FANUC PPR

Paper Tape Roll. 69mm wide 50mm ø 12mm Bore.

OPERATOR'S MANUAL

CONTENTS

1. PPR 1
1.1 General 1
1.2 Composition 1
1.2.1 Composition unit 1
1.2.2 External dimensions 2
1.3 Performance Specifications 2
1.3.1 Specifications of printer 2
1.3.2 Specifications of puncher 2
1.3.3 Specifications of tape reader 2
1.3.4 Specifications of RS-232C interface 2
1.3.5 Specifications of power supply 3
1.3.6 External dimensions 3
1.3.7 Weight 3
1.4 Attachments and Consumables 3

2. OPERATION OF FANUC PPR 4
2.1 Selection of PPR Modes 5
2.2 Operation and Display in REMOTE Mode 6
2.2.1 When PPR is connected to an NC 6
2.2.2 When the PPR is connected to FANUC SYSTEM-MODE G 10
2.3 Setting in REMOTE mode 11
2.4 Operation, Display and Setting in LOCAL mode 13
2.5 Alarm 21
2.6 Handling of Printer 24
2.7 Handling of Puncher 26
2.8 Handling of Tape Reader 28

3. CLEANING AND PERIODIC MAINTENANCE 30
3.1 Cleaning 30
3.2 Periodic Maintenance 30
3.3 Consumables and Spare Parts 37

4. TROUBLESHOOTING 38
4.1 Power Supply 38
4.2 Switch Unit 40
4.3 I/O Control PCB and Units 41

B-54584E/01

5. MAINTENANCE OF FANUC PPR 43
5.1 General 43
5.1.1 Structure 43
5.2 Maintenance Parts 45
5.3 Maintenance Instruments and Tools 46
5.4 Adjustments 47
5.4.1 Adjustment of photoamplifier output waveform of tape reader 47
5.5 Replacement of PCB and Units 49
5.5.1 Removal of reel unit and upper cover 49
5.5.2 Replacement of printer 50
5.5.3 Replacement of puncher 51
5.5.4 Replacement of tape reader 52
5.5.5 Replacement of switch unit 53
5.5.6 Replacement of fan 54
5.5.7 Replacement of PCB 55
5.5.8 Replacement of fuses 57
5.6 Replacement of Consumables 58
5.6.1 Replacement of print head of printer 58
5.6.2 Replacement of punch block of puncher 59
5.7 Replacement of Other Parts 60
5.7.1 Replacement of tape reader read element 60

6. INSTALLATION 61
6.1 Environmental Conditions at Installation Site 61
6.2 Electrical Equipment 61
6.2.1 Plug socket with a grounding terminal 61
6.2.2 Connection using the grounding adapter (for 100V type only) 63

1. PPR

1.1 General

The FANUC PPR (hereinafter referred to as PPR) consists of a printer, a paper tape puncher, and a paper tape reader. This PPR is combined with an NC or the FANUC SYSTEM P-MODEL G (NC tape preparation unit), and used for printing out or punching out NC data and inputting data from paper tape.

Its interface conforms to RS-232C and thus, PPR is easily connectable to an NC and FANUC SYSTEM P-MODEL G.

In addition, PPR can print out or punch out data input from a tape reader, or execute TH, TV check of input data as an independent unit.

1.2 Composition

1.2.1 Composition unit

* Paper tape puncher (hereinafter referred to as puncher)
* Paper tape reader (hereinafter referred to as tape reader)
* Reel unit
* I/O control PCB
* Power supply PCB
* Switch unit
* Fan

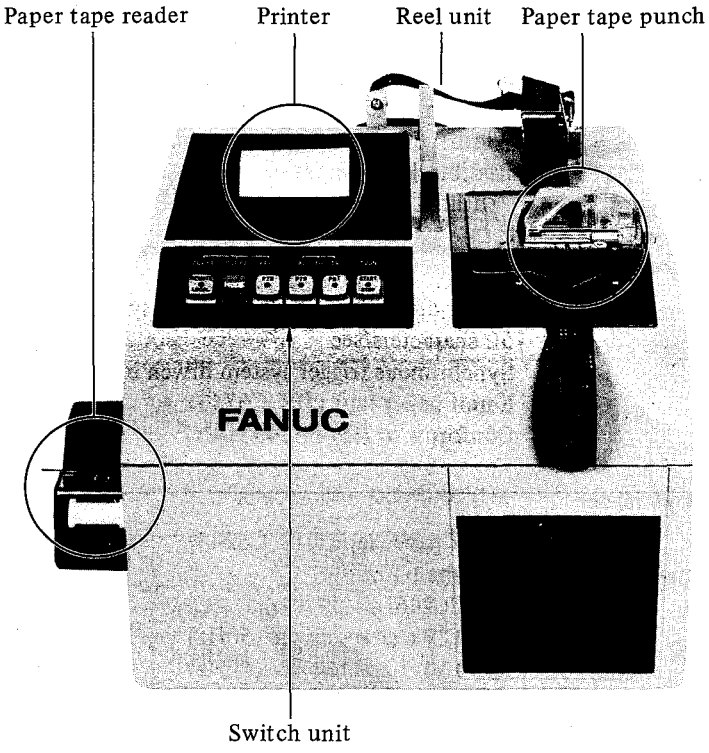


Fig. 1.2.1 FANUC PPR

1.2.2 External dimensions

Fig. 1.2.2 shows external dimensions of FANUC PPR.

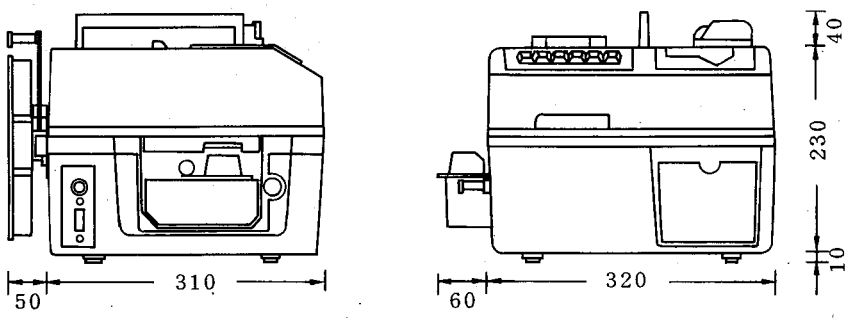


Fig. 1.2.2. External dimensions of FANUC PPR

1.3 Performance Specifications

1.3.1 Specifications of printer

Printing system	Serial dot impact system
Printing speed	About 1.2 lines/sec
No. of printing digits	40 digits
Character font	5 x 7 matrix
Character size	1.25mm x 2.5mm
Chart	Width: 69 ±1mm Outer diameter: ϕ50mm
Ink ribbon	Red/black (2 colors) Width: 13mm Spool diameter: ϕ30mm

1.3.2 Specifications of puncher

Punching system	Motor driven synchronous trigger system
Punching speed	50 characters/sec
Tape feed system	Synchronous trigger system driven by shared punching motor
Paper tape	8-unit paper tape (JIS C6243)
Punching standard	Conforms to JIS C6246

1.3.3 Specifications of tape reader

Paper tape	8-unit paper tape (JIS C6243)
Transmittance of paper tape	Less than 40%
Punching standard	JIS C6246
Reading speed	250 ±25 characters/sec (50Hz) 300 ±30 characters/sec (60Hz)
Reading direction	Positive direction only
Reading system	Optical system (LED light source)
Tape feed system	Capstan drive system

1.3.4 Specifications of RS-232C interface

Transfer speed	1200/2400/4800 bauds
Synchronizing system	Start-stop synchronization
Composition of transfer characters	Start bit 1 Data bit 8 Stop bit 1/2
Parity check	None
Signal cable connector	25-pin male connector (DB-25P)
Signal cable	1.5m

1.3.5 Specifications of power supply

(1) AC100V type (A13B-0117-B001)

Power supply	AC 85V ~ AC 125V, 50/60Hz $^{+1}_{-3}$Hz
Power supply capacity	0.2KVA
Power cable	1.5m

(2) AC200V type (A13B-0117-B002)

Power supply	AC 170V ~ AC 250V, 50/60Hz $^{+1}_{-3}$Hz
Power supply capacity	0.24KVA
Power cable	1.5m

1.3.6 External dimensions

380mm wide x 280mm height x 360mm depth

1.3.7 Weight

12 kg

1.4 Attachments and Consumables

The following attachments are delivered as standard attachments together with FANUC PPR.

Table 1.4 (a) Standard attachments for FANUC PPR

Item	Name	Specifications	Q'ty	Remarks
1	Fuse 4A	A60L-0001-0039#M4	5	For input power supply for 100V
	Fuse 2A	A60L-0001-0039#M2		For input power supply for 200V
2	Fuse DM32	A60L-0001-0172#DM32	3	For power supply PCB DC output
3	Fuse DM03	A60L-0001-0172#DM03	1	For power supply PCB DC output
4	Paper tape (black)	A87L-0001-0083#BL	1	8-unit, 275m
5	Printer form	A99L-0091-0001	1	20m/roll, 5 rolls
6	Printer ink ribbon	A99L-0091-0002	1	2 pcs.
7	Cabinet cover	A98L-0001-0394#C	1	

The following consumables are purchasable at option.

Table 1.4 (b) Consumables

Name	Specifications	Remarks
Paper tape (black)	A87L-0001-0083#BL	8-unit, 275m
Printer form	A99L-0091-0001	20m/roll, 5 rolls
Printer ink ribbon	A99L-0091-0002	2 pcs.

2. OPERATION OF FANUC PPR

The FANUC PPR consists of the paper tape reader, printer, and paper tape punch as shown in the following figure. The PPR operating conditions can be displayed or commands can be given to PPR by the pushbuttons and lamps of the switch unit.

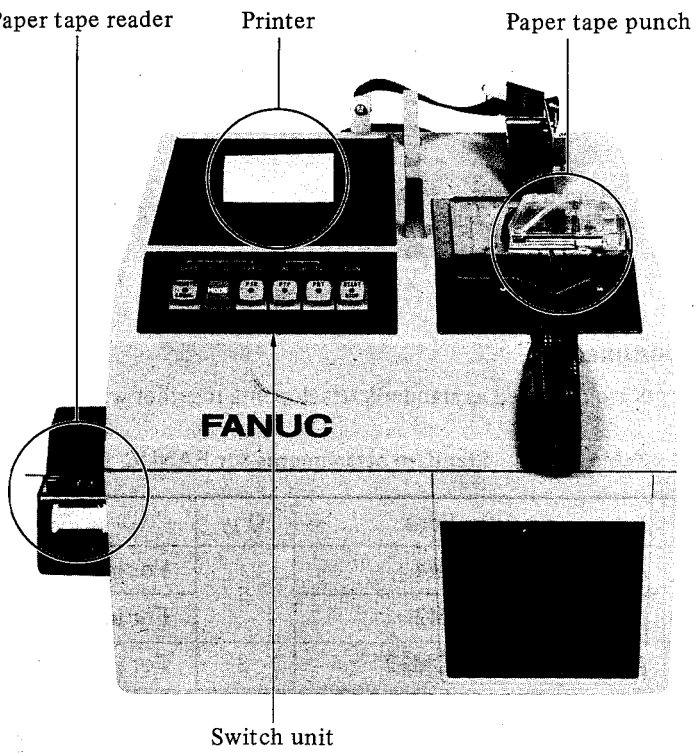


Fig. 2 Names of component parts of FANUC PPR

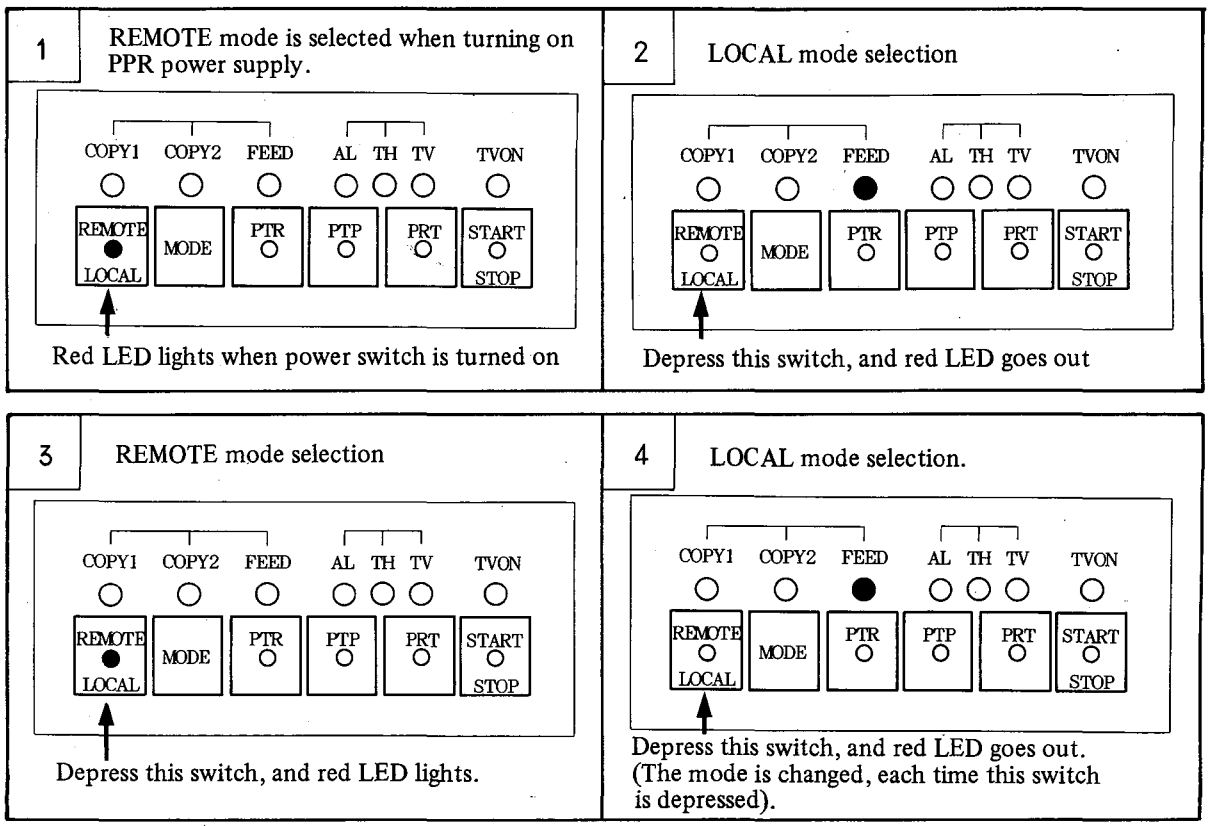
For operating PPR with FANUC SYSTEM P-MODEL G combined, refer to the operator's manual for FANUC SYSTEM P-MODEL G. (B-54111E)

2.1 Selection of PPR Modes

PPR has the following two operation modes.

(1) REMOTE mode: PPR is operated according to commands from the P-G main unit or NC.
(2) LOCAL mode : PPR is operated by the key switch operation on PPR.

The operation methods differ according to these modes. Use PPR correctly according to the following operation procedures. When turning on the PPR power supply, the REMOTE mode is selected. Observe the following procedure for selecting the REMOTE mode to the LOCAL mode.



(Note) When the printer, puncher or tape reader is operated, don't depress REMOTE/LOCAL key switch.

2.2 Operation and Display in REMOTE Mode

2.2.1 When PPR is connected to an NC

The PPR is connectable to following NCs.

Item	NC	RS-232C interface		ROM edition No.	Manufacturing date of NC to which PPR is connectable
		Basic	Option		
1	FS9-A		○	Edition 01 or subsequent	In and after April 1982
2	FS6T/M-B		○	"	"
3	FS3T/M-A FS3T/M-C FS2T/M-A		○	"	"
4	FS3T-F	○		"	"
5	Mate P-B	○		Edition 03 or subsequent	"

When RS-232C interface is optional, PPR is not connectable to NC without RS-232C.

The manufacturing date of NC is described on the equipment nameplate. When PPR is connected to an NC, connect the PPR power cable to AC100/200V, and then, connect the signal cable to the RS-232C interface connector as shown in Fig. 2.2.1.

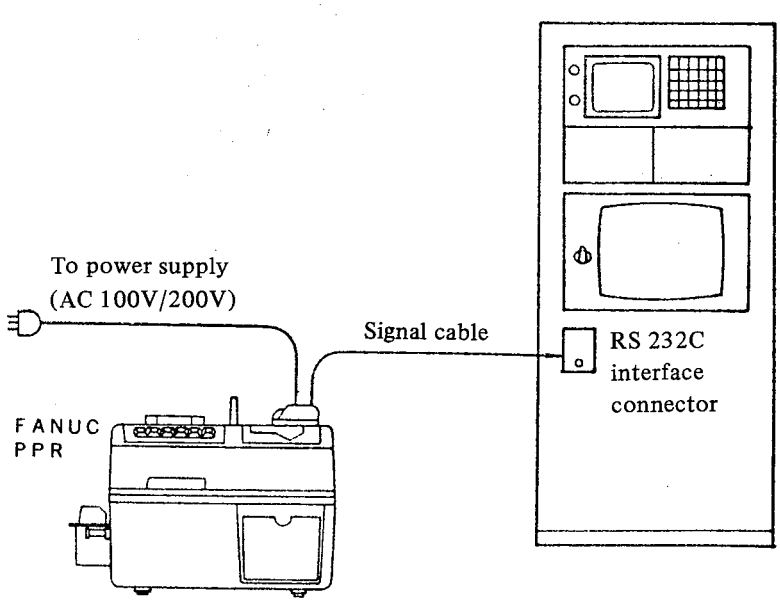


Fig. 2.2.1

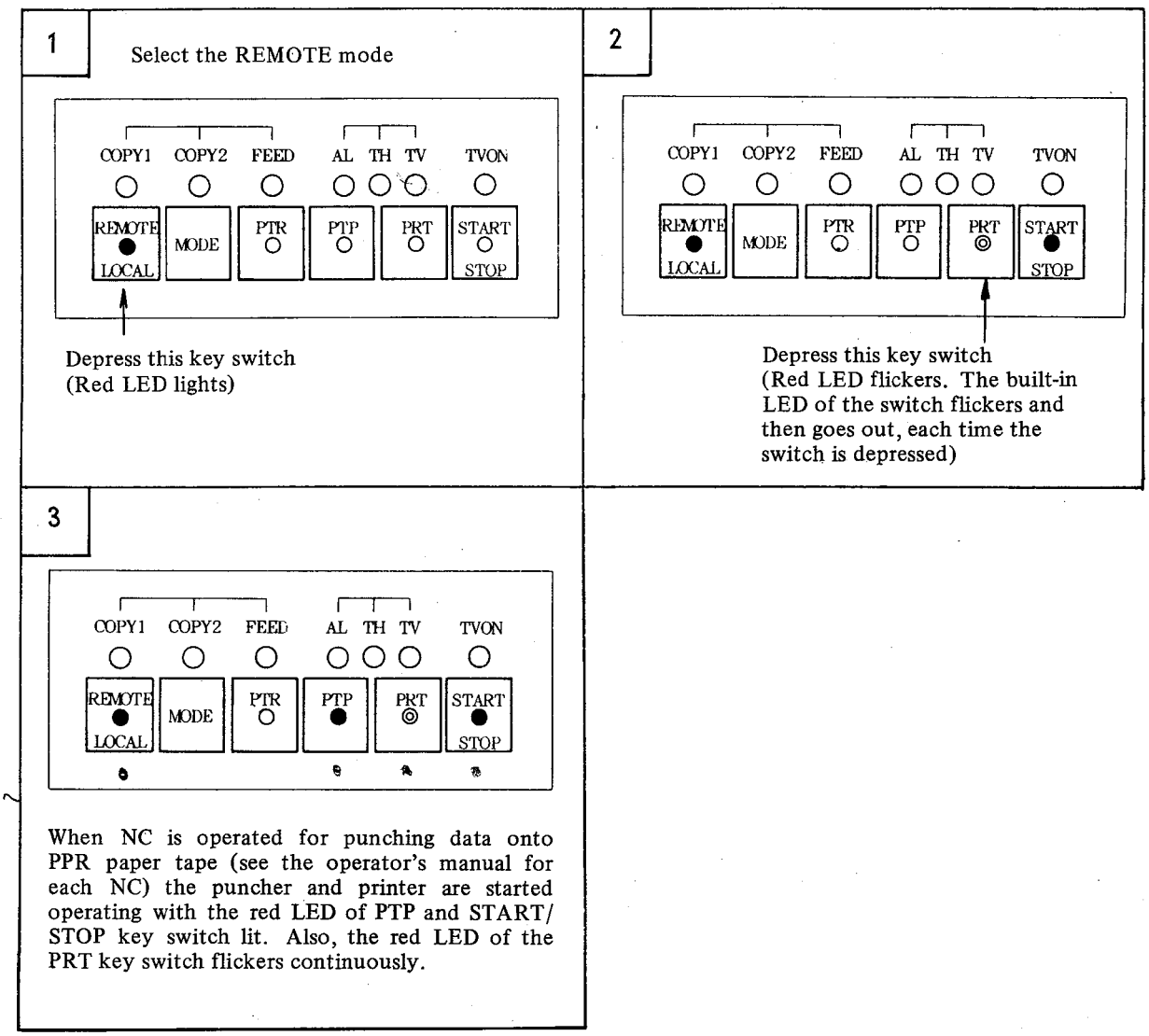
The following two operations are required for outputting data from NC to PPR (for printing and punching) or inputting data from PPR to NC.

(1) NC operation
(2) PPR operation

This paragraph describes the PPR operation in (2). For the NC operation in (1), refer to the operator's manual for NC to be connected. Certain NCs also require parameter setting for PPR connection. Refer to the operator's manual for NC without fail.

(1) Punching and printing

(Operation) For outputting data from NC to the paper tape and printing chart of PPR, observe the following procedure.



(Note 1) It is impossible to start the print operation only.

(Note 2) When special characters other than numerics and characters were sent from NC during the punch and print operation, they are printed, but not punched, except for LF, CR and ER.
When the PTP switch is depressed, its built-in LED flickers. The all special characters are punched by punching operation under this condition.

Special character	Meanings	Remarks
L_F	LF line feed (ISO)	Punched at all times
$\sqsubset_R$	CR carriage return (EIA)	"
♦	ER (EIA)	"
D_1	DC1	When the built-in LED of PTP key switch flickers, it is punched.
D_2	DC2	
D_3	DC3	
D_4	DC4	
Θ & ..... :	ESC & ..... :	

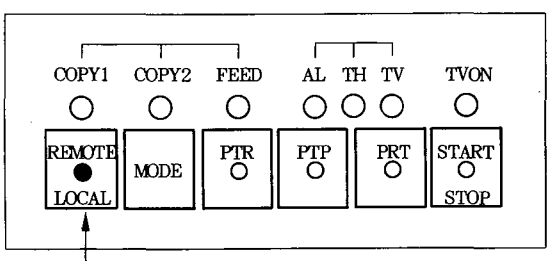
'CR' in ISO code is punched, but kept blank in printing.

(Note 3) When the printer, puncher or tape reader is operated, don't depress PRT or START/STOP key switch.

(2) Punching

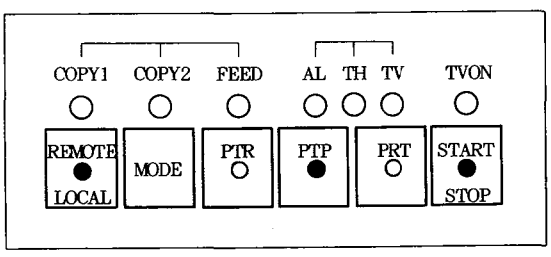
(Operation) For outputting data from NC to PPR paper tape, observe the following procedure.

