

# INSTALLATION PROCEDURE

## FOR THE INNOVEC IPT

### POWERED

### PRINTING TOTALISOR



## **IPT POWERED TOTALISOR CALIBRATION PROCEDURE**

Thank you for purchasing an Innovec product. The IPT totalises flow in increments of one litre and 0.1 litres, displays the total on an 16 digit 10mm alphanumeric LCD backlit display and prints out the batch total, master total, time, date, client name (header one), Job name (header two) on a 40 column dot matrix printer set for double height printing which is incorporated into the instrument. It is housed in a panel mounting enclosure measuring 144mm wide x 144mm high x 145mm deep. The count values are stored in non-volatile EEPROM memory for a minimum period of 10 years. The instrument incorporates two counters, an 8 Digit foreground (batch total), which is normally displayed and a background total (master total). The K factor is a number of eight characters [00.000000].

### **Run Mode Functions:**

**Up button displays the current time**

**Down button displays the current date**

**Mode button displays the current master total**

### **Step 1 - Panel Installation**

The instrument is supplied in 144mm x 144mm x 145mm deep aluminium enclosure with sealed weatherproof front and is designed to be panel mount mounted with a panel cut out of 138mm high by 138mm wide. To mount, the instrument should be slid into the hole from the front and the 4 brackets fixed to the side and tightened to hold the instrument firmly in place.

### **Step 2 - Electrical Connection**

The instrument has been supplied with a two-part screw terminal (male and female) for easier installation which has a ten (10) way plug for signal and a ten (10) way plug for power and output relay connection. The instrument is supplied as either an AC or DC powered instrument. As an AC powered instrument it has a universal input primary which can be connected to 85 to 265VAC 50Hz to 60 hertz single phase supply. As a DC powered instrument it has a 30watt DC to DC convertor which provides 500VDC isolation from input to output. **Before connecting power to the instrument always check the label** for the supply the instrument has been configured for:

For a nominal 240VAC operation connect AC power to:

- (a) Terminal 18 is 240VAC supply**
- (b) Terminal 19 is neutral supply**
- (c) Terminal 20 is ground supply**

For a nominal 115VAC operation connect AC power to:

- (a) Terminal 18 is 115VAC supply**
- (b) Terminal 19 is neutral supply**
- (c) Terminal 20 is ground supply**

For a nominal 24VDC (18-36VDC) operation, connect **DC** power to:

- (a) Terminal 18 is 24VDC supply**
- (b) Terminal 19 is 0VDC supply**
- (c) Terminal 20 is ground supply**

## Step 2 – Input Connection

Input Signal used	Input Connection		Switch settings used for this function							
	CHI									
	+	-	1	2	3	4	5	6	7	8
CMOS Logic signal	3	2	off	off	off	off	on	off	off	off
Open Collector or Reed switch	3	2	off	off	off	off	on	off	on	off
Namur Proximity (set loop supply out to 8 volts)	8	3	off	off	on	on	on	off	off	off
Switch or Reed Switch with debounce circuit (200Hz max)	3	2	off	off	off	off	on	off	on	on
Coil (20mv P-P minimum)	3	2	off	on	off	off	off	off	off	off
Coil (low impedance 22mv pp minimum)	3	2	on	on	off	off	off	off	off	off

- CMOS Logic signal – for vortex or magnetic flow meters
- Open Collector or Reed switch – hall effect sensors or positive displacement flow meters with reed switch output
- Namur Proximity - positive displacement flow meters with 2 wire proximity output not yet available
- Coil (20mv P-P minimum) – millivolts signal from turbine meter

## Step 3 - Reset Button Connection

The instrument accepts a reset from a clean contact (contact closure).

The fore ground total can be reset by a normally open push button connected across terminal seven (7) reset input and terminal (1) internal 0VDC. Holding this switch closed for a minimum of 5 seconds will also reset the background total.

## Step 4 - Using the 24VDC loop supply

The 24VDC loop supply is available on terminal eight (8) but is limited to a current capacity of approximately 25mA. It is not available in this application. Note: for the Namur sensor this loop supply needs to be adjustable to 8 volts – coming soon

## Step 5 - Using the Printer

The printer detects the paper running out, and the displays the message **paper out** Please refer to appendix 1 for information regarding care of the printer including, changing of paper rolls and the print ribbon.

