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# Commodore Dot Matrix Printer

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## Technical Manual

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Model 8023P

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MPP-1361

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SECTION 1  
INTRODUCTION

1.1 SCOPE OF THIS MANUAL

This manual contains detailed information on the installation, operation, theory, maintenance and adjustment of the Model 82w dot matrix printer. The contents are intended for use by qualified service personal who are trained in the maintenance of electronic and electromechanical equipment.

1.2 DESCRIPTION

Model 82w is compact, light weight, 136 columns serial dot matrix printer which is capable to print 150 characters per second at bi-directional logic seeking mode with one line buffer memory.

This printer is used for print-out only.

## SECTION 2 OPERATION

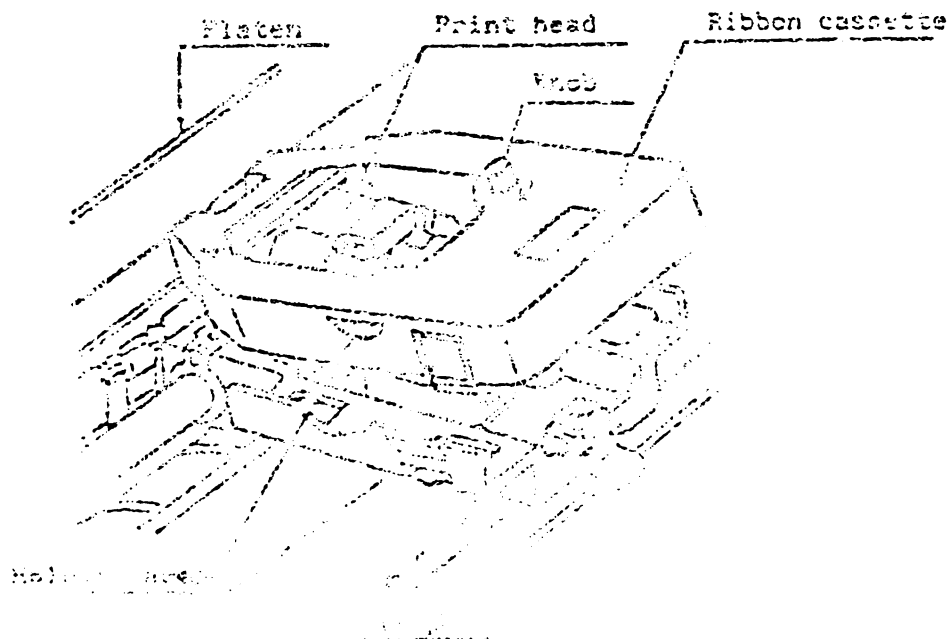
### 2.1 GENERAL

This section contains instructions on loading paper and ribbon, and the use of the controls, assuming that proper unpacking and proper interface preparation has been accomplished. Before attempting to operate the printer, make certain that the AC power to be used is the correct voltage and frequency and that the interface requirements are met. Power and interface requirements, plus the codes and command sequences are contained in Section 1.

### 2.2 RIBBON CASSETTE INSTALLATION

The procedure for installing or replacing the ribbon cassette is as follows;

1. The POWER ON/OFF switch must be in the OFF position.
2. Lift up front cover.
3. Remove cassette by holding its sides from carriage.
4. Set ribbon and mask portion between platen and print head, then push down cassette into the carriage.
5. Turn knob on cassette in arrow marked direction to take up slack of the ribbon.



### 2.3 TRACTOR UNIT INSTALLATION

1. Hold tractor unit horizontally.
2. Set tractor unit to engage rear slits on the chassis of tractor unit to pins on frames, as shown below, and turn tractor unit forward until front slits on chassis of tractor unit engage another pins firmly.

### 2.4 PAPER INSTALLATION

1. The POWER ON/OFF switch must be in the OFF position.
2. Pull Paper Release Lever forward.
3. Insert top edge of the paper through opening in the rear of the tractor unit under the platen.
4. Turn PF knob in the clockwise direction by pulling it to right side until the paper feeds over about 4 inches (10 cm) from the top of the tractor unit.
5. Push Paper Release Lever towards rear and open tractor doors.  
Engage the paper onto pins of the tractors and close tractor doors.
6. Take up slack of the paper by pulling it towards rear at the rear of the printer.  
Set the paper in position for the first printed line by pulling PF knob to right side and turning it in the clockwise direction.  
If it is necessary to reposition the paper, feed the paper to backward over the position for the first printed line.

#### NOTE

Do not turn PF knob to feed the paper without pulling PF knob to right side.

## 2.5 SWITCH OPERATION AND LED INDICATORS

### 1. Operation switch

- a. Power switch --- Make electric power to turn on or off. This with 3.15A breaker is mounted on right side of printer.
- b. Serect Sw. --- Make printer to select condition by depressing this switch. When depressing serect swith, self-printing condition starts by turning power on, but shoud not operate more than 5 min.

