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**User's**  
**Manual**

**SR 10**  
**Recorder**  
**User's Manual**

IM 4D8B2-01E

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**YOKOGAWA**   
**Yokogawa Electric Corporation**

IM 4D8B2-01E  
2<sup>nd</sup> Edition

Notes :

- The contents of this manual are subject to change without prior notice as a result of improvements in the instruments performance and functions. Display contents illustrated in this manual may differ slightly from what actually appears on your screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your sales representative.

Disk No. MR32  
2<sup>nd</sup> Edition : May 1999(YG)  
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## Conventions Used in this Manual

### Displayed Characters

Bold alphanumeric characters enclosed with [ ] refer to characters or setting values are displayed on the screen.

### Symbol

The following symbol marks are used to attract the operator's attention.



Affixed to the instrument. Indicates danger to personnel or instrument and the operator must refer to the User's manual. ThinUser's manual to indicate the reference.



Describes precautions that should be observed to prevent injury or death to the user.



Describes precautions that should be observed to prevent minor or moderate injury, or damage to the instrument.

**Note:** Provides important information for the proper operation of the instrument.

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## **SAFETY PRECAUTIONS**

This recorder is developed to satisfy and to be used under the following conditions:

- It is a component type instrument to be installed on an instrumentation panel or rack.
- It complies with the IEC class II safety standard.
- It complies with the EN61010-1 safety standard.
- It complies with the CSA1010-1 Safety standard.
- It is based on EN55011 (EMI) Group 1, Class A (for commercial and industrial use).
- It complies with the EN50082-2 (EMS) safety standard.

### **General definitions of safety symbols used on the recorder and in this manual:**

Make sure to comply with the following safety precautions. Not complying might result in injury, death of personal, or cause damage to the instrument. We assume no liability for customer's failure to comply with these requirements.



Where this mark is found on the recorder there is danger of injury or death. Please check the manual carefully.



In-position of bitable push control



Power ON



Out-Position of bitable push control



Power OFF



Alternating Current



Equipment protected throughout by double insulation or reinforced insulation (CLASS II)



Functional Earth terminal (This terminal should not be used as a "Protective Earth Terminal.")

## **WARNING**

### **Power Supply**

Ensure the source voltage matches the voltage of power supply before turning ON the power.

### **Grounding**

Make sure to ground the recorder before turning on the power.

## **Using the Users's Manual**

This manual contains information about the instrument's functions and operating procedures as well as precautions that should be observed during use. To ensure proper use of the instruments, please read this manual thoroughly before operating it. Keep the manual in a safe place for quick reference whenever the question arises.

Two manuals are provided with the instrument, including this User's Manual.

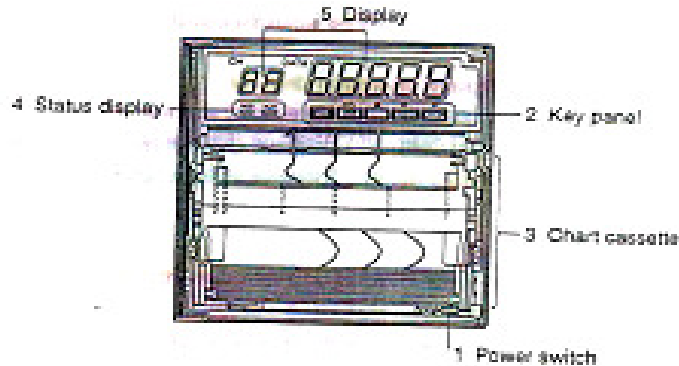
<b>Manual Name</b>	<b>Manual No.</b>	<b>Description</b>
User's Manual	IM 4D8B2-01	Basic Information for recorder operators.
Technical Manual	IM 4D8B2-04E	Detailed technical manual for recorder engineer, including mounting, wiring and setting information. Read this manual first.

## **Structure of this Manual**

<b>Chapter Title</b>	<b>Content</b>
<b>1 Before Operation</b>	Explains basic functions and display of the encoder and contains the handling precautions. Please read carefully.
<b>2. Daily Operation</b>	Contains all information needed for simple daily operation of the recorder, including instructions on chart, pen and ribbon cassette replacement.
<b>3 Maintenance</b>	About periodic inspection and cleaning of the recorder.
<b>4 Troubleshooting</b>	Explains the meaning of some basic error messages on recorder display.
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## 1.1 Front/Rear Panels: Functions and Display

### Front Panel



1. **Power Switch (Push-Button Type)**  
Pressing The Switch Turns The Power ON and OFF.
2. **Key Panel (Push Key Type)**  
The Panel Contains the Following five Keys:



**RCD** key

Pressing the key starts or stops the recording.