## Step 6 - Instrument Calibration

All functions of the instrument are programmable from the four touch buttons mounted on the circuit board.

▲	▼	Mode	Prog/Run	Print
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To enter the programming mode press:

<u>Prog/Run</u>
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The display shows:

## SET UP

It is necessary to push in sequence:

UP BUTTON then DOWN BUTTON then UP BUTTON again. (This is a simple ACCESS code)



You are now in the programming mode. The instrument displays:

## DP

This is the **decimal point position**. The decimal point can be adjusted for NO decimal (00) point for the display of units of measure or a decimal point (0.0) for the display or 0.1 measurement units. Pushing the up button will cause the number to increment. If the up button is being pushed the DP increments. If no changes are required or when you have selected the required display decimal point position, please press:

Mode

To show:

## KFACTOR

**This is the K-factor** that the instrument uses to calculate the flow in litres. **This is displayed for approximately 3 seconds before displaying the actual K factor value.** As you have entered **K Factor** programming point you will notice the right most digit is flashing. The flashing digit designates that this is the digit that can be changed. Pressing the up button will cause this digit to increment from 0 to 9 and back to 0. Pressing the down button (**▼**) will cause (*the controllable digit to move one decimal place to the left*) the second most digit from the right to flash and the right most digit is now stationary.

To enter the K factor it is first necessary to calculate this value. Divide 1 (for one litre) by the calibration factor of your flow sensor. If your flow sensor has a factor of 7, then divide 1 by 7 = 0.142867. This is the factor you should enter.

### Enter the value

This can be changed using the up or down button. Pressing the up button causes the flashing digit (right most digit [digit 1] (the right hand digit when viewed from the front) to increment. If the up button is kept pressed after digit 1 has incremented to 9 then 0 and continuously to 9.

Pressing the down button causes the digit being changed to increment left. If you were changing digit zero (0) [the right most digit] by pressing the down button once you will now be on digit one [the second digit from the right], and so on. If no changes are required, or when you have selected the required K-factor, please press.

Mode

To show

## TIME

-

**This is** the current time that the instrument uses when printing a total value. This is displayed for approximately 3 seconds before displaying the actual time value in 24hour format.

20:00
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The time can be changed using the up button. *As you have entered time programming point you will notice the right most digit is flashing. The flashing digit designates that this is the digit that can be changed. Pressing the up button will cause this digit to increment from 0 to 9 and back to 0. Pressing the down button (▼) will cause (the controllable digit to move one decimal place to the left) the second most digit from the right to flash and the right most digit is now stationary. Pressing the down button causes the digit being changed to increment left. If you were changing digit zero (0) [the right most digit] by pressing the down button once you will now be on digit one [the second digit from the right], and so on. If no changes are required, or when you have selected the required time value, please press.*

Mode
------

To show

Date
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**This is** the current date that the instrument uses when printing a total value. The date is in European format [days/month/years]. This value is displayed for approximately 3 seconds before displaying the actual date value.

31 10 2008
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The date can be changed using the up button. *As you have entered date programming point you will notice the right most digit is flashing. The flashing digit designates that this is the digit that can be changed. Pressing the up button will cause this digit to increment from 0 to 9 and back to 0. Pressing the down button (▼) will cause (the controllable digit to move one decimal place to the left) the second most digit from the right to flash and the right most digit is now stationary.*

Pressing the down button causes the digit being changed to increment left. If you were changing digit zero (0) [the right most digit] by pressing the down button once you will now be on digit one [the second digit from the right], and so on. If no changes are required, or when you have selected the required time value, please press.

MODE
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To show

TEXT 01 N
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**This is** the first character of the first line of header text of 24 characters wide that the instrument uses when printing.

**Note: The instrument has the ability to print a two lines of header on the users printing ticket. This text is programmable by the user as:**

- A first line of 24 characters [marked text 01 to text 24] meant for the Clients name.
- A second line of 16 characters [marked text 25 to text 40] meant for the clients job or application name.
- The Units of measurement name is also programmable and has been allocated eight (8) characters and is found at location Text 41 to 48 [a blank space is one character].

