



TEC Thermal Printer

B-880 SERIES

Maintenance Manual

Document No. **EO18-33007**

Original **Apr., 2000**

(Revised)

WARNING!

Follow all manual instructions. Failure to do so could create safety hazards such as fire or electrocution.

- NOTES:**
- 1. Manual instructions must be followed when installing option kits or adding cables to avoid system failures and to insure proper performance and operation.*
 - 2. Failure to follow manual instructions or any unauthorized modification, substitution or change to this product will void the limited product warranty.*

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CAUTION:

1. *This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
2. *The contents of this manual may be changed without notification.*
3. *Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

1. UNPACKING

1.1 PROCEDURE

- 1) Open the carton.
- 2) Unpack the accesories from the carton
- 3) Unpack the side pads (L)/(R) and the printer from the carton.
- 4) Place the printer on a level surface.

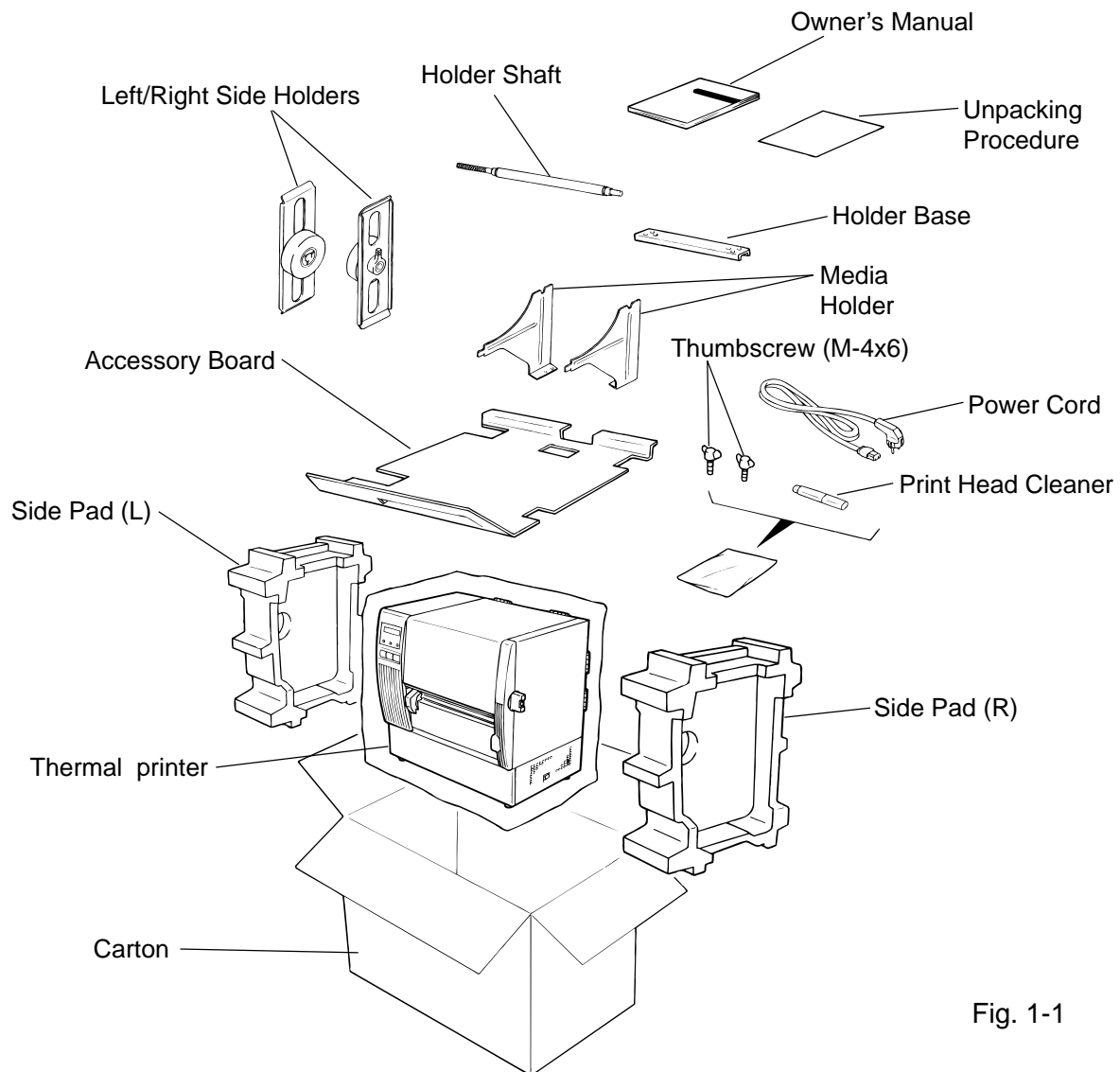


Fig. 1-1

1.2 CHECKS

- 1) Check for damage or scratches on the machine.
- 2) Confirm that none of the accessories are missing.

NOTE: Keep the carton and side pads for later transport.

2. MAJOR UNIT REPLACEMENT

WARNING!

Disconnect power cord before replacing important parts.

CAUTION:

1. *NEVER* separate the ribbon motors from the attaching plate (bracket), because doing so will change their adjustment. (See Fig. 2-7)
2. *NEVER* remove the two screws painted red on the side of the print block. (See Fig. 2-10)
3. *NEVER* remove screws unless directed to do so in this manual. Removing screws may change pre-set adjustments.

- 1) Turn the power off.
- 2) Open the right side and top covers.
- 3) Remove the six screws (FL-4x6, B-4x6 and B-3x8) to detach the left side cover.
- 4) Remove the (B-3x8) screw to remove the bottom plate.

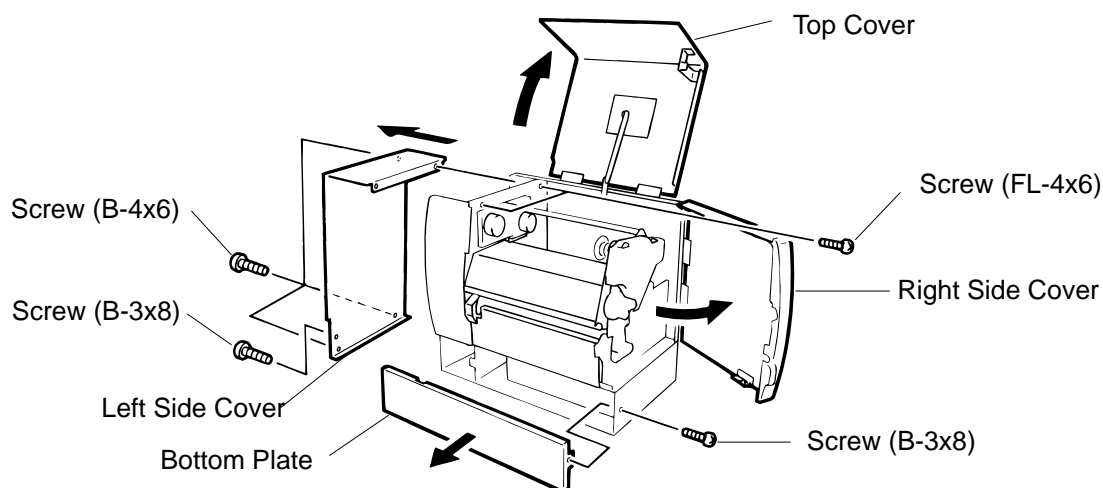


Fig. 2-1

NOTE: Instructions to open the top and right side covers and to remove the left side cover are omitted from each removal/installation procedure provided below.

■ Lubrication

CAUTION:

1. *Lubrication:* During parts replacement
2. *Kinds of oil:* FLOIL G-488: 1 Kg can. (Parts No. 19454906001).
3. *Do not spray the inside of the printer with lubricants. Unsuitable oil can damage the mechanism.*

All machines are generally delivered in their best condition. Efforts should be made to keep them that way. Lack of oil, or the presence of debris or dust, may cause an unexpected failure. To maintain in optimal operating condition, periodically clean the machine and apply the proper kinds of oil to each part in which lubrication is needed.

Although the frequency of lubrication varies according to how often the machine is used, as a minimum it is necessary to lubricate before any part becomes dry. It is also necessary to wipe off excessive oil or it will collect dirt.

2.1 REPLACING THE CPU PC BOARD

CAUTION:

Replace only with the same type and rated fuse for continued protection against risk of fire.

- 1) Disconnect the 3 harnesses from CN2, CN5, and CN7 on the CPU PC Board.

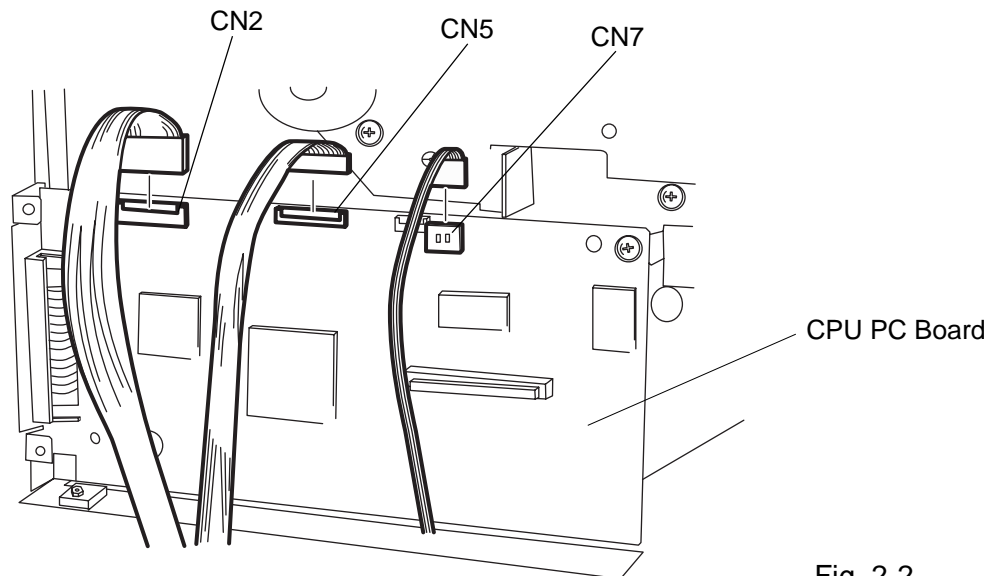


Fig. 2-2

- 2) Remove the 3 screws (SM-3x5 and SM-3x6) to detach the CPU PC board.

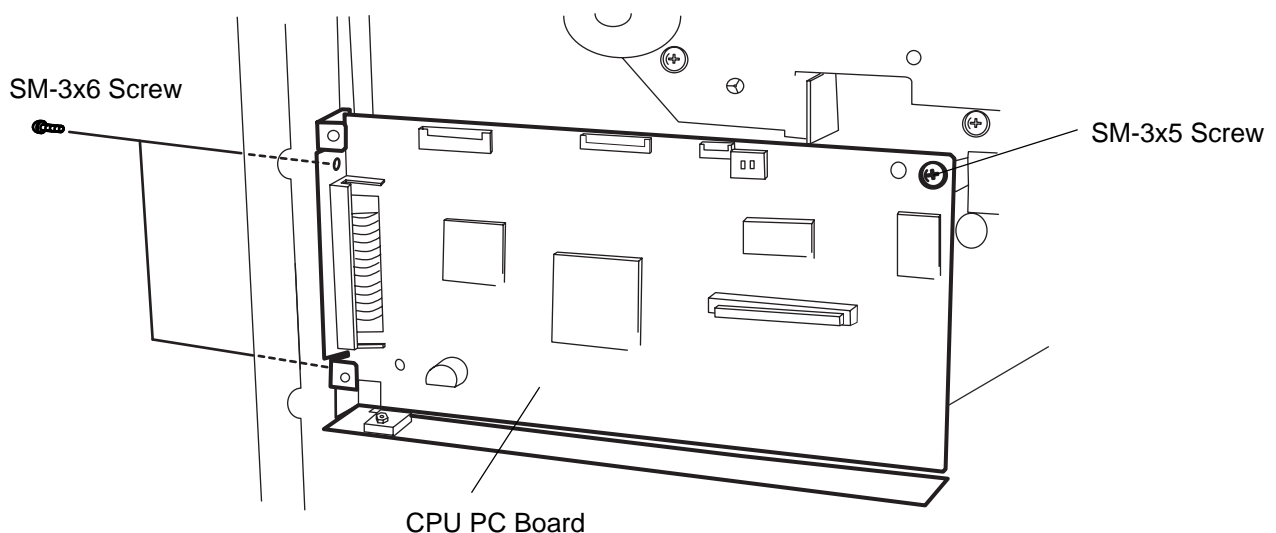


Fig. 2-3

- 3) Replace the CPU PC board and reassemble in the reverse order of removal.

CAUTION:

Be careful when replacing the CPU PC board, since a non-resettable counter (IC15) is installed on this board. (Refer to section 6.2.1 Maintenance Counter Printing.) If this counter should be reset, replace IC15.

2.2 REPLACING THE PS UNIT

CAUTION:

Replace only with the same type and rated of fuse for continued protection against risk of fire.

- 1) Disconnect the PS cable from CN2 on the I/O PC board.
- 2) Remove the two screws (FL-4 x 6) to detach the PS unit. Pushing the AC power inlet from behind will ease the removal of the PS unit.
- 3) Disconnect the PS cable from the PS unit.

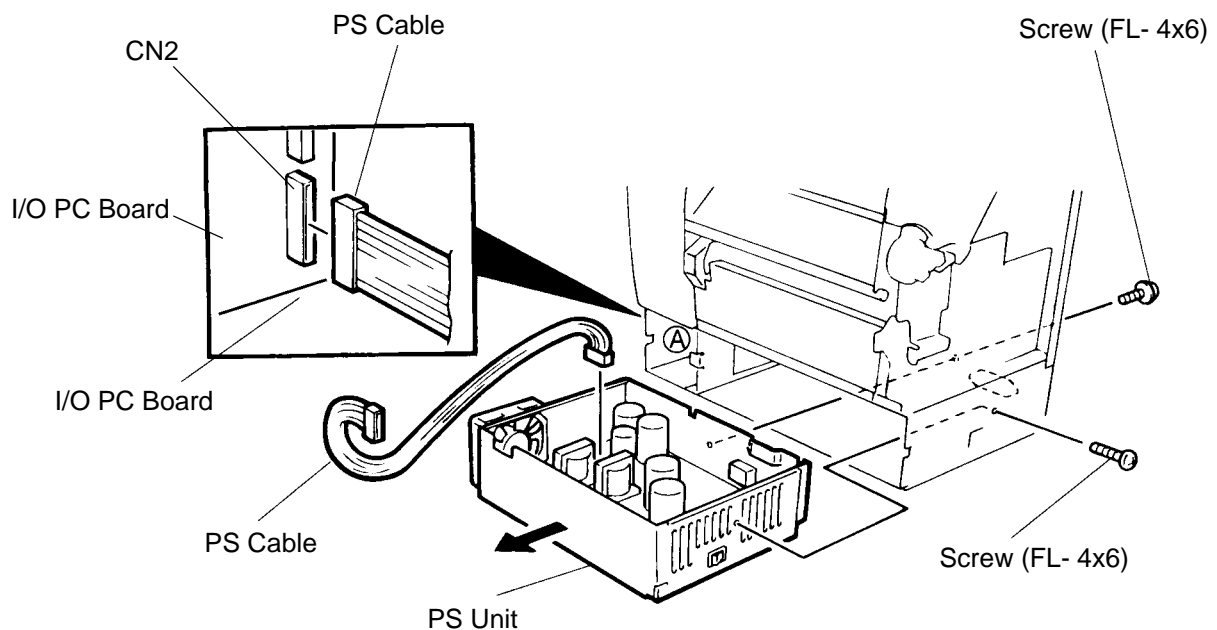


Fig. 2-4

- 4) Replace the PS unit and reassemble in the reverse order of removal. Insert the PS cable into the notch **A**.

2.3 REPLACING THE STEPPING MOTOR

- 1) Remove the 4 screws (FL-4x6) to detach the front plate.

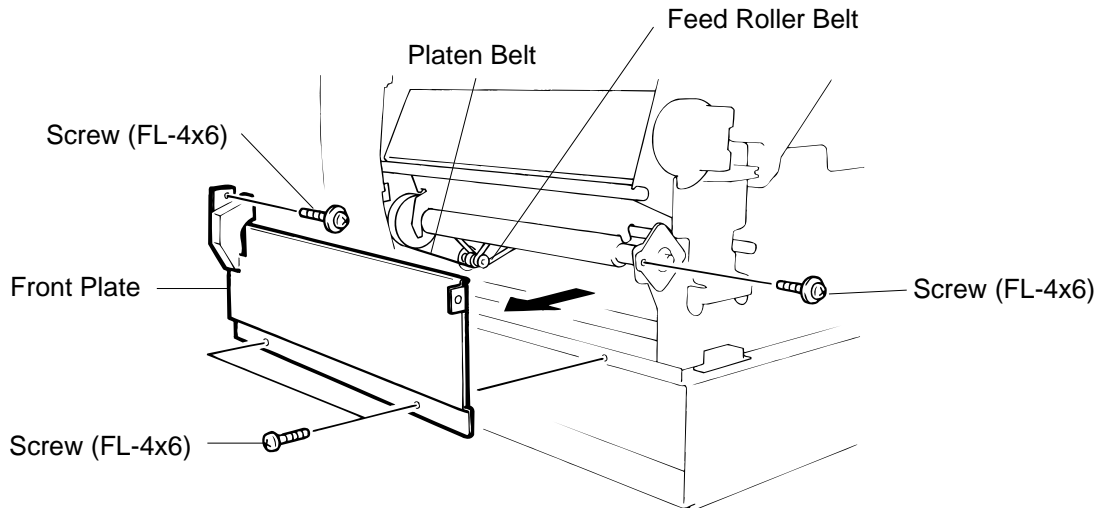


Fig. 2-5

- 2) Disconnect the cable from CN14 on the I/O PC board.
- 3) Remove the two screws (SM-4x8), take the two belts off the pinion gear, and remove the stepping motor.

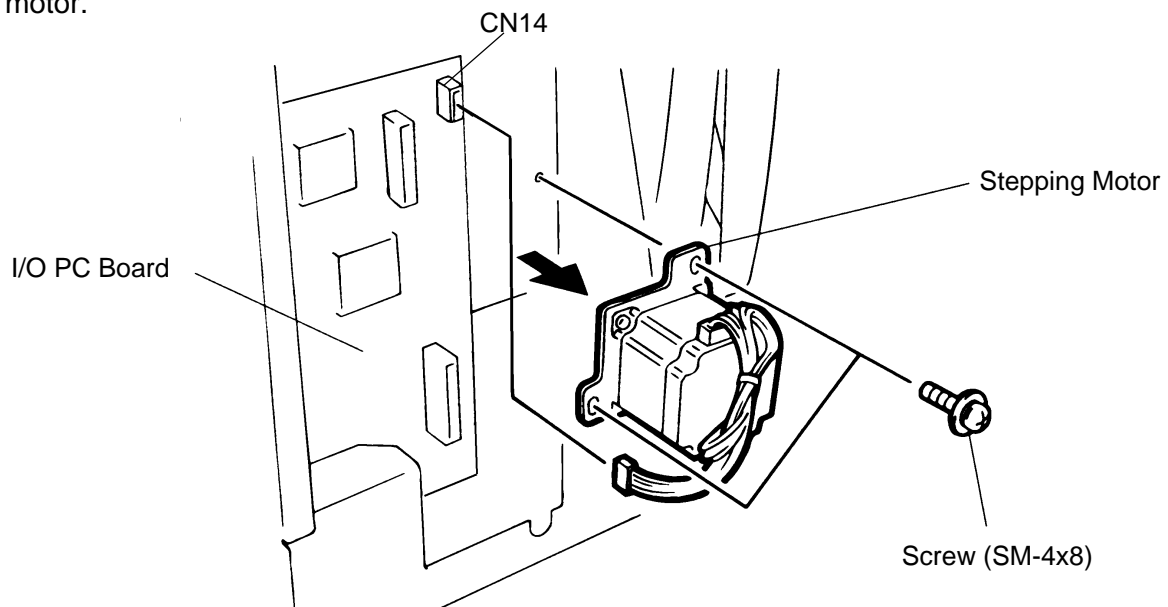


Fig. 2-6

- 4) When replacing the stepping motor, place the platen belt around the pinion gear first, then the feed roller belt, so that the partition is positioned between the two belts. Press down on the stepping motor with 3.5 Kg – 300 g force and secure it so the platen belt and feed roller belt have no slack, are engaged, and evenly tense.
- 5) Reassemble in the reverse order of removal.

2.4 REPLACING THE RIBBON MOTORS

CAUTION:

NEVER separate the ribbon motor from the attaching plate because doing so will change their adjustment.

- 1) Detach the connector and remove the two SM-3x5B screws to detach the ribbon motors.

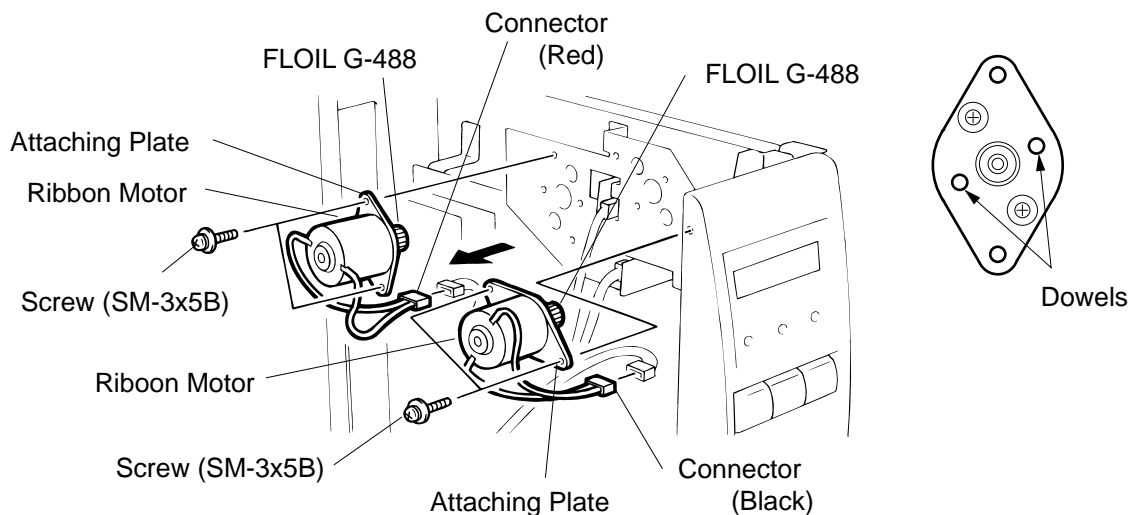


Fig. 2-7

- 2) Replace the ribbon motors, then align the dowels to attach the ribbon motors. Reassemble in the reverse order of removal.

2.5 REPLACING THE SOLENOID

NOTE: This procedure can be done without removing the left side cover.

- 1) Remove the two SM-4x8B screws, detach the connectors, and remove the solenoid unit (R).
- 2) Remove the two SM-4x8B screws, disconnect the cables from CN1, CN2 and CN3 on the RSV2 PC board and detach the solenoid unit (L).

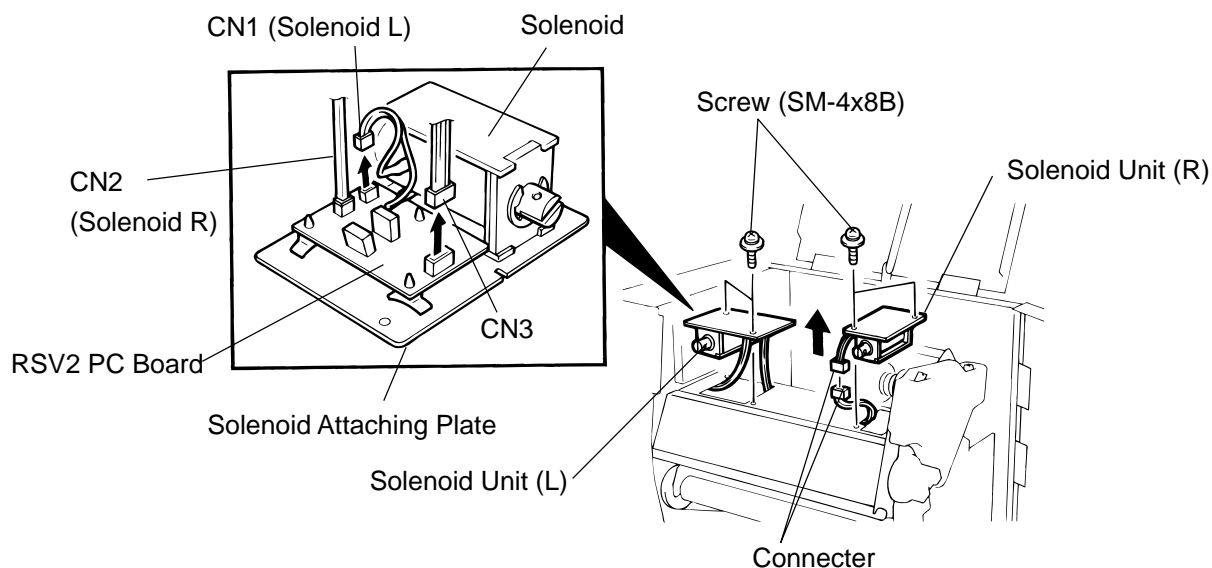


Fig. 2-8

- 3) Remove the two SM-3 x 6B screws each from the solenoid units (L) and (R) to detach the solenoid.
- 4) Replace the solenoid and attach it to the solenoid attaching plate. Be careful of the differences in length of the solenoid cables when installing the solenoid.
- 5) Assemble the solenoid unit so that the head up link engages the spring pin.

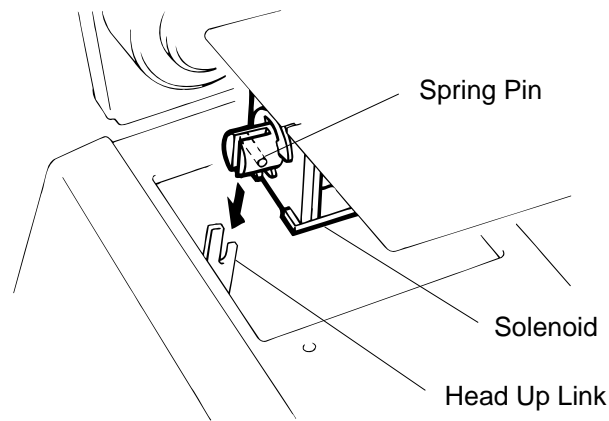


Fig. 2-9

NOTE: Make sure to remove any dust that appears during removal or installation because it may affect the print quality.

CAUTION:

Take care to orient the screws so that they are vertically aligned with the solenoid attaching plate.

- 6) Insert piled 10 pieces of tag paper of 8 inches (203.2 mm) in width, 0.16 mm in thickness (I-BEST-S is recommended) between the print head and the platen. Then turn the head lever to the LOCK position.
- 7) Press and hold the link against the solenoid, and then press and fit the solenoid unit sungly to the link. Secure the solenoid unit with the screws.
- 8) Reassemble in the reverse order of removal.

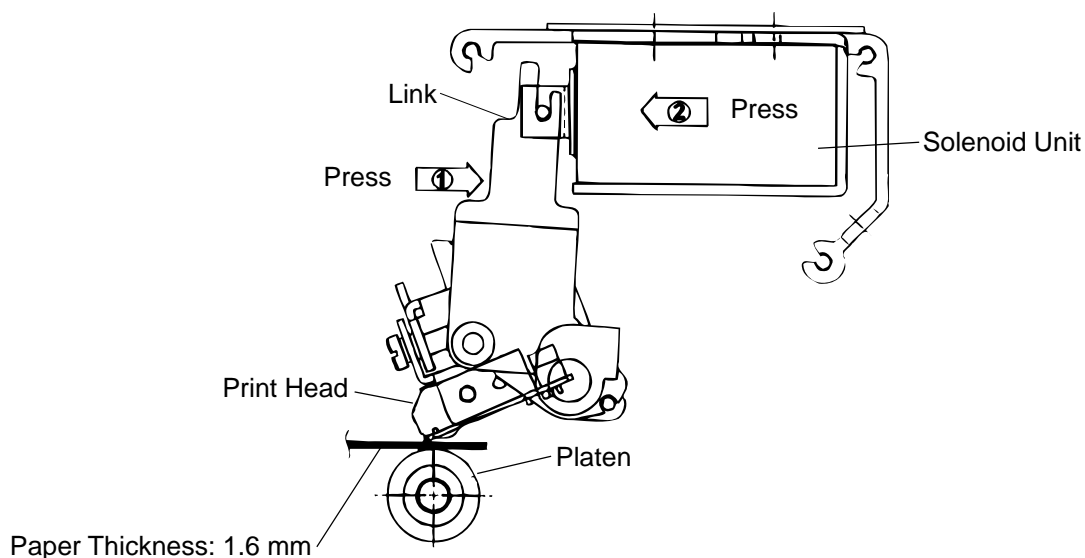


Fig. 2-10

2.6 REPLACING THE PRINT HEAD

CAUTION:

1. NEVER touch the element when handling the print head.
2. NEVER touch the connector pins to avoid damage to the print head by static electricity.
3. NEVER remove the two screws painted red on the side of the print block.

NOTE: This procedure can be done without removing the left side cover.

- 1) Remove the two (B-4x4) screws to detach the head cover plate.
- 2) Pull right to remove the front shaft.

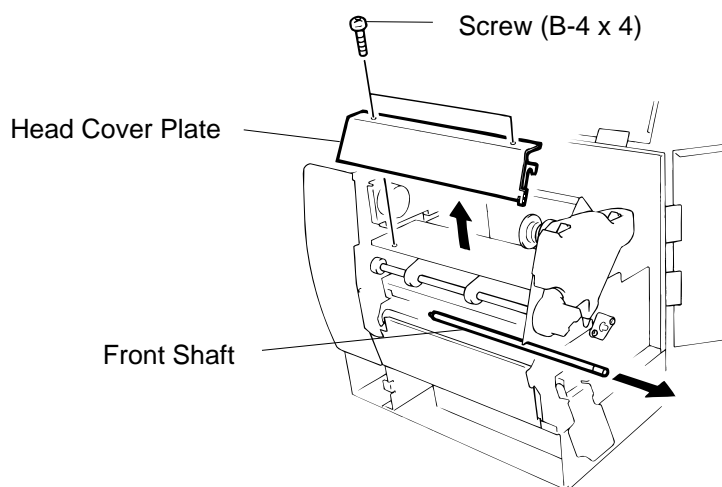


Fig. 2-11

- 3) Turn the head lever counterclockwise to lift the print head.
- 4) Remove the head fixing screw and pull out the print head.
- 5) Disconnect the two cables and remove the print head.

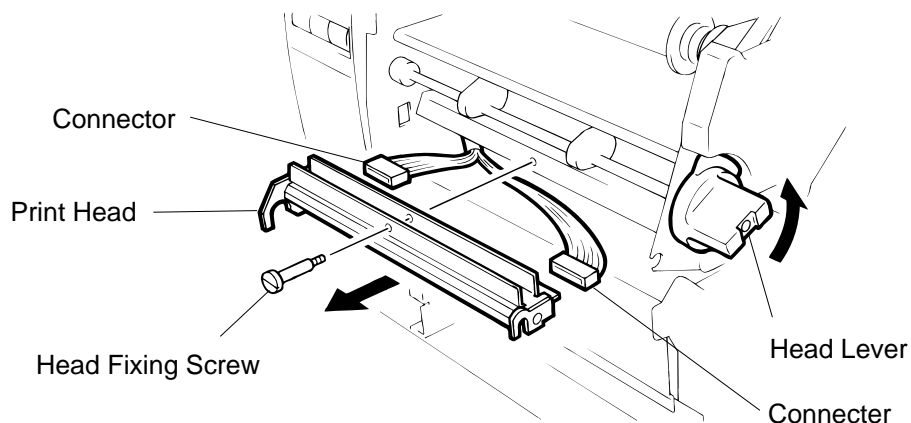


Fig. 2-12

NOTE: Never remove the bracket.

- 6) Replace the print head and reassemble in the reverse order of removal.
- 7) Refer to page 6-69 and clear the maintenance counter.
- 8) Refer to page 6-54 and perform a test print.

2.7 REPLACING THE PLATEN

- 1) Remove the front plate. (Refer to Fig. 2-5.)
- 2) Loosen the two screws (SM-4 x 10C) securing the stepping motor.
- 3) Remove the (FL-4 x 6) screw to detach the platen positioning plate.
- 4) Take the platen belt off the platen pulley, move the platen fully to the right and remove the platen from the left end.

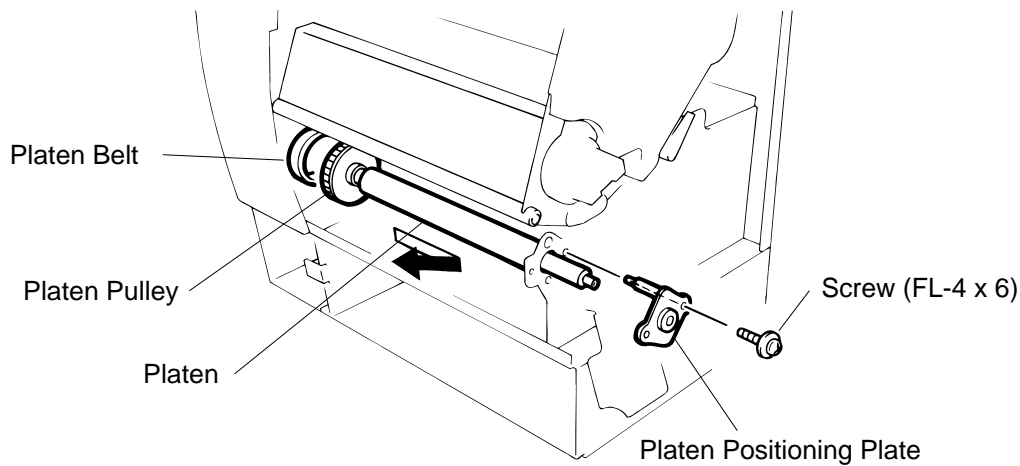


Fig. 2-13

- 5) Replace and install the platen, then place the platen belt around the platen pulley.
- 6) Install the platen positioning plate.
- 7) Press down on the stepping motor with 3.5 Kg – 300 g force and secure it so the platen belt and the feed roller belt have no slack, are engaged and evenly tense.
- 8) Reassemble the remaining parts in the reverse order of removal.

2.8 REPLACING THE ROLLER BELT AND FEED ROLLER

- 1) Lower the pinch roller lever.
- 2) Remove the white screw to detach the ribbon end sensor plate.
- 3) Remove the FL-3 x 5 screw, cut the cable band and remove the head-up switch.
- 4) Detach the connector of the ribbon end sensor.
- 5) Removal the pinch roller block.

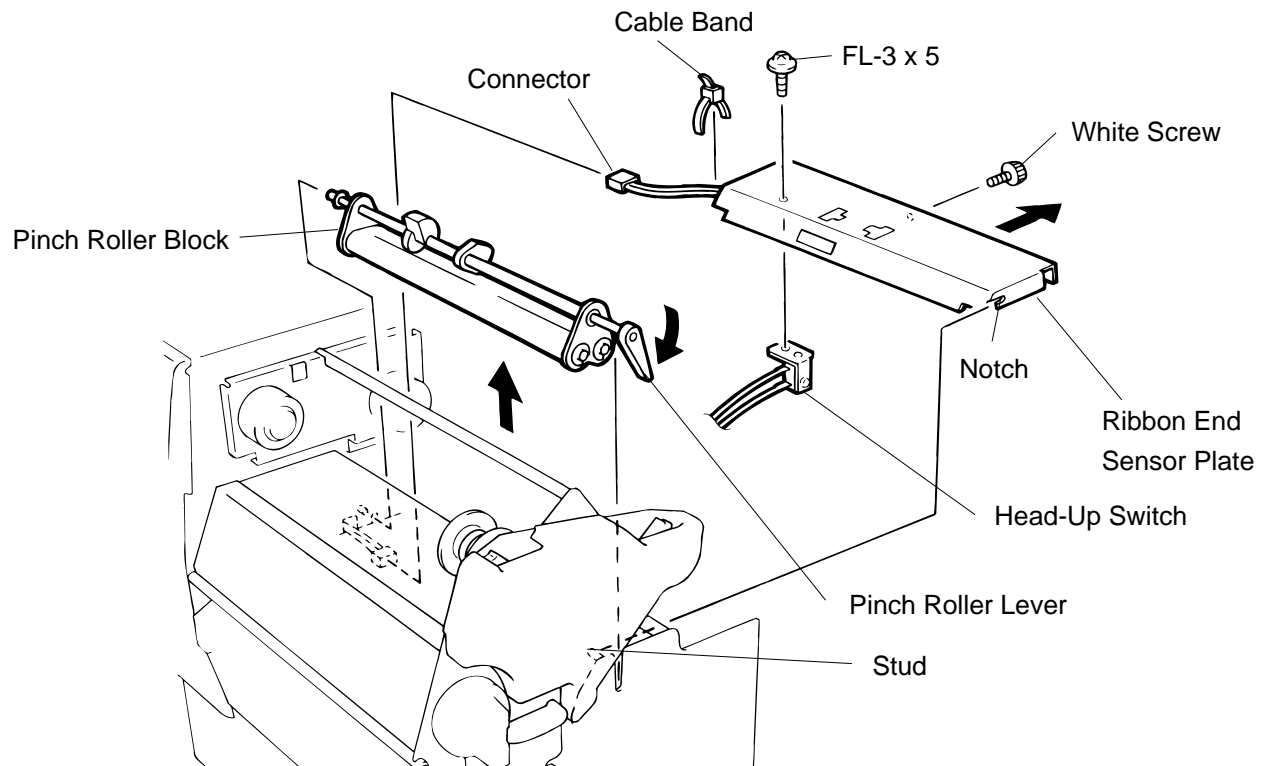


Fig. 2-14

NOTE: Fit both sides of the studs into the notches when installing the ribbon end sensor plate.

- 6) Remove the four E-rings (E-5), pinch roller holder, bush, pinch roller washer, and then roller belt.

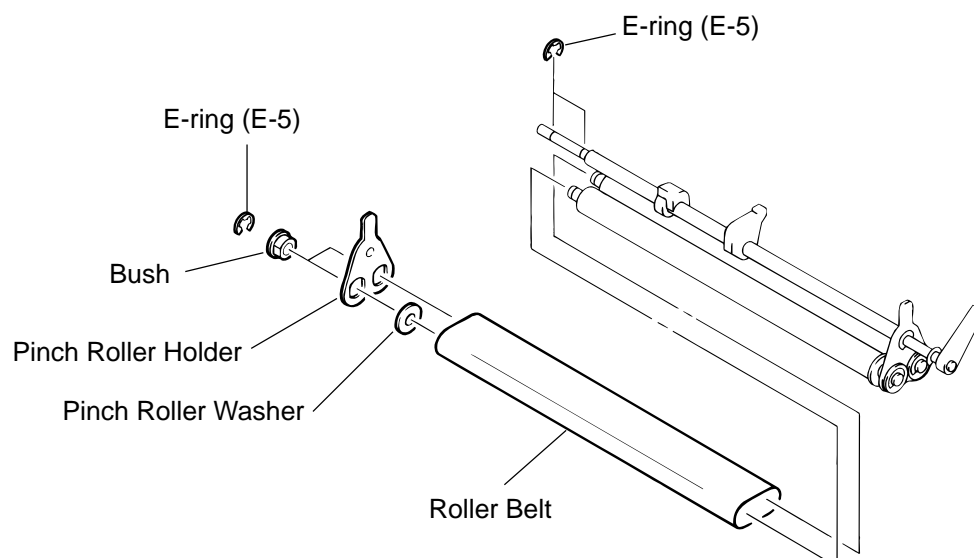


Fig. 2-15

- 7) Remove the two (FL-4x6) screws and detach the media plate.
- 8) Remove the two (FL-4x6) screws and detach the media guide unit.
- 9) Loosen the two (SM-4x10C) screws securing the stepping motor.
- 10) Remove the two screws to detach the feed roller positioning plate.
- 11) Take the feed roller belt off the feed roller, move the feed roller fully to the left and remove the feed roller from the right end.

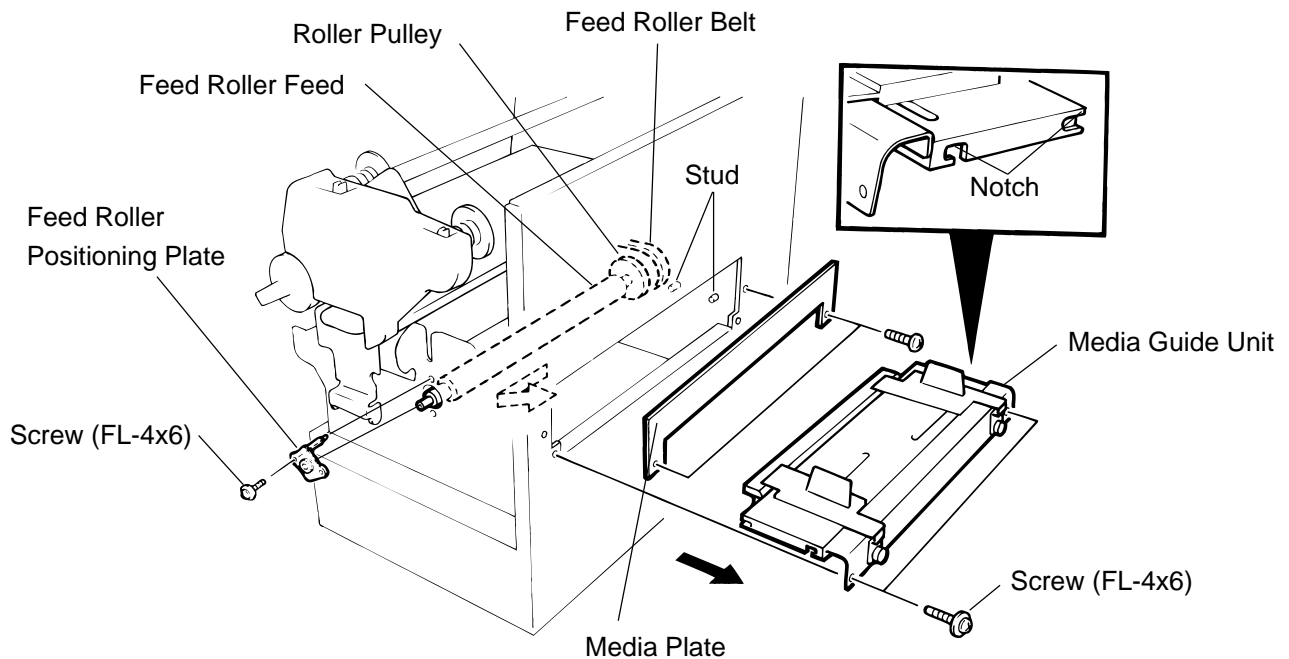


Fig. 2-16

NOTE: Fit both sides of the studs into the notches when installing the media guide unit.

- 12) Replace and install the feed roller, place the feed roller belt around the feed roller pulley.
- 13) Install the feed roller positioning plate.
- 14) Press down on the stepping motor with 3.5 Kg – 300 g force and secure it so the platen belt and the feed roller belt have no slack, are engaged and evenly tense.
- 15) Reassemble the remaining parts in the reverse order of removal.

2.9 REPLACING THE MEDIA SENSOR

CAUTION:

1. When using the fixed sensor, line up the feed gap sensors between the upper and lower sensors.
2. When shipped from the factory, the black mark sensor is positioned at the center of the effective print area and the feed gap sensor is located 10 mm left of center as viewed from the front.

- 1) Detach the 4 connectors from the fixed/movable media sensors.
- 2) Remove the two screws (FL-3 x 4) and the sensor holder to detach the media sensor unit.
- 3) Turn the knob of the sensor shaft clockwise and remove the movable media sensor.
- 4) Remove the E-ring (E-3) from the sensor shaft and detach the lower fixed media sensor.

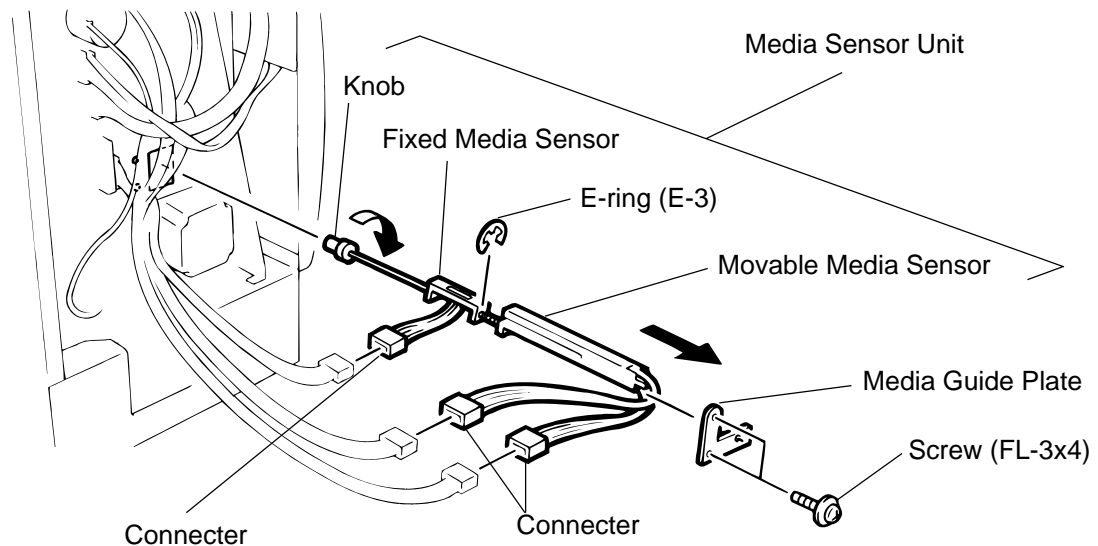


Fig. 2-17

- 5) Remove the white screw to detach the media guide plate.
- 6) Remove the two SM-3 x 6B screws, then unclamp and detach the upper fixed media sensor.

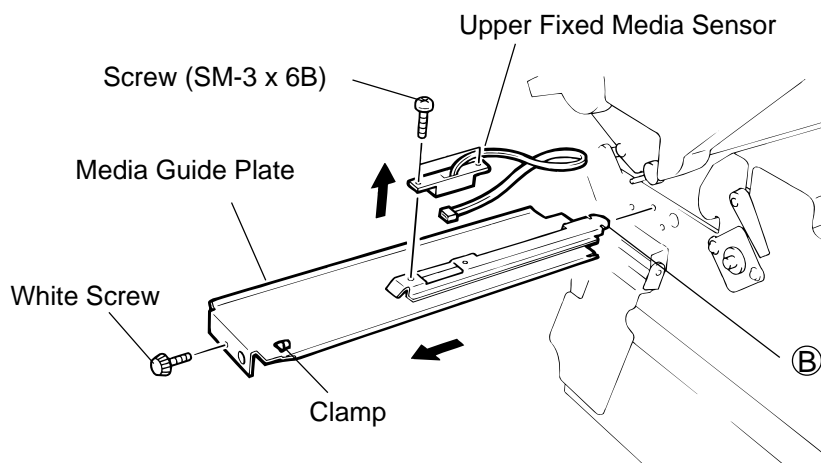


Fig. 2-18

- 7) Replace the fixed/movable media sensors and reassemble in the reverse order of removal.

2.10 REPLACING THE I/O PC BOARD

- 1) Disconnect the 13 harnesses from CN1 to CN3 and CN5 to CN14 on the I/O PC board. (See Fig. 2-19)
- 2) Remove the two SM-3x5 screws and one SM-4x8 screws from the I/O PC board. Remove the I/O PC board from the printer by releasing it from the locking supports. (See Fig. 2-20)
- 3) Replace the I/O PC board with a new one and reassemble in the reverse order of removal.