1 Select the REMOTE mode



Depress this key switch.
(The red RED lights)

2

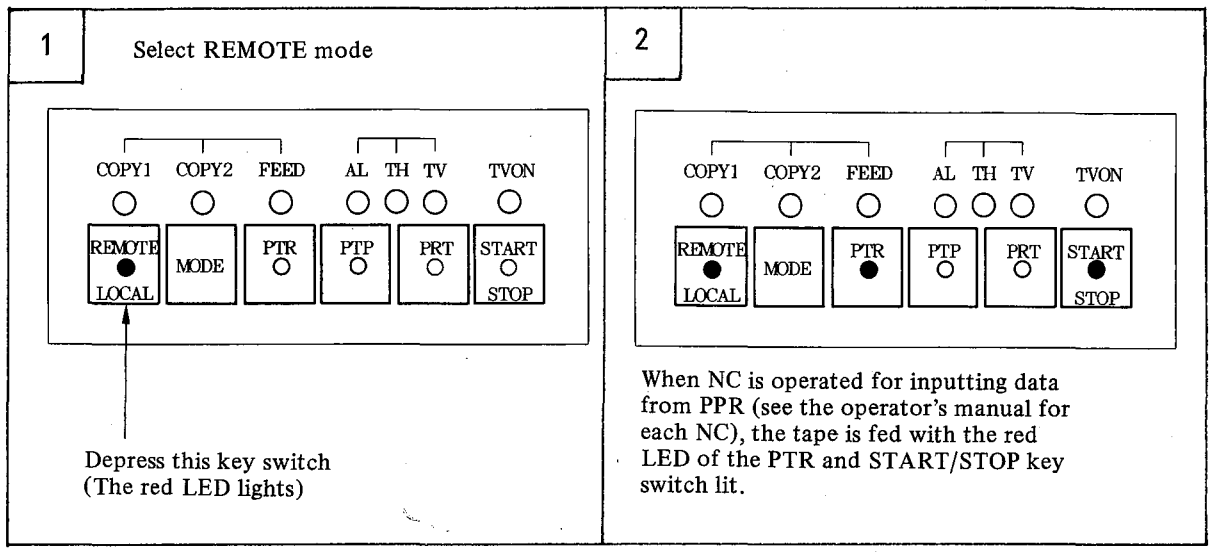


When NC is operated for punching data onto paper tape (see the operator's manual for each NC), the puncher is started operating with the built-in LED of PTP and START/STOP key switch lit.

(Note) When the puncher is operating, don't depress PTP and START/STOP key switch.

(3) Data read

(Operation) For inputting data from the paper tape into NC, observe the following procedure.



(Note) When the tape reader is operated, don't depress START/STOP key switch.

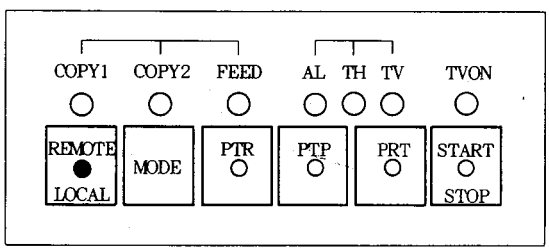
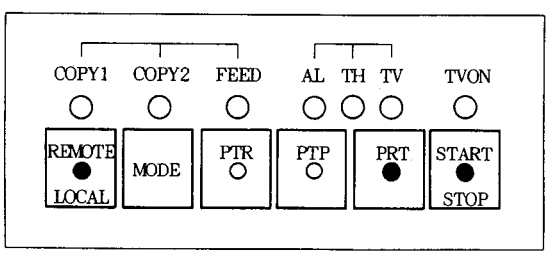
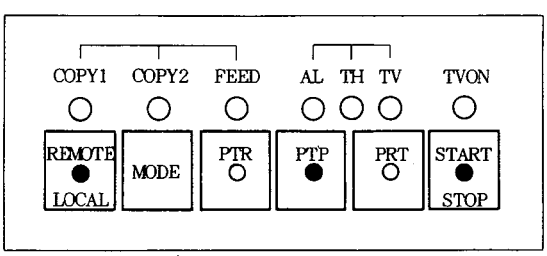
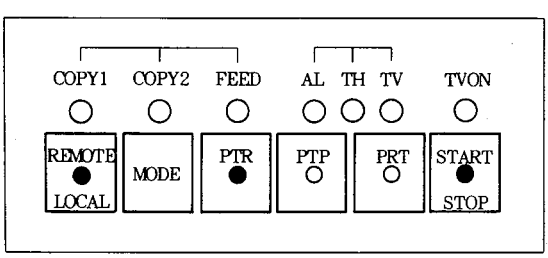
2.2.2 When the PPR is connected to FANUC SYSTEM P-MODEL G

(Operation)

In the REMOTE mode, all key switches other than the remote-local selector switch on PPR become ineffective, and PPR is operated according to the commands from the P-G main unit.

(Display)

The following four displays are made on the PPR key switch unit in the remote mode. (R/L key indicates the remote-local selector switch in the following explanation).

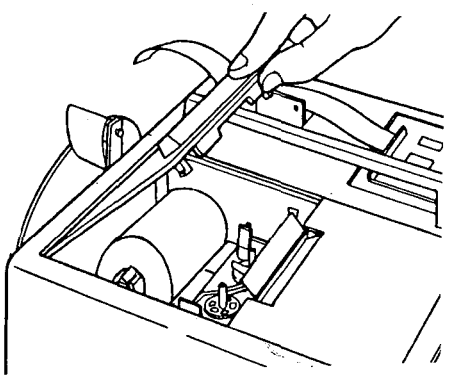
	Display	Meanings
1		REMOTE mode status display Built-in red LED of R/L key switch lights.
2		Printer is operating. Red LED of PRT key switch lights. This lamp lights when the printer is being operated by the commands from P-G main unit.
3		Puncher is operating. Red LED of PTP key switch lights. This lamp lights when the puncher is being operated by the commands from the P-G main unit.
4		Tape reader is operating. Red LED of PTR key switch lights. This lamp lights when the tape reader is being operated by the commands from P-G main unit.

(Note 1) The LED other than specified above are not lit in the REMOTE mode.
(Note 2) Don't depress the switch other than R/L key switch.

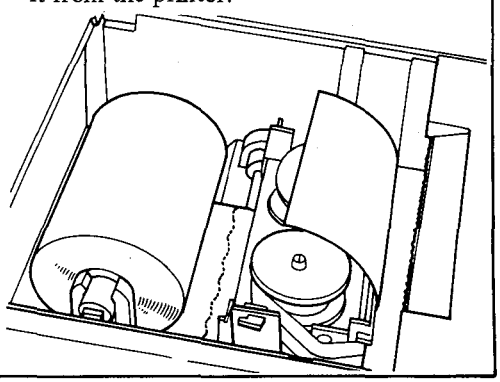
2.3 Setting in REMOTE mode

For handling data control codes on interface and resetting the baud rate, observe the following procedure. (It is no longer necessary to reset the baud rate, if the PPR is used at the standard setting of 4800 bauds)

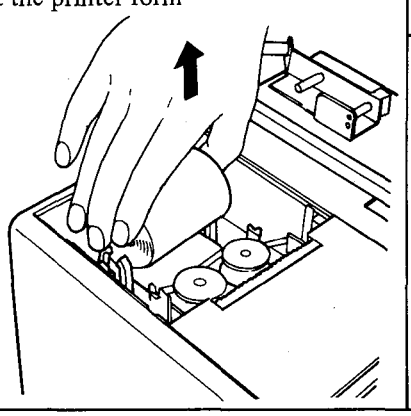
1 Open the upper cover of the printer.



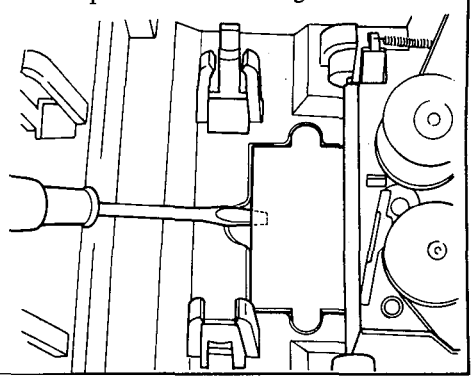
2 Cut the printer form halfway and unload it from the printer.



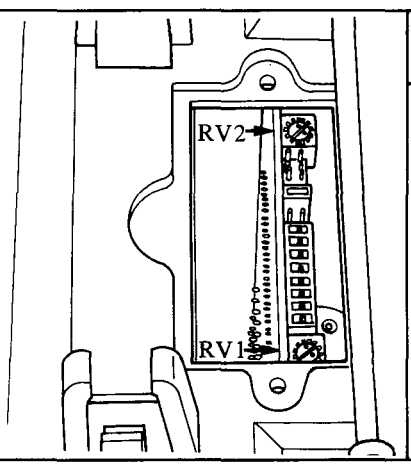
3 Take out the printer form



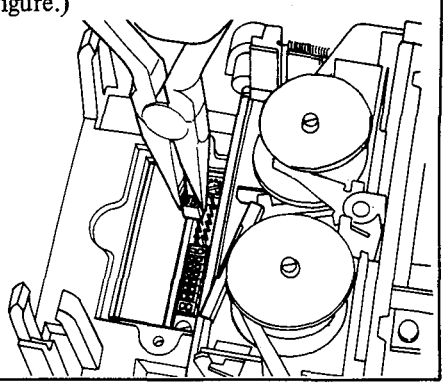
4 Remove the rubber cover from the buttom face of the printer form loading room.



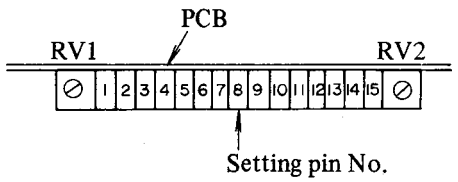
5 The setting part will appear at the opening



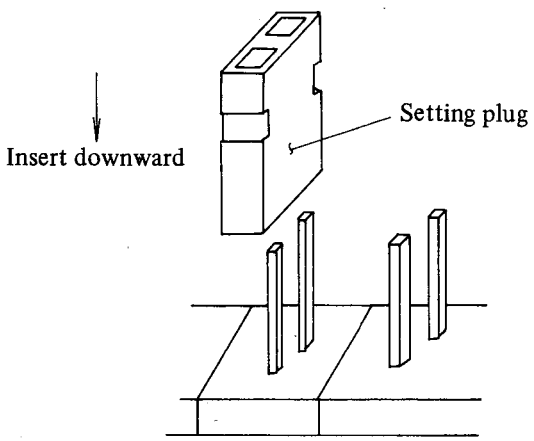
6 Change the setting by taking out the setting plug by plier. (for details refer to the next figure.)



7 Set the baudrate as follows.



Setting Pin No.	Meanings of setting
1	Automatic alarm reset in REMOTE mode. (Alarm is reset by depressing the R/L key, if the automatic alarm reset is not preset.) For details, see section 2.5
2 ≀ 6	For meanings of these setting, refer to item 2.4 (2).
8	Stop bit 2 (Stop bit 1 is set, if this setting is neglected.)
9	———
10	———
11	4800 bauds (standard setting)
12	2400 bauds
13	1200 bauds
14	———
15	———

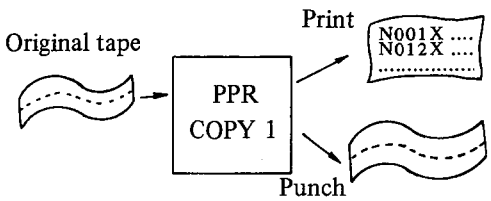
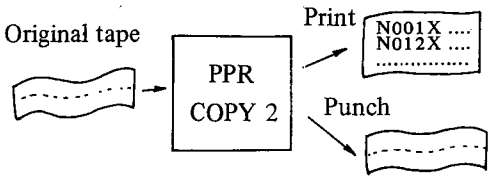


(Note 1) A corresponding baudrate it set by inserting the setting plug into the place having the setting number.

(Note) Turn off the power switch before setting. This setting becomes effective when the power switch is turned on again. If this setting is changed with the power switch turned on, it is not effective.

2.4 Operation, Display and Setting in LOCAL mode

All commands from the NC and P-G main unit are ineffective in the local mode, and PPR is operated by its key switches. PPR provides the following functions in the local mode.

No.	Items	Functions
1	COPY 1	 Punched or printed data are just the same as data of the original tape.
2	COPY 2	 Punched or printed data are output after data of original tape have been processed (For the instruction method, refer to item (2)).
3	FEED	Paper tape or printer form is fed. (1) Paper tape is fed in case of tape reader. (2) Sprocket holes only are punched on paper tape, and paper tape is fed in case of puncher. (3) Printer form is fed in case of printer.
4	TV ON (Tape check)	Tape data can be checked as a part of "COPY 2" function. (TH and TV check are made, if preset)

(1) COPY 1

(Functions)

Select this "COPY 1" function, if you want to prepare a tape having just the same data as in the original tape being set on the tape reader. If an original tape punched by EIA codes is employed, the output tape is punched by EIA codes. If an original tape punched by ISO codes is employed, the output tape is punched by ISO codes. If an original tape punched by codes other than EIA and ISO, the output data are punched in just the same as in the original tape.

If printing is made concurrently, the printed characters conform to the EIA codes table and ISO codes table (ISO 840)

However, CR in ISO code is not printed and becomes space.

Special symbols (■) are printed in case of codes which are not converted by these tables.

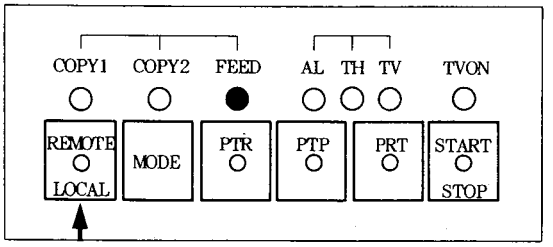
(Operation)

For executing "COPY 1", observe the following procedure.

1

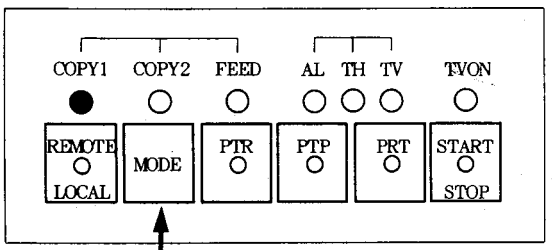
Load a tape to which "COPY 1" is to be executed on the tape reader.

2 Select the LOCAL mode.



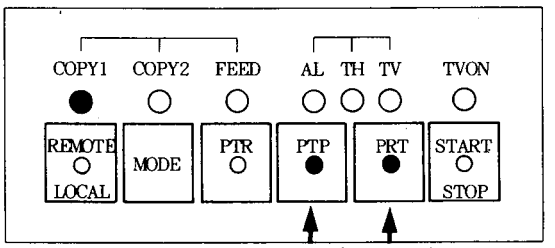
Depress this key switch (Red LED goes out.)

3 Select "COPY 1".



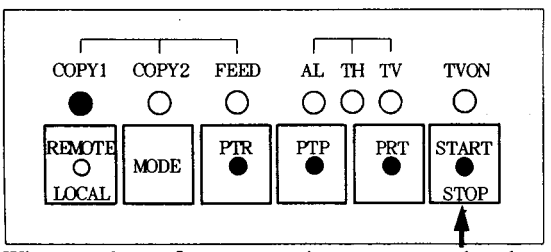
Depress this key switch several times until the green LED of COPY 1 lights.

4 Select an output unit



Press PTP or PRT key switch for punching or printing, respectively. (each red LED leghts) These output unit can be selected simultaneously. For releasing, depress PTP or PRT key again.

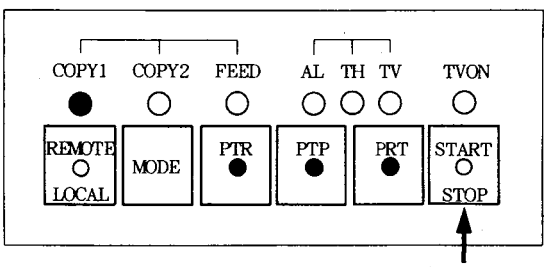
5 Start executing "COPY 1" (Start punching or printing)



When reading of paper tape is started, red LED of PTR key switch lights automatically.

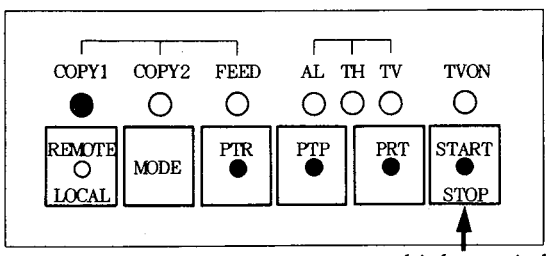
Depress this key switch.(Red LED lights.)

6 Stop executing "COPY 1"



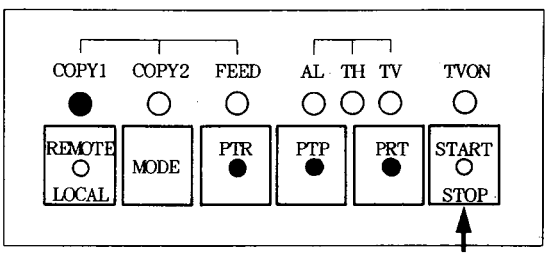
Depress this key switch. (Red LED goes out).

7 Restart executing "COPY 1"



Depress this key switch (Red LED lights).

8 Stop executing "COPY 1 "



Depress this key switch. (Red LED goes out)

(Note) When the printer, puncher, or tape reader is operating, don't depress MODE key switch. Stop operating by depressing START/STOP key to change the mode, such as COPY 1 to COPY 2.

(2) COPY 2

(Functions)

Data of original tape are processed to output or print paper tape according to the functions being preset by setting plugs. The following functions are settable.

Setting pin No.	Setting		Functions
	Provided	Not provided	
2	○		Performs TH check of the original tape being set to the tape reader. TH check is also done even if the original tape is being read into the reader for punching or printing.
		○	Does not perform any TH check of the original tape being set to the tape reader.
3	○		Prints the number of punch characters (inclusive of the first ER and last ER) and the tape length from an ER to an ER of the output tape; provided that these characters are limited up to max. 65535 and the tape length is printed every unit of m.
		○	Prints neither the number of punch characters nor tape length from an ER to an ER of output tape.
4	○		Prints characters by shifting the start of the 2nd and subsequent lines from the start of the 1st line for easy-to-see printing when printing characters exceeding 40 digits. N001 X ..... T ..... S .....
		○	Prints characters by aligning the start of the 2nd and subsequent lines with the start of the 1st line when printing characters exceeding 40 digits. N001 X ..... T ..... S .....
5	○		Adds TV parity to the original tape, and punches to output tape. When the pin No. 6 is set, don't set this pin.
		○	Punches data on output tape without adding TV parity to the original tape.
6	○		Replaces LF (ISO code) being punched on the original tape with CR LF (ISO code), and punches data on output tape. When the pin No.5 is set, don't set this pin.
		○	Punches data to output tape together with LF (ISO code) being punched on the original tape.
7	○		Deletes "delete" codes (both EIA and ISO codes) being punched on the original tape, and punches data on output tape.
		○	Punches data on output tape together with "delete" codes being punched on the original tape.

The output tape is punched by EIA codes when the original tape employed is punched by EIA codes, and it is punched by ISO codes when the original tape employed is punched by ISO codes. If "COPY 2" is executed by using an original tape punched by codes other than EIA and ISO, PPR executes processing, assuming that EIA and ISO codes are input. As a result, it is uncertain how the output paper tape is punched.

Don't use any original tape punched by codes other than EIA and ISO codes.

Printing characters conforming to the EIA codes table and ISO codes table (ISO 840) are printed, if printing is done concurrently. CR in ISO code is not printed and becomes space. Special symbols (■) are printed, if codes are not covered by these tables.

Both TH check and TV check are executed for the original tape being set to the tape reader, if these check functions are preset.

For Copy of Paper Tape + PRINT OUT

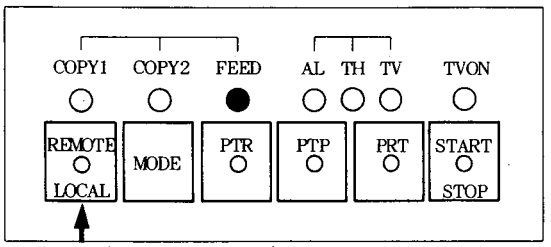
(Operation)

Observe the following procedure when executing "COPY 2"

1

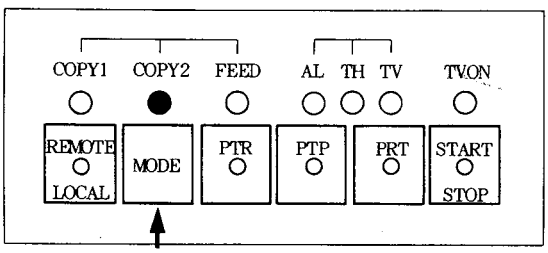
Load a tape to which "COPY 2 " is to be executed onto the tape reader.
When "%" in ISO code or "ER" in EIA code is read, the tape reader stops.

2 Select the LOCAL mode.



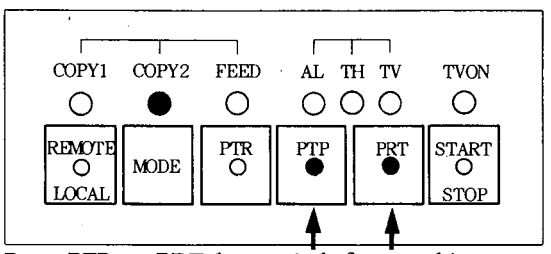
Depress this key switch (Red LED lights)

3 Select "COPY 2"



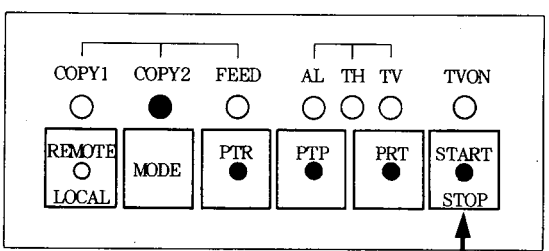
Depress this key switch several times until the green LED of COPY 2 lights.

4 Select an output unit



Press PTP or PRT key switch for punching or printing, respectively. (each red LED lights) These output unit can be selected simultaneously. For releasing, depress PTP or PRT key again.

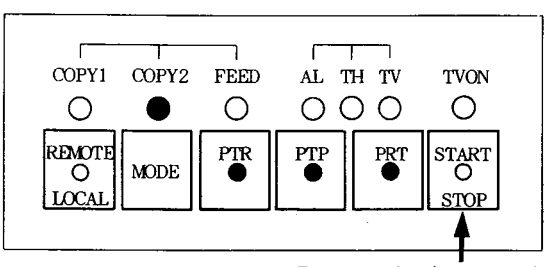
5 Start executing "COPY 2"
(Start puching or printing)



When reading of paper tape is started, red LED of PTR key switch lights automatically.

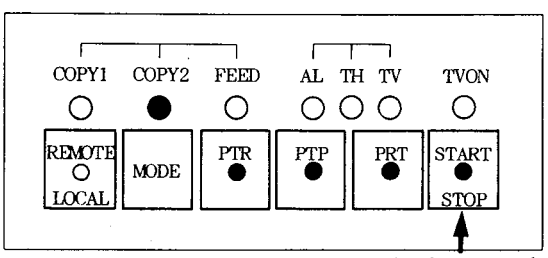
Depress this key switch. (Red LED lights)

6 Stop executing "COPY 2"



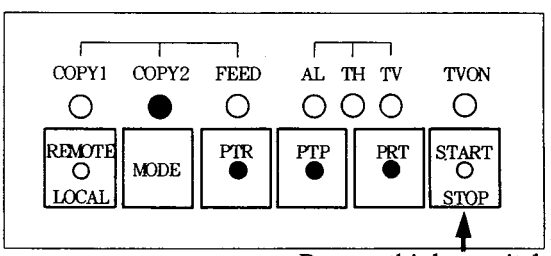
Depress this key switch (Red LED goes out)

7 Restart executing "COPY 2 "



Depress this key switch (Red LED lights)

8 Stop executing "COPY 2"



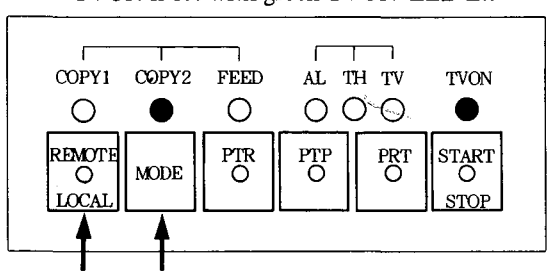
Depress this key switch (Red LED goes out)

(Note 1) If you want to check tape data only without any punching and printing, select the tape reader only by depressing PTR key switch or by starting the execution of "COPY 2" in process 5 without selecting any output unit.
The tape reader only is started to input tape, and tape data are checked. An error, if detected, is displayed. (No display means that no error has been produced.) In addition, the TH check and TV check are made, if preset.