Print sample

<p><i>Innovac Controls Pty Ltd</i></p> <p><i>Truck No 3</i></p> <p><i>Date 31-10-08</i></p> <p><i>Time 17:56 hrs</i></p> <p><i>Batch Total 00000963.5 Litres</i></p> <p><i>Master Total 00000963 Litres</i></p>
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The text value can be changed using the up or down button. Pressing the up button causes digit 1 (the right hand digit when viewed from the front) to increment. If the up button is kept pressed after digit 1 has incremented to 9 it will continue through the alphabet from letter A to letter Z. If the up button is released at any time and pressed again incrementing will restart.

Pressing the down button causes digit 1 (the right hand digit when viewed from the front) to decrement. If the down button is kept pressed after digit 1 has decremented to 0 it will jump to the last letter of the alphabet Z and decrement down to letter A. If no changes are required, or when you have selected the required character, please press.

MODE
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To show

TEXT 02 N
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**This is** the second character of the first line of header text. Pressing the MODE button will continue up to text 24 to complete the first line of text that the instrument uses when printing. Continuing to press the MODE button will take you through the second header (text 25 to text 40). Still continuing to press the MODE button will take you through the units of measurement header (text 41 to text 48). After displaying text 48 the instrument will cycle back to the beginning

MODE
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To show

DP
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And you have returned to the beginning of the menu.

If you have finished configuring the instrument then press:

## Prog/Run

The instrument returns to run mode and all variables are written to non-volatile memory.

[It should be noted that if none of the buttons are pressed in a twelve (10) second period the instrument will revert back to run mode without saving any variables to the non-volatile memory.] If a mistake has been made you can cycle through the variables using the button marked:

## Mode

### **Run Mode Functions.**

In run mode (when the instrument is operating normally and not being programmed) the push buttons have alternative functions which are:

**Up button:** Displays the current time while the up button is depressed.

**Down button:** Displays the current date while the down button is depressed.

**Mode button:** Displays the background total while the mode button is depressed.

Rear view of instrument screw terminal arrangement

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----

Terminal 1	Input common (internal 0VDC)
Terminal 2	input minus
Terminal 3	input plus
Terminal 4	not used
Terminal 5	not used
Terminal 6	Initiate print
Terminal 7	reset input
Terminal 8	Not used
Terminal 9	not used
Terminal 10	not used
Terminal 11	not used
Terminal 12	not used
Terminal 13	not used
Terminal 14	not used
Terminal 15	not used
Terminal 16	not used
Terminal 17	not used
Terminal 18	85 to 240VAC
Terminal 19	VAC common supply
Terminal 20	Ground supply

Dip switch DS1 (located at rear of printer) setting for correct operation

Switch 1	Switch 2	Switch 3	Switch 4
On	On	Off	Off



First line of text (header one)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
I	N	N	O	V	E	C		C	O	N	T	R	O	L	S		P	T	Y		L	T	D	

Second line of text (header two)

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
T	R	U	C	K		N	O		3						

Third line of text (Units of measurement)

41	42	43	44	45	46	47	48
L	I	T	R	E	S		

**Sample header for the user to fill out [you will find it easier to program when following this map]**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Second line of text (header two)

