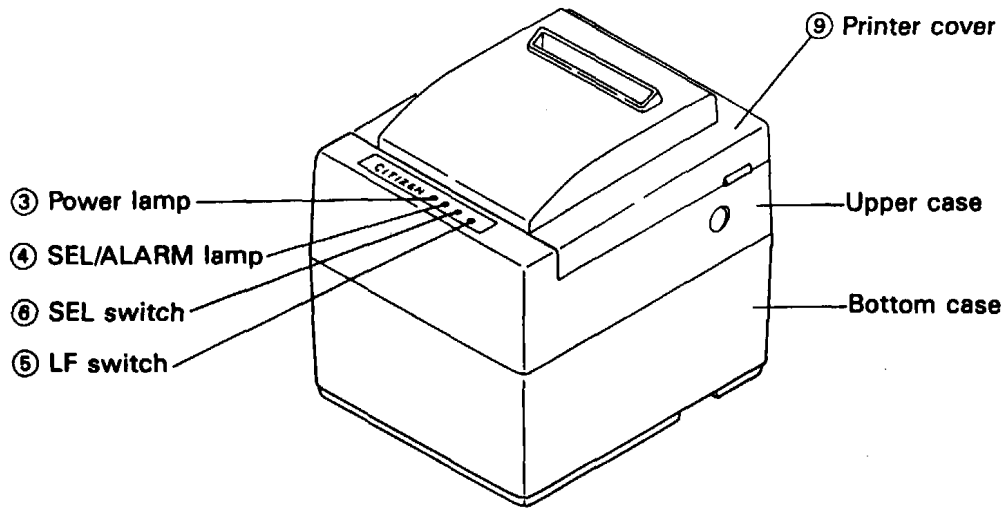


## 5. External Appearance and parts Description

### 5-1. External appearance and parts names Model : iDP3540



## 5-2. External appearance and parts names Model : iDP3541



## 5-3. Parts Descriptions

- |                             |  |
|-----------------------------|--|
| (1) Power Cord              | Insert the plug end into an electric outlet.   |
| (2) Power Switch            | Power is supplied to the printer by turning this switch on.  |
| (3) Power Lamp              | This lights up when the power switch is "ON" and goes out when turning "OFF".  |
| (4) SEL / ALARM Lamp        | <p>This lights up when the printer is in SELECT state (ON-LINE) and goes out when in DESELECT state (OFF-LINE). The printer can print out the data only when this lamp is on.</p> <p>This lamp may blink on the following occasions.</p> <p>a)When the paper roll in coming to near-end, the SEL / ALARM lamp keeps blinking at interval of 1.0 second.<br/>In this case, change the roll paper.</p> <p>b)When the printer is in alarm state, this lamp keeps blinking at interval of 1/4 second.<br/>Remove the cause for alarm and press the SEL switch.<br/>(or re-switch the power on)</p> |
| (5) LF Switch               | Paper feeding is performed when this switch is pressed (in DESELECT status only), this is used when inserting the paper and for spacing up etc.  |
| (6) SEL Switch              | <p>When this switch is pressed, the printer enters SELECT (ON-LINE) status. When pressed again, the printer enters DESELECT (OFF-LINE) status.</p> <p>This switch is also used when clearing an alarm condition. And if this switch is pressed when printing, the printer enters DESELECT status, after all the data in the buffer is printed.</p>   |
| (7) I/F Connector           | Connects through a cable to a computer etc. Please be certain that power to both the printer and the computer are turned off when connection is made.  |
| (8) Cash Drawer Connector   | To be used to control the P.O.S. cash drawer.  |
| (9) Printer Cover           | Open when replacing the Ribbon Cassette.   |
| (10) Manual Paper Feed Knob | Use to adjust the paper position (Available only on pin tractor paper feeding model).  |
| (11) Rear Cover             | Cover for paper roll.  |
| (12) Winder Connector       | Use Model CBM AW-3   |
| (13) Stacker                | Basket for fan-fold paper.   |

## 6. Preparation

### 6-1. Inserting / Removing the Printer Cover

Inserting and removing the printer cover as shown in Fig. 1, 2.

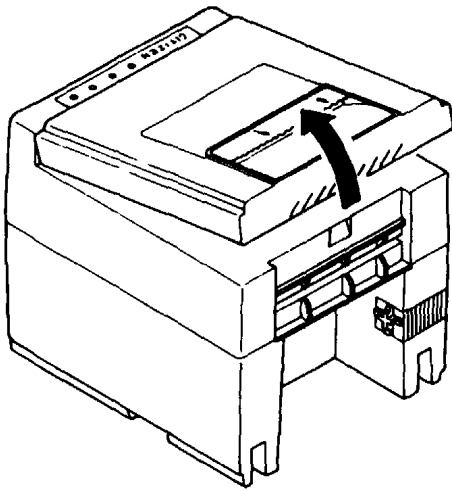


Fig. 1

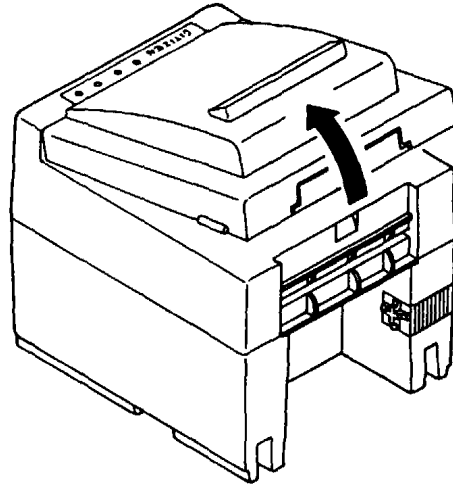


Fig. 2

### 6-2. Opening and Closing the Cutter Unit (iDP3541)

- 1) To open the unit, grasp two levers and lift upward.
- 2) When closing the unit, press downward until it completely lock place.

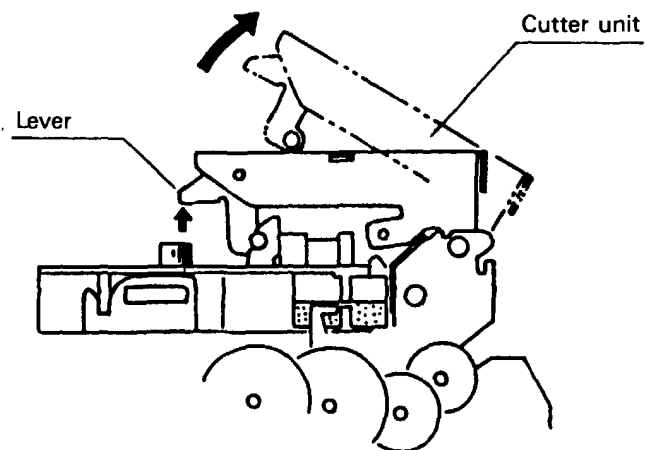


Fig. 3

### 6-3. The Ribbon Cassette Installation

To insert the ribbon, disconnect the power source beforehand. If the printer has been printing for many hours, be careful not to touch the printer head as it might be hot.

- 1) Remove the printer cover
- 2) While inserting the ribbon into the space between the print head and the ribbon guide, press the cassette into the holder unit it clicks into place. (Ref. to Fig. 4&5)
- 3) Turn the cassette ribbon knob in the direction of the arrow to take up slack in the ribbon.