### 2. LED Indncater

- a. Power LED ----- When turning on electric power, this LED is lighted.
- b. Select LED ---- This is lighted under select condition. Printer will be deselect under following conditions.
  - \* Select switch turning off
  - \* Cover is opened
  - \* Paper empty conedition
- c. PE LED ----- This will be lighted on when no paper is at sensor. In case of PE condition, printer will be deselect.

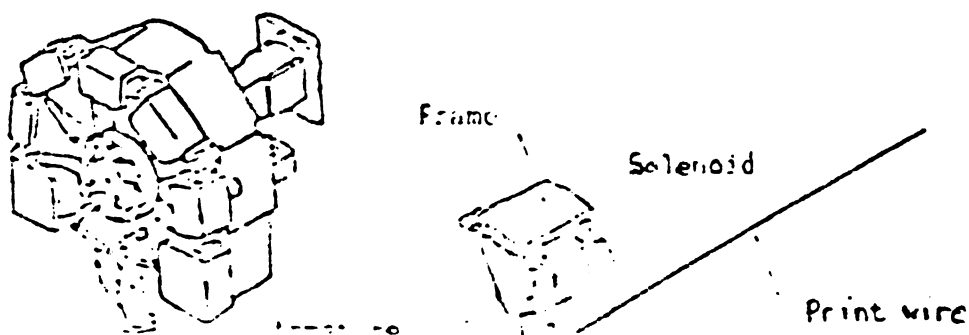
### 3-2-1 CHARACTER PRINTING

The print head (Figure 3-1) consists of the jewel, casting and eight solenoids with attached print wires. The eight print solenoids and their attached print wires are arranged radially around the print head. The free ends of the print wires pass through a wire guide at the front of the print head, which properly spaces the wires so that the correct wires pass through the correct holes in the print jewel.

Printing is accomplished by selectively firing the print wires as the print head mounted on the carriage moves from left to right across the print line. From the character generator, printing impulses are sent to the driver circuits, which energize the print head solenoids and drive the print wires against the ribbon, paper and platen to form the characters in a dot matrix pattern. Timing of printing is controlled by driving pulses of the carriage drive pulse motor.

A character is formed by 9 x 8 dot matrix and each solenoid can fire independently. When the solenoids are de-energized, the wires are withdrawn by the springs so they are flush with the surface of the jewel.