25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

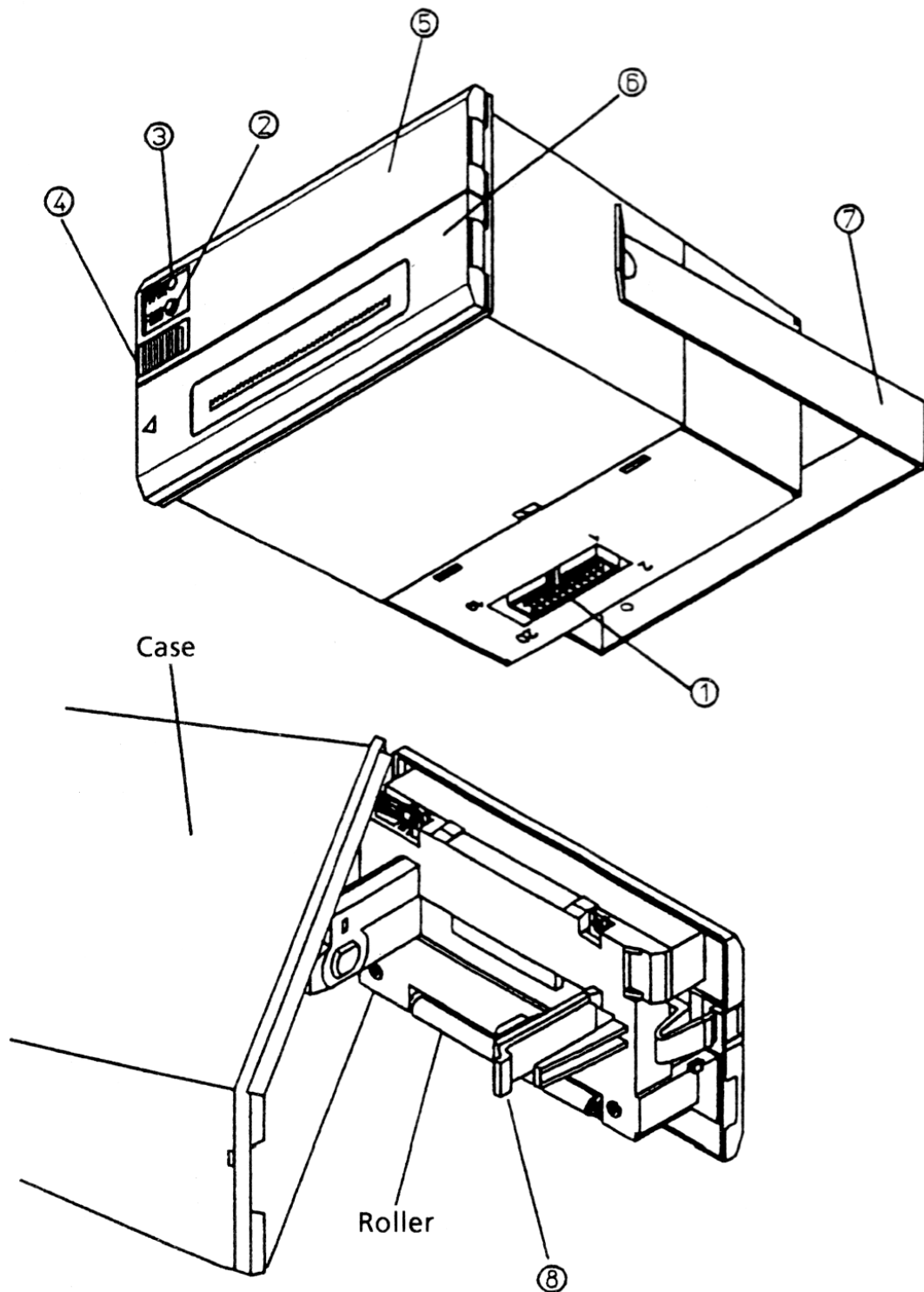
Third line of text (Units of measurement)

41	42	43	44	45	46	47	48
L	I	T	R	E	S		

## Appendix 1: Care of the printer

### 3. OUTER APPEARANCE AND EXPLANATION OF EACH PART

#### 3.1 Outer Appearance and Explanation of Each Part



### **3.2 Explanation of Each Part**

1 Interface Connector Connected to various hosts via cables. On connection, confirm beforehand that power

Supply of the host and the printer are OFF. The power cable, also, is held in this Connector.

Make sure to connect FG terminal with an earth. Do not connect this terminal with the Lines except for an earth.

2 Feed Switch With this switch pressed, paper is fed. Use this to insert paper and to put space. With pushing this switch, power is turned on, and self -print function is conducted.

3 Paper Lamp Lights up when paper has become scarce or run out.  
(Only when Paper Near End/Paper End function has been set.)

Put out when paper has been inserted.