**DISP** key **ESC** key

**DISP** function: Cycles through the modes of display in the order of AUTO, MANUAL, and OFF. Also selects between the regular settings and operation modes.

If this key is pressed for 3 sec. The recorders enter in regular setting mode.

**ESC** function: Exits from the menu in the middle of setting procedures.



**Δ** Key

Selects setting parameters (numeric or command codes) selecting step upward circulation.

If the recorder is a pen model, pressing this key for three seconds causes the recorder to enter the pen-replacement mode.



**FEED** key, **>** key

**FEED** Function: The chart is fed as long as this key is being pressed.

**>** Key function: Changes the number of digits for setting the numeric values. The digit moves from high to low.



**CH UP** key **ENT** key

**CH UP** function: Selects a channel; for which the display shows the screen in the manual display mode.

**↵** Function: Makes a parameter entry or executes a function after selecting parameters (numerals or command codes.) Pressing the key executes the settings.

3. Chart Cassette: - Contains a Z-fold chart (width 100m, length 16m).
4. Status Display: - RCD indicator: illuminated when recording of measurement values is in process. ALM indicator: illuminates when an alarm occurs.
5. Seven-Segment Character Display: - Used display data, setting screen, and so on.
  - DATA Display (left): Displays the channel no., type of alarm, and measured data
  - Setting Screen (right): Displays various settings of the recorder.

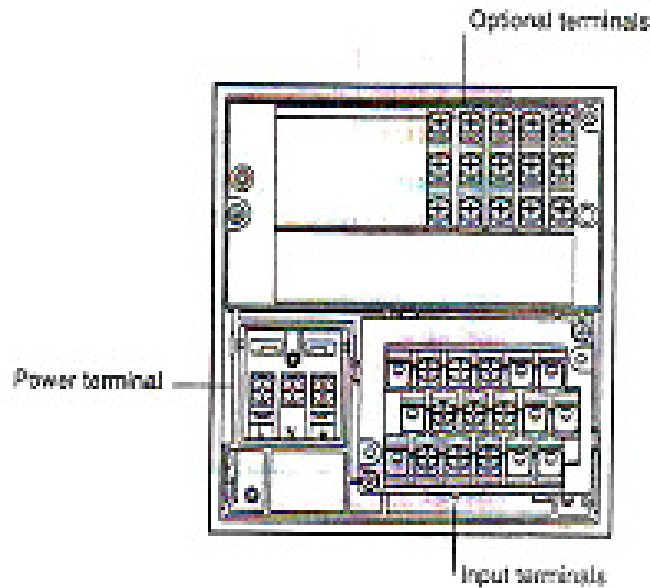
### Characters on Display

The display consists of seven segments, and therefore characters exist which are difficult to display. Characters are presented on the display as shown in the following table:

Display	A	B	C	D	E	F	G	H	h	!	J	K	L	L
Alphabet	A	B	C	D	E	F	G	H	h	i	J	K	L	l
Display	M	N	O	P	Q	R	S	T	U	U	V	W	X	Y
Alphabet	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

### **Rear Panel**

Below, the rear panel of the dot model recorder, for more details and the rear of the pen model recorder see the *Technical Manual, Section 1.7, and Wiring*.





## **1.2 Handling Precautions**

### **Safety Precautions**

- Before you use this recorder make sure to read the safety precautions on Page No 2 of this module.
- Do not touch the interior of this recorder. For the replacement of parts, please contact the dealer of which you purchased the recorder.
- Turn the recorder power switch OFF as soon as any symptoms of malfunction such as unusual sound, smell, or smoke yield from the recorder. Also turn the main power switch off.

If a malfunction occurs, contact dealer from which you purchased the instrument.

