



TEC Thermal Printer

B-450 SERIES

Maintenance Manual

Document No. **EO18-33003A**

Original **Dec., 1998**

(Revision **May, 2000**)

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 side pads (L)/(R) and cushions and the printer from the carton.
- 3) Unpack the accessories from the carton.

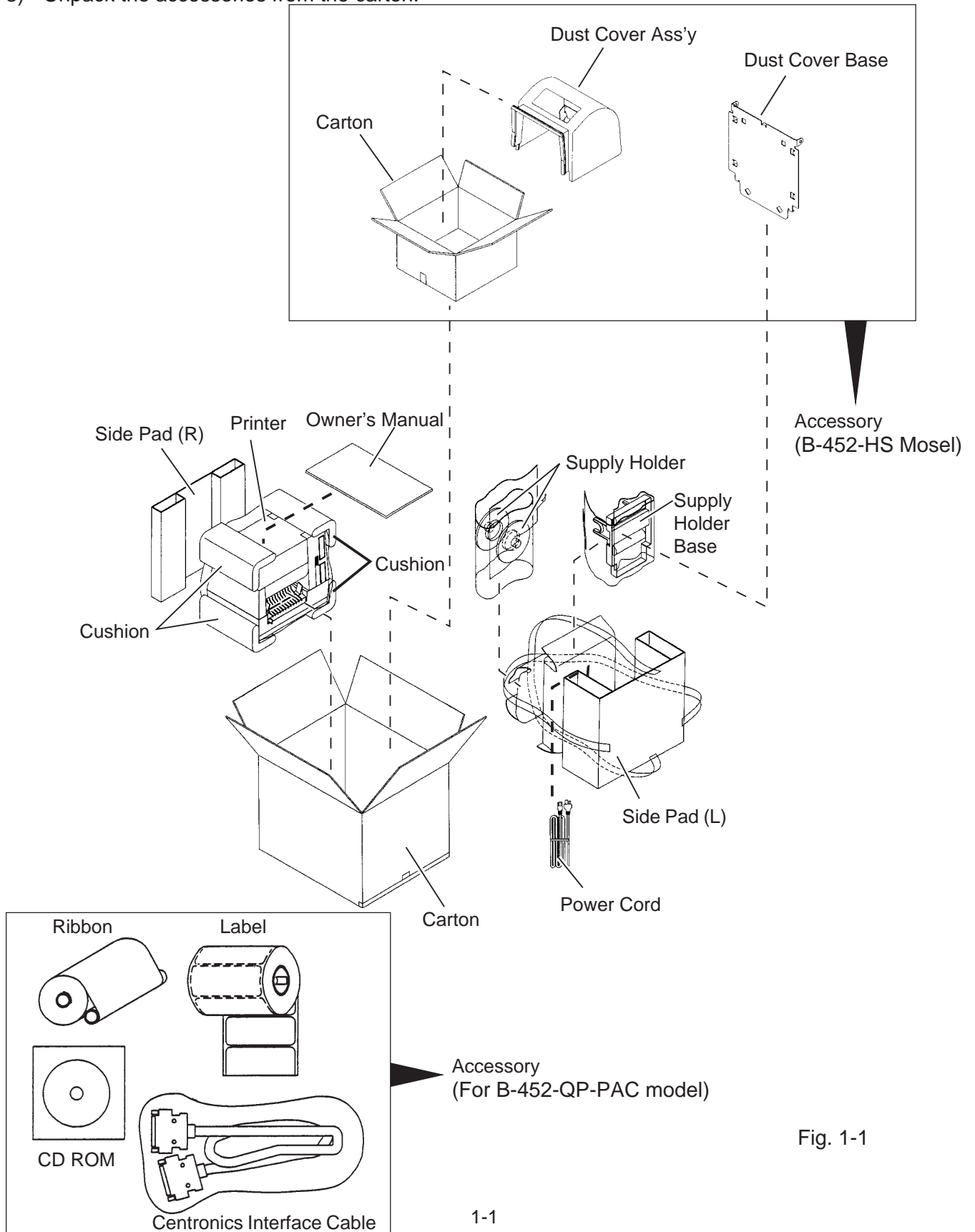


Fig. 1-1

- 4) Remove the three pieces of tape from the printer.

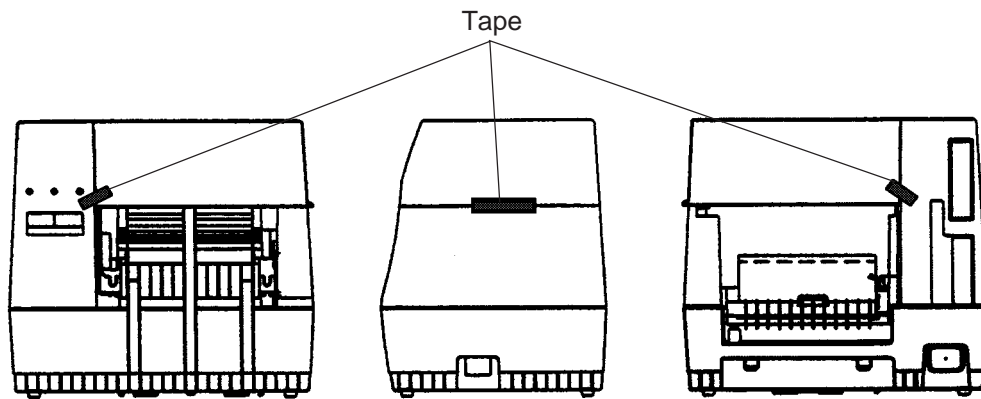


Fig. 1-2

- 5) Open the top cover.
6) Remove the three pieces of tape and print head pad from the printer.

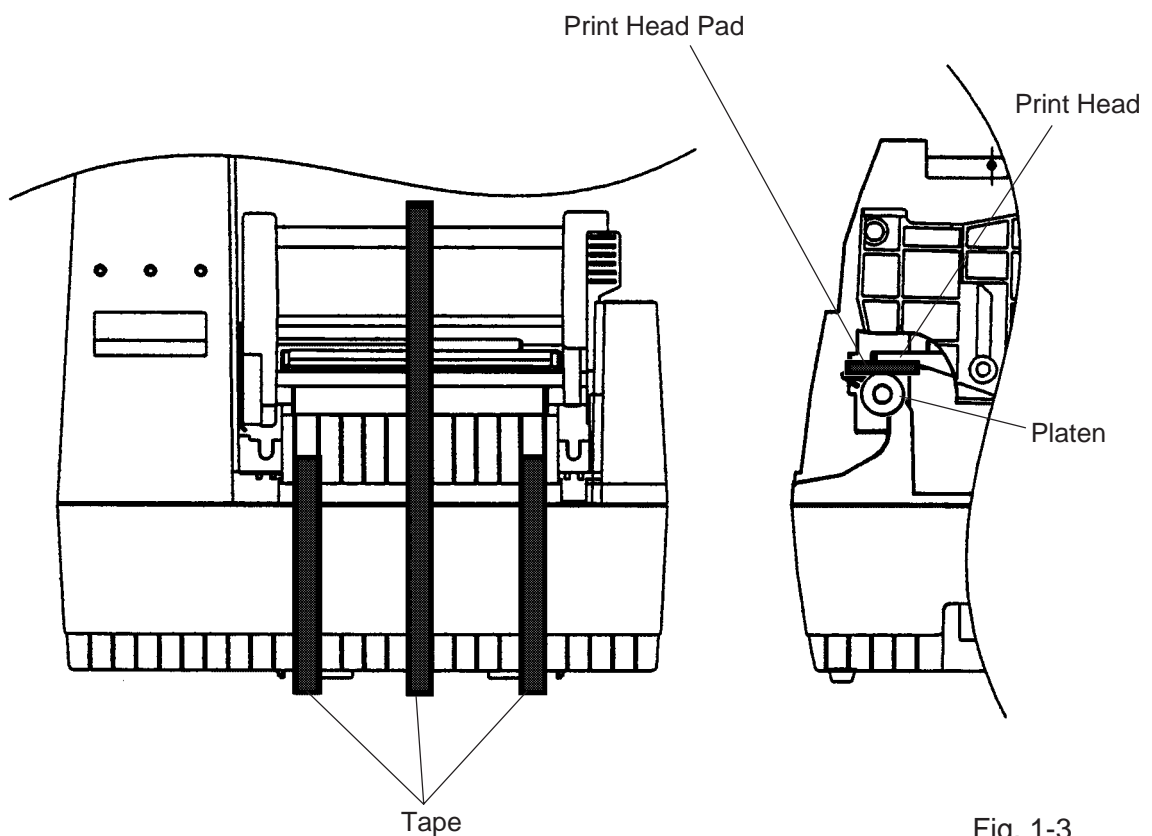


Fig. 1-3

- 7) Place the printer on a level surface.