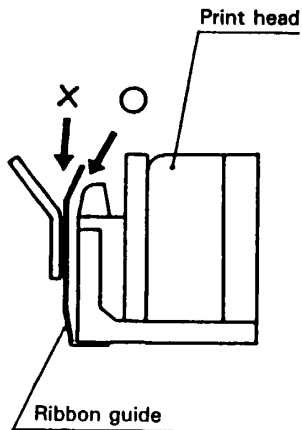


Fig. 4

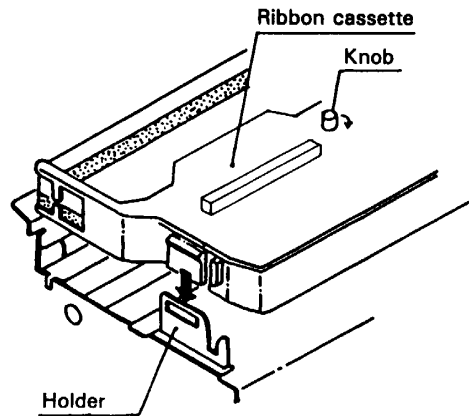
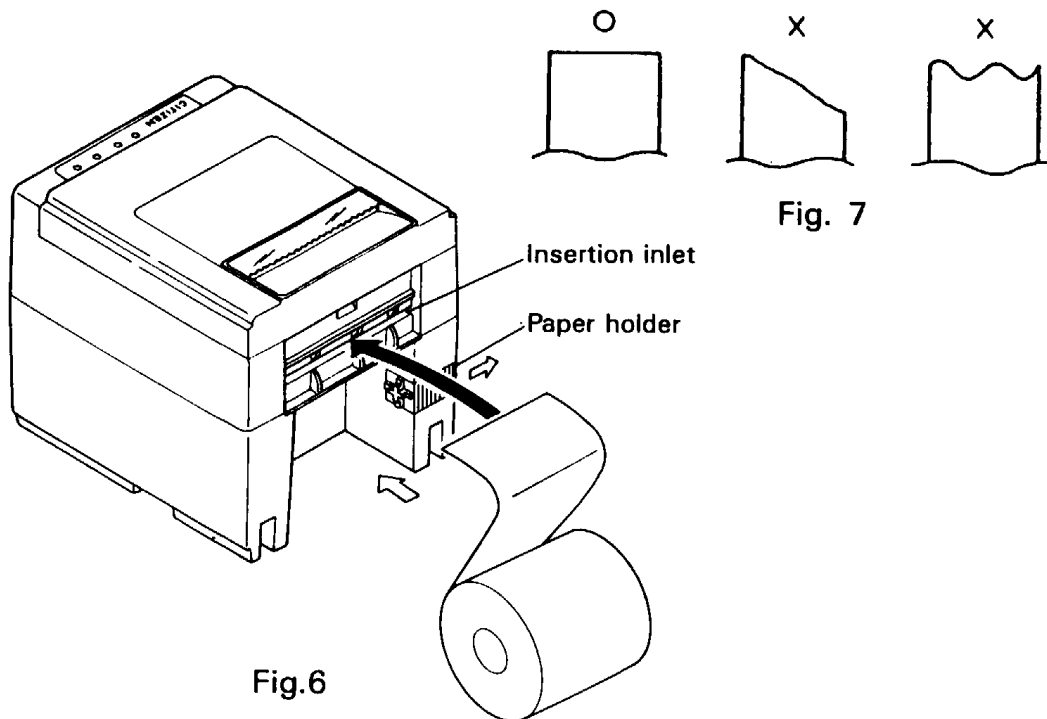


Fig. 5

## 6-4. Loading and Changing the Paper

### 6-4-1. Using Paper Roll (iDP3540F, 3541)

- 1) Cut the paper in right angle to its longitudinal center line as shown in Fig. 7.
- 2) Insert the paper into insertion inlet on the rear side of printer.
- 3) Turn on the power switch and feed the paper by pushing the LF switch.
- 4) When the printing paper comes out of the clearance (paper cutter part) on the printer cover, fix the paper by means of paper holder, then set in on the main unit.





## 6-4-2. Using Fan-Fold Paper (iDP3540P)

- 1) Remove the printer cover
- 2) Set the imprint face of the paper downward and put into the paper entrance.
- 3) If necessary to adjust the sprocket-wheel's position, free the wheels using the lever on both sides. Slide them to the appropriate position, and lock them back.
- 4) Hook some of the paper's perforations on the sprockets and forward the paper into the printer mechanism by pulling and turning the paper-feed knob until the paper's tip reaches the platen.

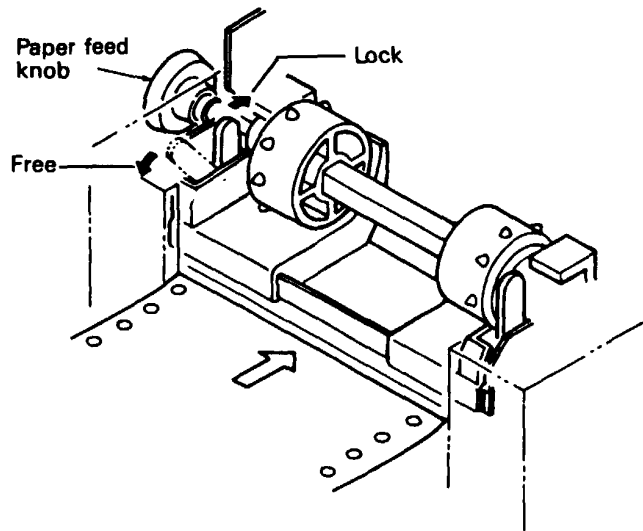


Fig. 8

## 6-5. Setting / Removing the Paper Cover and Stacker

- 1) Setting and removing the paper cover and the stacker as shown in Fig.9, 10.
- 2) Capacity of stacker

The maximum size of fan-fold paper sheaf which can be stored in this stacker is 3 to 3.5(W) x 6(H) x 1.6(D) inches.

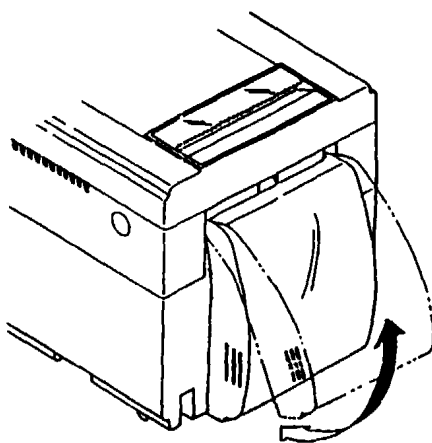


Fig. 9

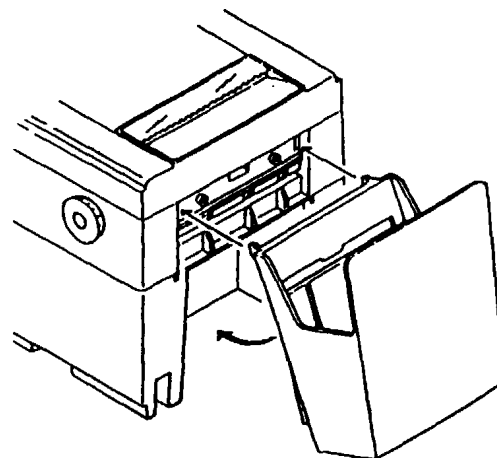


Fig. 10

## 6-6. Self Test Printing

Your printer has a built in self print function for purpose of checking print operation without the need for any other external device.

Procedures for Actuating the Print Function

- 1) Be sure that a paper roll is properly loaded.
- 2) Confirm that the ribbon cassette is properly installed and turn the power switch off.
- 3) Turn the power switch ON while pressing the LF switch, and release the LF switch after the self test operation has begun.

In the above operation, the self print function will stop automatically when completed. However, the self print function will not operate without paper.

## 6-7. Alarm and Paper Near-End Detection

This printer has the paper near-end sensor to stop the operation when the paper comes to near-end, sending out both BUSY and FAULT signals. This status is indicated by the SEL / ALARM lamp blinking at an interval of 1.0 second.

## 7. Input Buffer Back-up Function

### 7-1. Input Buffer Back-up

If the power is turned off, or there is a power failure during printing, the data in the input buffer will be retained. When the power comes back on, the power failure symbol (....PD) will be printed, and then the data which was interrupted will be printed from the beginning of the line where the interruption occurred.

Note: The input buffer back-up function may not operate properly if the related capacitor is not sufficiently charged. This may be the case if the printer has not been operated for a long period of time. After the printer power switch has been turned on for 10 minutes, the buffer back-up should be effective for approximately 24 hours or more.

### 7-2. Clearing the Input Buffer

In case it is desired to delete the data in the input buffer, the power switch should be turned on while pressing the SEL switch. When deletion of the buffer is completed the buzzer will sound. Please be sure to continue pressing the SEL switch until that time.

If the printer fails to work properly at the time the power switch is turned on, please delete the input buffer as described above before inputting new data.



### 8-3. Description of Input / Output Signals

#### 8-3-1. Input / Output Signals

##### a) Input / Output Signals

- \*DATA : 8 bit parallel signal. (Positive logic)
- \*STB : A strobe signal for reading in 8 bit data. (Negative logic)
- \*RESET : A signal which resets the entire printer. (Negative logic, 1 ms or more)

##### b) Output Signals (From Printer)

- \*ACK : This is a pulse signal for requesting 8 bit data, issued at the end of a BUSY signal. (Negative logic)
- \*BUSY : This signal indicates that your printer is in a BUSY state.  
New data should be input when this signal is "LOW". (Positive logic)
- \*FAULT : When your printer is in an alarm state, this signal is "LOW". At this time, all control circuits of your printer are interrupted. (Negative logic)

Note: An alarm condition occurs when the timing of the print head movement sensor is abnormal.

##### c) Power Source

- \*"H" Level : H level out put for TTL level
- \*GND : The common circuit ground.
- \*FRAME GND : Connect the shield of interface cable to this.

## 8-3-2. Electrical Characteristics

## a) Input Signal Level

All input signals are TTL level.

“HIGH” level .... 2.0V Min.

“LOW” Level .... 0.8V Max.

## b) Output Signal Level

“HIGH” level .... 2.4V Min.

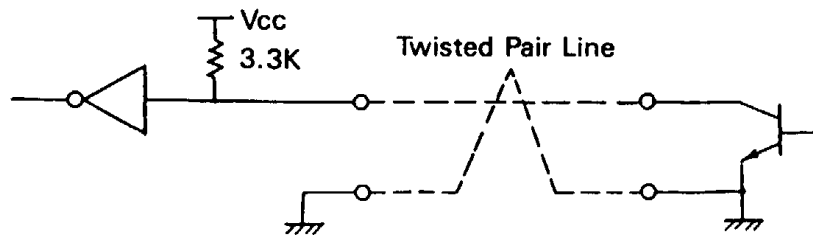
“LOW” Level .... 0.4V Max.