Fig. 3-1

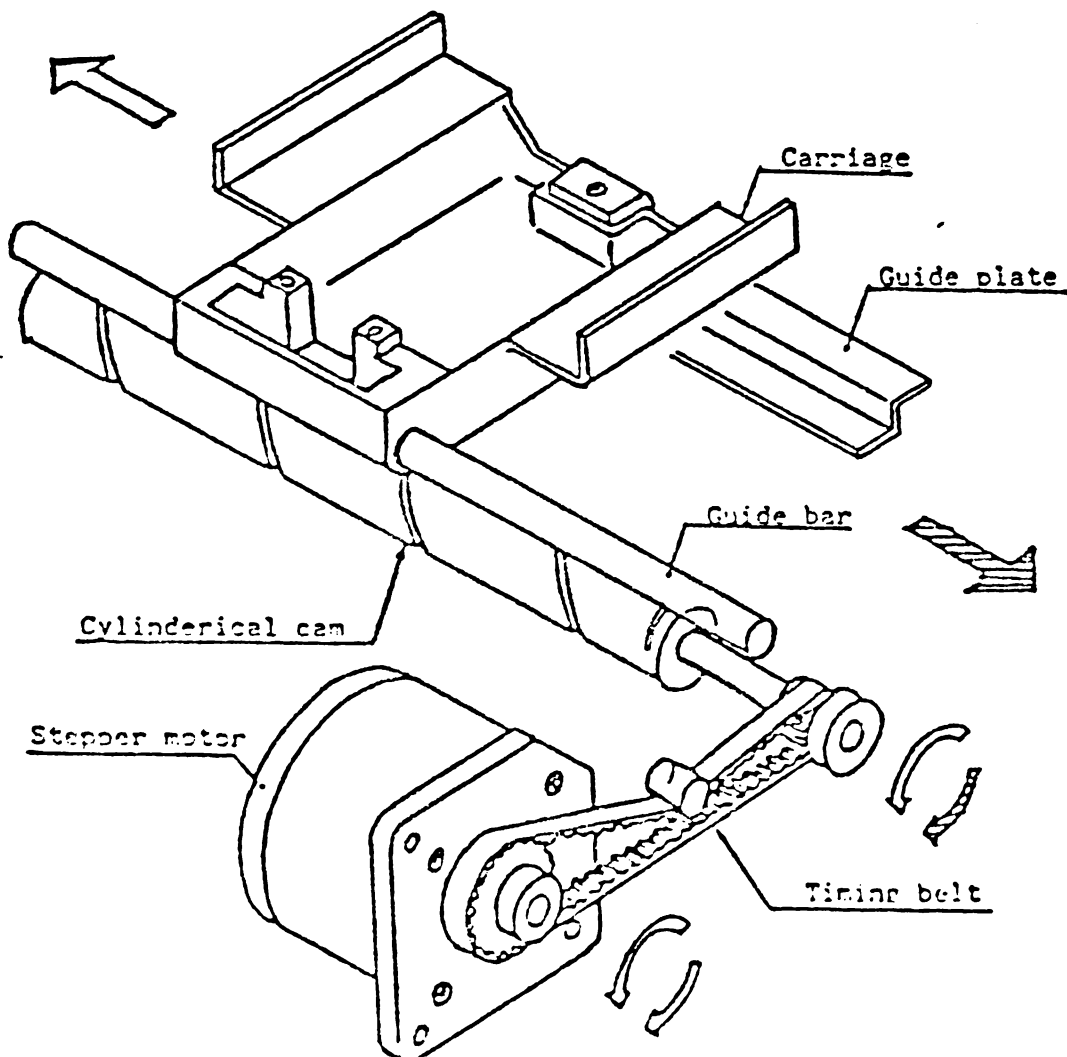


### 3-2-2 CARRIAGE MOVEMENT

The carriage is, as shown in Figure 3-2, supported by a guide bar and a guide plate to move along the print line from left to right. The carriage is moved by the cylindrical cam with a spiral groove.

Receiving a printing command, the stepper motor turns counter clockwise and the carriage moves forward. Printing action is initiated when signal RTP goes low. When printing is finished, the carriage stops at the column of the last printed character and wait the next printing command.

The carriage returns to its home position when power is on.



### 3-2-3 RIBBON MOVEMENT

The ink ribbon is fed only when the carriage is moving. Torque for feeding ribbon is transmitted as shown below (Fig. 3-3 & Fig. 3-4) and the end-less ribbon is rotated.