1.2 CHECKS

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

NOTE: Keep the carton, pads and cushions for later transport.

2. MAJOR UNIT REPLACEMENT

WARNING!

Disconnect power cord before replacing important parts.

■ Lubrication

CAUTION: 1) *Lubrication: During parts replacement*
2) *Kinds of oil: Kinds of oil: FLOIL G-488: 1Kg can. (Part No. 19454906001).*

Any machine is generally in its best condition when delivered; therefore, it is necessary to try to keep this condition. Unexpected failure occurs due to lack of oil, debris or dust. To keep its best condition, periodically clean the machine and apply proper kinds of oil to each part in which lubrication is needed. Although the frequency of lubrication varies according to how much the machine is used, at least it is necessary to lubricate before the machine becomes dry. It is also necessary to wipe off excessive oil as it collects dirt.

CAUTION: *Do not spray the inside of the printer with lubricants. Unsuitable oil can damage the mechanism.*

2.1 REPLACING THE CPU PC BOARD

NOTE: *For the B-452-HS model, the following PC boards need to be removed before removing the CPU PC board. Refer to the sections below.*

Head Control PC Board (Refer to Section 2.5.)

600 DPI EXPIO PC board (Refer to Section 2.7.)

Centronics interface Board (Refer to Section 3.2.)

- 1) Turn the power off.
- 2) Open the top cover.
- 3) Remove the two PT-3x10 screws to detach the top cover.

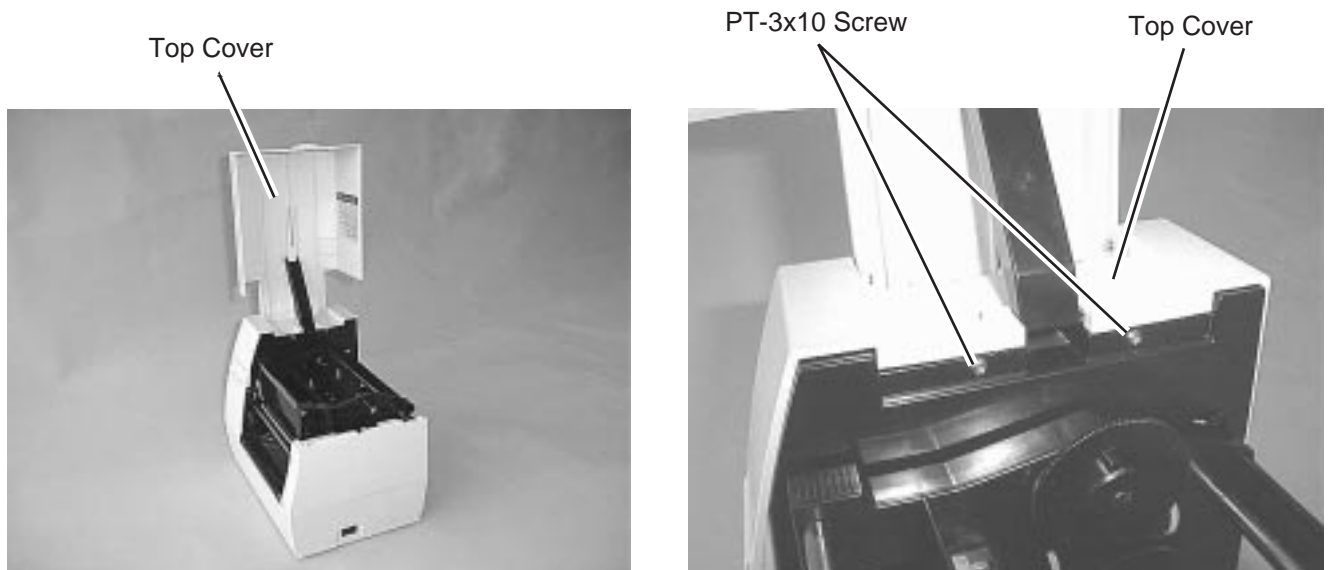


Fig. 2-1

- 4) Disconnect the nine harnesses from CN3 to CN5, CN9, CN12, CN13, CN14, CN20 and CN21 on the CPU PC board.

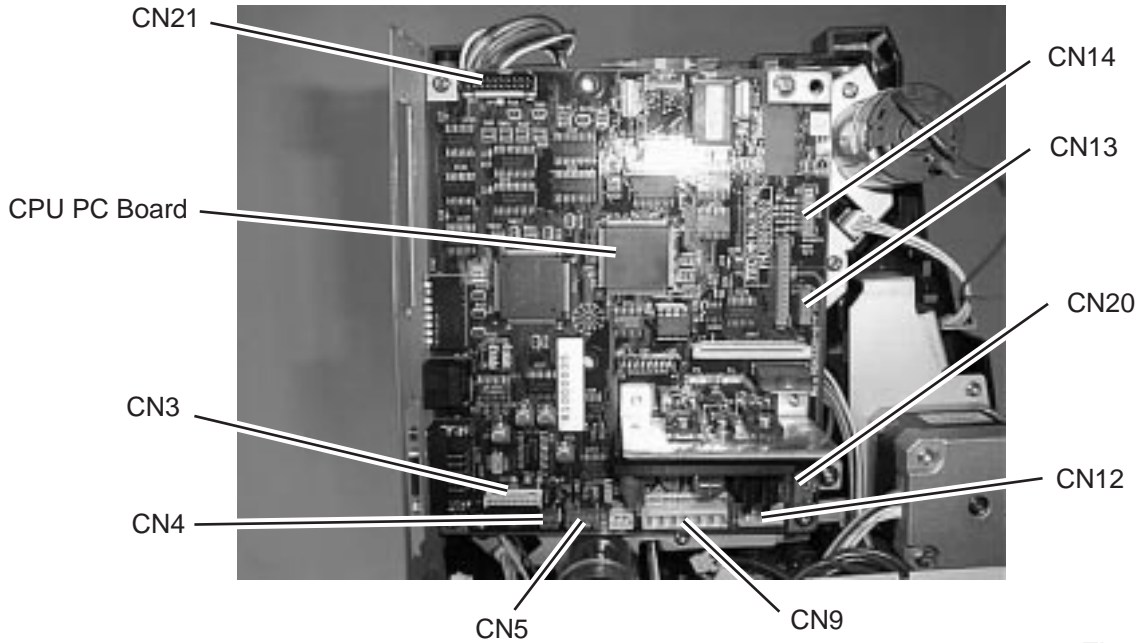


Fig. 2-2

- 5) Remove the five PT-3x10 screws, the two SMW-3x6 screws and the ground wire to detach the CPU PC board.

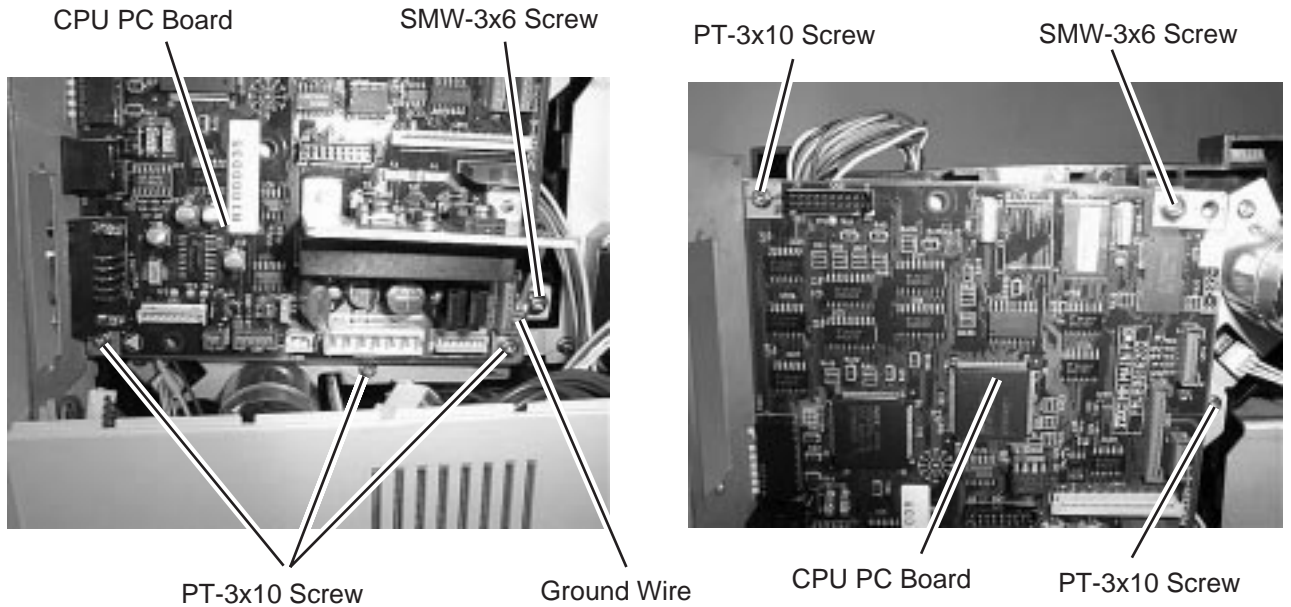


Fig. 2-3

- 6) Replace the CPU PC board with a new one, and then reassemble in the reverse order of removal.