4 Knob Use this to set paper or to open the front cover on changing of paper.

5 Front Cover Open/close this on setting or changing of paper.

6 Ribbon Cover Open/close this to change ink ribbon.

This opens when the left side of the front face is pulled forward.

7 Mounting bracket Use this to fix the main body to a rack, etc.

8 Paper Holder Paper setting.

### 4.3 Panel Opening/Closing

#### 4.3.1 Opening/Closing of Front Panel

(1) Applying your finger on the projection on the left side of the front panel, pull it forward when the lock is released. It opens by about 180°, centred on the fixed axis.

(2) For closing, pressing the front panel, tightly close it until click sound is heard. Also, confirm, on closing, that paper is free of slackening.

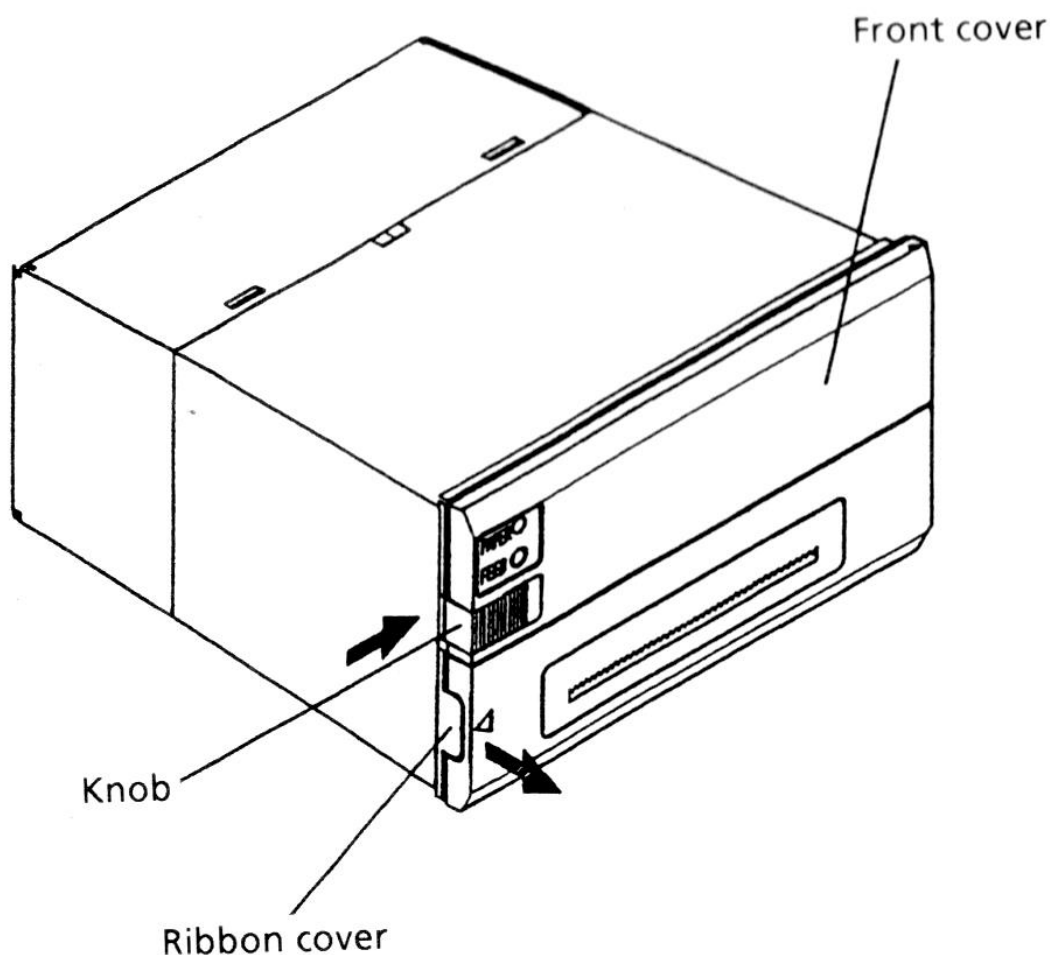
#### 4.3.2 Opening/Closing of Ribbon Cover

(1) When paper is out of the front cover, cut it off.

(2) Applying your finger on the dent on the left side of the ribbon cover, pull it forward.