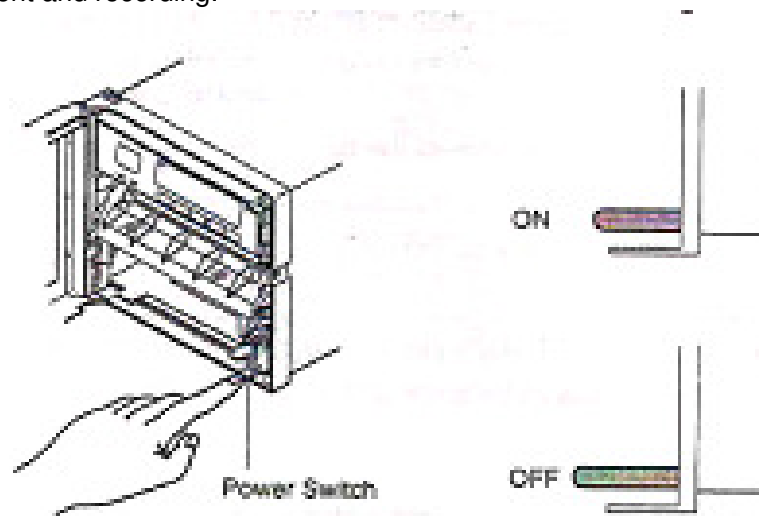
### **General Handling Precautions**

- The recorder contains many plastic parts. To clean, use a soft, dry cloth. Do not use chemicals such as benzene or thinner, since this may cause discoloration or damage.
- Do not bring any objects charged with static electricity near the signal terminal. This might cause malfunction.
- Do not allow any voltage substances to the front or key panel. Do not allow rubber or vinyl to remain in contact with the recorder for long periods.
- Whenever the recorder is not used, turn the power switch OFF.

## 2.1 Recording

### Switching Power ON/OFF

The power switch is located at the lower right-hand corner of the front face behind the door. The switch is a push-button type. Press the switch to turn the recorder ON and Press again to turn OFF. After the power turns ON, the recorder executes a self-diagnostic check for several seconds before starting measurement and recording.




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#### **NOTE: -**

- The warm-up time is approximately 30 minutes, however, after the initial start-up, the recorder might need more time.
  - If the input wiring is connected parallel with other equipment, do not turn the power switch ON/OFF to prevent the functions in measuring values.
- 

### Starting/Stopping Recording

Press the **RCD** key to start or stop the recording.

### Feeding Chart Paper

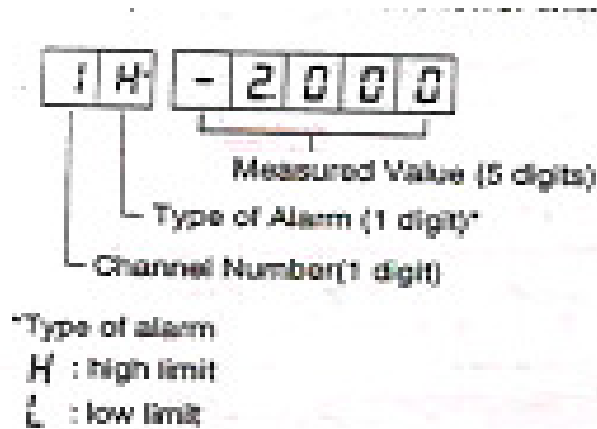
The chart paper is fed by pressing the **FEED** key as long as the key is pressed. See also section 2.4, Loading Chart Paper.

## 2.2 Selecting the Display

Three different displays can be selected: Manual, and Display OFF. If the **DISP** key is pressed you the recorder will change the display modes in the order of AUTO>MANUAL>OFF,  
Note that manual display can't be selected on the 1-pen model.

### Auto Display

Channel No and Measured values will appear on the display. Every Channel will be shown approximately 2 sec. If the input is gather than the upper limit of the recording span, ----- will appear.



### Manual Display

**Pen Model:** - The Measured values of specified channels are alternately displayed every 2 sec. The contents of the display are the same as that of auto mode.

**Dot-Printing Model (Dot Model):** - The Measured values of specified channels are alternately displayed every measurement cycle. The contents of the display are the same as that of auto mode.

Pressing the **CH UP** key changes the channel no. Being displayed (Channel No. Increases). Manual display can't be selected on the 1-pen model.

### **Display OFF**

Turns OFF all displays except the status Display.

## 2.3 Recorder Modes

The recorder has three modes as described below:

### Operation Mode

This is the mode for daily operation; when the power turns on, the recorder automatically enters this mode.

Select from the following functions by pressing the appropriate keys on the key panel.

△	Key	Replacement of pens (pen model only). See chart paper.
<b>RCD</b>	Key	Starting/Stopping the recording.
<b>FEED</b>	Key	Feeding the chart. See section 2.1, Feeding chart Paper.
<b>DISP</b>	Key	Selection from the modes on display. See section 1.1.

### Regular Setting Mode

In this mode, daily-used data such as alarm set points, date, and time are set. Pressing the **DISP** key three seconds in the operation mode changes the mode to the regular setting mode. For details, refer to the Technical Manual Section 2, Regular Settings.