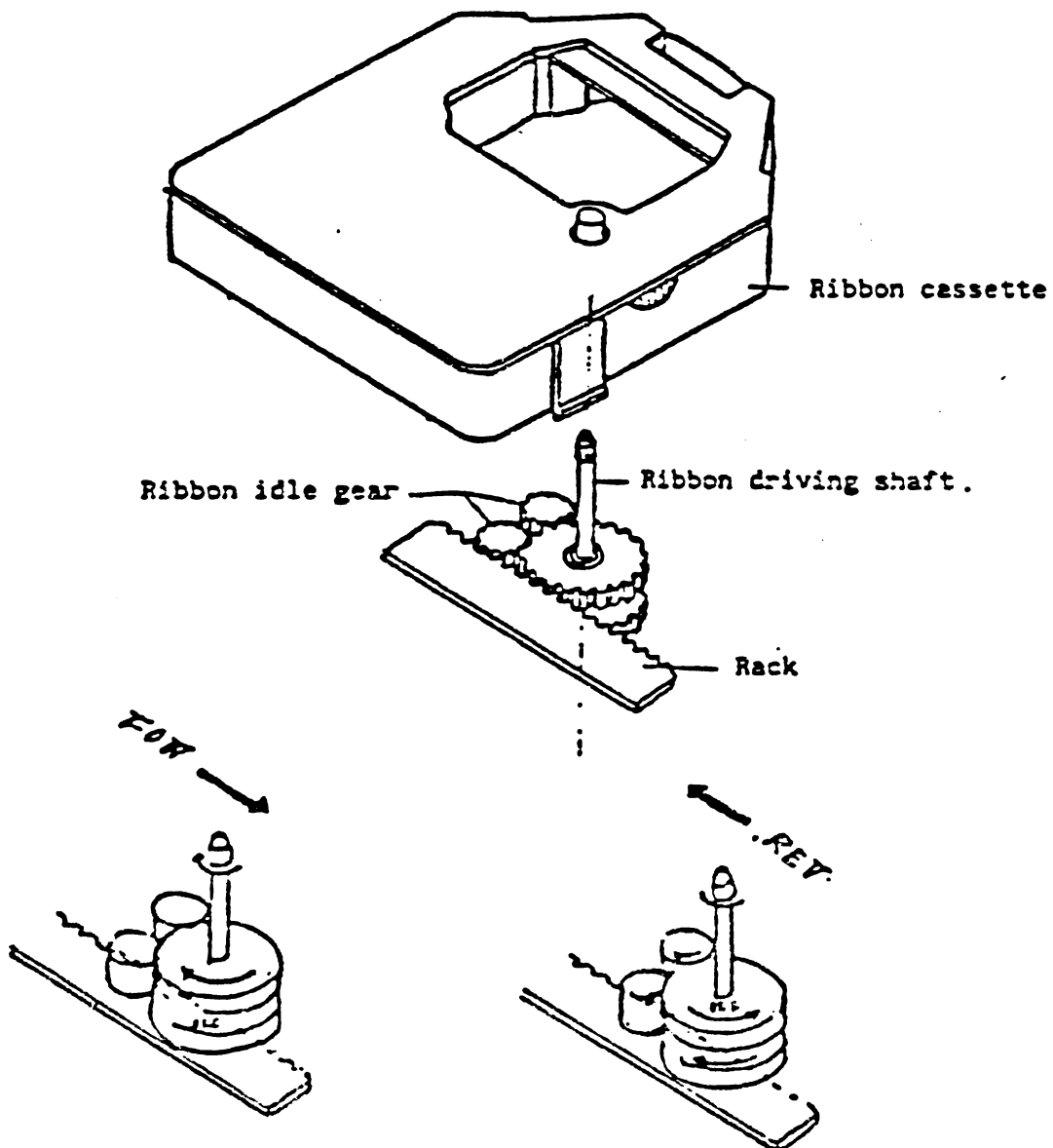


Fig. 3-3

Fig. 3-4



SECTION 4  
MAINTENANCE

4-1 GENERAL

This section contains information on maintaining the printer. Routine preventive maintenance should be performed at regularly scheduled intervals to insure satisfactory performance of the printer. Preventive maintenance of periodic lubrication, cleaning, adjustment, removal and replacement.

4-2 PREVENTIVE MAINTENANCE

Following steps 1 through 6 contain the recommended preventive maintenance routines to be performed.

1) Frequency of preventive maintenance recommended  
frequency of preventive maintenance may be required at earliest condition of either 200 hours actual printing, 6 month or 20 million characters printing.

2) Tool and materials

Tools required: Flat tip screw driver  
Phillips screw driver  
2mm Allen wrench  
0.4mm feeler gage  
0.45mm feeler gage  
0.5mm feeler gage  
Scale  
Cutter  
Nipper  
Solder iron

Materials required:

Turbine oil f90 --- Bearing guide bar guide  
plate.  
Grease ----- Gear  
Clutch  
Cam

### WARNING

When performing preventive maintenance procedures, the POWER ON/OFF switch must be in the OFF position and the AC input plug must be disconnected.

High voltages are present in some locations within the printer when printer is turned OFF.

### STEP 1 Cleaning and lubrication for guide bar & guide plate.

- 1) Clean guide bar & guide plate by soft cloth.
- 2) Drop 2 - 3 drips of turbine oil #90 (NISEKI FBK-32) on guide bar and guide plate and move carriage so as to lubricate oil on all surfaces of bar and plate. Be careful not to drop oil on printing head and printing head cable.

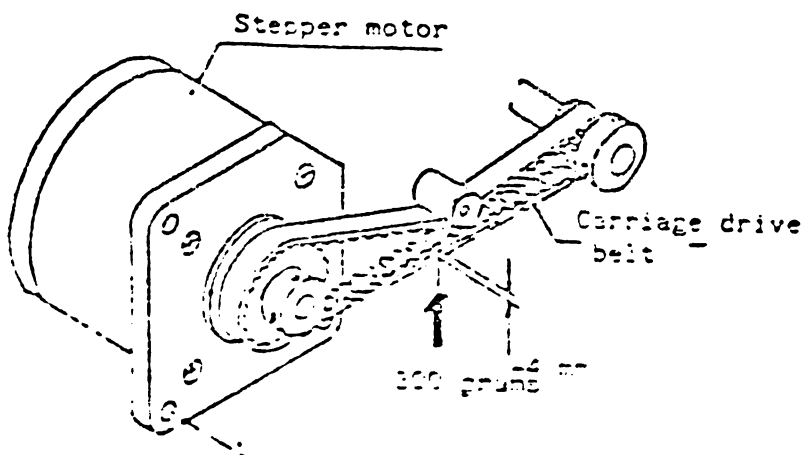
### STEP 2 Carriage drive belt

#### Checking procedures

- 1) When 300 grams (10.6 oz) pressure is applied to lower half of belt, mid point between pulleys, belt depression is about 3 to 4 mm (0.12 to 0.16 in.)

#### Adjustments

- 1) Loosen three screws for stepper motor.
- 2) Adjust belt tension by repositioning stepper motor, then tighten all screws. Do not remove belt from pulleys in order to prevent printer from losing timing and changing first column position.



**STEP 3 Gap between printing head and platen.**

Adjustments

- 1) Loosen screws for printing head.
- 2) Adjust gap between platen and printing head without ribbon to  $0.45 \pm 0.05$  mm at right end, middle and left end of carriage travel by repositioning printing head, then tighten screws.