Sensor Adjustment

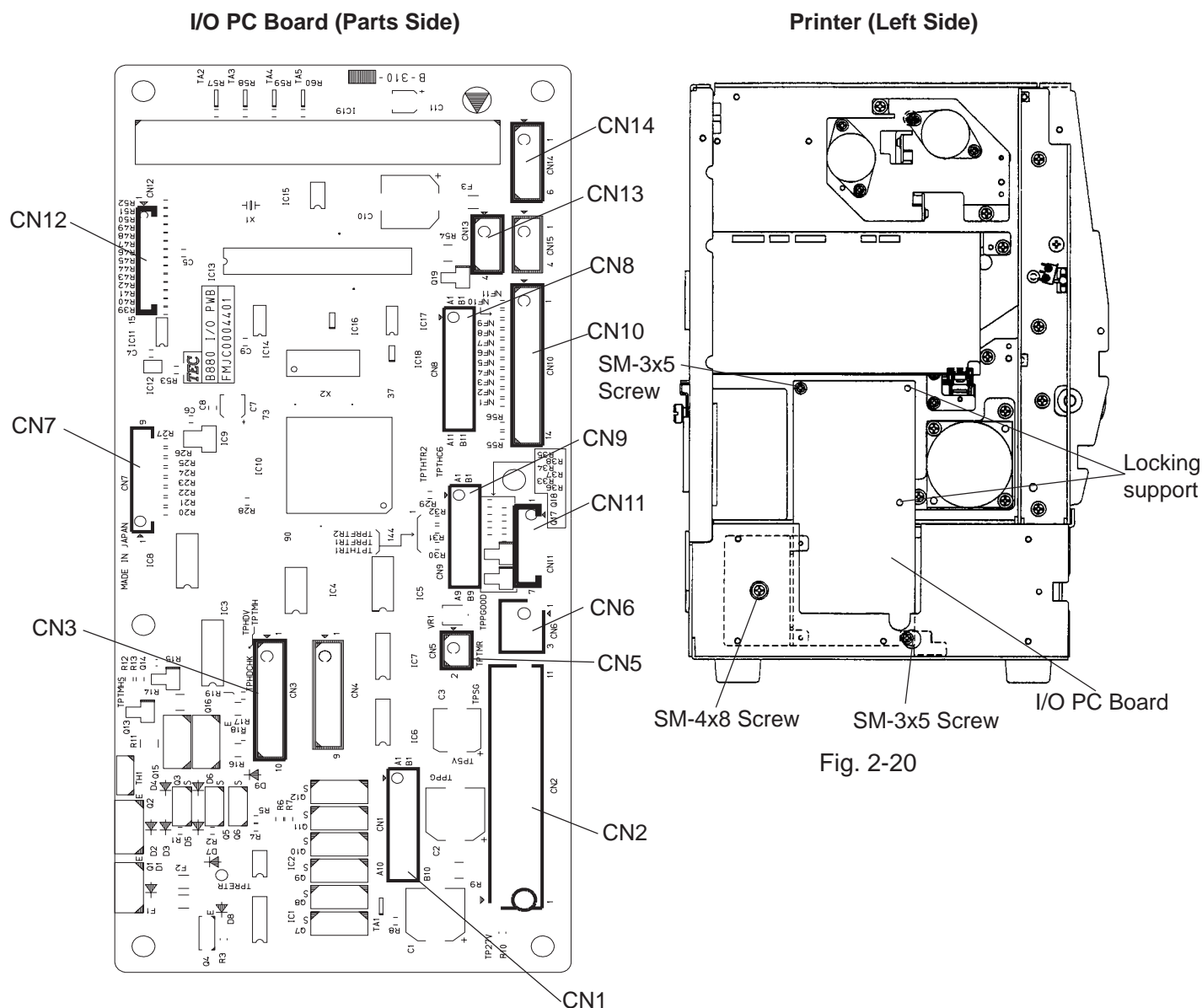


Fig. 2-19

Fig. 2-20

Sensor Adjustment

After replacing the I/O PC board or changing ribbon type, be sure to adjust the sensors in the following procedure.

Ribbon End Sensor

1) Set the ribbon so that the ribbon end sensor can detect the ribbon. Then turn on the power.

NOTE: Use TOSHIBA TEC-approved ribbon (TTP-110).

2) Measure the voltage between TPRETR pin on the I/O PC board and the printer inner plate (GND) with a oscilloscope, and adjust the voltage to 3.0–0.2V by turning VR1 on the I/O PC board.

3) Set the ribbon end portion (not ink portion) so that the ribbon end sensor can detect it. Measure the voltage again. If it is over 0.4V, re-adjust the voltage from step (2) again.

4) After the adjustment is successfully made, turn off the printer and reassemble the left side cover.

I/O PC Board (Parts Side)

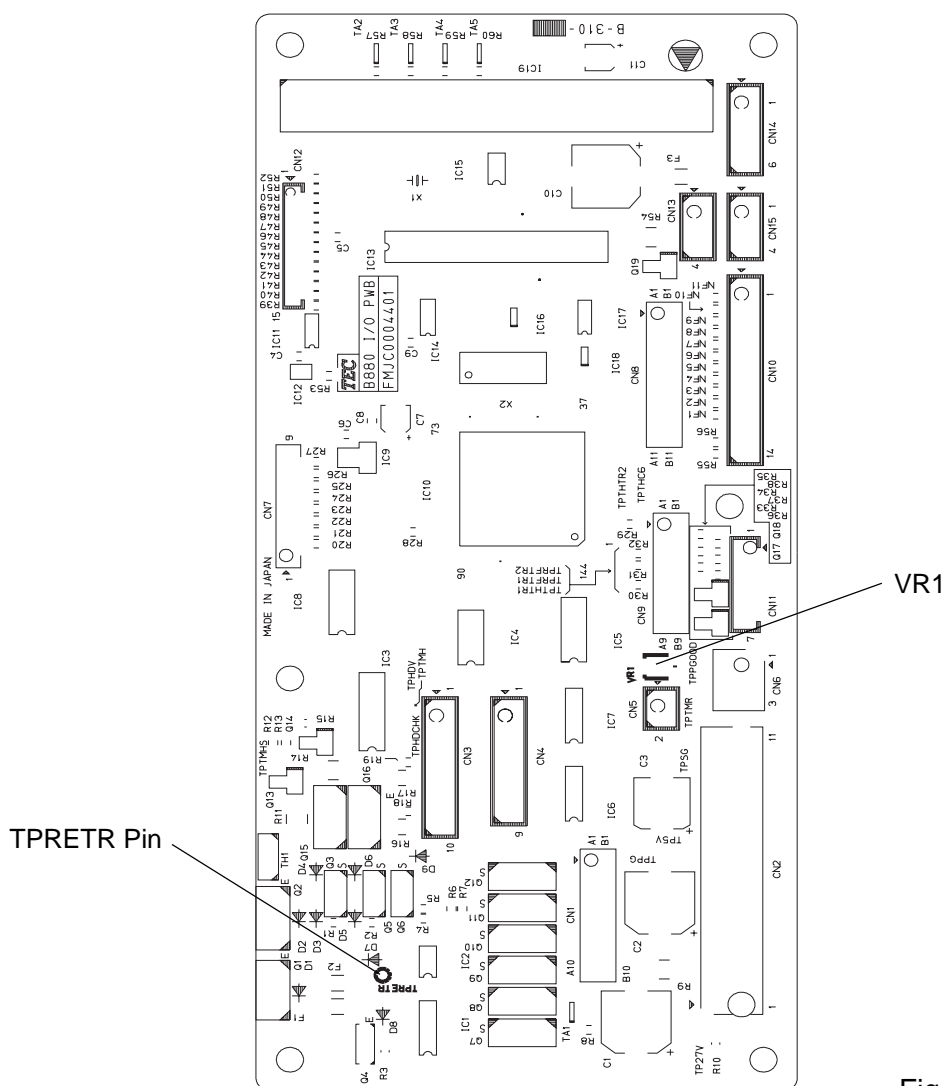


Fig. 2-21

Black Mark Sensor

Refer to the adjustment procedure for the black mark sensor (Section 6.5.2) which is adjusted by key entries in system mode.

Feed Gap Sensor

Refer to the adjustment procedure for the feed gap sensor (Section 6.5.3) which is adjusted by key entries in system mode.

2.11 REPLACING THE EXP I/O PC BOARD

- (1) Remove the two SM-3x6 screws to detach the EXP I/O PC board from the rear cover.
- (2) Disconnect the harness from CN1 on the EXP I/O PC board.

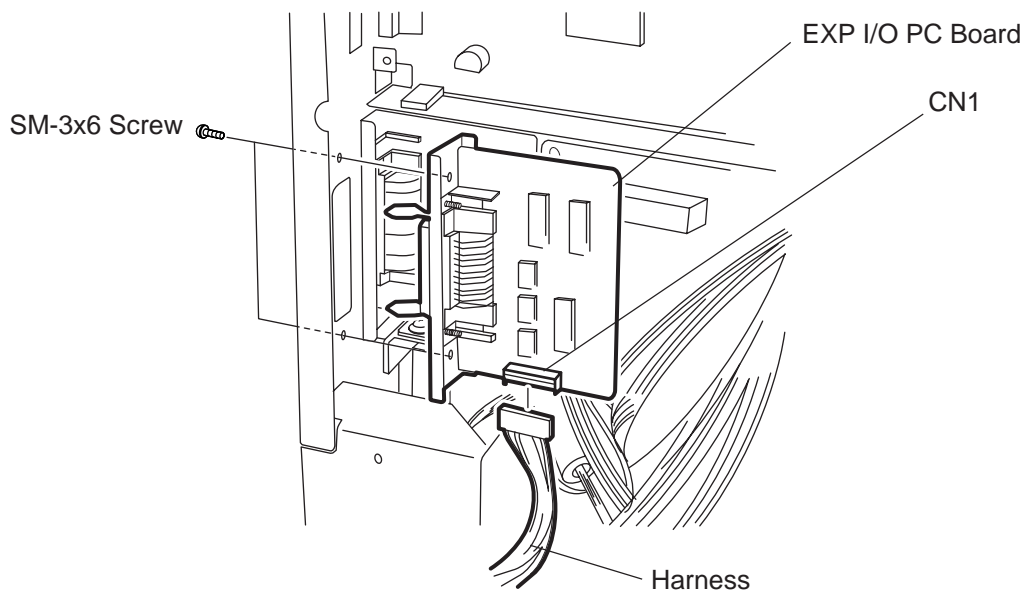


Fig. 2-22

- (3) Replace the EXP I/O PC board with a new one, then reassemble in the reverse order of removal.

2.12 REPLACING THE CENTRO PC BOARD

- (1) Refer to Section 2.11 to detach the EXP I/O PC board.
- (2) Remove the two SM-3x6C screws to detach the CENTRO PC board from the rear cover.
- (3) Disconnect the harness from CN1 on the CENTRO PC board.

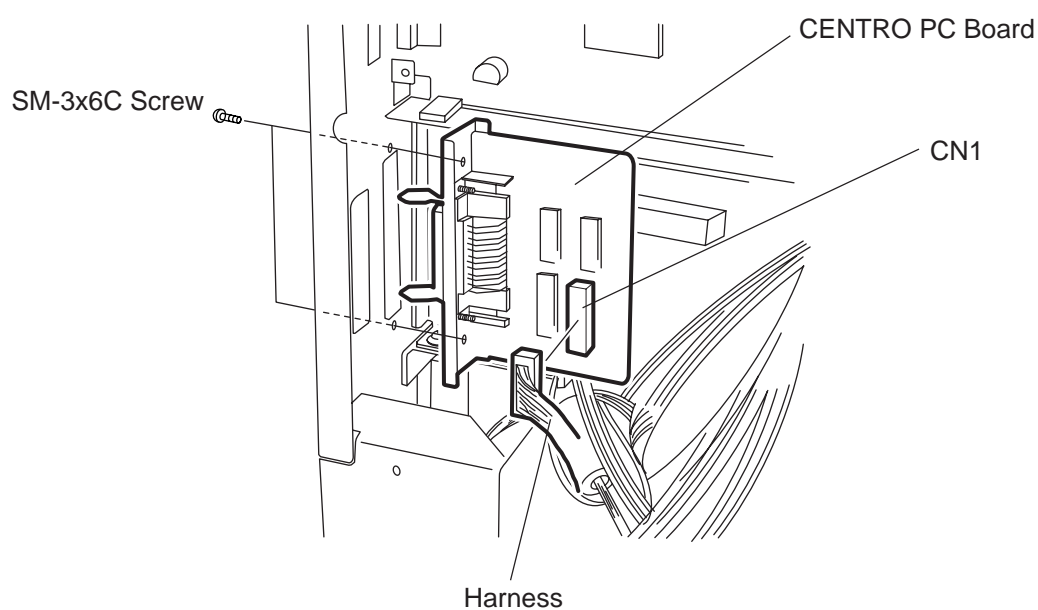


Fig. 2-23

- (4) Replace the CENTRO PC board with a new one, then reassemble in the reverse order of removal.

2.13 PERIODIC PARTS REPLACEMENT

No.	Part Name	Part No.	Standard Interval of Replacement
1	Ribbon Motor	FMBB0030501 FMBB0030502	730 Km
2	Solenoid	FMBB0032104 FMBB0032105	1,000,000 times
3	Platen	FMBC0044501	50 Km
4	Feed Roller	FMBC0044601	50 KMm

Since the above intervals are the standard values for a fully maintained machine, they are not guaranteed, The values vary depending on the operating environment (dust or debris) or use of proper media and ribbon.

3. INSTALLATION PROCEDURE FOR OPTIONAL EQUIPMENT

WARNING!

Make sure to unplug the power cord before installing any optional equipment.

3.1 CUTTER MODULE (B-4208-QM)

NOTE: This module cannot be used together with the B-4908-H-QM strip module. Remove the strip module if it has been attached to the printer.

Description	Q'ty/Unit	Description	Q'ty/Unit
Cutter Unit	1	Cutter Attaching Screw	2
Cutter	1	Screw (FL-4x6)	2
Cutter Harnes	1	Screw (SM-4x6C)	1
Cutter Support	1	Cleaner	1

- 1) Open the right side cover and the top cover. (See Fig. 2-1.)
- 2) Remove the left side cover. (See Fig. 2-1.)
- 3) Remove the front plate. (See Fig. 2-5.)
- 4) Remove the screw (SM-4x8B) and two connectors to detach the operation panel.
- 5) Attach the cutter support to the main frame with the two screws (FL-4x6).

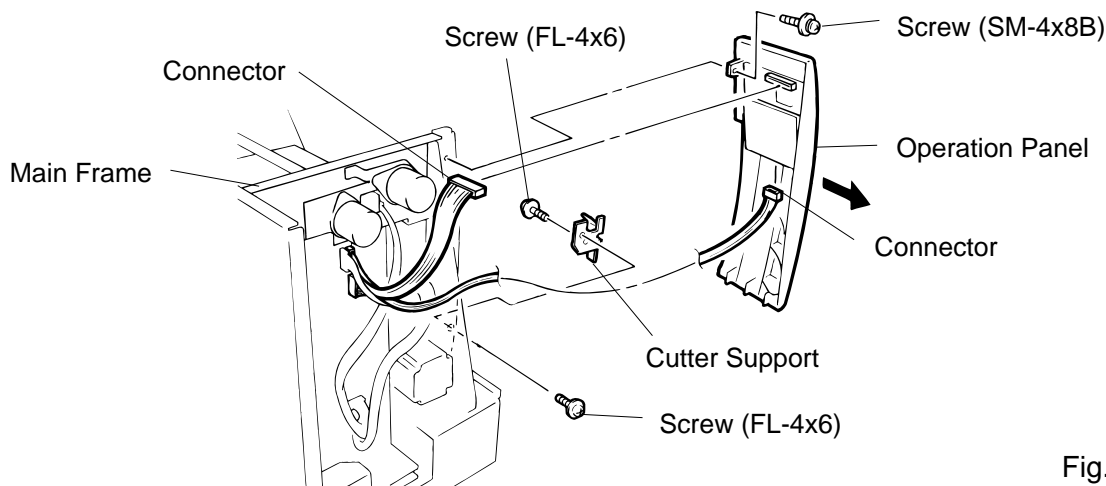


Fig. 3-1

- 6) Install the cutter unit with the attached four screws (cutter attaching screw, SM-4x6C and FL-4x6).

- 7) Connect the cutter harness to CN1 on the cutter I/F PC board through the opening of the cutter unit. When installing the cutter, make sure that the cutter guide is not in contact with the platen. If it is, print failure or noise may be caused.

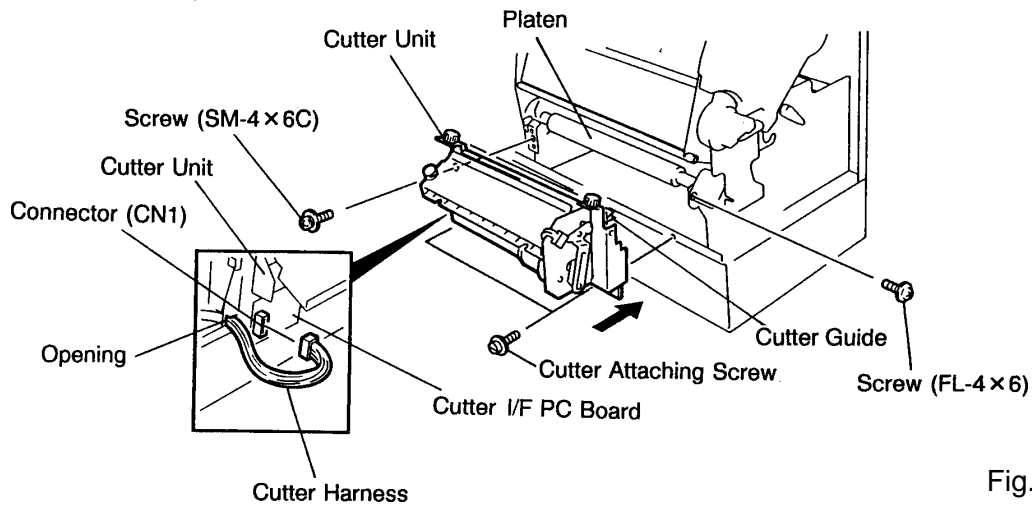


Fig. 3-2

- 8) Connect the cutter harness to CN4 on the I/O PC board.

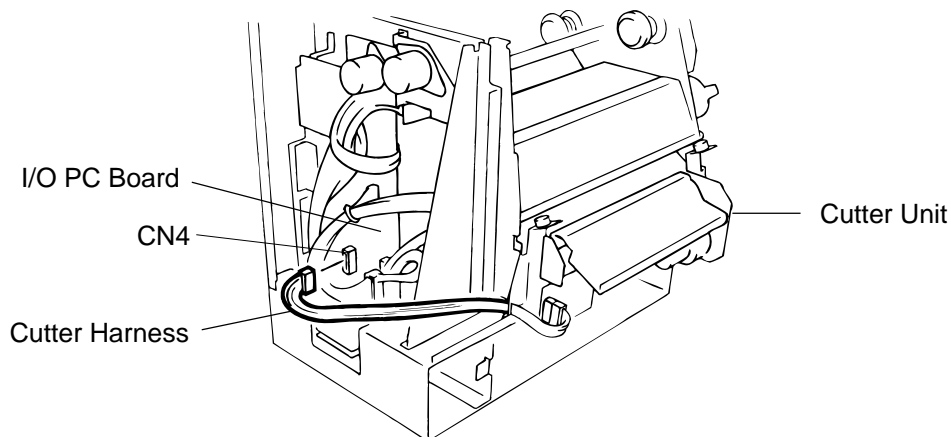


Fig. 3-3

- 9) Mount the cutter cover with the two screws.

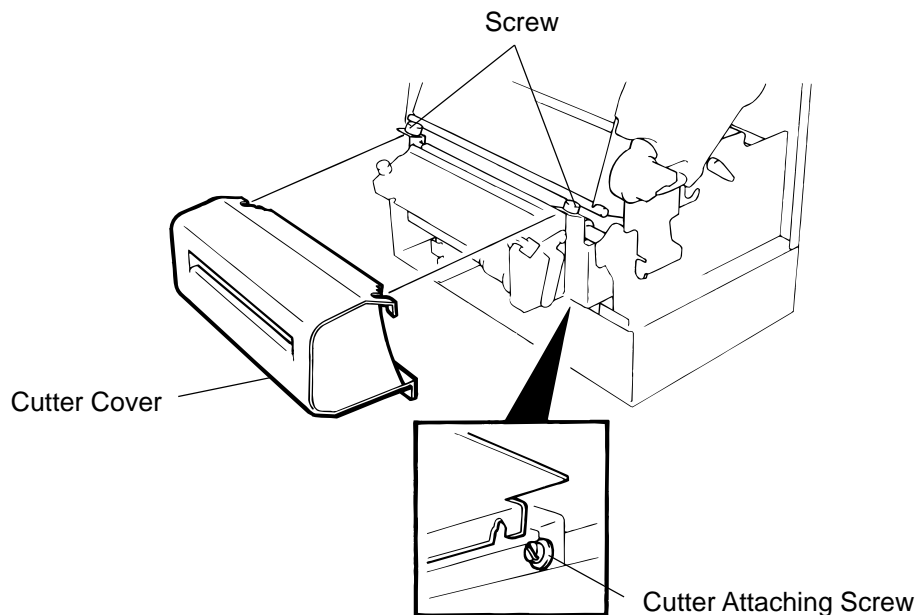


Fig. 3-4

- 10) Mount the operation panel and the left side cover on the printer.
- 11) Close the top and right covers.
- 12) After reassembly is complete, perform a test print to confirm that the cutter works properly. If the print start position becomes misalign when media is fed in the reverse direction, fine adjust the back feed value using the Back Feed Fine Adjustment procedure in diag. mode.

NOTE: Retain the parts that are removed during installation of the cutter unit. They will be required when the printer is modified to a standard type.

Removed Parts	Q'ty/Unit	Removed Parts	Q'ty/Unit
Front plate	1	Screw (FL-4x6)	3

■ Adjusting the Cutter Guide Plates

After replacing the cutter unit the following adjustment procedure should be employed to prevent paper jams.

1. Attach the cutter guide plate A with two SM-4 x 6C screw so that the fixed cutter is positioned 0.1 mm to 0.4 mm above the bottom of the cutter guide plate A.
2. Attach the cutter guide plate B with two FL-4 x 8 screws so that there is a clearance of 0.5 mm between the cutter guide plate A and cutter guide plate B using a clearance gauge.

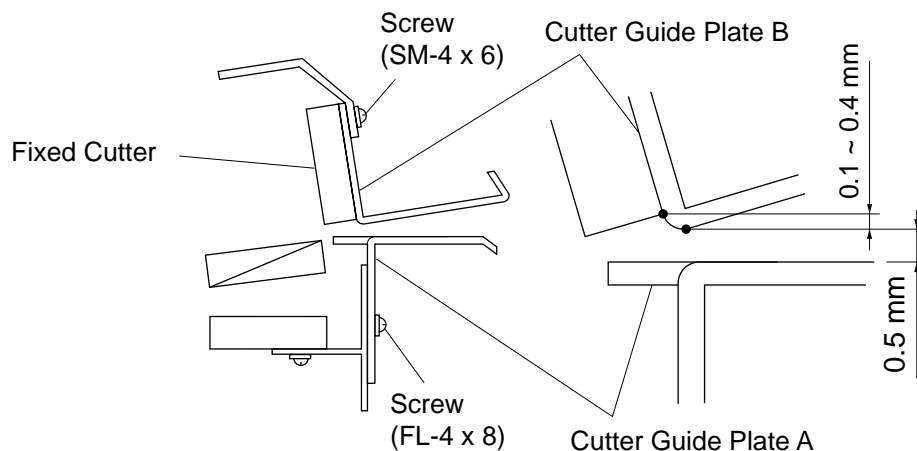


Fig. 3-5

3.2 STRIP MODULE (B-4908-H-QM)

NOTE: This module cannot be used together with the B-4208-QM cutter module. Remove the cutter module if it has been attached to the printer.

Description	Q'ty/Unit
Strip Unit	1
Strip Harness	1

- 1) Open the right side cover and the top cover. (See Fig. 2-1)
- 2) Remove the left side cover (See Fig. 2-1)
- 3) Remove the front plate (See Fig. 2-5)
- 4) Remove the operation panel (See Fig. 3-5)
- 5) Connect the strip harness to the CN2 on the PWM PC board through the opening of the strip base.
- 6) Install the strip unit to the printer with the four FL-4 x 6 screws removed in STEP 3.
- 7) Connect the strip harness to the CN4 on the I/O PC board.
- 8) Connect the strip sensor harness to the CN15 on the I/O PC board.

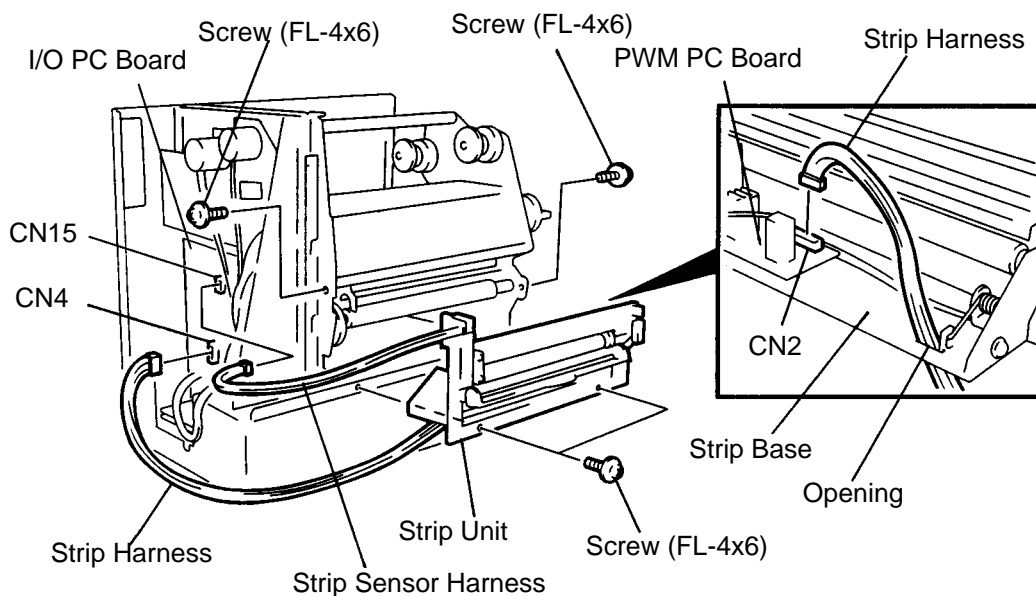


Fig. 3-6

- 9) Mount the operation panel and the left side cover on the printer.
- 10) Close the top and right covers.
- 11) Refer to Section 6.4 of the Maintenance Manual to load the label and make a test print to check for proper strip issue. If not, refer to Section 6.3.2 of the Maintenance Manual to adjust the strip position.

3.3 PCMCIA PC BOARD (B-8700-PC-QM)

Description	Q'ty/Unit
Installation Manual	1
PCMCIA PC Board	1
SM-3x8 Screw	4
Ferrite Core	1
PCB Holder Plate	1

- 1) Turn the power off.
- 2) Open the right side and top covers (See Fig. 2-1).
- 3) Remove the six screws (FL-4x6, B-4x6 and B-3x8) to detach the left side cover. (See Fig. 2-1).
- 4) Remove the two FL-3x5 screws to detach the blind plate.

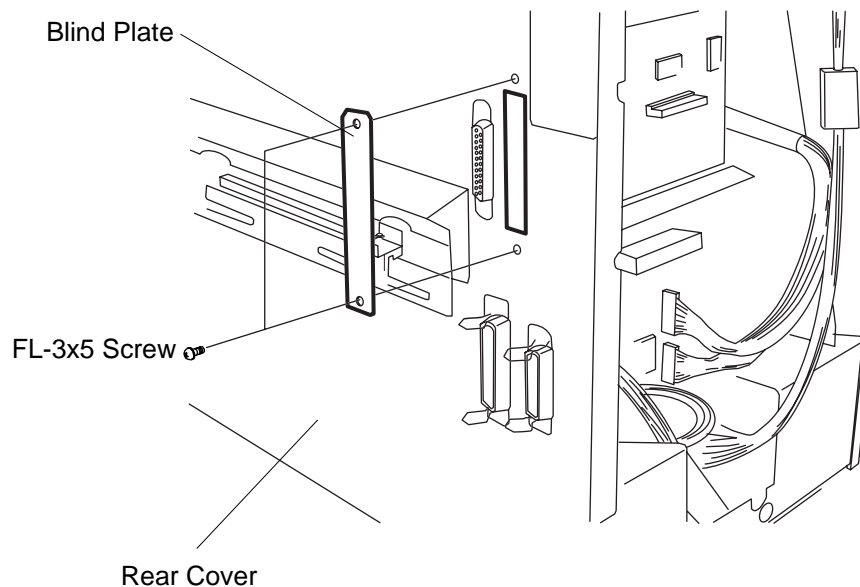


Fig. 3-7

- 5) Detach the three harnesses from CN2, CN5 and CN7 on the CPU PC board.

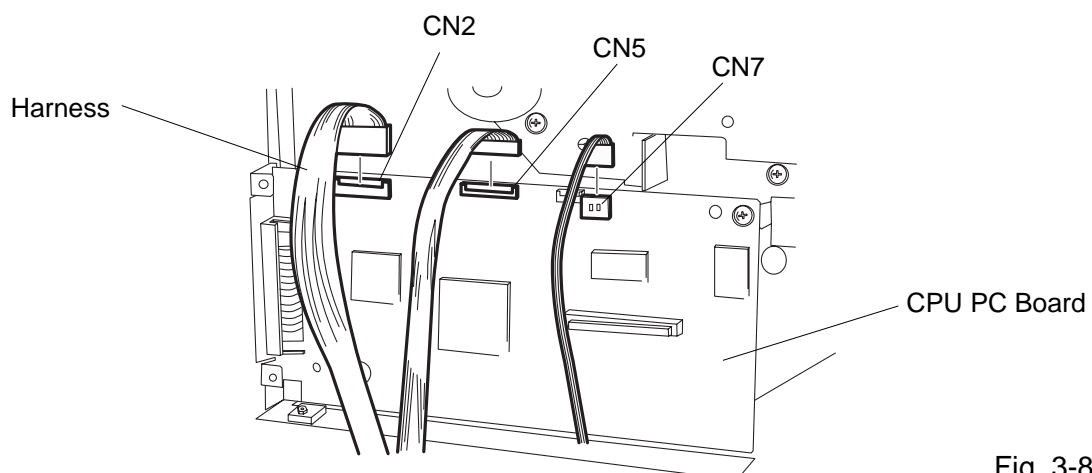


Fig. 3-8

- 6) Fix the PCB holder plate to the CPU PC board with the SM-3x8 screw so that the PCB holder plate aligns with the PCB support plate.

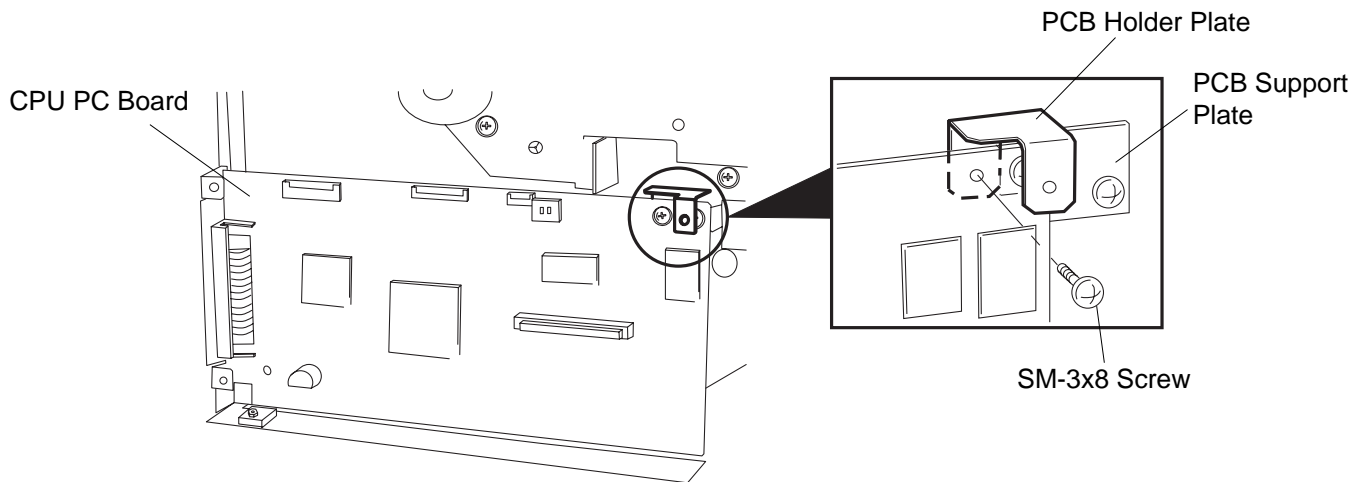


Fig. 3-9

- 7) Connect the CN51 on the PCMCIA PC board to the CN9 on the CPU PC board.
8) Fix the PCMCIA PC board with the three SM-3x8 screws on the CPU PC board and the PCB holder plate.

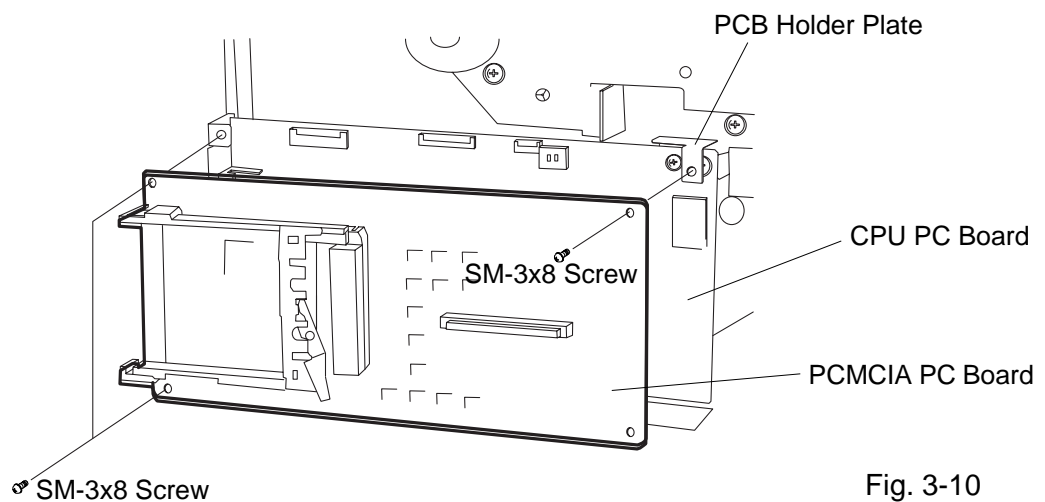


Fig. 3-10

- 9) Return the three harnesses to CN2, CN5, CN7 on the CPU PC board.
10) Attach the ferrite core to any cable attached to a PCMCIA PC board (Example LAN card) that may be inserted into the card slot. Place the ferrite core as close to the PCMCIA card as possible.
11) Reassemble the left side cover in the reverse order removal.

4. MECHANISM DESCRIPTION

4.1 CUTTER DRIVE (CUTTER MODE)

The printer supplies DC + 27 V to the cutter motor to rotate it and the clutch counter clockwise. The arm swings like a pendulum and moves the fixed slide cutter up and down to make a cut.

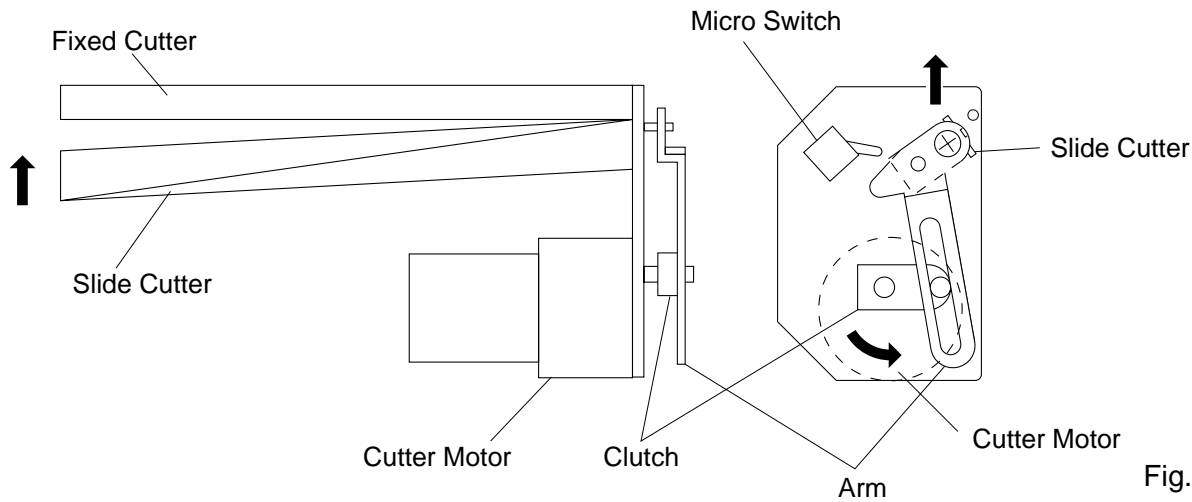


Fig. 4-1

After making a cut, the arm turns the micro switch off and the cutter home position is detected. When the cutter does not return to the home position because of a paper jam, an error occurs and the next piece of paper will not be cut.

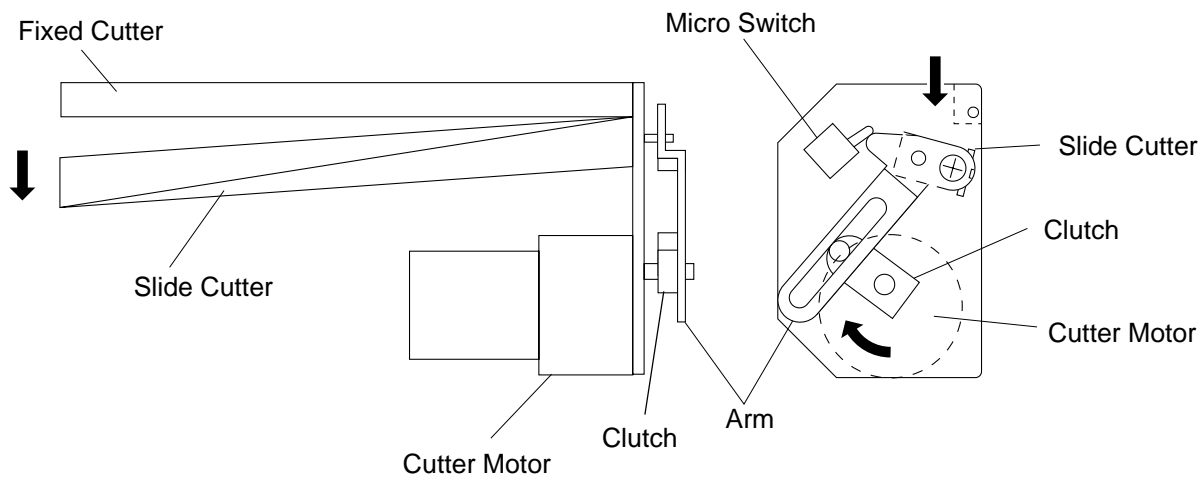
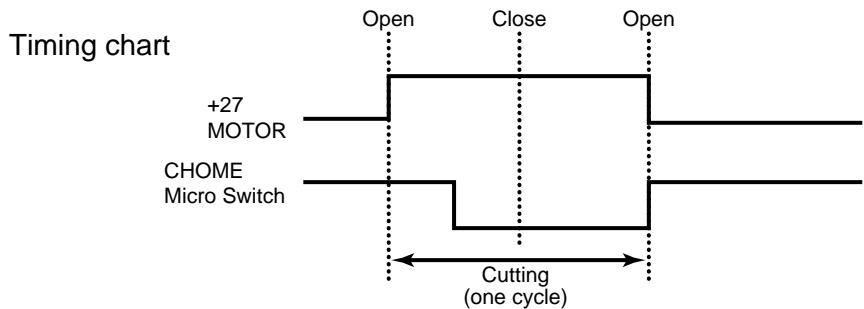


Fig. 4-2



5. TROUBLESHOOTING

Problems	Cause	Solution
Power does not turn ON.	<ol style="list-style-type: none"> 1. Input voltage to the printer is not within the rated voltage. (Check by CN1 on the PS unit.) 2. Output voltage from the printer is not within the rated voltage. (Check that the voltage between Pin 4 and Pin 6 (GND) of CN1 on the PS unit is 27 V. And check that the voltage between Pin 11 and Pin 6 (GND) is 5 V.) 3. No voltage to the I/O PC board. (Check that the voltage between Pin 1 and Pin 5 (GND) of CN2 on the I/O PC board is 27 V. And check that the voltage between Pin 11 and Pin 10 (GND) is 5 V.) 4. Failure of CPU PC board. 	<ul style="list-style-type: none"> • Replace the power cable or power inlet. • Replace the PS unit. • Replace the power harness. • Replace the CPU PC board.
LED or LCD does not light.	<ol style="list-style-type: none"> 1. Failure of the LED board/LCD 2. Failure of the LCD/LED harness 3. Failure of the CPU PC board 	<ul style="list-style-type: none"> • Replace the LED board/LCD. • Replace the LCD/LED harness. • Replace the CPU PC board.
Poor printing	<ol style="list-style-type: none"> 1. The print paper is of poor quality. 2. Dirty print head 3. The head lever fastens the print head incompletely. 	<ul style="list-style-type: none"> • Use the media approved by TOSHIBA TEC. • Clean the print head. • Fasten the head lever completely.
Printer does not print	<ol style="list-style-type: none"> 1. Print head failure 2. Connection of the print head connector is incomplete, a bad contact, or broken wires. 3. Failure in rewinding/feeding of the ribbon. 4. Failure of the CPU PC board 5. Failure of the software 6. Failure of the printer cable 	<ul style="list-style-type: none"> • Replace the print head. • Connect the harness completely, or replace the harness. • Replace the ribbon rewind motor, ribbon feed motor or I/O PC board. • Replace the CPU PC board. • Check the program. • Replace the printer cable.
Dot missing	<ol style="list-style-type: none"> 1. Broken print head element 2. Broken print head cable wires 3. Failure of the CPU PC board 4. Failure of the I/O PC board. 	<ul style="list-style-type: none"> • Replace the print head. • Replace the print head harness. • Replace the CPU PC board. • Replace the I/O PC board.

Problems	Cause	Solution
Blurred print	<ol style="list-style-type: none"> 1. Poor media quality. 2. Dust is on the media. 	<ul style="list-style-type: none"> • Use only TOSHIBA TEC specified media. • Clean the print head and remove any dust from the media.
Ribbon wrinkle	<ol style="list-style-type: none"> 1. Poor ribbon quality 2. Ribbon is not rewound or fed smoothly. 	<ul style="list-style-type: none"> • Use only TOSHIBA TEC specified ribbon. • Replace the ribbon rewind motor or ribbon feed motor.
Ribbon end error	<ol style="list-style-type: none"> 1. Poor ribbon quality 2. Improper voltage applied to the ribbon end sensor 3. Failure of the ribbon end sensor 4. Failure of the circuit which controls the ribbon end sensor. 	<ul style="list-style-type: none"> • Use only TOSHIBA TEC specified ribbon. • Refer to page 2-13 to adjust the ribbon end sensor. • Replace the ribbon end sensor. • Replace the I/O PC board.
Label feed failure	<ol style="list-style-type: none"> 1. Paper is not set properly. 2. Paper of poor quality 3. Improper adjustment of the feed gap sensor or black mark sensor. 4. The proper media sensor is not selected. 5. Threshold is improper. 6. Failure of the feed gap sensor or black mark sensor 7. Labels cannot be stripped off the backing paper or the backing paper with labels cannot be wound properly. 8. The cutter mechanism is not installed properly. 9. Failure of the stepping motor 	<ul style="list-style-type: none"> • Set the paper properly. • Use paper approved by TOSHIBA TEC. • Re-adjust the sensor. • Select the media sensor by DIP switch and adjust the sensitivity of the sensor. (Refer to page 6-40, 41) • Set the threshold. (Refer to Owner's Manual.) • Replace the feed gap sensor or black mark sensor. • Replace the take-up motor or I/O PC board. • Install the cutter mechanism properly. • Replace the stepping motor or I/O PC board.
Communication error	<ol style="list-style-type: none"> 1. Failure of the communication cable 2. Failure of the RS-232C connector 3. Failure of the communication connector 4. Failure of the PC or application software 5. Failure of the CPU PC board 	<ul style="list-style-type: none"> • Replace the cable. • Replace the connector. • Replace the connector. • Modify the program. • Replace IC2 (MC145407). If the trouble is not solved, replace the CPU PC board.

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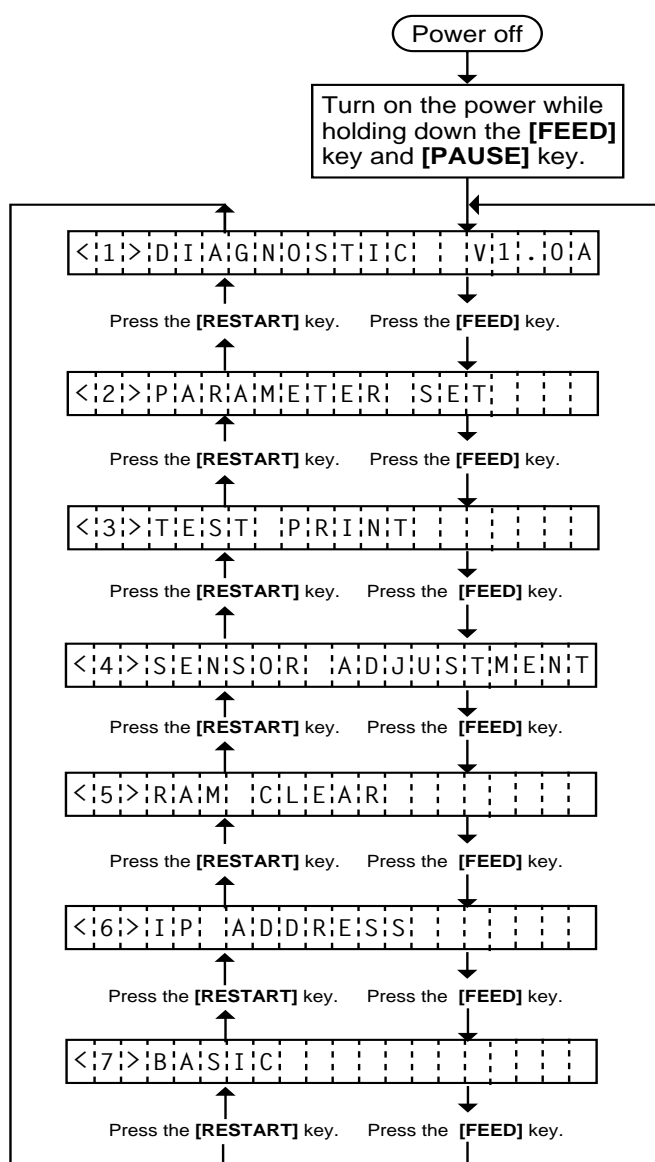
6. DIAG. TEST OPERATION

6.1 OUTLINE OF THE DIAG. TEST OPERATION

In system mode the diag. test operation is used to diagnose the printer and to set the parameters by using the [FEED], [RESTART] and [PAUSE] keys on the operation panel. Diag. test operation (Type I) is started from the power off state and the parameter setting (Type II) is started while the printer is on-line or printing. For further details, please refer to the corresponding pages.

NOTE: Every size in this manual is written in millimeter. To obtain the size in inch, divide by 25.4.

■ Type I



■ Self Test Mode (See page 6-3)

Data from the maintenance counter and automatic diagnosis are printed on the media.

■ Parameter Setting Mode (See page 6-15)

Fine adjustment of the feed length, cut/strip position, back feed length, X axis, print tone, thresholds of the black mark sensor and feed gap sensor, ribbon motor drive voltage, and selection of character code, font zero, baud rate, data length, stop bit, parity, transmission control mode, language of LCD message, auto forward wait and head up ON/OFF in cut mode, ribbon saving module, control code, ribbon type, strip wait status, feed key function, kanji code, EURO font cod, Centronics I/F ACK/BUSY timing, Web printer, and auto print head broken element check are available in this mode.

■ Test Print Mode (See page 6-54)

Print condition and test print type (slant line, characters and bar code) are selectable.

■ Sensor Setting Mode (See page 6-62)

A thermistor check and the adjustment of the black mark and feed gap sensors are available in this mode.

A transmission check is made to both a print head thermistor and an environmental temperature thermistor.

■ RAM Clear Mode (See page 6-67)

Data from the maintenance counter is cleared and parameter setting is initialized in the RAM clear mode.

■ IP Address Setting Mode (See page 6-72)

Host IP address, Printer IP address, and Gateway IP address settings are available in this mode.