## c) Input / Output Conditions

All of the input signals are pulled up by 3.3K ohms.

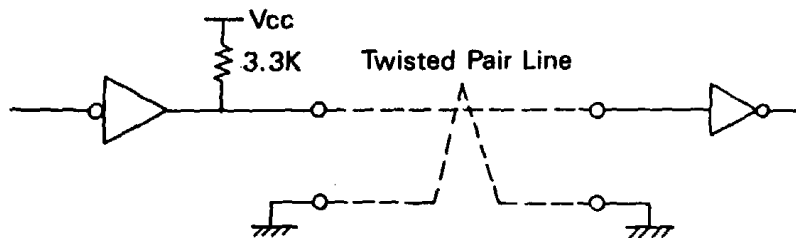
[Printer Side]

[Host Side]



7406 or equivalent

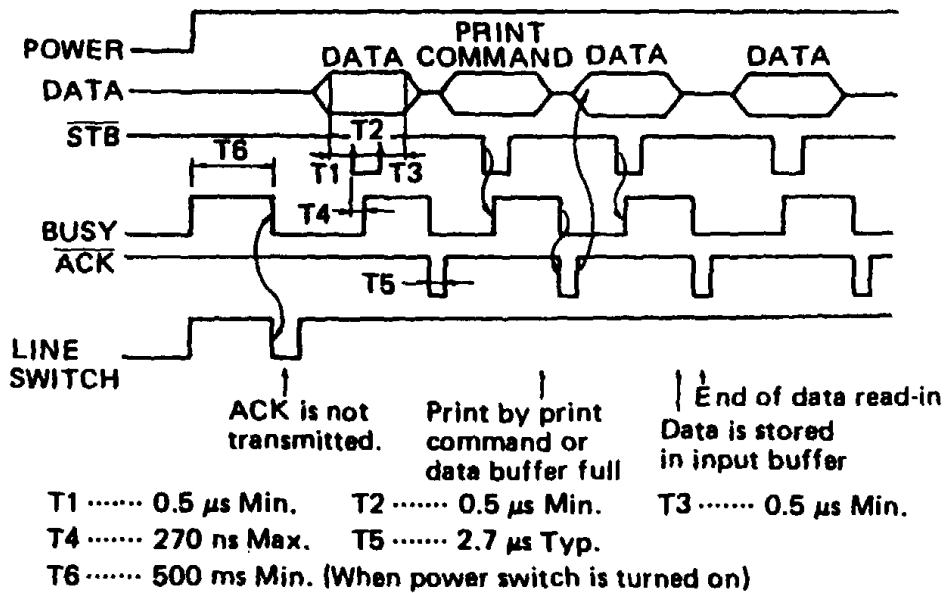
All of the output signals are pulled up by 3.3K ohms.



7406 or equivalent

## 8-3-3. Timing Chart

## a) Data Input and Print Timing



## 8-3-4. Data Receiving Control

Your printer is able to receive data sent from the host side when the BUSY signal is LOW, but unable to receive when the BUSY signal is HIGH.

## 8-3-5. Buffering

## 1) N Type

Your printer is provided with a two line input buffer.

## 2) B Type

Your printer is provided with a 7K byte input buffer. This makes possible a large amount of data buffering. And therefore, the host side is free immediately after data transmission.

## 9. Serial Interface

### 9-1. Specifications

- a) Synchronism : Asynchronous
- b) Baud rate :  
 RS-232C type : 110, 150, 300, 600, 1200, 2400, 4800, 9600BPS  
 (Selected by user)  
 Current Loop : 110, 150, 300, 600, 1200BPS  
 Type (Selected by user)
- c) Composition of one word :  
 Start bit : 1 bit  
 Data bit : 7 or 8 bit (selected by user)  
 Parity bit : Odd, even or no parity (Selected user)  
 Stop bit : 1 bit or more
- d) Signal Polarity :  
 RS-232C type : \*Mark = Logic "1" (-3V to -12V)  
 \*Space = Logic "0" (+3V to +12V)  
 Current Loop : \*Mark = Logic "1" (Current ON)  
 Type \*Space = Logic "0" (Current OFF)  
 TTL type : \*"H" level = Logic "1" Ref. to 8-3-2  
 \*"L" level = Logic "0"
- e) Received Data :  
 RS-232C & Current Loop (RD signal)  
 \*Mark = 1  
 \*Space = 0
- f) Receiving Control (RD signal)  
 RS-232C : \*Mark: Data Transfer not possible  
 \*Space: Data Transfer possible  
 Current Loop : \*Mark: (Current ON): Data Transfer possible  
 \*Space (Current OFF): Data Transfer not possible
- g) Transmission Control (TD signal)  
 DC1 code (11H) "X" ON: Data Receiving possible  
 DC3 code (13H) "X" OFF: Data Receiving not possible  
 However, this is valid only for type B input buffer (7K).

## 9-2. Connector Pin Assignment

Signal Pin	Return Signal Pin	Signal Name	Direction Host / Printer	Function	RS-232C	Current Loop	TTL
1		FG		Safety Ground	○		
7		GND		Signal Ground	○		
3		RD	→	Received Data	○		
20		DTR	←	Printer BUSY Signal	○		
2	22	TD	←	Transmitted Data	○	○	
11		PE	←	Paper End Signal			○
12		FAULT	←	Printer ALARM Signal	○		
13	14	DTR	←	Printer BUSY Signal		○	
18	16	RD	→	Received Data		○	
23		RESET	→	Printer RESET Signal			○

- Notes:
- [1] The signals for RS-232C use are based on EIA RS-232C level.
  - [2] The loop current for Current Loop signal use should be restricted within the range of 10 to 20 mA.
  - [3] Please always maintain the “Mark state”, when received data are not being transferred.
  - [4] The assignment of RS-232C / Current loop / TTL can be performed with the slide switch (Ref to 11-3).
    - Compatible Connector (D-Sub connector):
    - \*Printer 17LE-13250 (AMPHENOL or equivalent)
    - \*Cables Side: 17JE-23250 (AMPHENOL or equivalent)



### 9-3. Description of Input / Output Signals

#### 9-3-1. Input / Output Signals

a) RD:

This is the serial signal for received data. When framing, overrun or parity errors occur, the data is converted into (7FH).

b) DTR:

Please write in data or commands when this signal is in a "ready" state. If written in when in a BUSY state, an overrun error will occur and the data will be ignored. Data can be written into the input buffer even during printing. Further, a BUSY signal is generated when the power is turned on, while test printing, when ONLINE and during reset.

c) FAULT:

When there is a problem in the printer mechanism the FAULT signal will be issued, and all control circuits will be interrupted. To RESET this signal, first correct the cause of trouble in the printer mechanism. Then, by pressing the SEL switch or by inputting "0" (LOW LEVEL) at the RESET terminal, the FAULT can be cleared.

Causes of the FAULT signal are lack of paper and errors in the printer mechanism. Printer errors include such as, the print head stopping during print operation or failure of the print head to return to the home position.

d) RESET:

This signal resets the entire printer.

e) PE:

This signal is output when the paper roll is near the end.

f) TD (Valid only for type B):

When receiving data signals, and when the printer's input buffer has less than 1K bytes remaining open, the DC3 code (13H) is issued, indicating that receipt of data is not possible. When the data in the input buffer is reduced to 2K bytes, the DC1 (11H) code is issued, which indicates that data receipt is possible.

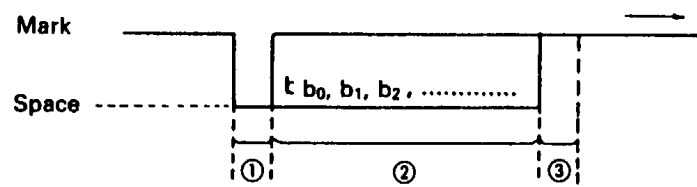
g) FG:

Frame Ground

h) GND:

Common ground for all circuits.

## 9-3-2. Data Composition



- [1] Start bit
- [2] Data bits (and parity bit)
- [3] Stop bit (1 bit or more)

## 1) Start bit

1/2 bit past the line dropping from MARK to SPACE, a status reading is taken again.

If the reading is SPACE, a start bit is recognized, but if it is MARK, it is not taken as a start bit.

This is not regarded as an error, but the search for the start bit is performed once again.

## 2) Data bit and parity bit

Data bits and parity bits are the data of the bits in question, which are represented by the state at the time sampling is performed. This is accomplished at time intervals equal to one bit in length, beginning from the middle of the start bit. The order of the bits is starting with the bit closest to the start bit, bit-0, bit-1....., parity bit. (Note: data bits are based on "one point sampling".)

## 3) Stop bit

The stop bit consists of one or more bits at "mark" level. When "space" level is detected for a stop bit, a framing error occurs.

## 9-3-1 Error Detection

The printer detects Parity, Framing and Overrun Error. When any error is detected, the data is converted into (7FH).

## 1) Framing Error

Framing error occurs when SPACE signal is checked out at STOP BIT.

And the data is converted into (7FH).

## 2) Parity Error

When parity check is designated and if the parity error is detected, the data is converted into (7FH).

## 3) Overrun error

When an overrun error is detected, the data is converted into (7FH).