**STEP 4 Ribbon drive gear**

Checking procedure

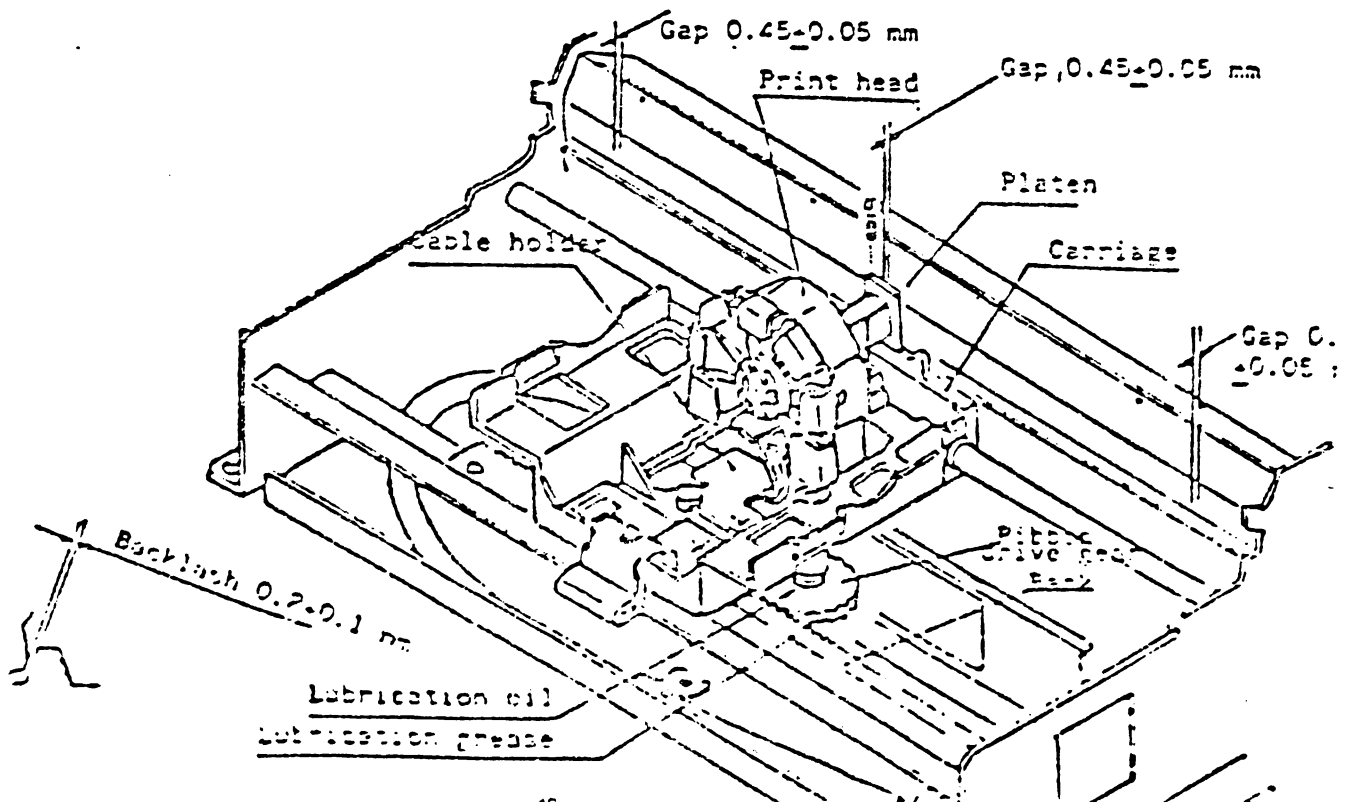
- 1) Make sure  $0.2 \pm 0.1$  mm backlash between ribbon drive gear and ribbon feed rack.

Adjustments

- 1) Loosen two screws for ribbon feed rack.
- 2) Adjust  $0.2 \pm 0.1$  mm backlash by positioning rack.

Lubrication

- 1) Drop 2 - 3 drips of turbine oil #90 (NISEKI FBK-32) between ribbon drive gear and drive shaft.
- 2) Lubricate grease on teeth of ribbon drive gear.