### Basic (SETUP) setting Mode

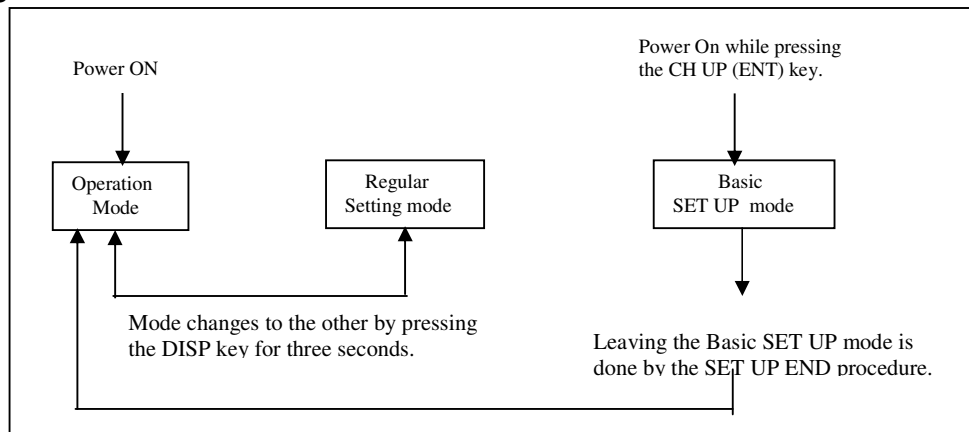
In the basic (SETUP) setting mode, you can adjust a whole range of detailed settings such as the pen's position, dot printing position and colors, the noise input filter, and remot4e trigger settings. For details, refer to the Technical manual section 3.

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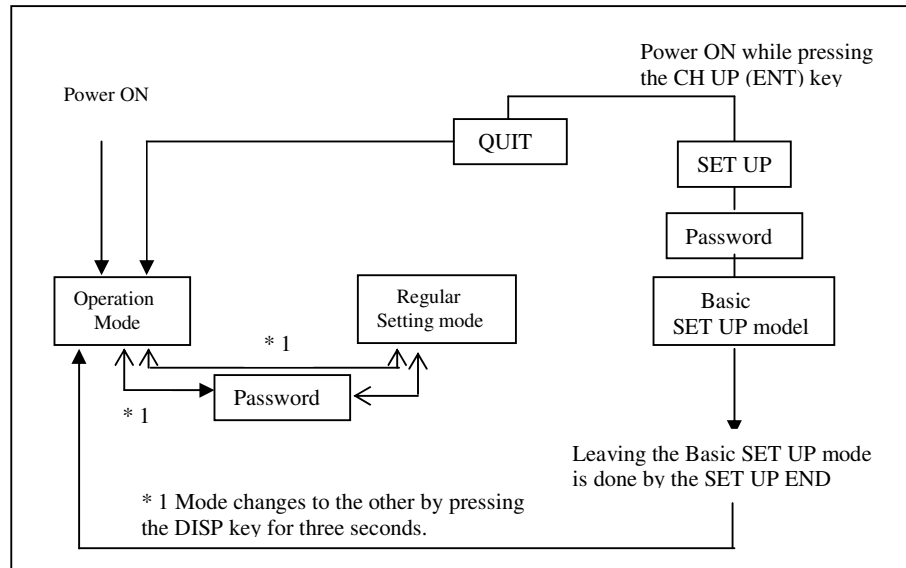
#### Note

- While in the Basic (SETUP) mode, measurement, recording and alarm detector are not carried out.
  - Using the settings function, you can protect your settings by defining a password when you enter the regular or basic (SETUP) mode. For Details on the settings Protection Function, see Technical Manual Section 3.12
- 