(Note 2) When the printer, puncher or tape reader is operating, don't depress MODE key switch. Stop operating by depressing START/STOP key to change a mode, such as COPY1 to COPY2.

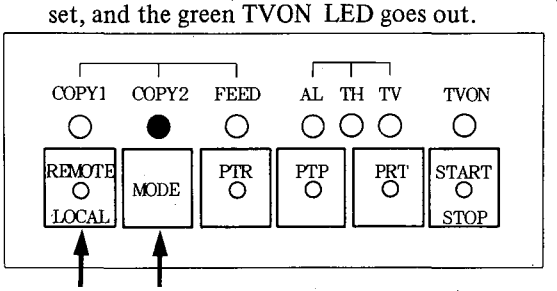
For the TV check of the original tape being set to the tape reader in "COPY 2", set TVON according to the following procedure.

1 Deperss R/L key switch while depressing the MODE key switch in the LOCAL mode, and TVON is set with green TVON LED lit.



Depress these key switches concurrently.

2 When depressing the R/L key switch while depressing the MODE key switch under the condition of TVON, TVON is released from being set, and the green TVON LED goes out.

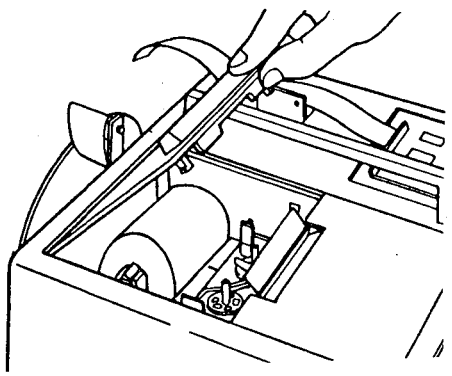


Depress these key switches concurrently.

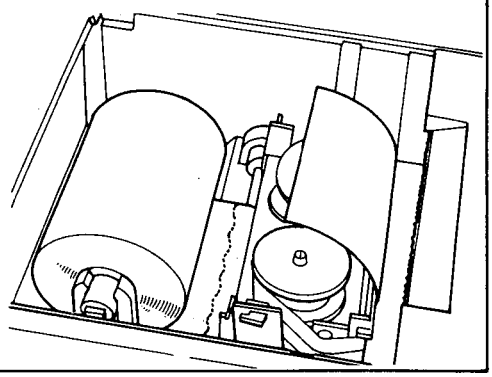
(Setting)

For changing of function setting in COPY 2, observe the following procedure.

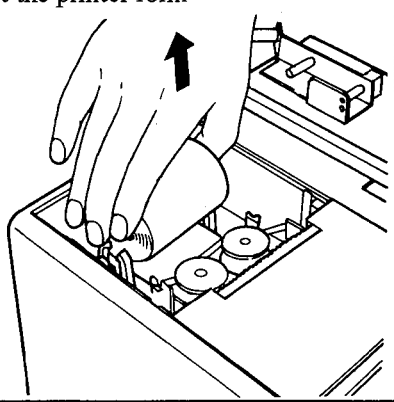
1 Open the upper cover of the printer.



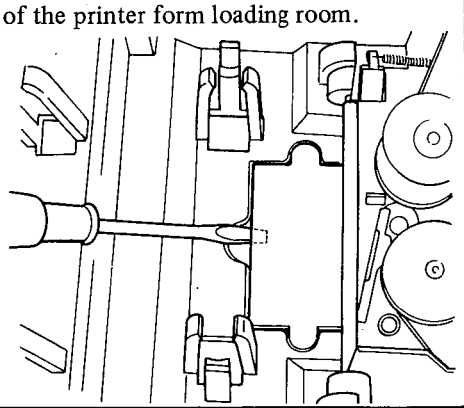
2 Cut the printer form halfway and unload it from the printer.



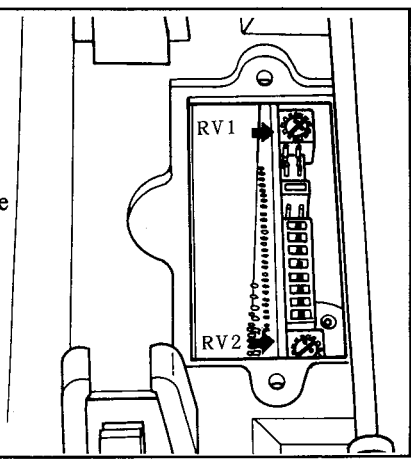
3 Take out the printer form



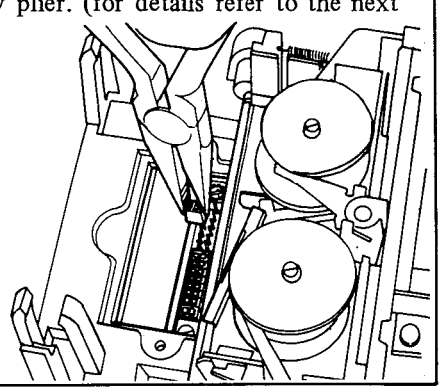
4 Remove the rubber cover from the buttom face of the printer form loading room.



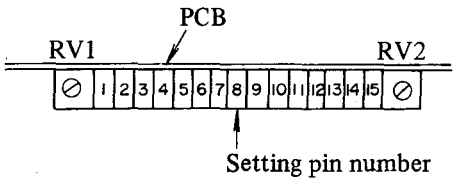
5 The setting part will appear at the opening



6 Change the setting by taking out the setting plug by plier. (for details refer to the next figure.)



7 Set functions as follows.



Setting pin No.	Setting		Functions
	Provided	Not provided	
2	○		Performs TH check of the original tape being set to the tape reader. TH check is also done even if the original tape is being read into the reader for punching or printing.
		○	Does not perform any TH check of the original tape being set to the tape reader.
3	○		Prints the number of punch characters (inclusive of the first ER and last ER) and the tape length from an ER to an ER of the output tape; provided that these characters are limited up to max. 65535 and the tape length is printed every unit of m.
		○	Prints neither the number of punch characters nor tape length from an ER to an ER of output tape.
4	○		Prints characters by shifting the start of the 2nd and subsequent lines from the start of the 1st line for easy-to-see printing when printing characters exceeding 40 digits. N001 X ..... T ..... S .....
		○	Prints characters by aligning the start of the 2nd and subsequent lines with the start of the 1st line when printing characters exceeding 40 digits. N001 X ..... T ..... S .....
5	○		Adds TV parity to the original tape, and punches to output tape. When the pin No. 6 is set, don't set this pin.
		○	Punches data on output tape without adding TV parity to the original tape.
6	○		Replaces LF (ISO code) being punched on the original tape with CR LF (ISO code), and punches data on output tape. When the pin No. 5 is set, don't set this pin.
		○	Punches data to output tape together with LF (ISO code) being punched on the original tape.
7	○		Deletes "delete" codes (both EIA and ISO codes) being punched on the original tape, and punches data on output tape.
		○	Punches data on output tape together with "delete" codes being punched on the original tape.

(Note) Turn off the power switch before setting. This setting becomes effective when power switch is turned on again.

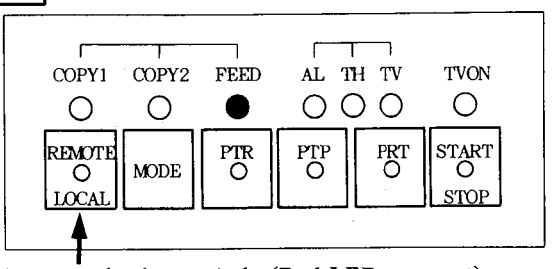
(3) Feed

For "feed", observe the following procedure.

1

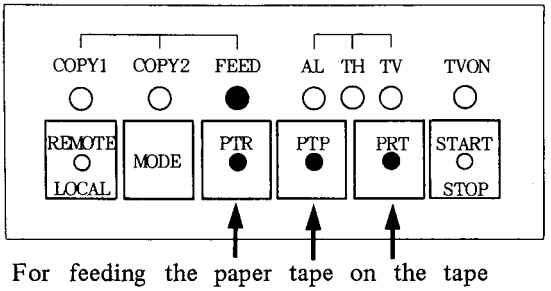
Observe the following procedure, assuming that paper tape is set to the tape reader or puncher, or a printer form is set to the printer.

2 Select the LOCAL mode



Depress this key switch, (Red LED goes out) Green FEED LED lights to be ready for feed operation.

3 Feed paper tape or printer form.



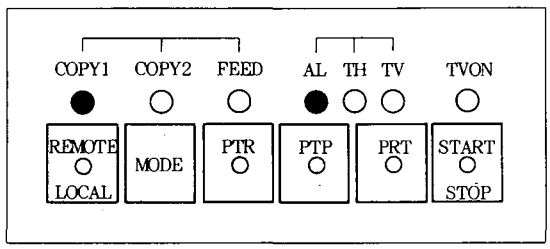
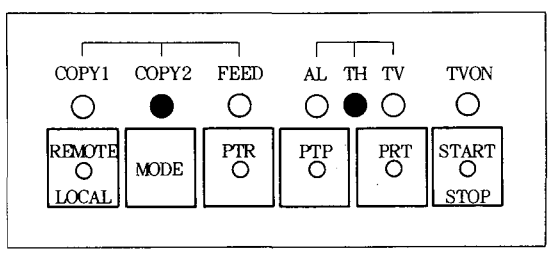
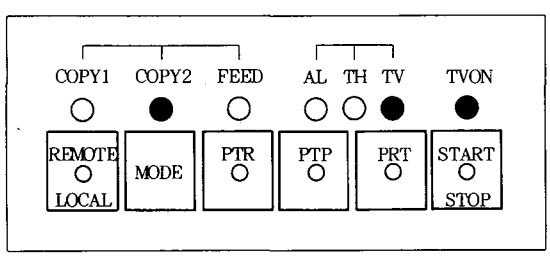
For feeding the paper tape on the tape reader, depress the PTR key switch. For feeding the paper tape on the puncher, depress PTP key switch. For feeding the printer form on the printer, depress PRT key switch. The paper tape and printer form are fed while depressing the corresponding key switches, and stopped feeding when releasing these key switches.

(Note) For feeding paper tape of puncher, the feed operation starts 2 seconds after PTP key switch is pushed. Push the PTP key switch for feeding 2 seconds or more.

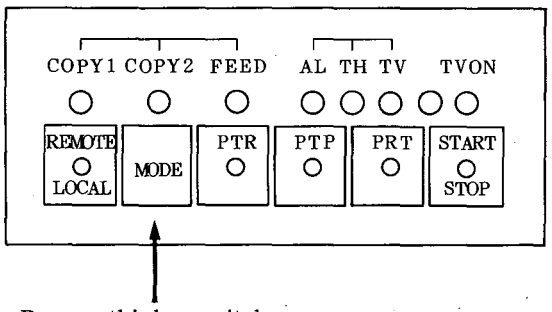
2.5 Alarm

(Alarm display)

PPR displays the following alarms

	Display	Causes of alarm
1	 Green LED of selected mode and red LED of selected unit are lighting.	(1) A printer signal is in trouble. (2) RS232C line is in trouble. (3) A read error is occures in tape reader. (4) The end of paper tape passed the read part of tape reader during read of paper tape on the tape reader. (5) PPR control circuit is in trouble.
2	 Red LED of selected unit is lighting.	Tape in tape reader is in TH error during "COPY2" *(Note) Assume that TH error detection is preset in advance.*
3	 Red LED of selected unit is lighting.	Tape on tape reader is in TV error during "COPY 2" when green TVON LED is lighting. *(Note) Assume that TV error detection is preset in advance.*
4	All LEDs light and then go out during operation (except when power is turned on.) (Display of alarm causes and reset of alarm are ineffective.)	Control PCB is defective.
5	Red AL LED flickers when power is turned on. (Display of alarm causes and reset of alarm are ineffective)	Control PCB is defective.
6	Red AL LED lights when power is turned on. (Display of alarm causes and reset of alarm are ineffective.)	Control PCB is defective.

(Display of causes of alarms)
If the red AL LED lights due to the occurrence of an alarm, a cause of the alarm can be located according to the following procedure.



Depress this key switch
The following LEDs indicate causes of the alarm.

(Note 1) This function is effective only when the red AL LED is lighting. If this red AL LED is went out by resetting an alarm after it lit once, the cause of this alarm is not displayed.

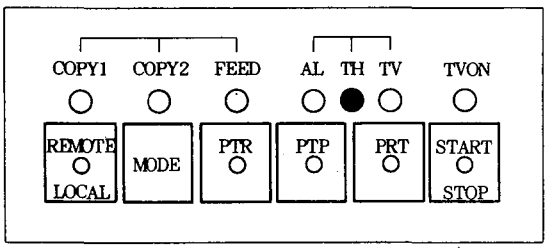
Display LED	Contents of alarm	Details
TVON	Printer alarm	Printer malfunctions.
TV	———	———
TH	Buffer full alarm	RS232C line is defective.
AL	Tape end alarm	Tape has come to an end during the tape reader operation.
FEED	Receiving data alarm	RS232C line data is defective. Baud rate or stop bit is wrongly set.
COPY2	Tape reader alarm	Tape readout error or faulty tape hole.
COPY1	Binary mode alarm	RS232C line data contents are faulty.

(Note 2) When PPR is connected to an NC unit or FSP-G, the red AL LED goes out soon after it lit once when an alarm occurs.
In such a case, it is difficult to display a cause of the alarm (because it is difficult to depress the MODE key switch before the red AL LED goes out.)
If the setting pin No. 1 described in section 2.3 is drawn out, the red AL LED remains lit when an alarm occurs.
Accordingly, draw out this setting pin for locating a cause of an alarm. For resetting the alarm after locating its cause, depress the REMOTE/LOCAL key switch.
Don't drawn out this pin during normal use.

(Remedy when an alarm occurred)

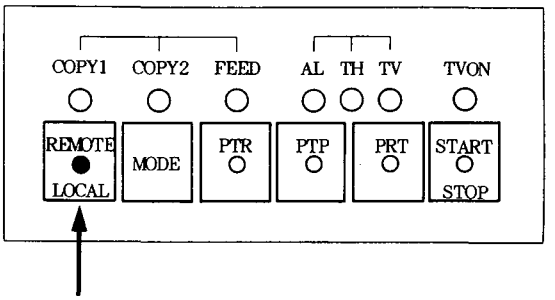
Reset alarm according to the following procedure.

1 Alarm occurred



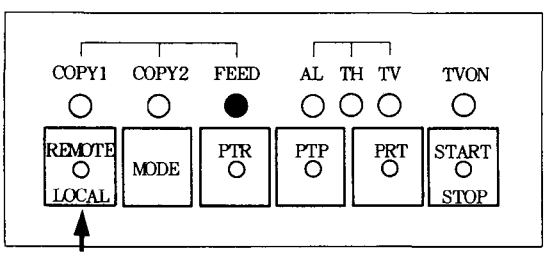
If one of red AL, TH, and TV alarm display LEDs lights, it indicates that an alarm occurs.

2 Release of alarm



Depress this key switch. The red alarm LED goes out. All other lighting LEDs, if any, also go out concurrently.

3 Reset to the LOCAL mode



Depress this key switch (Red LED goes out)

2.6 Handling of Printer

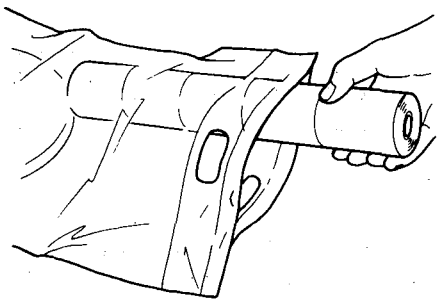
(Functions)

The printer prints punch data from NC or print data from FANUC SYSTEM P-MODEL G.

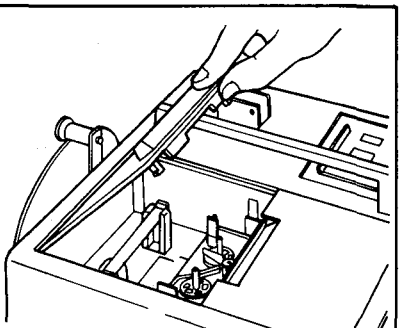
(Replacement and loading of printer form)

Observe the following procedure.

1 Take the printer form out of the accessory bag.

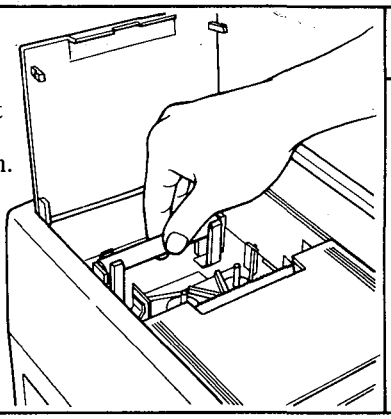


2

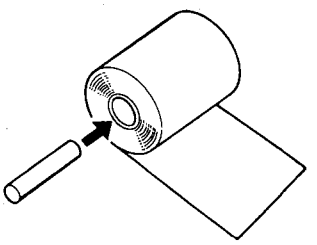


Open the upper cover of the printer form loading room

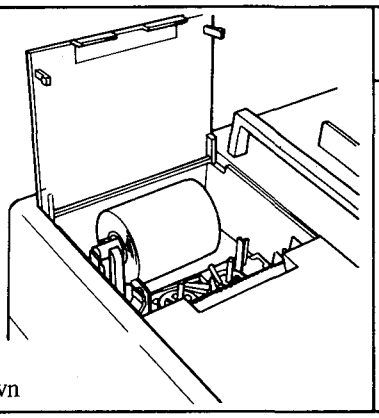
3 Take the roll shaft out of the printer form loading room.



4 Insert the roll shaft into the center of the printer form.

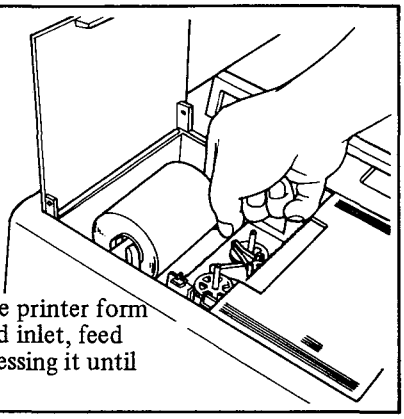


5



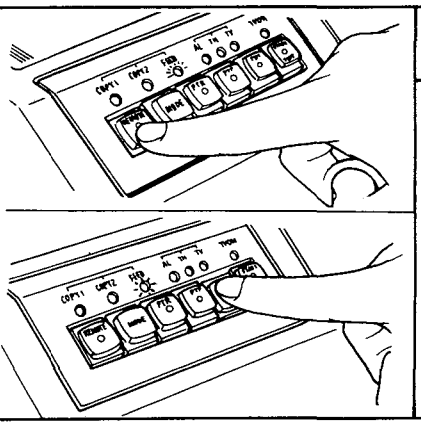
Mount the printer form into the roll shaft holder as shown

6

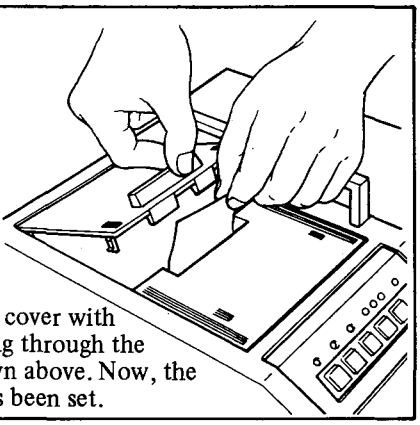


After inserting the printer form into the form feed inlet, feed the form by depressing it until it stops.

7 Set the FEED mode in the LOCAL mode, and depress PRT button to feed the form until it reaches higher than the paper cutter.



8

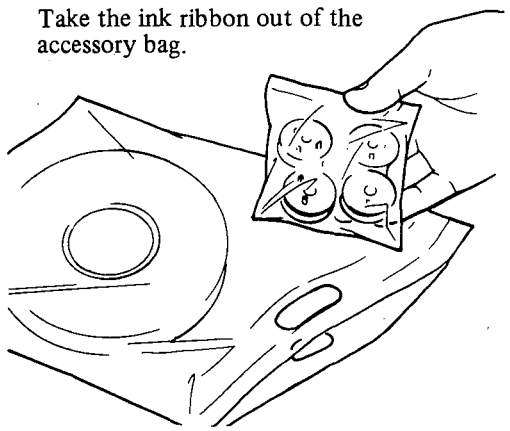


Close the upper cover with the paper passing through the opening as shown above. Now, the printer form has been set.

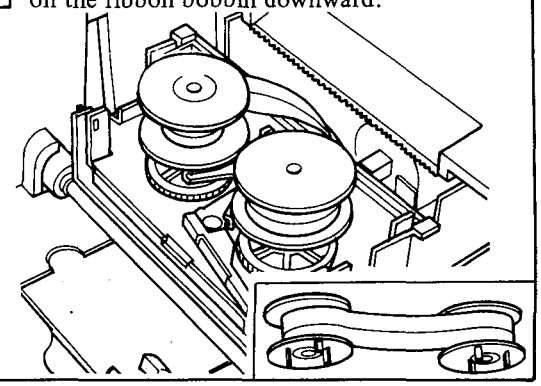
(Replacement and loading of ink ribbon)

Observe the following procedure.

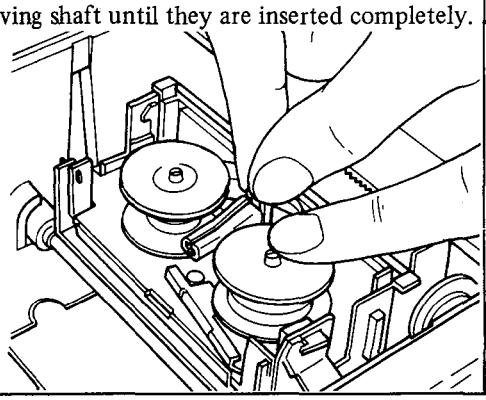
1 Take the ink ribbon out of the accessory bag.



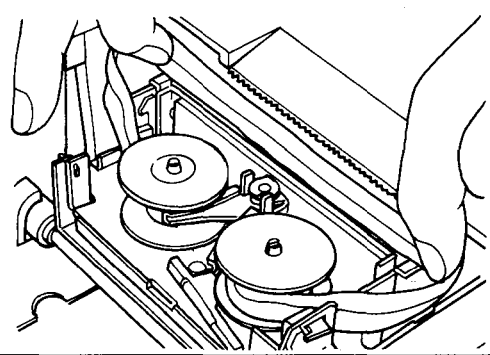
2 Put the ink ribbon bobbin onto the ribbon driving shaft. In this case, face the protrusion on the ribbon bobbin downward.



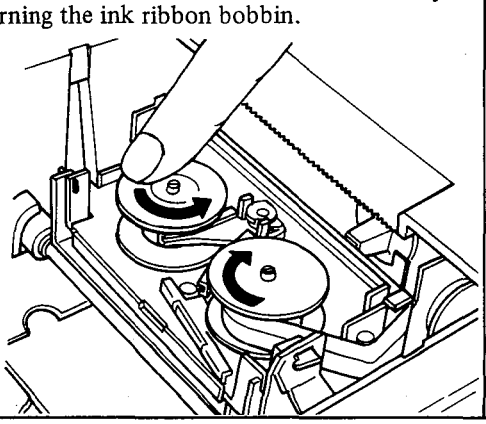
3 Close the ink ribbon holding lever, and push the ink ribbon bobbins into the ribbon driving shaft until they are inserted completely.