## 4) Other errors

When trouble is detected in the printer mechanism, the SEL / ALARM lamp goes on, the buzzer is sounded, the FAULT signal is output, and the DTR signal becomes BUSY. After the cause of the trouble has been corrected, the SEL / ALARM lamp can be turned off by pressing the SEL switch or by making RESET = "0". When the printer is put ONLINE, data receiving restarts.

#### 9-3-4. Data Receiving Control

When the BUSY signal is LOW, your printer receives data from the host side, but when this signal is HIGH, it cannot receive data.

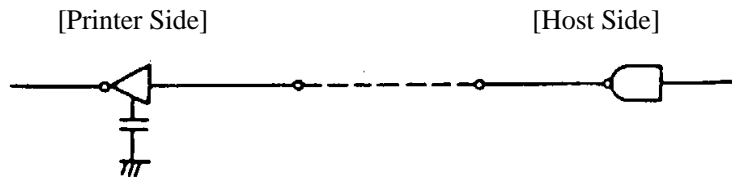
#### 9-3-5. Buffering

Data transfer to the input buffer is controlled by the DTR and TD signals. Please refer to 9-3-1 b) for the DTR signal and 9-3-1 f) for the TD signal.

## 9-3-6. Electrical Characteristics

## a) RS-232C Circuit

Input (RD)



MAX232 or equivalent      Mark = (-8V): Stop bit  
 Space = (+8V): start bit

Output (DTR, TD, FAULT)

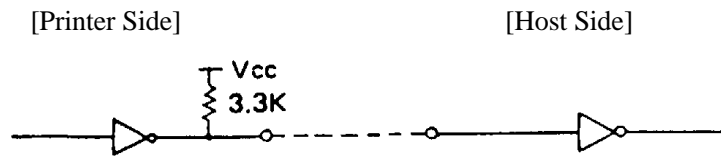


MAX232 or equivalent

DTR    (-8V): BUSY      \*TD Mark = (-8V): 1  
       (+8V): READY      Space = (+8V): 0  
 FAULT (-8V): Normal  
        (+8V): Abnormal

## b) TTL Circuit

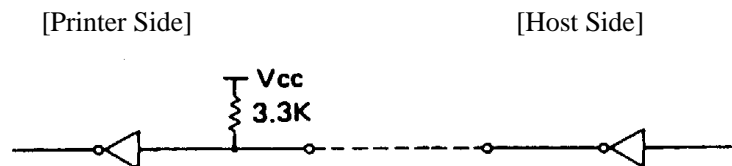
Output (PE)



7406 or equivalent

PE      H: Paper empty  
        L: Paper remaining

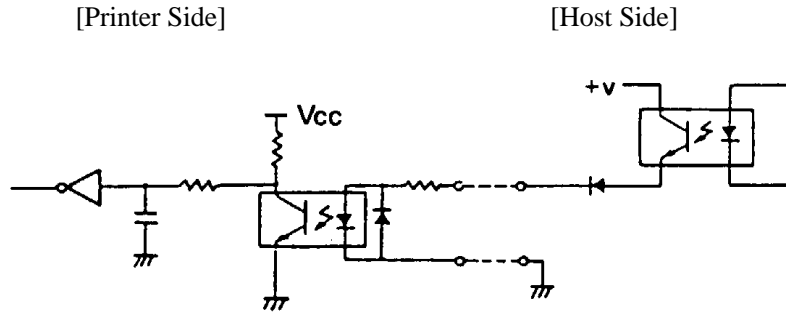
Input (RESET)



7406 or equivalent

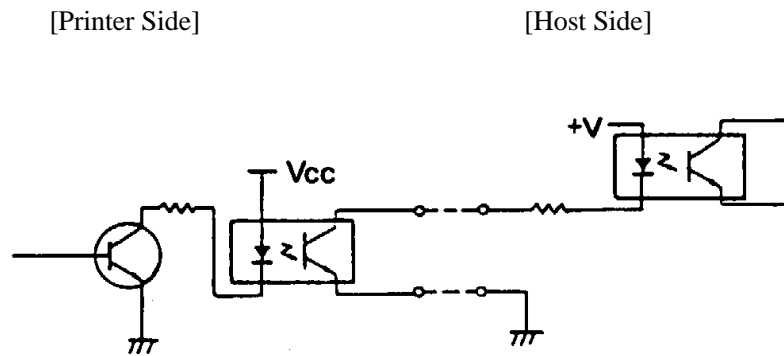
LOW for RESET

c) Current Loop Circuit  
Input (RD)



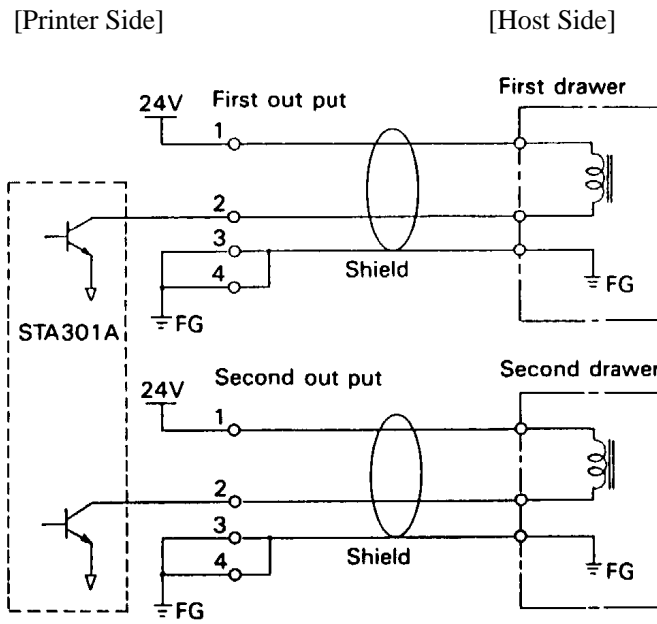
Mark = Current ON  
Space = Current OFF

Output (DTR, TD)

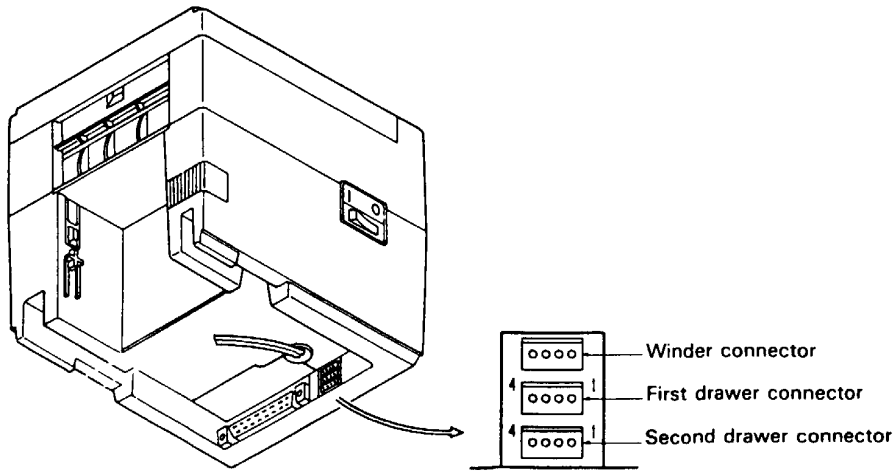


- \*DTR Current ON : READY  
Current OFF : BUSY
- \*TD Mark : Current ON  
Space : Current OFF

10. External Output



Remarks : The solenoid for drawer should be more than 36 Ohms.



Connector Printer side : 5045-04A (Molex)  
 Cable side : 5209-04 (Molex)

## 11. Function Selection

In order to meet the widest possible range of needs, various conditions can be selected by setting the DIP switches.

### 11-1. Setting DIP Switch DS1

No.	Function	OFF	ON	Factory Setting
1	Auto Cutter	NO	YES	*1
2	International country	(Refer to table below)		OFF
3	switching			OFF
4	Input buffer	7K Bytes	2 Lines	OFF
5	Character direction	Normal	Inverted	OFF
6	CR cord	CR	CR + LF	OFF
7	Mode	Character	Graphic	*1
8	SEL / DESEL at "power on "	SELECT	DESELECT	OFF

Notes: \*1) Setting is variable, depending on the type of printer.