## Turning the Recorder Modes ON



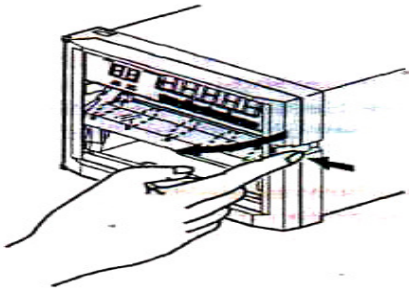
## Turing the Recorder Modes OFF



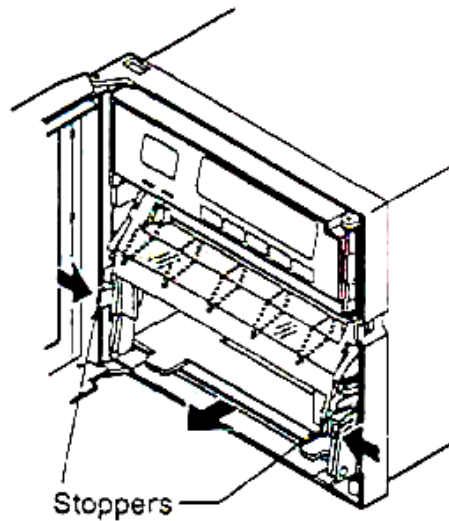
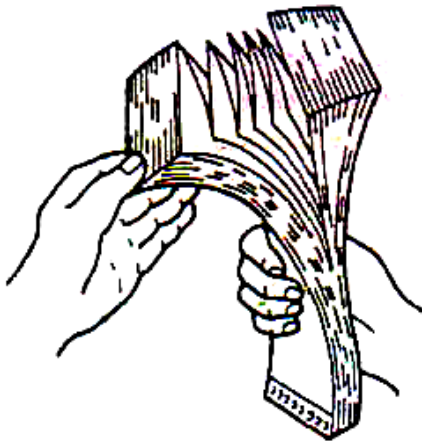
## **2.4 Loading Chart Paper**

### **Installing/Replacing Chart Paper**

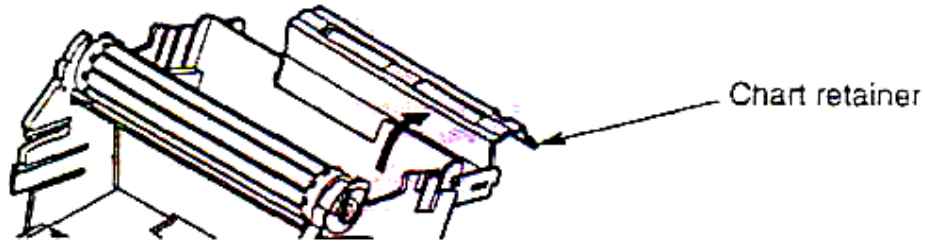
1. Open the front door of the recorder, as shown below



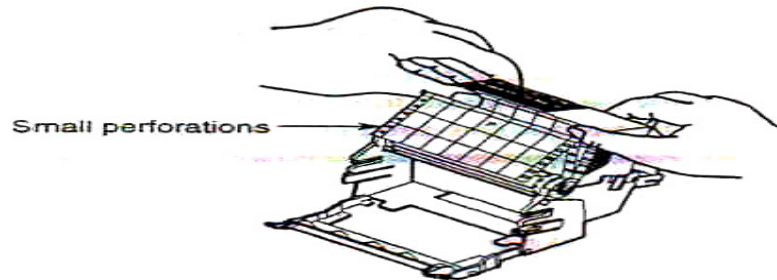
2. Make Sure that recording is OFF. Power may be ON.
3. Riffle the chart thoroughly before loading.
4. While gently pressing the chart cassette stoppers, located at both front ends of the cassette, lift and draw the cassette out of the recorder case.



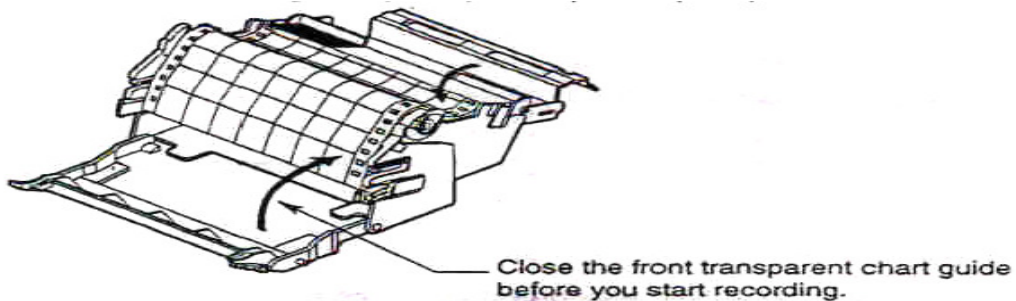
5. Open the chart retainer backward on the cassette.
6. Pull and open the front transparent chart guide.



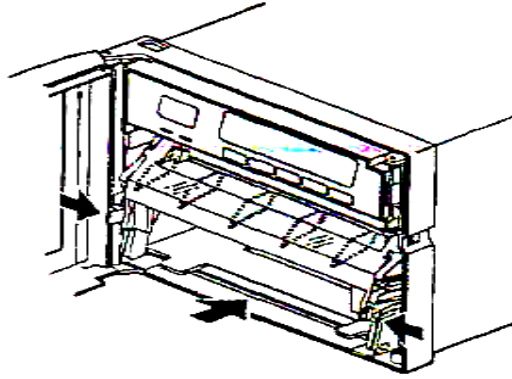
7. Load the chart paper into the chart compartment; the small perforation should be at the left hand. Make sure that the sprocket teeth of the chart drives are properly engaged in the chart paper perforations. Take care not to load the chart paper backwards.