2.2 REPLACING THE MOTOR

Before removing the motors, refer to Section 2.1 to detach the top cover and CPU PC board.

2.2.1 Ribbon Motor

- 1) Remove the two PT-3x10 screws and harnesses to detach the ribbon motor attaching plate.

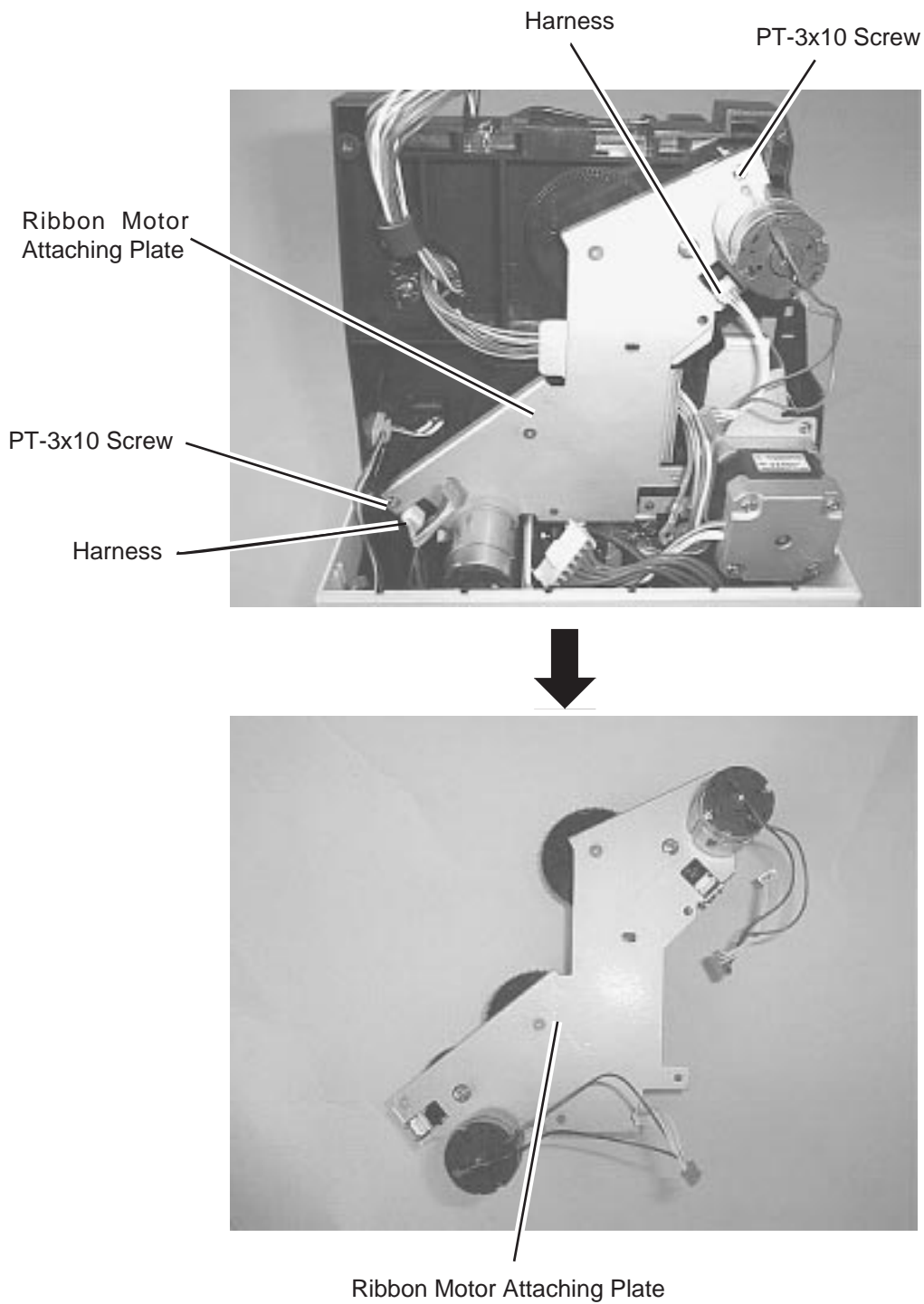
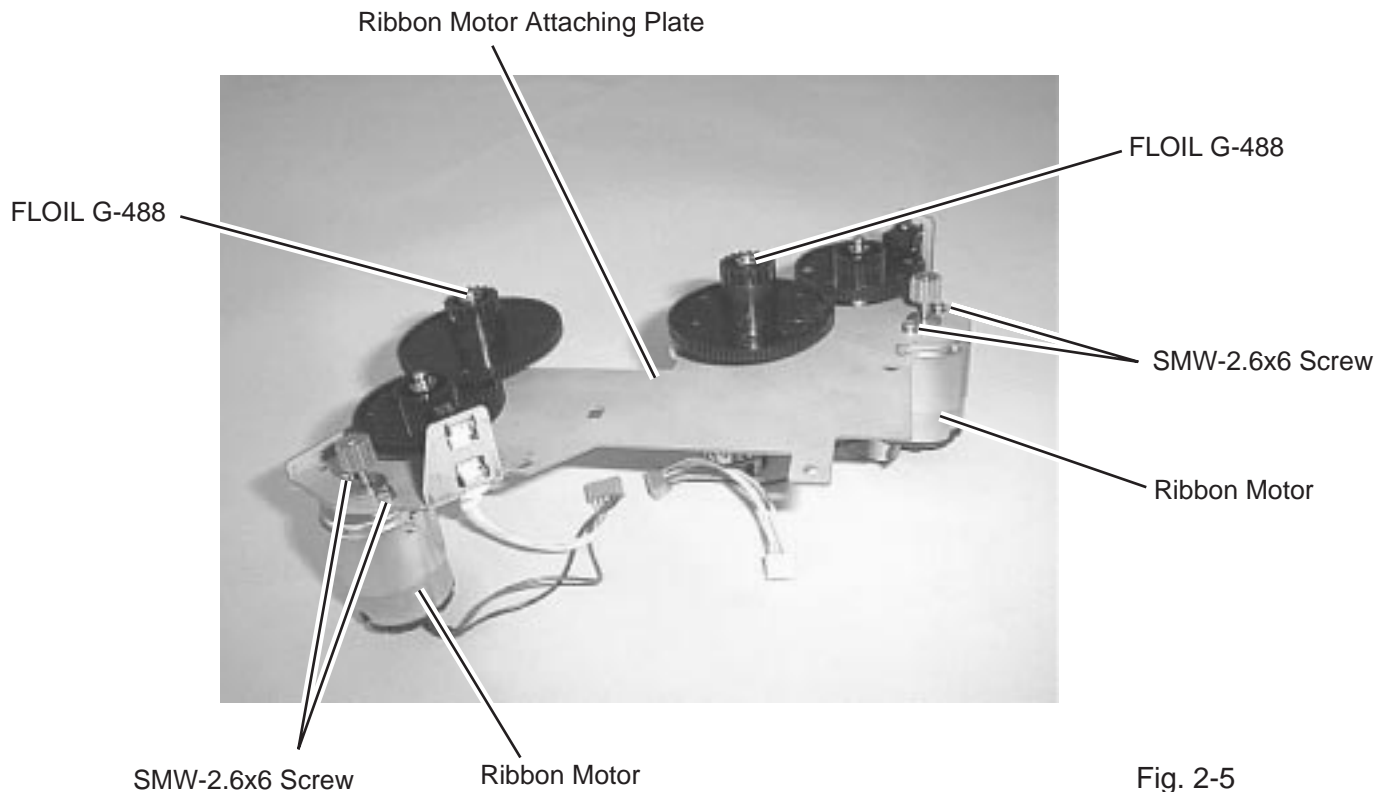


Fig. 2-4

- 2) Remove the four SMW-2.6x6 screws to detach the two ribbon motors from the ribbon motor attaching plate.