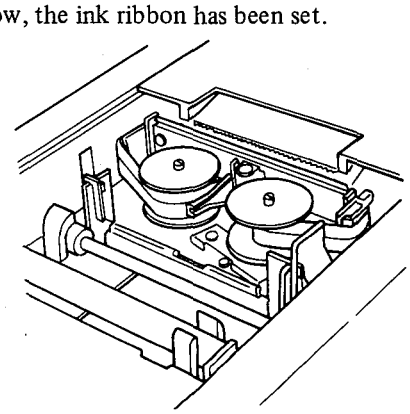
4 Loosen the ribbon by turning the ink ribbon. Insert the ribbon between the platen and the printer head by holding its both ends.



5 Eliminate the looseness of the ink ribbon by turning the ink ribbon bobbin.



6 Streatch the ink ribbon.
Now, the ink ribbon has been set.



(Cautions on handling)

(a) Check if the printer from has been loaded properly before using the printer. If the printer is operated without loading any printer form, it may become defective.

(b) Close the upper cover of the printer during use of PPR, otherwise ingress of dust and foreign substance may cause a printer trouble.

(c) The printer head is consumable. Replace it after printing about 200 rolls of chart, referring to item 5.6.1.

2.7 Handling of Puncher

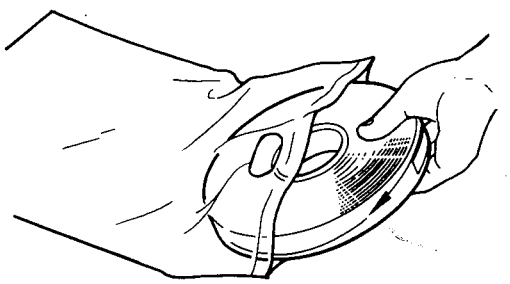
(Functions)

The puncher punches data from NC and FANUC SYSTEM P–MODEL G onto the paper tape.

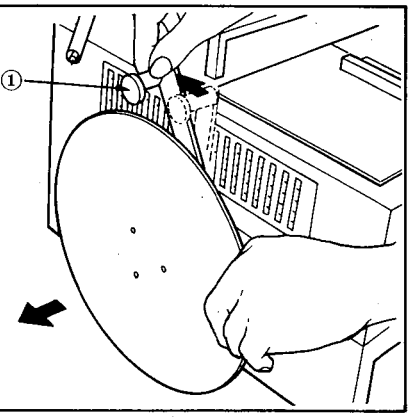
(Replacement and loading of paper tape)

Observe the following procedure.

1 Take the paper tape out of the accessory bag.

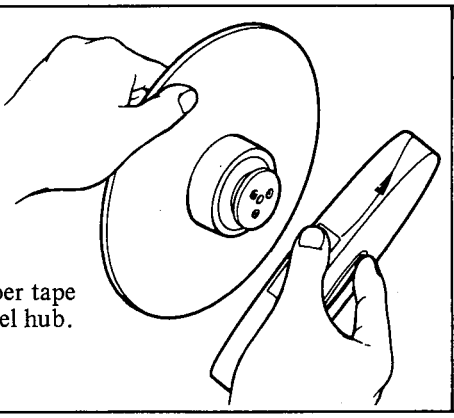


2



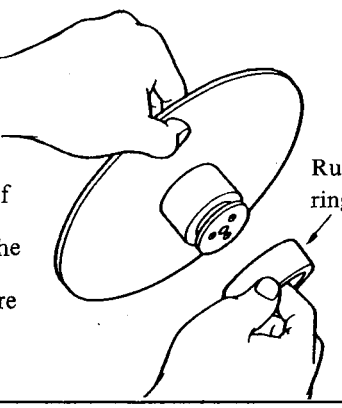
Remove the tape holder pushing the arm ① in the figure.

3



Put the paper tape onto the reel hub.

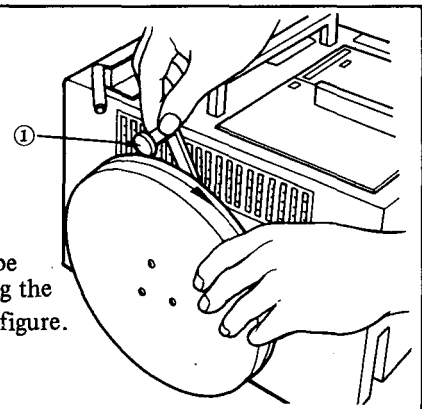
4



If the inner dia. of the paper tape is 50 mm, remove the rubber ring from the reel hub before putting it.

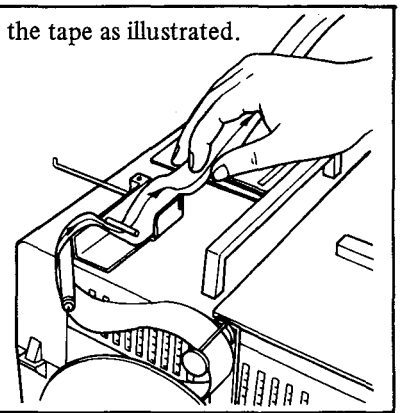
5

Mount the tape holder pushing the arm ① in the figure.



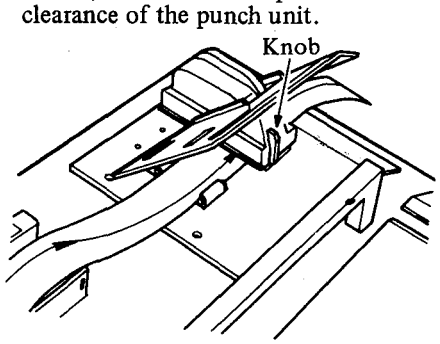
6

Thread the tape as illustrated.



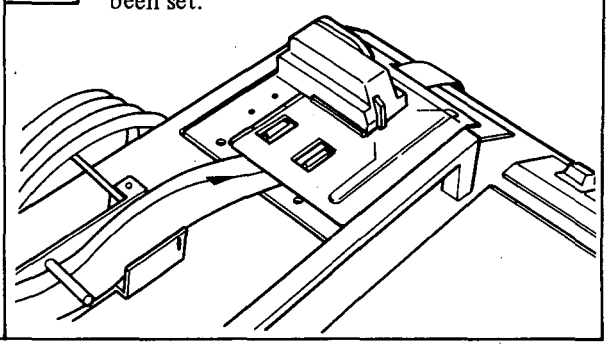
7

Depress the knob to lift the tape holder, and insert the tape into a clearance of the punch unit.



8

The tape holder is locked by depressing it downward. Now, the paper tape has been set.



(Cautions on handling)

(a) Use the 8-unit information exchange tape conforming to JIS C 6243.

(b) The punch block is consumable. Replace it referring to item 5.6.2.

Black tape	After punching about 100 rolls
Other color tape	After punching about 500 rolls

2.8 Handling of Tape Reader

(Functions)

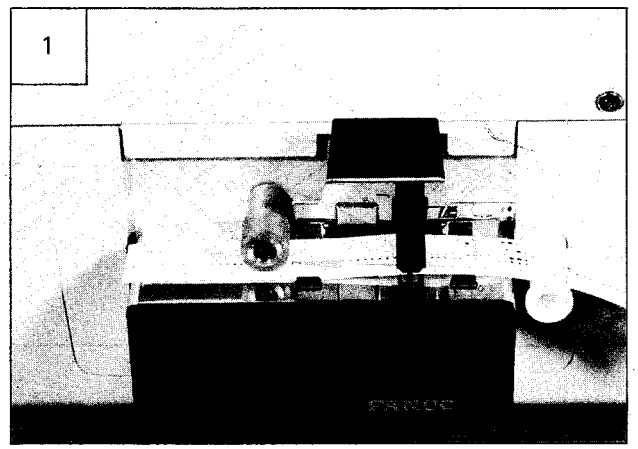
The tape reader is used for inputting data of paper tape into NC or FANUC SYSTEM P–MODEL G.

(Loading and unloading of paper tape)

Observe the following procedure.

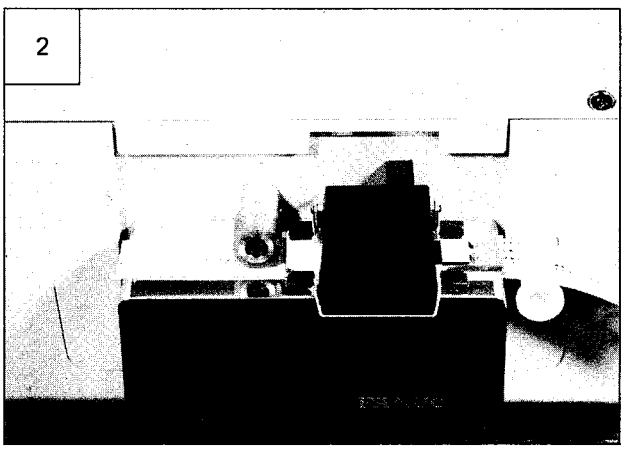
Make sure that the tape reader and paper tape are kept clean without any dust. Clean them, if required.

1



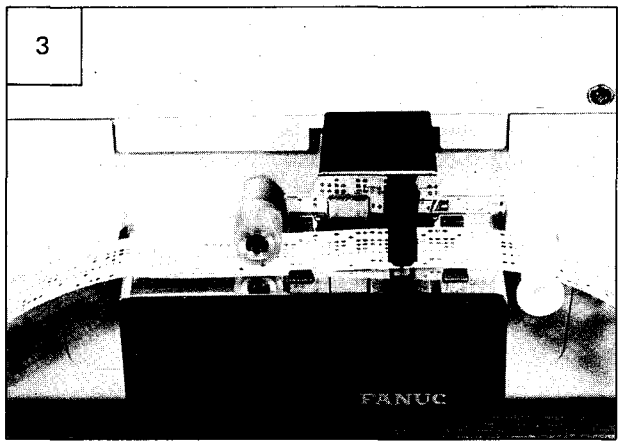
Lift the tape holder upward, and insert the paper tape below the tape holder. The paper tape travels from right to left as viewed from the front. Insert the paper tape in such a way as the sprocket holes (small holes perforated at certain intervals) are positioned this side from the center of the paper tape and the left end of the paper tape on the left side of the capstan roller.

2



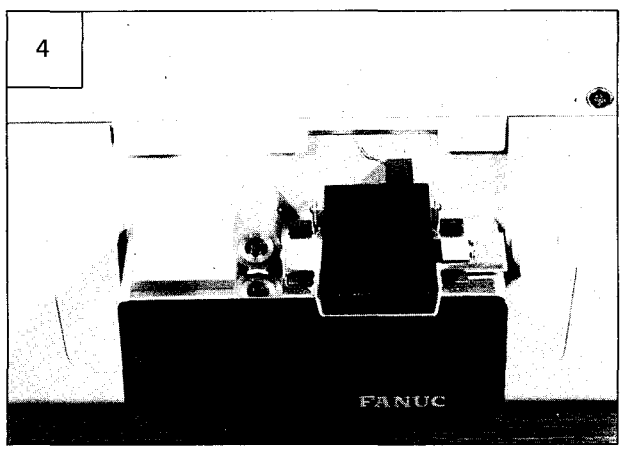
Lower the tape holder after making sure that the paper tape has been securely inserted into the paper tape guide.
If the paper tape is not inserted into its guide properly, it may be damaged or a read error may result.

3



For unloading the paper tape, lift the tape holder. In this case, wait for about 2 seconds until the stop magnet has been stopped after stopping the paper tape.

4



Lower the tape holder after unloading the paper tape. This tape holder should be lowered without fail to prevent ingress of dust.

3. CLEANING AND PERIODIC MAINTENANCE

3.1 Cleaning

To keep the PPR clean and use it correctly, use neutral detergent and alcokol. Don't use thinner, trickloro-ethylen, kentone and other like solvents, because they may injure plastic parts and coating.

3.2 Periodic Maintenance

Following four units require periodical maintenance. Clean and lubricate mechanical moving parts of these units periodically

Item	Units requiring periodical maintenance
1	Printer
2	Puncher
3	Tape reader
4	Air filter

(1) Printer

(a) Cleaning

① Cleaning frequency

Remove dust and paper dust after printing 10 rolled printer forms or once every 3 months.

② Cleaning method

After removing the PRT cover with paper cutter and PRT form cover, remove attached paper dust from the ribbon, form guide, form platen, and other surrounding parts of the printer by means of an electric vacuum cleaner.

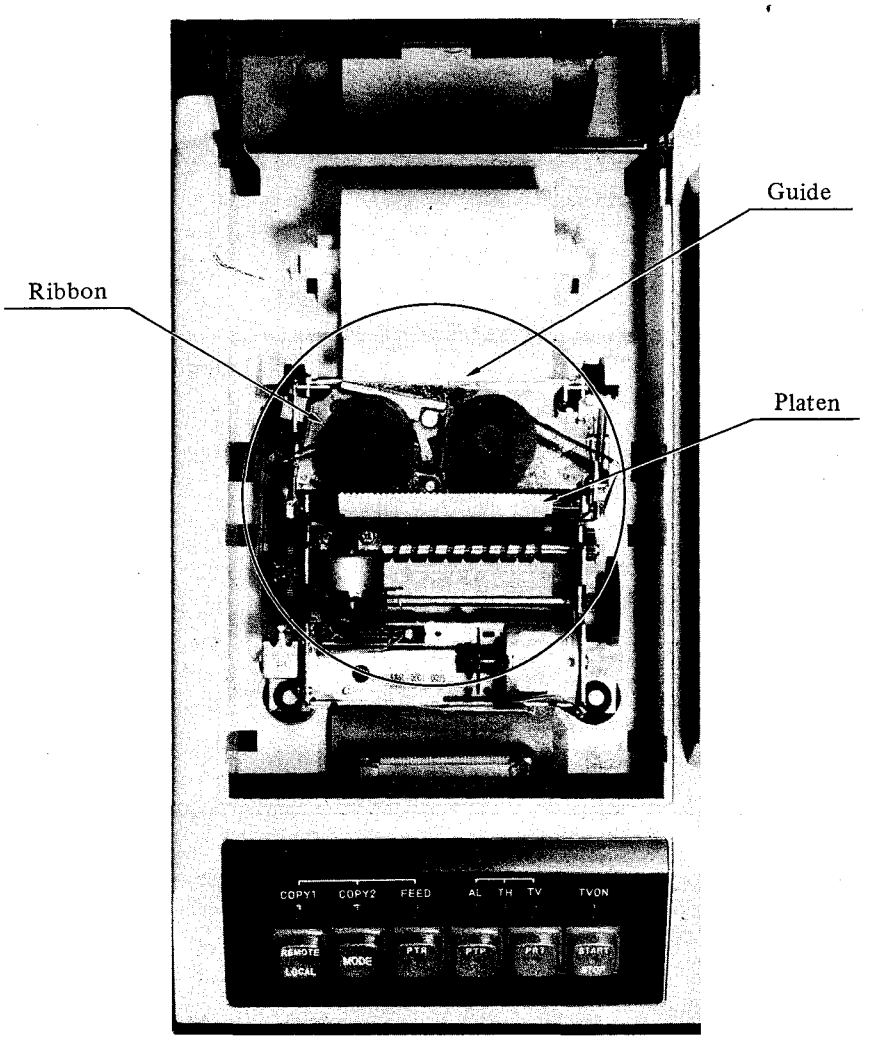
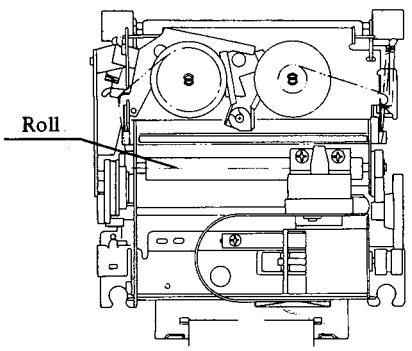
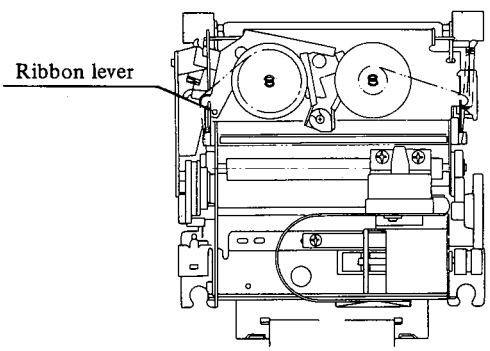


Fig. 3.2.1 Cleaning of Printer

(b) Lubrication
Table 3.2.1 shows lubricating parts of the printer.

Table 3.2.1

Item	Lubricating parts	Frequency	Kind of oil	Oil quantity
1	Roll 	3 months	MULTEMP	A little
2	Ribbon lever 	3 months	MULTEMP	A little

(2) Paper tape puncher

(a) Cleaning

① Cleaning Frequency

Remove punch waste, fluff, dust and dirt from the unit after punching about 50 rolled tape or once every 3 months.

② Cleaning method

After removing the punch waste guide, wipe off punch waste, fluff, dust, and dirt from the tape transport face as well as the waste inside the guide by using a brush or a soft paper, or remove them by means of an electric vacuum cleaner.

Cleaning of tape transport face

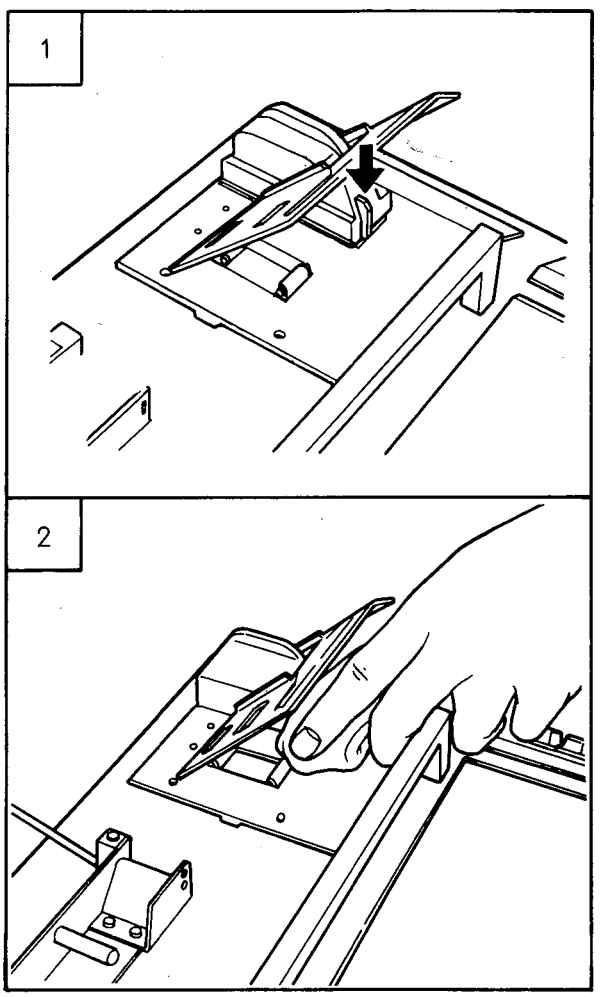


Fig. 3.2.2

Removing method of punch waste guide

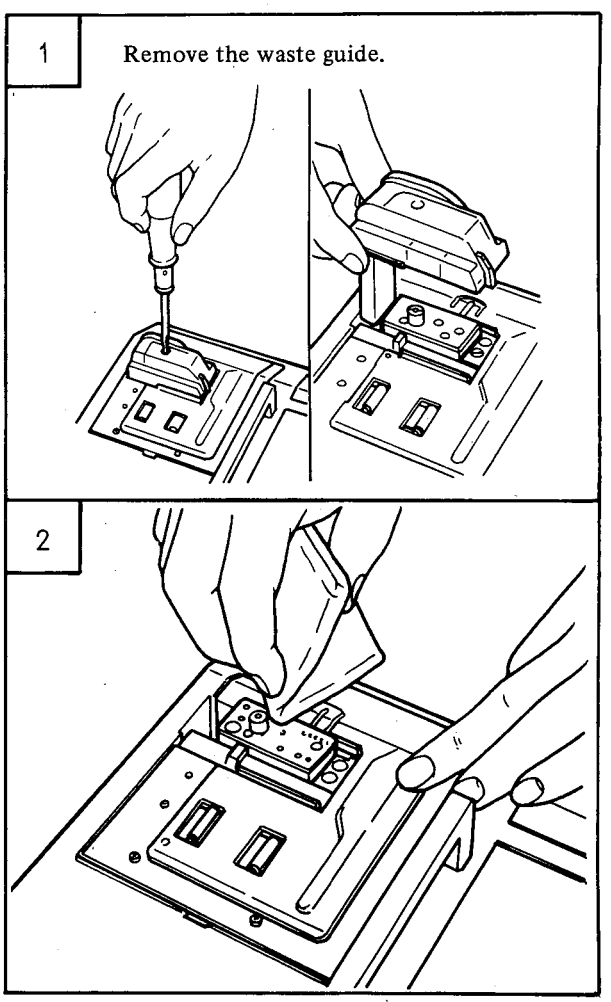


Fig. 3.2.3

(3) Paper tape reader

(a) Cleaning

Table 3.2.2 shows the parts to be cleaned in the paper tape reader.

Table 3.2.2 Parts to be cleaned in paper tape reader

Item No.	Parts to be cleaned	Reference figure	Cleaning frequency	Cleaning method
1	Read head surface (Light receiving part)	Fig. 3.2.4 ①	Every day	Clean with gauze or a thin brush wetted with absolute alcohol.
2	Read head surface (Light emitting part)	Fig. 3.2.4 ②	Every day	
3	Tape holder plate	Fig. 3.2.4 ③	Every day	
4	Tape transport surface	Fig. 3.2.4 ④	Every day	
5	Capstan roller	Fig. 3.2.4 ⑤	Every week	
6	Roller guide	Fig. 3.2.4 ⑥	Every week	
7	Pinch roller	Fig. 3.2.4 ⑦	Every week	
8	Assembly part of machine mounted below the tape transport plate	Fig. 3.2.4 ⑧	Every month	Clean with a cloth or a brush.
9	Inside the tape reader cover	Fig. 3.2.4 ⑨	Every month	

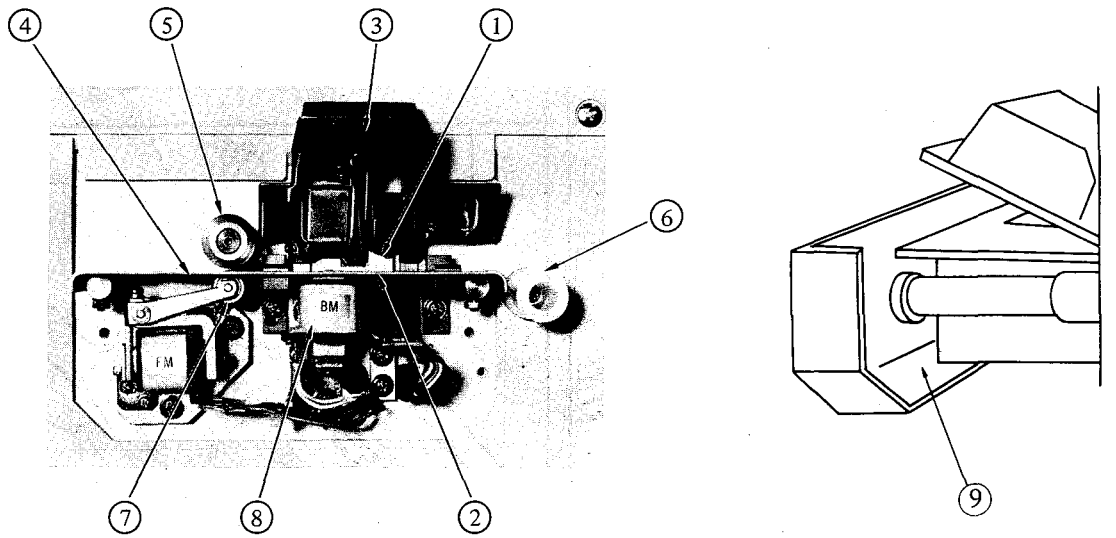
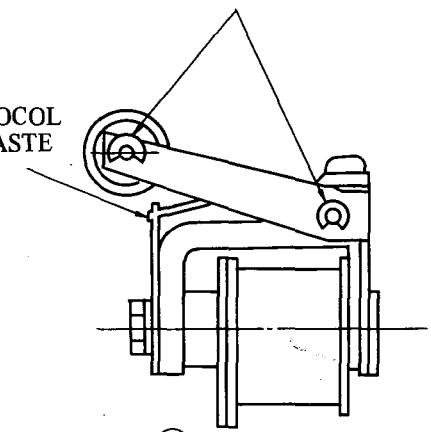


Fig. 3.2.4 Parts to be Cleaned in Paper Tape Reader

(b) Lubrication

Table 3.2.3 shows the parts to be lubricated in paper tape reader.