## STEP 1 PRINT HEAD

### REMOVAL PROCEDURES

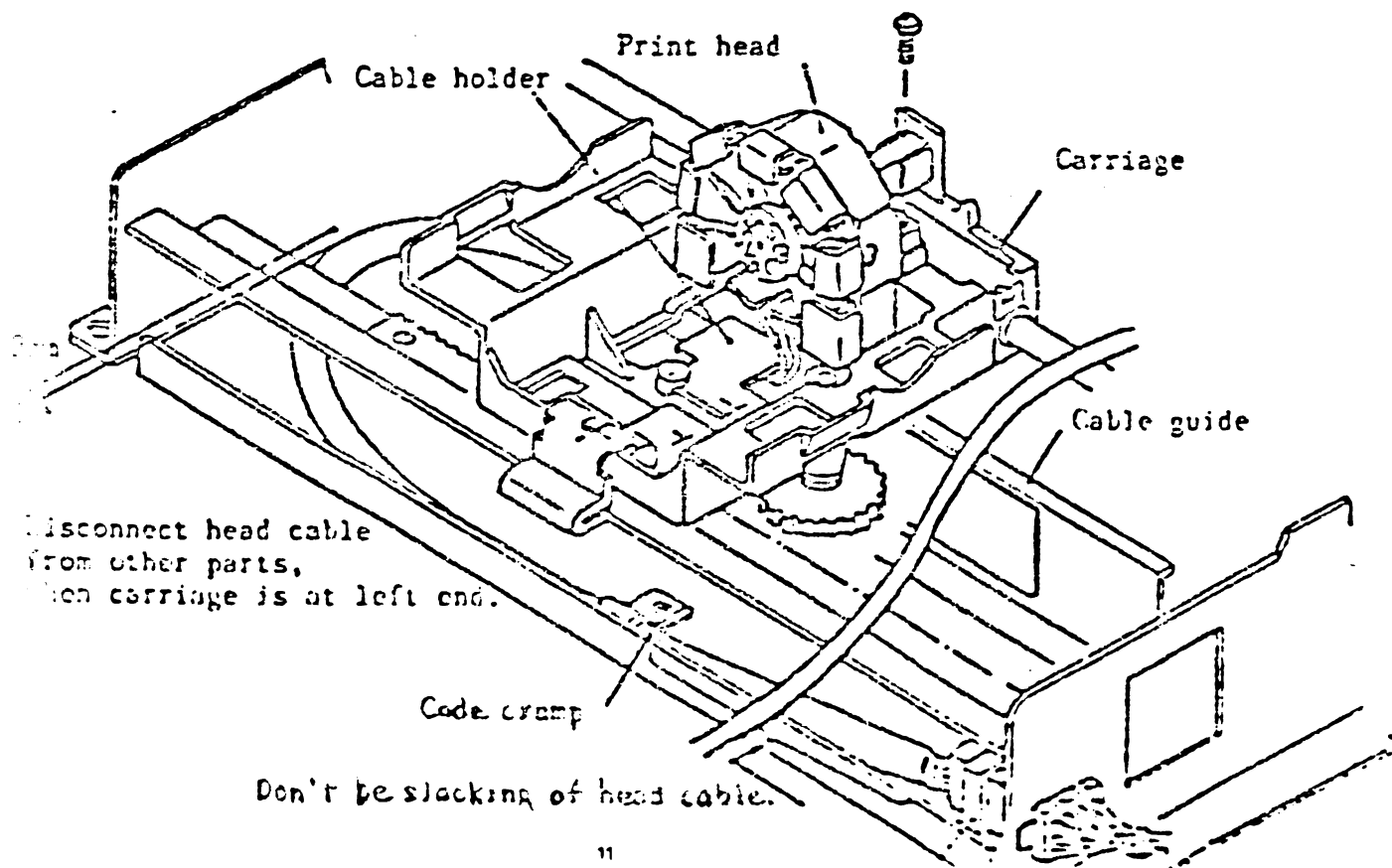
- 1) Remove ribbon cassette.
- 2) Remove the connector of head cable.
- 3) Remove the screw of wire clamp for head cable connector.
- 4) Remove the screw for cable holder on carriage.
- 5) Move carriage at right end and loosen two screws for print head. Remove the print head above.

### INSTALLING PROCEDURES

- 1) Install in a reverse order of removal procedures.

### NOTICES

- a) Disconnect lead wire for head cable from cable guide.
  - b) One to two mm tube for head cable is outside cable holder.
  - c) Disconnect head cable from ribbon drive rack, the screws for it and so on.
- 2) Adjust gap between print head and praten.



## STEP 2 SENSOR UNIT

### REMOVAL PROCEDURE

- 1) Loosen screws of sensor unit and remove sensor units.

### INSTALLING PROCEDURES

- 1) Install each sensor unit by tightening screws.

### NOTICES

- a) In case of RTP sensor, lead wire should pass through opening on frame. Don't mistake installing hall for sensor board.
  - b) First, install HP sensor and set photo cut board. ( cf.figure A )
- 2) Make sure disconnecting photo cut board ( HP side ) from photo coupler. ( cf. figure B )

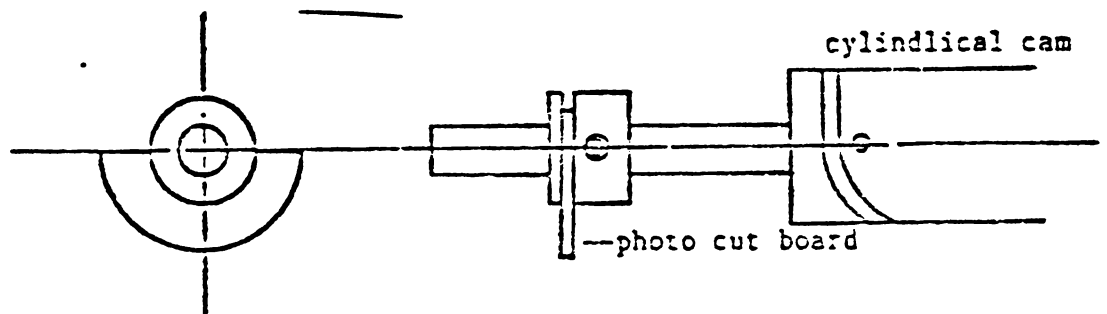


FIG. A View from upper side of printer.

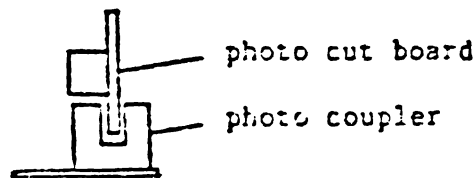
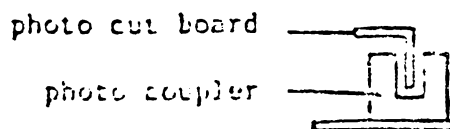


FIG. B #.P side

- 3) Make sure disconnecting photo cut board (RTP side ) from photo coupler.