No.	USA	FRANCE	GERMAN Y	ENGLAND
2	OFF	ON	OFF	ON
3	OFF	OFF	ON	ON

### 11-2. Setting DIP Switch DS2

#### 1) Serial interface only

No.	Function	OFF	ON	Factory Setting
1	Word length setting	8 bits	7 bits	OFF
2	Parity check	YES	NO	ON
3	Parity condition	ODD	EVEN	OFF
4	- Not used -			
5	Baud rate setting	(Refer to the table below)		OFF
6				ON
7				ON
8				OFF

## 2) RS-422A type only

No.	Function		OFF	ON	Factory Setting
1	2	Printer address	L	H	OFF
2	2		L	H	OFF
3	2		L	H	OFF
4	-				OFF
5	Baud rate setting		Refer to the table below		OFF
6					ON
7					ON
8					OFF

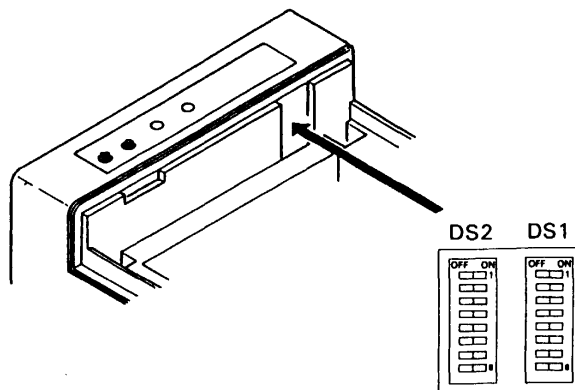
bps No.	110	150	300	600	1200	2400	4800	9600
5	OFF	ON	OFF	ON	OFF	ON	OFF	ON
6	OFF	OFF	ON	ON	OFF	OFF	ON	ON
7	OFF	OFF	OFF	OFF	ON	ON	ON	ON
8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

## 11-3. Slide Switch Setting (Serial interface specifications only)

RS-232C or 20mA current loop can be selected by changing slide switch SW1 on the control board. The side labeled "RS" is for RS-232C and the side labeled "CL" is for 20mA current loop. The switch is set at the factory for RS-232C.

## 11-4. Dip-Switch Location

Power off and remove the printer cover before setting the Dip-Switches.



Notes: DS2 is mounted for Serial type and RS-422A type only.



## 12. Print Control Functions

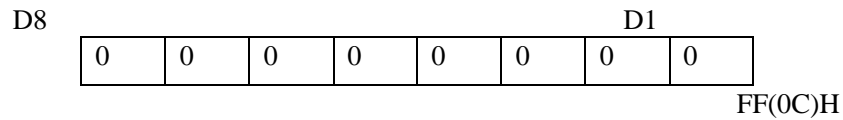
### 12-1. Control Codes

Function code	Hex. Code	Functions
FF + n	0C + n	"n" -lines paper feed command
SO	0E	Enlarged character command
SI	0F	Normal character command
LF	0A	Paper feed command
CR	0D	Print command
DC1	11	Initial set command
DC2	12	Inverted character command
DC3	13	Red color print command
CAN	18	Clear command
ESC + P + 0	1B, 50, 00	Paper full cut command
ESC + P + 1	1B, 50, 01	Paper partial cut command
ESC + - + n	1B, 2D, n	Underline command
ESC + * + n1 + n2	1B, 2A, n1, n2	Graphic command
ESC + 1	1B, 31	1 / 9 inch paper feed preset command
ESC + 2	1B, 32	2 / 9 inch paper feed preset command
ESC + C + n	1B, 43, n	Page length set command
ESC + f + 1	1B, 66, 01	From feed command
ESC + N + n	1B, 4E, n	"n line" skip perforation command
ESC + O	1B, 4F	Skip perforation cancel command
RS	1E	Buzzer command
SUB	1A	Second drawer drive command
FS	1C	First drawer quick drive command
ESC + BEL + N1 + N2	1B, 07, n1, n2	Drive pulse setting command for the first drawer
BEL	7	First drawer drive command

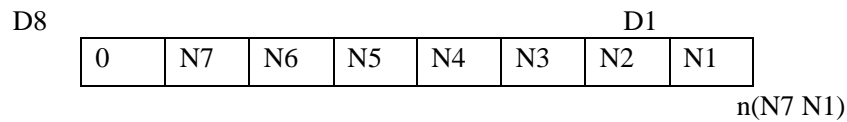
## 12-2. Input Data Formats

## 12-2-1. Paper feed command for “n” lines

1st byte



2nd byte

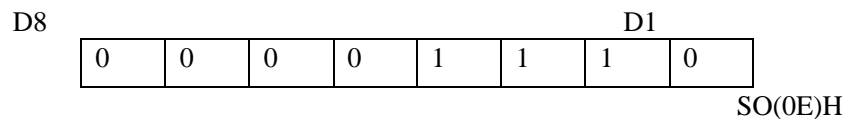


(Binary digits)

When the number of lines to be fed (2<sup>nd</sup> byte) is written-in following the paper feed command (1<sup>st</sup> byte), the paper will be fed by the number of lines specified. The number of lines to be fed can be specified from  $n = 1$  to 127. If “0” is specified, paper feed will not be carried out.

When there is data in the print buffer at the time this command is applied, this data will first to printed out and then line feeding of “n” – lines will be performed.

## 12-2-2. Enlarged character command

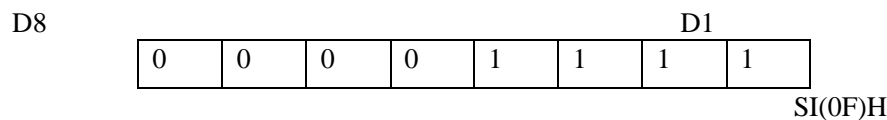


The data following this command, are printed out in twice the normal width.

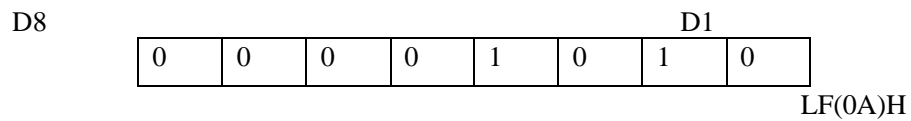
This mode will continue until the corresponding cancel command is input, or automatically released after printing one line. Since enlarged characters are twice the normal width, care should be taken to avoid exceeding the column capacity.

## 12-2-3. Enlarged character cancel command

This command is used for canceling the enlarged character mode set by SO, and the following data will be printed out in the normal character mode.

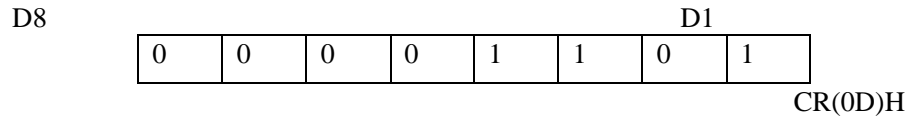


## 12-2-4. Paper feed command



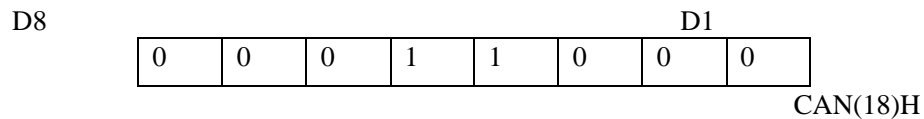
When there is data in the internal print buffer, line feed will be carried out after printing is completed. When the buffer is empty, line feed only will be carried out.

## 12-2-5. Print command



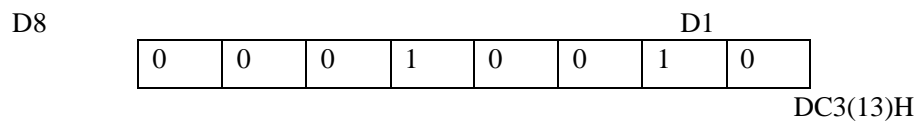
By means of this command, printing will be carried out. In order to accommodate the print data output formats of various computers, the CR function is selectable.  
(Please refer to 11-1 DIP Switch Setting)

## 12-2-6. Clear command



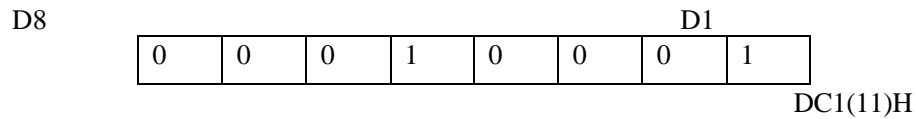
Print data previously entered on the same line can be cleared by the command.

## 12-2-7. Red color print command



This command specifies red colored characters and all of the characters on one line will be printed in red. Since this command is cancelled after printing one line, it is necessary to use it for each line on which red printing is desired.

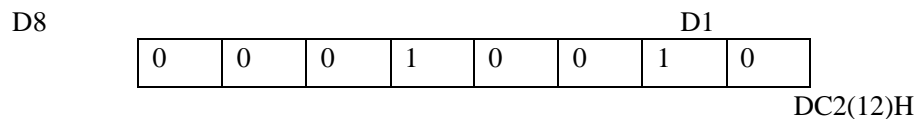
## 12-2-8. Initial Set Command



The controller is initialized by this command and the following conditions are established.