Table 3.2.3 Parts to be lubricated in paper tape reader

Item No.	Parts to be lubricated	Frequency	Kind of oil	Oil quantity
1	Magnet ass'y Luna oil ROCOL PASTE  See Fig. 3.2.4 ⑦	3 months	Luna oil	One drip
		1 year	ROCOL PASTE	To such an extent as oil forms a thin film

(Note) Kinds of oil

Item	Name	Brand	Maker
1	Luna oil	Luna 40	Nippon Oil
2	ROCOL PASTE	LOCOL PASTE	Sumitomo Kinzoku Kozan Co.
		ROCOL ASP	ROCOL CO. LTD. (UK)

Item	Name	Type	Volume
1	Luna Oil	WT7004A	50 cc
2	ROCOL PASTE	WT7022	50 g

(4) Air filter

(a) Cleaning

(1) Cleaning frequency

Clean the air filter once every month, since the air flow decrease, if the air filter is dusty.

(b) Cleaning method

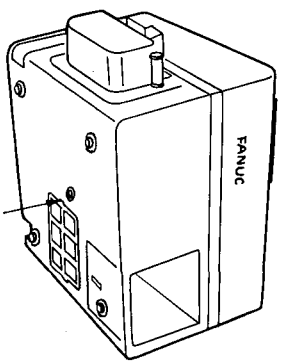
Remove the air filter and clean it according to the following procedure.

If the air filter is not so dirty, blow off compressed air from the inside while shaking the air filter, and eliminate clogging due to dust. If it is seriously dirty, immerse it into 2 ~ 4g/liter of synthetic cleaner, and then, wash it with pressure.

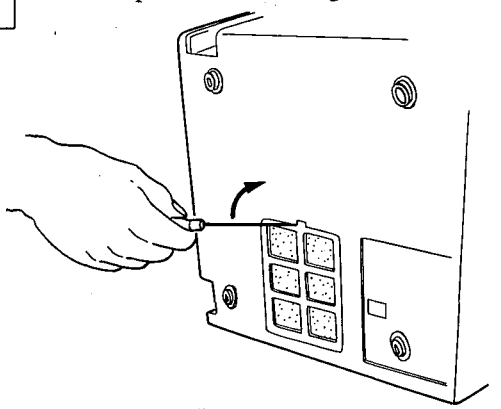
Don't rub it during washing.

Dry it in the shade after rinsing it with fresh water.

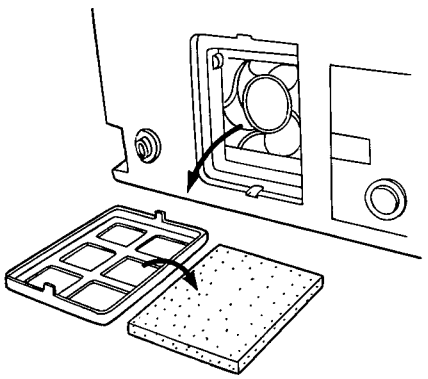
1 Bring down the PPR after removing the dust box.



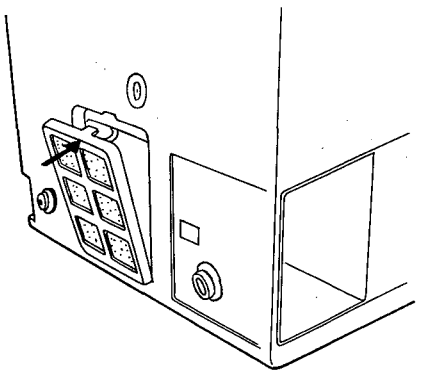
2 Wrench open the cover using the screwdriver.



3 Remove the air filter and clean it.



4 Attach the cleaned air filter.



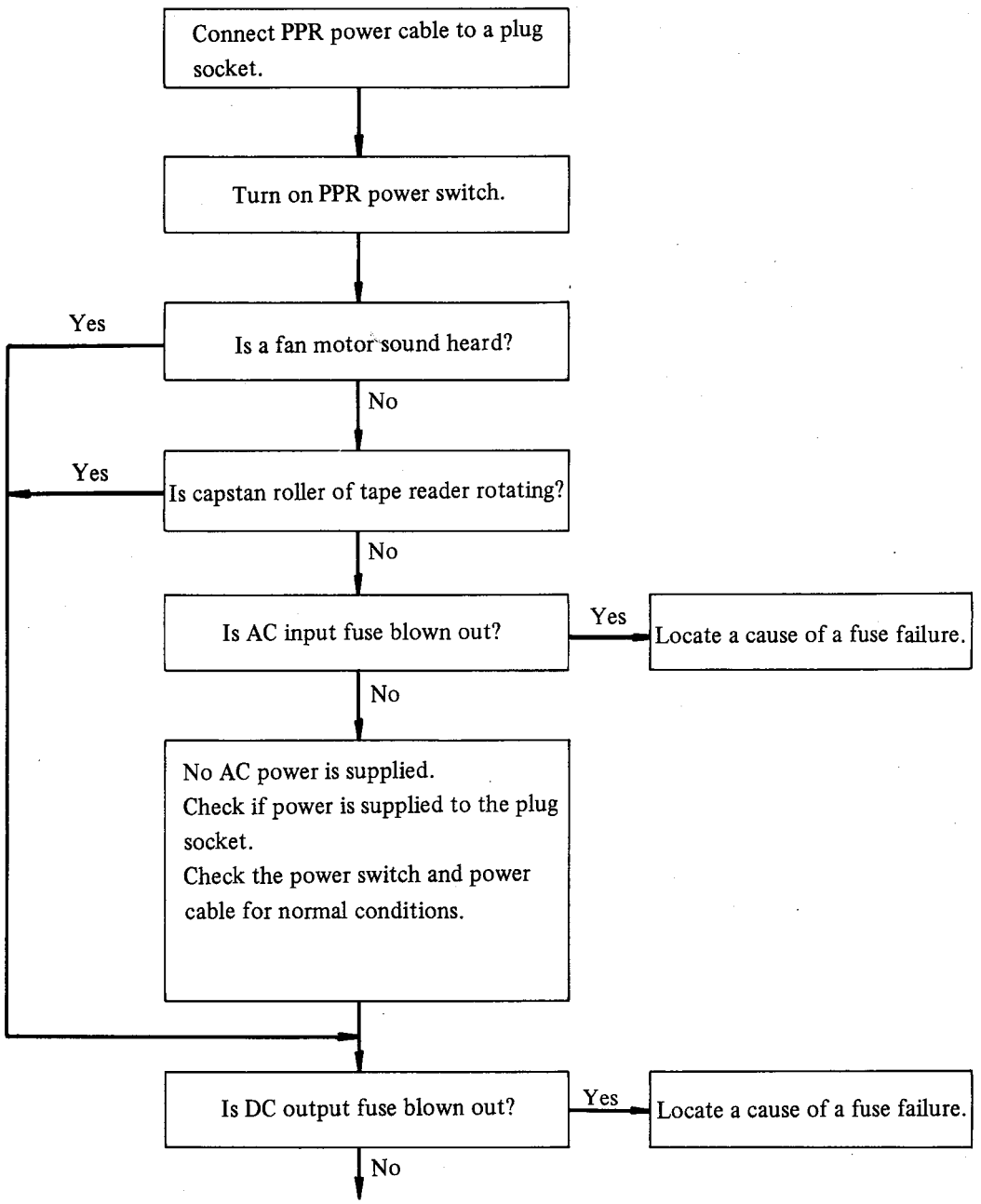
3.3 Consumables and Spare Parts

You are requested to use the consumables and spare parts satisfying their specifications for the purpose of operating P-G under a good operating condition. These consumables and spare parts are introduced below.

Item	Consumables/ spare parts	Dealers	Types	Specifications	Remarks
1	Diskette	Hitachi Maxcell Co. (TEL: 03-567-6221)	Mini-floppy diskette MD2-256D	Dual-face density IBM format 1 track=16 sectors 1 sector=256 bytes 48 TPI	
2	Printer form	CBM Co. (TEL: 03-200-6291)	RP-69/50	69 x 50φ 20 rolls unit	¥5.000.-/20 rolls
3	Printer ink ribbon	CBM Co. (TEL: 03-200-6291)	IR-01 B/R	13 x 30φ 12 pcs.	¥9.000.-/12 pcs.
4	Paper tape	Kobayashi Chart Sales Co. (TEL: 03-553-4131)	Information exchange 8-unit tape	JIS C6243	
5	Paper tape releaser	Uchida Yoko Co. (TEL: 03-555-4281)	271-0104 S type	For tape diameter 160 mm	This unit is used for feeding a long paper tape. Besides, KOKUYO's product, etc. are available.
			271-0105 L type	For tape diameter 230 mm	
6	Paper tape winder	Uchida Yoko Co. (TEL: 03-553-4131)	271-0112 B type		This unit is used to wind paper tape by hand. Besides, KOKUYO's product, etc. are available.

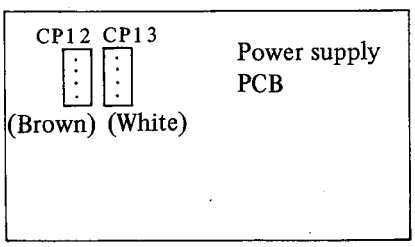
4. TROUBLESHOOTING

4.1 Power Supply

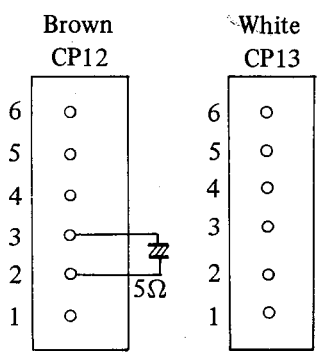


Check the power voltage as follows.

(1) Disconnect cables from the following connectors.



(2) Measure the voltage by using a circuit tester with a 5Ω (1 kW) resistor connected as shown below.



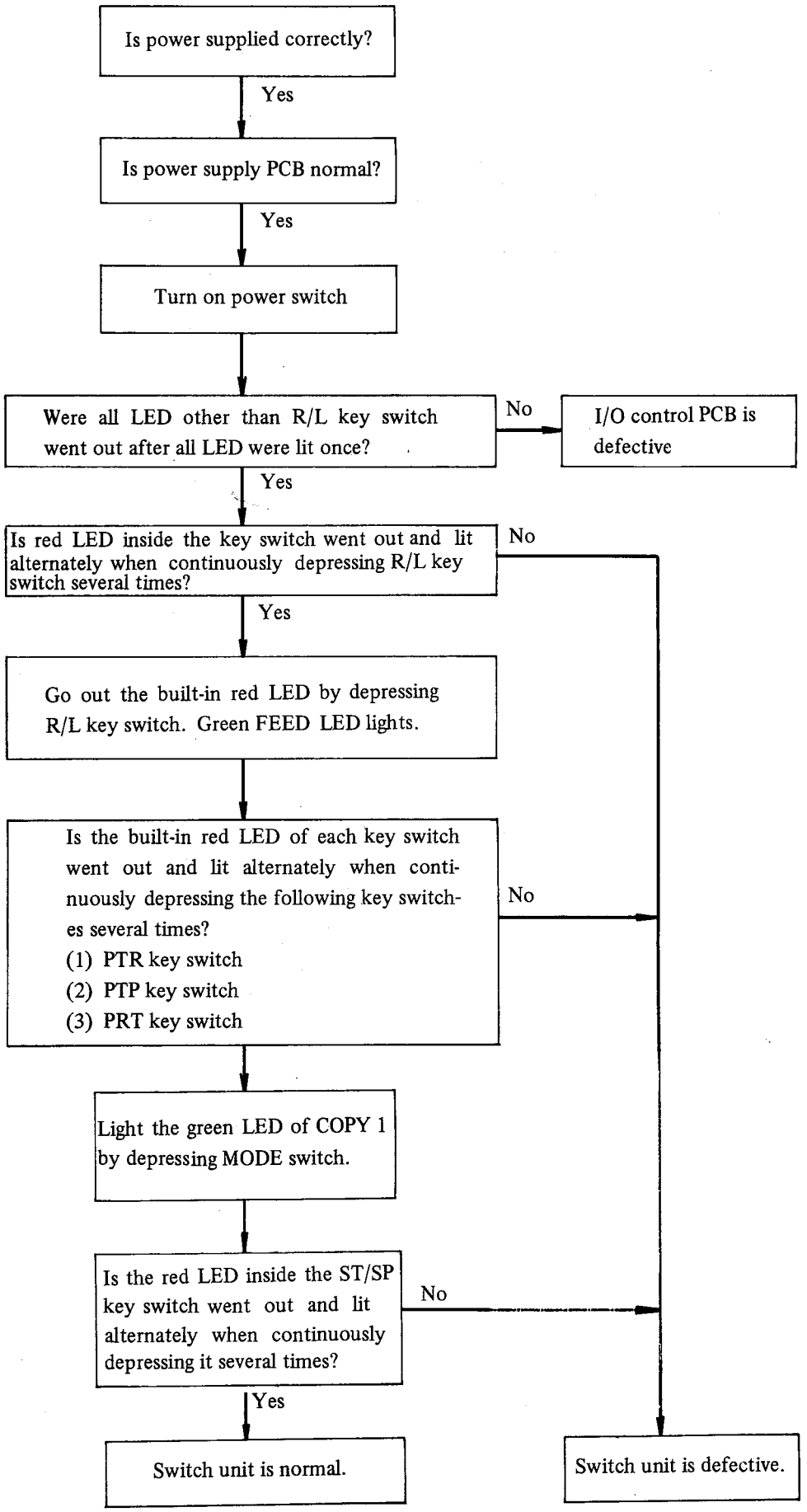
	Output terminal	Output voltage range
24V	CP12-5, 6	$24V^{+2.4V}_{-3.0V}$
17V	CP13-3	17V ± 1V
12V	CP13-1	12V ± 0.6V
5V	CP12-1, 2	5V ± 0.15V
-12V	CP13-6	12V ± 1.2V
0V	CP12-3, 4 CP13-2, 5	

Is the output voltage within the specified range?

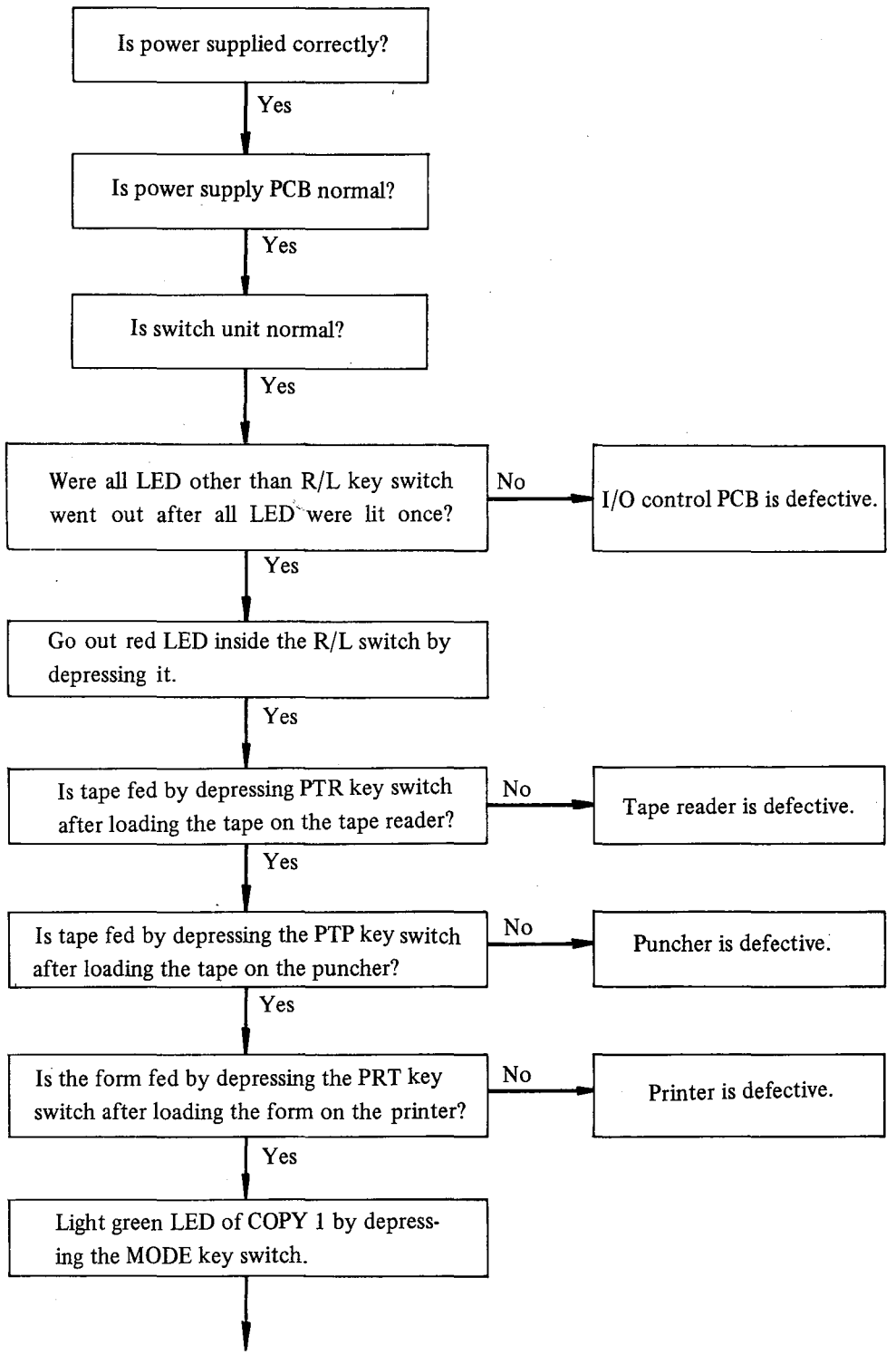
No → Power supply PCB is normal.

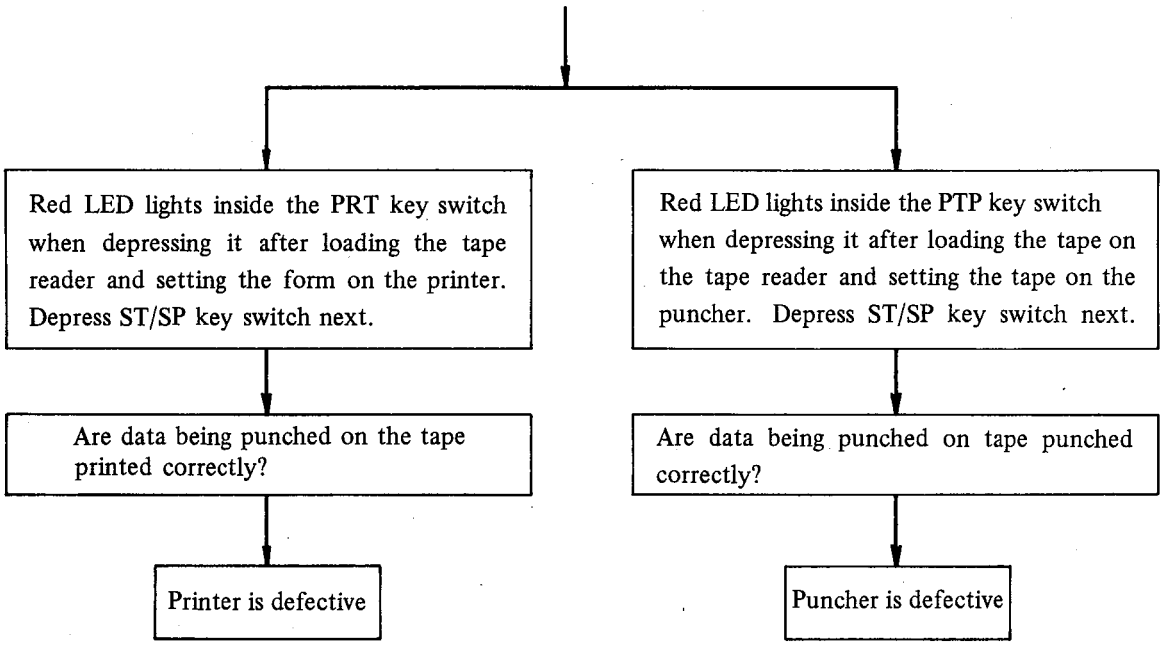
Yes → Power supply PCB is defective.

4.2 Switch Unit



4.3 I/O Control PCB and Units




Red LED lights inside the PRT key switch when depressing it after loading the tape reader and setting the form on the printer. Depress ST/SP key switch next.
Red LED lights inside the PTP key switch when depressing it after loading the tape on the tape reader and setting the tape on the puncher. Depress ST/SP key switch next.
Are data being punched on the tape printed correctly?
Are data being punched on tape punched correctly?
Printer is defective
Puncher is defective

5. MAINTENANCE OF FANUC PPR

5.1 General

5.1.1 Structure

The FANUC PPR consists of the following units. Maintenance of FANUC PPR should be done for these units individually.

Fig. 5.1.2 shows general connection diagram.