■ BASIC Setting Mode (See page 6-74)

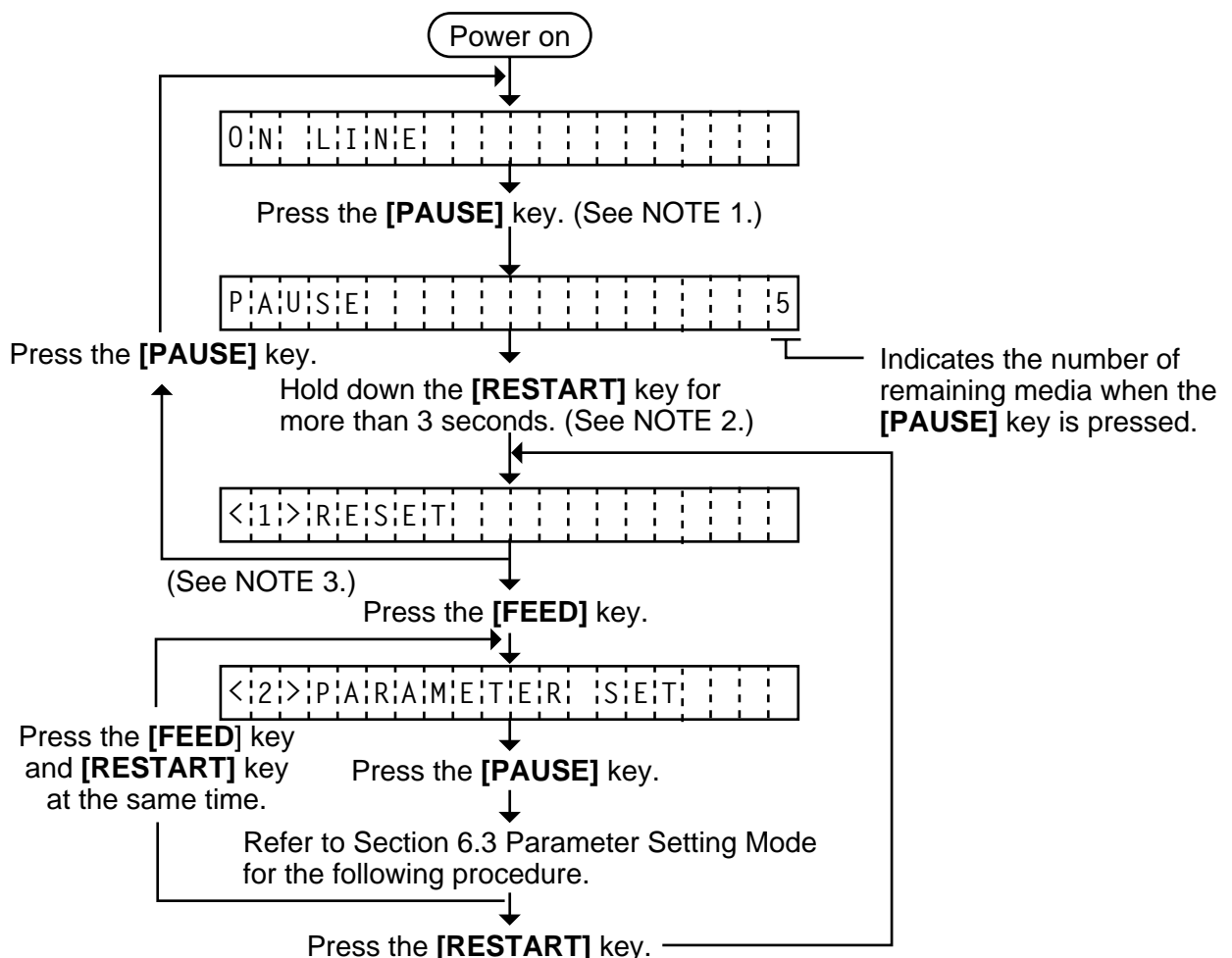
Setting the BASIC specification and trace specification to be enabled/disabled, and displaying the program file/data file are available in this mode.

In system mode the **[FEED]**, **[RESTART]** and **[PAUSE]** keys function as described below.

Key Name	Function
[FEED] key	Used to start the system mode as a [PAUSE] key does. Used to select the parameter mode or to fine adjust the parameters in the negative direction (-).
[RESTART] key	Used to select the parameter mode or to fine adjust the parameters in the positive direction (+)
[PAUSE] key	Used to start the system mode as a [FEED] key does and to select the parameter mode. Used as an enter key.

■ Type II

The parameter setting such as feed length fine adjustment or cut/strip position fine adjustment can be changed while the printer is on-line or printing. Pressing the **[PAUSE]** key causes the printer to enter parameter setting mode. Reset mode is provided for this procedure to cancel the steps which follow the **[PAUSE]** key without turning the power off.



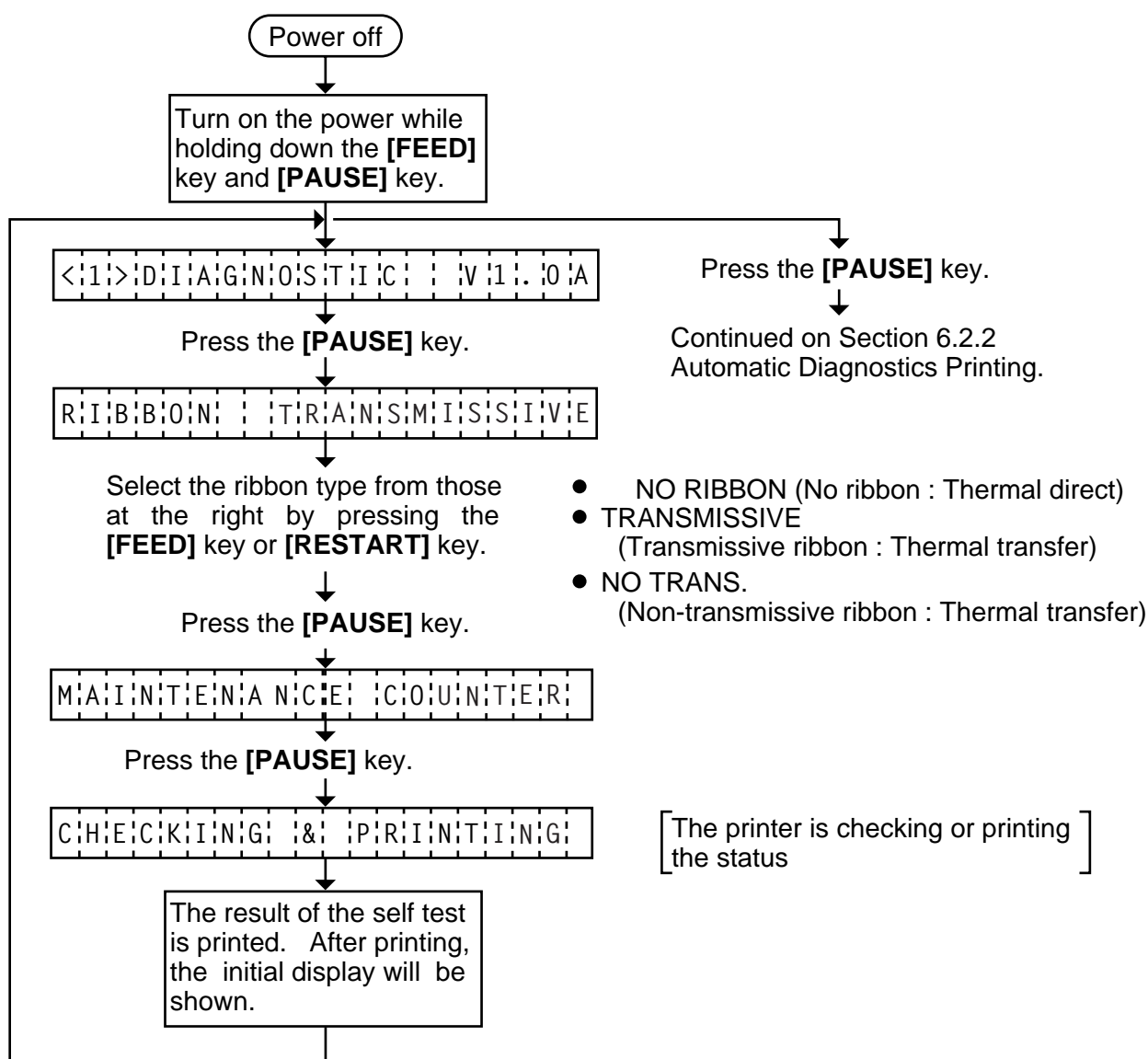
- NOTES:**
1. Pressing the **[PAUSE]** key during printing causes the printer to pause printing and show the number of remaining media.
 2. If the **[RESTART]** key is released within 3 seconds, the printer will resume printing because the **[RESTART]** key is activated.
 3. Since the reset is performed when terminating this mode, the printer cancels the remaining media and returns to on-line mode. This reset will not clear the changed parameter settings.

6.2 SELF TEST MODE

In self test mode the printer status is printed in two types of sample print.

6.2.1 Maintenance Counter Printing

The data from 1 to 53 on a sample print is printed. This data is the printer status and the value set in the parameter setting mode.



- NOTES:**
1. If the maintenance counter printing results in an error, the printer will display the error message and stop printing. The error status can be cleared by the [PAUSE] key, however, the display will return to the initial display "<1> DIAG. V1.0A". Printing is not automatically resumed after the error is cleared.
 2. Both label and tag paper can be used for printing.

■ Sample Print

[Print Condition]

- Preset count : 1
- Print speed : 4"/sec.
- Sensor : No sensor
- Printing method : Thermal transfer
- Supply length : 140 mm
- Issuing mode : Batch printing
(without rewinder)

(1)	TL FEED	1.1 km	[PC]		
(2)	FEED	1.1 km	FEED	+2.0 mm	(43)
(3)	PRINT	0.5 km	CUT	+0.0 mm	(44)
(4)	CUT	96	BACK	+0.0 mm	(45)
(5)	HEAD U/D	32	TONE (T)	+0 step	(46)
(6)	RIBBON	3 h	TONE (D)	+0 step	(47)
(7)	SOLENOID	0 h	RBN (FW)	-10	(48)
			RBN (BK)	+0	(49)
(8)	232C ERR	255	[KEY]		
(9)	SYS ERR	0	FEED	+0.0 mm	(50)
(10)	PW FAIL	0	CUT	+1.0 mm	(51)
			BACK	+0.0 mm	(52)
(11)	THRESHOLD (R)	1.0 V	TONE (T)	+0 step	(53)
(12)	THRESHOLD (T)	0.7 V	TONE (D)	+0 step	(54)
			RBN (FW)	-8	(55)
(13)	FONT [PC-850]	[0]	RBN (BK)	+0	(56)
(14)	CODE [AUTO]		X ADJ.	+0.0 mm	(57)
(15)	RIBBON	[TRANS]			
(16)	STATUS	[ON]			
(17)	SPEED	[9600]			
(18)	DATA LENG.	[8]			
(19)	STOP BIT	[1]			
(20)	PARITY	[EVEN]			
(21)	CONTROL	[XON+READY AUTO]			
(22)	MESSAGE	[ENGLISH]			
(23)	FORWARD WAIT	[OFF]			
(24)	HEAD UP CUT	[OFF]			
(25)	RIBBON SAVE	[ON]			
(26)	SENS POSI	[CENTER]			
(27)	FEED KEY	[FEED]			
(28)	KANJI	[TYPE1]			
(29)	EURO CODE	[B0]			
(30)	AUTO HD CHK	[OFF]			
(31)	WEB PRINTER	[OFF]			
(32)	HOST IP ADDR	[192.168.010.010]			
(33)	PRTR IP ADDR	[192.168.010.020]			
(34)	GATE IP ADDR	[000.000.000.000]			
(35)	SUBNET MASK	[255.255.255.000]			
(36)	TTF AREA	[704 KB]			
(37)	EXT CHR AREA	[128 KB]			
(38)	BASIC AREA	[64 KB]			
(39)	PC SAVE AREA	[64 KB]			
(40)	SOCKET PORT	[ON] [08000]			
(41)	BASIC	[OFF]			
(42)	BASIC TRACE	[OFF]			

Fig. 6-1

1) Maintenance Counter

#	Item	Count Condition	Range
(1)	Total media distance covered	Counted when the feed motor drives to feed, print and issue the media. (Counted also during ribbon save operation and back feed.) [See NOTE 2.]	0.0 to 3200.0 km
(2)	Media distance covered		0.0 to 200.0 km
(3)	Print distance	Counted while printing. (Feeding and issuing media, and ribbon saving operation are not counted.) [See NOTE 2.]	0.0 to 200.0 km
(4)	Cut count	Counts every cut. [See NOTE 3.]	0 to 1000000 times
(5)	Head up and down count	Counts every up and down of the print head using the solenoid for ribbon save operation. (Up+Down=1 count) [See NOTE 3.]	0 to 2000000 times
(6)	Ribbon motor driving time	Counts when the ribbon motor drives to feed, print and issue the media. (The driving time is not counted during ribbon saving operation, but is during back feed.) [See NOTE 4.]	0 to 2000 hours
(7)	Solenoid driving time	Counted during ribbon saving operation. [See NOTE 4.]	0 to 1000 hours
(8)	RS-232C hardware error count	Counted when a parity, overrun or framing error occurs. [See NOTE 5.]	0 to 255 times
(9)	System error count	Counted when a zero-dividing error occurs or undefined command is retrieved.	0 to 15 times
(10)	Momentary power failure count	Counts the number of times the power restores while the CPU is busy after reset.	0 to 15 times

- NOTES:**
- Item from (2) through (10) are initialized to "0" after RAM clear.
 - If the distance is 5.5 m or less, it is rounded down and no data is added to the memory at power off.
 - If the count is 31 counts or less, it is rounded down and no data is added to the memory at power off.
 - If the driving time is 27 sec. or less, it is rounded down and no data is added to the memory at power off.
 - When a sent command results in an error, the same number as the data capacity of the command is counted by byte.

2) Parameters

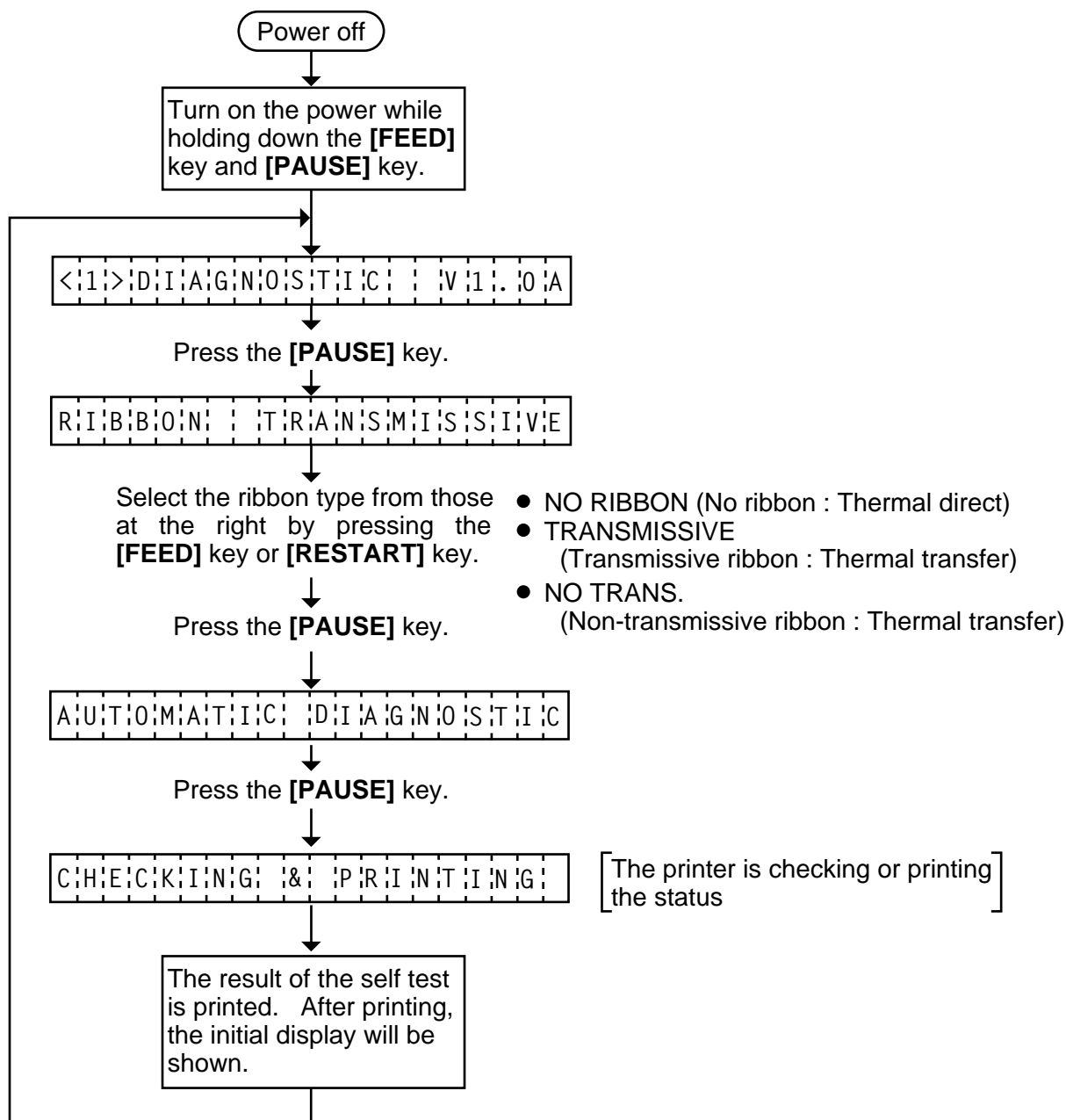
#	Item	Contents
(11)	Threshold manual fine adjustment for the black mark sensor	0.0V to 4.0V
(12)	Threshold manual fine adjustment for the feed gap sensor	0.0V to 4.0V
(13)	Character	PC-850: PC-851 PC-1252 LATIN9 PC-852: PC-855 PC-1253 Arabic PC-857: PC-1250 PC-1254 PC-8: PC-1251 PC-1257
	Font zero	0: No slash used. Ø: Slash used.
(14)	Control code	AUTO: Automatic selection ESC LF NUL: ESC LF NUL mode { I }: Mainframe mode 1B 1C 1D: Manual
(15)	Ribbon type	TRANS.: Transmissive ribbon NON TRANS.: Non-transmissive ribbon

#	Item	Contents
(16)	Status	1: Strip wait status is not sent to the PC. 2: Strip wait status is sent to the PC.
(17)	Baud rate	2400: 2400 bps 4800: 4800 bps 9600: 9600 bps 19200: 19200 bps 38400: 38400 bps
(18)	Data length	7: 7 bits 8: 8 bits
(19)	Stop bit	1: 1 bit 2: 2 bits
(20)	Parity	NONE: None ODD: ODD EVEN: EVEN
(21)	Transmission control code	XON/XOFF: XON/XOFF READY/BUSY: READY/BUSY (DTR) XON+READY AUTO: XON/XOFF+READY/BUSY (DTR) XON/XOFF AUTO: XON/XOFF READY/BUSY RTS: RTS
(22)	Language selection for LCD message	ENGLISH:English GERMAN:German FRENCH: French DUTCH: Dutch SPANISH:Spanish JAPANESE: Japanese ITALIAN: Italian
(23)	Auto forward wait in cut mode	ON:Available OFF: Unavailable
(24)	Head up in cut mode	ON:Available OFF: Unavailable
(25)	Ribbon saving module	ON:Available OFF: Unavailable
(26)	Sensor Position	CENTER: Fixed Type Sensor EDGE: Movable Type Sensor
(27)	Feed key function	FEED: feeds one label PRINT: prints image buffer on one label
(28)	Kanji code type (Not supported QQ/QP models)	TYPE 1: Windows code TYPE 2: Original code
(29)	Euro font code	20H to FFH
(30)	Auto print head broken element check	ON:Available OFF: Unavailable
(31)	Web printer function	ON:Available OFF: Unavailable
(32)	Host IP address	***.***.***.***
(33)	Printer IP address	***.***.***.***
(34)	Gateway IP address	***.***.***.***
(35)	Subnet mask	***.***.***.***
(36)	True type font registration area size	0 KB to 896 KB (units of 64 KB)
(37)	External character registration area size	0 KB to 896 KB (units of 64 KB)
(38)	BASIC file store area size	0 KB to 896 KB (units of 64 KB)
(39)	PC saving area size	0 KB to 896 KB (units of 64 KB)

#	Item	Contents
(40)	Socket port number	ON: Available OFF: Unavailable Port No. 0 to 65535
(41)	BASIC interpreter setting	ON: Available OFF: Unavailable
(42)	BASIC interpreter trace setting	ON: Available OFF: Unavailable
(43) (50)	Feed length fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
(44) (51)	Cut/Strip position fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
(45) (52)	Back feed length fine adjustment (PC), (KEY)	-9.5 mm to +9.5 mm
(46) (53)	Print tone fine adjustment (Thermal transfer) (PC), (KEY)	-10 step to +10 step
(47) (54)	Print tone fine adjustment (Thermal direct) (PC), (KEY)	-10 step to +10 step
(48) (55)	Ribbon take-up motor driving voltage fine adjustment (PC), (KEY)	-15 step to +0 step
(49) (56)	Ribbon feed motor driving voltage fine adjustment (PC), (KEY)	-15 step to +10 step
(57)	X axis fine adjustment	-99.5 mm to +99.5 mm

6.2.2 Automatic Diagnostic Printing

The data from ① to ⑩ on a sample print is printed.



- NOTES:**
1. If the automatic diagnosis printing results in an error, the printer will display the error message and stop printing. The error status can be cleared by the **[PAUSE]** key, however, the display will return to the initial display "<1> DIAG. V1.0A". Printing is not automatically resumed.
 2. Both label and tag paper can be used for printing.

■ Sample Print

[Print condition]

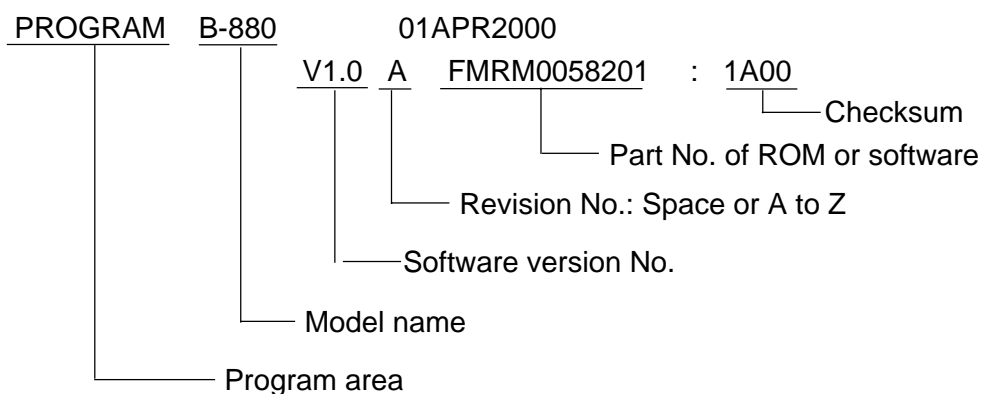
- Preset count : 1
- Print speed : 4"/sec.
- Sensor : No sensor
- Printing method : Thermal Transfer
- Supply length : 59 mm
- Issuing mode : Batch printing
(without rewinder)

(1)	PROGRAM	B-880	01APR2000
		V1.0A	FMRM0058201: 1A00
(2)	BOOT	B-880	01APR2000
		V1.0A	FMRM0058401: 8500
(3)	FONT	5600	
(4)	KANJI	8900	
(5)	EEPROM	OK	
(6)	DRAM	16MB	
(7)	CARD	SLOT 1	ATA
		SLOT 2	LAN
(8)	SENSOR1	00000000,00000000	
(9)	SENSOR2	[H] 20 C [A] 22 C [S] 25 C	
		[R] 4.2V [T] 2.5V	
		[RANK]7	
(10)	EXP.I/O	NG	

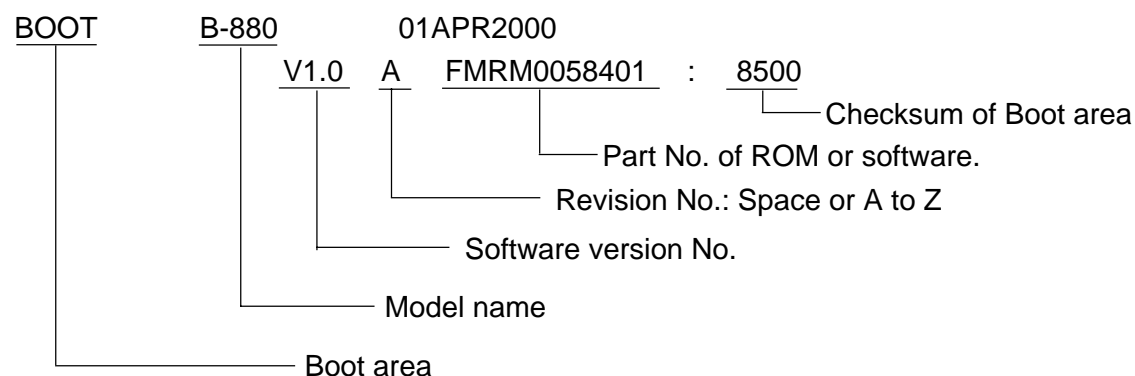
Fig. 6-2

NOTE: The symbol " " in " C" may not be printed depending on the type of character code.

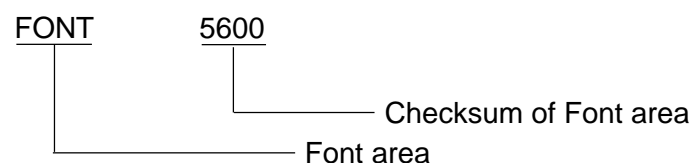
(1) PROGRAM ROM Check



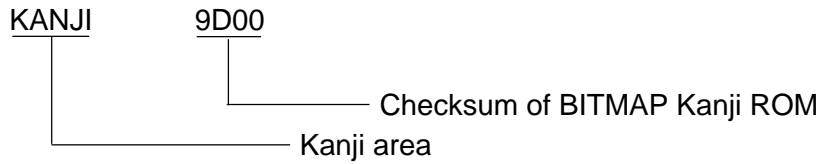
(2) BOOT Check



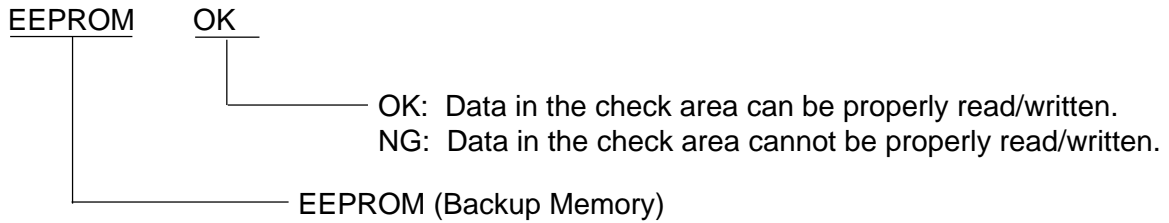
(3) Font Check



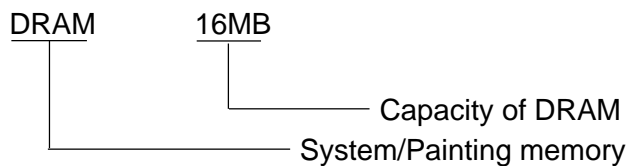
(4) Kanji Check



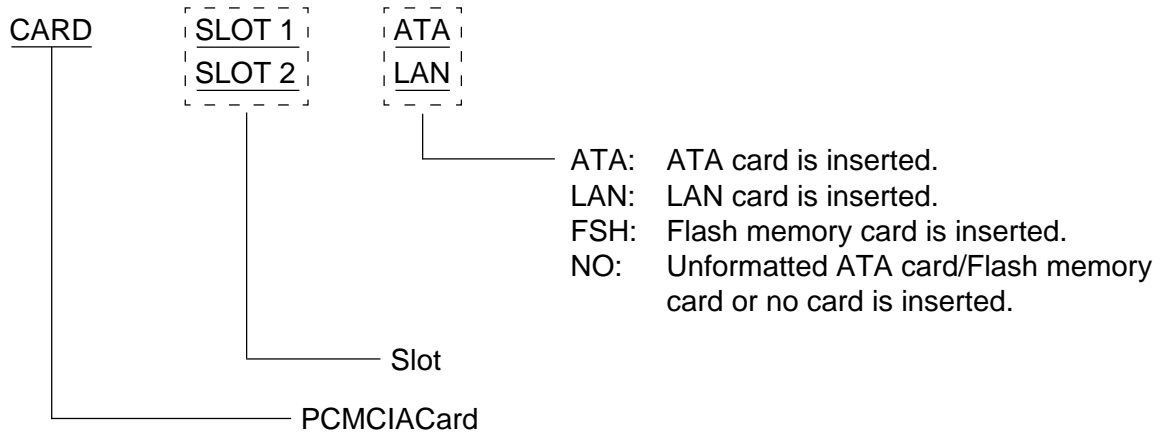
(5) EEPROM Check



(6) DRAM Check

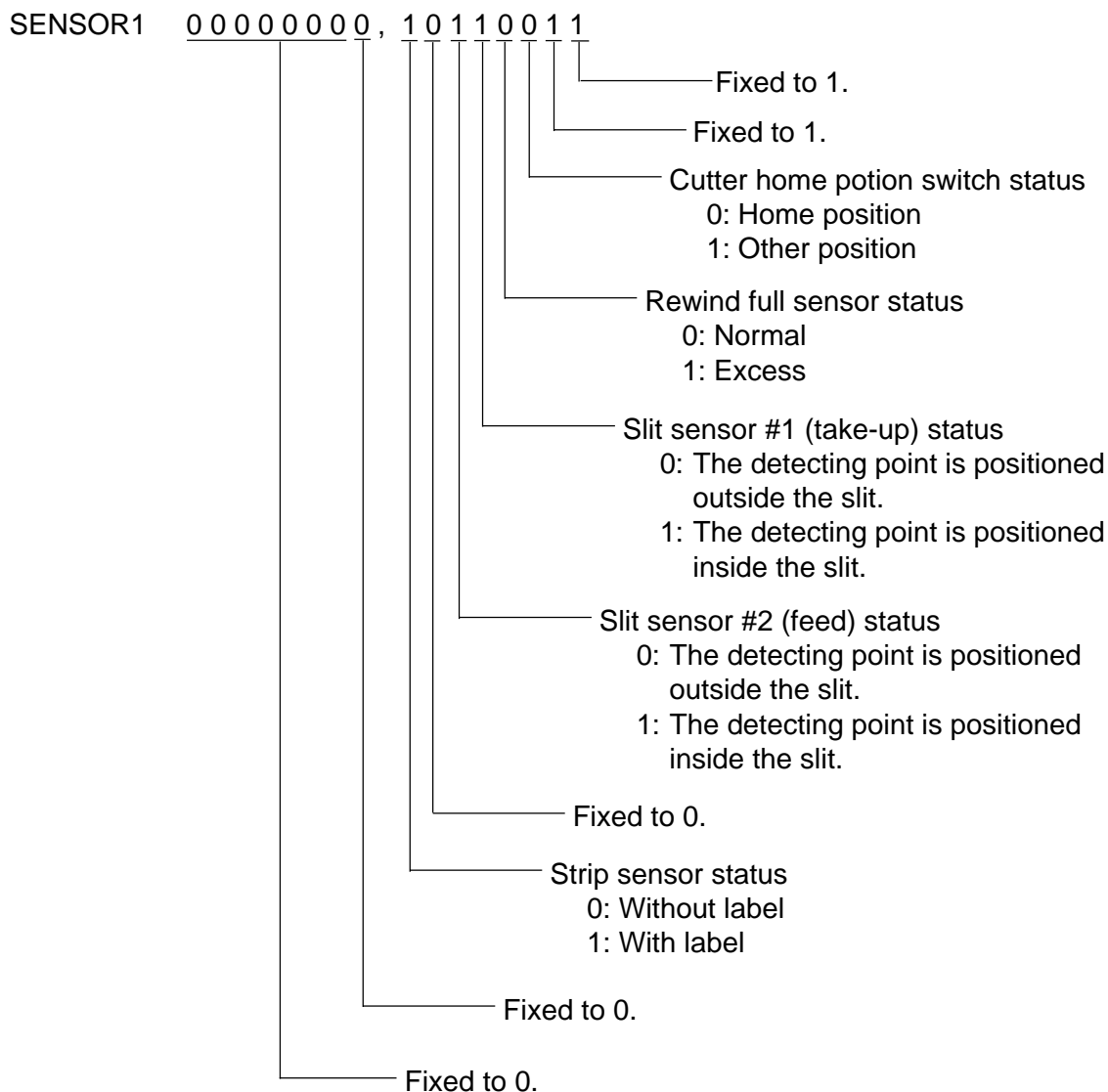


(7) PC card Check



- NOTES:**
1. Software version No., part No. of ROM and checksum vary according to the software version of PROGRAM ROM.
 2. The last two digits of the checksum are usually 0.
 3. When the kanji ROM is not installed, the checksum becomes "0000"
 4. When selecting the Diag. Test operation, pressing the **[RESTART]** and **[FEED]** keys at the same time restores the display to the system mode menu.

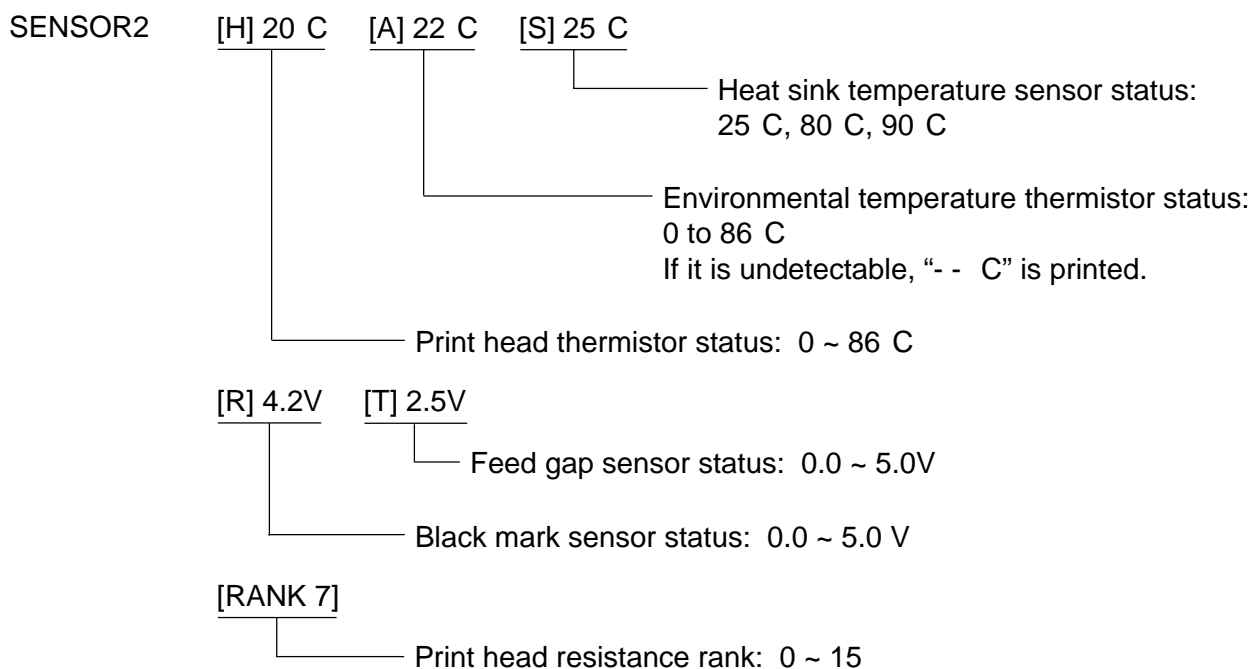
(8) Sensor 1 Check



■ Print status content description of each sensor/switch

Sensor/Switch	Print status content description
Cutter home position switch	Indicates whether the cutter is at the home position or not.
Rewind full sensor	Indicates whether the media is wound to peak capacity on the built-in take-up spool or not.
Slit sensor #1 (take-up) Slit sensor #2 (feed)	Controls ribbon motor rotation by detecting the slit on the ribbon take-up motor and the ribbon feed motor. Indicates the position of the slit sensor.
Strip sensor	Indicates the existence of label in strip mode. When no label is detected (0), the subsequent label is issued, when a label is detected (1), the subsequent label will not be issued until the current label is removed.

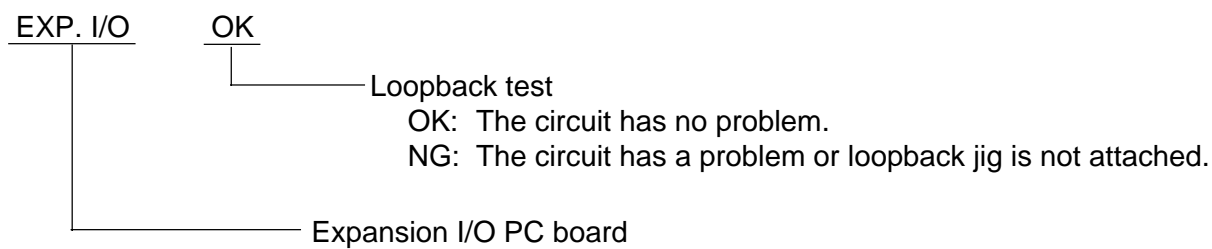
(9) SENSOR 2 Check



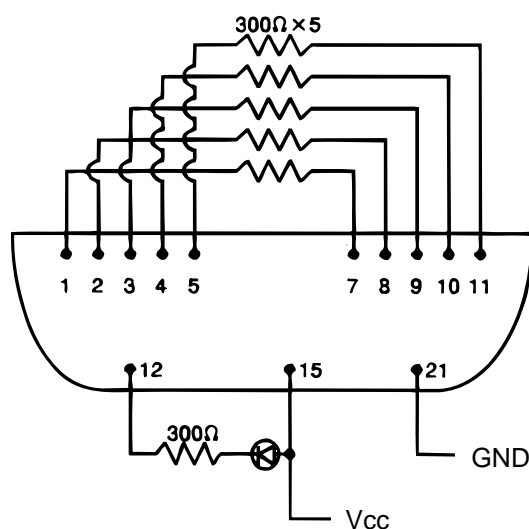
Print Head Resistance Rank

Resistance Rank	Average resistance (ohm)
0	1432 - 1454
1	1409 - 1431
2	1385 - 1408
3	1361 - 1384
4	1337 - 1360
5	1314 - 1336
6	1290 - 1313
7	1266 - 1289
8	1242 - 1265
9	1219 - 1241
10	1195 - 1218
11	1171 - 1194
12	1147 - 1170
13	1124 - 1146
14	1100 - 1123
15	1076 - 1099

(10)EXP. I/O Check



For the loopback test, connect a jig as shown below and check HIGH output / HIGH input and LOW output / LOW input.

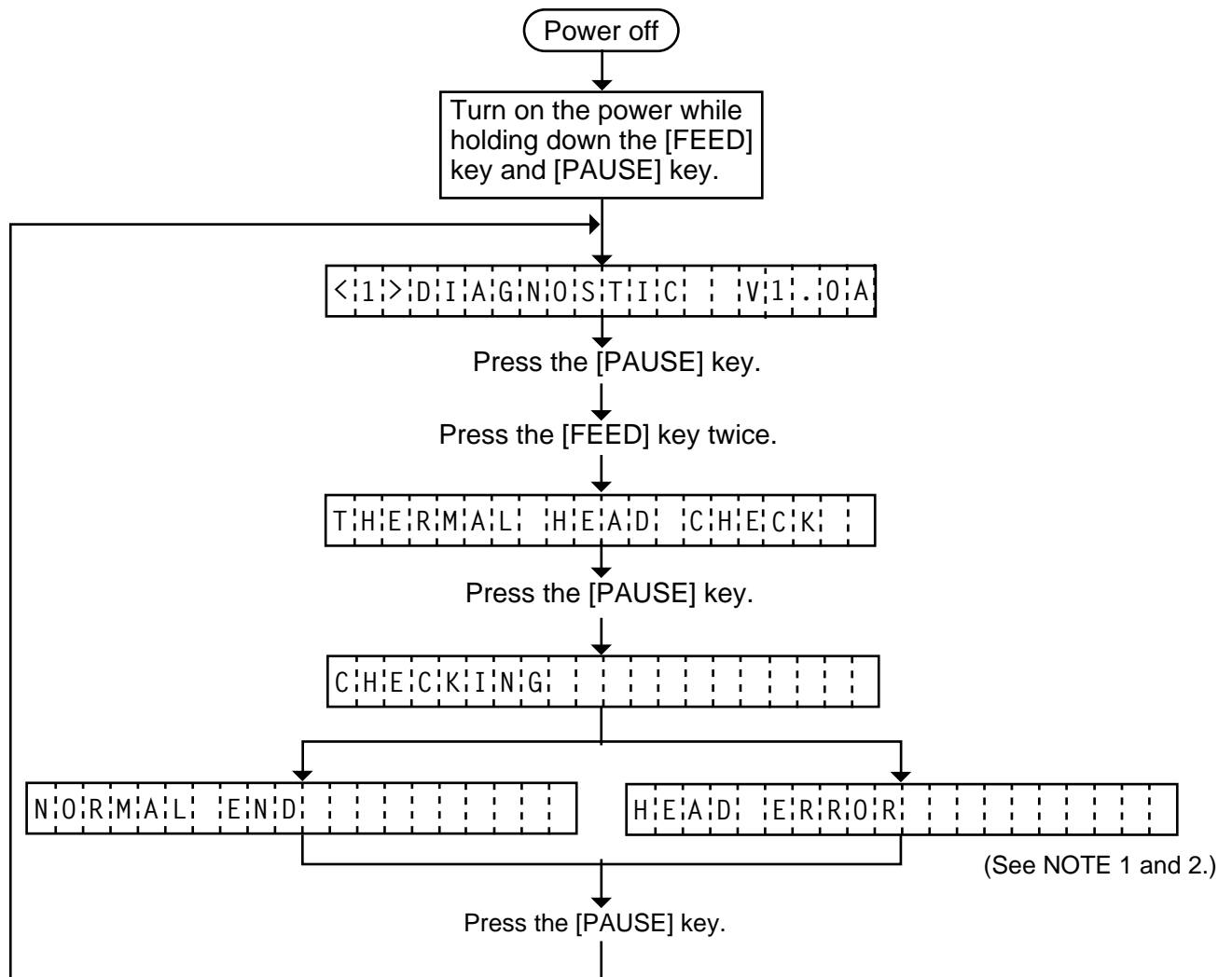


Connector: FCN-781P024-G/P

Fig. 6-3

6.2.3 Head Broken Element Check

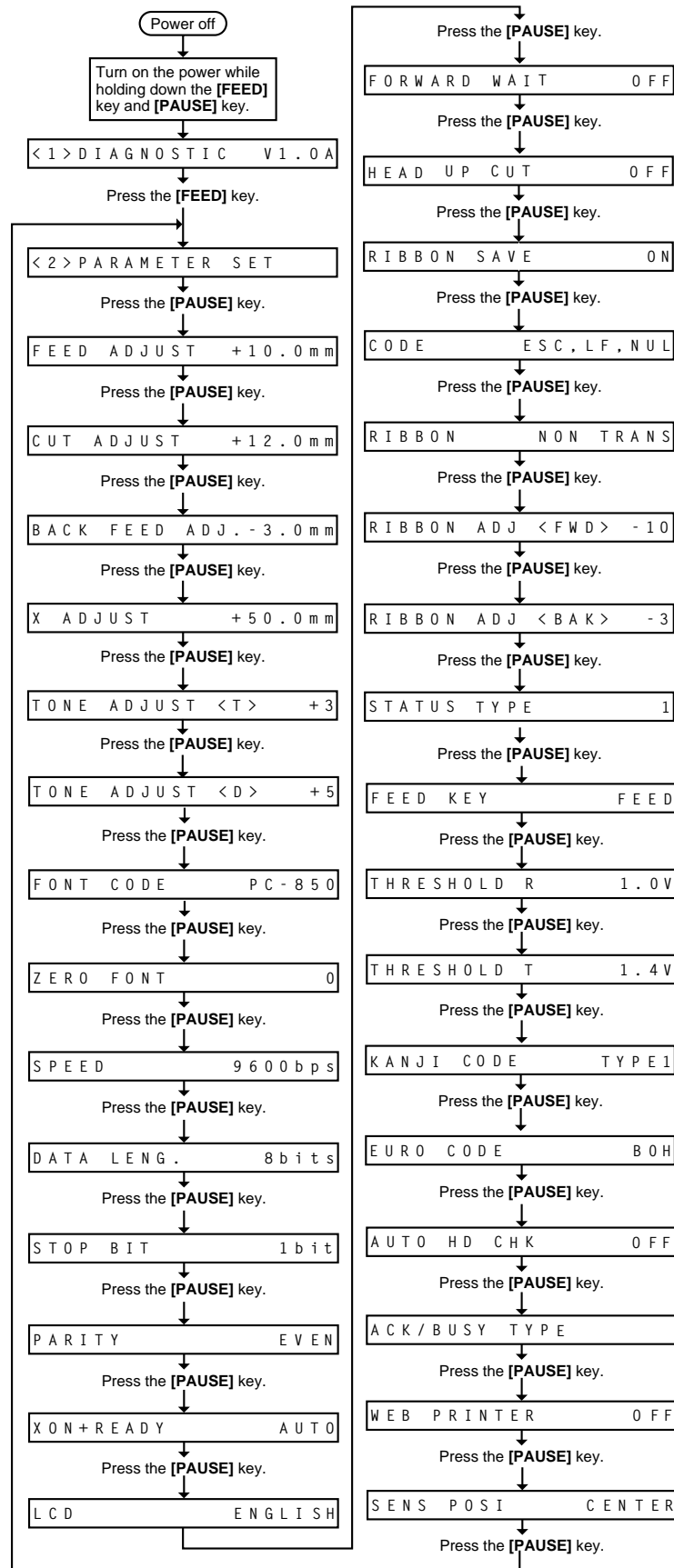
The printer automatically performs the head broken element check. The result of the head broken element check is indicated in the display.



- NOTES:**
1. If the head broken element check results in 'HEAD ERROR', the print head must be replaced after referring to Section 2.5 Replacing the Print Head.
 2. After replacing the print head, clear the maintenance counter as described in Section 5.6.1 and perform a test print in Section 6.4 TEST PRINT MODE.

6.3 PARAMETER SETTING MODE

The following items are set in the parameter setting mode. The values set in this mode are printed on the sample print of the maintenance counter. Setting procedure and functions are provided below.