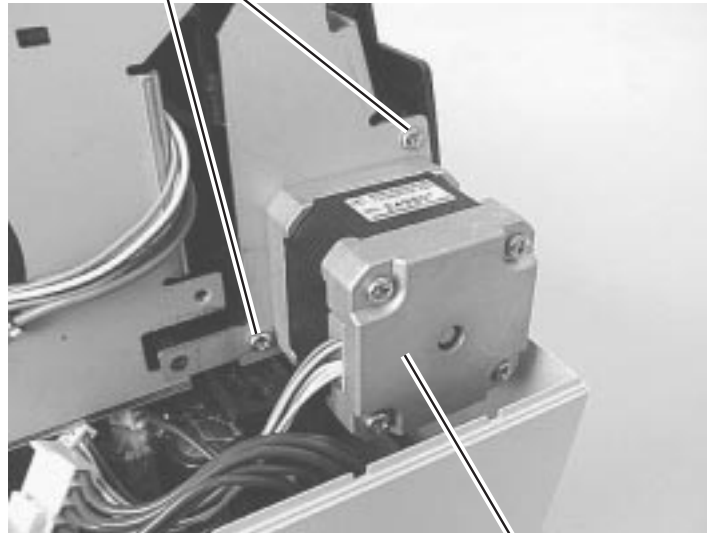
- 3) Replace the ribbon motors with new ones, and then reassemble in the reverse order of removal.

2.2.2 Stepping Motor

WARNING!
Be careful not to get burned when handling the stepping motor since it becomes very hot while printing.

- 1) Remove the two PT-3x10 screws to detach the stepping motor ass'y.

PT-3x10 Screw

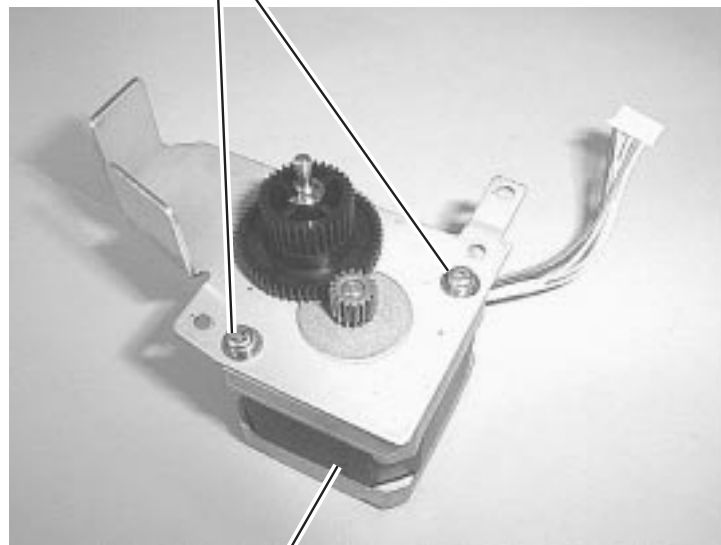


Stepping Motor Ass'y

Fig. 2-6

- 2) Remove the two SMW-3x6 screws to detach the stepping motor.

SMW-3x6 Screw



Stepping Motor

Fig. 2-7

- 3) Replace the stepping motor with a new one, and then reassemble in the reverse order of removal.

2.3 REPLACING THE PS UNIT

WARNING!

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

- 1) Refer to Section 2.1 to detach the top cover.
- 2) Remove the T-3x10 screw to detach the side cover R.

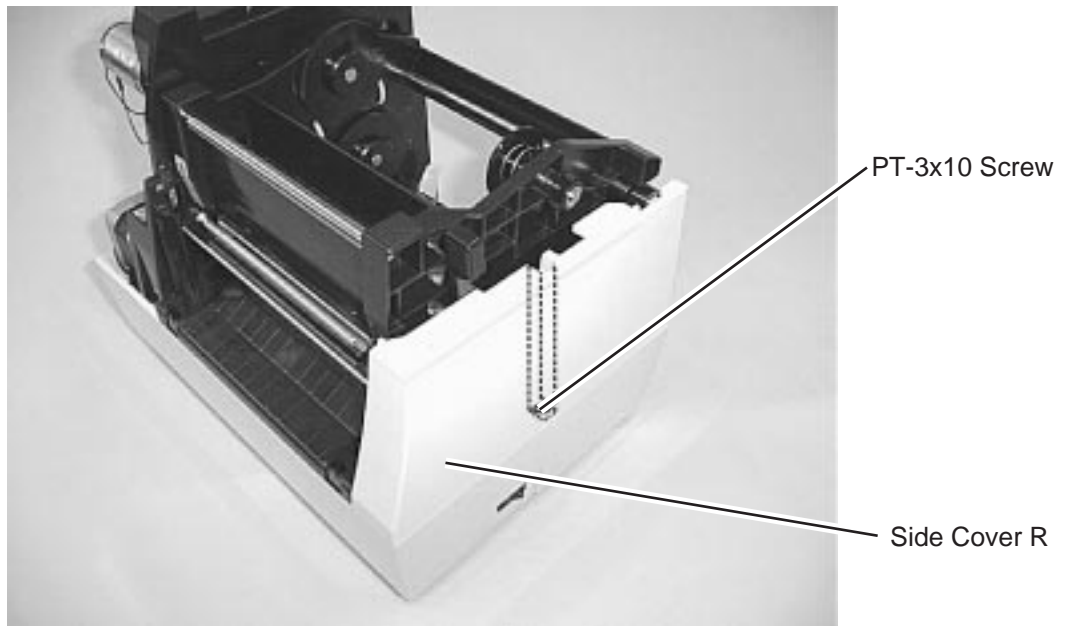


Fig. 2-8

- 3) Disconnect the power harness and fan motor harness from CN9 and CN8 on the CPU PC board.

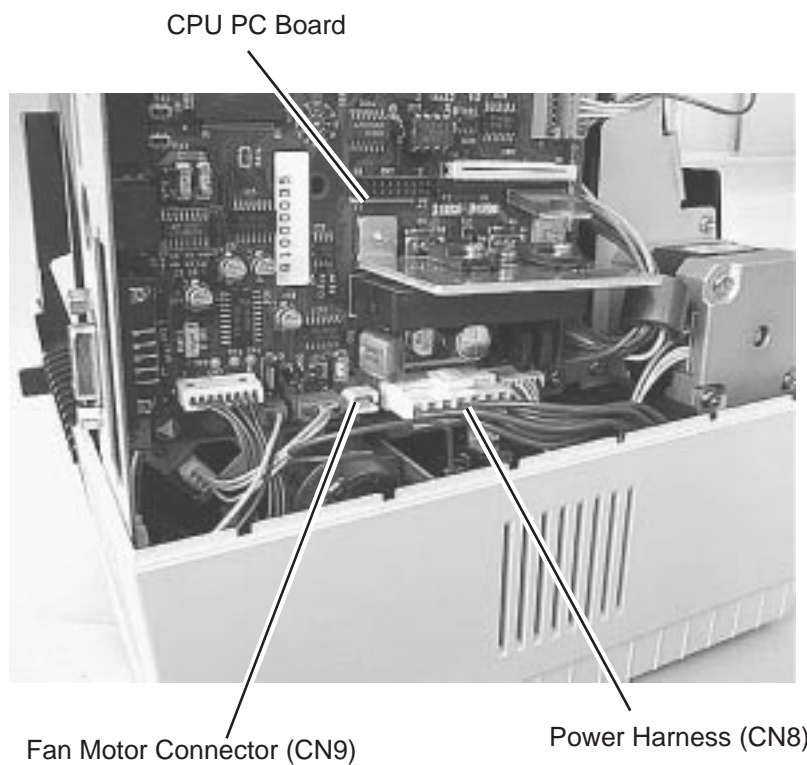


Fig. 2-9

- 4) Release the two hooks securing the printer unit.

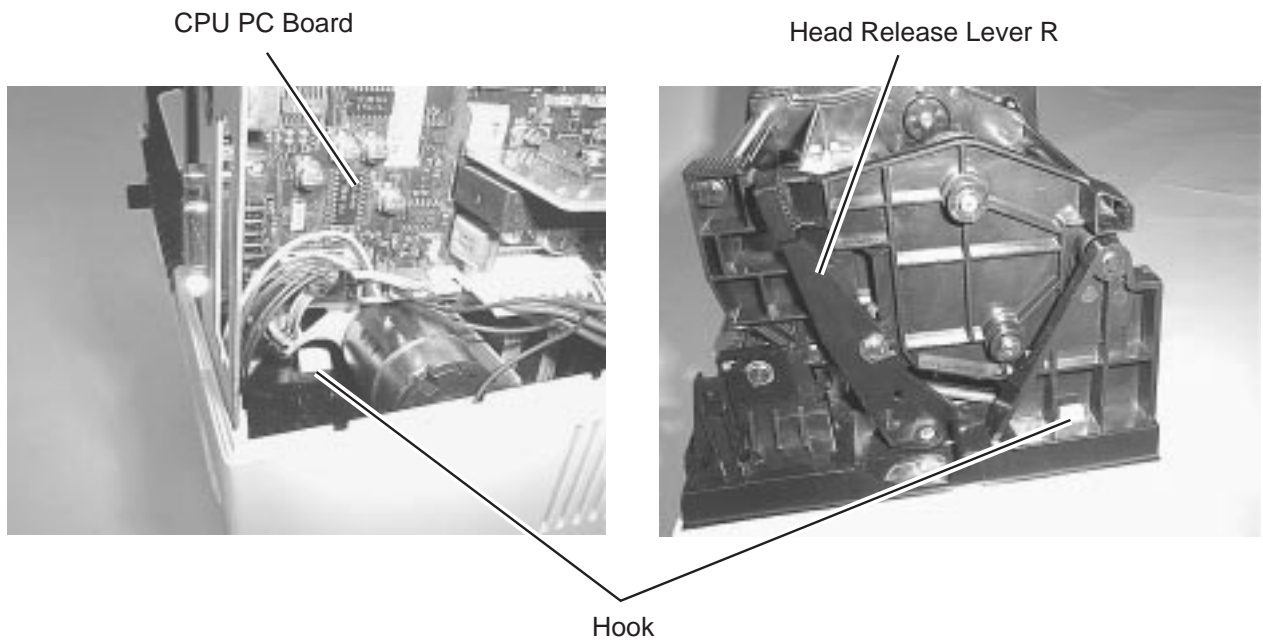


Fig. 2-10

- 5) Detach the printer unit from the bottom cover.