It opens by about 180° centring on the fixed axis.

(3) For closing, pressing the ribbon cover, close it tightly.



### 4.4 Paper Feeding

With the LF switch pressed once, paper is fed by one line.

Paper is fed while it is continuously pressed.

To feed paper, do not pull it forcibly. Use the LF switch.

During pressing the LF switch, the data can not be received.

### 4.5 Setting Ribbon Cassette

(1) Open the ribbon cover. Be sure to turn off power before opening it.

(2) In case the paper is out from front cover, cut the paper or remove this paper.

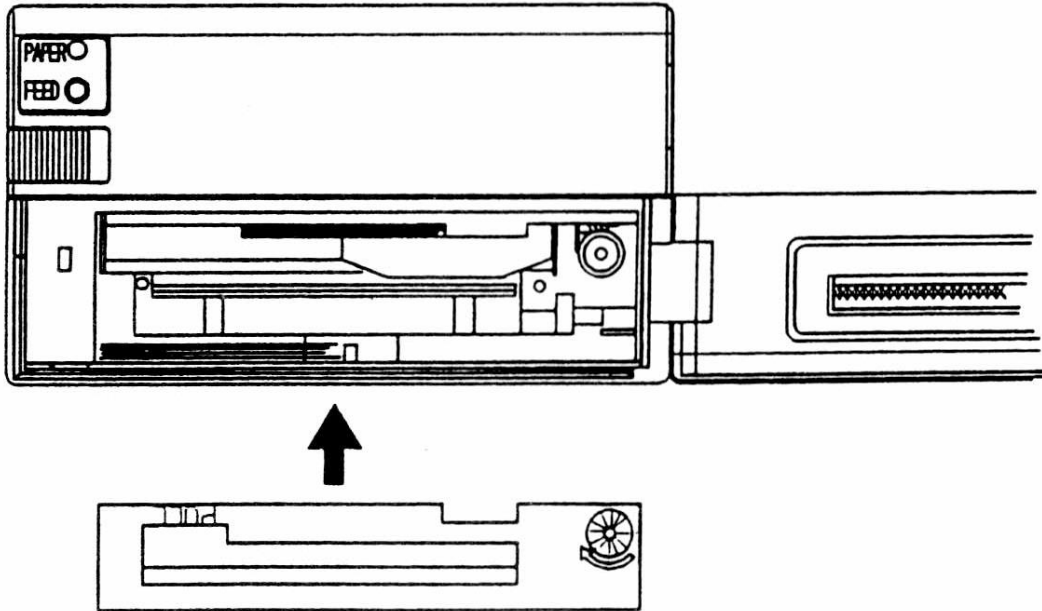
(3) Confirming the correct direction of a new ribbon cassette, insert ribbon between the printing head and the

Platen and press cassette down from the knob side.

(4) Turning the ribbon cassette knob in the arrowed direction, remove slack.

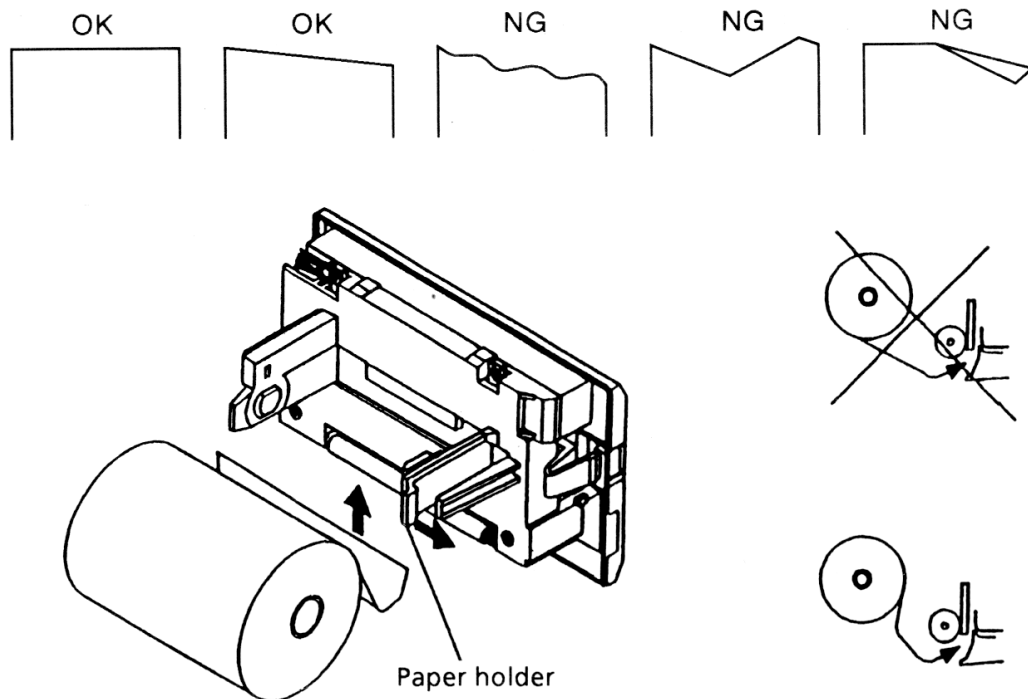
(5) On replacing a ribbon cassette, pull it out as holding the "PULL" part.