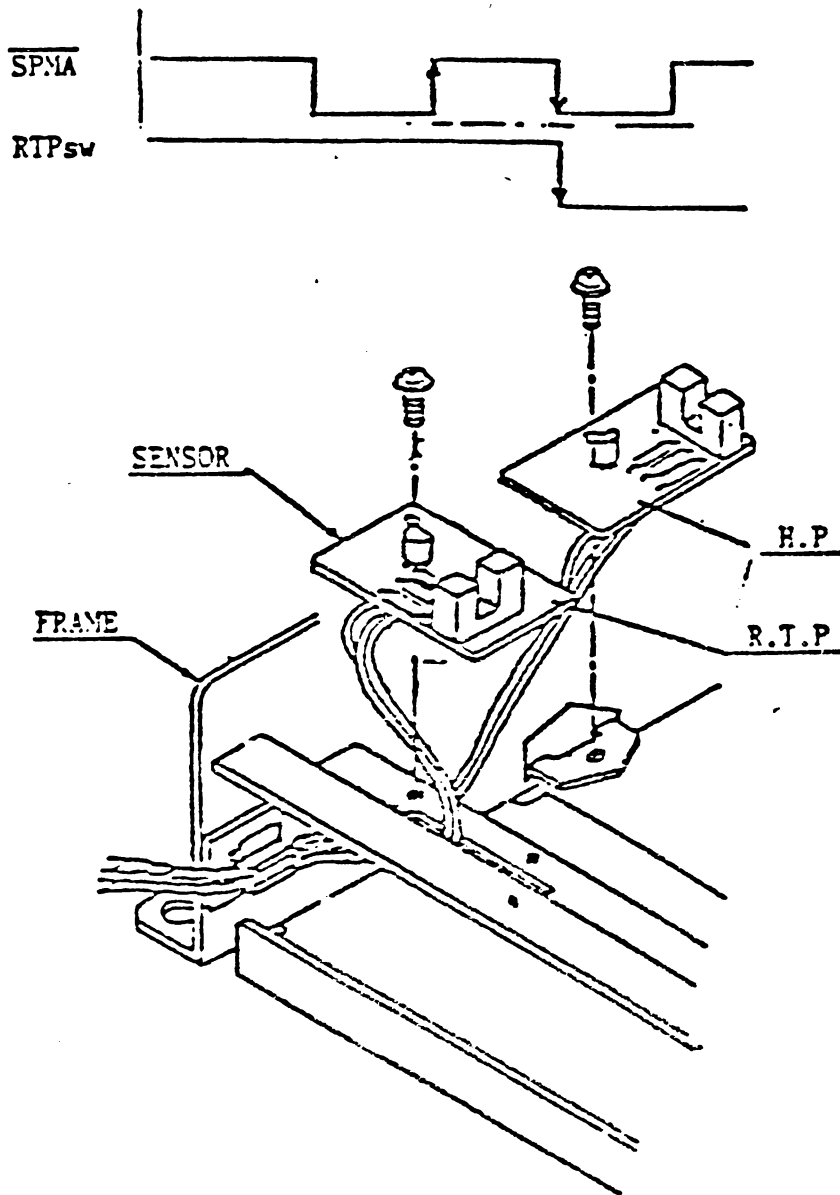
FIG.



R.T.P side

- 4) Adjust print starting position while moving photo cut board on carriage.  
Now, adjust the same timing that  $\overline{SPMA}(CH4)$  and  $RTPsw(CH5)$  go low.

FIG.



### STEP 3 CARRIAGE DRIVE MOTOR

#### REMOVAL PROCEDURE

- 1) Loosen three screws and remove carriage drive belt, and C.M motor.