8. Close the chart retainer.
9. Close the chart guide (transparent plastic plate).



10. Replace the chart cassette back into the recorder case; hang the knurls of the cassette to the grooves of the case, and move the cassette to trap the stopper.



11. Press the **FEED** key on the key panel to assure that the chart moves two or more folds smoothly into the chart receiver. If it moves unsteadily, do the installing procedure again from step (4).

**NOTE**

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A red band with a 'RENEW CHART' Notice appears when the chart nears to its end (length of remaining chart is approximately 40 cm) to suggest you to prepare a new chart.

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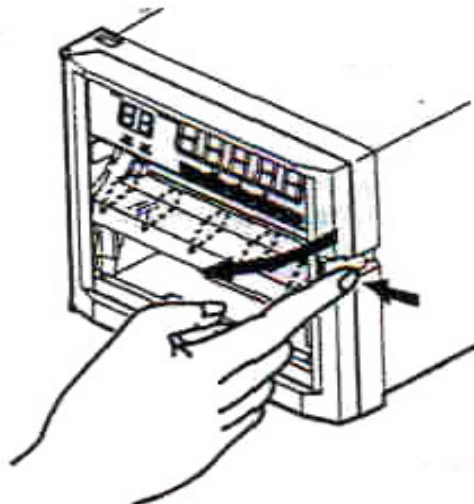
## **2.5 Installing/Replacing Pens (Pen Model)**

### **CAUTION**

- Do not press the felt tip to prevent deformation. Do not move the penholders up or down scale to protect the driving mechanism.
- Always make sure to remove the pen cap before installation.

### **Simple Replacement**

- 1 Open the front door, and make sure that recording is OFF. Power may be ON.





- 2 Pull and open the display around the hinge.

---

**CAUTION**

- Please take care not to apply any undue pressure in an upward or downward direction to the display, to prevent the strain on the hinges.
  - Do not force the display open any further than about 100° from being closed.
- 

- 3 Pull out the pen cartridge by pulling the protruding part of the cartridge from the Pen holder.



### Replacement under Pen-Replacement Mode

When a pen is located at a place where its replacement is difficult to do, relocate the pen by following procedure:

1. Make sure that recording is OFF. The main power switch must be ON.
2. Press the  $\triangle$  key for three sec. To display **[C\_Pen]** and press the **ENT** key.
3. Press the  $\triangle$  key to display **[Yes]**, and press the **ENT** key. The pens will move near to the center of the scale where the pens can be easily replaced.  
**Note** that a line is drawn on the chart when the pens move.
4. Replace the pen according to the 'simple replacement' 2, 3 and 4 described above.
5. After pen replacement the indicator shows **[End]**, then press the **ENT** key.
6. To restart recording, press the **RCD** key.

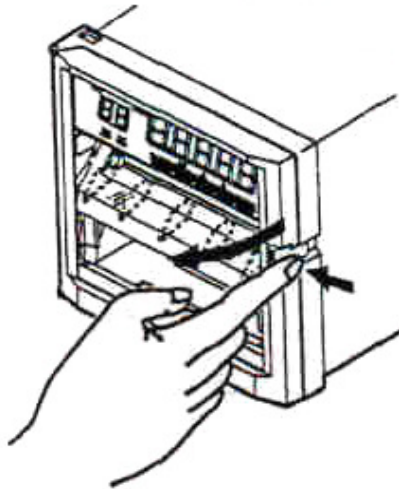
## **2.6 Installing/Replacing the Ribbon Cassette (Dot Model)**

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### **CAUTION**

\* Improper cassette insertion may cause faulty print cooler or damage the cassette.