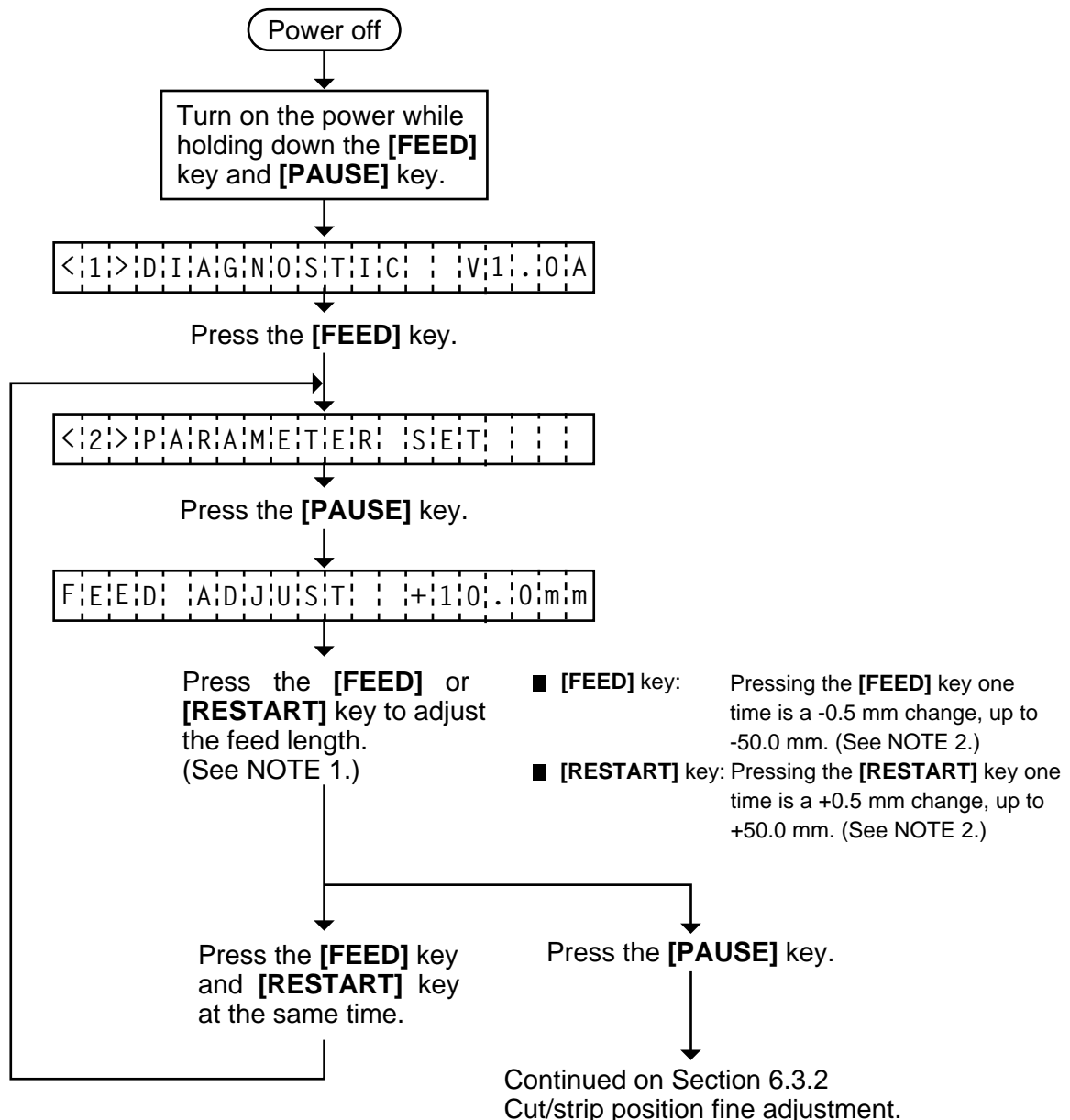


■ Parameter Setting Mode Table

Mode Name	Function
FEED ADJUST	Using this parameter the feed length is fine adjusted.
CUT ADJUST	Using this parameter the cut position or strip position is fine adjusted.
BACK FEED ADJUST	Using this parameter the back feed length from the cut/strip position to the home position is fine adjusted.
X ADJUST	This setting is used to finely adjust print position in the X axis.
TONE ADJ. <T> (Thermal transfer printing) TONE ADJ. <D> (Thermal direct printing)	Using this parameter the print tone is fine adjusted. The longer the print pulse width, the darker the print tone becomes. The shorter, the lighter the print tone becomes.
FONT CODE	The character code either PC-850 or PC-8 is selected.
ZERO FONT	The font zero either 0 or Ø is selected.
SPEED	Baud rate of the serial interface is selected.
DATA LENG.	Data length of the serial interface is selected.
STOP BIT	Stop bit of the serial interface is selected.
PARITY	Parity of the serial interface is selected.
XON+READY	Transmission control mode of the serial interface is selected.
LCD	Language which displays LCD message is selected.
FORWARD WAIT	Auto forward wait in cut mode is selected. When idle for 3 seconds or more after cutting, the printer automatically feeds the paper 10mm forward.
HEAD UP CUT	Print head up in cut mode is selected. If a back feed is performed when this parameter is ON, it is done while the print head is up. (Available only when the ribbon saving module is installed and the ribbon save mode is ON.)
RIBBON SAVE	The ribbon saving module is selected. Be sure to set this parameter to ON when using the ribbon saving module.
CODE	The command code out of AUTO, ESC/LF/NUL, or { I } is selected.
RIBBON	Ribbon type either transmissive or non-transmissive is selected.
RIBBON ADJ <FWD> (Ribbon feed motor) RIBBON ADJ <BAK> (Ribbon feed motor)	Using this parameter the torque of the ribbon motors is fine adjusted.
STATUS TYPE	Whether or not the strip wait status (05H) is sent in response to the status request command from the PC is selectable.
FEED KEY	The [FEED] key function is selected. FEED: feeds a piece of paper PRINT: prints image buffer on a piece of paper.
THRESHOLD R	The threshold of the black mark sensor is manually fine adjusted.
THRESHOLD T	The threshold of the feed gap sensor is manually fine adjusted.
KANJI CODE	Kanji code either Windows code or original code is selected. (Not supported by QQ/QP models.)
EURO CODE	EURO code is selected from 20H to FFH.
SENS POSI	The media sensor position is selected. CENTER: Fixed EDGE: Movable

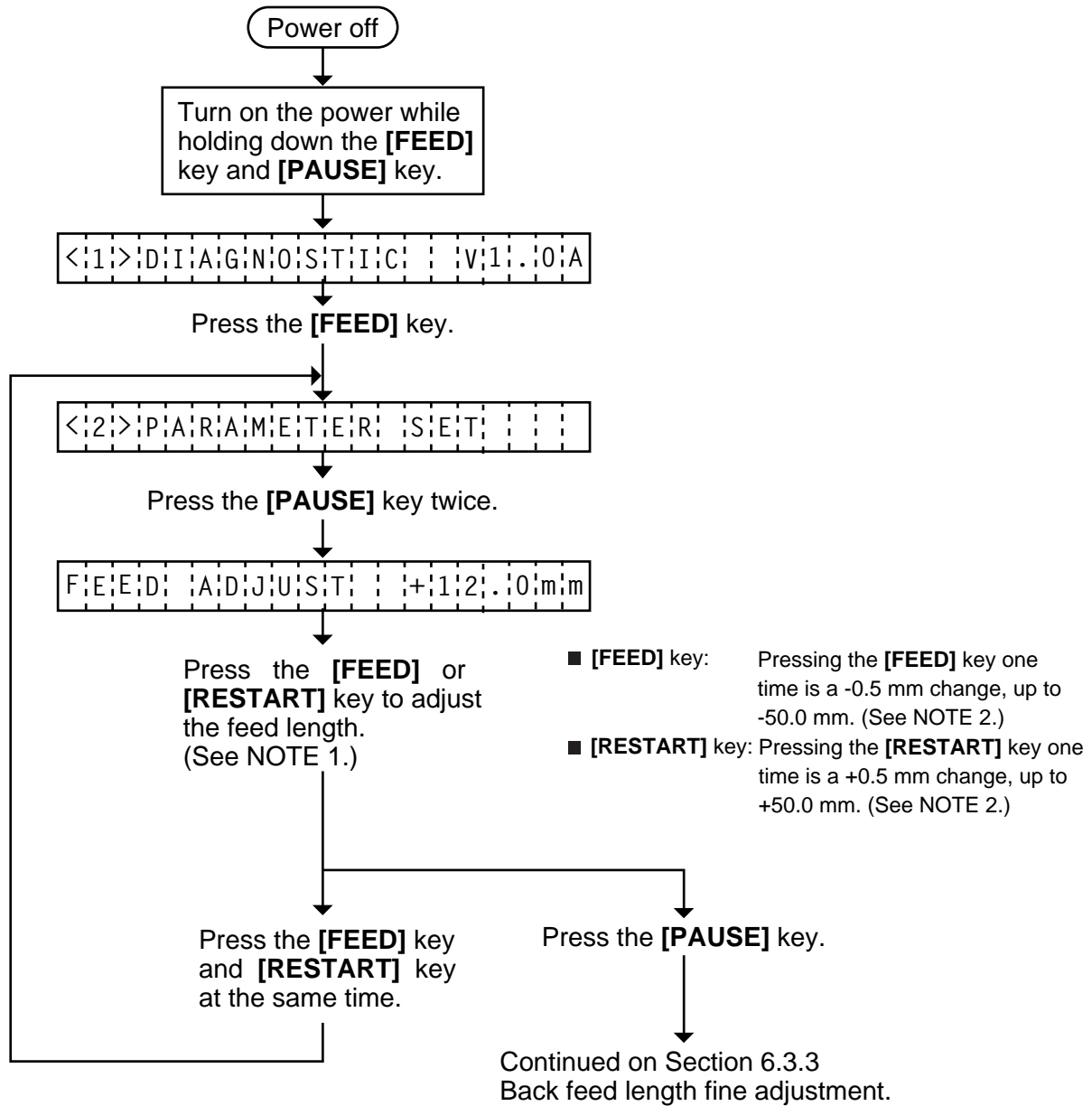
Mode Name	Function
AUTO HD CHK	Auto head broken element check is selected. ON: When the power turns ON, the auto head broken element check is performed. OFF: When the power turns ON, the auto head broken element check is not performed.
ACK/BUSY	Using this parameter sets the Centronics I/F ACK/BUSY timing.
WEB PRINTER	The Web printer is selected.

6.3.1 Feed Length Fine Adjustment



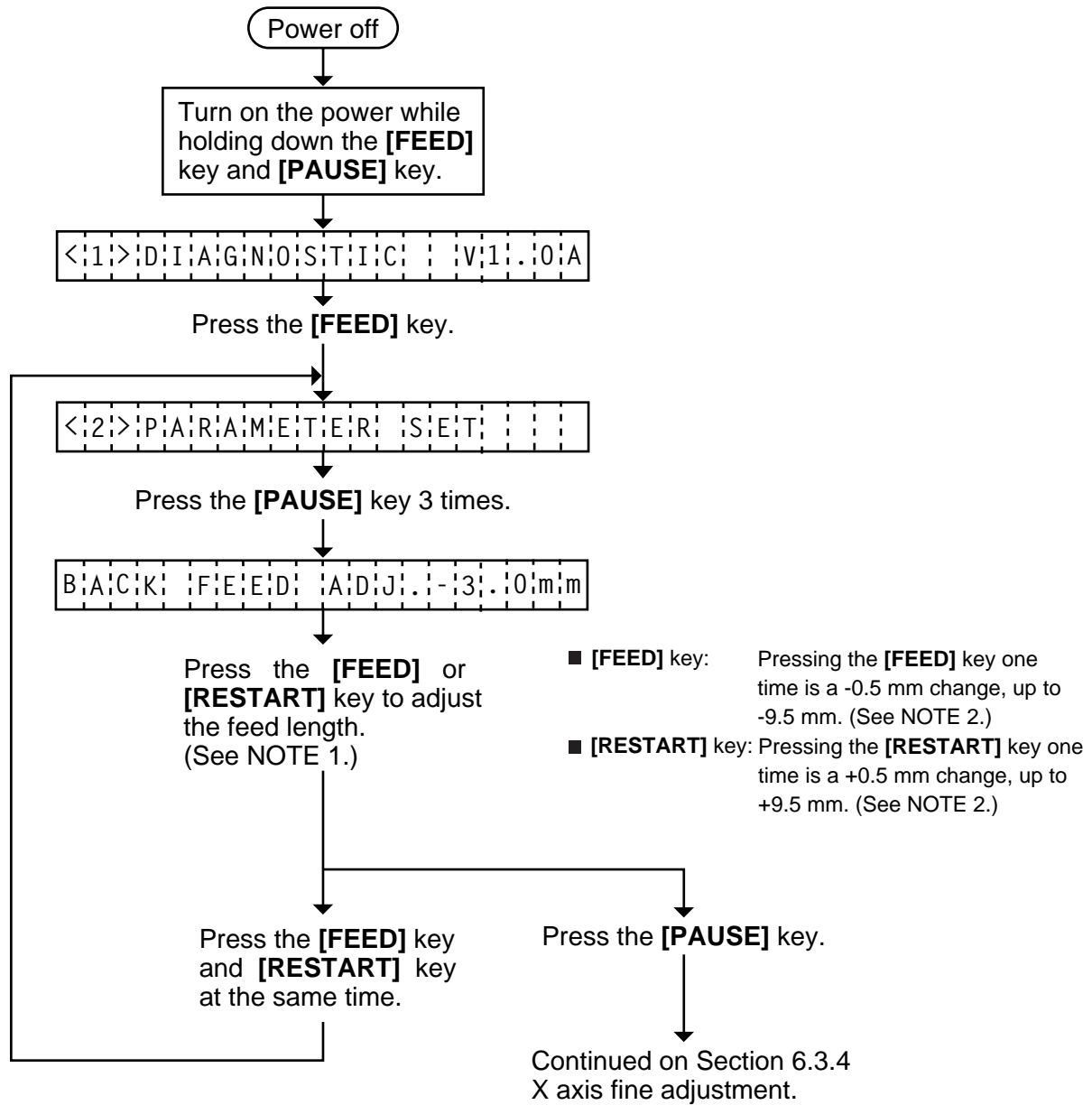
- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment -50.0 mm = Key fine adjustment value (-50.0 mm) + PC fine adjustment value (-50.0 mm)
When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
 3. A changed feed value is stored in memory by pressing the **[PAUSE]** key.

6.3.2 Cut/Strip Position Fine Adjustment



- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment -50.0 mm = Key fine adjustment value (-50.0 mm) + PC fine adjustment value (-50.0 mm)
When the value reaches the maximum, the value remains unchanged even if a subsequent fine adjustment is performed.
 3. A changed cut/strip position value is stored in memory by pressing the **[PAUSE]** key.
 4. When using label with length of less than 38 mm, calculate the cut position fine adjustment value using the expression provided on page 6-21.

6.3.3 Back Feed Length Fine Adjustment



- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment -9.9 mm = Key fine adjustment value (-9.5 mm) + PC fine adjustment value (-9.9 mm)
When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
 3. A changed back feed value is stored in memory by pressing the **[PAUSE]** key.

■ Feed Length Fine Adjustment Example

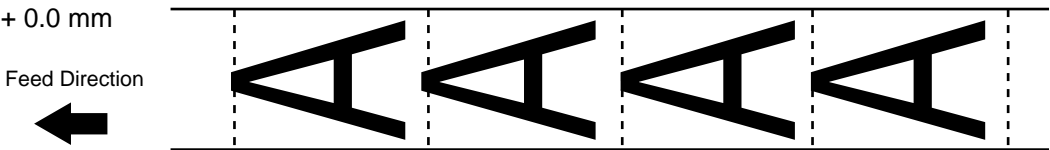


Fig. 6-4

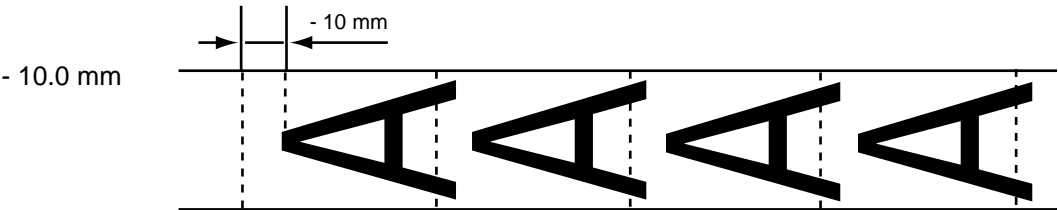


Fig. 6-5

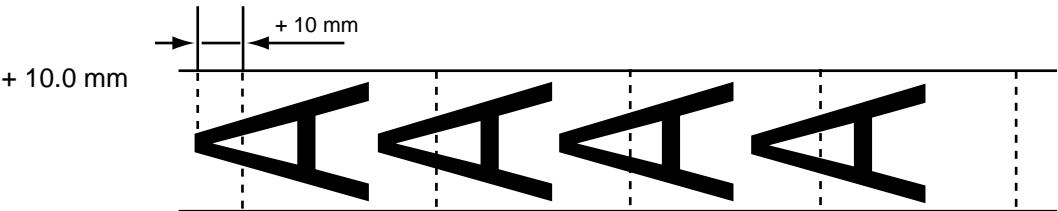


Fig. 6-6

■ Cut Position Fine Adjustment Example

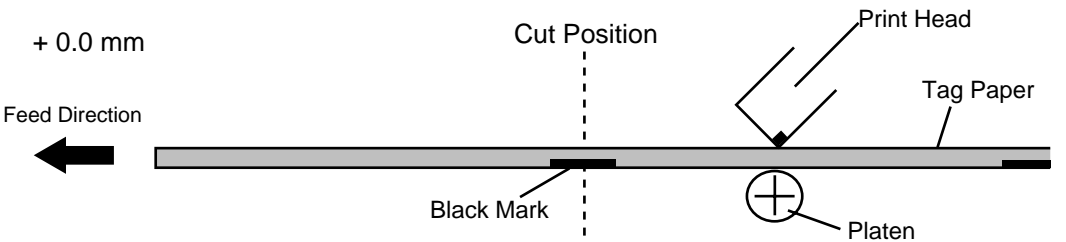


Fig. 6-7

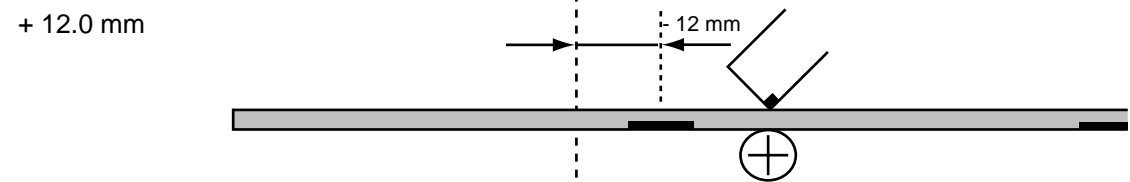


Fig. 6-8

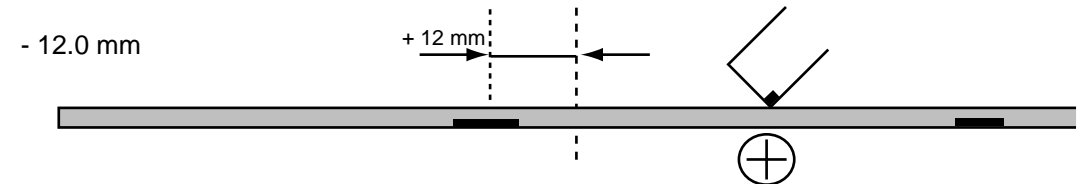


Fig. 6-9

■ When using a label with a length of less than 38 mm :

Case 1

Conditions: Issue command [ESC]XS, feed command [ESC]T and eject command [ESC]IB are received. Label pitch: 38.0 mm or less, with cut, feed gap sensor, cut position fine adjustment value -10 mm or less, and issue mode set to C (cut). When the above conditions are all met, the issue operation in cut issue mode is as follows:

- ① Head lifted → ② Forward feed to the cut position → ③ Head lowered → ④ Cut →
⑤ Head lifted → ⑥ Backfeed to the home position → ⑦ Head lowered.

Case 2

Generally the minimum label length which is available in cut mode is 38.0 mm. When using a label with a length of less than 38 mm, the edge of the label may be caught on the print head during back feed to the print start position after cutting the label gap, causing a improper print start position.

In this case set the cut position fine adjustment value after calculating the value using the following formula so that the unprinted label returns to the correct print start position.

However, use of this method will leave one or two printed label(s) between the print head and the cutter. Feed or print the label(s) to remove them.

(a) Formula for cut position fine adjustment value

Cut position fine adjustment value

= (the number of labels left between the print head and the cutter) x (span of label)

= (32.8 mm/label length) x (span of label)

* Omit the decimals of the value obtained by dividing 32.8 mm by the label length for one unit.

(example) Span of label : 30.0 mm, Label length : 24.0 mm

$(32.8 \text{ mm} / 30.0 \text{ mm}) \times 30.0 \text{ mm} = 1 \times 30.0 \text{ mm} = +30.0 \text{ mm}$

(b) Example

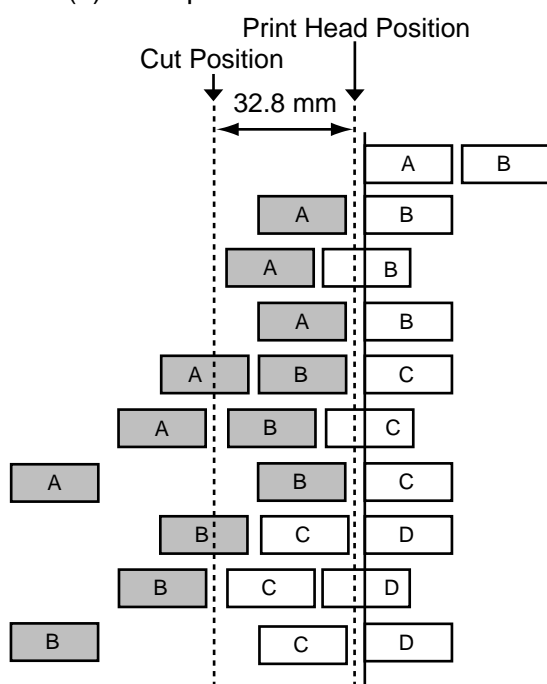


Fig. 6-10

Print Start Position

- ① Idling
- ② Printing the first label (A) is completed.
- ③ Label A is fed to the cut position and the front gap is cut.
- ④ Label B is fed in the reverse direction to the print start position.
- ⑤ Printing the second label (B) is completed.
- ⑥ Label B is fed to the cut position and the front gap is cut.
- ⑦ Label C is fed in the reverse direction to the print start position.
- ⑧ To take away label B, label (C) is fed.
- ⑨ Label B is fed to the cut position and the front gap is cut.
- ⑩ Label D is fed in the reverse direction to the print start position.

■ Strip Position Fine Adjustment Example

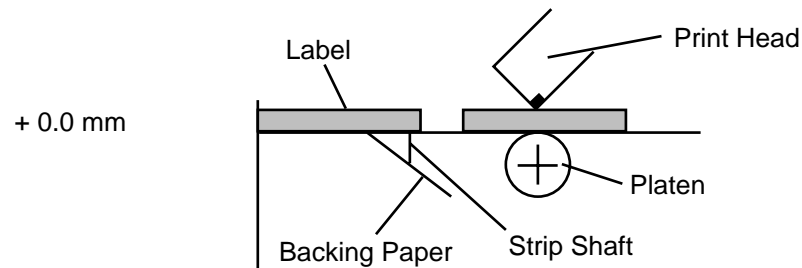


Fig. 6-11

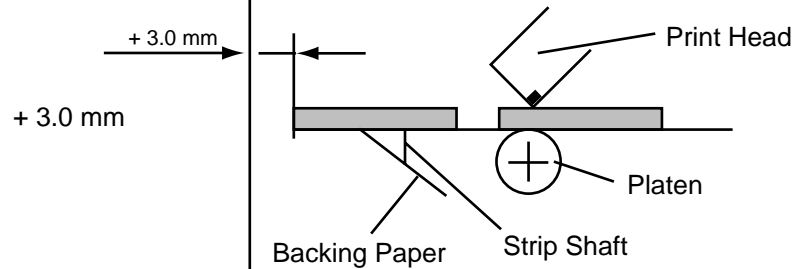


Fig. 6-12

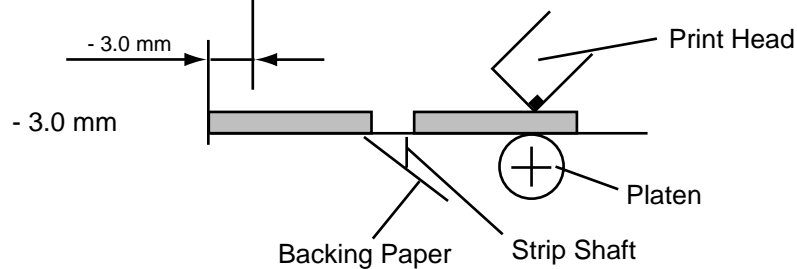


Fig. 6-13

NOTE: The print stop position when printing the label in strip mode varies according to label length for the strip mode printing stops so that the edge of the strip shaft is 4 mm from the middle of the gap. This is because the gap length is programmed as 2 mm. When the gap length is 5 mm or more, the effective print length should be set to the value obtained by subtracting 2 mm from the label pitch, that is, set the gap length to 2 mm. If the print format hangs over the gap as a result, correct the print start position. If the print stop position is improper, refer to Section 6.3.2 and make a fine adjustment.

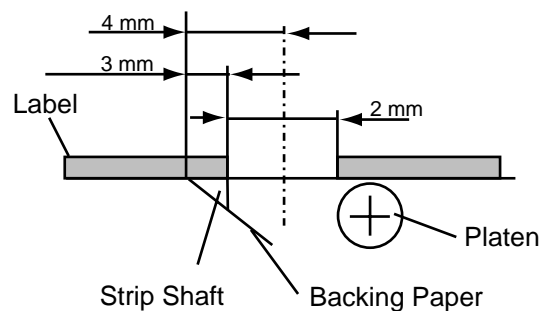


Fig. 6-14

■ Back Feed Length Fine Adjustment Example

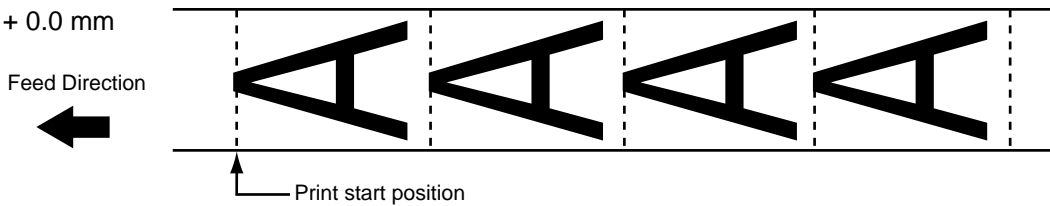


Fig. 6-15

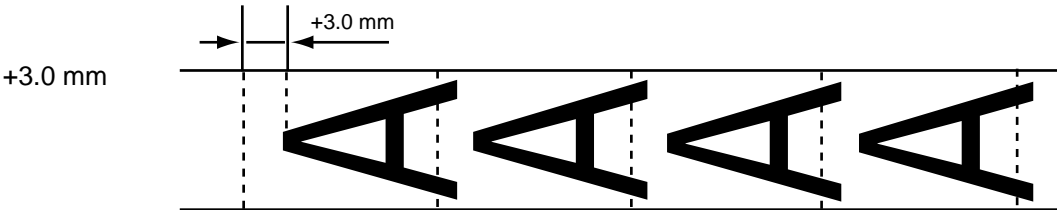


Fig. 6-16

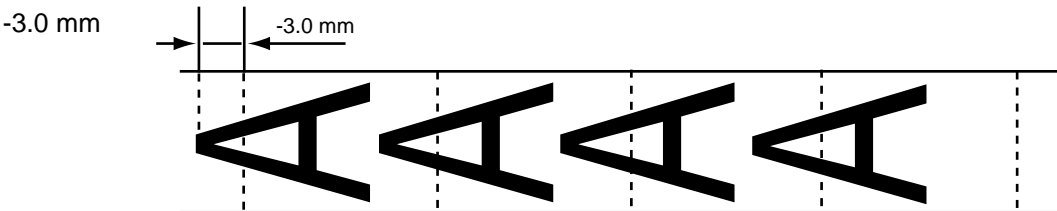
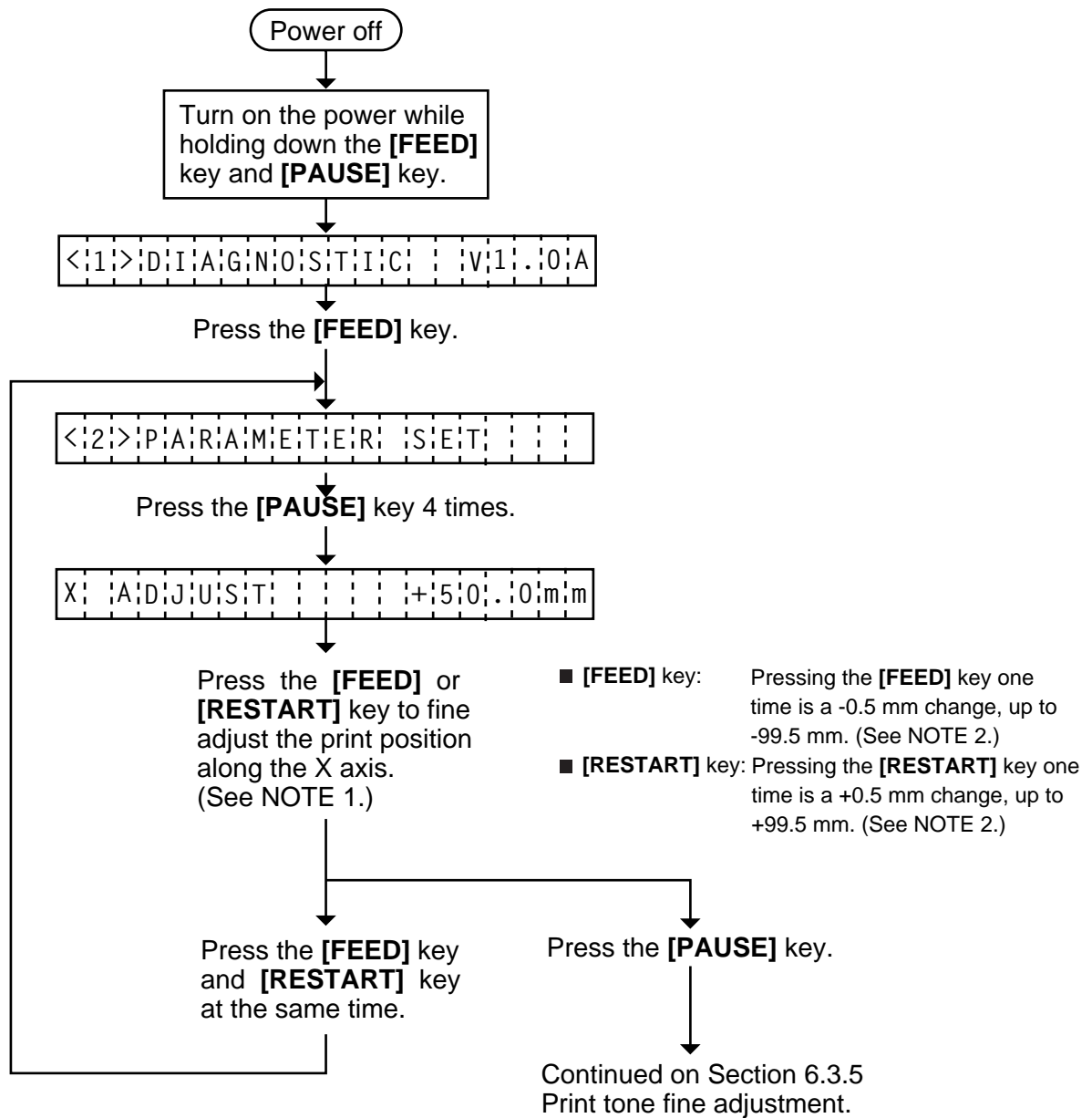


Fig. 6-17

6.3.4 X Axis Fine Adjustment



- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment -99.5 mm = X axis value
When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
 3. A changed X axis is stored in memory by pressing the **[PAUSE]** key.

■ X Axis Fine Adjustment Example

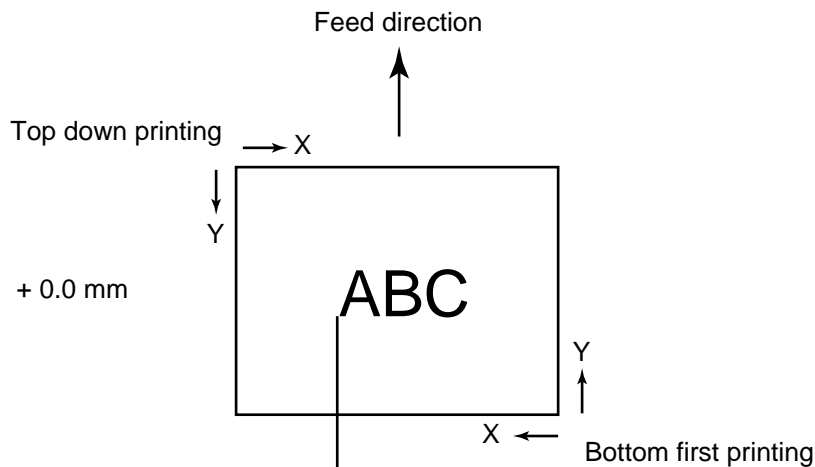


Fig. 6-18

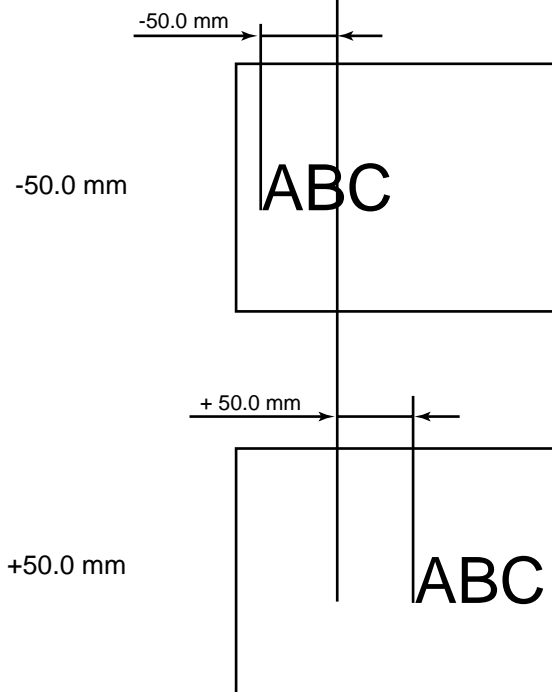


Fig. 6-19

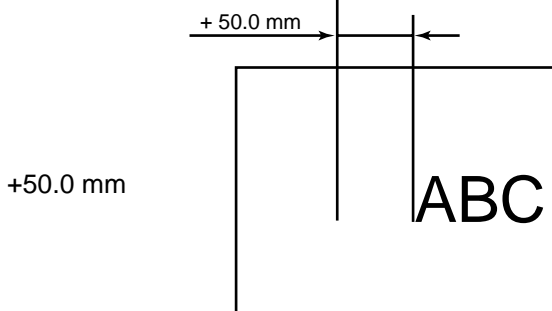
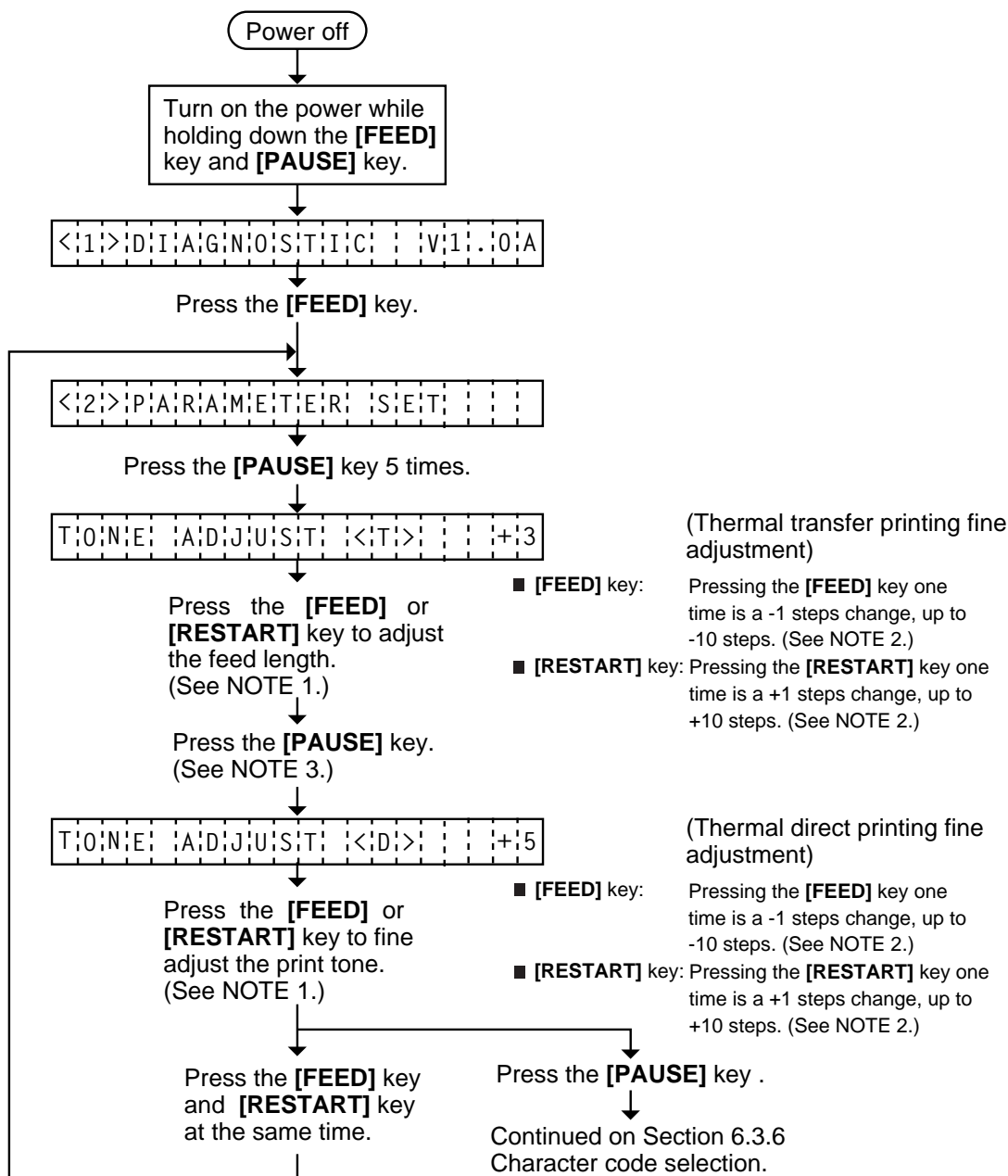


Fig. 6-20

- NOTES:**
4. The X axis fine adjustment is performed to fine adjust the X axis of the drawing in the left or right direction.
 5. Adjust the X axis in the effective print range. (After the value reaches the coordinate "0", the value remains unchanged even if the subsequent fine adjustment is performed in the negative direction.)
 6. X axis fine adjustment cannot be used in self test mode or test printing.

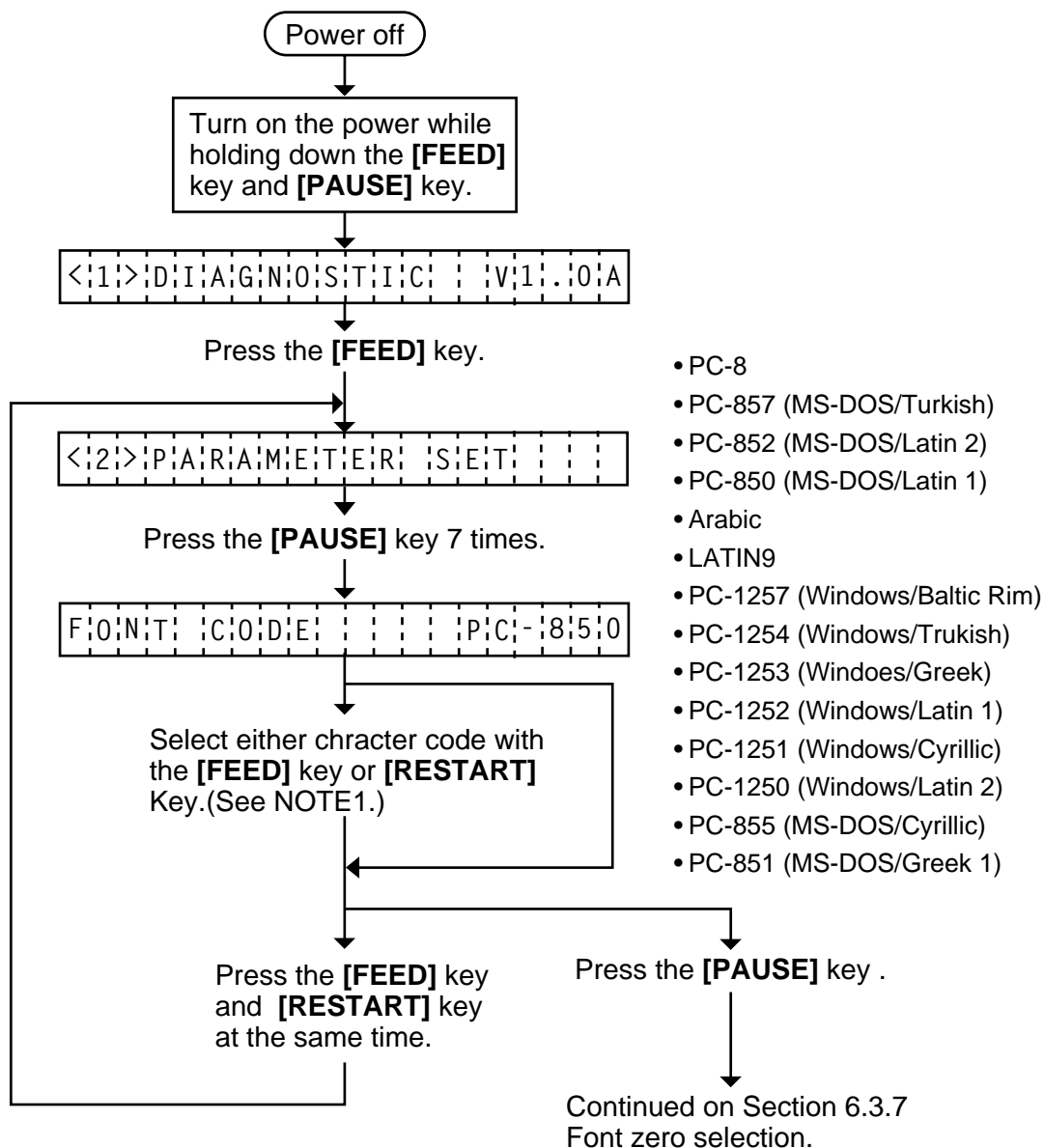
6.3.5 Print Tone Fine Adjustment



- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. A changed print tone value is stored in memory by pressing the **[PAUSE]** key.
3. Fine adjustment value equals to the sum of the values set by the PC command and system mode (key operation) and each max. value is -10 step. However, the upper limit of the adjustment value is decided according to the print speed to protect the print head. If the set value exceeds the following upper limit, it is automatically corrected to the proper value.

Print Speed	Thermal Transfer	Thermal Direct
3" / sec.	+10 step	+ 10 step
4" / sec.	+5 step	+ 5 step
8" / sec.	+2 step	+ 2 step

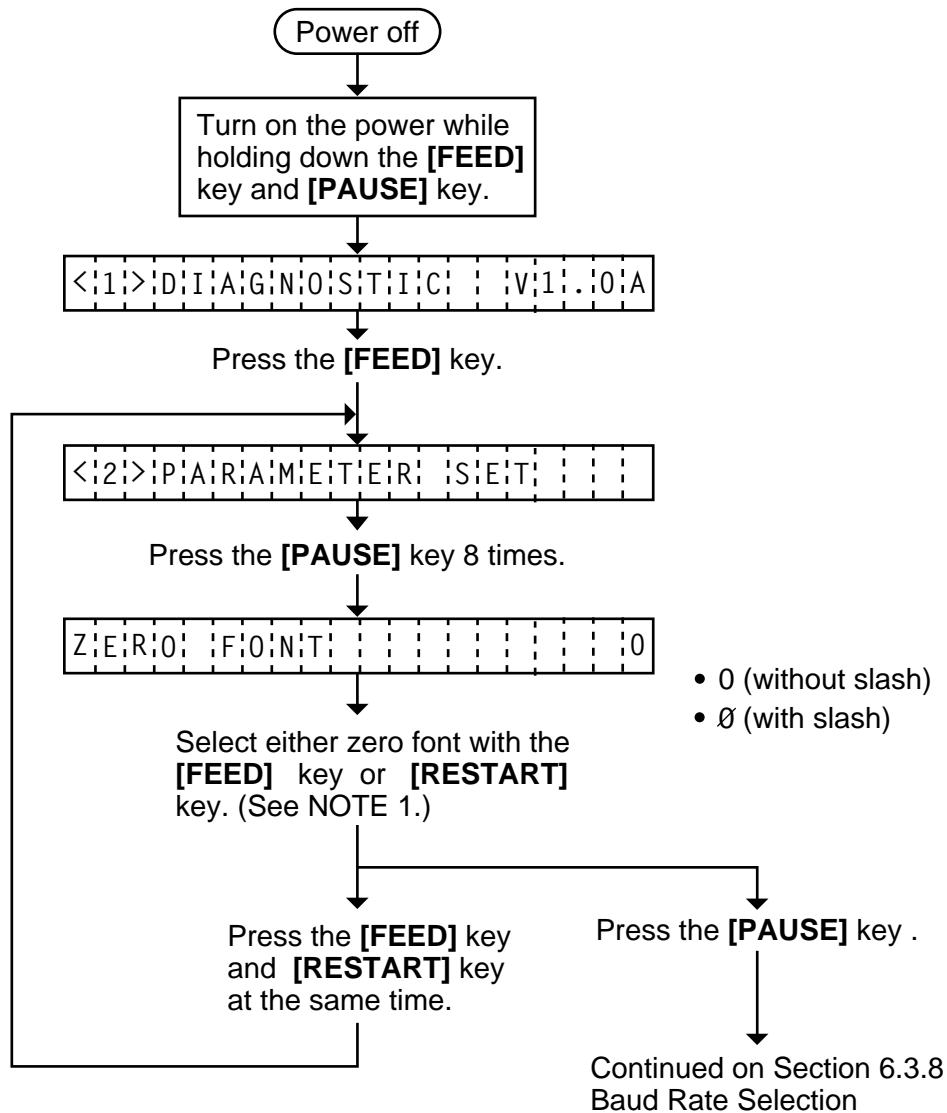
6.3.6 Character Code Selection



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed font code is stored in memory by pressing the **[PAUSE]** key.

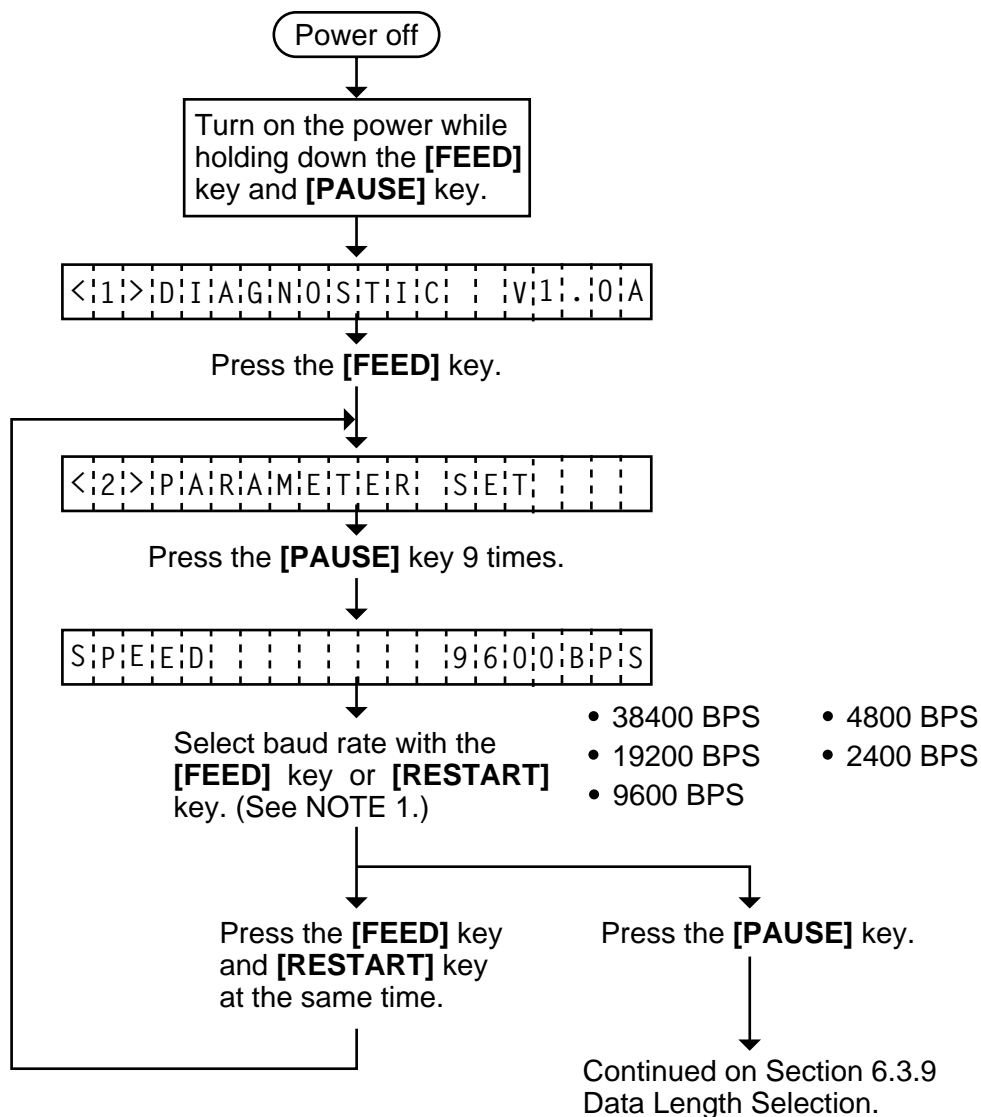
6.3.7 Font Zero Selection



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed zero font is stored in memory by pressing the **[PAUSE]** key.