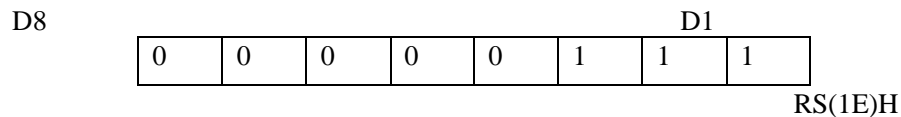
- \*Internal input buffer cleared
- \* Normal character mode selected
- \* Black color print mode selected
- \* Skip designation cancelled
- \* Page length set to 66 lines
- \* Line feed pitch set to 2/9 inch (graphic type only)

## 12-2-9. Inverted character command



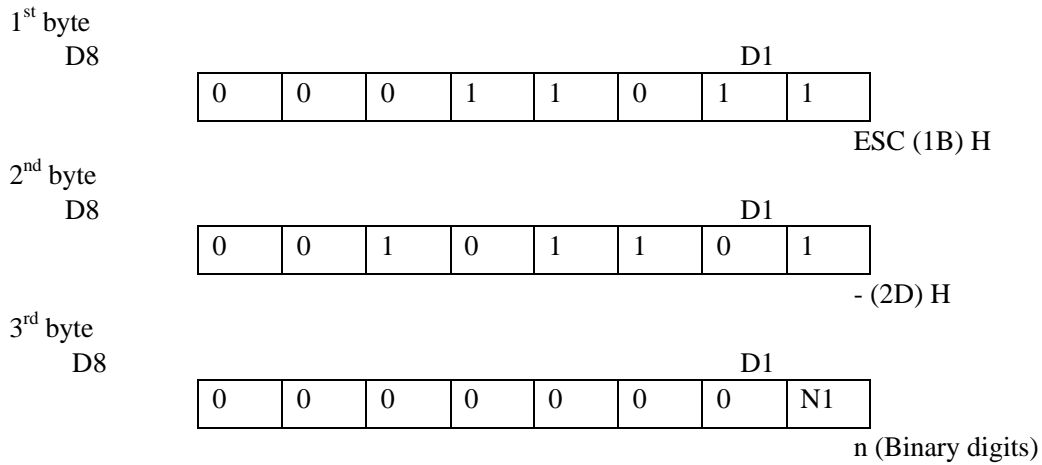
This command specifies inverted characters. By entering this command at the beginning of print data and then sending the data to the controller, all of the following characters will be printed upside down. This command remains valid until, either it is entered again or the initial set command is entered.

## 12-2-10. Buzzer Command



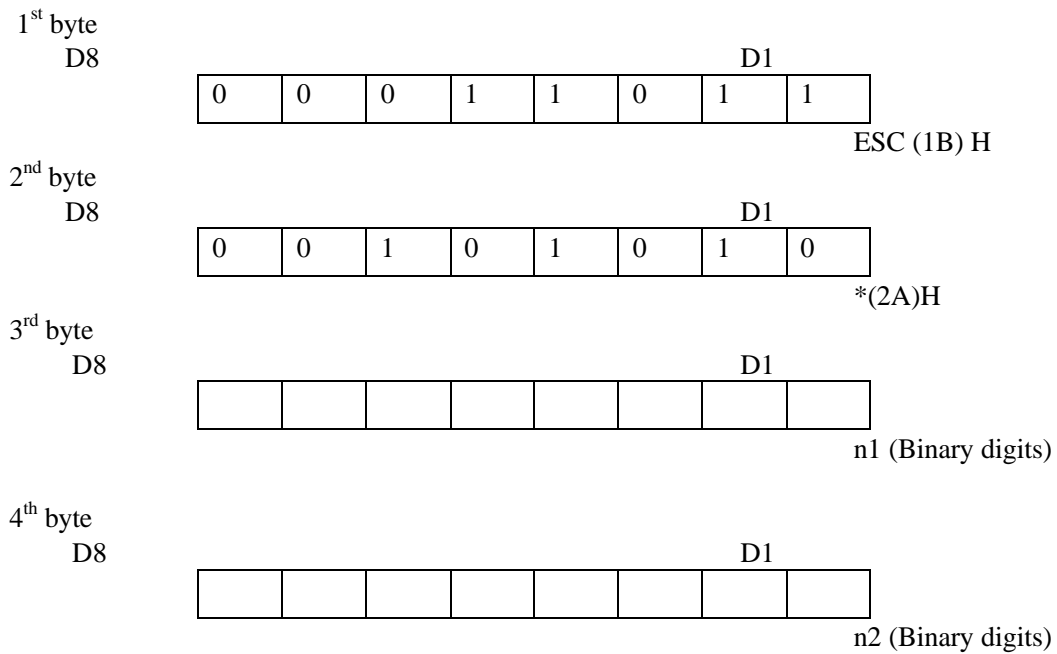
Command to activate the alarm buzzer for 0.3 second period.

## 12-2-11. Underline Command



When  $n = 1$ , the underline mode is set, and when  $n = 0$ , it is cancelled.

## 12-2-12. Graphic Command (Graphic Type Only)



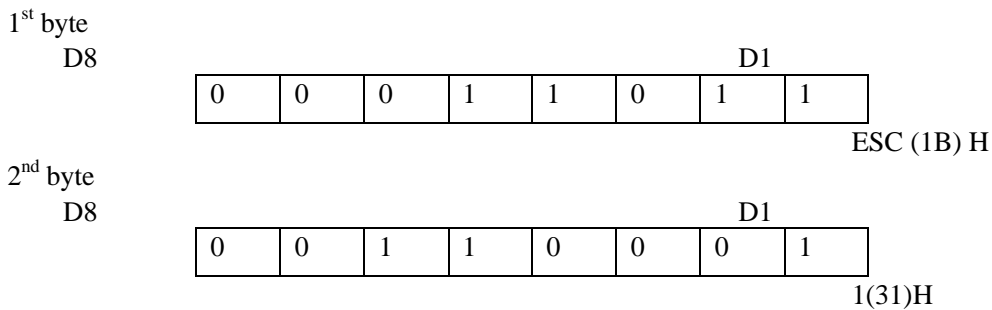
Bit image mode printing is performed by this command. (n2 is the equotient when divided by 256, and n1 is the remainder.) When data is received only for numbers specified by n1 and n2, printing and line feed are carried out automatically, and the bit image mode is cancelled.

However, since “half-dots” are being used, the next corresponding pin cannot print at the same time.

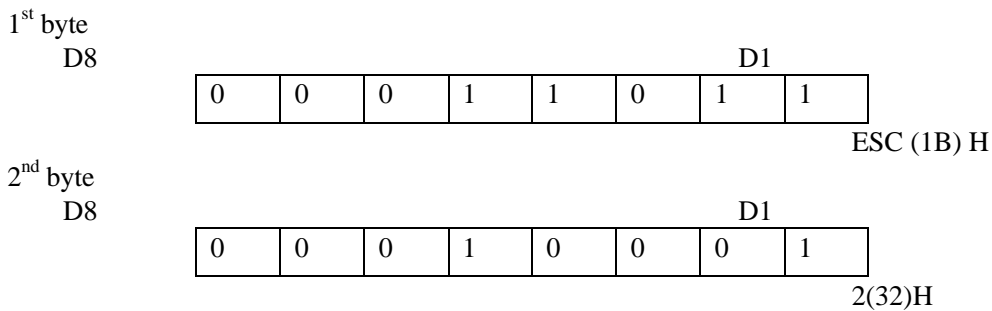
Further, the maximum value of n1 and n2 is the number contained in one line, and this cannot be exceeded.

#### Relation of Head Pins to Data

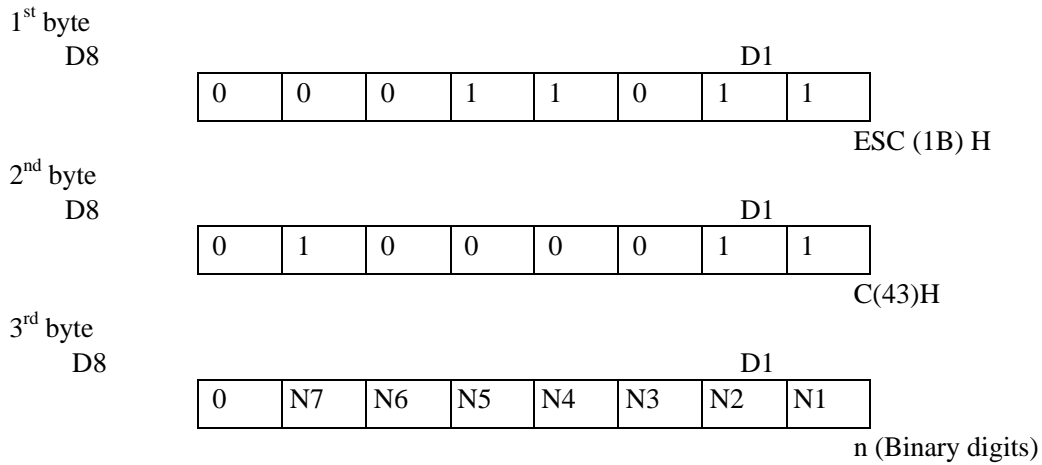
#### 12-2-13. 1/9 inch Line Feed Pitch Set Command (Graphic Type)



#### 12-2-14. 2/9 inch Line Feed Set Command (Graphic Type)

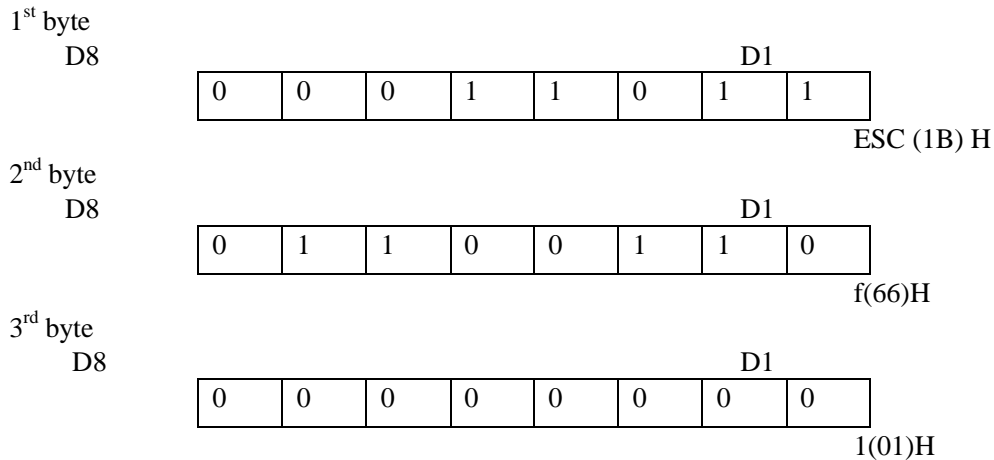


## 12-2-15. Page Length Set Command



The length of one page is set to “n” lines by this command. ( $1 \leq n \leq 127$ )

## 12-2-16. From Feed Command



The input of this command feeds the paper to the top of the next page, after printing the data contained in the print buffer.