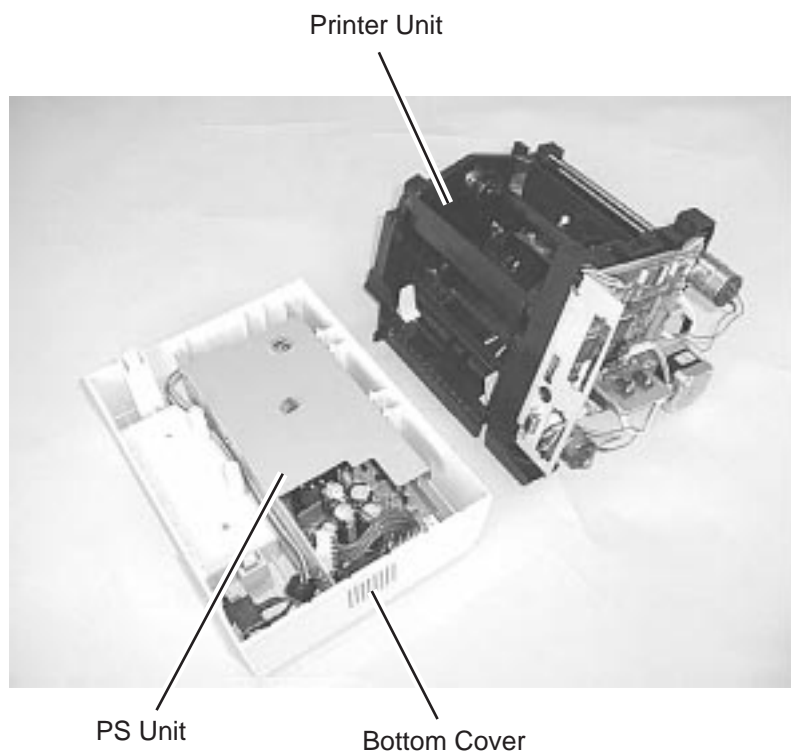


Fig. 2-11

6) Detach the PS unit from the bottom cover.

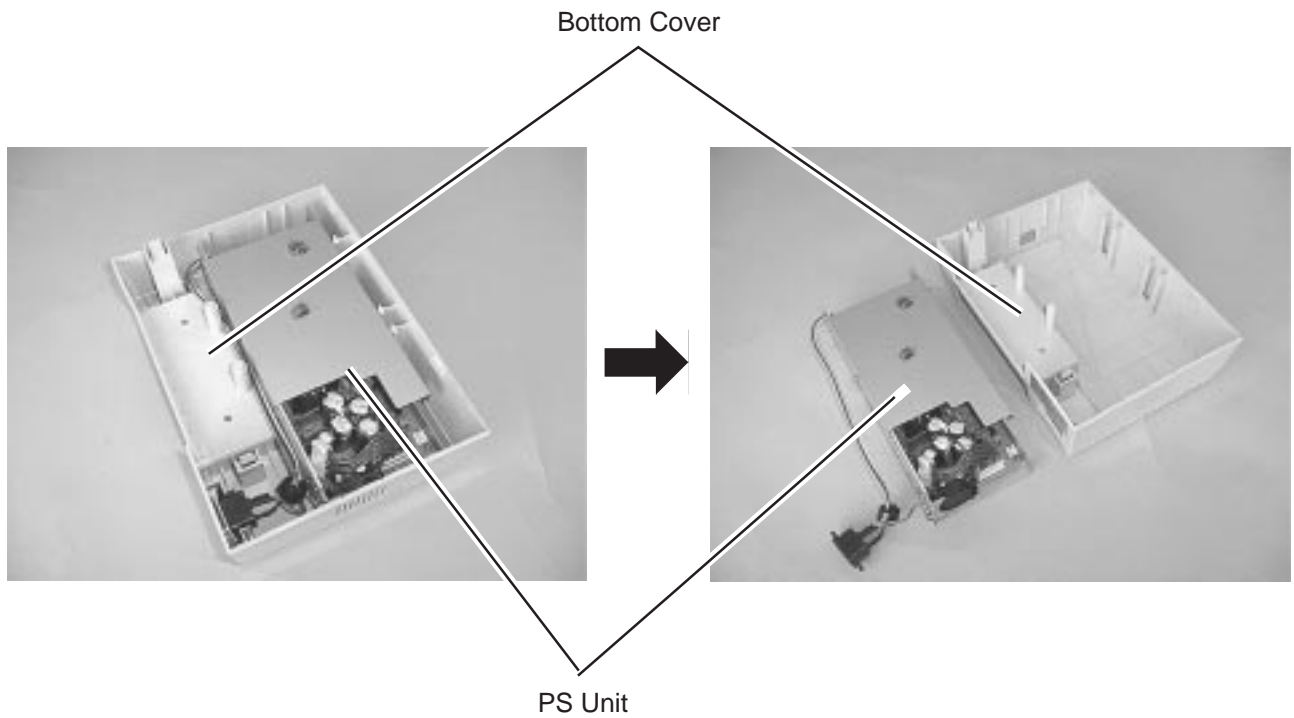


Fig. 2-12

7) Disconnect the power harness from CN3 on the PS unit. Remove the SMW-4x8 screw to release the ground wire of the inlet ass'y.

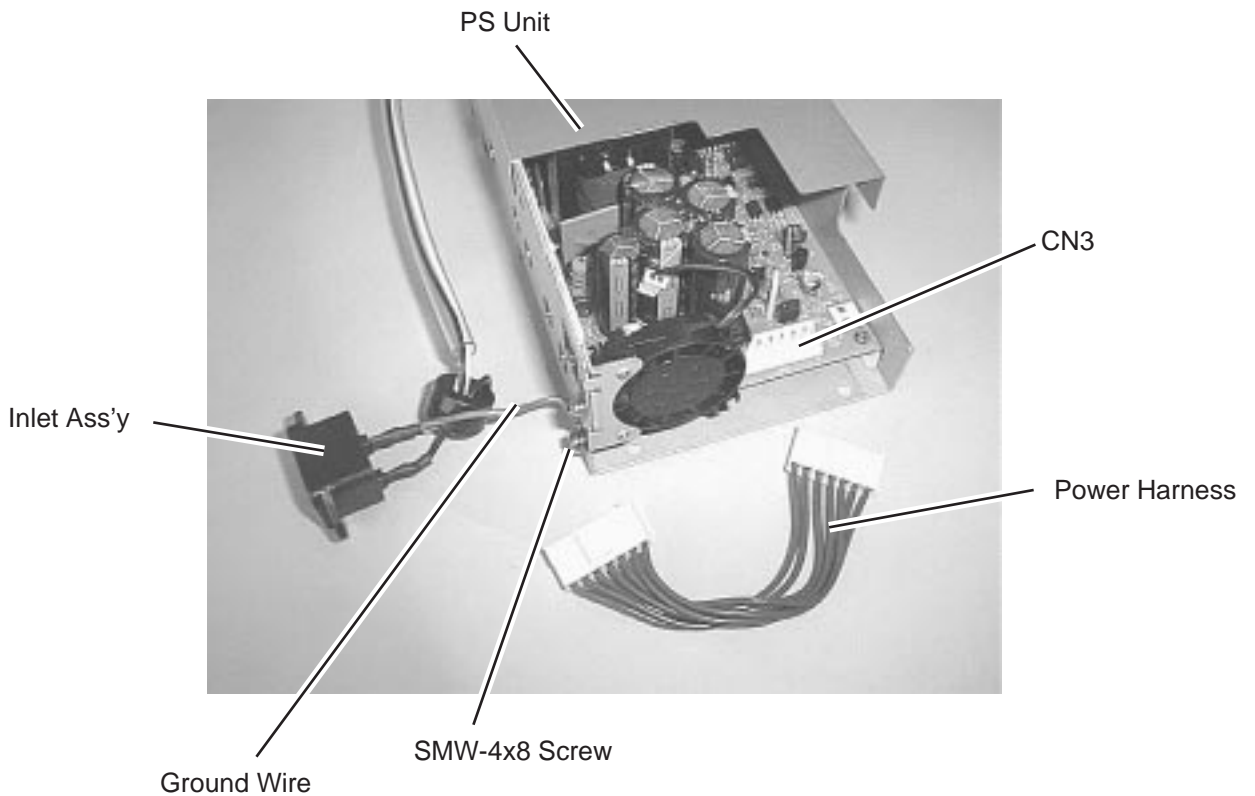


Fig. 2-13

- 8) Disconnect the inlet ass'y from CN1 on the PS unit.