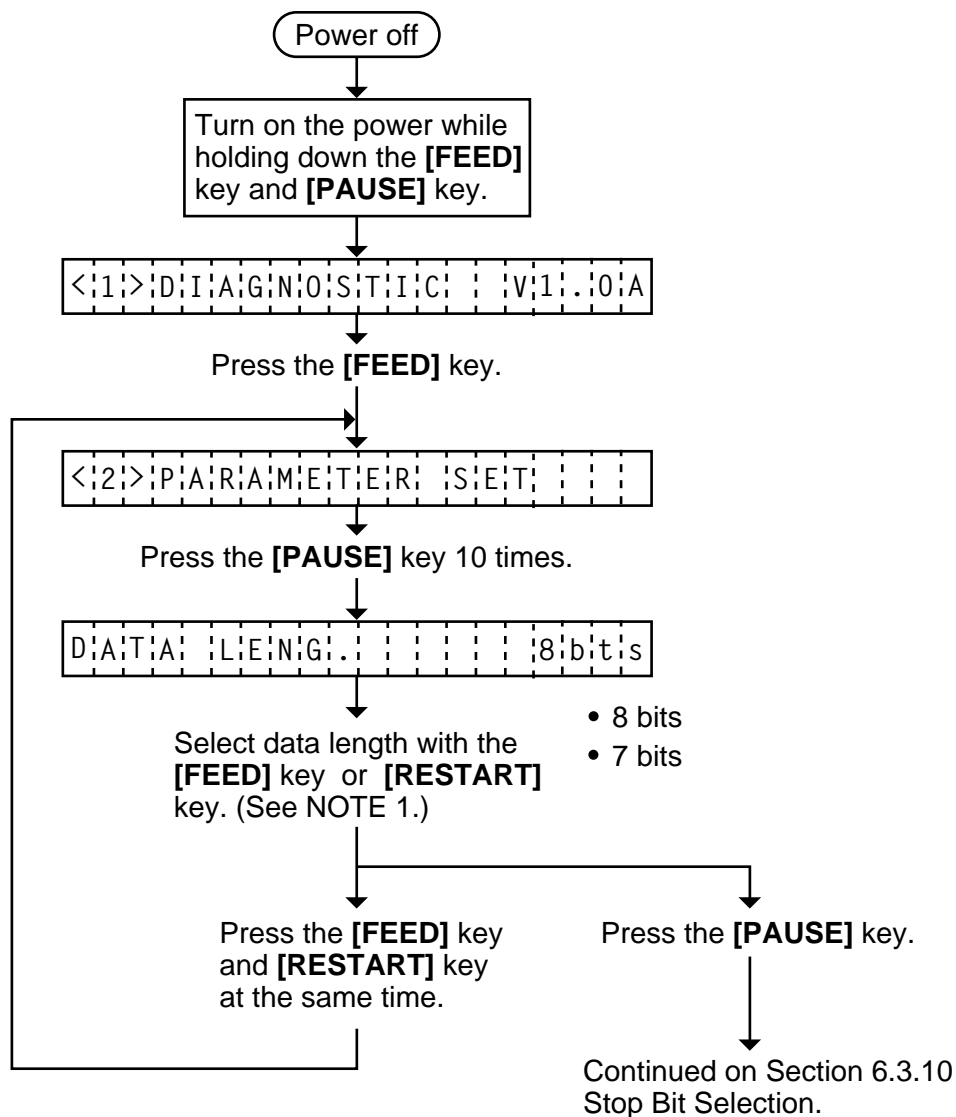
6.3.8 Baud Rate Selection



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed baud rate is stored in memory by pressing the **[PAUSE]** key.

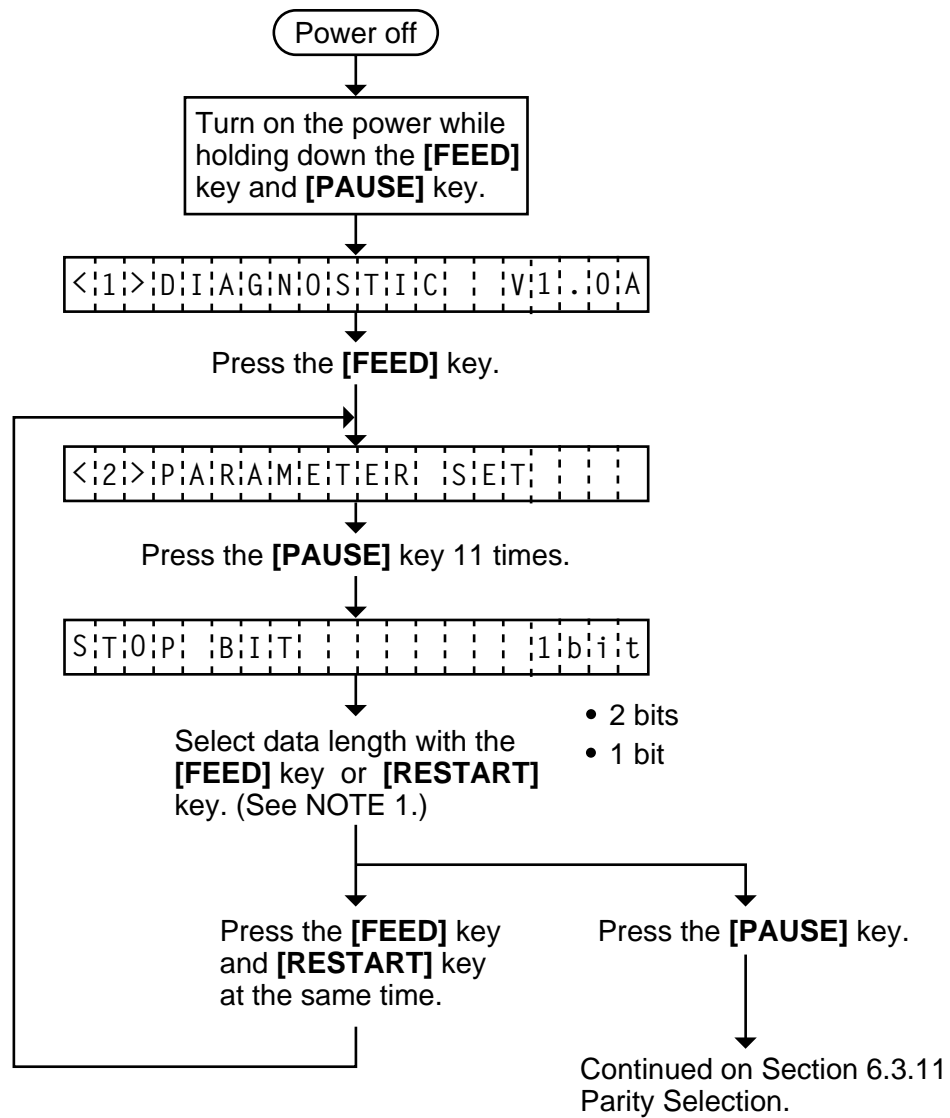
6.3.9 Data Length Selection



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed data length is stored in memory by pressing the **[PAUSE]** key.

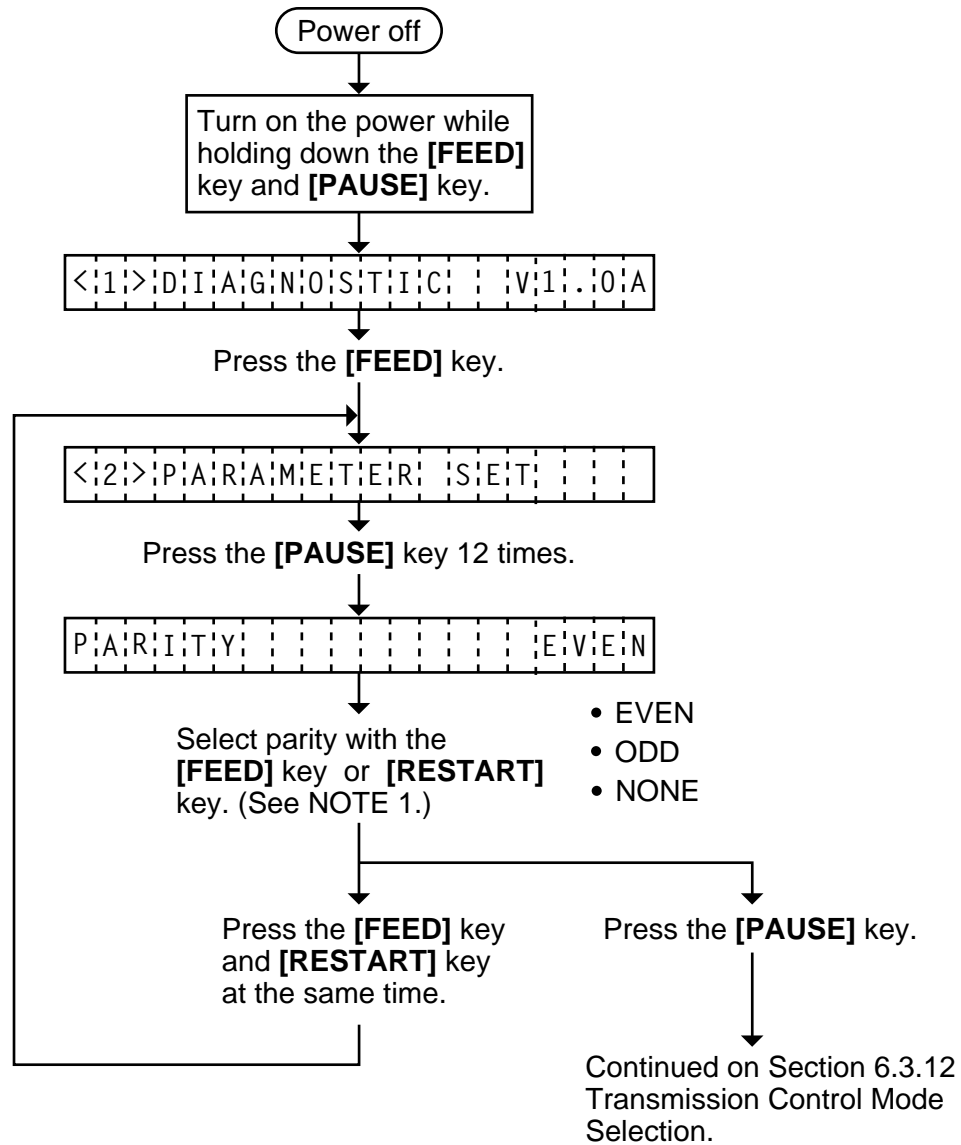
6.3.10 Stop Bit Selection



NOTES: 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.

2. A changed data length is stored in memory by pressing the [PAUSE] key.

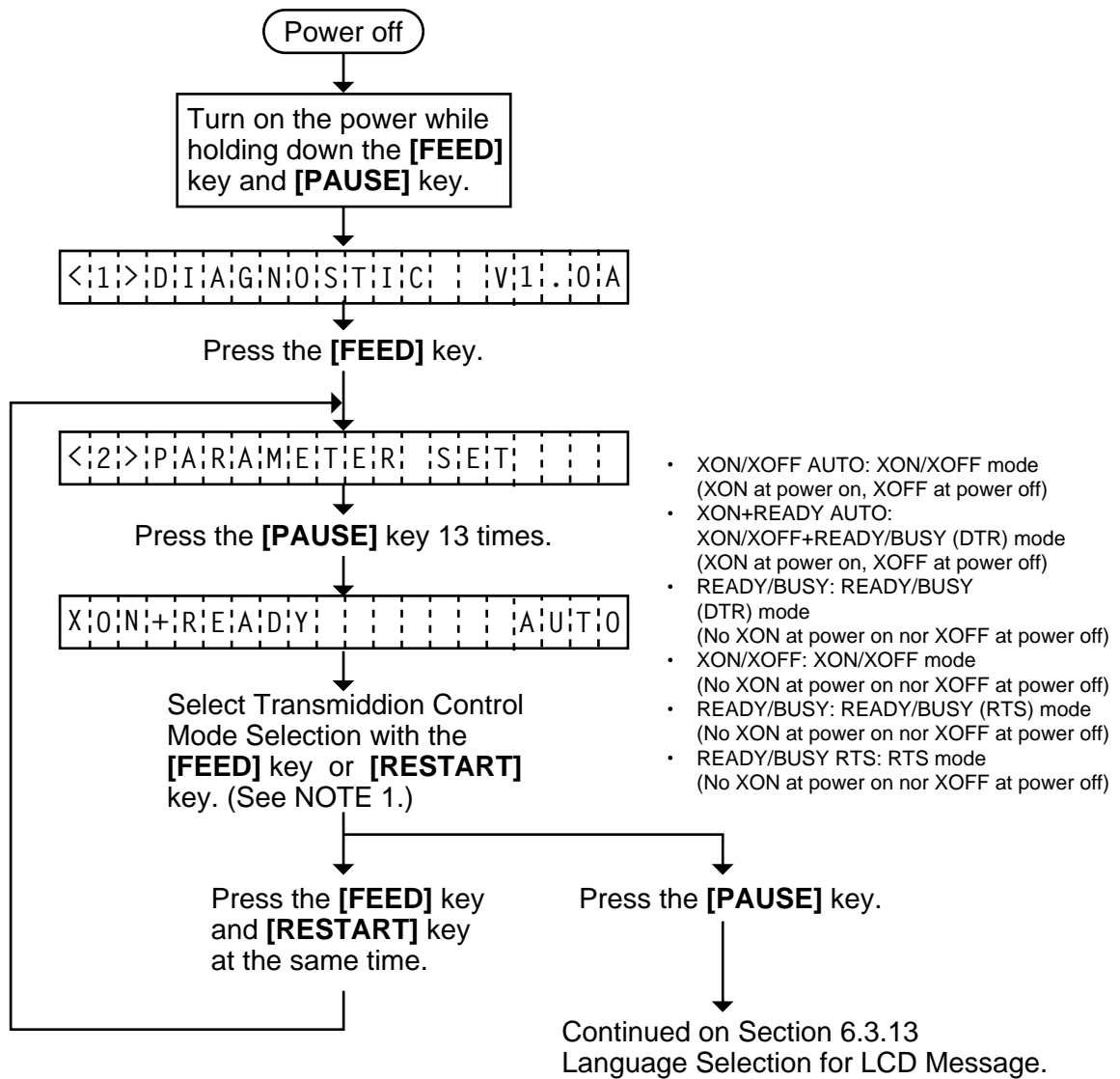
6.3.11 Parity Selection



NOTES: 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.

2. A changed parity is stored in memory by pressing the [PAUSE] key.

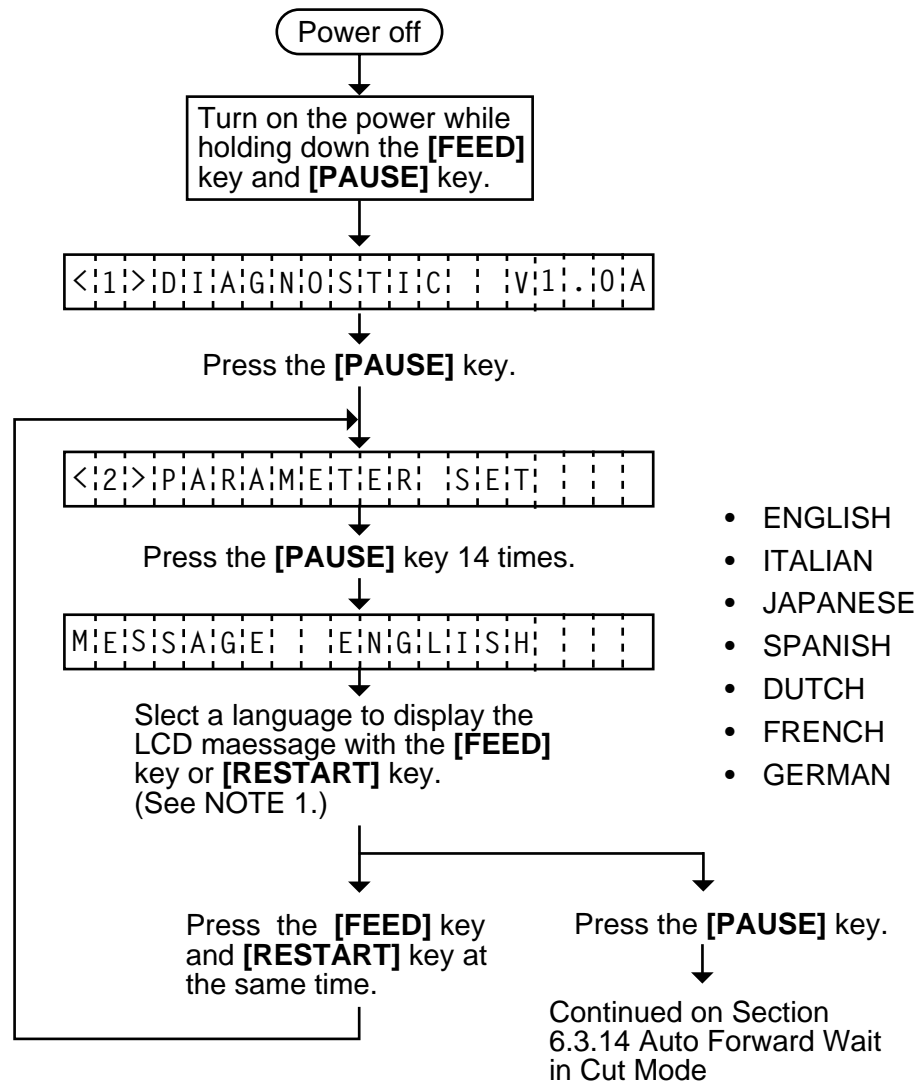
6.3.12 Transmission Control Mode Selection



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

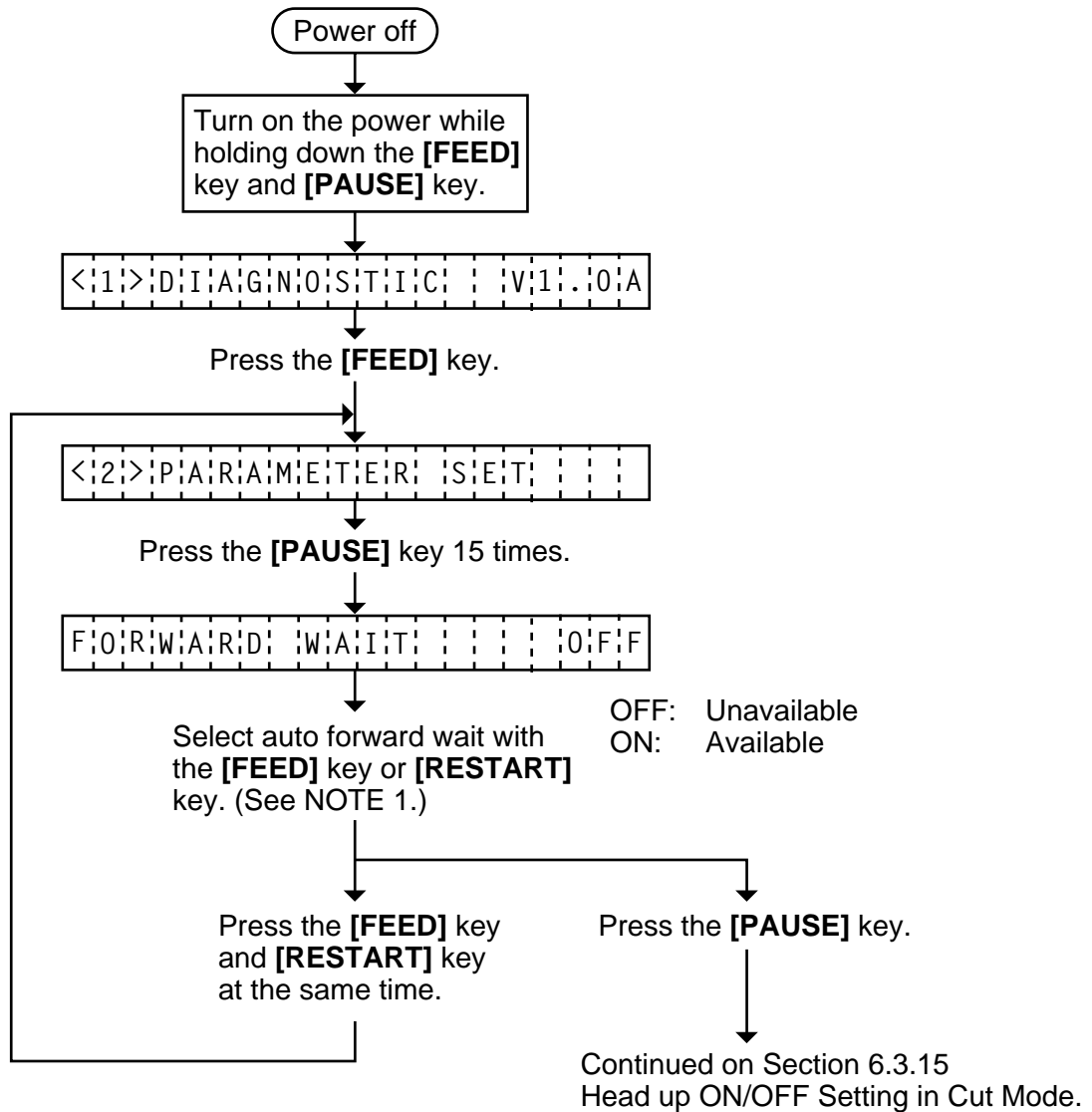
2. A changed transmission control mode is stored in memory by pressing the **[PAUSE]** key.

6.3.13 Language Selection for LCD Message



- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. A changed language is stored in memory by pressing the **[PAUSE]** key.
3. A changed language is not cleared by a parameter clear.

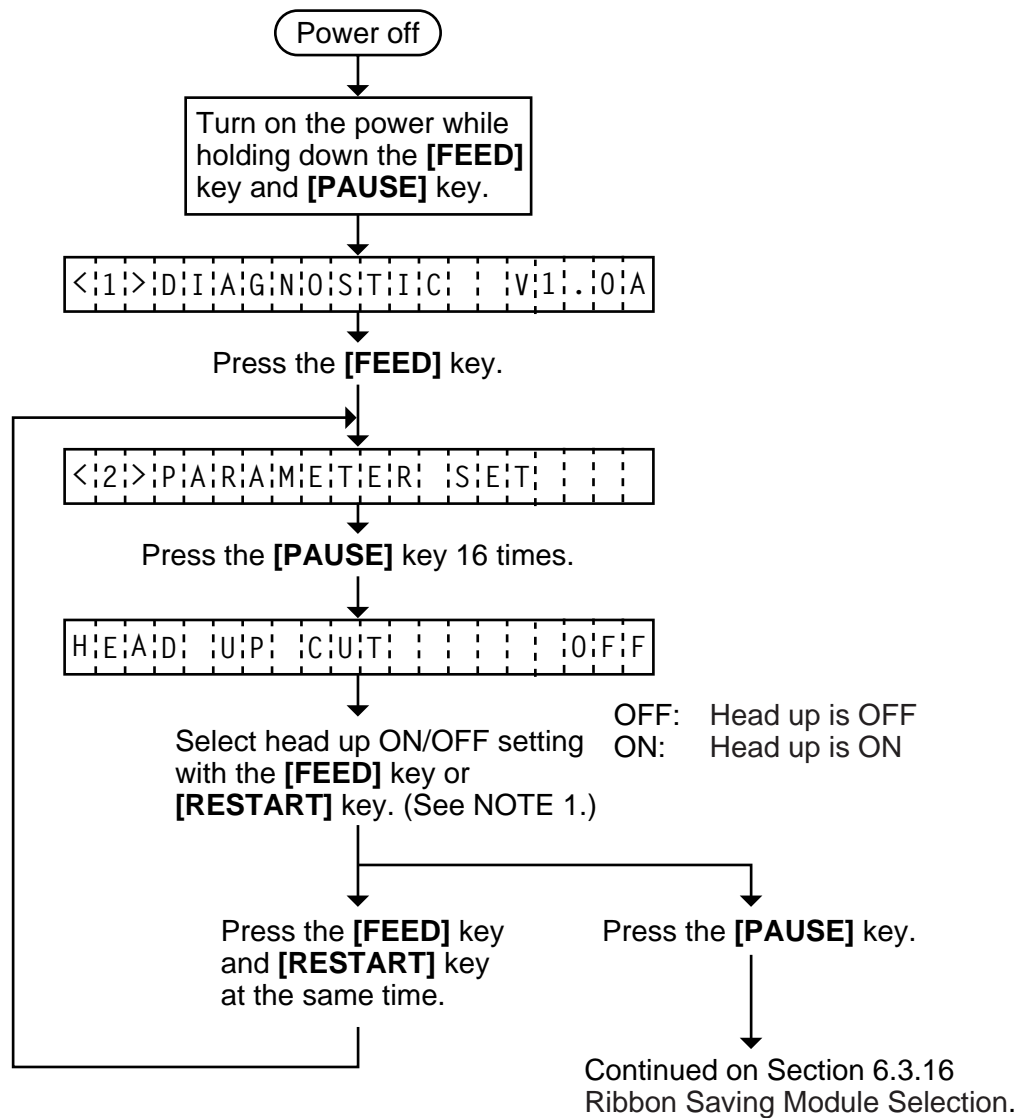
6.3.14 Auto Forward Wait in Cut Mode



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed data length is stored in memory by pressing the **[PAUSE]** key.

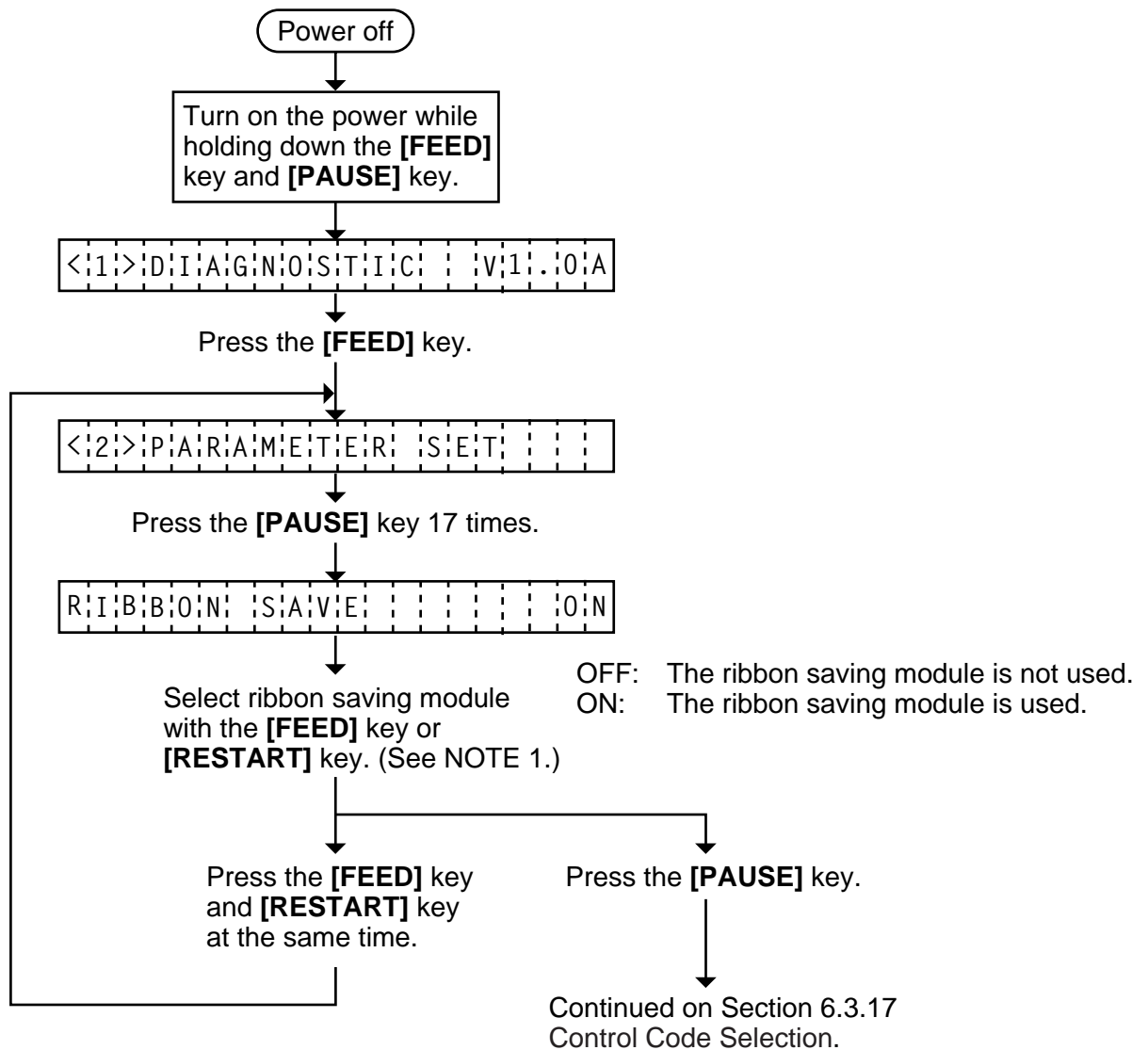
6.3.15 Head up ON/OFF Setting in Cut Mode



NOTES: 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.

2. A changed data length is stored in memory by pressing the [PAUSE] key.

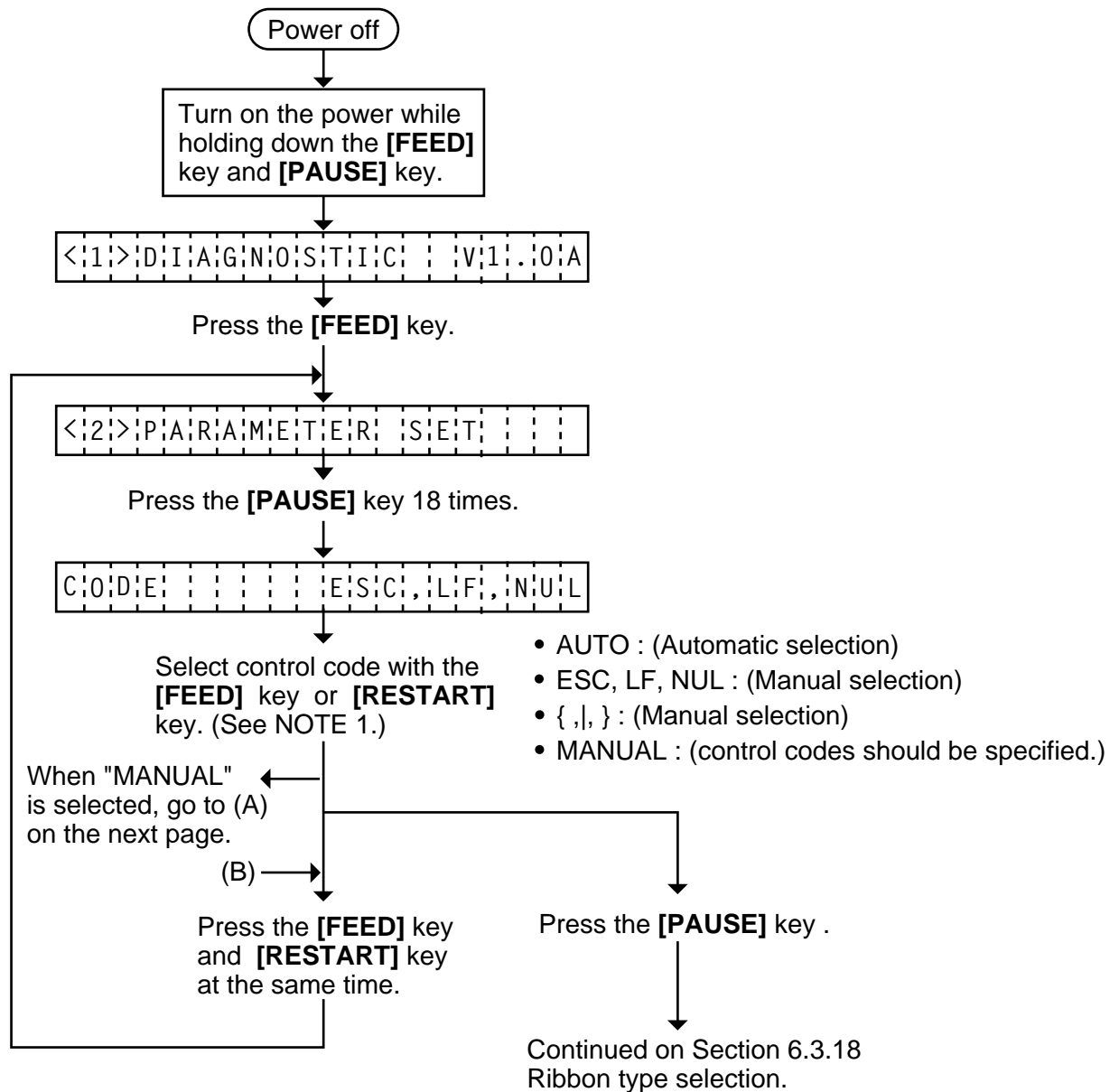
6.3.16 Ribbon Saving Module Selection



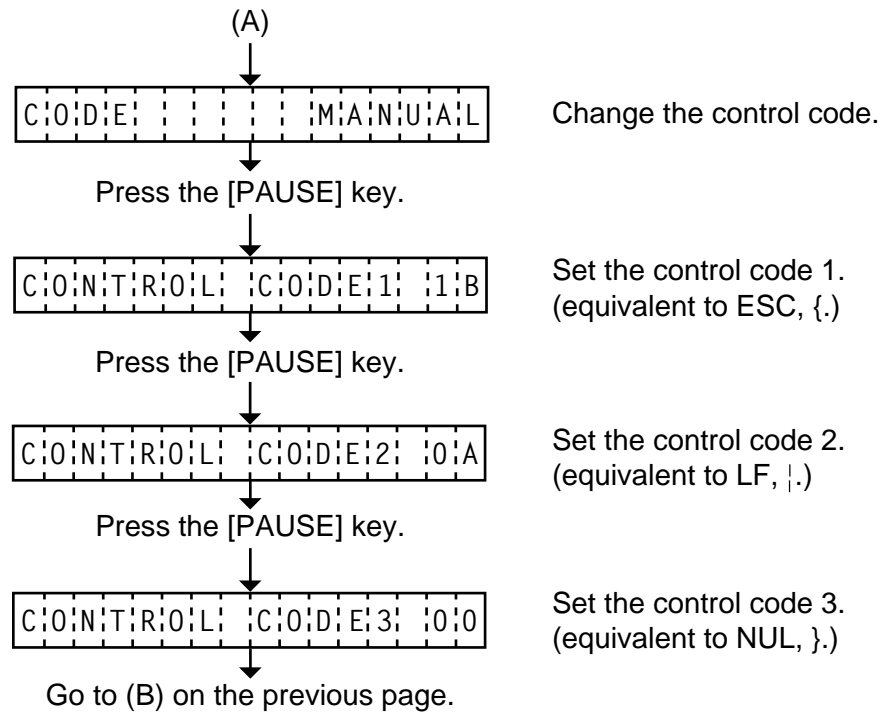
NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed data length is stored in memory by pressing the **[PAUSE]** key.

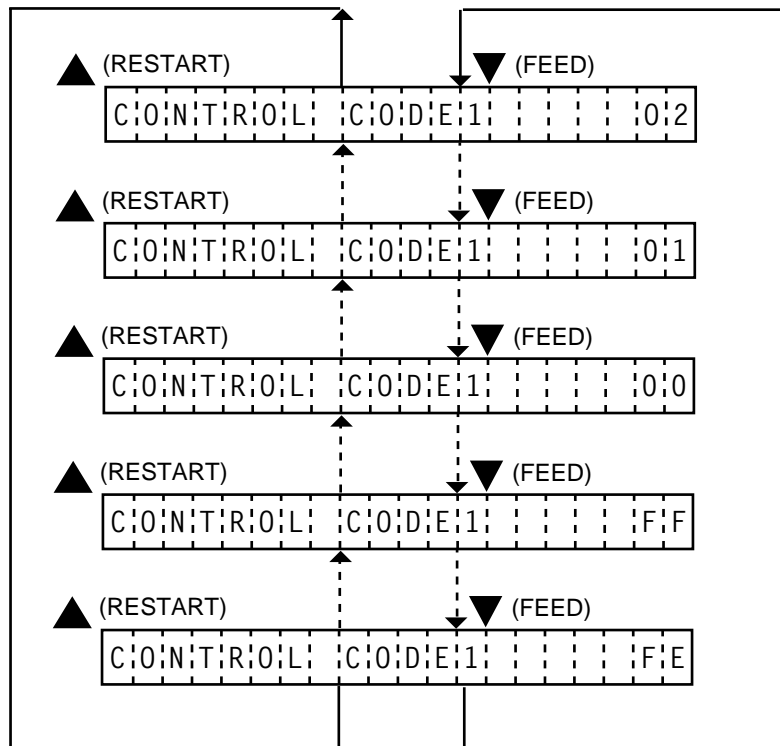
6.3.17 Control Code Selection



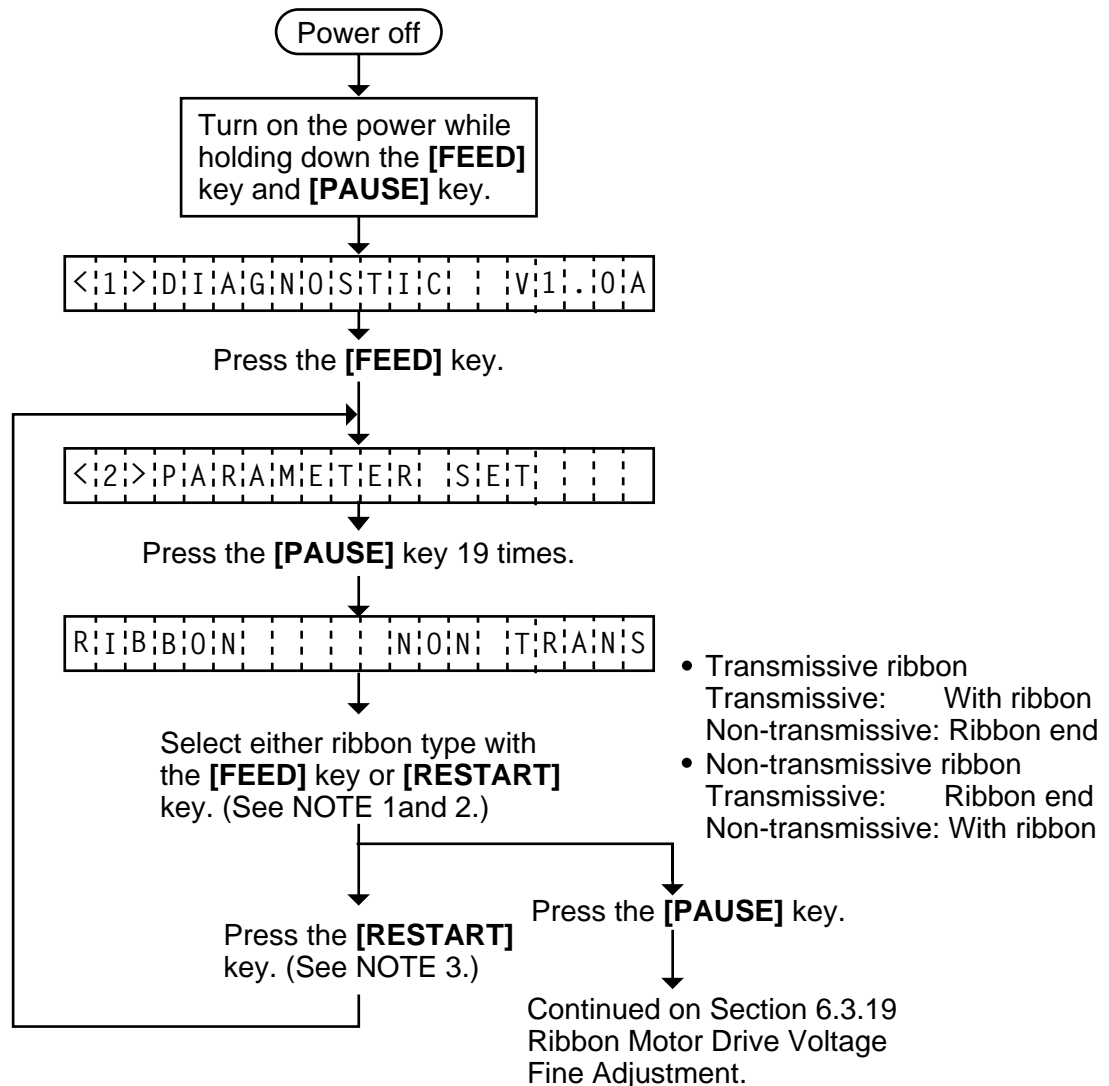
- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. A changed control code is stored in memory by pressing the **[PAUSE]** key.
 3. When "AUTO", "ESC, FL, NUL", or "{,I,}" is selected, be sure to select the Non-transmissive ribbon in the ribbon type selection operation.
 4. When "MANUAL" is selected be sure to specify all the control codes 1 to 3. Failure to do this disables selection of "MANUAL".



NOTE: Refer to the following the selection of the control codes 1 to 3.

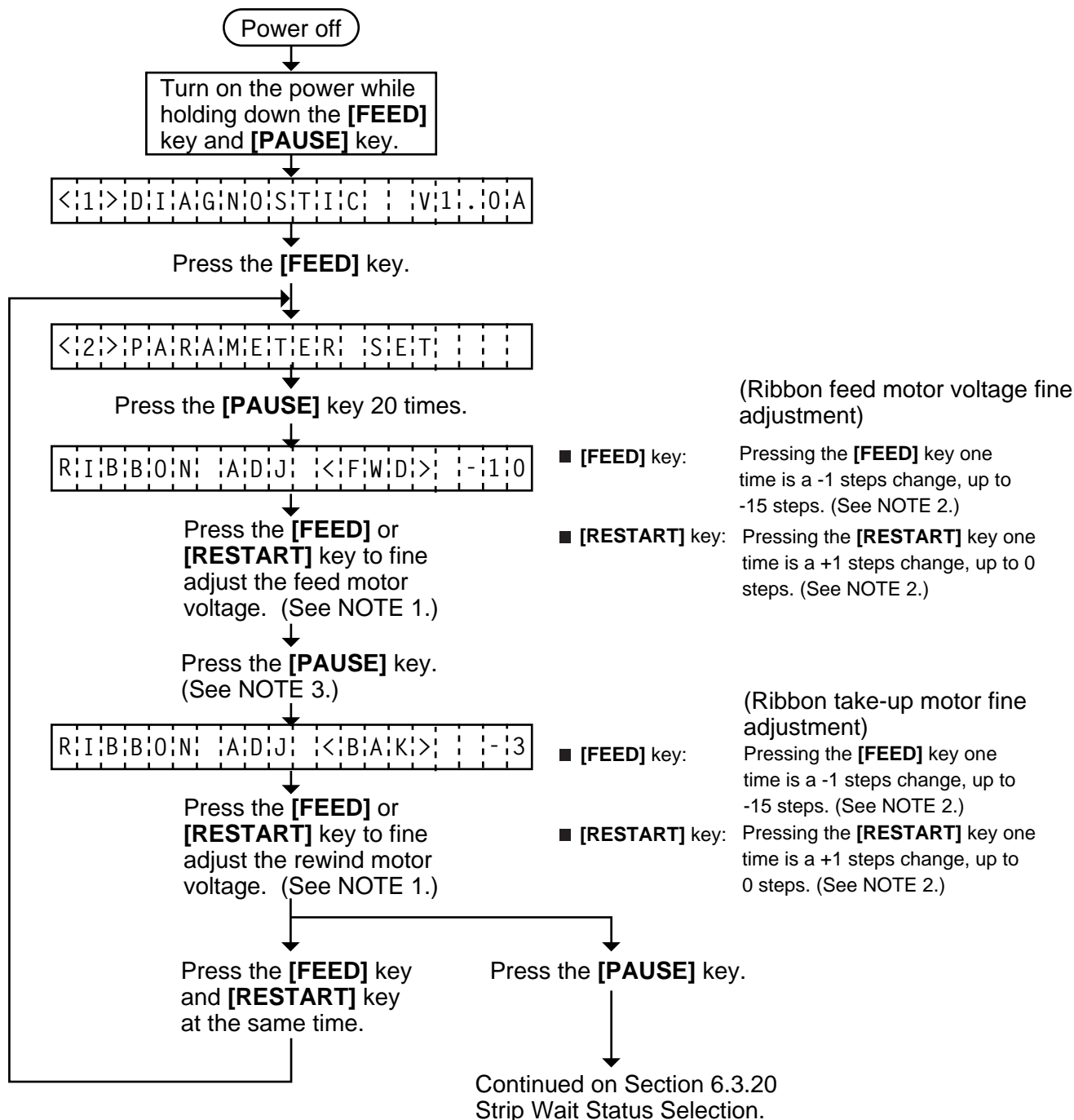


6.3.18 Ribbon Type Selection



- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. Non-transmissive (NON TRANS.) ribbon cannot be used so the ribbon type must be set to transmissive (TRANS.) ribbon.
3. A changed ribbon type is stored in memory by pressing the **[PAUSE]** key.

6.3.19 Ribbon Motor Drive Voltage Fine Adjustment



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

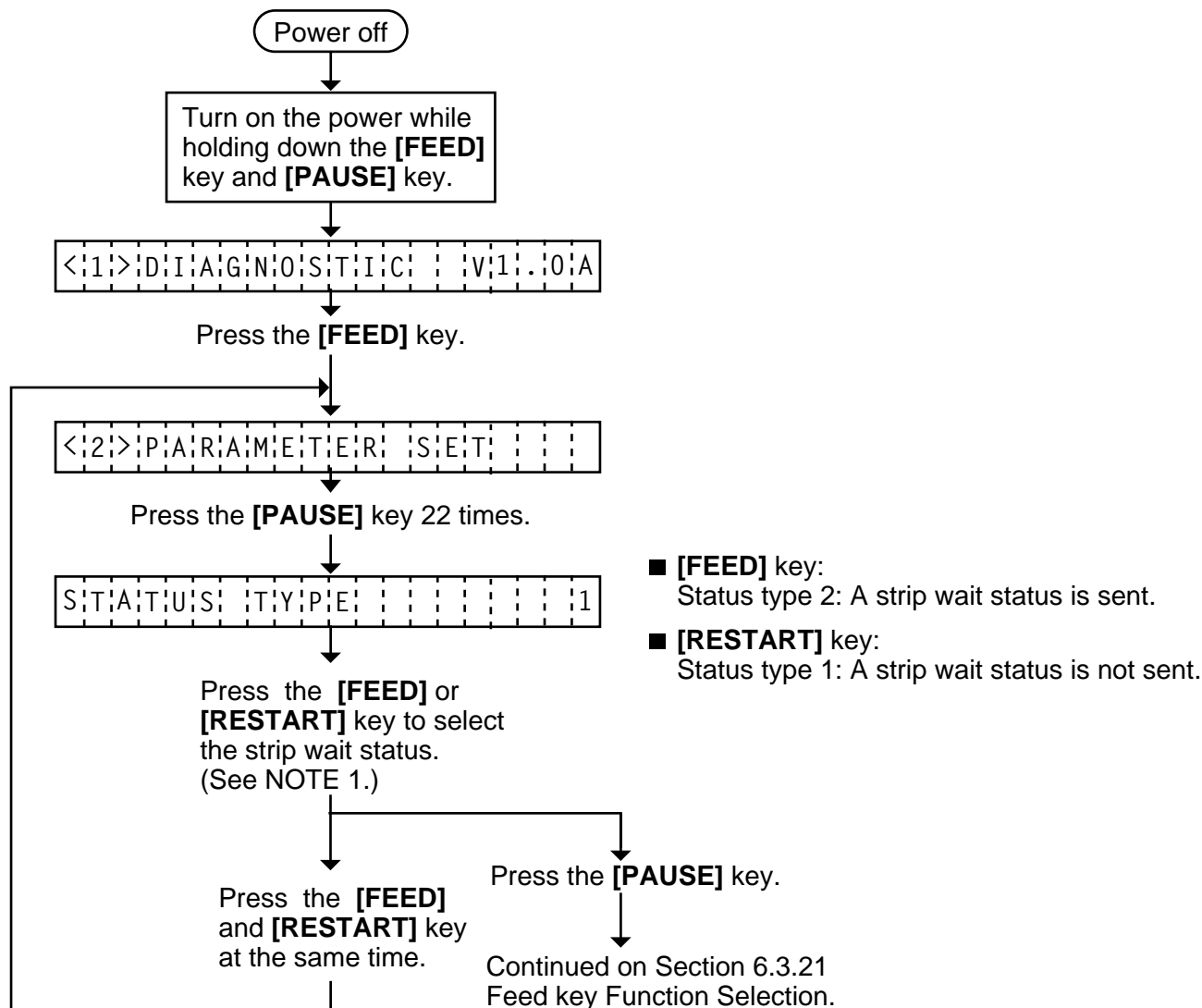
2. Max. fine adjustment -15 steps = Key fine adjustment value (-15 steps) + PC fine adjustment value (-15 steps)

When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

3. A changed motor voltage value is stored in memory by pressing the **[PAUSE]** key.

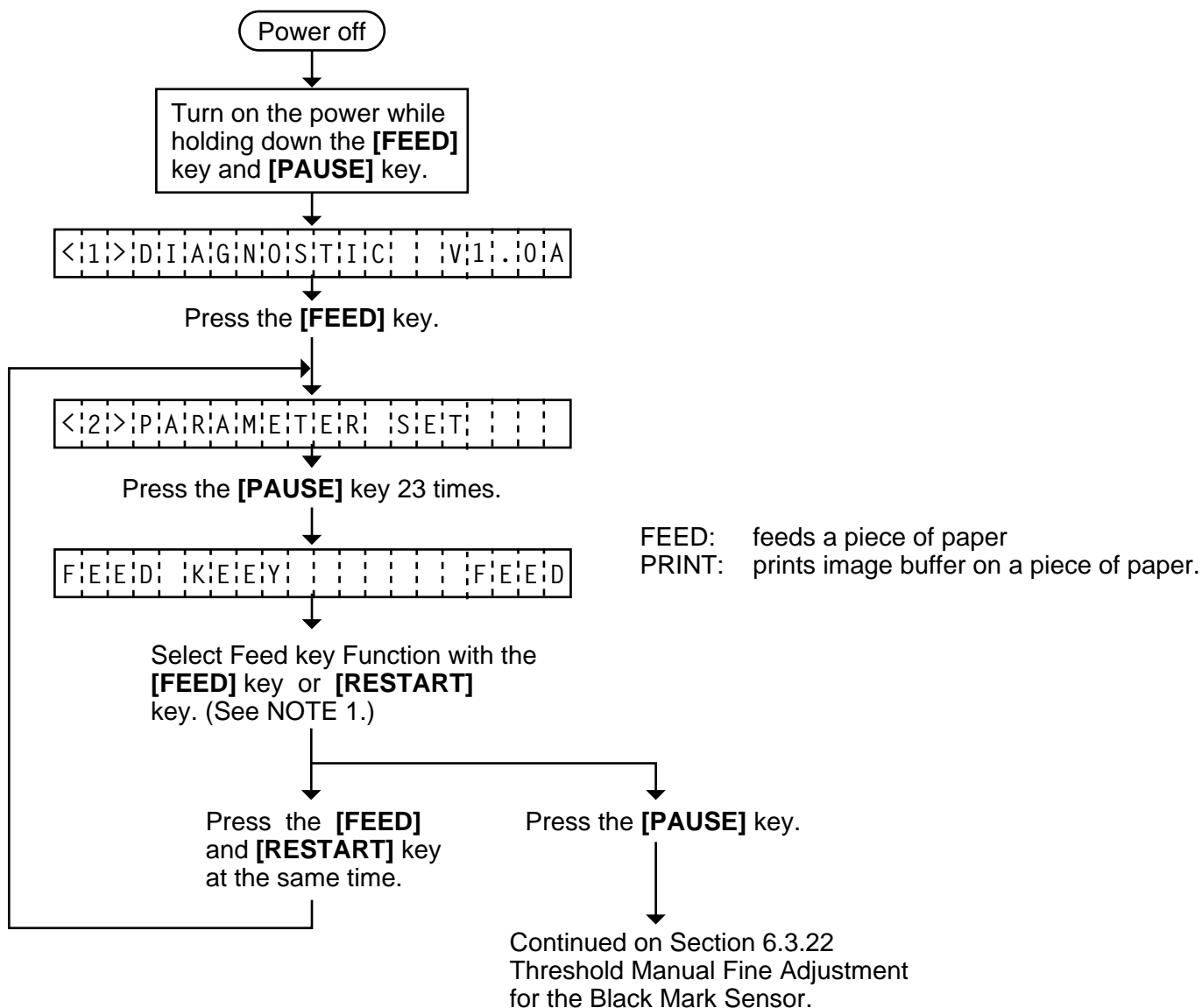
4. One step corresponds to 5% of the standard voltage and up to 75% of the voltage can be decreased.