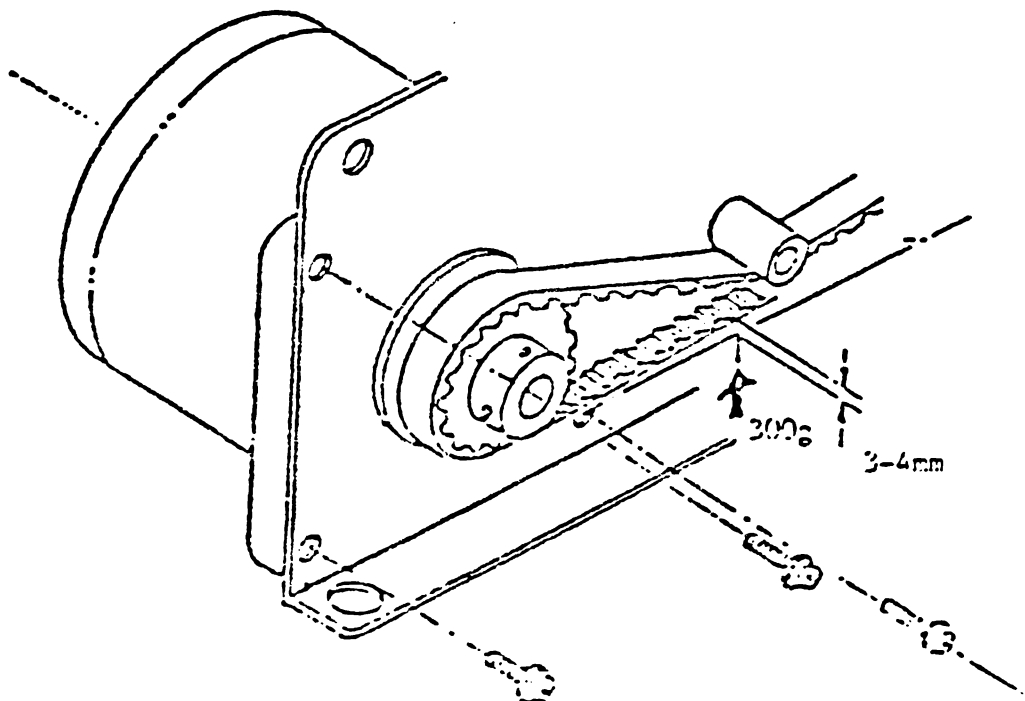
#### INSTALLING PROCEDURE

- 1) Installing C.M motor unit on frame, and carriage drive belt.

#### NOTICES

- a) When the load of 300g is put on the center of the carriage drive belt, the slack of it should be 3 to 4 mm. Adjust by moving the motor itself back and forth.
- b) Make sure print starting position.  
( Adjustment -- See Installing procedure 4 of STEP 2 )

FIG.



## STEP 4 L.F MOTOR

### REMOVAL PROCEDURE

- 1) Loosen three screws of L.F motor, and remove L.F motor.

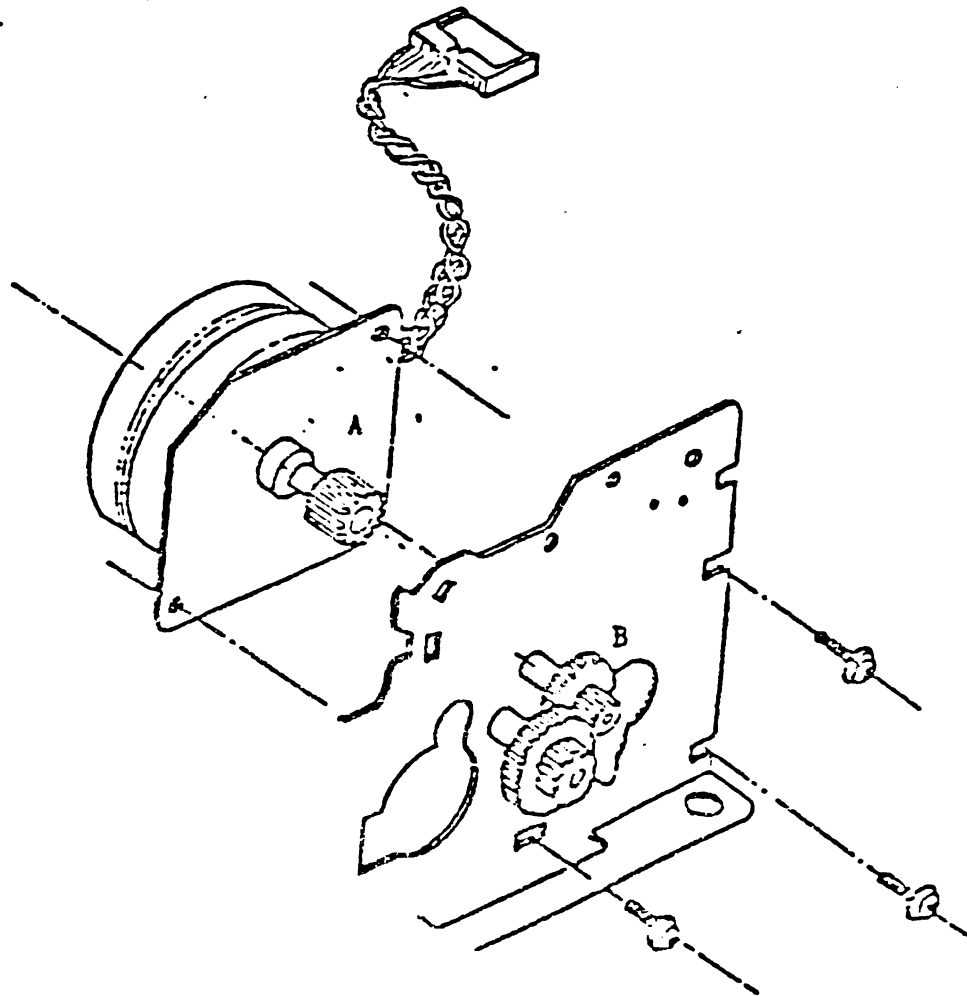
### INSTALLING PROCEDURE

- 1) Install L.F motor unit.

### NOTICE

- a) Adjust 0.05 to 0.2mm backlash between A gear and B gear.

FIG.







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