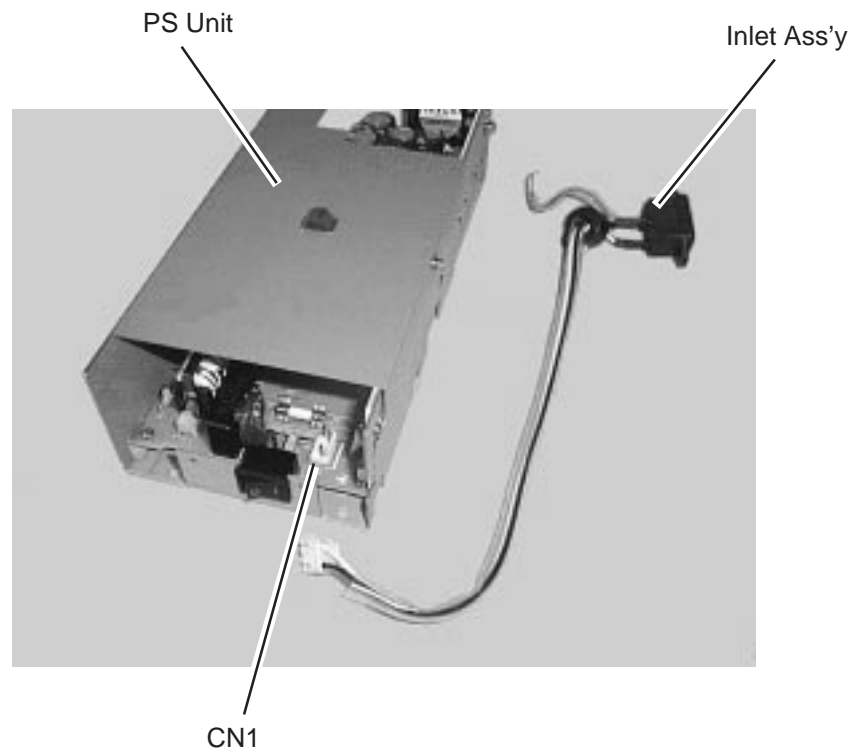


Fig. 2-14

- 9) Replace the PS unit with a new one, and then reassemble in the reverse order of removal.

2.4 REPLACING THE PRINT HEAD

CAUTION: 1. NEVER touch the element when handling the print head.
2. NEVER touch the connector pins. Touching them may cause a static electric discharge which will damage the print head.

- 1) Push down the head release lever R to open the print head block.

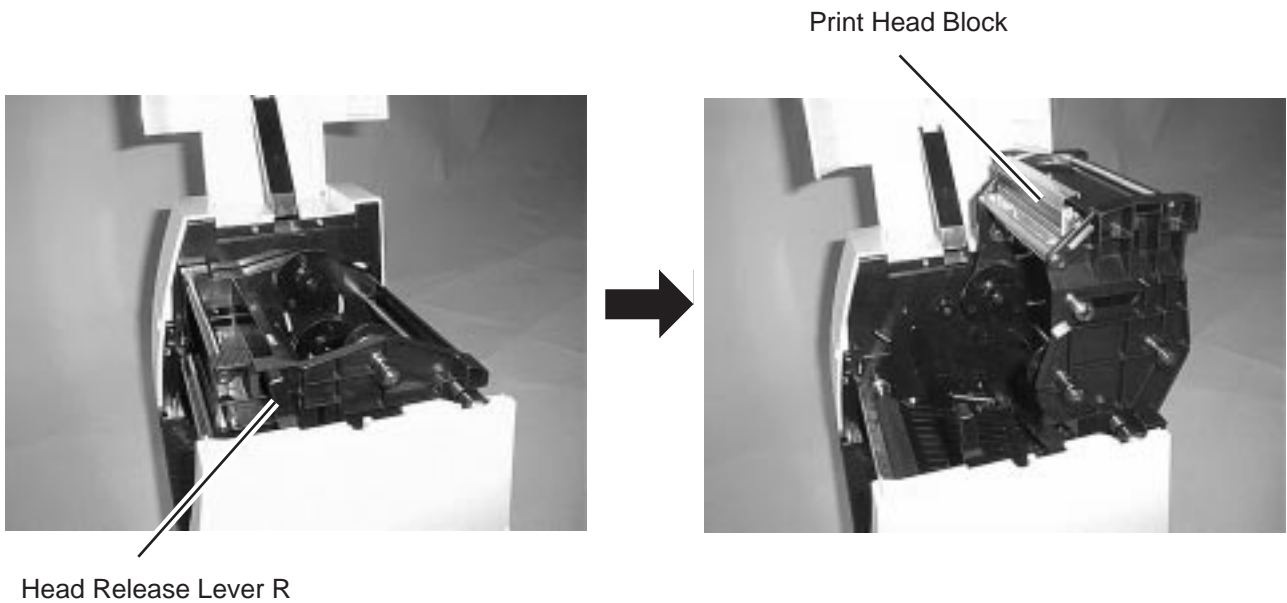


Fig. 2-15

- 2) Disconnect the two print head harnesses. Then, pull the print head ass'y upward while pulling the knob.

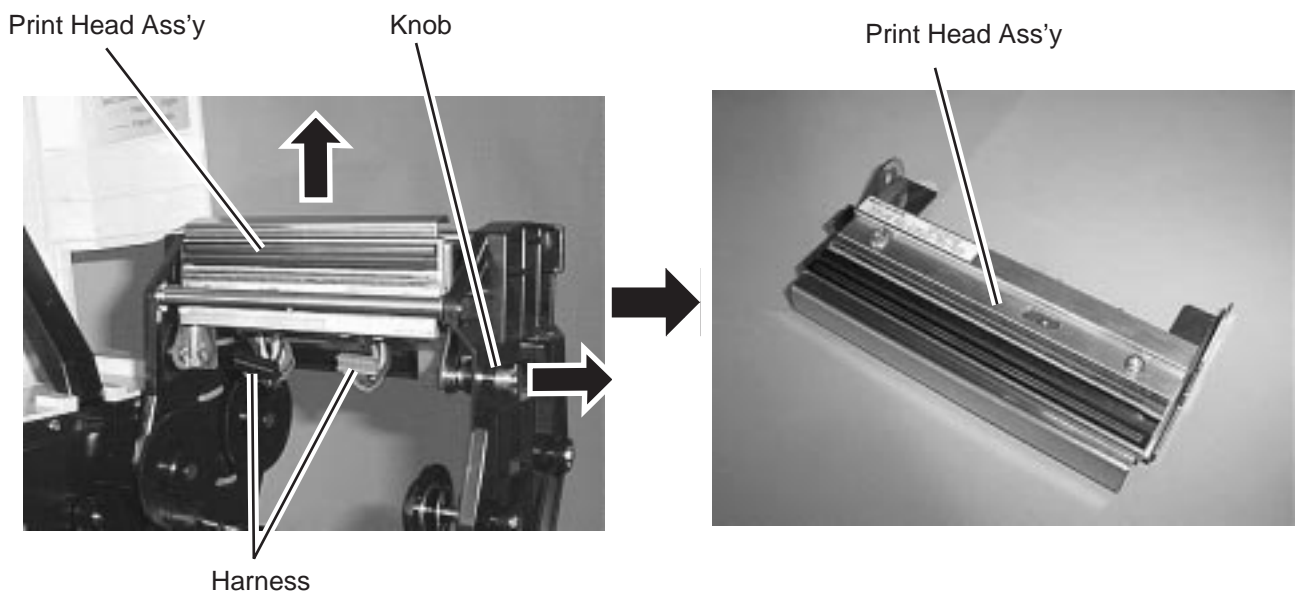


Fig. 2-16

- 3) Replace the print head with a new one, and then reassemble in the reverse order of removal.