	Component units	Symbols
1	Printer	PRT
2	Puncher	PTP
3	Tape reader	PTR
4	Switch unit	
5	Relay unit	
6	I/O control PCB	
7	Power supply PCB	
8	Fan	

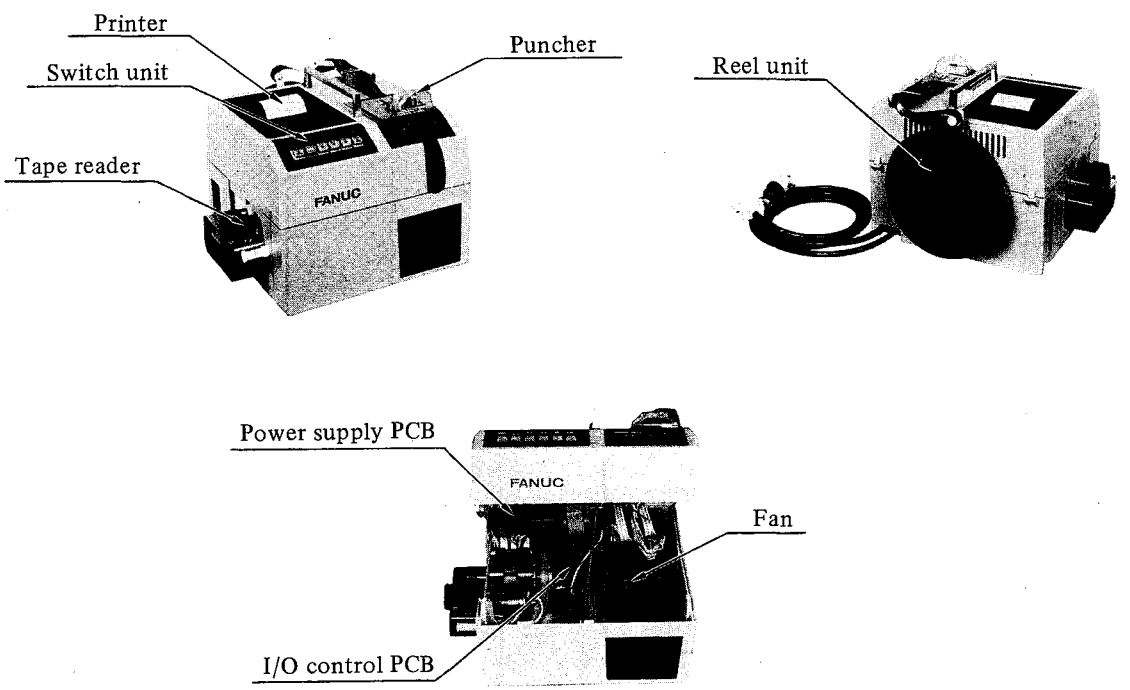


Fig. 5.1.1 External View of FANUC PPR

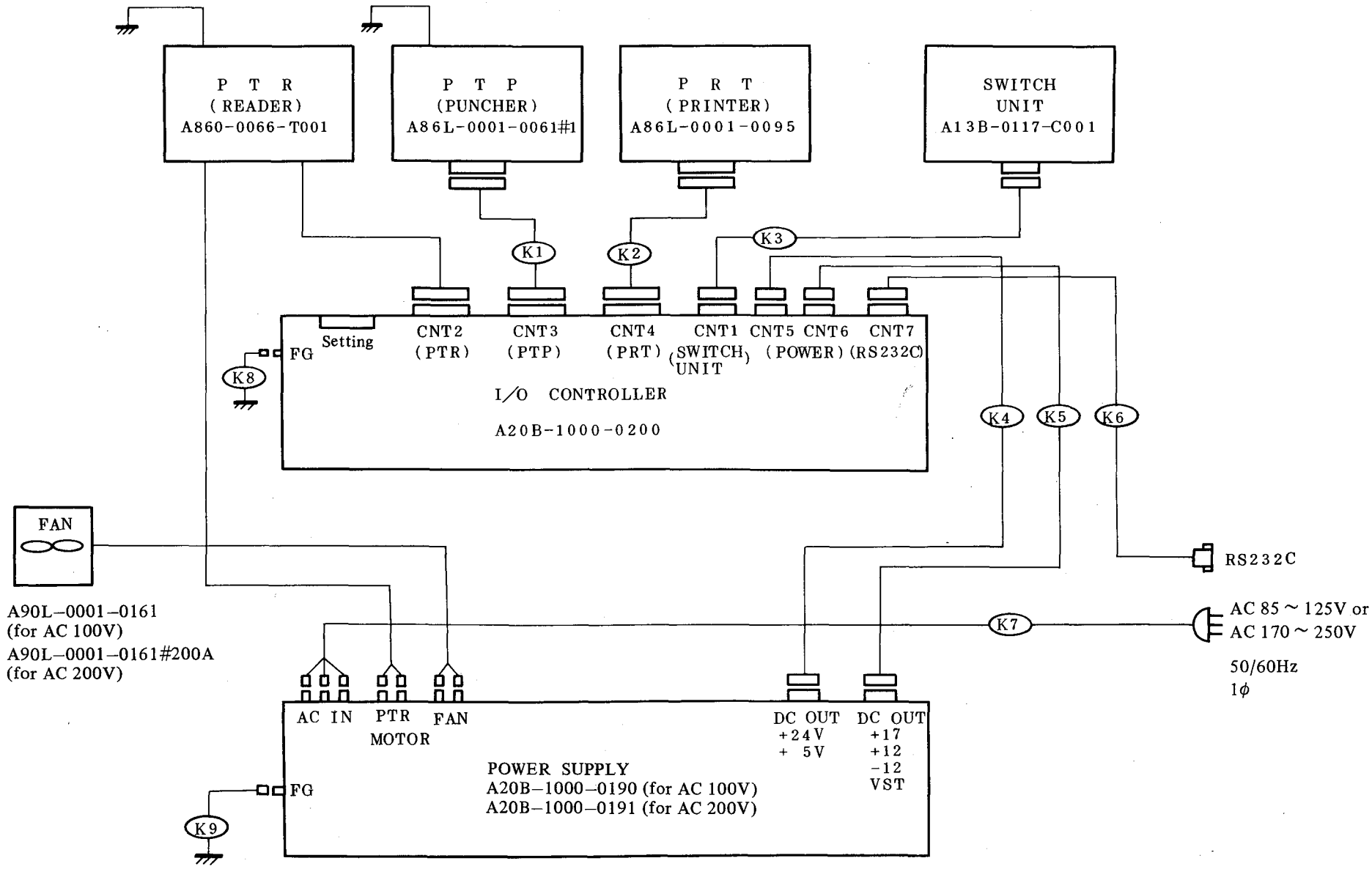


Fig. 5.1.2 FANUC PPR General Connection Diagram

5.2 Maintenance Parts

Table 5.2.1 shows standard maintenance parts or units, (Kinds: A.. Consumables B.. Unit parts)

Table 1.2.2 Maintenance parts and units for FANUC PPR

	Name	Article	Specifications	Class and standard quantity			Q'ty	Remarks
				A	B	C		
1	Fuse 4A	Fuse 4A	A60L-0001-0039 #M-4	5				Input power supply for 100V
	Fuse 2A	Fuse 2A	A60L-0001-0039 #M-2					Input power supply for 200V
2	Fuse DM32	Fuse DM32	A60L-0001-0172 #DM32	3				For power supply PCB
3	Fuse DM03	Fuse DM03	A60L-0001-0172 #DM03	1				"
4	Air filter	Air filter	A230-0235-X009	5				
5	Fan	Fan	A90L-0001-0161	1				for AC 100V
			A90L-0001-0161 #200A					for AC 200V
6	Punch block	Punch block	A86L-0001-0065 #001	1				
7	Printed head	Printed head	A86L-0001-0095 #002	1				
8	Printer	Printer	A86L-0001-0095		1			
9	Puncher	Puncher	A86L-0001-0061 #1		1			
10	Tape reader	Tape reader	A860-0066-T001		1			
11	Switch unit	Switch unit	A13B-0117-C001		1			
12	I/O control PCB	Control PCB	A20B-1000-0200		1			
13	Power supply PCB	Power supply PCB	A20B-1000-0190		1			
14	Tape reader read element	Read element	A50L-8001-0074			1		

You can purchase the above maintenance parts and units as a kit according to the following specifications as well as individually

A13P-0117-B001#A (From items 1 to 7 in the above table. Their quantities are as specified in column A.)

A13P-0117-B001#B (From items 8 to 13 in the above table. Their quantities are as specified in column B.)

A13P-0117-B001#C (Item 14 in the above table. Its quantity is as specified in column C.)

5.3 Maintenance Instruments and Tools

Table 5.3.1 shows measuring instruments and tools required for routine maintenance.

Table 5.3.1 Maintenance instruments and tools

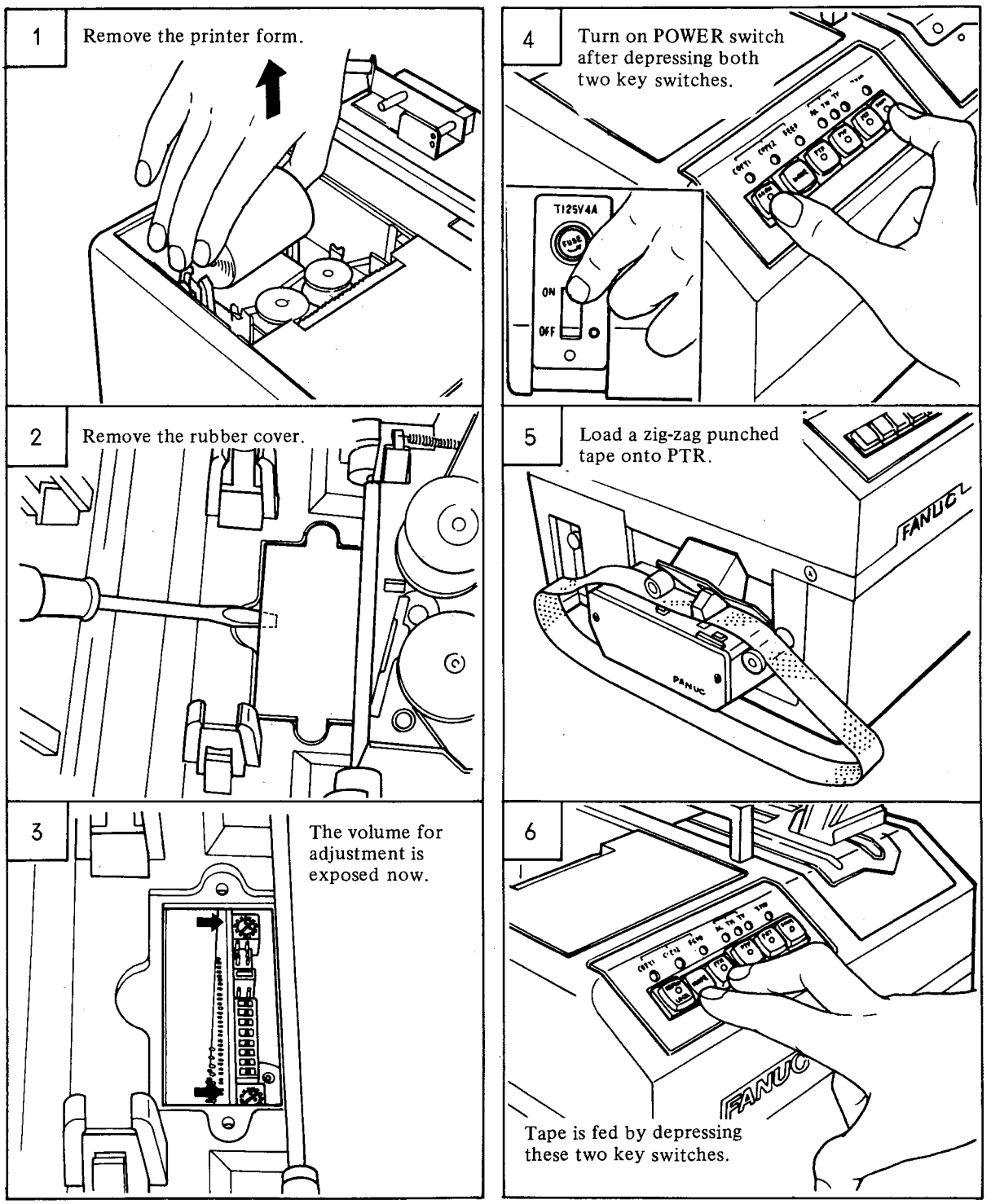
	Name	Remarks
Measuring instrument	Circuit tester	
Tools	Philips (+) screwdrivers	Large, medium, and small sized
	Convertional (−) screwdrivers	Medium (total length shorter than 7 cm) and small sizes
	Hexagon wrench key	4 mm (nominal 4)

5.4 Adjustments

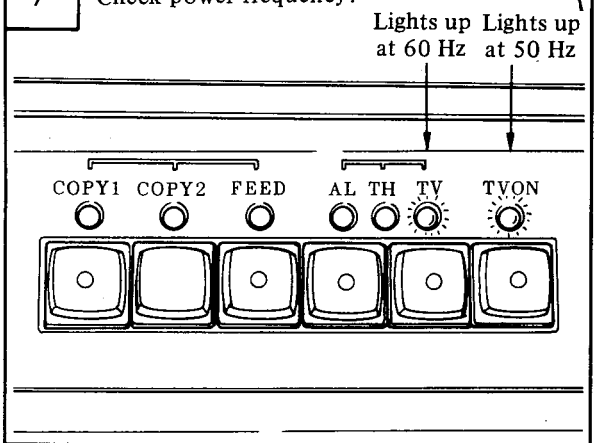
Since the system has been adjusted at factory before shipment, it is no longer necessary to adjust the system at site.

However, readjustments may be necessary as a result of secular change, replacement of a unit, and others.

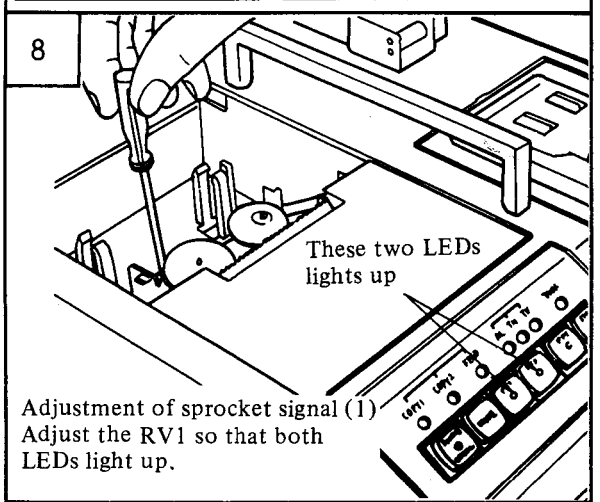
5.4.1 Adjustment of photoamplifier output waveform of tape reader



7 Check power frequency.

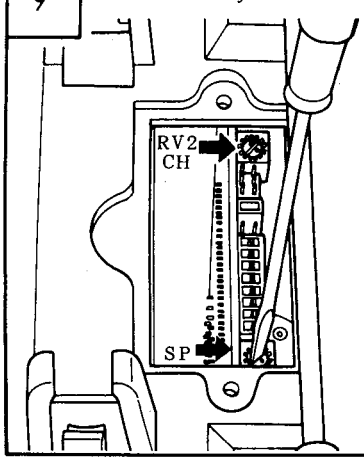


8

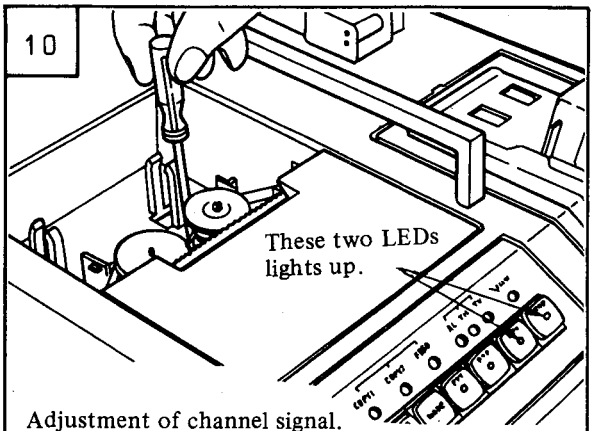


Adjustment of sprocket signal (1)
Adjust the RV1 so that both LEDs light up.

9 Adjustment of sprocket signal (2)
LED lights up in some area.
Set adjustment point at the middle of its area.

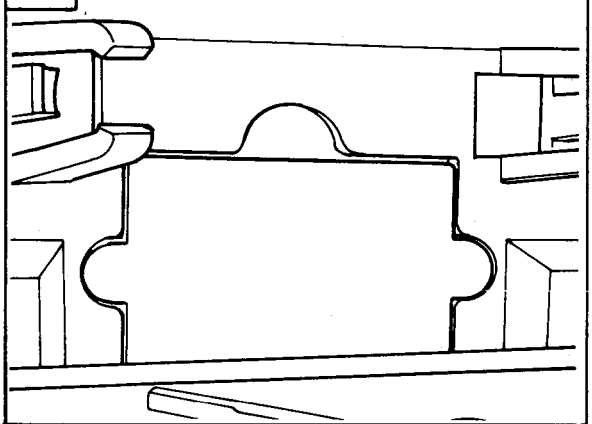


10

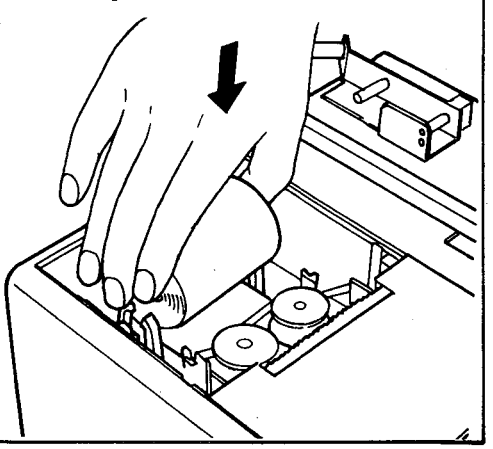


Adjustment of channel signal.
LED light up in some area. Set adjustment point at the middle of its area.

11 Mount the rubber cover after adjustment.



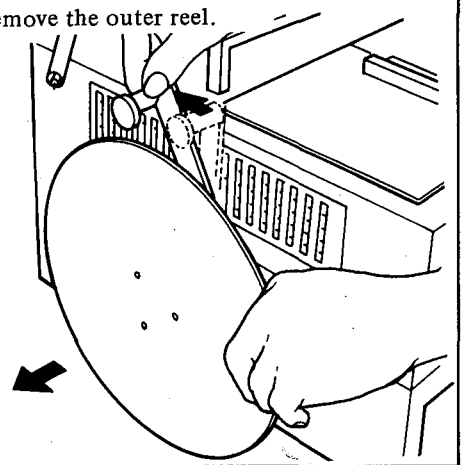
12 Mount the printer form.



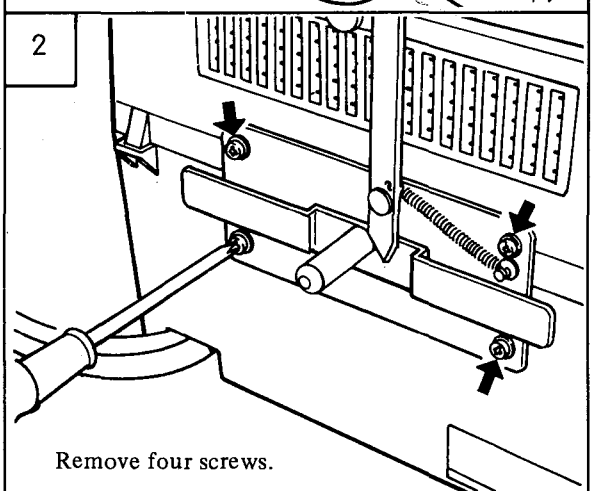
5.5 Replacement of PCB and Units

5.5.1 Removal of reel unit and upper cover

1 Remove the outer reel.

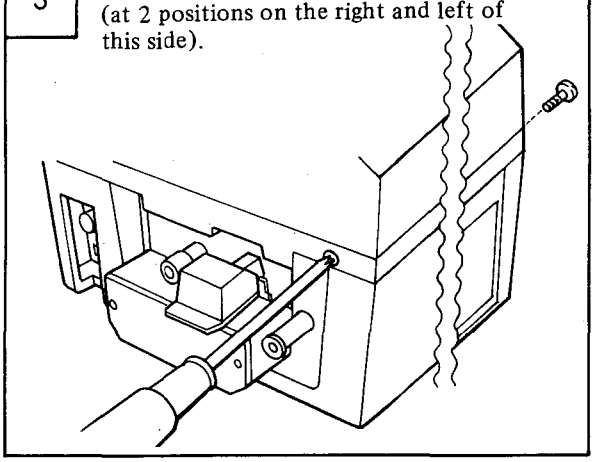


2

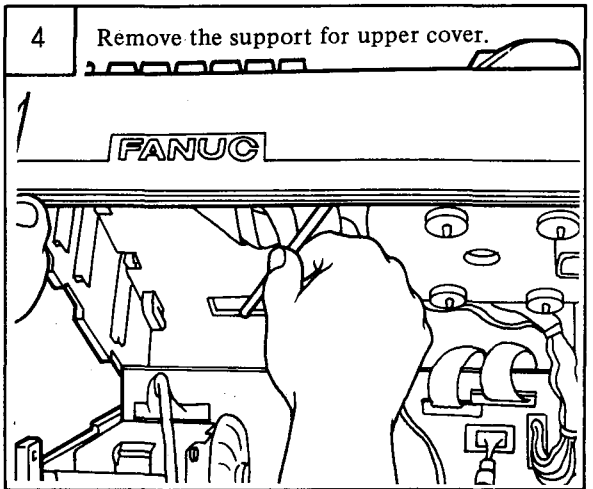


Remove four screws.

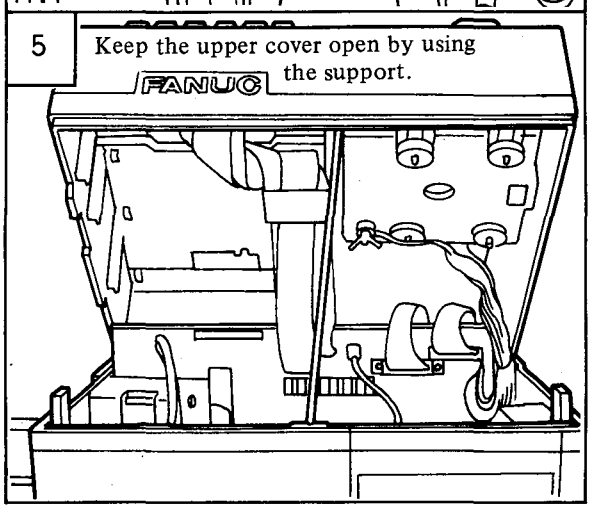
3 Remove two upper cover fixing screws (at 2 positions on the right and left of this side).



4 Remove the support for upper cover.



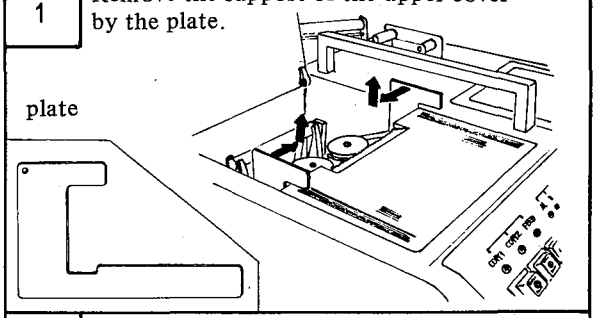
5 Keep the upper cover open by using the support.



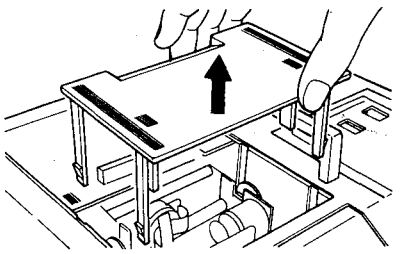
5.5.2 Replacement of printer

1 Remove the support of the upper cover by the plate.

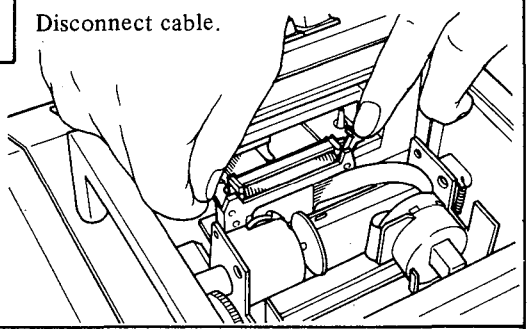
plate



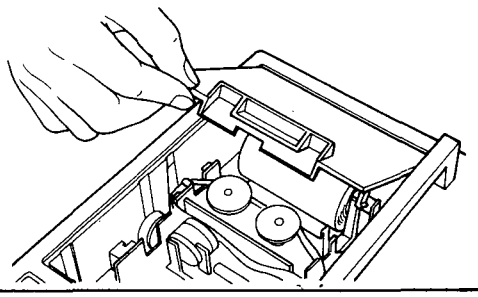
2 Remove the support of the upper cover.



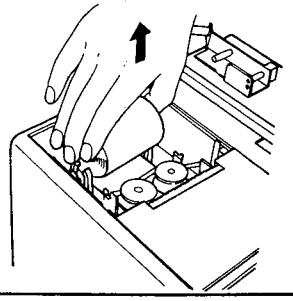
3 Disconnect cable.



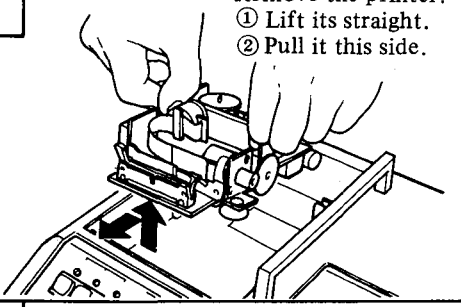
4 Open the PRT form cover.