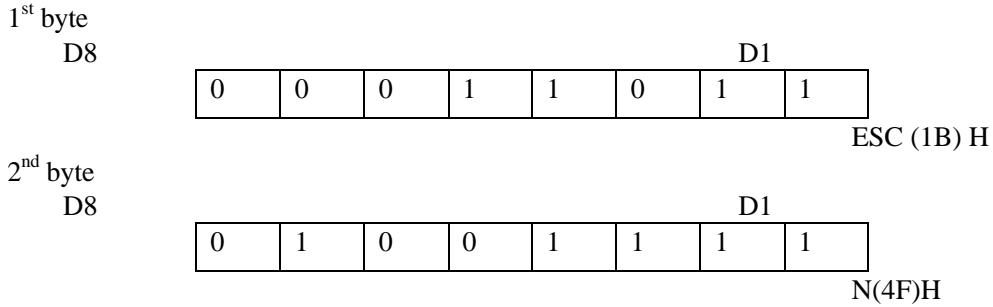
## 12-2-17. Skip Perforation Command



This command feeds the paper (skips) “n” lines without any printing. However, this cannot exceed

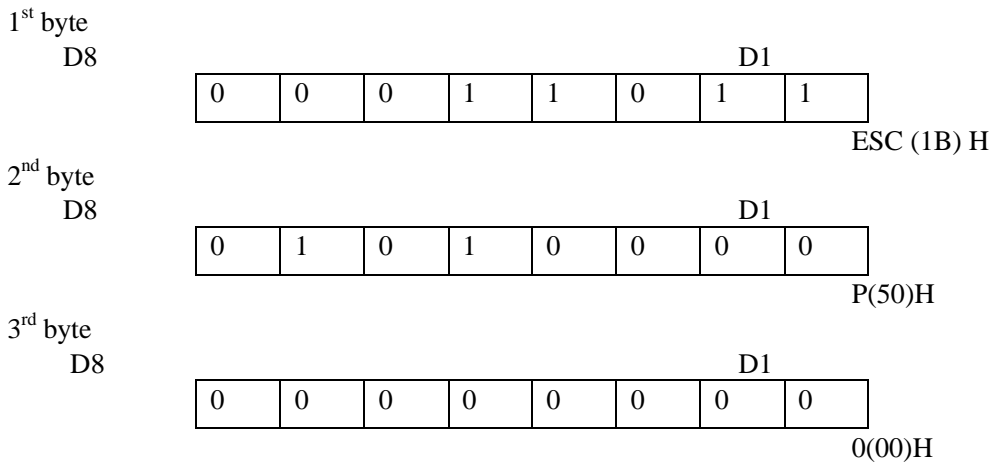
the length of one page. ( $1 \leq n \leq 126$ )

#### 12-2-18. Skip Perforation Cancel Command



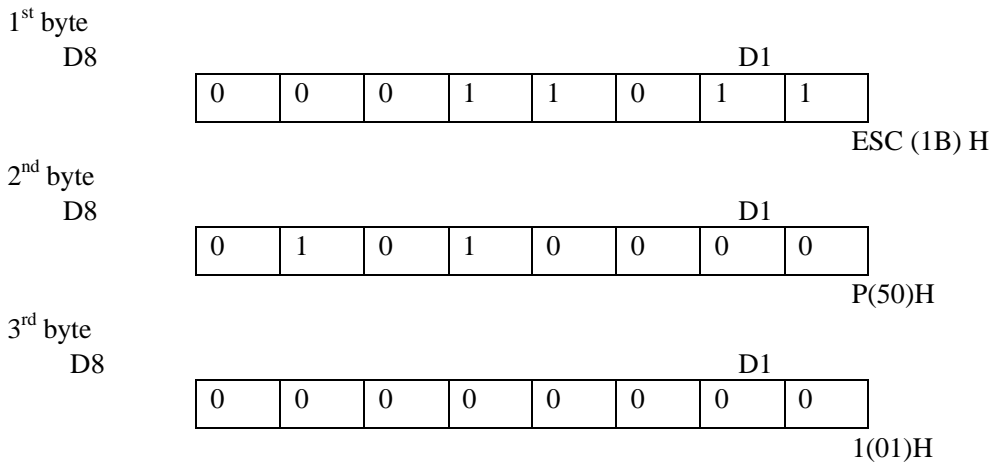
This command cancels the skip perforation function.

#### 12-2-19. Full Cut Command (iDP3541 Only)



A full cut the paper is performed by this command (one connecting point remaining).

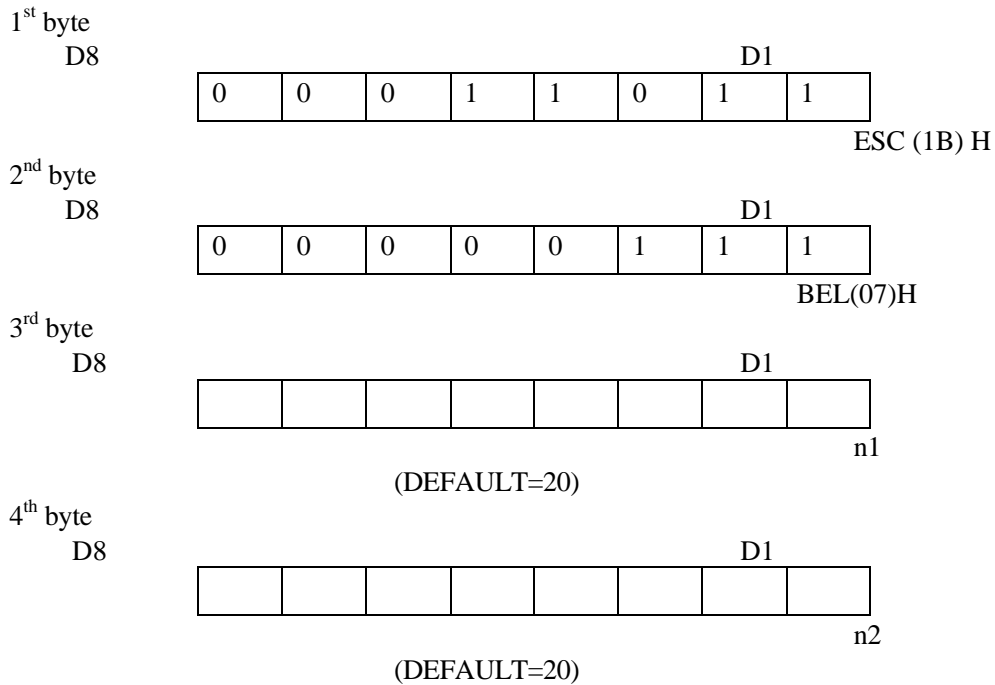
#### 12-2-20. Partial Cut Command (iDP3541 Only)



A partial cut of the paper is performed by this command.



## 12-2-21. Drive Pulse Duration Setting Command For the First Drawer



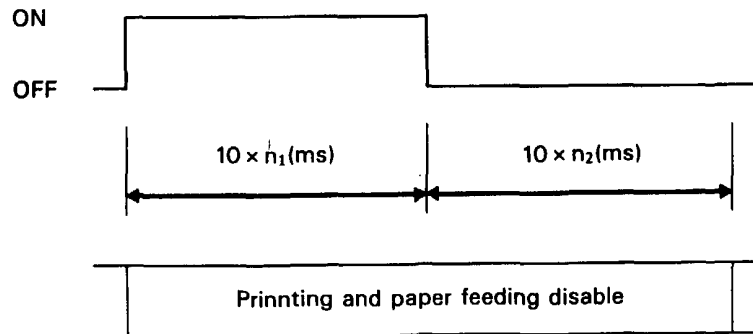
This command adjusts the drive pulse duration for the first drawer.