1. Open the front door and make sure that power is switched OFF.

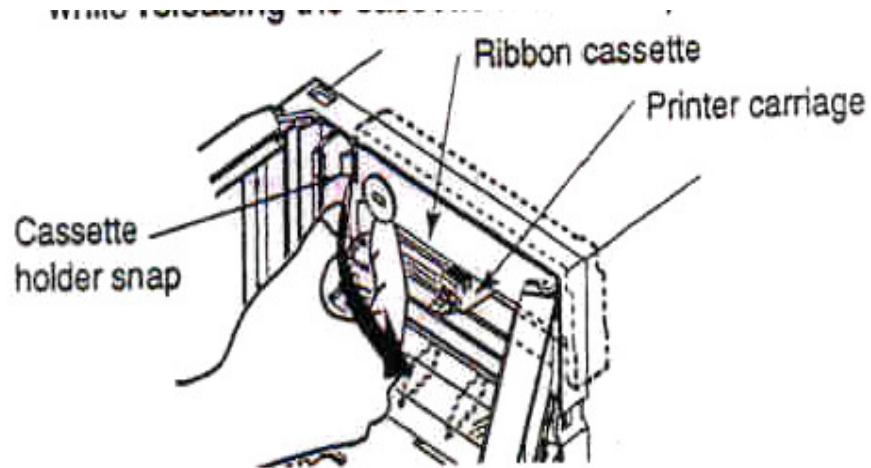


2. Open the display by pulling its left end.

---

### **CAUTION**

- Please take care not to apply any undue pressure in an upward or downward direction to the display, to prevent strain on the hinges.
  - Do not force the display open any further than about 100° from being closed.
- 
3. Hold the printer carriage, and moves it to right.
  4. Hold the left-hand part of the ribbon cassette, and pull it out from the recorder case while releasing the cassette holder snap.



### **3.1 Periodic Inspection**

Check following items periodically, and replace parts, if necessary.

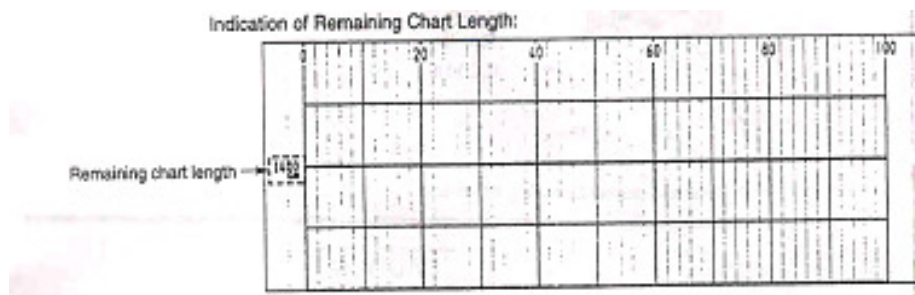
#### **Character Printing**

Are recorded lines or printed characters clear, not blurred? To replace a felt-tip pen, refer to the User's manual section 2.6 Installing/Replacing Ribbon Cassette to replace the ribbon cassette of a dot-printing model.

#### **Chart Paper**

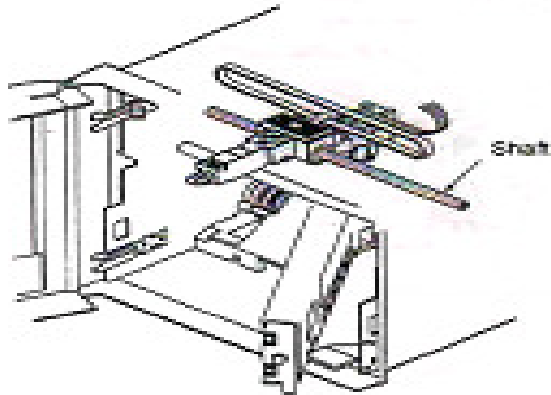
Is there enough chart paper left in the chart compartment?

Remaining chart length (cm) is printed on the left margin of the chart at interval of 20 cm. See also user's manual section 2.4 loading chart paper.



#### **Cleaning the carriage shafts (Dot Model)**

To maintain proper recording functions, it is recommended to, if necessary, wipe up dust from the printer carriage with a piece of soft cloth or paper without fluffing.



### **3.2 Fuse**

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#### **WARNING**

Don't replace the fuse by yourself. Never take the recorder apart to replace a fuse.

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Please contact you're nearest Yokogawa sales representative if the fuse needs to be replaced.