6.3.20 Strip Wait Status Selection



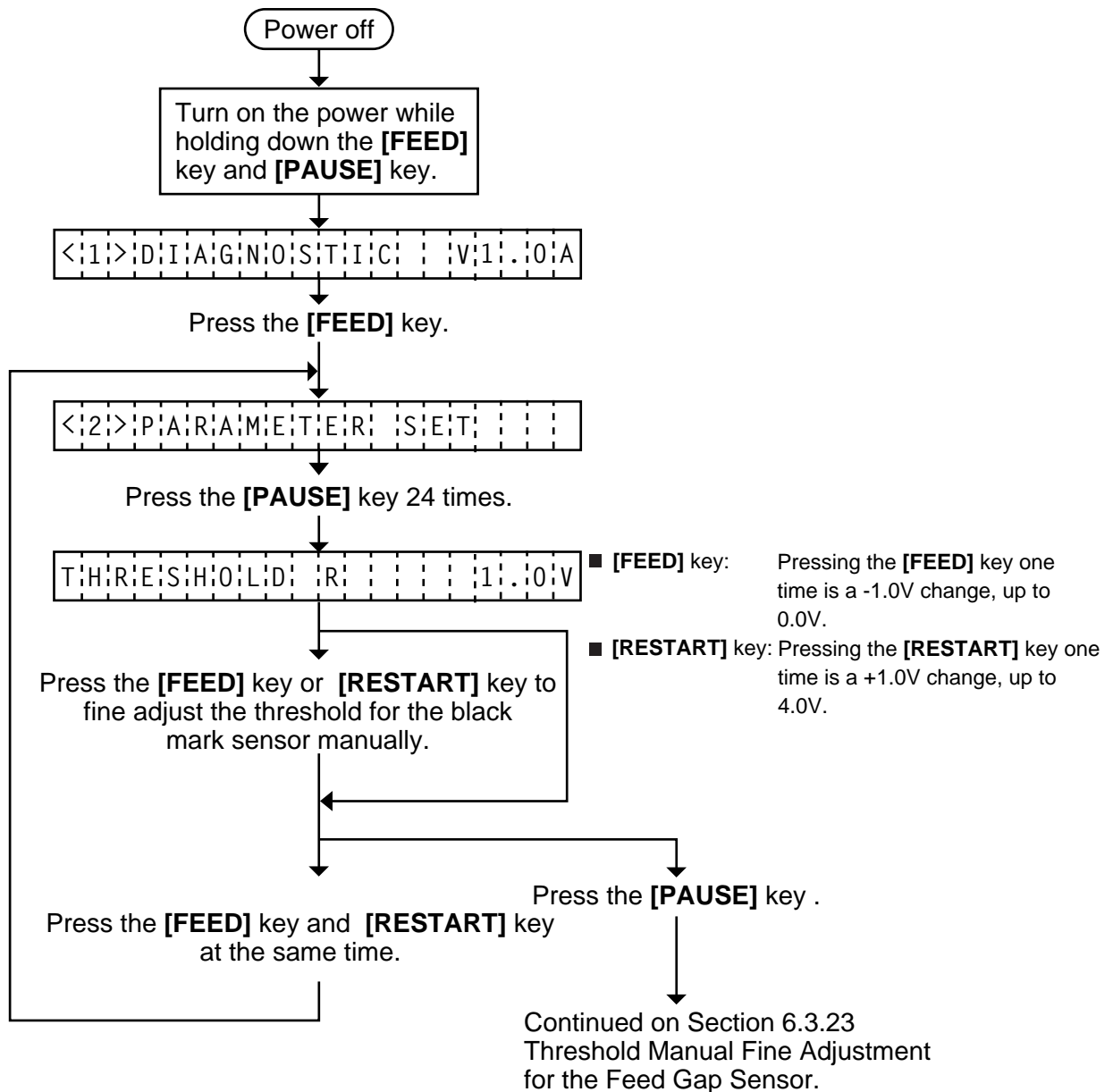
- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. When the status type 1 is selected, the printer will send (00H) in response to the status request command sent from the PC while a label stays at the strip sensor (when idling, after feeding, or all printing finished).
When the status type 2 is selected, the printer will send (05H) in response to the status request command sent from the PC while a label stays at the strip sensor (when idling, after feeding, or all printing finished.)
If the status request command is sent during printing, the printer will always send (05H) regardless of the setting.

6.3.21 FEED Key Function Selection



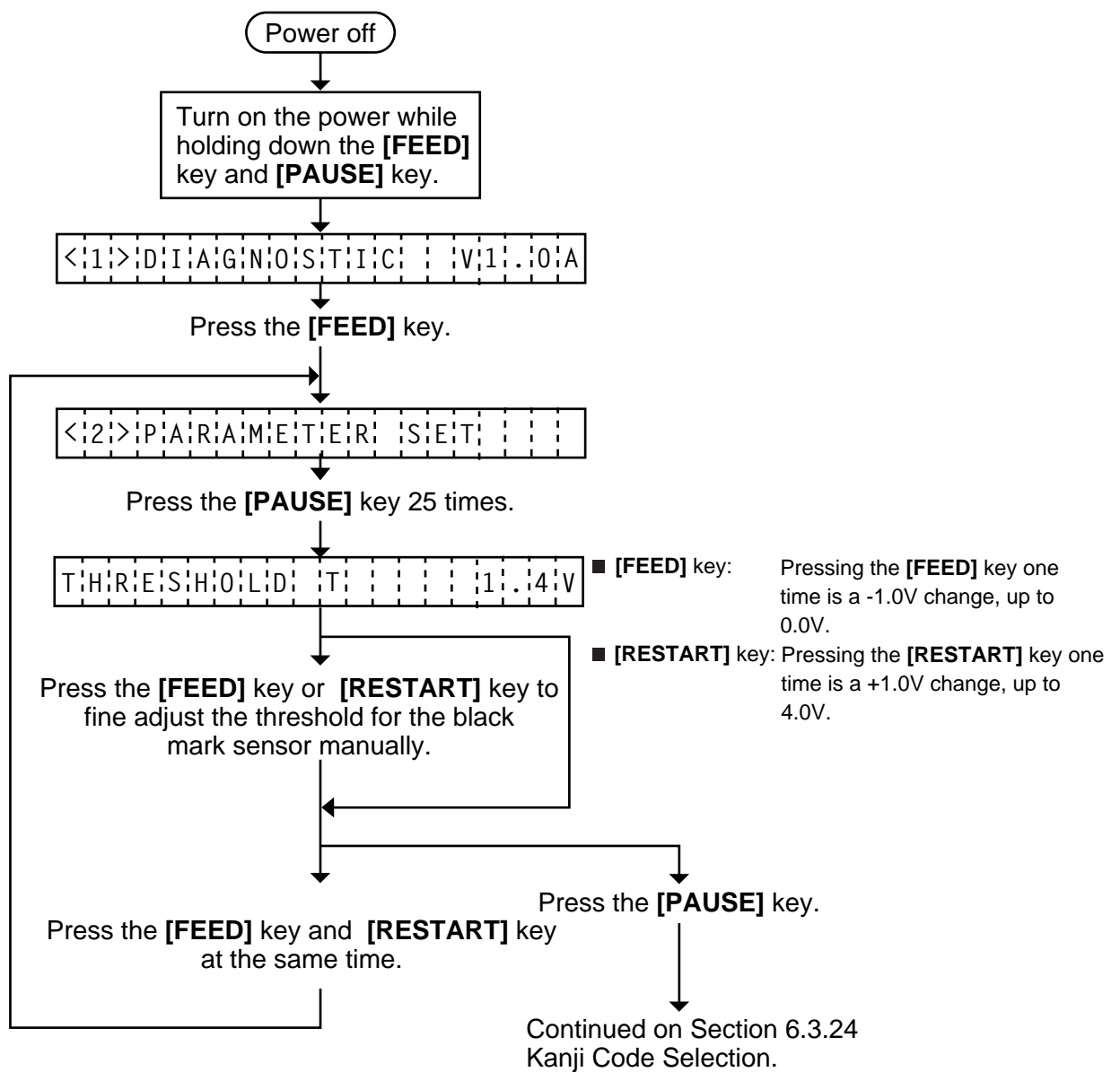
- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. A changed data length is stored in memory by pressing the **[PAUSE]** key.

6.3.22 Threshold Manual Fine Adjustment for the Black Mark Sensor



- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. A changed threshold fine adjustment value is stored in memory by pressing the **[PAUSE]** key.

6.3.23 Threshold Manual Fine Adjustment for the Feed Gap Sensor



NOTES: 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.

2. A changed threshold fine adjustment value is stored in memory by pressing the [PAUSE] key.

- **How to Calculate Threshold Fine Adjustment Value**

If the following cases occurred, threshold value for the paper sensors should be fine adjusted after referring to the next page.

Case 1:

When using tag paper, the black mark and the print area are distinguished from each other by the 1.5V or more difference of sensor output voltage. If a low-sensitive sensor is installed in the printer, it may not detect 1.5V or more difference between the black mark and the print area. This may cause the printer to feed over one and a half tags, and then stop with "PAPER JAM" displayed.

Case 2:

The presence and lack of label are distinguished from each other by the reflective sensor voltage. When the voltage is more than 1.5V, it is regarded as the presence of paper. And less than 1.5V is regarded as the paper end. If a low-sensitive-sensor is used, 1.5V or more may not be detected at the backing paper since the reflectance of backing paper is low. In such case, more than 5mm-long gap is regarded as the no paper. And trying to print or feed the label when the sensor stops at the gap results in a NO PAPER error. This problem tends to occur when using labels with thin backing paper.

Case 3:

If the reflective sensor's output voltage when detecting no paper is 1.5V or more, the sensor does not recognize the actual paper end during printing. Accordingly, the printer continues to print despite of the paper end. This problem may occur on printers of which the resistors on the CPU PCB have been changed according to the Technical Information #SVM7A1010/1 (issued on April 16, 1997).

Case 4:

When using perforated fanfold labels, the transmissive sensor mistakes the perforation on the gap for a print area, resulting in a PAPER JAM error.

Case 5:

When using such a particular label stock that a black mark is printed on every two or three gaps, the sensor detects three different voltages at the label, unmarked gap and black mark, respectively. The sensor cannot distinguish the unmarked gap from the black mark, so the printer stops with displaying "PAPER JAM".

NOTE: The following operation cannot be performed unless the sensor type is changed by the issue command or feed command.

- (1) Using the sensor adjustment in Diag. mode, measure the sensor voltage at the following four points.

Label: Print area Backing paper

Tag paper: Print area Black mark

Example:

[R E F L E C T I V E]	2 . 8 V
[T R A N S M I S S I V E]	4 . 1 V

- (2) Using the following formula, calculate the threshold from the measured voltage:

When using labels (transmissive sensor):

Threshold = (Max. voltage at the backing paper) - (Voltage at the print area) - 0.7V

e.g.) $2.0V = 4.2V - 1.5V - 0.7V$

When using perforated labels (transmissive sensor):

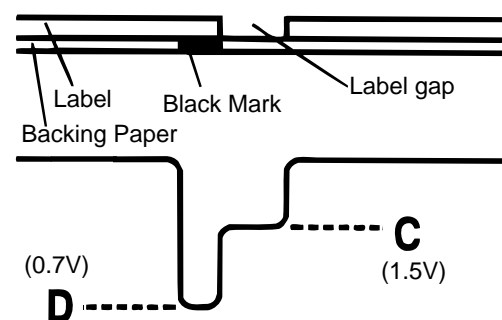
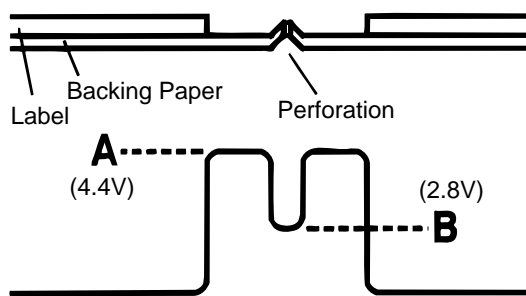
Threshold = $\frac{\text{A}}{\text{A}}$ (Max. voltage at the backing paper) - $\frac{\text{B}}{2}$ (Min. voltage at the backing paper) - $\frac{\text{A}}{2}$ (Min. voltage at the backing paper)

e.g.) $2.2V = 4.4V - (2.8V/2) - (1.6V/2)$

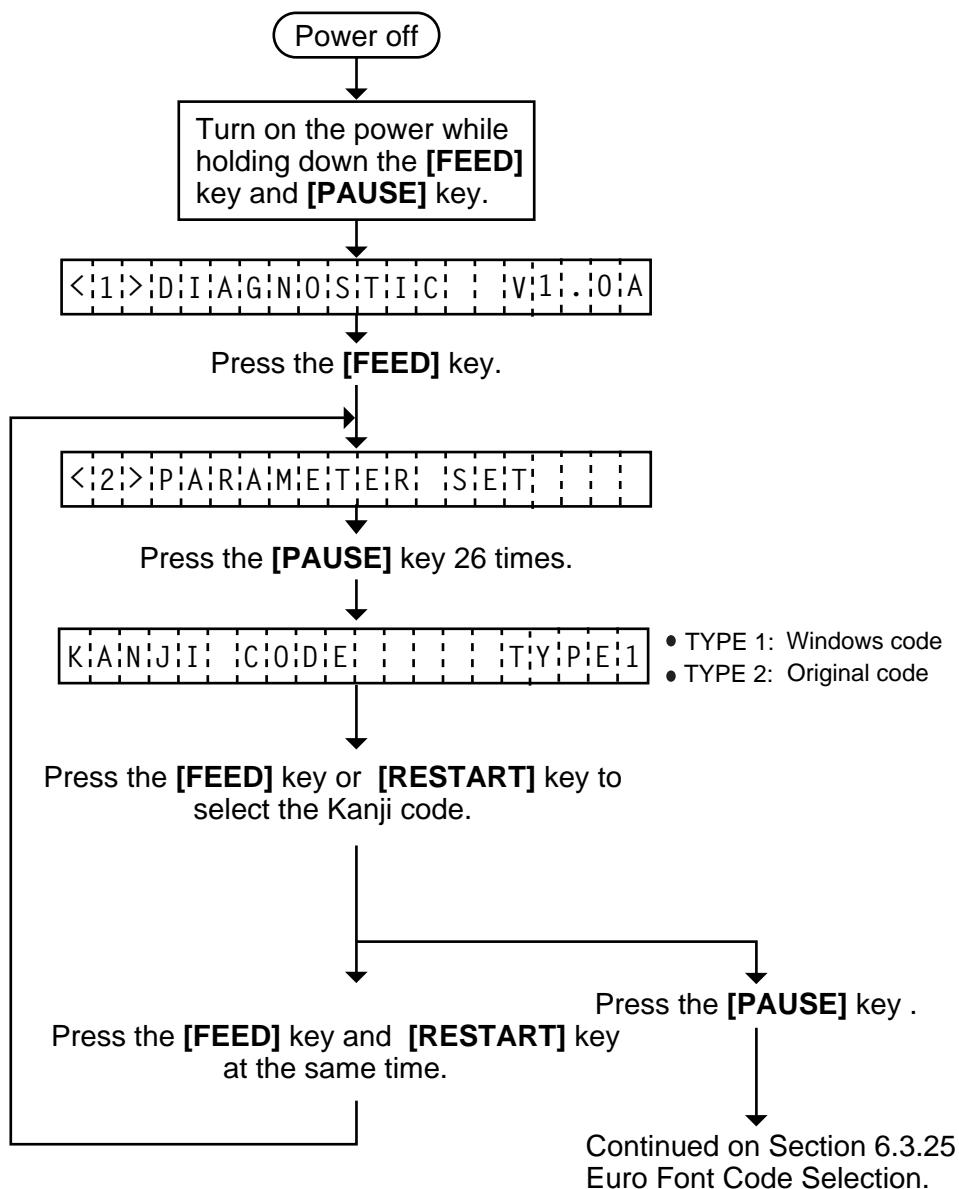
When using labels with black marks (reflective sensor):

Threshold = $\frac{\text{C}}{2}$ (Min. voltage at the print area) - $\frac{\text{D}}{2}$ (Min. voltage at the black mark)

e.g.) $0.4V = (1.5V - 0.7V)/2$

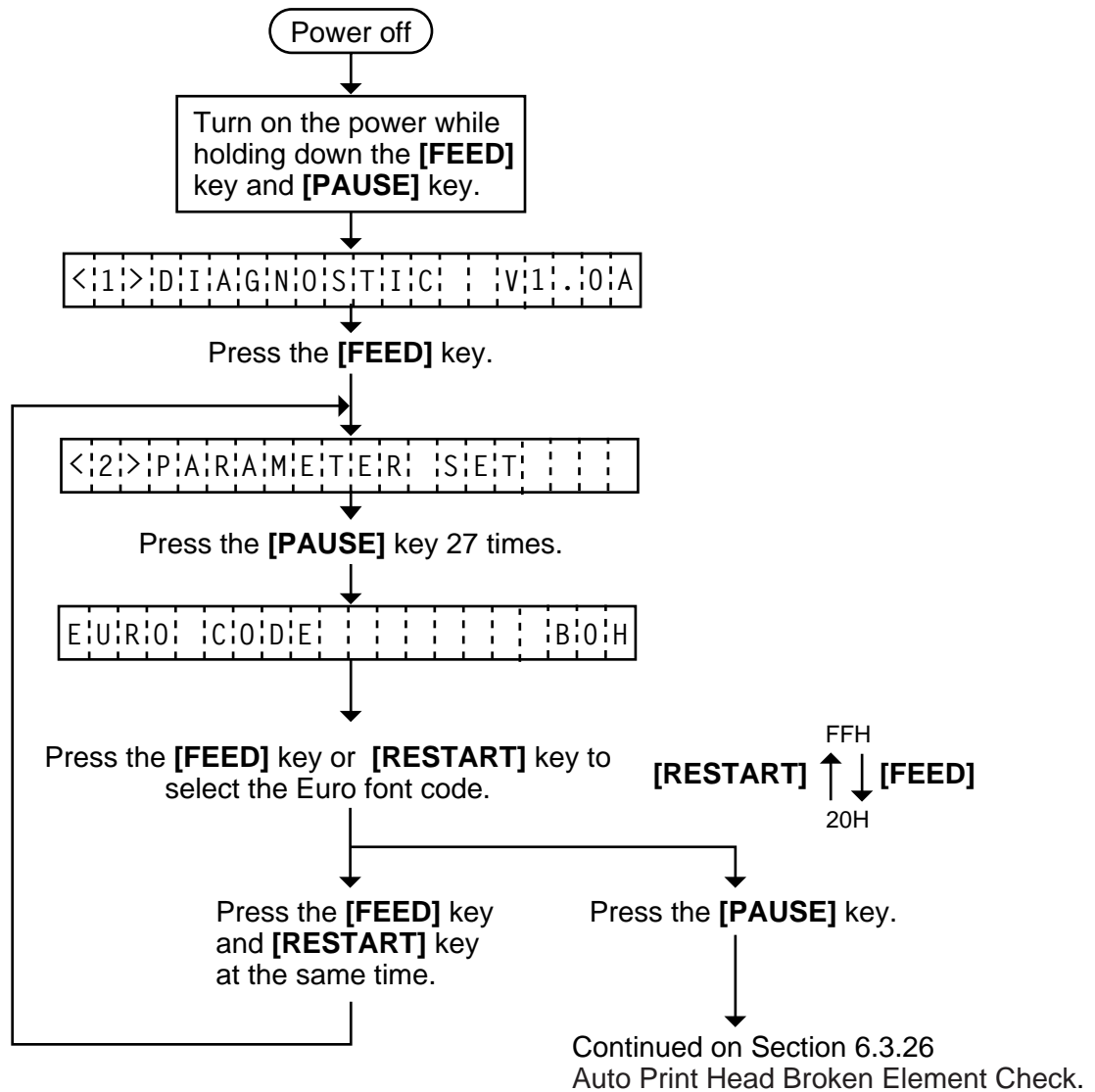


6.3.24 Kanji Code Selection



- NOTES:** 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.
2. A changed Kanji code is stored in memory by pressing the [PAUSE] key.

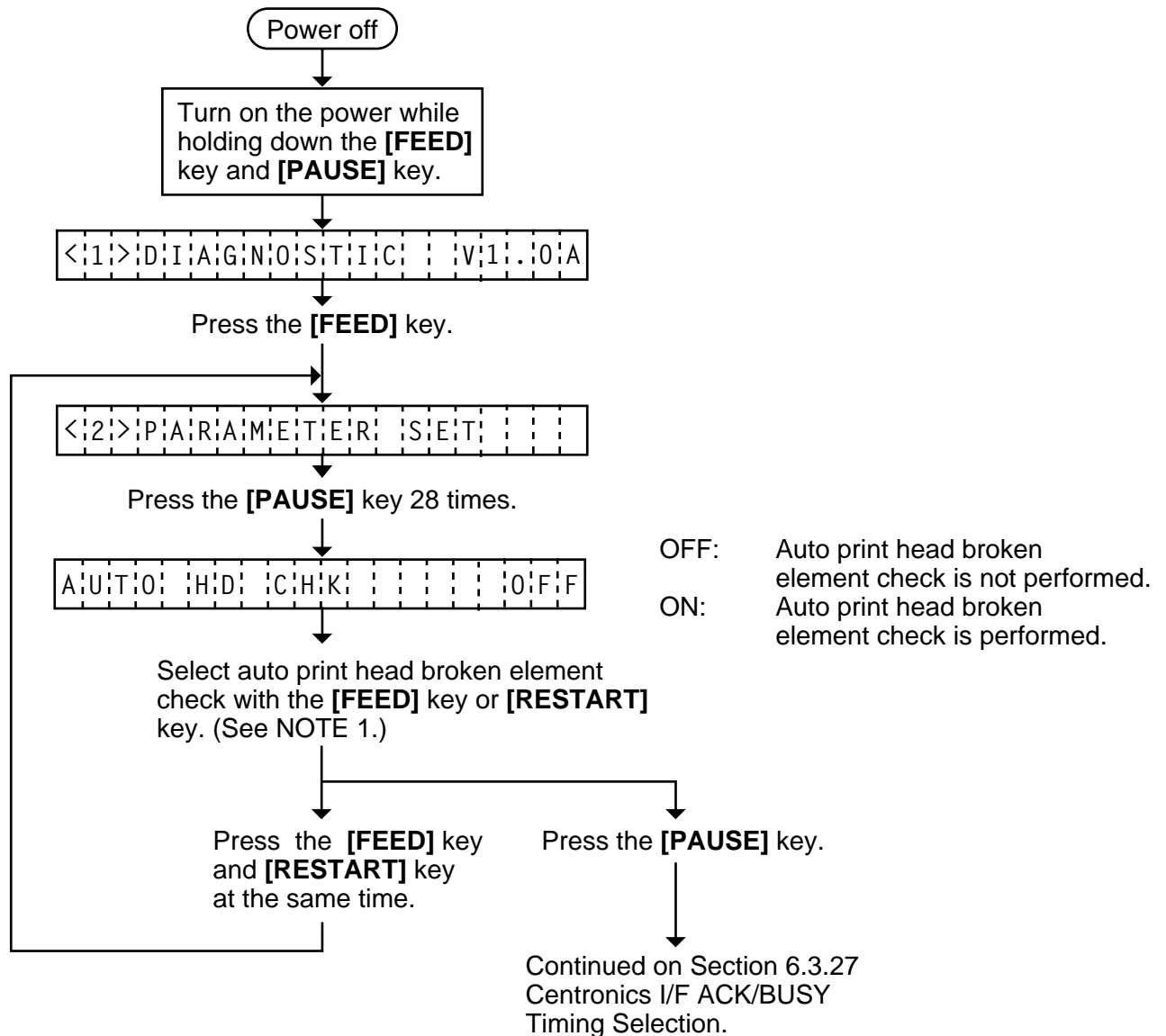
6.3.25 Euro Font Code Selection



NOTES: 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed Euro font code is stored in memory by pressing the **[PAUSE]** key.

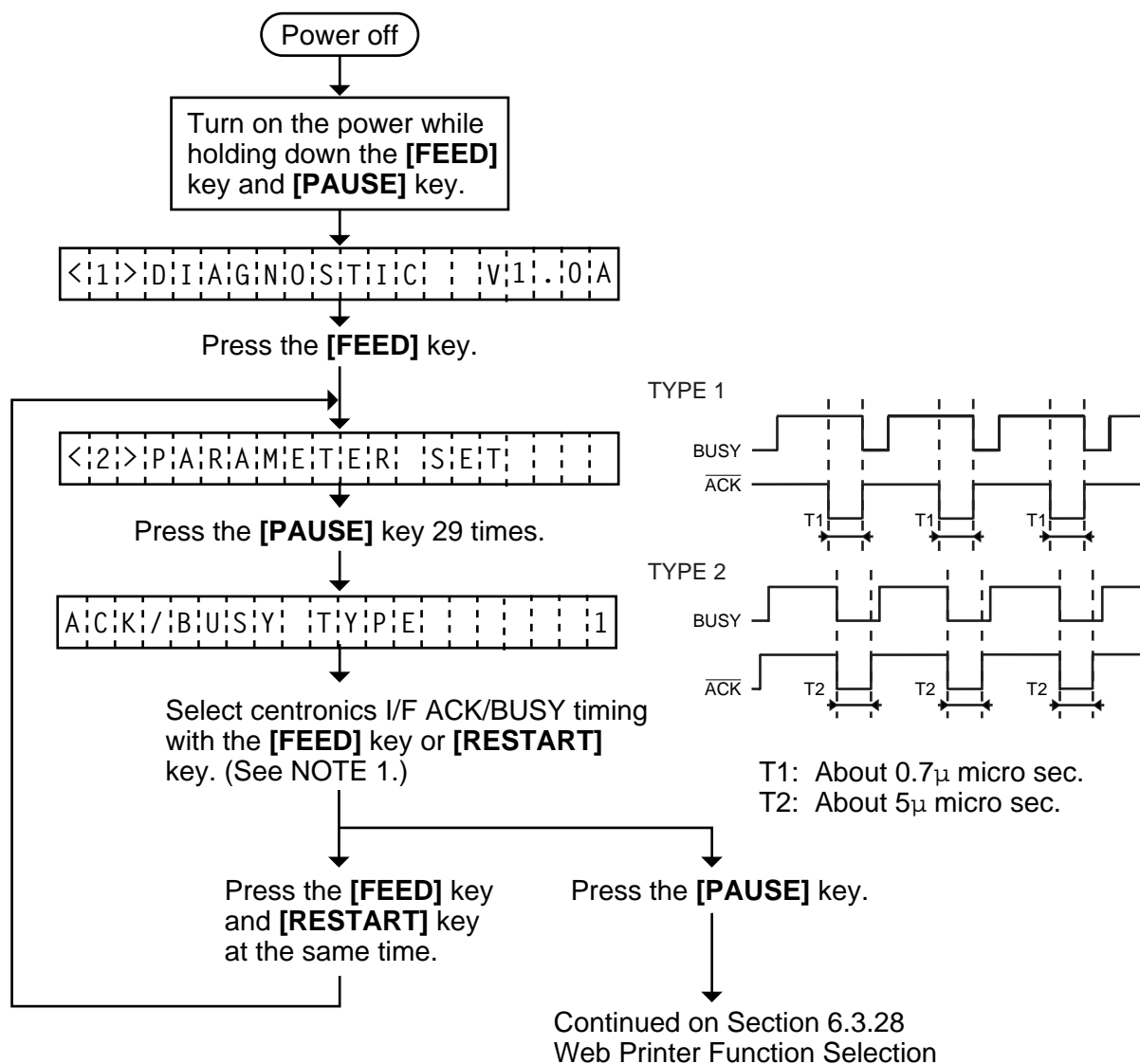
6.3.26 Auto Print Head Broken Element Check



- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. A changed data length is stored in memory by pressing the **[PAUSE]** key.

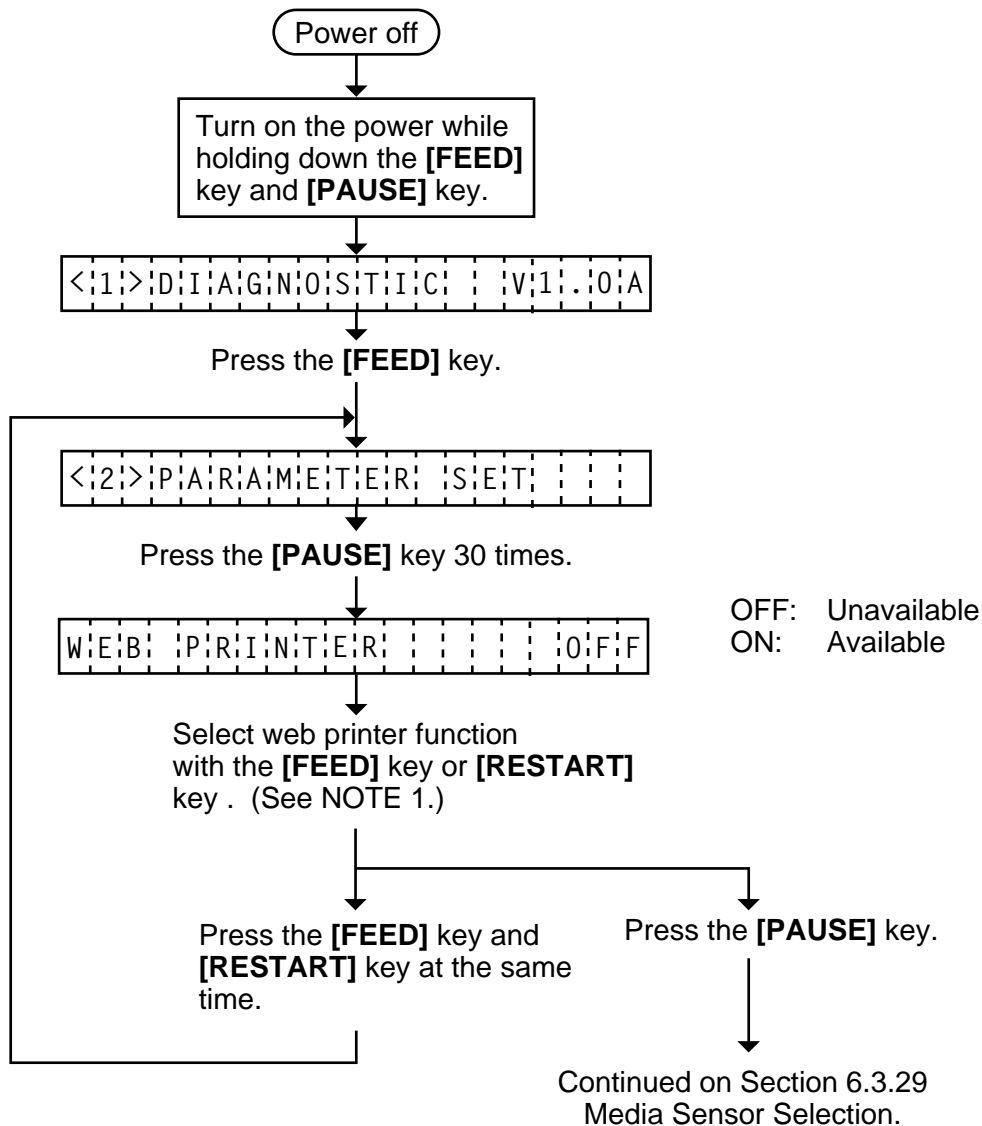
6.3.27 Centronics I/F ACK/BUSY Timing Selection

Choose the ACK/BUSY timing type 1 or type 2.



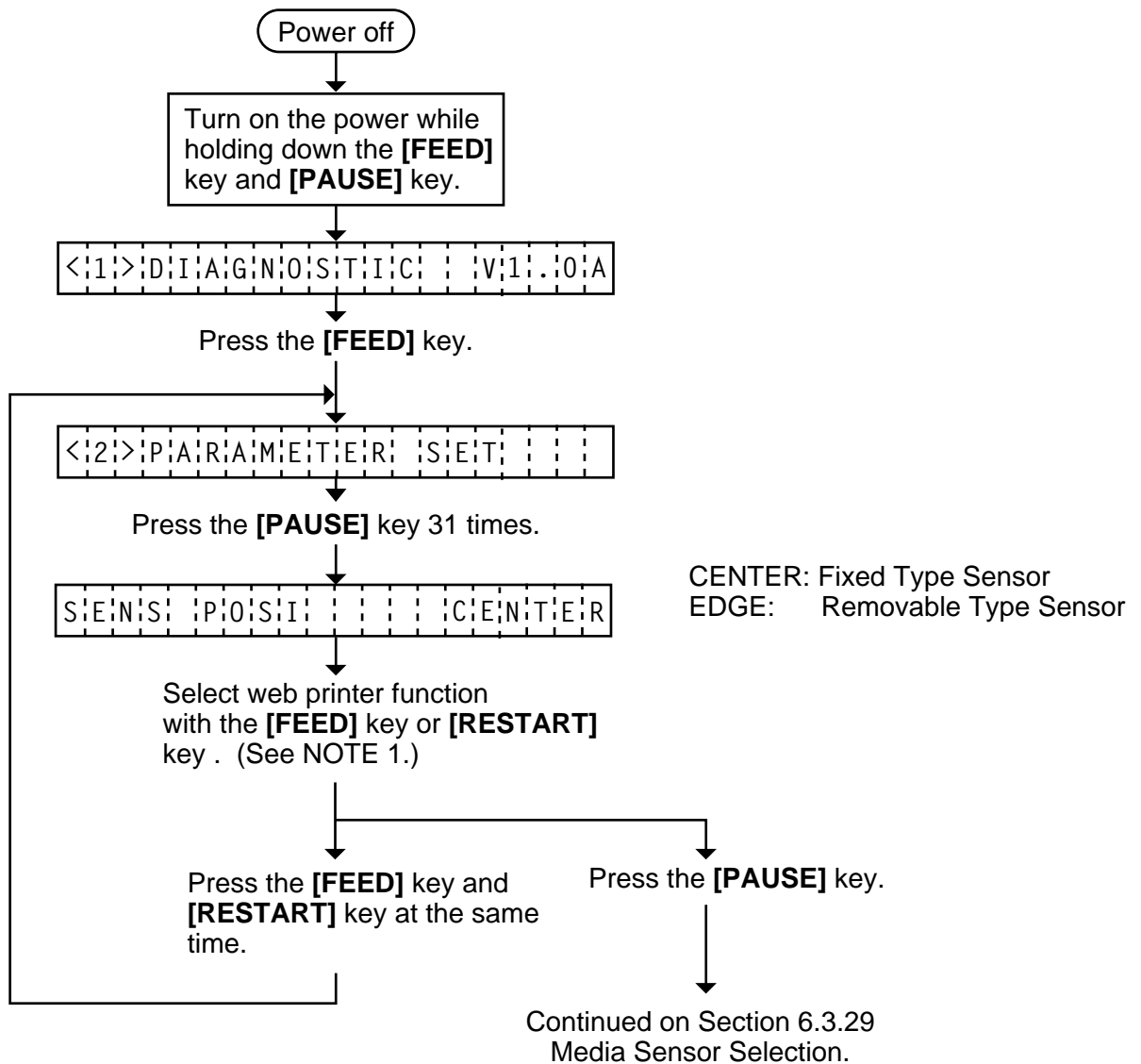
- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. A changed data length is stored in memory by pressing the **[PAUSE]** key.
 3. Select type1 when using ECP + DMA mode.

6.3.28 Web Printer Function Selection



- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. A changed Euro font code is stored in memory by pressing the **[PAUSE]** key.

6.3.29 Media Sensor Selection



- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 2. A changed Euro font code is stored in memory by pressing the **[PAUSE]** key.

6.4 TEST PRINT MODE

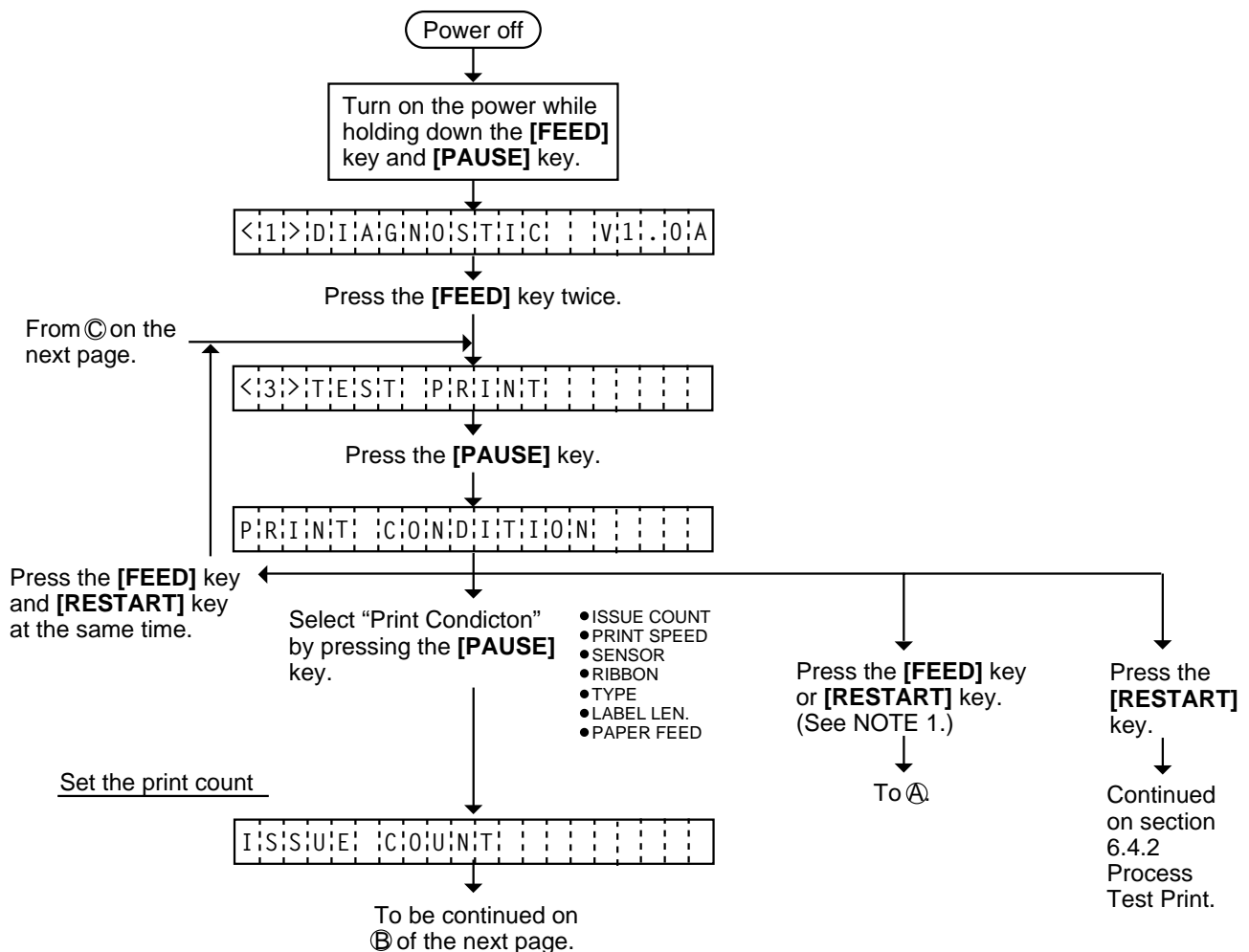
Test print mode contains normal test print and process test print.

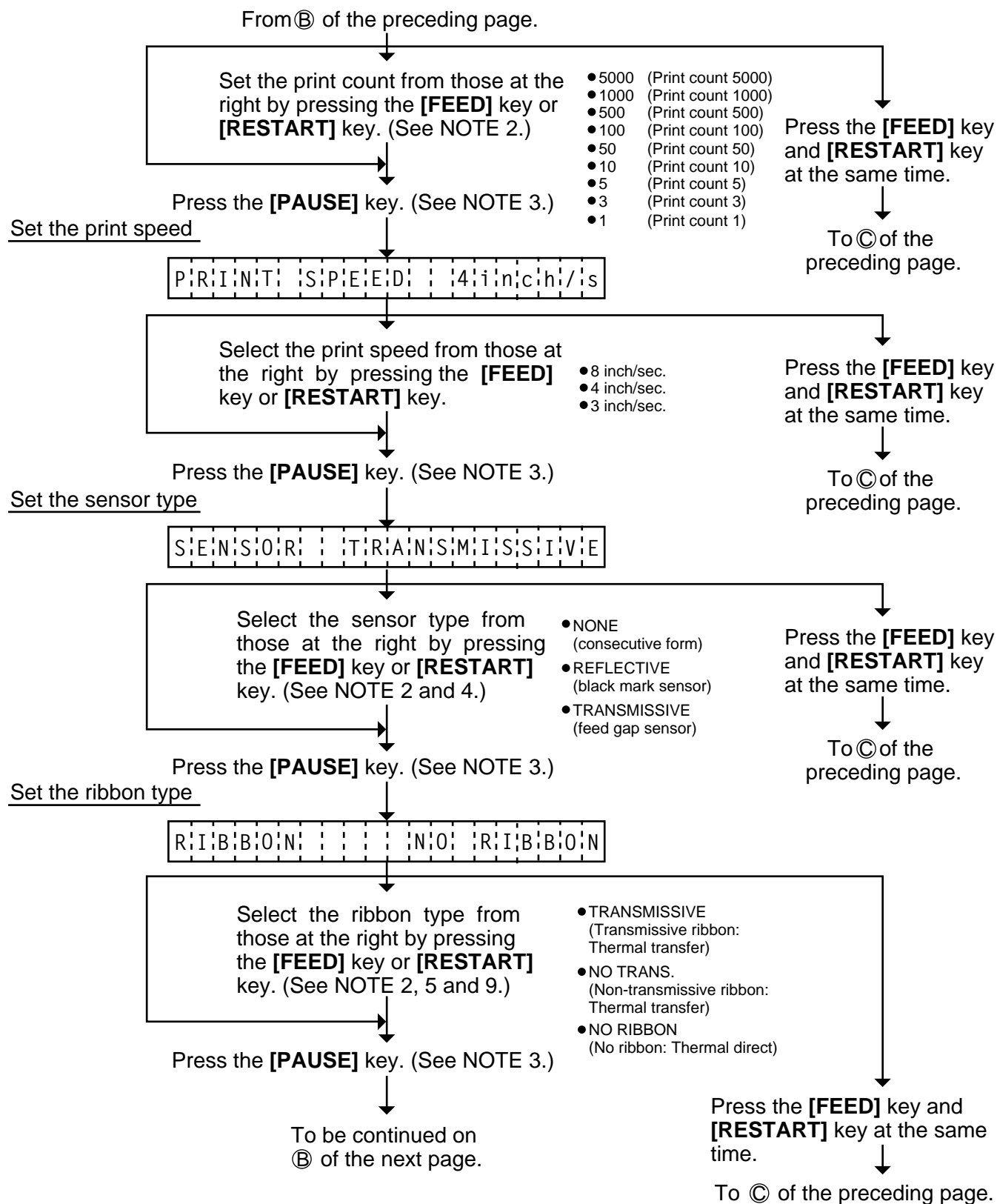
6.4.1 Normal Test Print

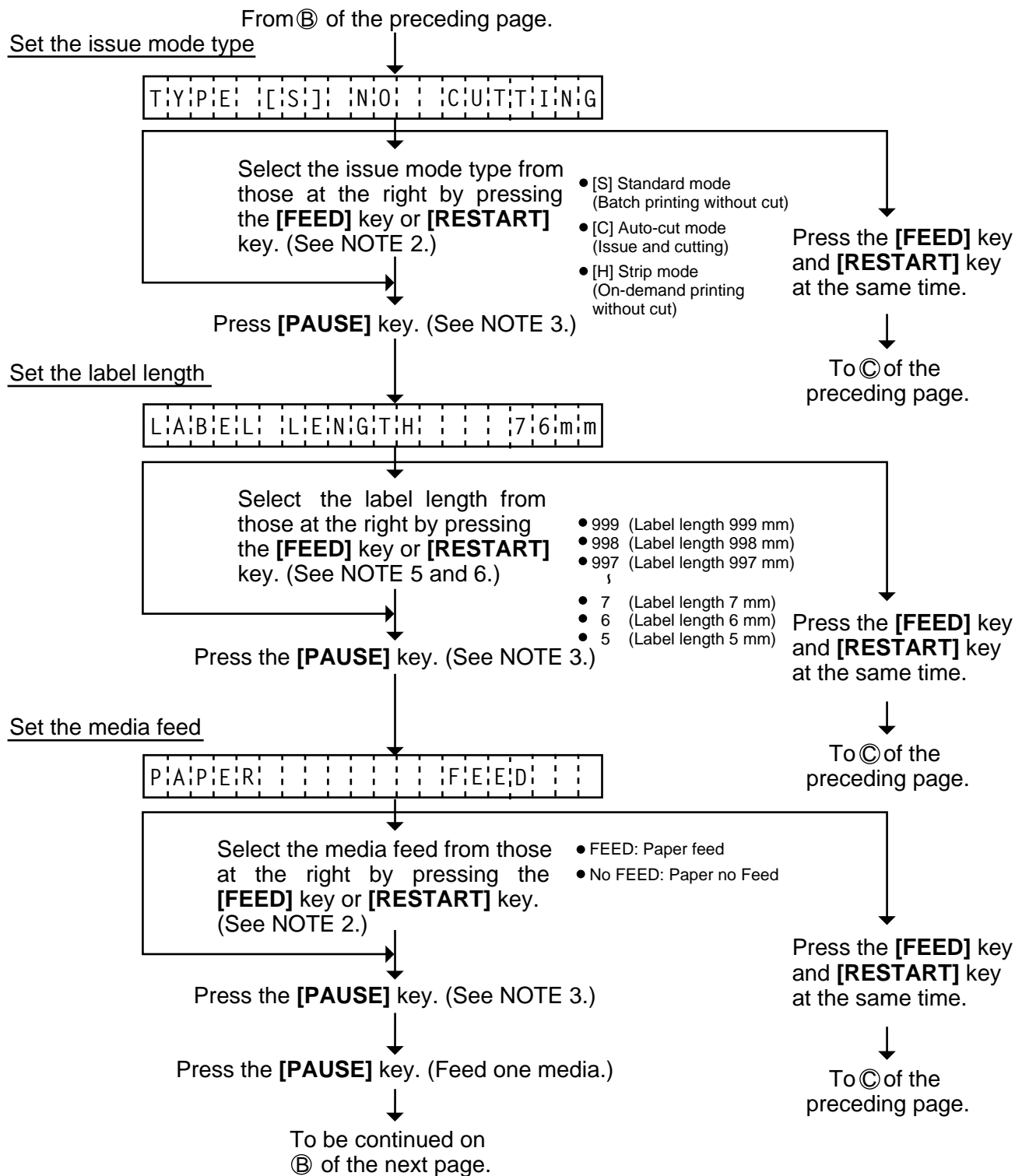
Eight kinds of test prints are provided in the test print mode. When performing the test print, 7 parameters should be set. The default parameter at power on is as below:

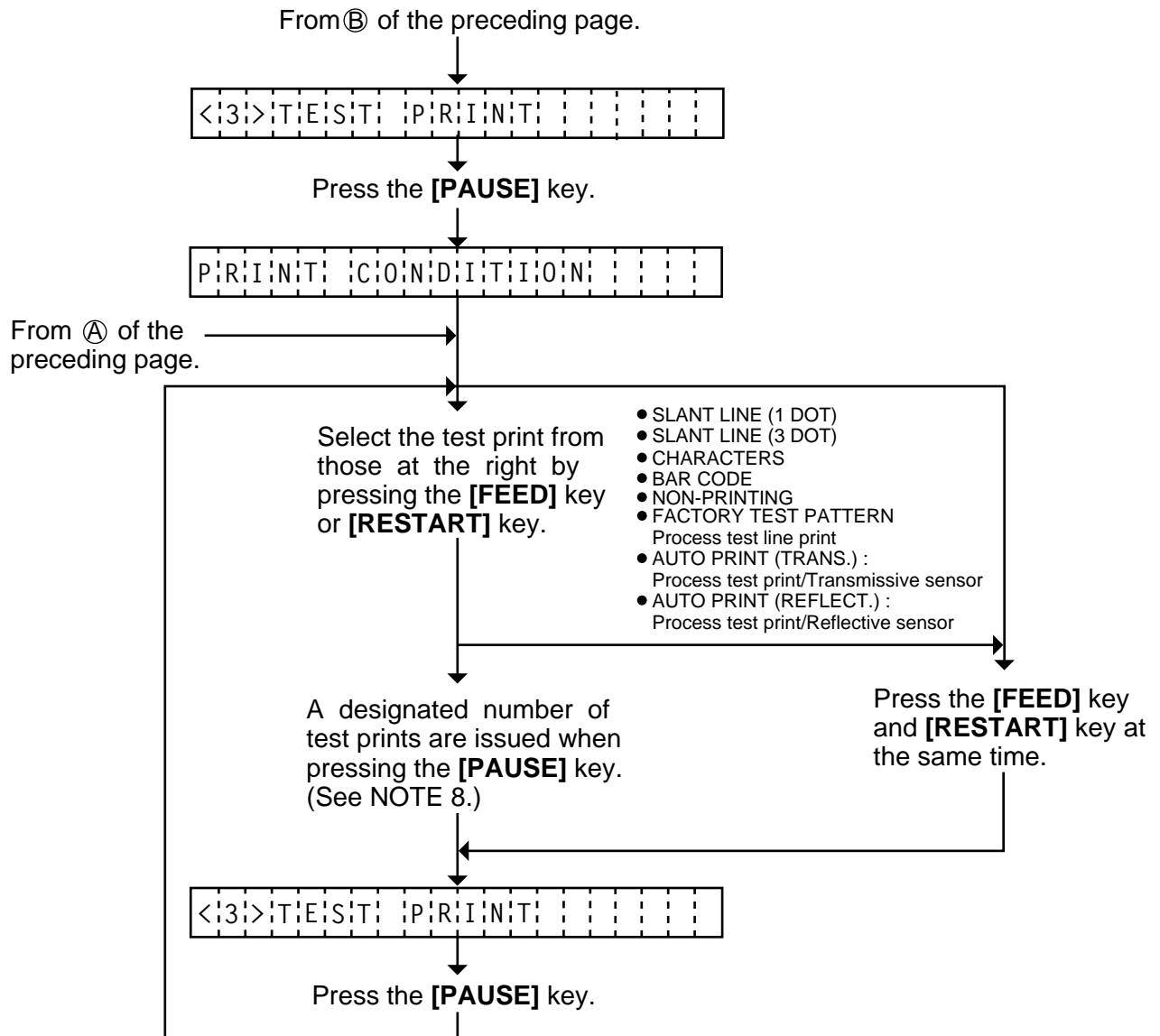
- ISSUE COUNT : 1
- PRINT SPEED : 4"/sec.
- SENSOR : Transmissive sensor
- PRINT TYPE : Thermal Transfer
- TYPE : Batch (without cut)
- LABEL LENGTH : 76 mm
- PAPER FEED : Feed

Operating procedure for the test mode is provided below.