Pulse duration =  $10 \times n_1$  (ms)

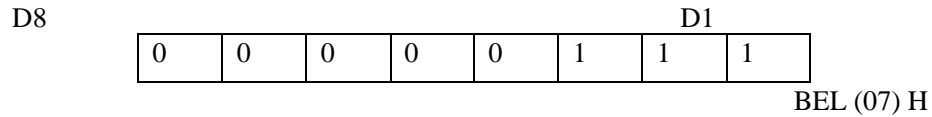
Delay =  $10 \times n_2$  (ms)

$1 \leq n_1 \leq 127$  default  $n_1 = 20$

$1 \leq n_2 \leq 127$  default  $n_2 = 20$



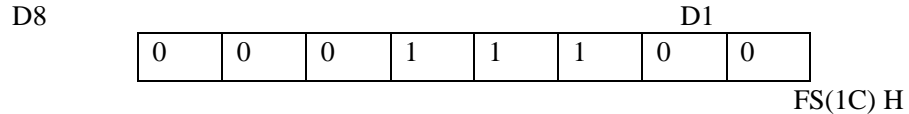
## 12-2-22. First Drawer Drive Command



This command generates a drive pulse for first drawer based on the condition of drive pulse duration setting command.

This command is stored in the buffer and is performed when it is received from buffered queue.

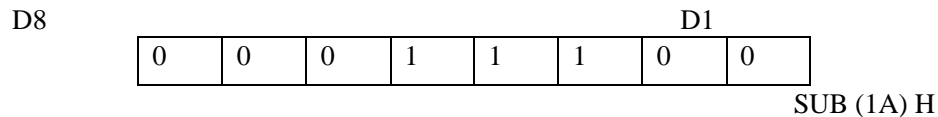
## 12-2-23. First Drawer Quick Drive Command



This command generates a drive pulse for first drawer based on the condition of drive pulse duration setting command.

This command is performed when the printer receiver it.

## 12-2-24. Second Drawer Drive Command



This command generates a drive pulse for second drawer. And drive pulse duration is fixed at 200 ms ON + 200 ms OFF.

This command is performed when printer receive it.

Remarks: First drawer and second drawer cannot be driven at the same time.

### 13. Initial Setting

Followings are automatically set after Power-on.

- (1) Printer head returns to its start position.
- (2) SELECT (ON-LINE) or DESELECT (OFF-LINE) status may be chosen by the Dip Switches for Pre-Setting.
- (3) Print buffer is cleared.
- (4) Standard character mode is set.
- (5) 66 lines per page is set.
- (6) The first line set at the present line.
- (7) Designation of Red printing is cleared.
- (8) For 7 bit data, character code SI is applied.

## 14. Maintenance

### 14-1 Maintenance Procedures

It is recommended that users perform periodic cleaning of their printer.

#### 14-1-1 Exterior

The exterior case of the printer can be cleaned with alcohol. Care should be taken to keep water from reaching the electronic parts and the printing mechanism.

#### 14-1-2 Interior

There is no particular requirement, however, when the printer case is opened to change setting etc., dust and other foreign matter may be removed from the printer mechanism and circuit boards with a soft brush.

Special care should be taken to avoid damage to electronic parts and wiring. Furthermore, be sure to disconnect the power plug from the electric outlet before opening the printer case.

## 15. General Cautions

- 1) Never operate your printer without loading paper and ribbon cassette. Any printing without paper and ribbon cassette may cause damage to printer head.
- 2) Replace ribbon cassette before it is worn with rents.
- 3) Be careful not to drop any foreign matters, such as paper clips, pin and the like into your printer. Those can cause mechanical trouble.
- 4) Nothing shall be placed on the radiation vents to the printer.
- 5) Place your printer always on a stable desk which is set horizontal.
- 6) No organic solvent (thinner, benzin or the like) shall be used in sweeping clean the surface of the main body case.
- 7) Make sure that the power of the printer is turned off whenever you do the following.
  - (1) Taking out any foreign matter which were dropped into the printer.
  - (2) Replacing the ribbon cassette.

## 16. Character Code Tables

### International Character Codes

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p			£	U	ē	ū		
1		DC1	!	1	A	Q	a	q			Ƨ	β	ē	ç		
2		DC2	"	2	B	R	b	r			Ƨ	§	ī	ı		
3		DC3	#	3	C	S	c	s			Ω	♯	ī	N		
4			\$	4	D	T	d	t			μ	ρ	ī	ñ		
5			%	5	E	U	e	u			Σ	'	ı	Ē		
6			&	6	F	V	f	v			σ	TL	T	o		
7			'	7	G	W	g	w			̄	<sup>1</sup> <sub>2</sub>	ö	ı		
8		CAN	(	8	H	X	h	x			©	N	ó	A		
9			)	9	I	Y	i	y			×	T	ó	ı		
A	LF		*	:	J	Z	j	z			∞	¥	ó	θ		
B		ESC	+	:	K	[	k	{			±	<sup>1</sup> <sub>4</sub>	ō	ä		
C	FF		.	<	L	\	l				+	Ā	ü	ā		
D	CR		-	=	M	]	m	}			π	ö	ú	ā		
E	SO		.	>	N	^	n	~			Ä	ó	ü	ā		
F	SI		/	?	O	_	o	••••			Ö	ó	ü	ā		

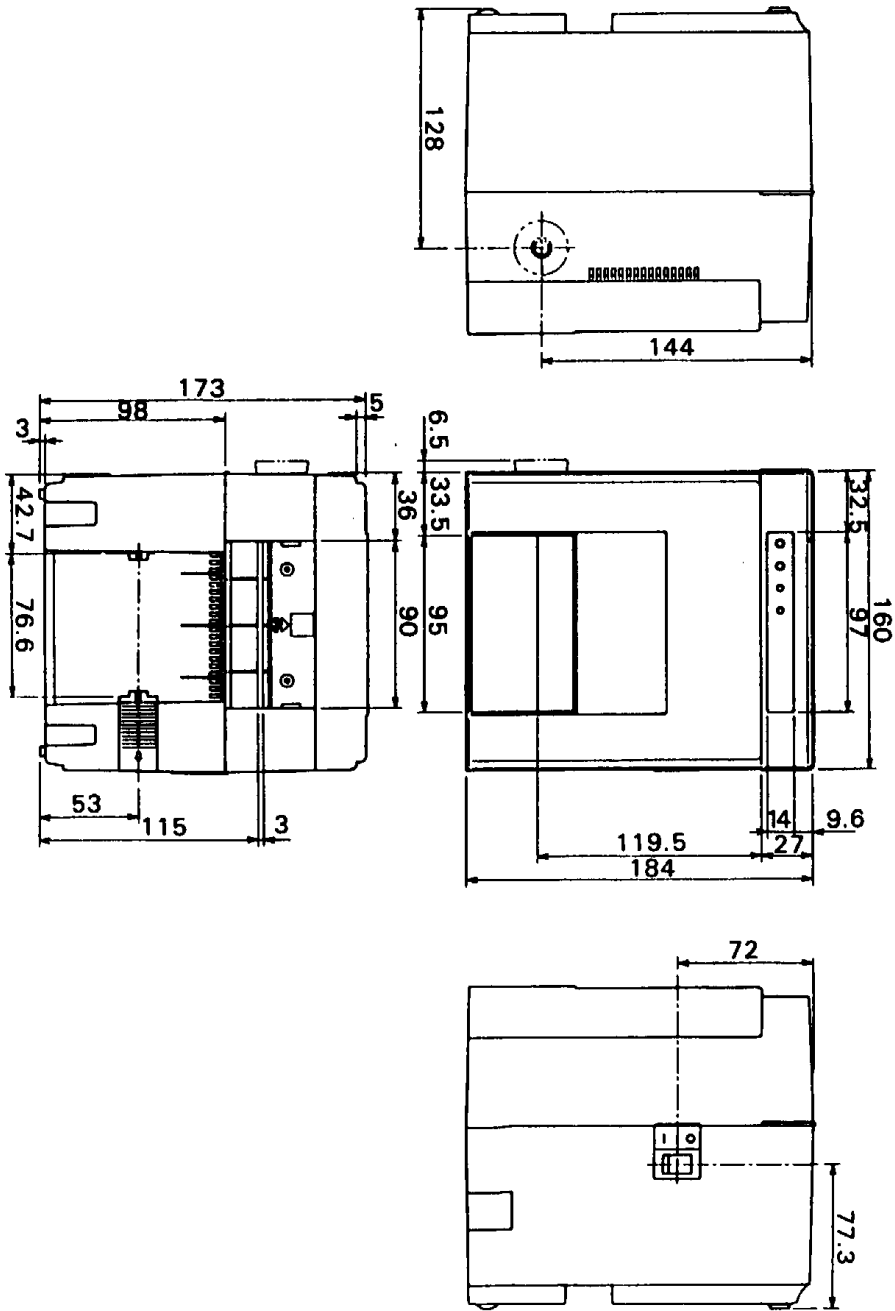
The following codes are set as space characters.  
20H, 80H-9FH, E0H-FFH

Individual Country  
Character Codes

	U.S.A.	England	France	Germany
2 3 H	#	£	#	#
4 0 H	@	@	à	§
5 B H	[	[	·	Ä
5 C H	\	\	C	Ö
5 D H	)	)	§	U
7 B H	{	{	ö	ä
7 C H			ù	ö
7 D H	}	}	ö	ü
7 E H	—	—	..	ß

17. External Dimensions

17-1. Model : iDP3540



## 17-2. Model : iDP3541