2.5 REPLACING THE HEAD CONTROL PC BOARD (FOR THE B-452-HS MODEL)

- 1) Open the top cover. (Refer to Section 2.1.)
- 2) Remove the two PT-3x10 screws to detach the top cover. (Refer to Section 2.1.)
- 3) Disconnect the harness and flat cable from CN1 and CN2 on the head control PC board, respectively.
NOTE: When re-connecting the flat cable, be careful of the terminal orientation.
- 4) Detach the head control PC board from the three locking supports that secure it to the CPU PC board.

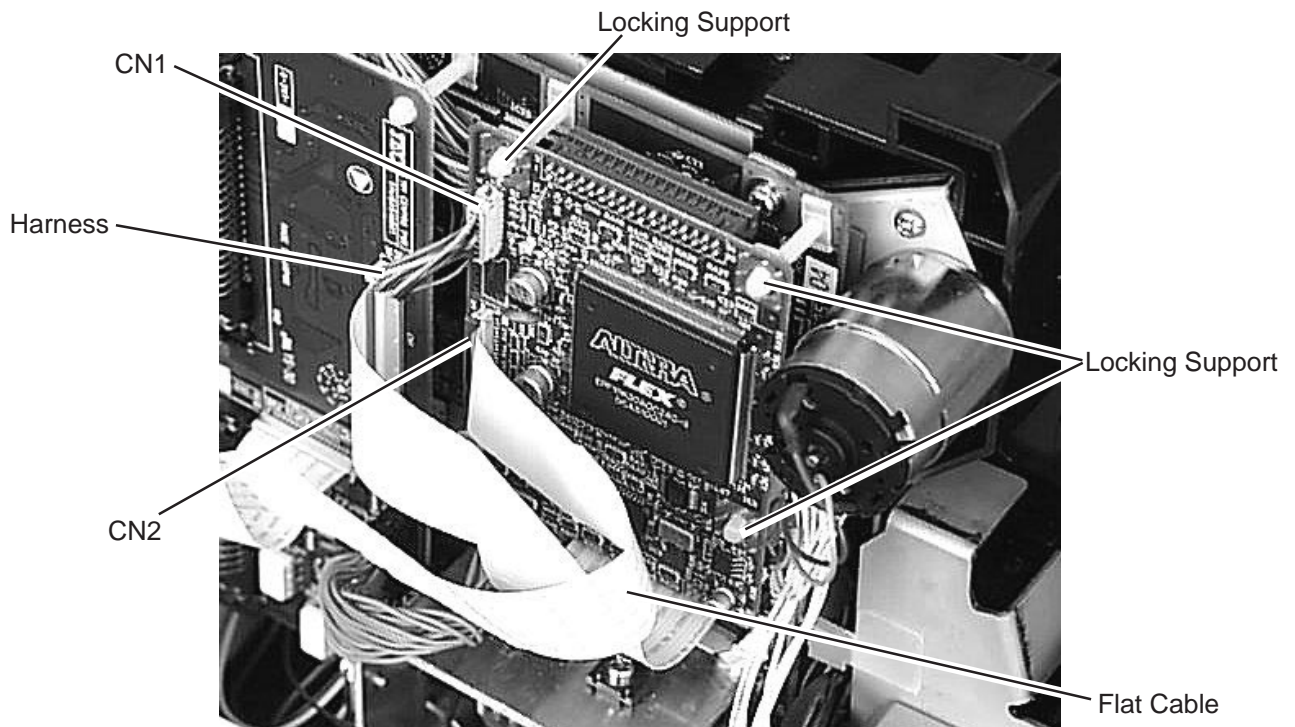


Fig. 2-17

- 5) Disconnect the harness from CN3 on the head control PC board.

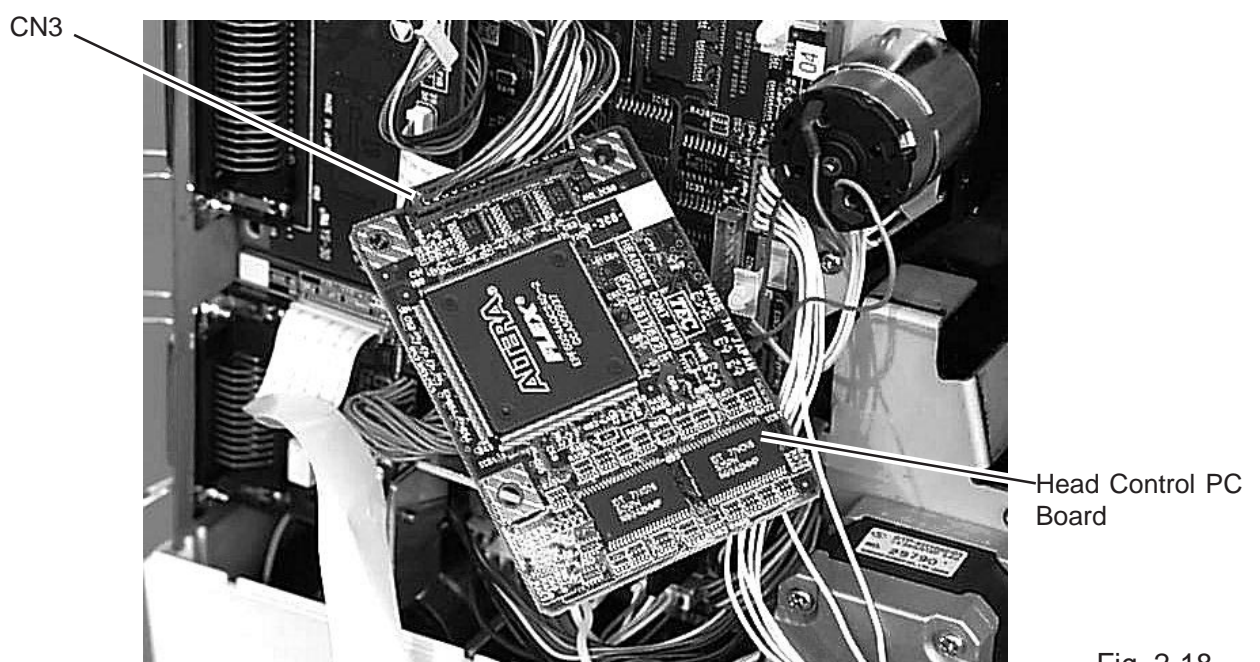


Fig. 2-18

- 6) Replace the head control PC board with a new one, and then reassemble in the reverse order of removal.

2.6 REPLACING THE MEDIA SENSOR

2.6.1 B-452-TS Model

Replacing the Sensor PCB (TR)

- 1) Push down the head release lever R to open the print head block. (Refer to Section 2.4.)
- 2) Remove the sensor holder from the sensor holder arm.

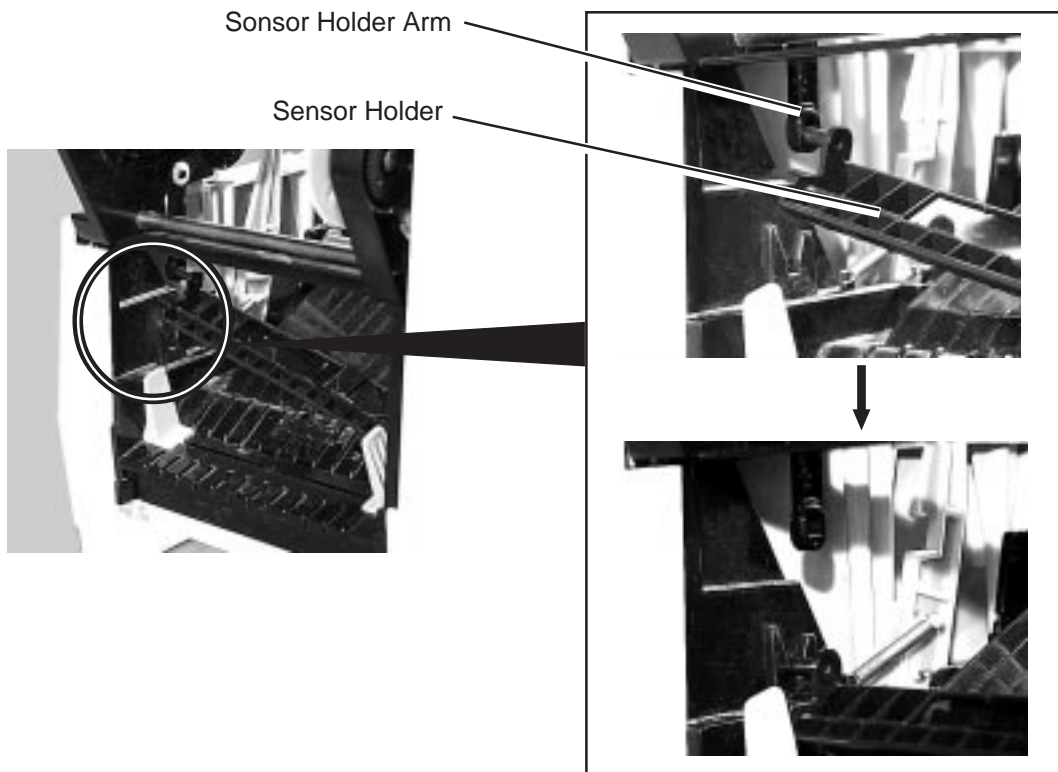


Fig. 2-19

- 3) Remove the sensor cover sheet from the sensor holder.