- In case the ribbon cassette is kept setting in printer for a long time, this could make the paper dirty.
- And in case of continuous printing under low temperature, light print may be occurred due to the Characteristic of the ink.
- Do not conduct printing with no ribbon cassette, this may damage a print head.
  - Replace ribbon cassette before wearing out completely.
  - Use exclusive ribbon cassette.



#### 4.6 Setting Printing Paper

- (1) Open the front cover.
  - (2) Cut the edge of Printing Paper as the following drawing.
  - (3) Insert the paper into the paper insertion of the printer mechanism.  
When auto loading function is specified, paper is loaded automatically.  
When auto loading function is not specified, push the LF switch until the paper enters the printer mechanism.
  - (4) By holding the paper holder in the arrowed direction, insert paper roll and make sure paper holder hold the roll.
  - (5) Eliminating slack on the printing paper, close the front panel.
  - (6) To change paper, as holding the paper holder in the arrowed direction, re-move the core.  
Remove, at this time, excessive paper by using the LF switch.  
After setting the paper, press LF switch once.  
Then, printer goes to data input printing mode.
- Keeping the paper winding direction correct.
  - While replacing of paper, do not send data from host terminal.
  - Do not pull the paper in reverse direction of paper feed. This may cause abnormality of print head.
  - In case the paper is fed diagonally in paper supplying side or paper removing side, paper jam may occur.
- In this case, turn OFF the power switch immediately and pull out the excessive paper slowly at straight direction.



## 4.8 Paper near End Sensor, Paper End Sensor, and Mechanical Alarm

### 4.8.1 Paper near End

When the paper is getting low, the paper near end is detected and printing is stopped. Power supply to the printing solenoid and motor is immediately stopped and BUSY PE signals are outputted to the host.

When data still exists in the input buffer, the remaining data in the buffer is printed before stopping.

Discharge remaining paper with the LF switch, set new paper and push the LF switch. Then normal print mode is created after cancellation of BUSY and PE output.

This function can be selected by Dip Switch setting.

## 7. DIP SWITCH SETTING

### DS1

Switch Number	Function	Off	On	Factory Setting
1	Character Direction	Normal	Inverted	Off
2	CR command	Ignore CR	CR+LF	Off
3	Reset In	Disable	Enable	On
4	Memory Switch	Disable	Enable	Off

Changes in setting are according to destination.

Hex. Dump mode is not available with 24 columns version.

### Serial Printer

Switch #	Function	OFF	ON	Factory setting
1	Bit length	8 bits	7 bits	OFF
2	Parity	NO	YES	ON
3	Parity Conditions	Odd	Even	OFF
4	Baud rate	See table below	See table below	OFF
5	Baud rate	See table below	See table below	ON

### Baud Rate (bps) Setting

Switch #	1,200	2,400	4,800	9,600
4	OFF	ON	OFF	ON
5	OFF	OFF	ON	ON

\* DS2 setting is available only for Serial interface