- NOTES:**
1. When there is no change to the print condition, select one of the test print options to issue the test print.
 2. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
 3. A selected print condition is activated when the **[PAUSE]** key is pressed.
 4. When the feed gap sensor is selected, the gap between labels becomes 3mm long.
 5. A label size greater than the image buffer length cannot be designated. The image buffer length differs according to memory size. If designated, the printer prints in the image buffer, or the printer stops because of an error.
 6. Pressing the **[FEED]** key changes the label length -1 mm, pressing the **[RESTART]** key changes +1 mm.
 7. When an error occurs during a test print, the error message is displayed and printing is stopped. The error is cleared by pressing the **[PAUSE]** key and the display shows "<3> TEST PRINT". Printing is not automatically resumed after the error is cleared.
 8. When the space area is 20mm at the print speed of 3"/sec., and 8"/sec., the printer automatically enters ribbon saving print mode. (only when the ribbon saving module is set to ON at the thermal transfer print)

9. All fine adjustment values except for the X axis fine adjustment are also available at a test print.
10. The print speed of 4"/sec. is applied to the thermal direct print only. Even if the print speed of 4"/sec. is selected for the thermal transfer print, the printer performs at 3"/sec..

■ Test Print Sample

- Slant line (1 dot)

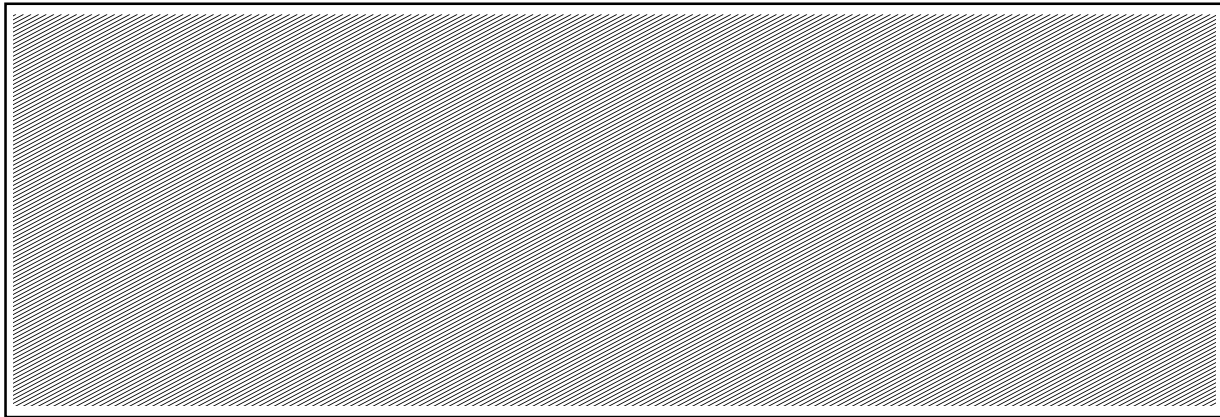


Fig. 6-21

- Slant line (3 dot)

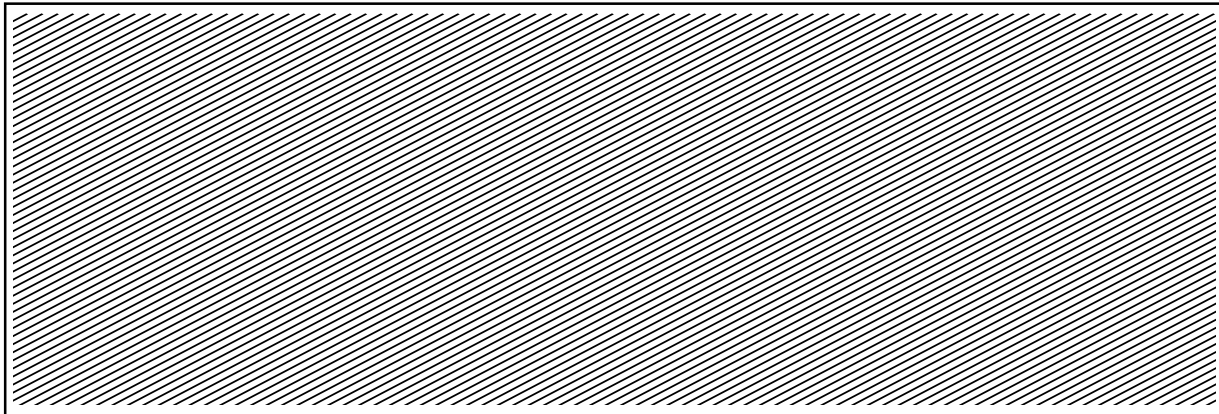


Fig. 6-22

- Characters

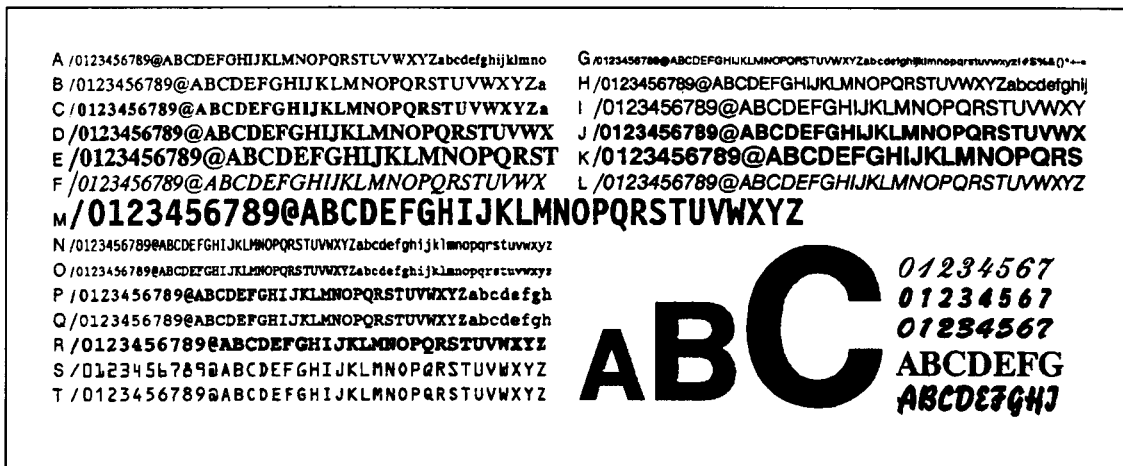


Fig. 6-23

• Bar code



Fig. 6-24

• AUTO PRINT

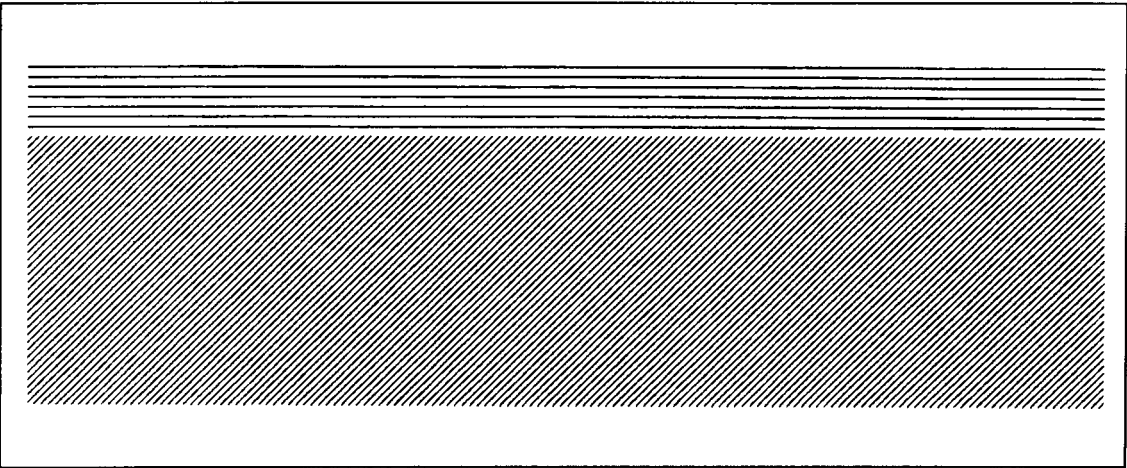


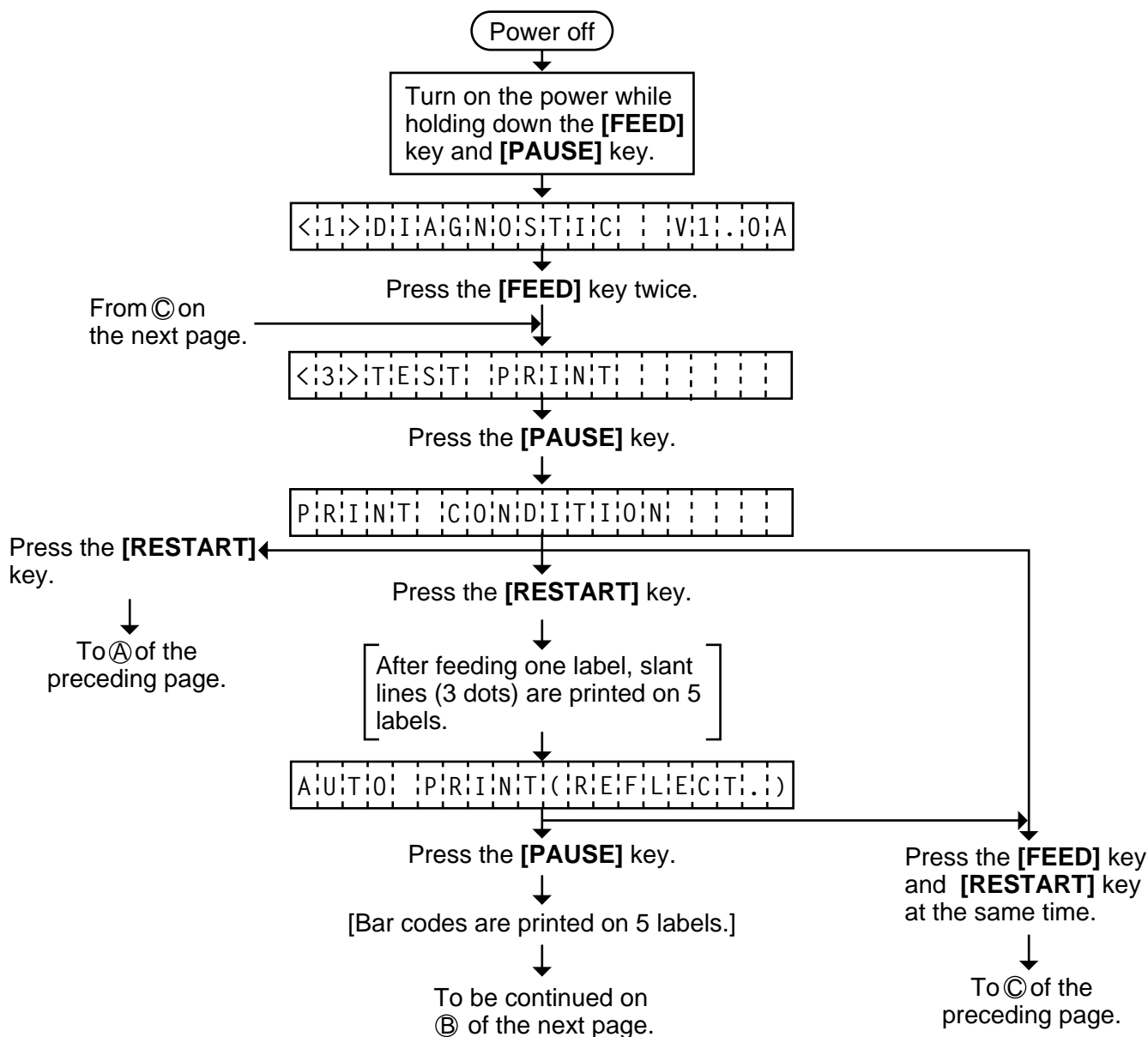
Fig. 6-25

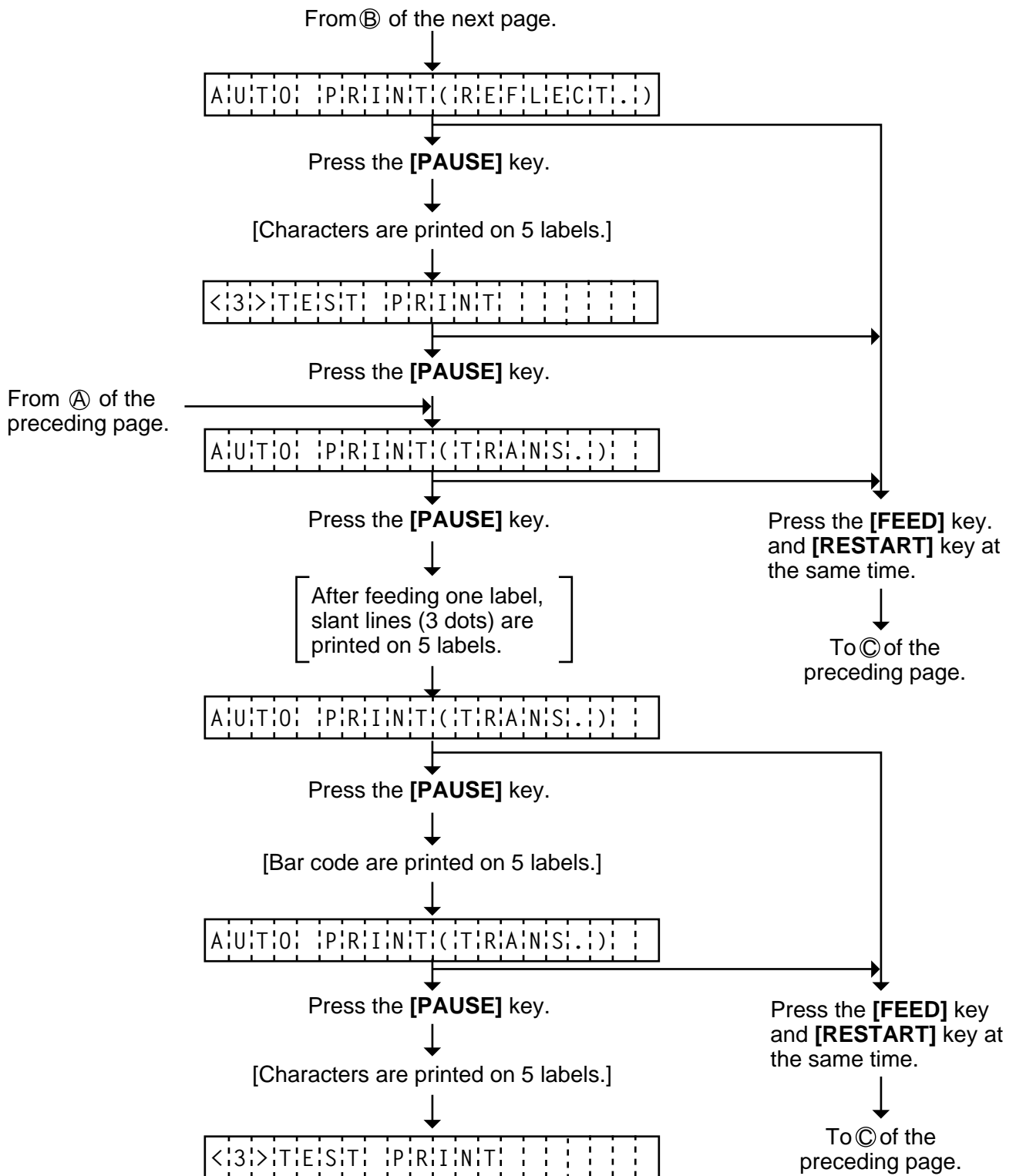
6.4.2 Process Test Print

In the process test print, the test print is automatically performed under the following conditions. Parameter setting and print tone fine adjustment value is ignored.

- OPERATION : One label feed, 3-dot slant line print, bar code print, character print
- ISSUE COUNT : 5 labels each
- PRINT SPEED : 8 inches/sec.
- SENSOR : Transmissive sensor (feed gap sensor) or reflective sensor (black mark sensor)
- RIBBON : Transmissive ribbon
- TYPE : Batch (without cut)
- LABEL LENGTH : 76 mm
- PRINT TONE FINE ADJUSTMENT VALUE : +0

Operating procedure for the test mode is provided below.



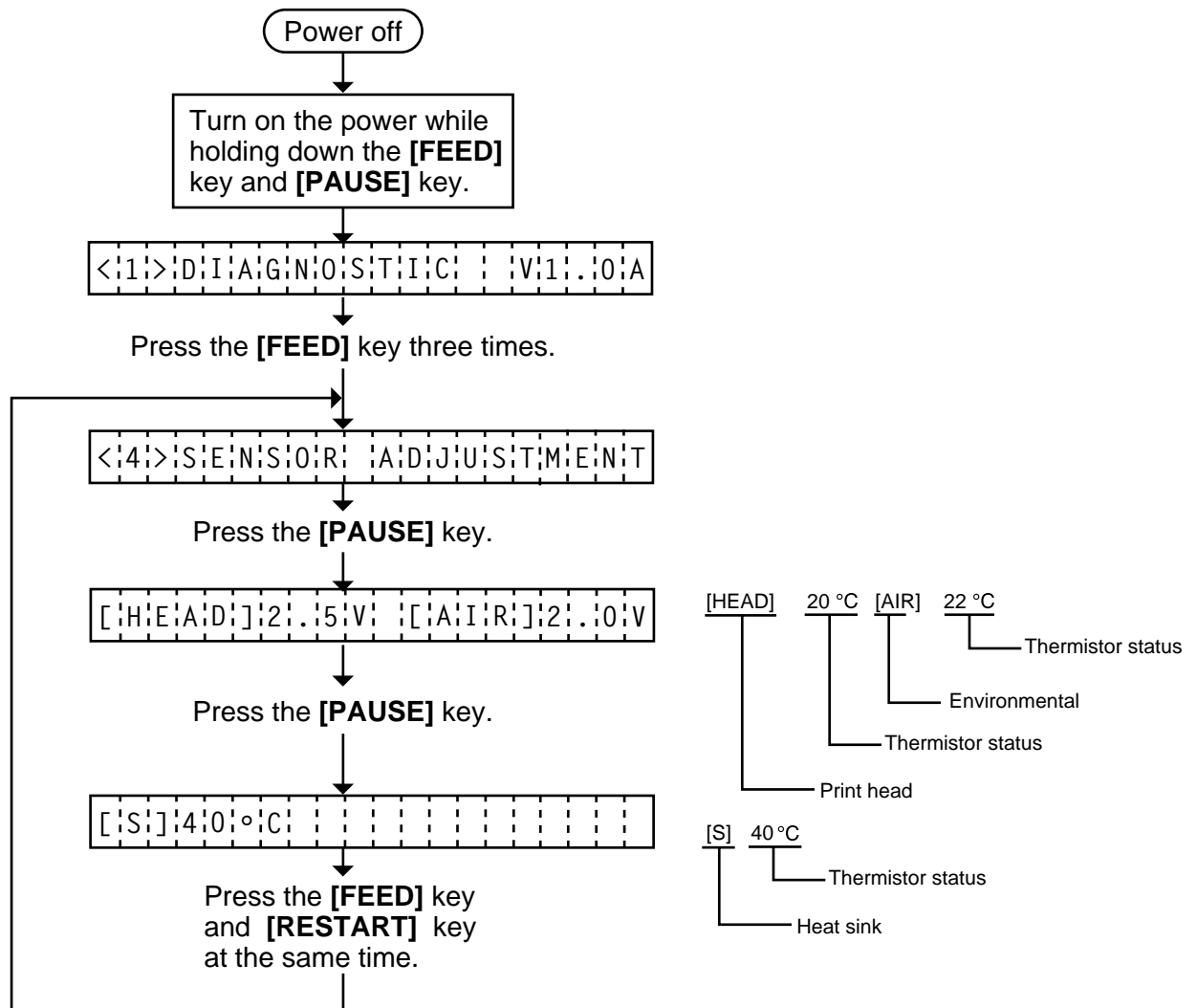


6.5 SENSOR SETTING MODE

Thermistor check and black mark/feed gap sensor settings are provided in the sensor setting mode. The value set in this mode is printed as data of sensor 2 in Automatic diagnosis printing in self test mode.

6.5.1 Thermistor Check (Read only)

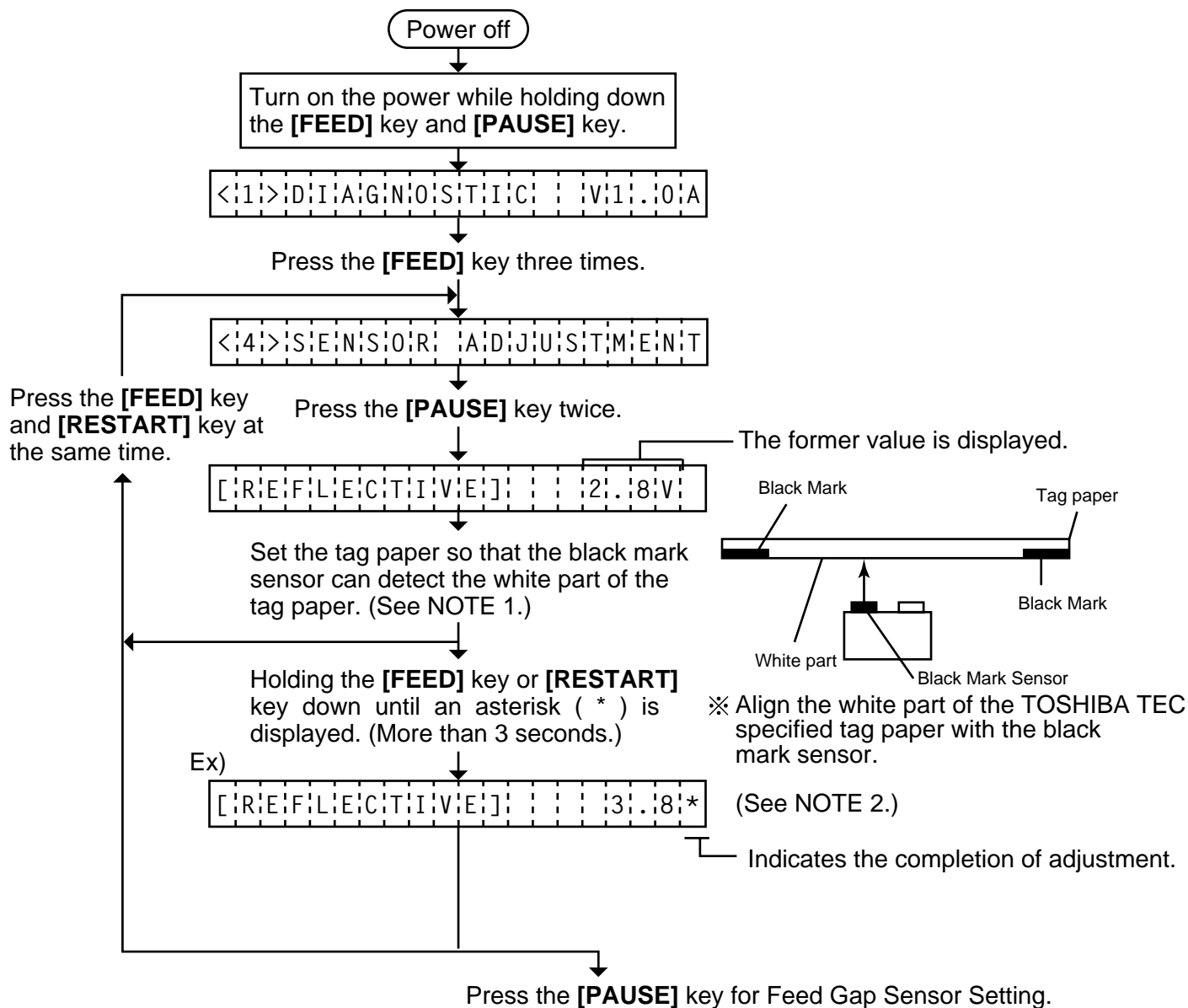
Thermistor check should be performed to check the environmental temperature and print head temperature after the excess head temp. error occurs or batch printing is performed for a long time.



NOTE: 1. Since the thermistor is supervised every 200 ms while displaying the status, the display could vary.

6.5.2 Black Mark Sensor Adjustment

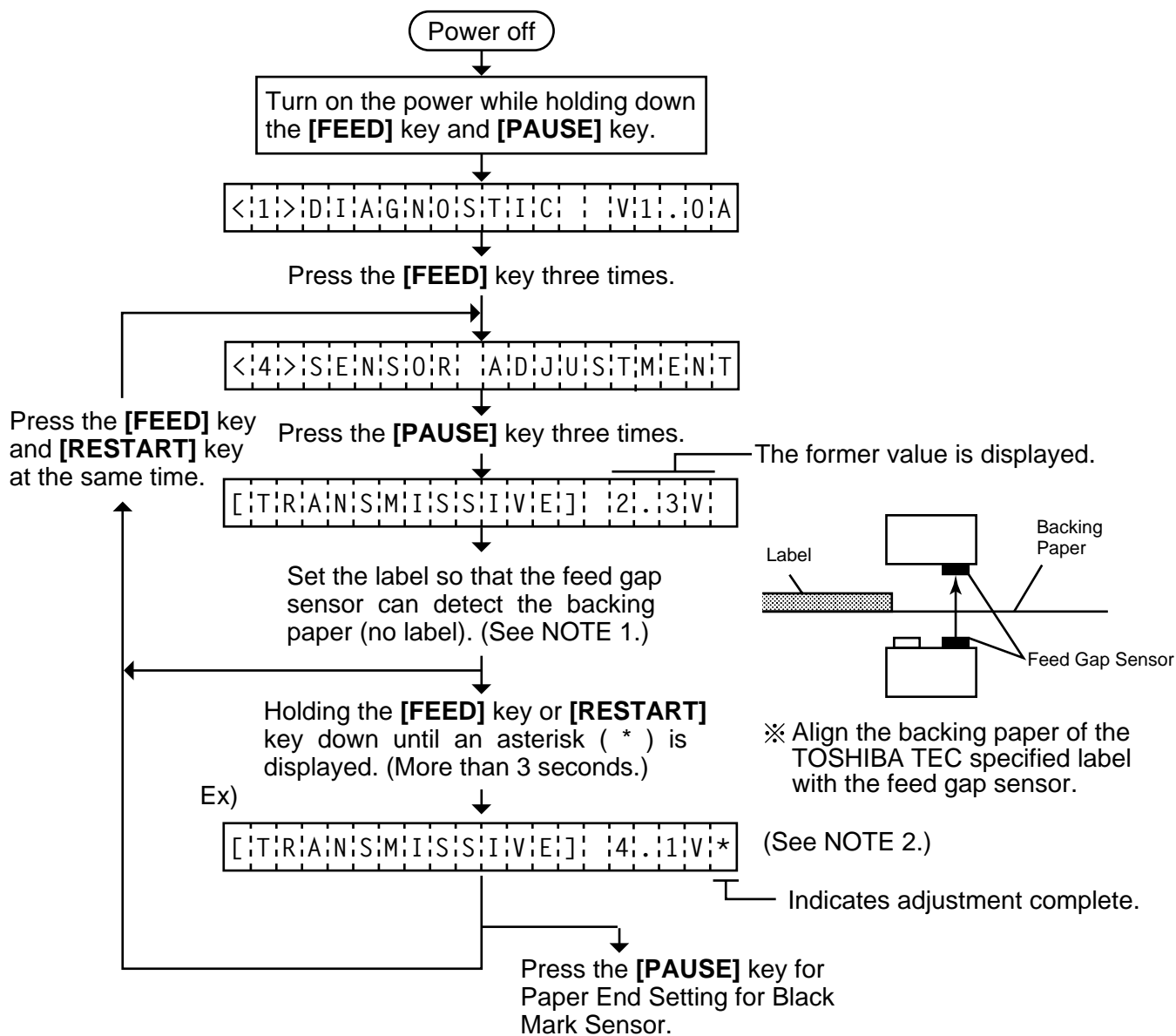
Black mark sensor setting should be performed after replacing the CPU PC board or changing the tag paper to other maker's one, or when a paper feed error occurs.



- NOTES:** 1. Make sure to adjust the black mark sensor using the white part of the tag paper as a criterion. Though an adjustment can be performed with the black mark, it may cause a paper jam error.
2. Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

6.5.3 Feed Gap Sensor Adjustment

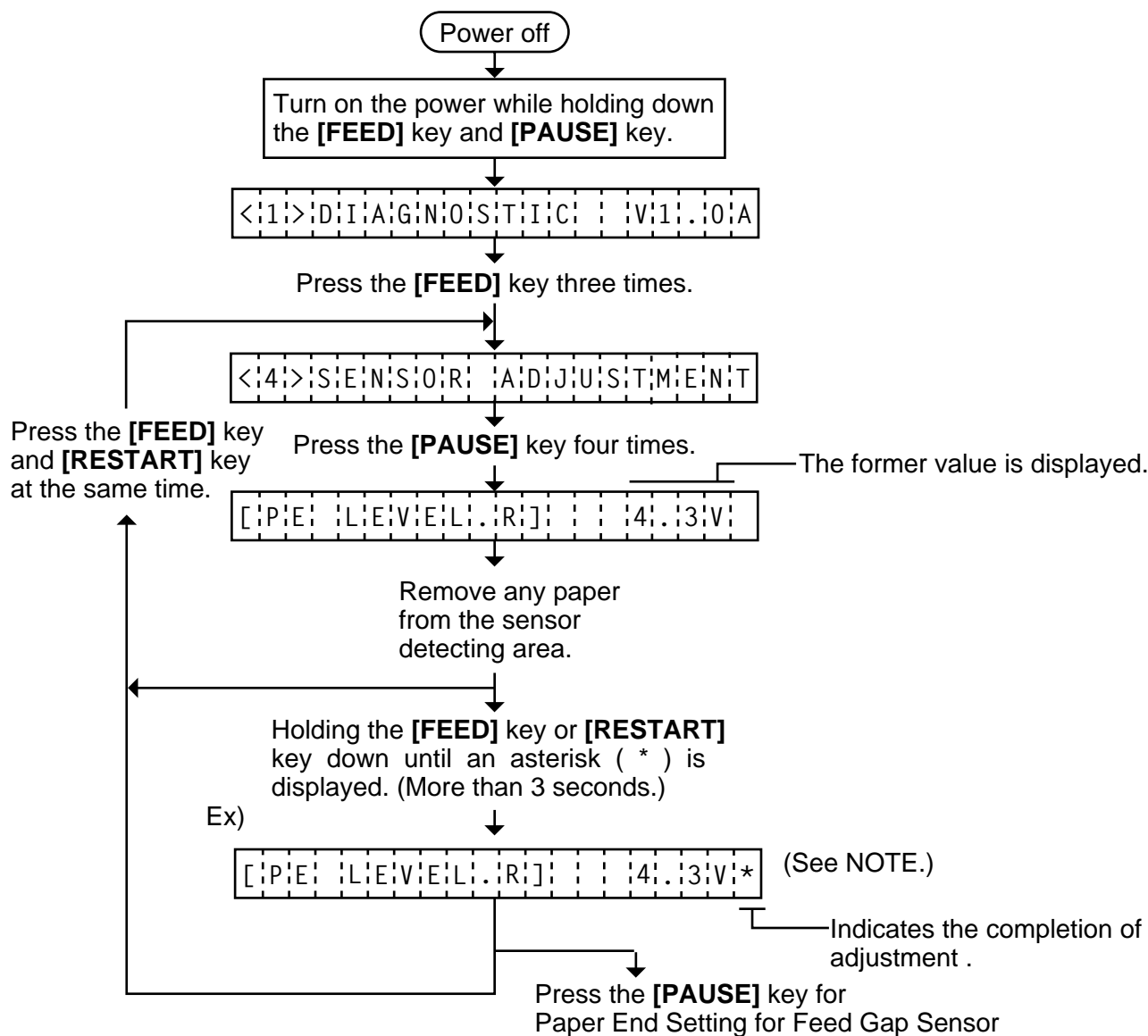
Feed gap sensor setting should be performed after replacing the CPU PC board or changing the label to other maker's one, or when a paper feed error occurs.



- NOTES:** 1. Make sure to adjust the feed gap sensor using the backing paper with no label as a criterion. Though an adjustment can be performed with the label, it could cause a paper jam error.
2. Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

6.5.4 Paper End Setting for Black Mark Sensor

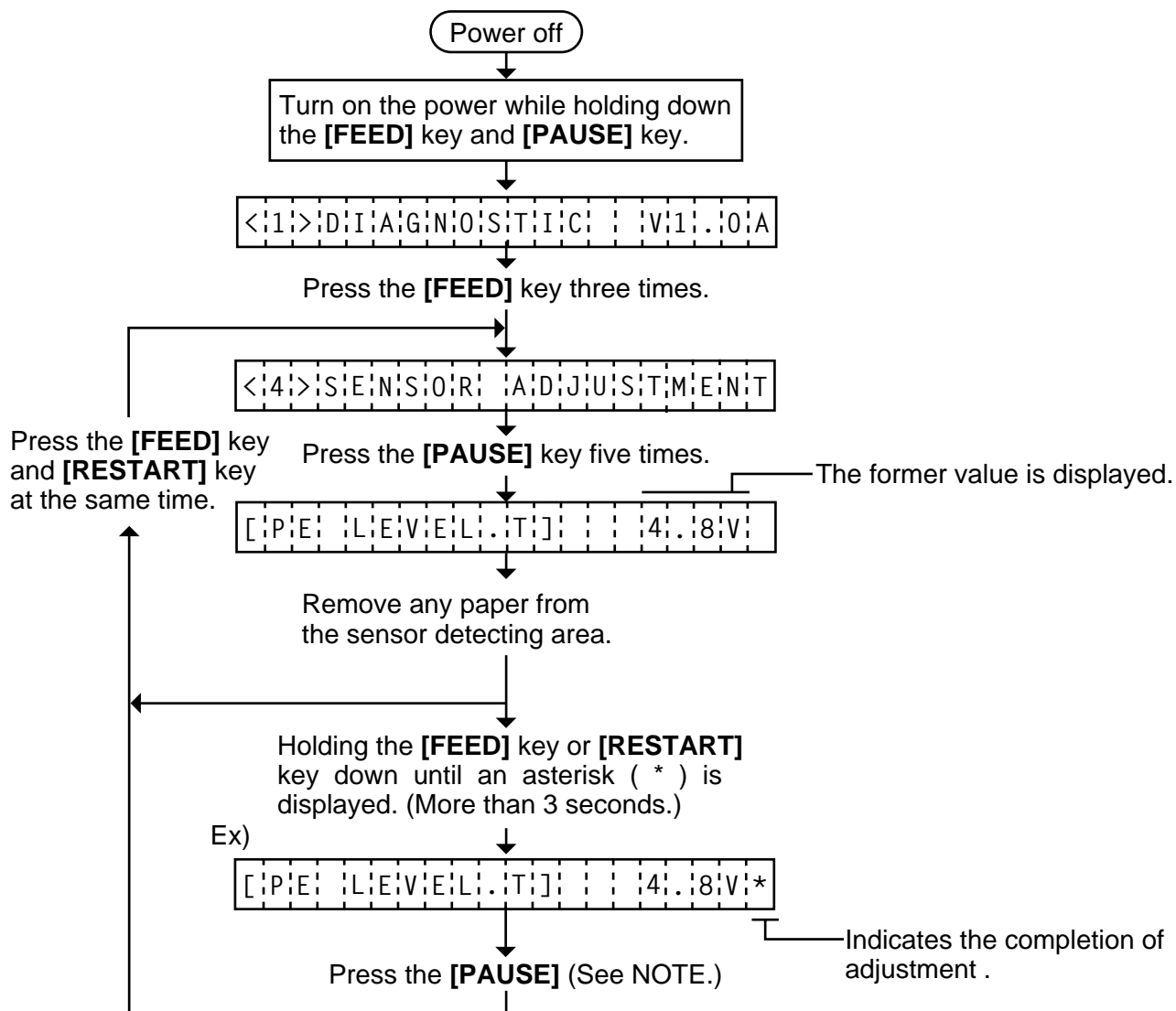
Paper end setting should be performed after replacing the CPU PC board or changing the tag paper to other maker's one, or when a paper feed error occurs.



NOTE: Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

6.5.5 Paper End Setting for Feed Gap Sensor

Paper end setting should be performed after replacing the CPU PC board or changing the label to other maker's one, or when a paper feed error occurs.



NOTE: Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

6.6 RAM CLEAR MODE

In RAM clear mode, various data written on the EEP-ROM can be initialized. There are two clear functions; Maintenance counter clear and parameter clear in the parameter setting mode. After referring to the following table specify and clear or initialize the data.

■ RAM Clear Mode Table

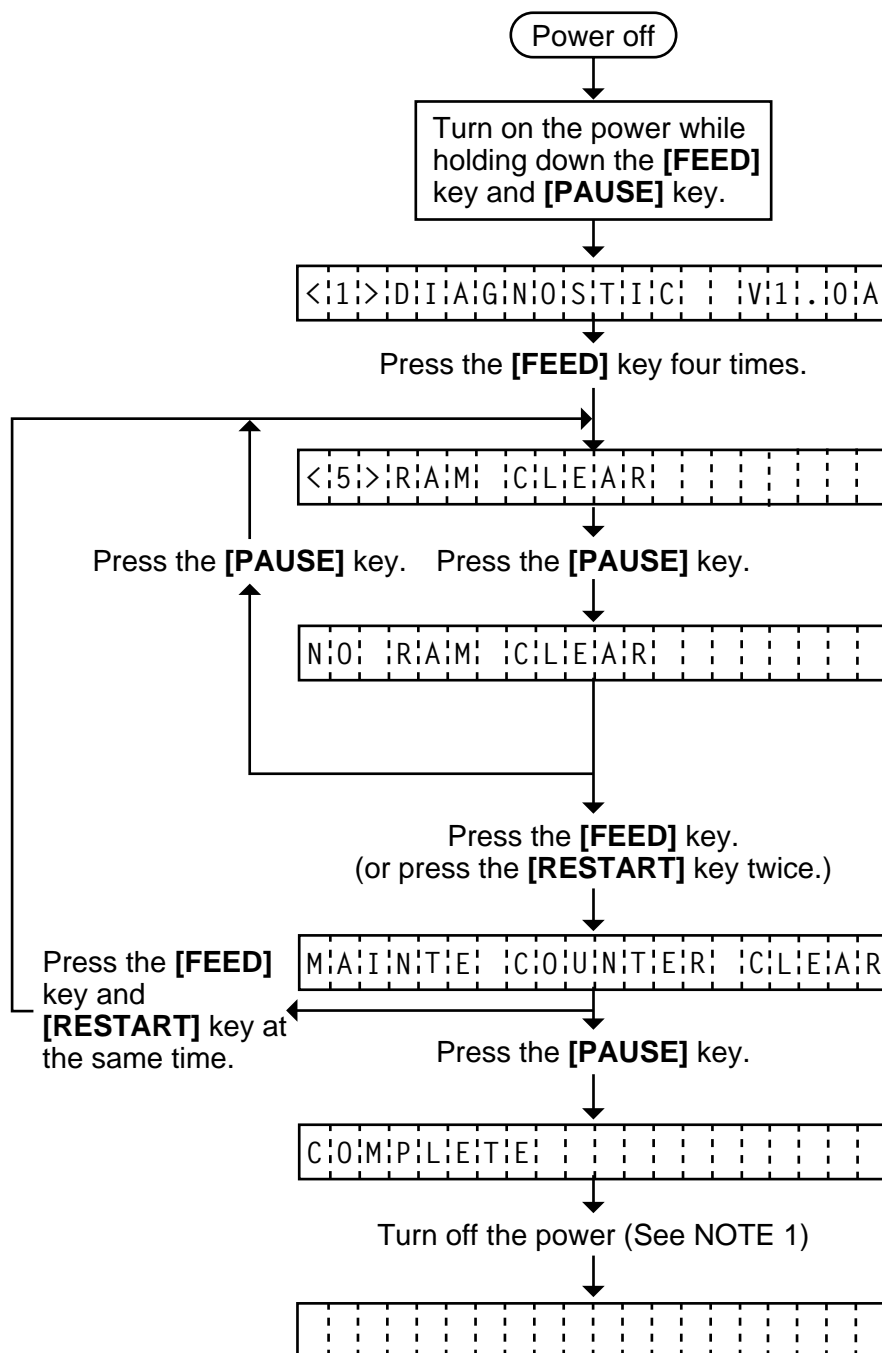
Mode Name	Function																								
NO RAM CLEAR	If you enter the RAM clear mode by mistake, specify this mode to escape from the RAM clear mode without executing RAM clear.																								
MAINTE. COUNTER CLEAR	<p>After replacing the print head, cutter module, ribbon feed/rewind motor, solenoid and CPU PC Board, clear the maintenance counter. The following data will be cleared to zero. Confirmation can be made through the maintenance counter procedure in self test mode. (See NOTE 1 and 2.)</p> <table> <tr> <th>Item</th><th>Initial Value</th></tr> <tr> <td>Media distance covered</td><td>0.0 km</td></tr> <tr> <td>Print distance</td><td>0.0 km</td></tr> <tr> <td>Cut count</td><td>0 time</td></tr> <tr> <td>Head up and down count</td><td>0 time</td></tr> <tr> <td>Ribbon motor driving time</td><td>0 hour</td></tr> <tr> <td>Solenoid driving time</td><td>0 hour</td></tr> <tr> <td>Take-up Motor driving time</td><td>0 hour</td></tr> <tr> <td>RS-232C hardware error count</td><td>0 time</td></tr> <tr> <td>System error count</td><td>0 time</td></tr> <tr> <td>Momentary power failure count</td><td>0 time</td></tr> </table>	Item	Initial Value	Media distance covered	0.0 km	Print distance	0.0 km	Cut count	0 time	Head up and down count	0 time	Ribbon motor driving time	0 hour	Solenoid driving time	0 hour	Take-up Motor driving time	0 hour	RS-232C hardware error count	0 time	System error count	0 time	Momentary power failure count	0 time		
Item	Initial Value																								
Media distance covered	0.0 km																								
Print distance	0.0 km																								
Cut count	0 time																								
Head up and down count	0 time																								
Ribbon motor driving time	0 hour																								
Solenoid driving time	0 hour																								
Take-up Motor driving time	0 hour																								
RS-232C hardware error count	0 time																								
System error count	0 time																								
Momentary power failure count	0 time																								
PARAMETER CLEAR	<p>This clear should be employed when initializing the following parameters to the settings before shipment. Confirmation can be made through the automatic diagnostic procedure in self test mode. (See NOTE 1 and 2.)</p> <table> <tr> <th>Item</th><th>Initial Value</th></tr> <tr> <td>Feed length fine adjustment (PC)</td><td>0.0 mm</td></tr> <tr> <td>Cut/strip position fine adjustment (PC)</td><td>0.0 mm</td></tr> <tr> <td>Back feed length fine adjustment (PC)</td><td>0.0 mm</td></tr> <tr> <td>Print tone fine adjustment (Thermal transfer) (PC)</td><td>0 step</td></tr> <tr> <td>Print tone fine adjustment (Thermal direct) (PC)</td><td>0 step</td></tr> <tr> <td>Ribbon motor drive voltage fine adjustment (Take-up) (PC)</td><td>0</td></tr> <tr> <td>Ribbon motor drive voltage fine adjustment (Feed) (PC)</td><td>0</td></tr> <tr> <td>Feed length fine adjustment (KEY)</td><td>0.0 mm</td></tr> <tr> <td>Cut/strip position fine adjustment (KEY)</td><td>0.0 mm</td></tr> <tr> <td>Back feed length fine adjustment (KEY)</td><td>0.0 mm</td></tr> <tr> <td>Print tone fine adjustment (Thermal transfer) (KEY)</td><td>0 step</td></tr> </table>	Item	Initial Value	Feed length fine adjustment (PC)	0.0 mm	Cut/strip position fine adjustment (PC)	0.0 mm	Back feed length fine adjustment (PC)	0.0 mm	Print tone fine adjustment (Thermal transfer) (PC)	0 step	Print tone fine adjustment (Thermal direct) (PC)	0 step	Ribbon motor drive voltage fine adjustment (Take-up) (PC)	0	Ribbon motor drive voltage fine adjustment (Feed) (PC)	0	Feed length fine adjustment (KEY)	0.0 mm	Cut/strip position fine adjustment (KEY)	0.0 mm	Back feed length fine adjustment (KEY)	0.0 mm	Print tone fine adjustment (Thermal transfer) (KEY)	0 step
Item	Initial Value																								
Feed length fine adjustment (PC)	0.0 mm																								
Cut/strip position fine adjustment (PC)	0.0 mm																								
Back feed length fine adjustment (PC)	0.0 mm																								
Print tone fine adjustment (Thermal transfer) (PC)	0 step																								
Print tone fine adjustment (Thermal direct) (PC)	0 step																								
Ribbon motor drive voltage fine adjustment (Take-up) (PC)	0																								
Ribbon motor drive voltage fine adjustment (Feed) (PC)	0																								
Feed length fine adjustment (KEY)	0.0 mm																								
Cut/strip position fine adjustment (KEY)	0.0 mm																								
Back feed length fine adjustment (KEY)	0.0 mm																								
Print tone fine adjustment (Thermal transfer) (KEY)	0 step																								

Mode Name	Function		
PARAMETER CLEAR	Item		Initial Value
	Print tone fine adjustment (Thermal direct) (KEY)		0 step
	Ribbon motor drive voltage fine adjustment (Take-up) (Key)		0
	Ribbon motor drive voltage fine adjustment (Feed) (Key)		0
	X axis fine adjustment		0.0 mm
	Threshold manual fine adjustment for the black mark sensor		1.4 V
	Threshold manual fine adjustment for the feed gap sensor		1.0 V
	Character code selection		PC-850
	Font zero selection		"0" (without slash)
	Control code selection		Auto.
	Ribbon type selection		Trans.
	Strip wait status setting		1
	Baud rate		9600 bps
	Data length	QP/JA Type	8 bits
		QP Type	7 bits
	Stop bit		1 bit
	Parity	QP Type	None
		QQ/JA Type	EVEN
	Transmission control mode	QP/JA Type	XON/XOFF+READY/ BUSY mode
		QQ Type	READY/BUSY DTR mode
	Language Selection for LCD Message	QP Type	English
		QQ Type	English
	Auto forward wait in cut mode		OFF
	Head up ON/OFF setting in cut mode		OFF
	Ribbon saving module selection		ON
	Auto print head broken element check		OFF
	[FEED] key function selection		feeds a piece of paper
	Status response		ON
	Label pitch		76.2 mm
	Effective printing length		74.2 mm
	Effective printing width		213.3 mm
	Print type		Thermal Transfer
	Sensor type		Transmissive sensor (Feed gap sensor)
	Feed Speed		4 inch/sec.