#### **Fuse Rating**

Rated Voltage	: 250V
Rated Current	: 1.25A
Type	: Time lag
Approved Standard	: ICE/VDE

## 4.1 Error Messages

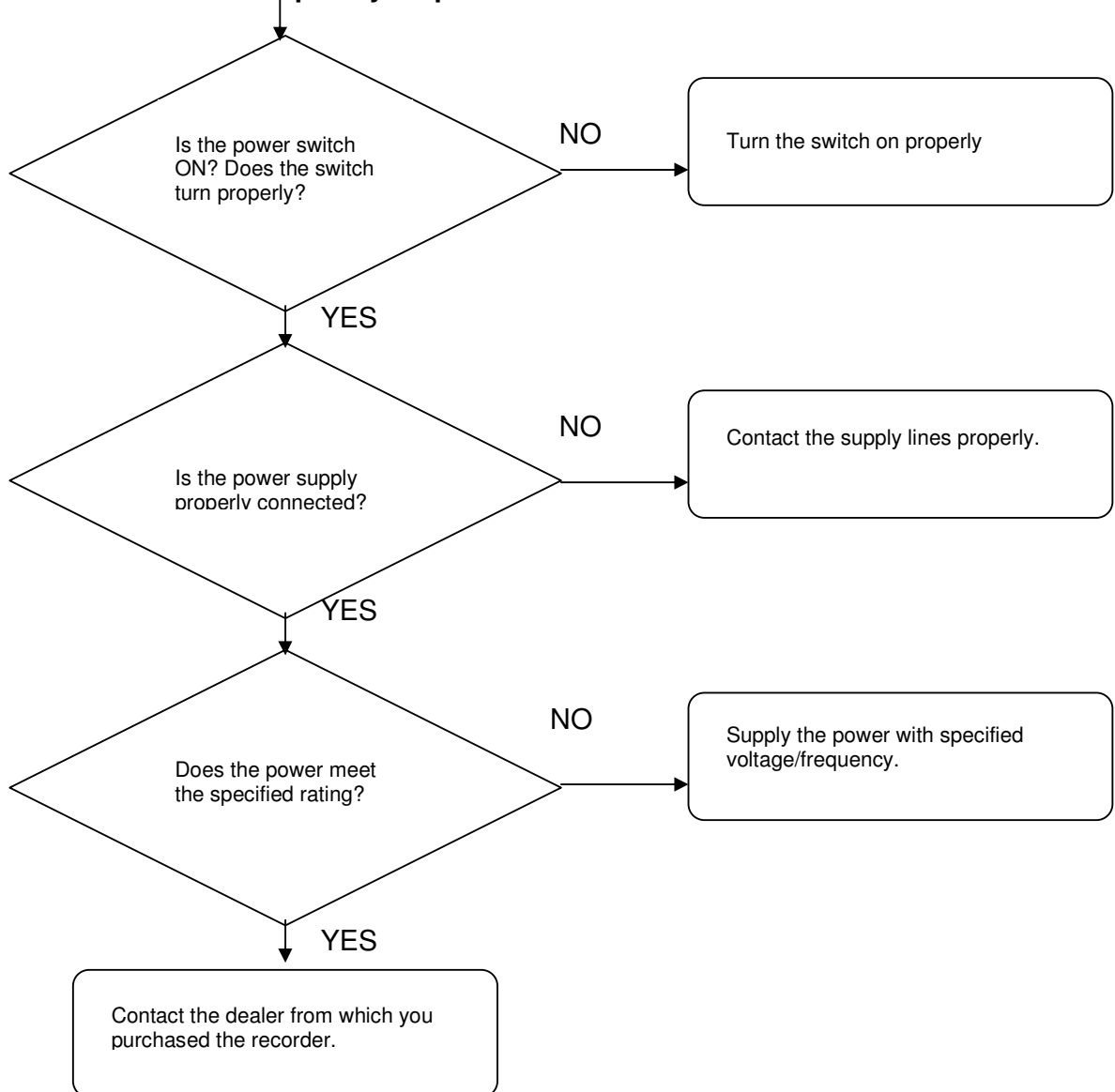
### Error Code List

Please contact the dealer from which you purchased the recorder in case the following errors appear. See the Technical Manual, Section 6, for more error messages.

Error Codes	Meaning	Recovery	
Er n_d t 1	Main memory reading error	Contact the dealer from which you purchased the recorder.	
Er n_d t 2	Main memory writing error		
Er A_d t 1	A/D converter memory reading error		
Er A_d t 2	A/D converter memory writing error		
Er AdAdJ	Calibration data error of A/D converter		
Er r o n	System ROM failure		
Er r A n	System RAM failure		
Er r b n	Ribbon shift, ribbon feed failure(dot model).		
Er P r n	Printer failure(dot model).		
Er S_d t □	Range memory reading/writing error		
Er 0 0 1	System failure.		
Er 0 1 2	Attempt replace pen(C_PEn) while recording.		Stop recording.

## **4.2 Troubleshooting**

See the Technical Manual Section 6, for more troubleshooting information.  
**Recorder is completely inoperative.**



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