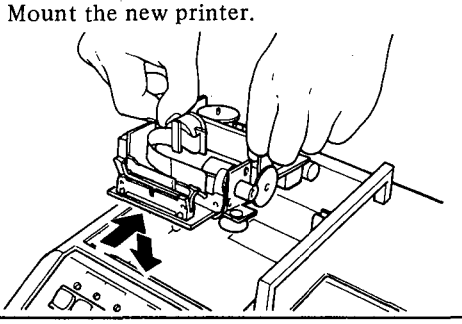
5 Unload the form from the printer.



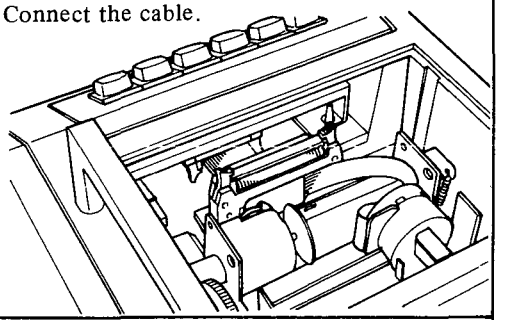
6 Remove the printer.
① Lift its straight.
② Pull it this side.



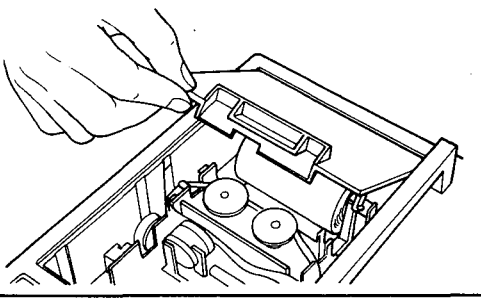
7 Mount the new printer.



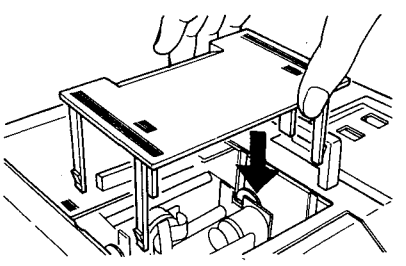
8 Connect the cable.



9 Close the PRT form cover.

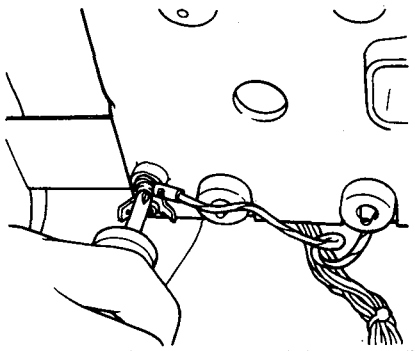


10 Close the PRT cover with paper cutter.

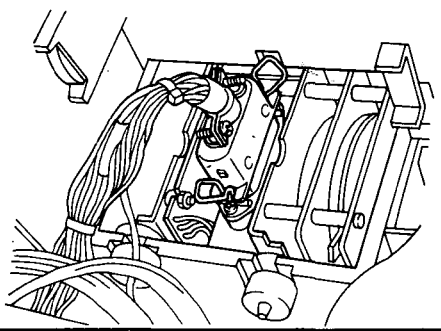


5.5.3 Replacement of puncher

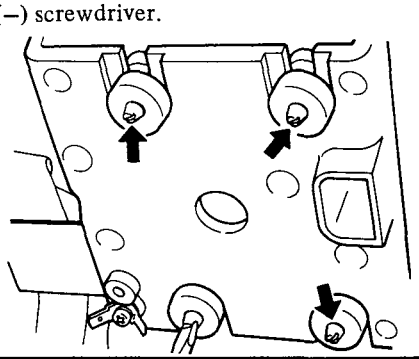
1 Disconnect the ground cable.



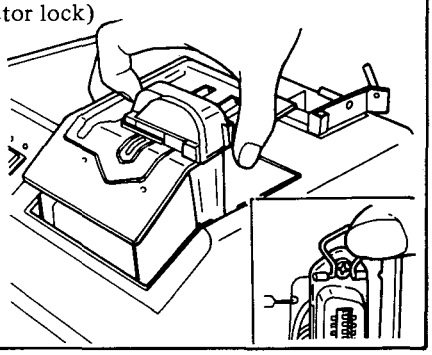
2 Disconnect cable.
(Remove the connector lock.)



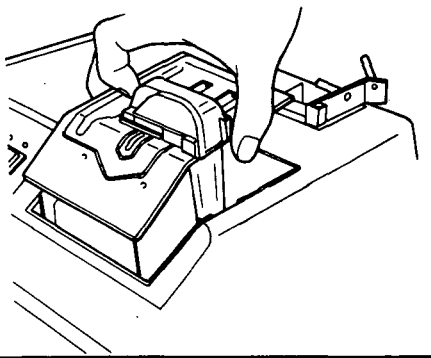
3 Remove four screw using a short (–) screwdriver.



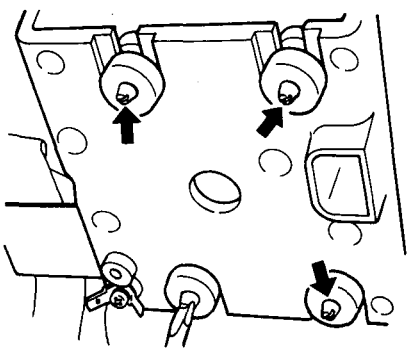
4 Draw out PTP upward.
(While taking care not to be caught by the connector lock)



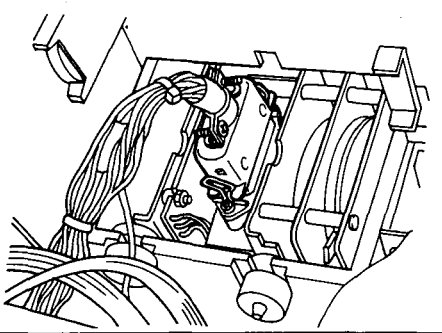
5 Mount new PTP.



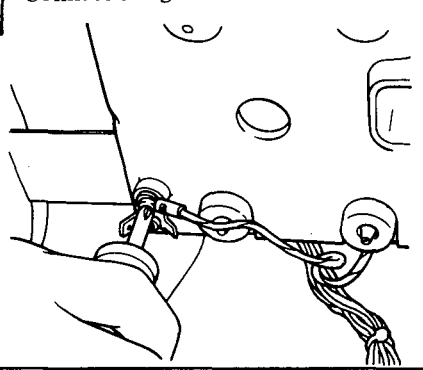
6 Tighten four screws.



7 Connect cable.
(Lock the connector lock.)

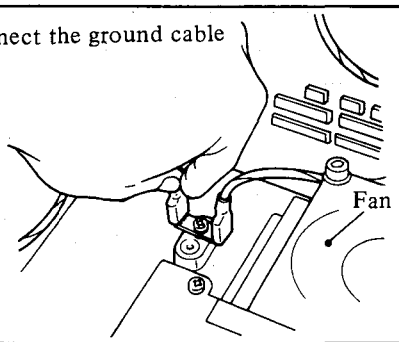


8 Connect the ground cable.

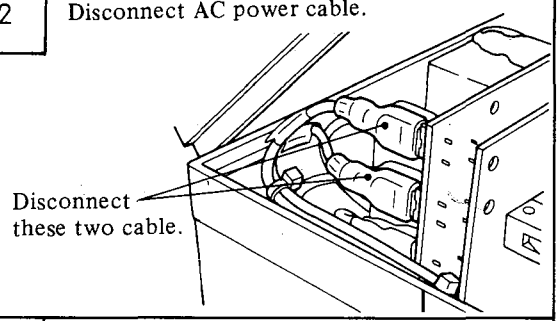


5.5.4 Replacement of tape reader

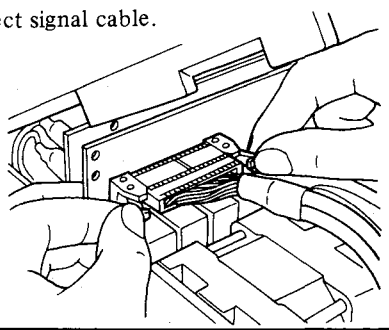
1 Disconnect the ground cable



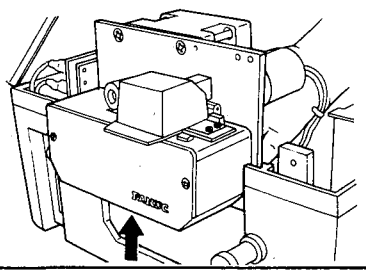
2 Disconnect AC power cable.



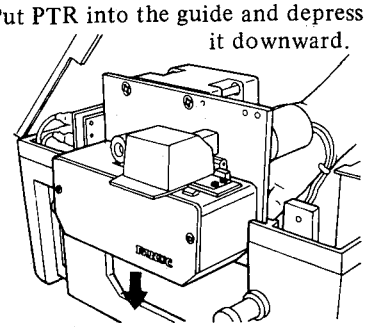
3 Disconnect signal cable.



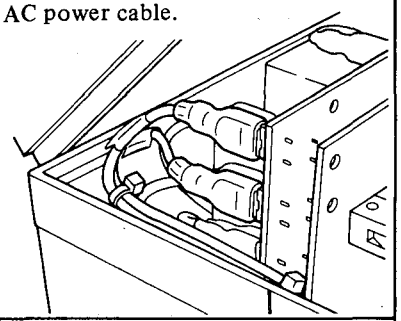
4 Draw out PTR upward by lifting the upper cover by hand.



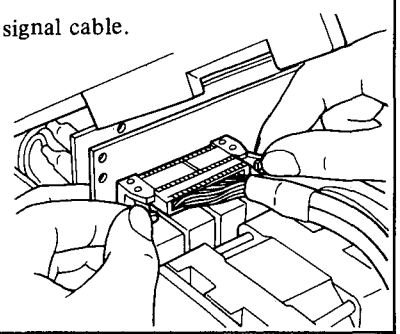
5 Put PTR into the guide and depress it downward.



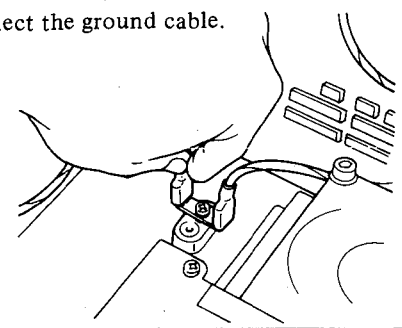
6 Connect AC power cable.



7 Connect signal cable.



8 Connect the ground cable.

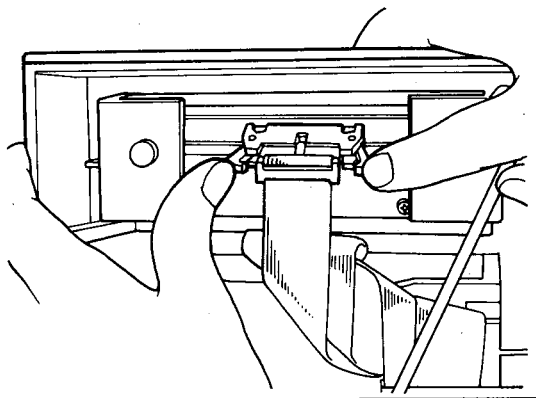


9 Adjustment

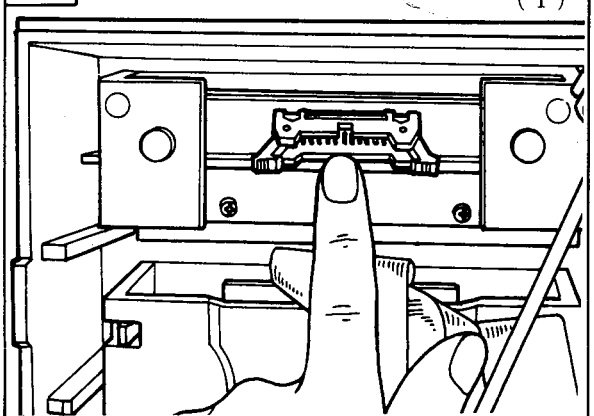
Refer to item 5.4.1

5.5.5 Replacement of switch unit

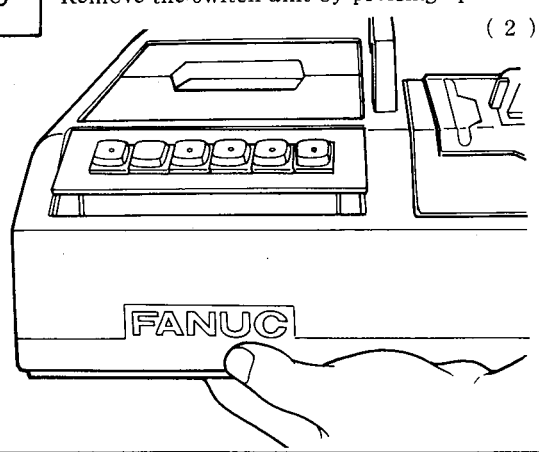
1 Disconnect cables
(Remove the connector lock.)



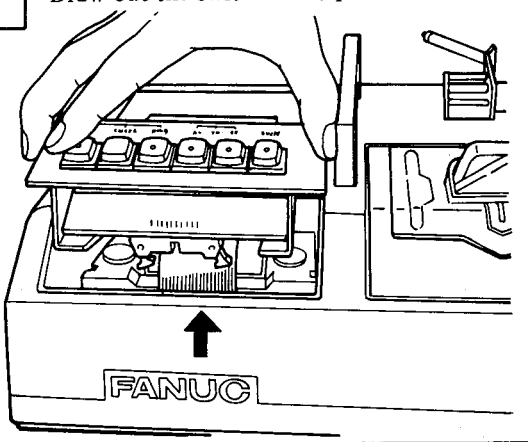
2 Remove the switch unit by pressing upward.
(1)



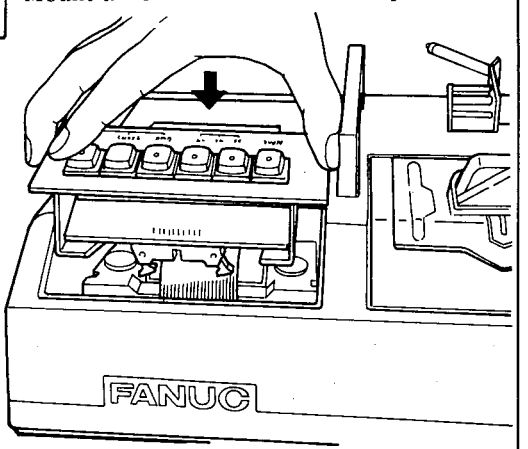
3 Remove the switch unit by pressing upward.
(2)



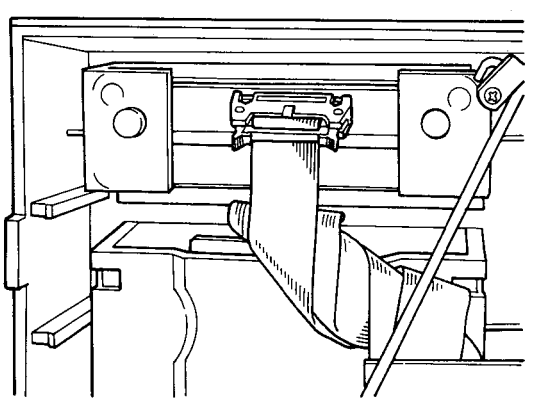
4 Draw out the switch unit upward.



5 Mount the switch unit from the top.



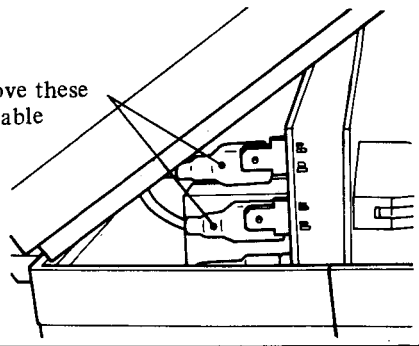
6 Connect cables, and lock them.



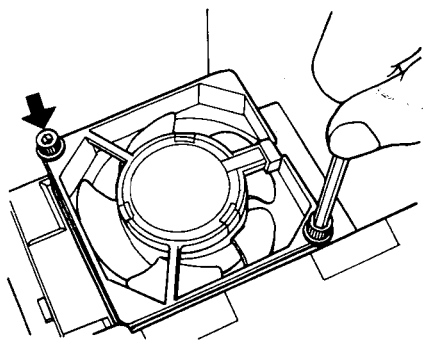
5.5.6 Replacement of fan

1 Disconnect AC power cable.

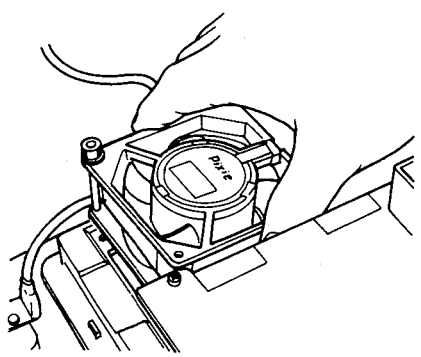
Remove these two cable



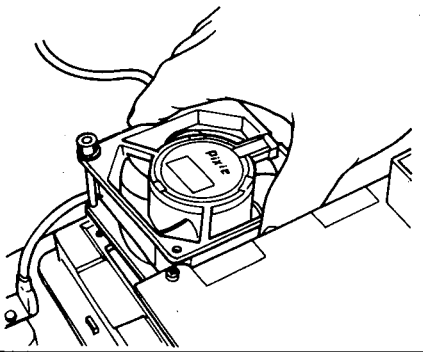
2 Remove two fan screws.



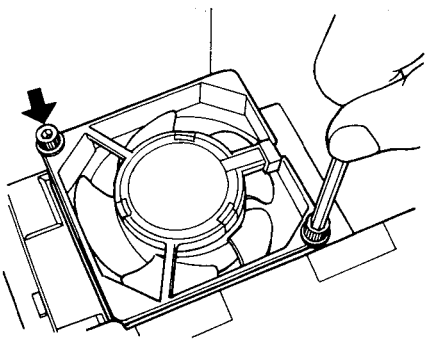
3 Remove the fan.



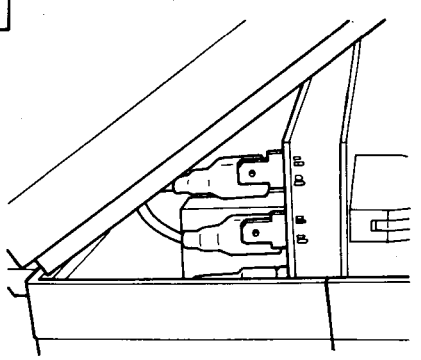
4 Mount the new fan.



5 Tighten two fan screws.



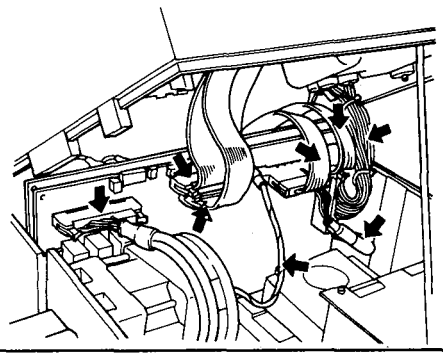
6 Connect AC power cable.



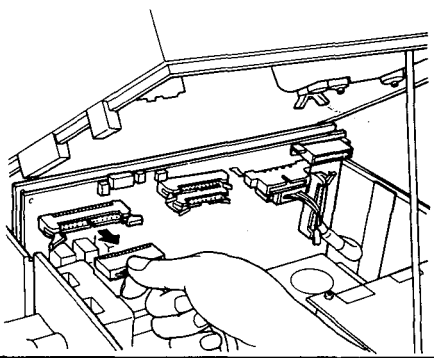
5.5.7 Replacement of PCB

(1) I/O control PCB (A20B-1000-0200)

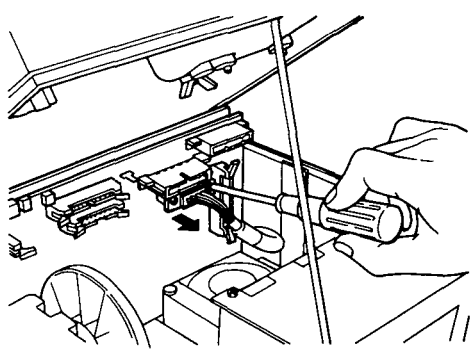
1 Disconnect all cables (8 points) (1)



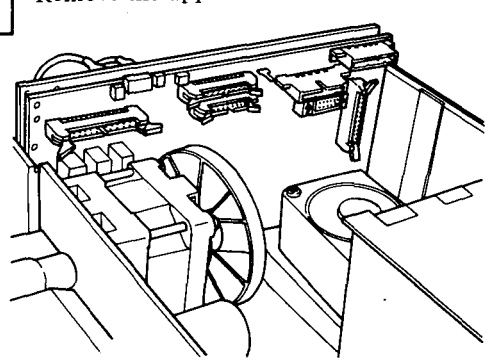
2 Disconnect the cables. (2)



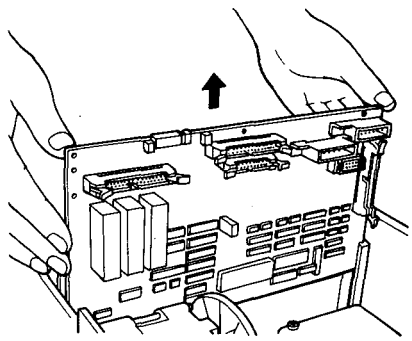
3 Disconnect the cables. (3)



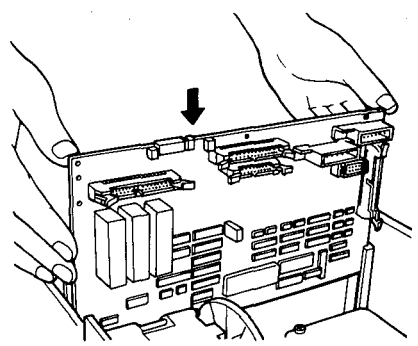
4 Remove the upper cover.



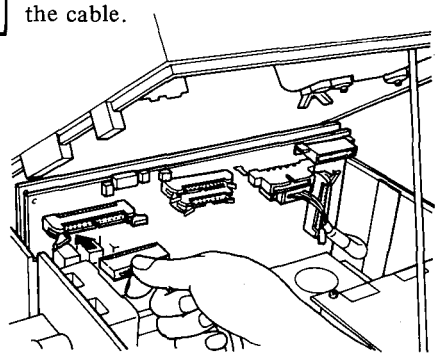
5 Remove PCB upward.



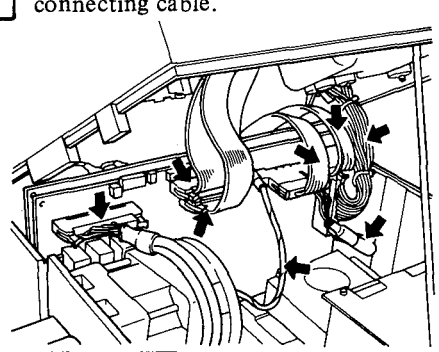
6 Input new PCB.