Mode Name	Function	
PARAMETER CLEAR	Item	Initial Value
	Issue mode	Standard (Batch printing without Cut)
	PC save automatic calling	ON
	Kanji code	TYPE 1
	EURO font code	B0H
	Web printer function selection	OFF
	Media Sensor Selection	Fixed Type

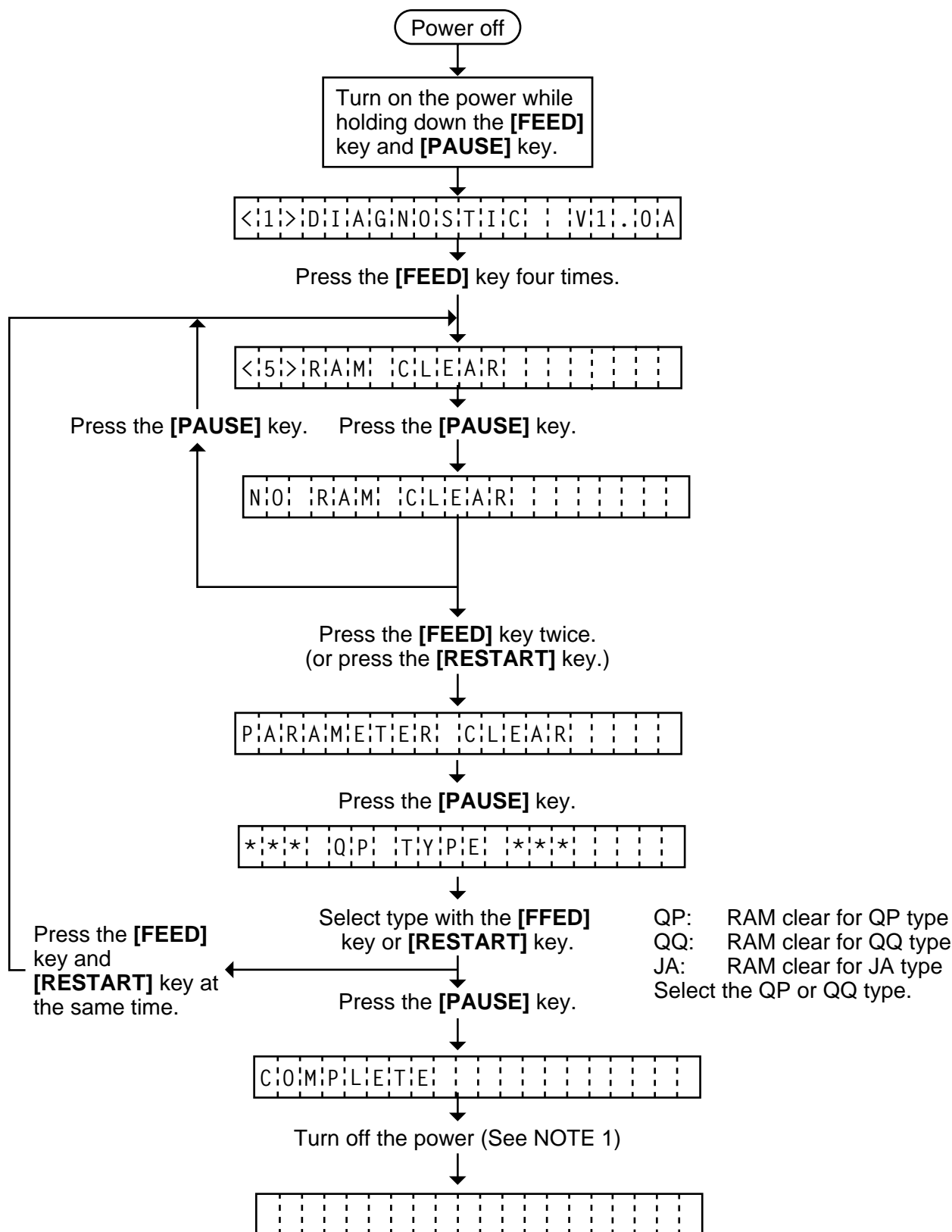
- NOTES:**
1. Total media distance covered (TL FEED) and the adjustment value for the sensors cannot be cleared.
 2. Data stored on the flash memory card cannot be cleared with this procedure. To clear data on the flash memory card, send the format command to initialize the card. For details, refer to the External Equipment Interface Specification.
 3. For data to be cleared in the RAM clear mode, refer to the RAM clear mode table.
 4. After RAM clear is performed, the threshold setting value will turn to the default (0). When using pre-printed labels, be sure to set the threshold after referring to the Owner's Manual.

6.6.1 Maintenance Counter Clear



NOTE: 1. Confirm that "COMPLETE" is displayed, then turn the power off.

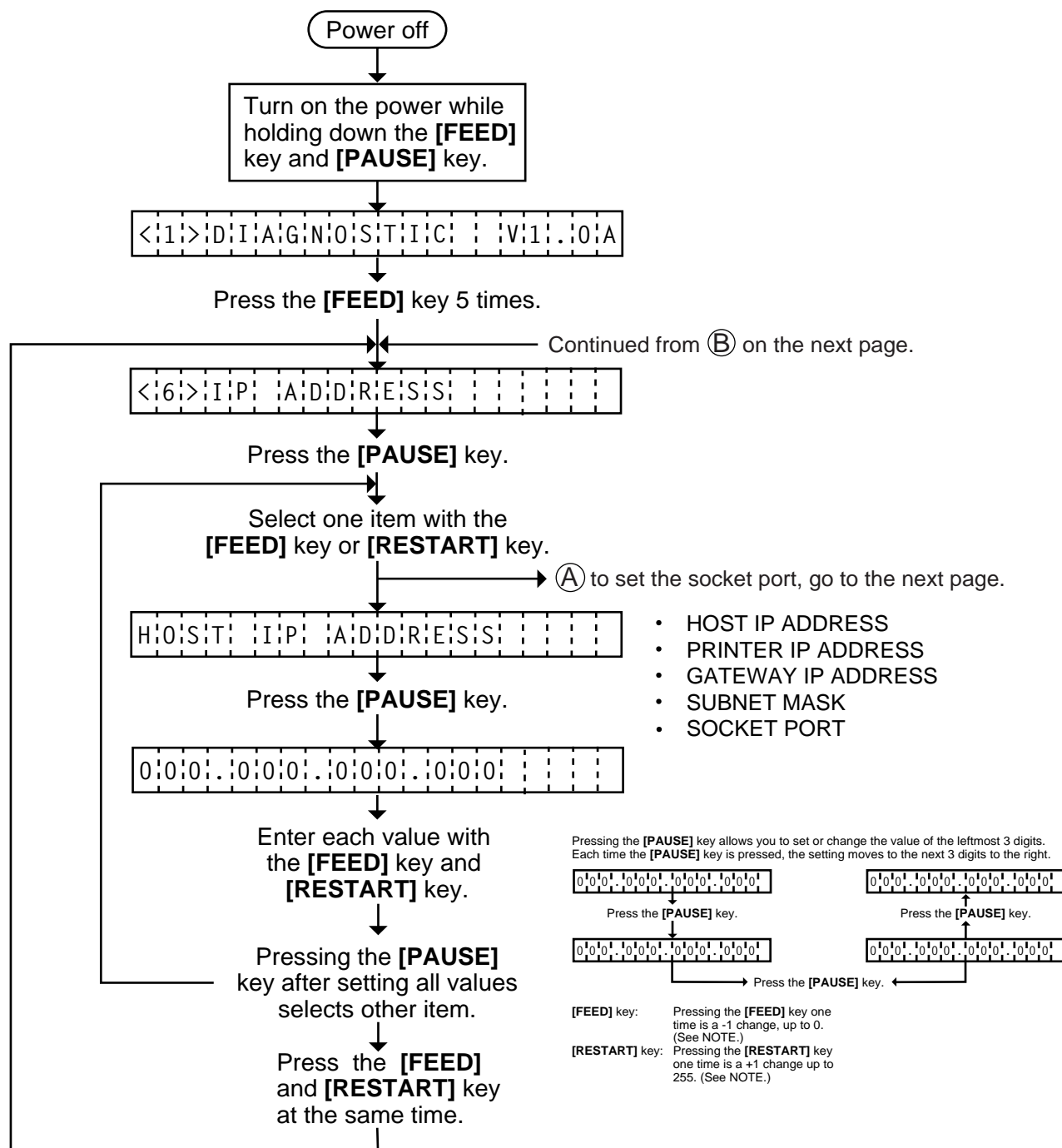
6.6.2 Parameter Clear



NOTE: Confirm that "COMPLETE" is displayed, then turn the power off.

6.7 IP ADDRESS SETTING MODE

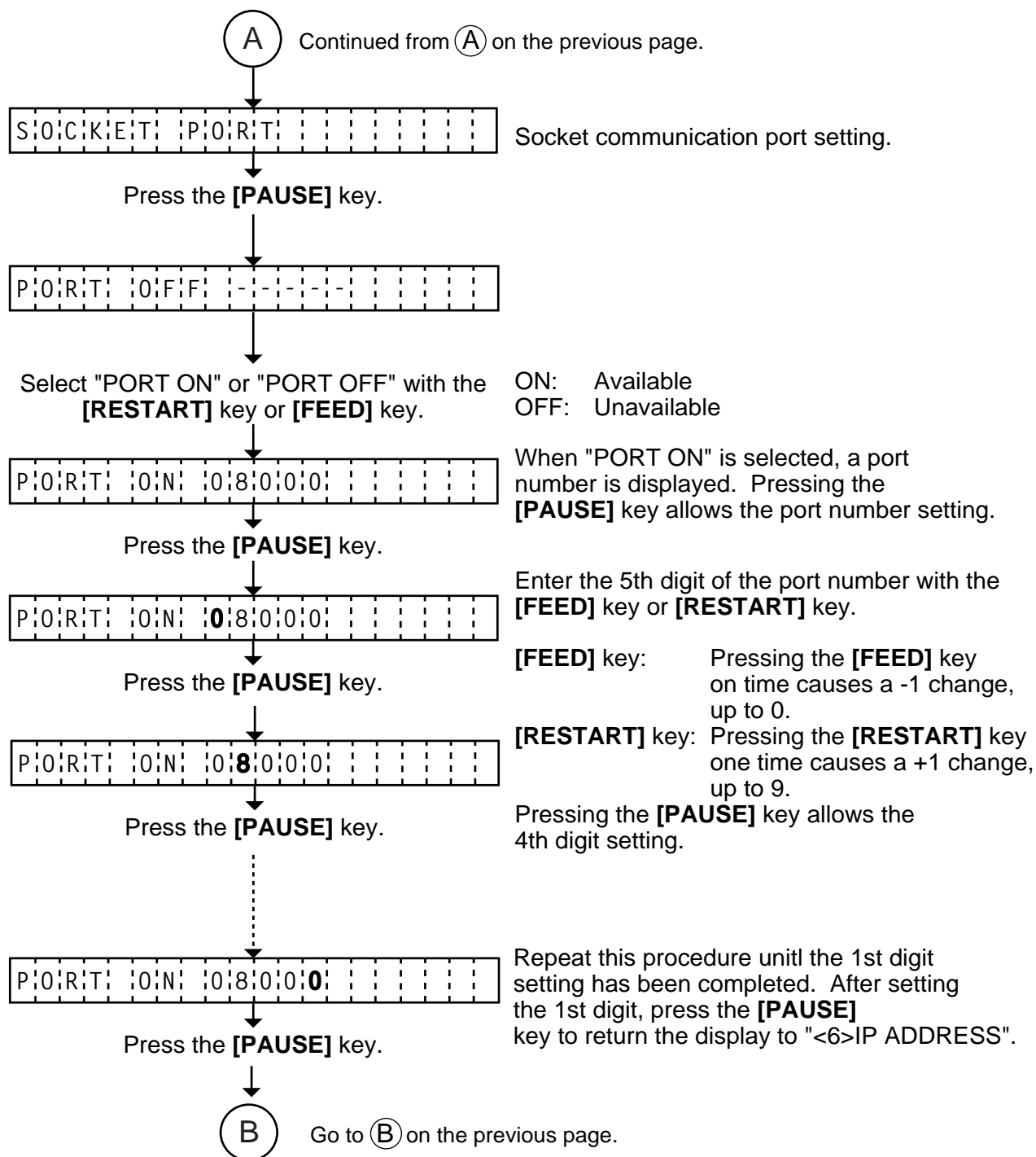
Host IP Address, Printer IP Address, Gateway IP Address, SUBNET mask, and Socket Port setting are available in this mode.



NOTES: 1. 0 to 255 are set into each IP address setting value.

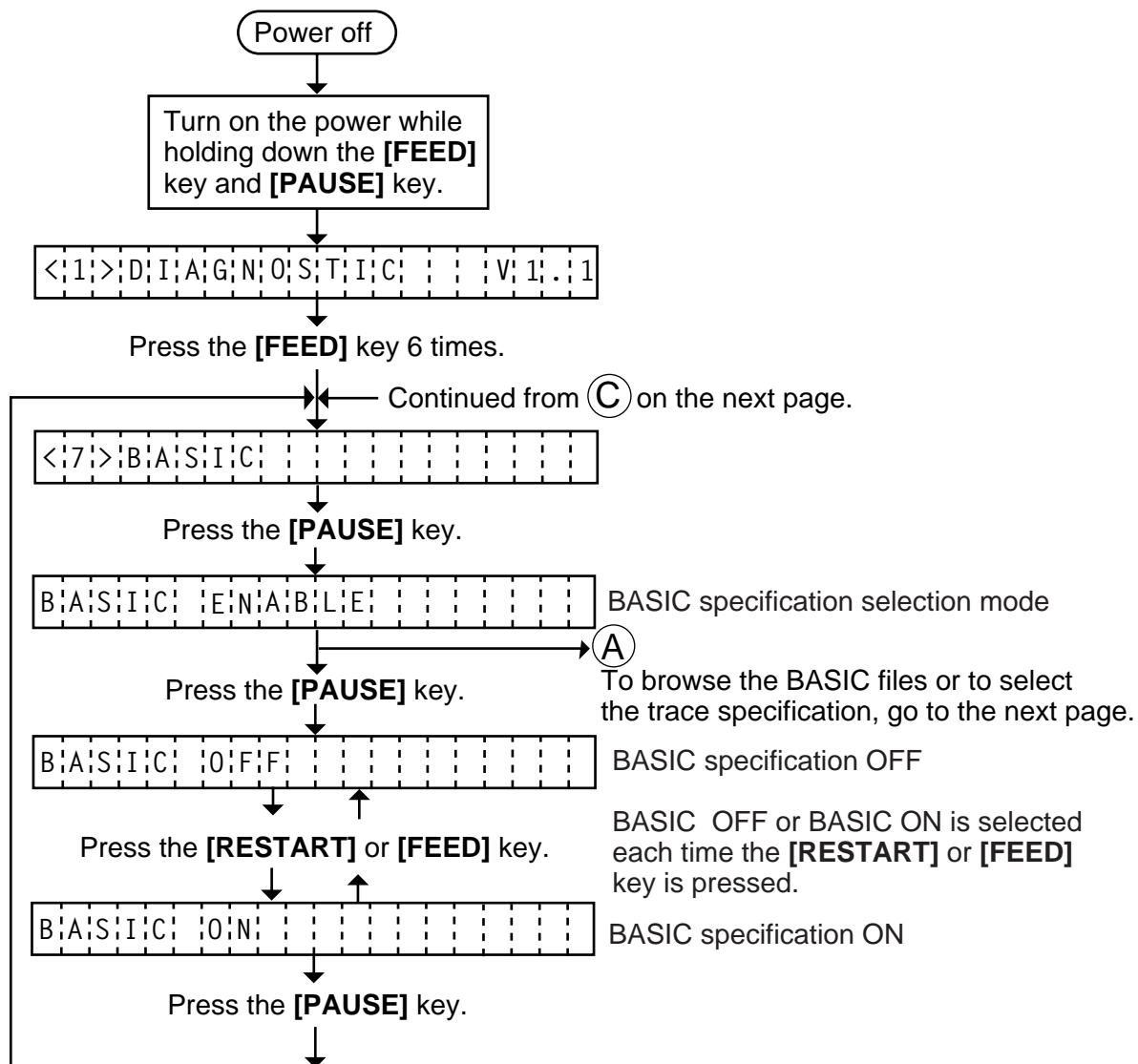
2. The factory-set initials for each parameter setting are as follows:

Parameter	Initial
HOST IP ADDRESS	192. 168. 10. 10
PRINTER IP ADDRESS	192. 168. 10. 20
GATEWAY IP ADDRESS	0. 0. 0. 0
SUBNET MASK	255. 255. 255. 0

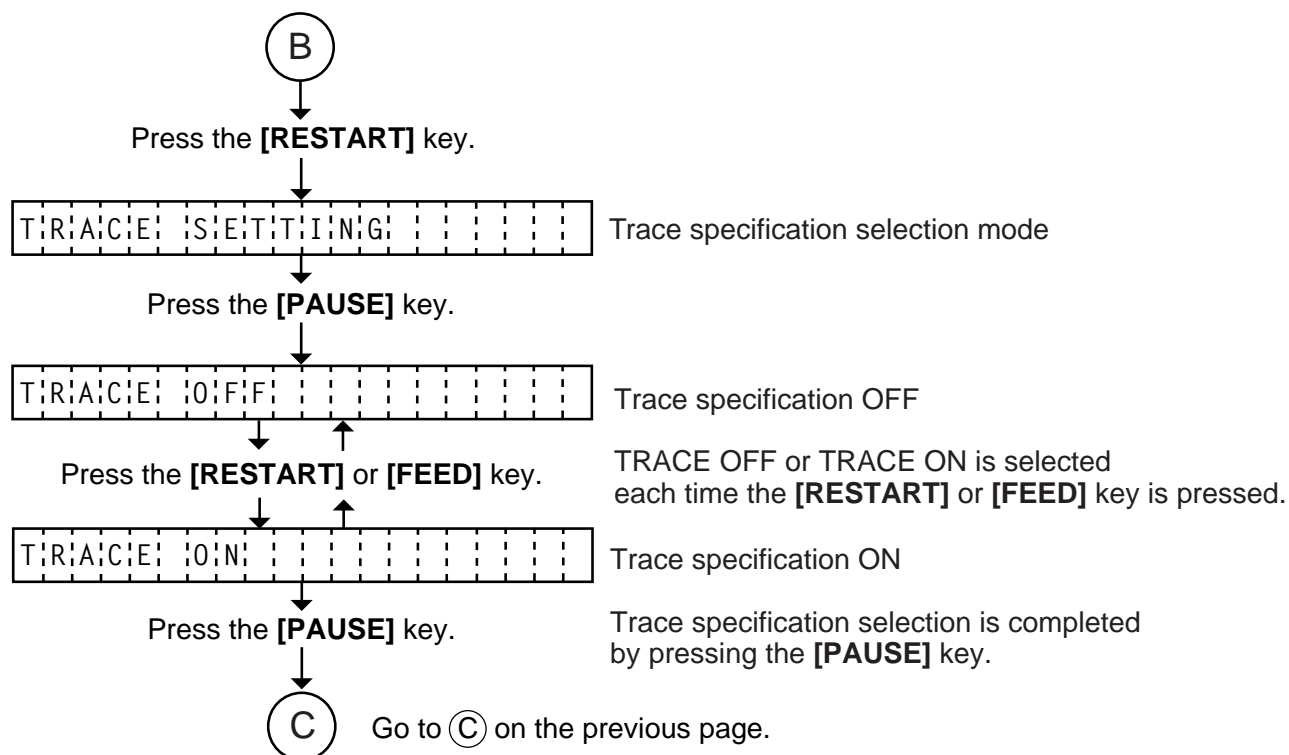
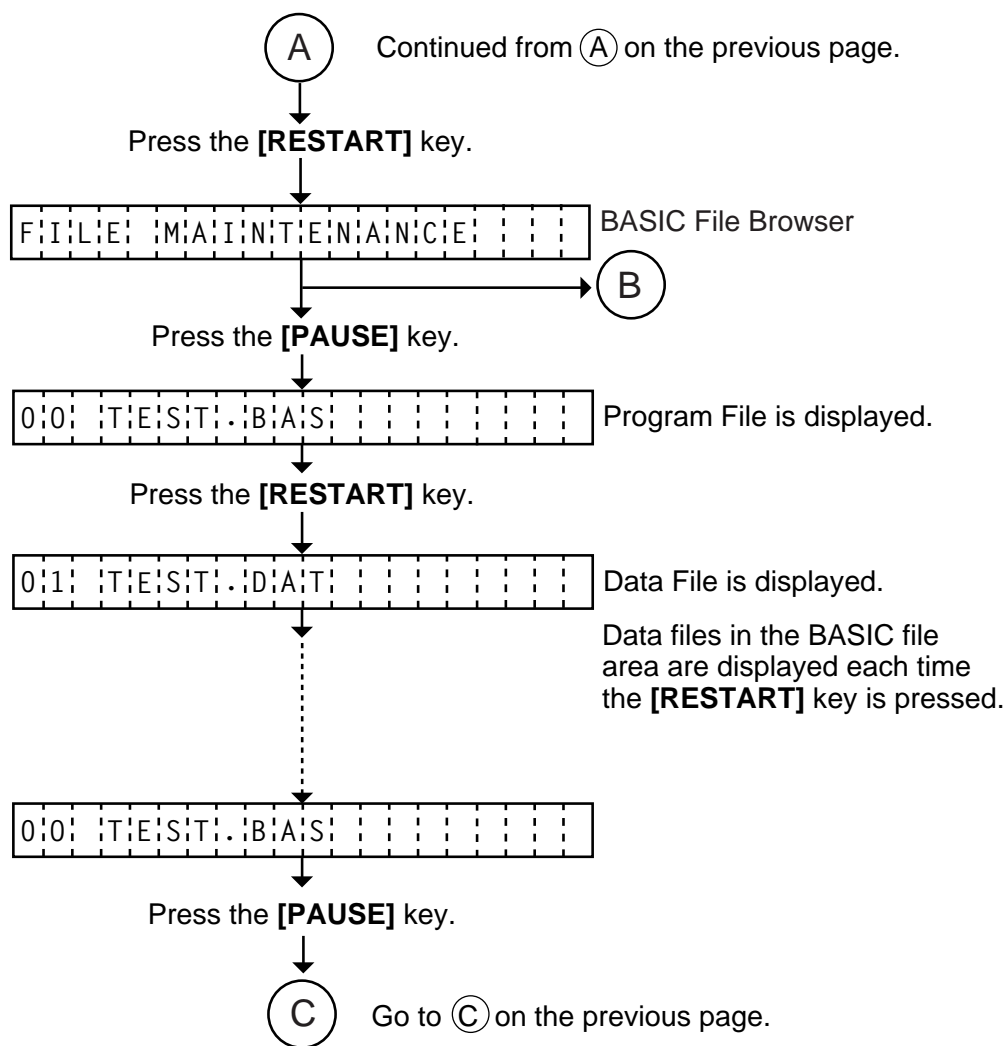


6.8 BASIC SETTING MODE

Setting the BASIC specification and Trace specification to be enabled/disabled, and displaying the program file, data file, and area file are available in this mode.



NOTE: This function is available on the machine V1.1 or later.

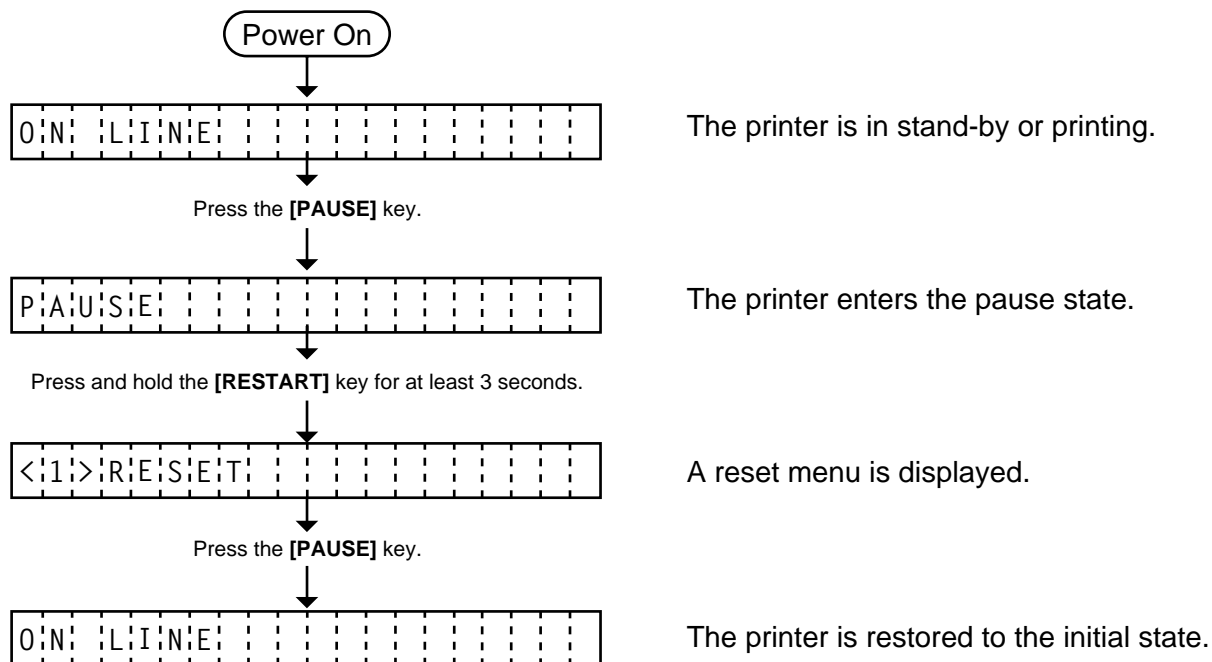


7. ON LINE OPERATION

7.1 RESET OPERATION

This operation restores the printer to the initial status.

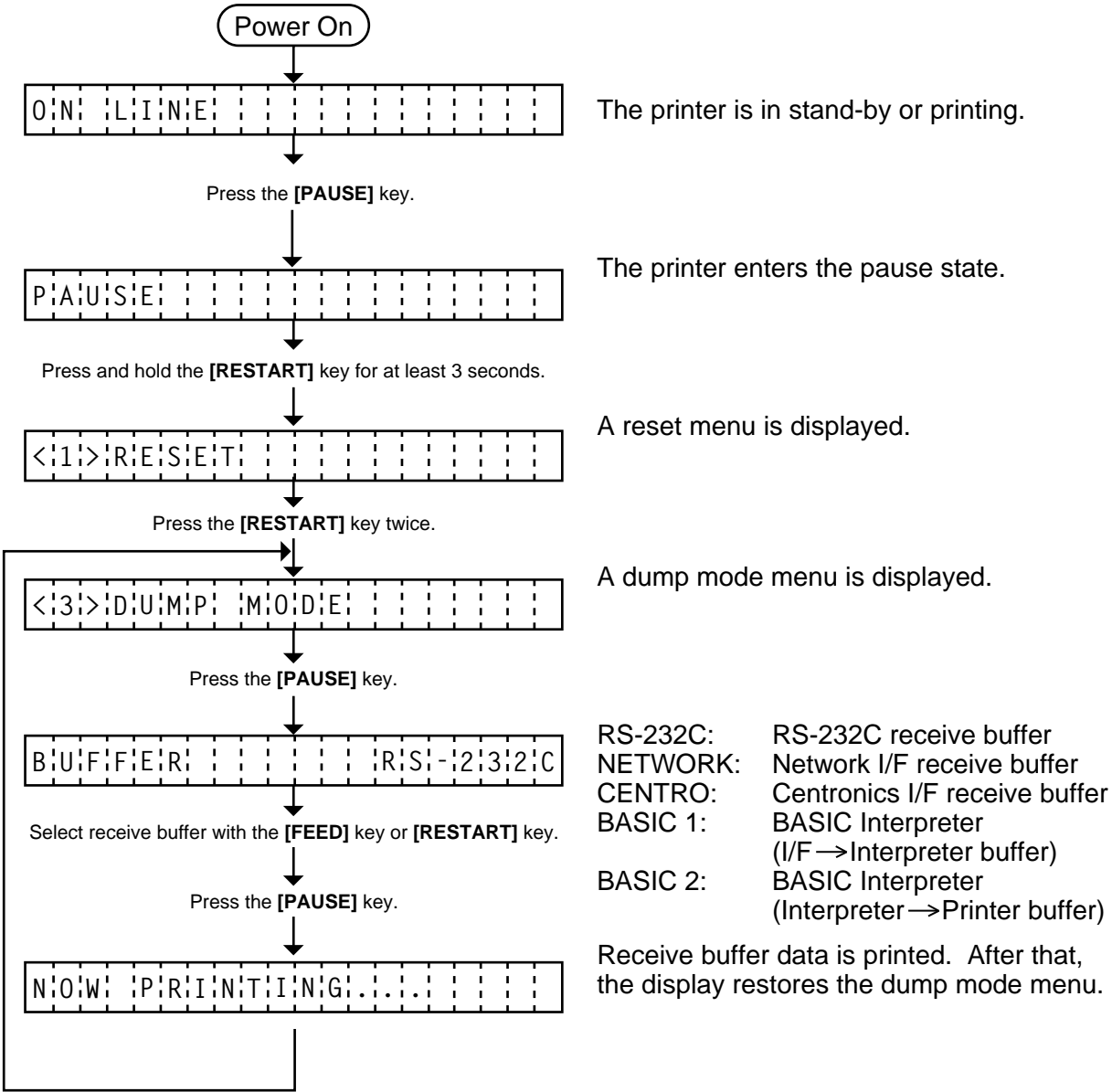
- Sample operation



- NOTES:**
1. If the **[RESTART]** key is released within 3 seconds in the pause state, the printer will resume printing without displaying the reset menu.
 2. If the **[RESTART]** key is released within 3 seconds in the error state, the printer will remain in error. However, in case of a communication error or command error, the printer will restore to the initial status.

7.2 Dump Mode

Receive buffer data of RS-232C I/F, Centronics I/F, Network I/F, and BASIC Interpreter are dumped in this mode. Communication data and Network connection can be checked.



Receive buffer data is printed on the following condition.

■ Sample Print

[Print condition]

- Print width: 4.2"
- Sensor: No sensor
- Print speed: 4"/sec.
- Print method (Thermal transfer/Thermal direct) which is in used is applied.
- 24-byte data is printed on one line.

```

53 43 24 3D 43 48 0A 00 1B 3A 2B 24 30 31 32 30 5E FF 01 0B 3C 2C 12 40
23 31 32 33 34 2C 31 2C 34 2C 41 0A 00 1B 20 45 89 00 30 30 30 31 2C 34
45 67 3B 2C 0A 00 0D 30 7B 3C FF 24 30 31 32 30 2E 9F 31 34 31 33 22 45
20 4F 3D 2C 21 22 23 24 2C 30 41 42 43 44 5B 21 26 73 06 13 4C 3F 32 33
67 32 4C 4A 50 12 33 34 35 36 2C 43 44 45 2C 0A 00 45 4C A4 BB 45 34 23
67 90 90 2C 34 35 36 37 2D 63 57 52 3B 79 97 56 5B 66 45 30 31 32 33 34
70 12 2C 34 53 76 5F D4 CC A3 26 78 35 70 7B 65 34 35 36 2C 40 0A 00 40

```



Feed direction

Receive buffer size

RS-232C: 10K bytes (427 lines)
Centronics I/F: 10K bytes (427 lines)
Network I/F: 8K bytes (342 lines)
BASIC 1: 4K bytes (171 lines)
BASIC 2: 4K bytes (171 lines)

NOTE: When an error occurs on printing, an error message is displayed and the printing stops. Pressing **[PAUSE]** key releases the error and restores the display to "<3> DUMP MODE", however an auto reissue is not performed after that.

8. PROGRAM DOWN LOAD

This section provides step by step instructions on how to setup and download the firmware to the B-882 thermal printer. The firmware download will be made from a Personal Computer via the RS-232C interface and centronics interface of the printer.

8.1 OUTLINE OF FEATURES

The software for performing the program download will allow the download of the Firmware (Boot Program, Application Program, and Character Generator) from the provided FDK. The software will be run on a standard PC and communication to the B-882 thermal printer will be via the RS-232C interface and the centronics interface.

Firmware Download - The Boot Program, Application Program, and Character Generator are installed into the B-882 printer's Flash memory prior to being shipped to the customer. However, if specifications should change at a later date, this software will allow downloading firmware updates to the B-882 printer.

8.2 SOFTWARE INSTALLATION

Before you can communicate from your PC to the B-882 printer, you must first copy the "Install Program for B-NX" from the two FDKs provided to the hard disk of your PC.

Example

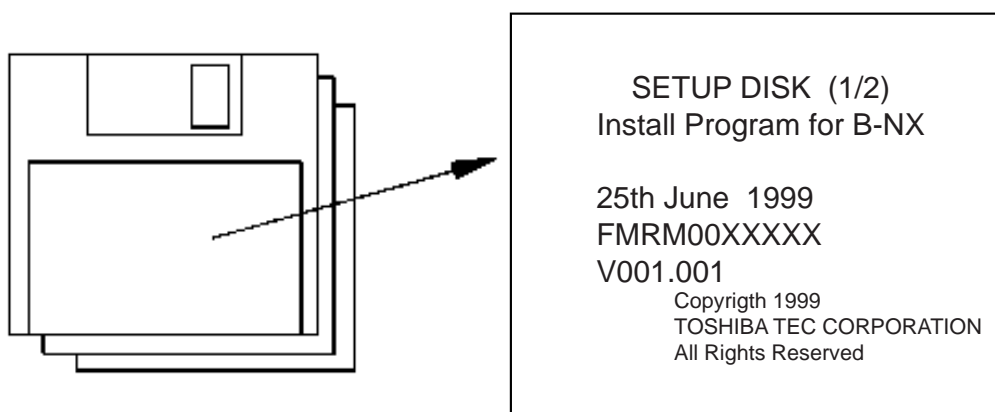


Fig. 8-1

8.2.1 System Requirements

System

IBM Compatible PC running Windows 95® or Windows 98®. (Note: Windows 3.1 is not supported)

Note: Windows 95 and Windows 98 are registered trademarks of the Microsoft Corporation.

Installed memory of 16MB minimum (32MB recommended)

Available Hard Disk space of 10MB

Interface

The RS-232C interface and centronics interface.

8.2.2 Setup

Setup Disk

Make sure that you have all two diskettes available of the “Install Program for B-NX”. (Refer to the Fig. 8-1 in paragraph 8.2 on the preceding page).

Installation Procedure

1. While running Windows 95 or Windows 98, insert Setup Disk (1/2) into the PC floppy drive.
2. Click on the START button then highlight RUN and click on RUN.
3. When the RUN display appears, as in Fig. 8-2, type in A:\SETUP and click on OK.

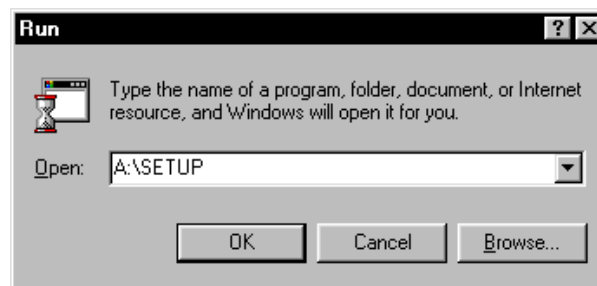


Fig. 8-2

4. When requested, insert Setup Disk (2/2).



Fig. 8-3

5. After all the files have been copied, the following message screen will automatically appear. Click on OK to continue.



Fig. 8-4

6. After click OK in the previous screen, the following message screen appears. Click on the button to accept the directory or change the directory if desired.

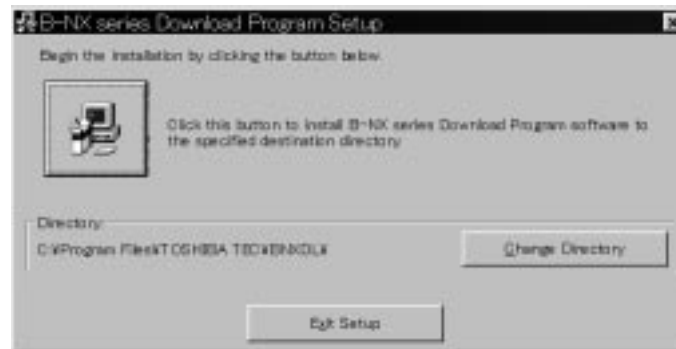


Fig. 8-5

7. The following program group selection menu will appear. Click on the CONTINUE button.



Fig. 8-6

8. When the install process is completed, the following screen display will appear. Click on the OK button to end the installation.



Fig. 8-7

8.3 FIRMWARE DOWNLOAD

The following paragraphs give the download procedure that the firmware is copied onto the PC hard disk before being transferred to the printer. First copy the download file (*.ROM) to the hard disk.

If the file format of the file installed onto the FDK is “:.EXE”, double-click on it to decompress into “:.ROM” file.

If it ever becomes necessary to upgrade the firmware in the B-882 printer you will be supplied with a floppy disk containing the latest firmware revision similar to that shown in Fig. 8-8 below.

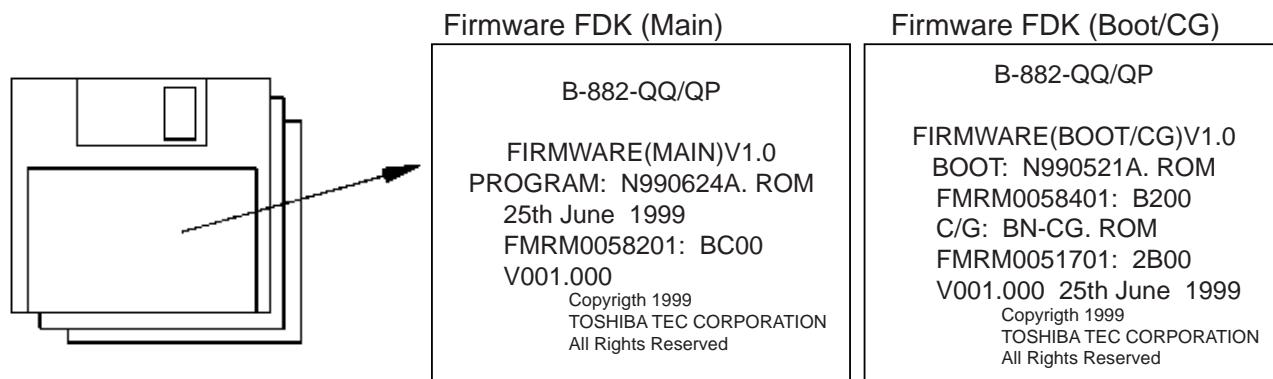
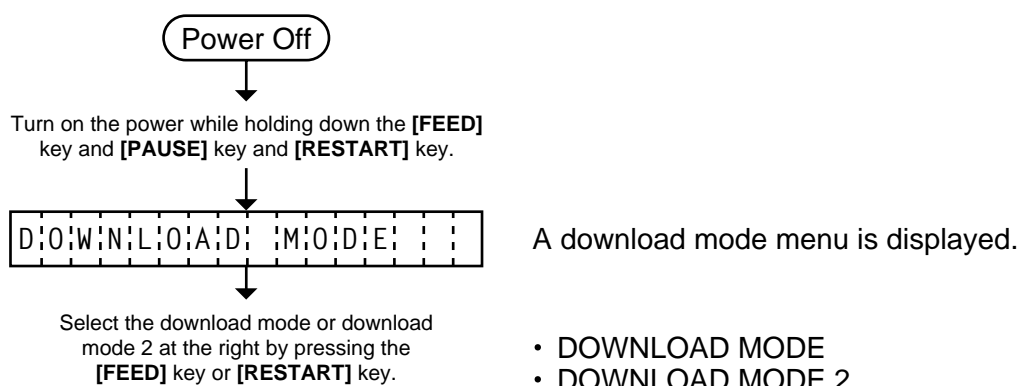


Fig. 8-8

- NOTES:**
1. Check the current firmware version and checksum by performing the self-diagnostic printing in the System Mode. If the current firmware version and checksum are equal to those you just try to download, do not perform a downloading.
 2. Prior to program files copy connect the B-882 printer to your PC with the Centronics I/F cable. Ccancel the network pass allocated to LPT 1 of the PC. Failure to do this will disable you from firmware download.
 3. If the file format of the file installed into the FDK is "*.EXE", click it twice to decompress into "*.ROM" file.

1. Turn on the printer power by the following procedure.



2. Turn on the PC power and start up Windows.
3. Click on the START button to access the program menu.
4. Highlight "Programs" then highlight "TOSHIBA TEC" and click on B-NX Series Download Program as shown in the screen display of Fig. 8-9 below.

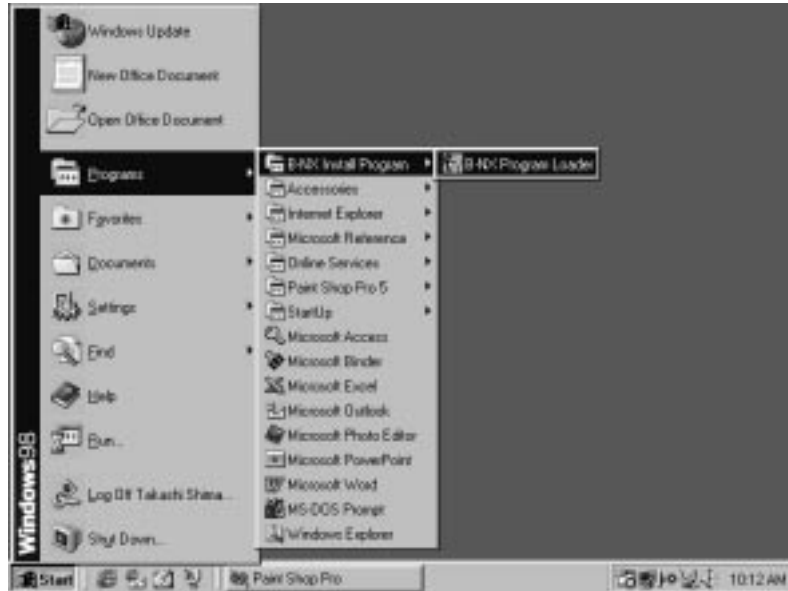


Fig. 8-9

5. As soon as you click on B-NX series download program, the screen will change to the initial screen of the Program Loader as shown in Fig. 8-10 below.



Fig. 8-10

6. Select the drive, directory, file name, extension, and applicable PC port for the firmware to be installed. (The following shows that C:\Program Files\TOSHIBA TEC\BNXDL\N400310A.ROM will be downloaded by using LPT1 port.)



Fig. 8-11

7. Through the following procedure, you can set the default device and pass.
- (1) Click on "Setting" menu on the upper left of the initial screen of the Program Loader.
 - (2) After clicking on the "Open setting Menu" in the previous screen, the B-NX series Download Program setting display screen will appear.



Fig. 8-12

Setting the default pass

- 1) Click on the "search" button.
- 2) Highlight the desired directory.
- 3) Click on the "select" button.
- 4) To end the default pass setting, click on the OK button. The selected pass will be displayed as a default afterward.



Fig. 8-13

Setting the default device

- 1) Highlight desired device.
- 2) To end the default device setting, click on the OK button. The selected device will be displayed as a default afterward.



Fig. 8-14

NOTES: 1. Communication parameters for COM1 and COM2 are fixed as follows.

Baud Rate: 9600 bps

Parity: None

Stop Bit: 1 bit

2. A device selection is possible on the main screen display of Fig. 8-11, however, that setting will be cleared when the screen is terminated.

8. Execution of Download to Printer

(1) Highlight the file to be downloaded and click on the RUN button.



Fig. 8-15

(2) The following screen will appear.



Fig. 8-16

(3) Click on the Yes button to begin the download. At this time the LCD on the B-880 printer changes from "DOWN LOAD MODE" to "NOW LOADING...".

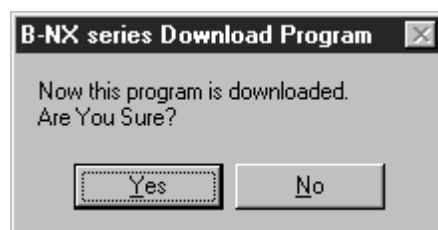


Fig. 8-17

- NOTES:**
1. If "NOW LOADING..." does not appear, finish the download program, turn the printer power off, and retry from Step 1).
 2. When "NOW LOADING..." is displayed and the downloading is in progress, never turn the printer power off or disconnect the cables. Even if a wrong file is downloaded by mistake, never stop downloading. After terminating the downloading, download the correct file.

(4) After about 10 seconds the following screen indicating the firmware is downloaded will appear.



Fig. 8-18

- NOTES:**
1. If an error occurs on the PC or printer in the middle of downloading, retry from connection of the printer to the PC.
 2. If the PC hangs up or a power failure occurs, retry from connection of the printer to the PC.

(5) When the firmware download is completed, the screen will be changed to the following.



Fig. 8-19

(6) After a few seconds the LCD on the printer will change from "NOW LOADING..." to "ON LINE". The printer will reboot automatically.

NOTE: *When the program install rate indicator on the PC returns to 0% after it reached 100%, and when the printer is in the ONLINE Mode, the downloading terminates successfully. After successful termination of the downloading, perform the following:*

- *Turn the printer power ON while pressing and holding the **[FEED]** and **[PAUSE]** keys to enter the System Mode.*
- *Confirm that the correct version of the software is displayed on the LCD.*
- *Perform a self-diagnostic printing and confirm that the correct version of the software has been downloaded.*

(7) Click on the END button to finish the download.

NOTES: 1. *Only download command is available on downloading.*
2. *In the "DOWNLOAD MODE", the firmware may not be downloaded from some kinds of PC. In this case, use the "DOWNLOAD MODE2". (Centronics Interface ACK-BUSY timing is different between "DOWNLOAD MODE" and "DOWNLOAD MODE2".)*