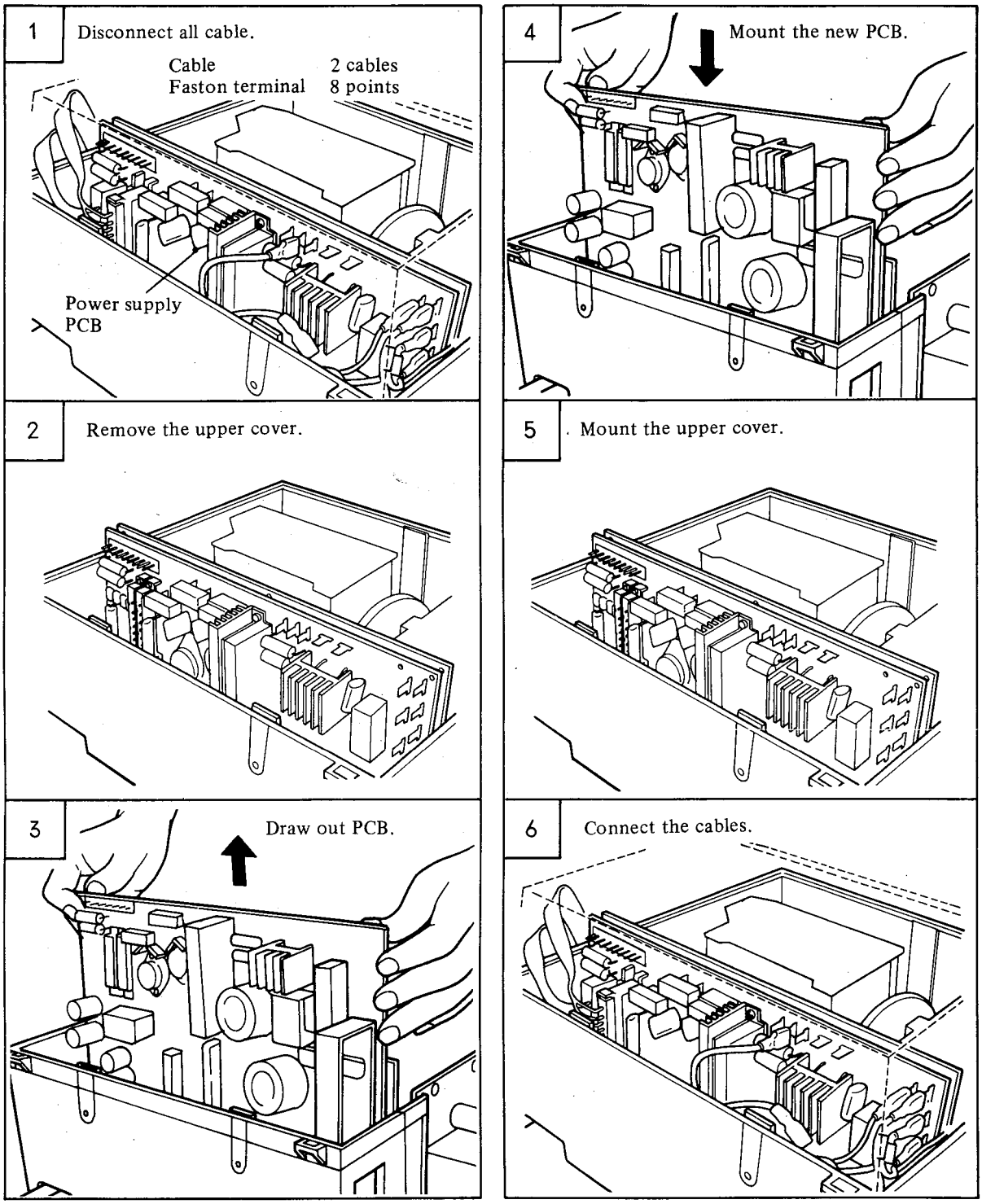
7 Mount the upper cover and connect the cable.



8 Close the upper cover after connecting cable.



(2) Power supply PCB (A20B-1000-0190/0191)

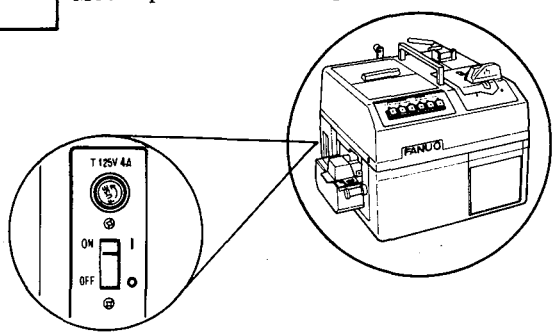


5.5.8 Replacement of fuses

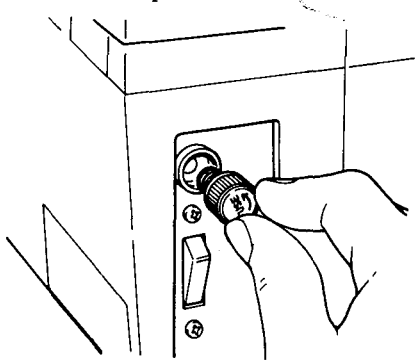
Replace fuses after locating and eliminating a cause of their failures.
If a cause of a blown out fuse is unknown, contact your nearest service center.

(1) AC Input Fuse

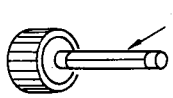
1 Mount position of AC input fuse



2 Remove the cap of fuse holder.

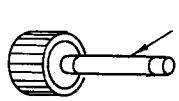


3 Remove the fuse



Draw out fuse in the arrows direction.

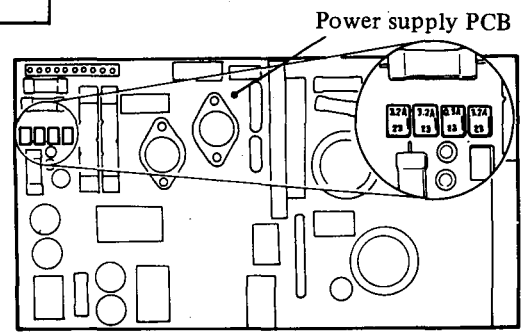
4 Mount the new fuse



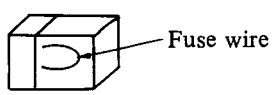
Mount the fuse in the arrow direction.

(2) DC Output Fuse

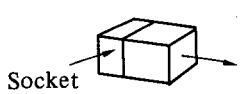
1 Mount position of fuse.



2 Confirmation of blowing fuse.

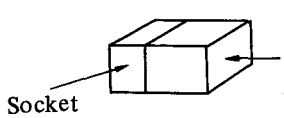


3 Remove the fuse



Draw out fuse in the arrow direction.

4 Mount the new fuse.



Mount the fuse in the arrow direction.

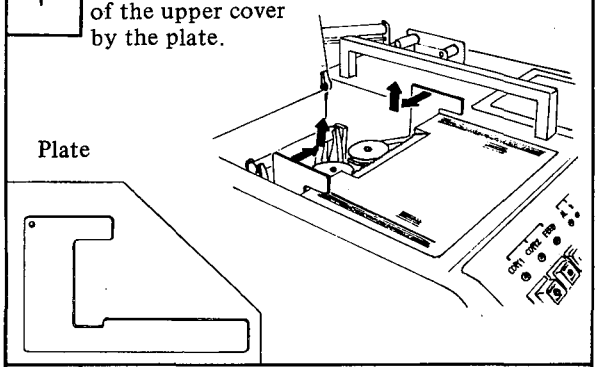
5.6 Replacement of Consumables

5.6.1 Replacement of print head of printer

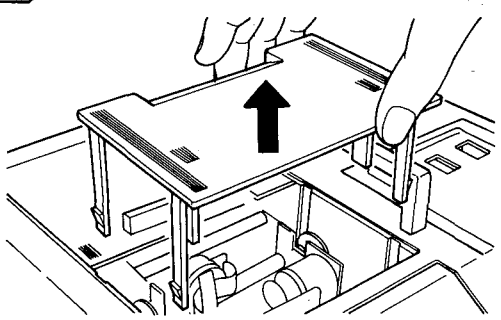
Replace the print head of the printer after printing data on print form by about 200 rolls.

1 Remove the support of the upper cover by the plate.

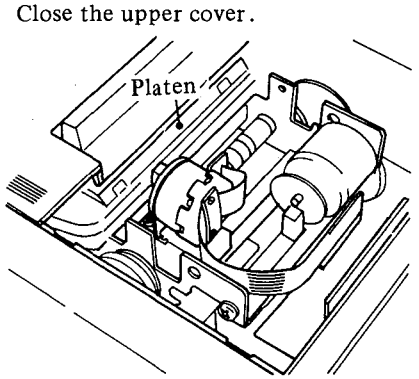
Plate



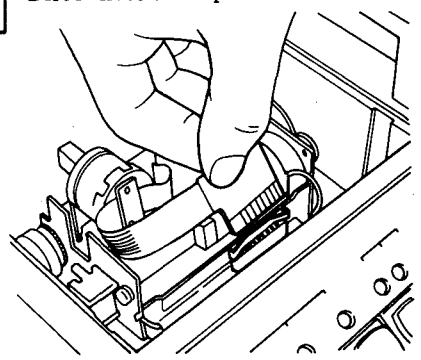
2 Remove the support of the upper cover



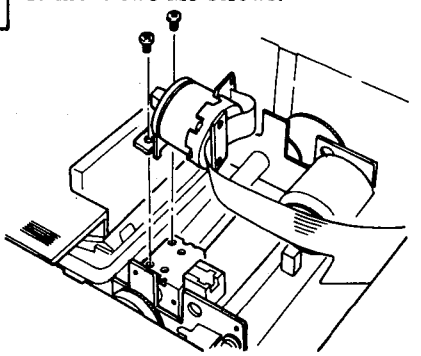
3 Close the upper cover.



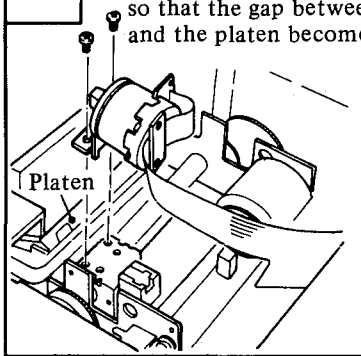
4 Disconnect the tape cable.

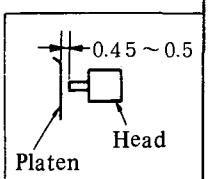


5 Remove two M3 screws.

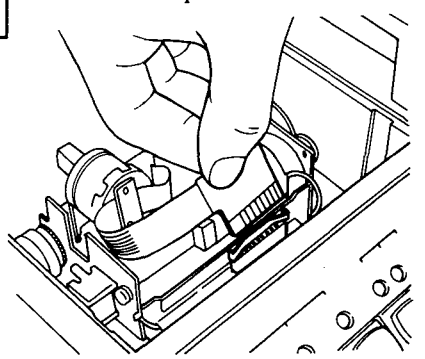


6 Fix the new print head by two screws so that the gap between the head tip and the platen becomes 0.45~0.5 mm.





7 Connect the tape cable to the connector

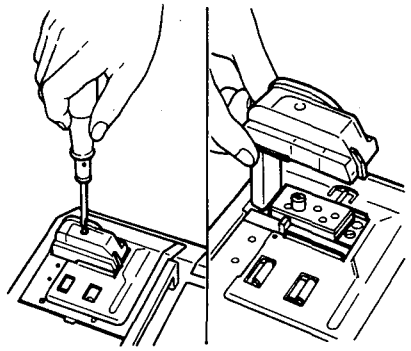


8 Close the printer cover with paper cutter.

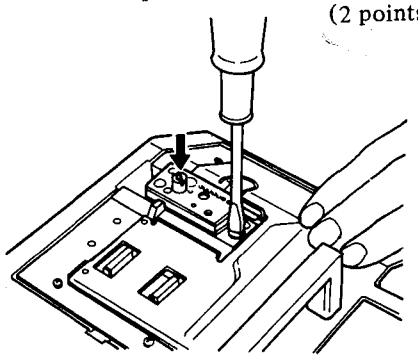
5.6.2 Replacement of punch block of puncher

Replace the punch block after punching black tape about 100 rolls or other colored tape (blue, pink, etc.) about 500 rolls, as a reference.

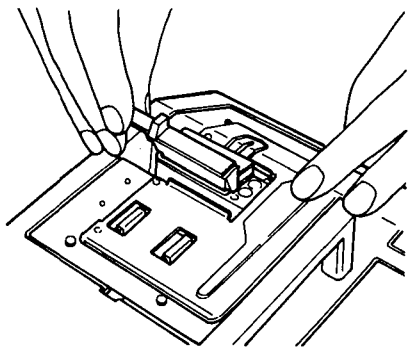
1 Remove the waste guide.



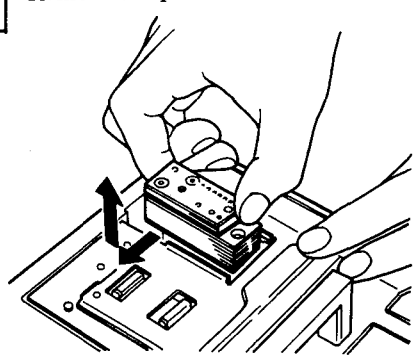
2 Unlock the punch block by unscrewing. (2 points)



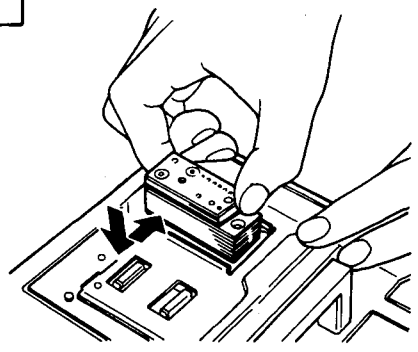
3 Remove the punch block spacer.



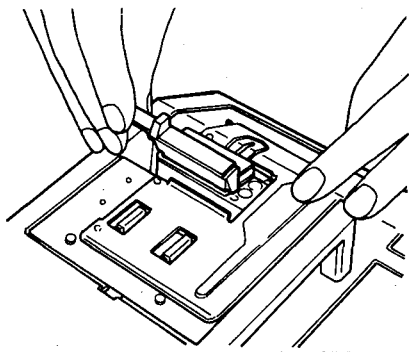
4 Remove the punch block.



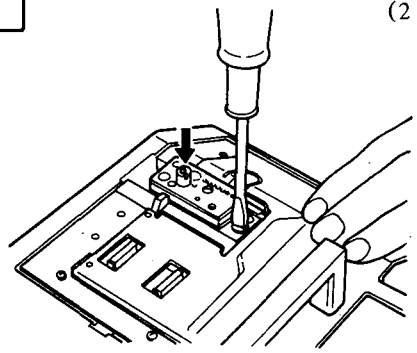
5 Mount the new punch block.



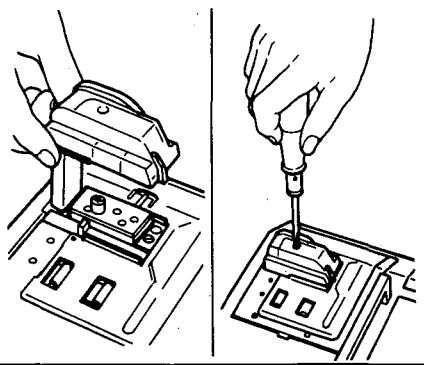
6 Insert the punch block spacer.



7 Lock the punch block by tightening screw. (2 points)



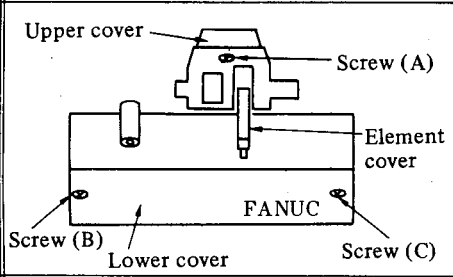
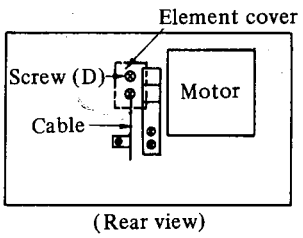
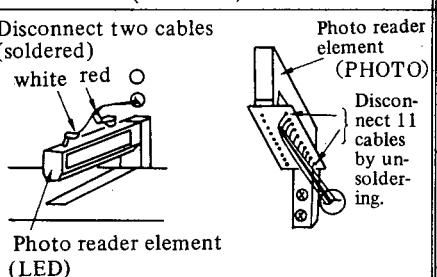
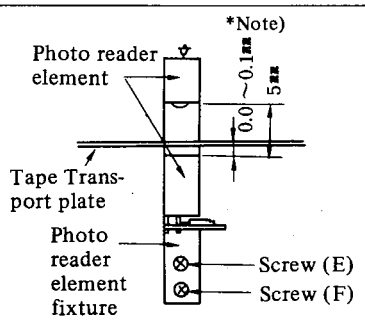
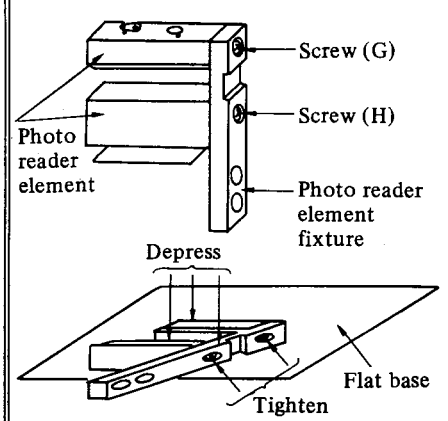
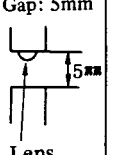
8 Mount the waste guide.



5.7 Replacement of Other Parts

5.7.1 Replacement of tape reader read element

If the photo reader element of tape reader was broken, replace it according to the following procedure after removing the tape reader from the cabinet as specified in 5.4.

	Procedure	Remarks	Figure		Procedure	Remarks
1	Remove upper cover by unscrewing screw (A).			15	Perform waveform adjustment.	See maintenance manual.
				14	Mount the upper cover by screws (A).	
2	Remove the lower cover by unscrewing screws (B), (C).			13	Mount the lower cover by screws (B), (C).	
3	Remove the element cover by unscrewing screw (D).			12	Mount element cover by screw (D).	
4	Disconnect cables from LED side.			11	Connect cables on LED side.	
5	Disconnect cables from PHOTO side.			10	Connect cables on the photo side.	
6	Remove screws (E), (F), and remove the read element fixture together with the photo reader element from the tape reader unit by depressing it downward after slightly pulling it toward you.			9	Mount the photo reader element fixture on the tape reader by screws (E), (F). Be careful with the position of the light receiving face of the photo reader element. Keep the light receiving face flush with the tape transport face.	
7	Remove the photo reader element by removing screws (G), (H). Don't remove them for photo reader element A50L-8001-0094, because the fixture is included in maintenance parts.			8	Mount new photo reader element on the read element fixture by screws (G), (H). Place LED and photo reader element to be parallel to each other.	Gap: 5mm 

6. INSTALLATION

6.1 Environmental Conditions at Installation Site

Table 6.1 shows the environmental conditions at the installation site of PPR.

Table 6.1 Einvironmental conditions at installation site

Items	Conditions
Input power supply	• For 100V type (A13B-0117-B001) AC85 ~ 125V, 50/60Hz $^{+1}_{-3}$Hz, 0.2 KVA • For 200V type (A13B-0117-B002) AC170 ~ 250V, 50/60Hz $^{+1}_{-3}$Hz, 0.24 KVA
Ambient temperature	5 ~ 35°C
Ambient humidity	30 ~ 80% RH, No dew formation is allowable.
Vibration	Less than 0.5G Vibrations should be avoided as much as possible.
Atmosphere	Shall be free of corrosive gases and oil mist.

The environmental conditions equivalent to those in a general air-conditioned office are applicable to the PPR without any trouble when installing the PPR.

Determine the installation site referring to the following items, and carefully handle the PPR.

(1) Don't put the PPR at a place exposed to the sunlight directly or the draft from an air conditioner or at a place near a stove.
(2) Don't use the PPR at a dusty place or a place subjected to corrosive gases, injurious gases, or oil mist.
(3) Don't use the PPR in a strong electromagnetic field near a large motor or the like.
(4) Avoid using a carpet or the like which may produce static electricity, or suppress the generation of static electricity by using a static electricity inhibitor.
High-voltage static electricity may be generated by means of friction, and it causes an electric shock or an error of the PPR due to its discharge in winter when moisture lowers in particular. In a tape reader unit is provided with an external paper tape receiving box, etc., connect a grounding wire to these external units.
(5) Don't mount the PPR at any vibrating place.
(6) Don't use the PPR at a place where ambient temperature changes abruptly (near a window, for example).
The temperature gradient should be within 10°C/hour. No dew formation is allowable.
(7) Don't share the power line (AC 100V) with a large motor, an air conditioner, etc.
(8) Place the PPR horizontally (within 10°).
(9) Put the attached vinyl cover on FANUC PPR to prevent ingress of dust whenever these units are not used. Remove the cover from these units without fail when they are used.

6.2 Electrical Equipment

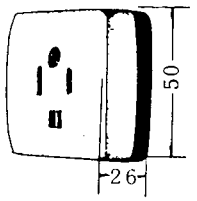
When installing the PPR, supply stable power from the following electrical equipment. Connect an AC 100V or 200V single-phase power source and a ground wire to the FANUC PPR.

6.2.1 Plug socket with a grounding terminal

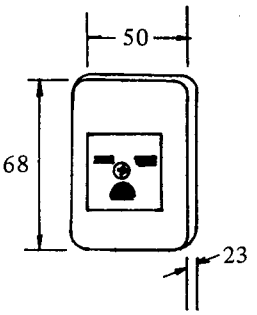
Prepare plug socket with a ground terminal as shown in Fig. 6.2.1 (a) within the reach of 1.5m power cable.

The power capacity of the PPR is about 0.2 KVA. However, the power supply equipment should have the capacitance of about 10A.

Connect a ground wire without fail.



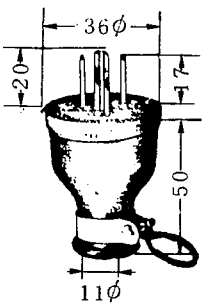
Grounding plug socket
15A 125V.



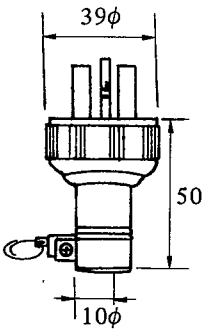
Grounding plug socket
15A 250V

Fig. 6.2.1 (a) Example of power plug socket

A ground rubber plug shown in Fig. 6.2.1 (b) is attached to the tip of the PPR power cable.



Grounding rubber plug.
15A 125V



Grounding rubber plug.
15A 250V

Fig. 6.2.1 (b) Tip connector of power cable

The power supplied from the power plug socket should satisfy the following specifications.

Power supply:
- 100V type (A13B-0117-B001)
  AC85 ~ 125V 50/60Hz $^{+1}_{-3}$Hz 1φ
- 200V type (A13B-0117-B002)
  AC 170 ~ 250V 50/60Hz $^{+1}_{-3}$Hz 1φ

Grounding: Class 3 grounding or grounding with a grounding resistance of lower than 100 ohm.

A noise filter is employed to eliminate power noises inside the FANUC PPR, and the leak current is about 0.5 mA (50V during open) each.

6.2.2 Connection using the grouding adapter (for 100V type only)

Connect the PPR by using the grounding adapter attached to the power cable as shown in Fig. 6.2.2, if the plug socket with a grounding terminal cannot be mounted.

Make sure that PPR is securely grounded.

Be careful with poor contact due to a fixing failure of the cable at the grounding adapter.

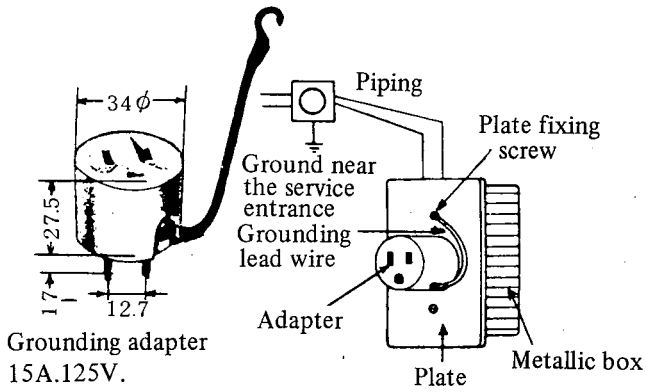


Fig. 6.2.2 Method of using the grounding adapter

Revision Record

FANUC PPR OPERATOR'S MANUAL (B-54584E)

01	July '83	———			
Edition	Date	Contents	Edition	Date	Contents