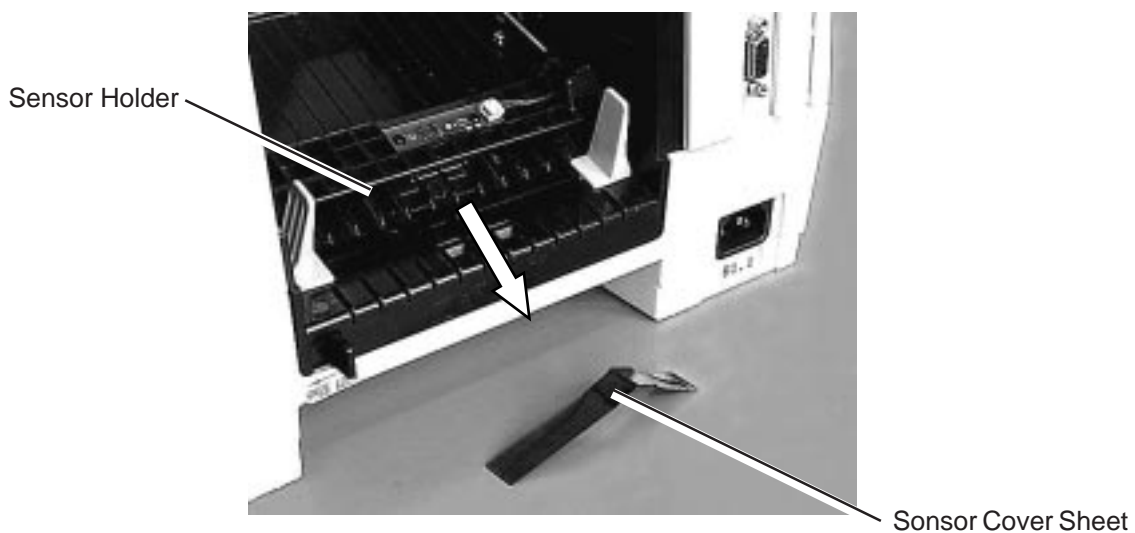


Fig. 2-20

- 4) Release the sensor holder while spreading the tabs of the sensor holder. Be careful not to break the tabs when spreading them.

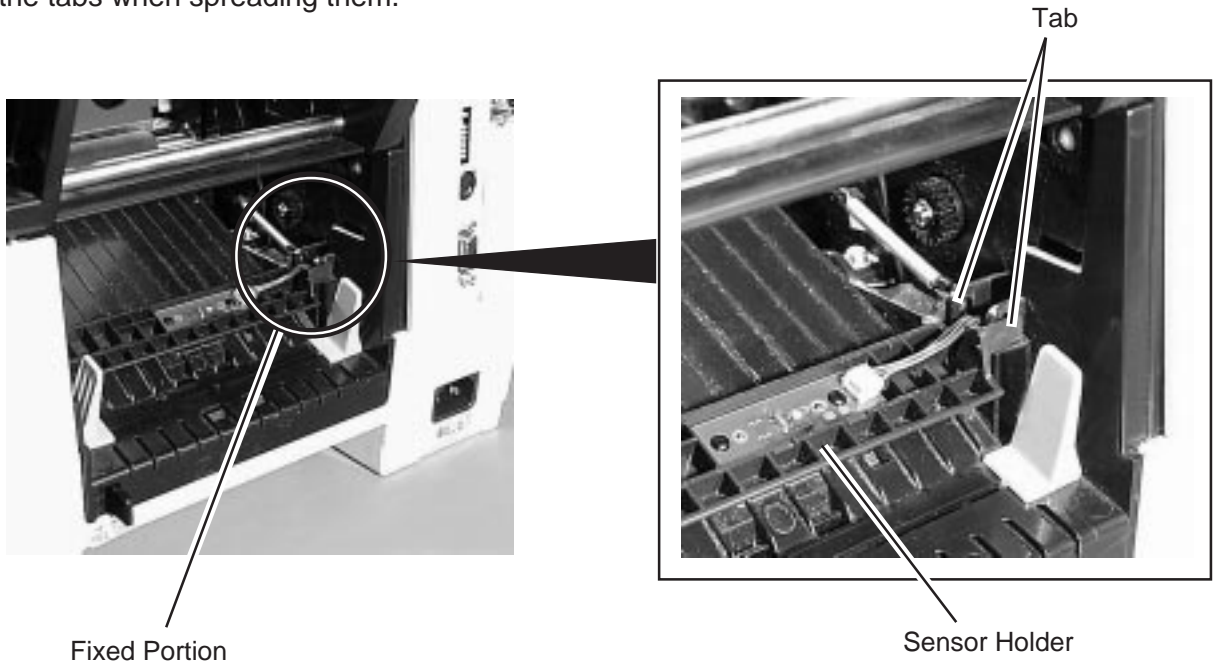


Fig. 2-21

- 5) Disconnect the harness from the sensor PCB (TR), and remove the sensor PCB (TR) from the sensor holder by releasing it from the two rivets.

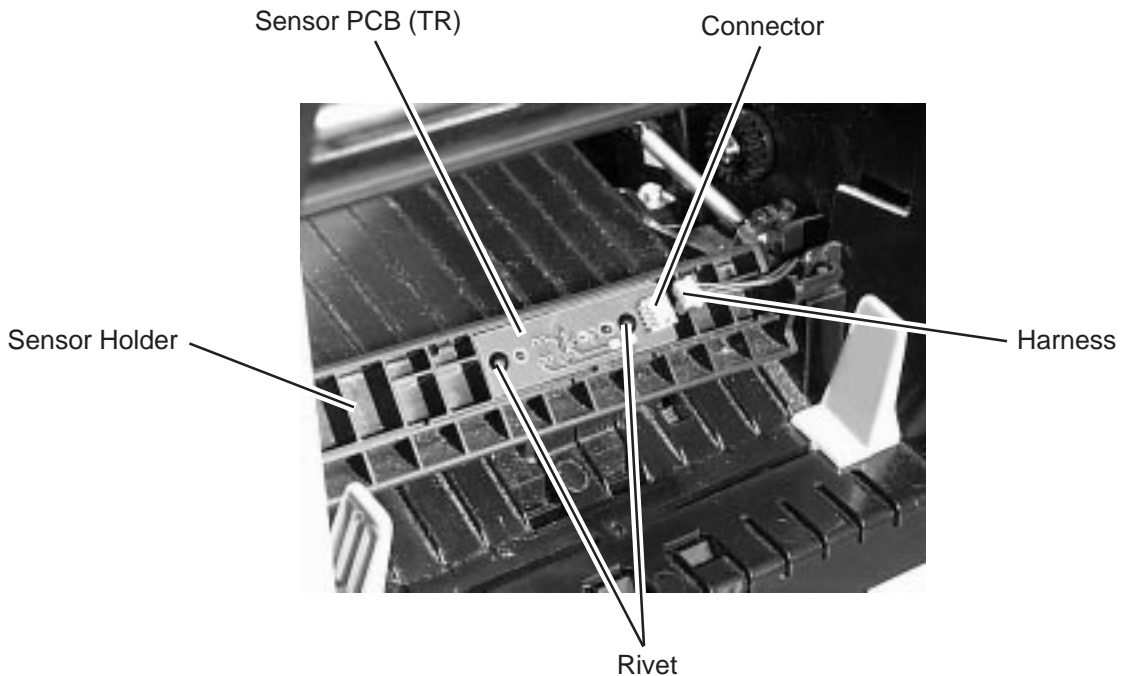


Fig. 2-22

- 6) Replace the sensor PCB (TR) with a new one, and then reassemble in the reverse order of removal.
- 7) After replacement, refer to Section 6.7 THRESHOLD SETTING in this manual to make a sensor adjustment.

Replacing the Sensor PCB (LED)

- 1) Open the top cover. (Refer to Section 2.1)
- 2) Remove the top cover. (Refer to Section 2.1.)
- 3) Push down the head release lever R to open the print head block. (Refer to Section 2.4.)
- 4) Detach the printer unit from the bottom cover. (Refer to Section 2.3.)
- 5) Disconnect the harness from the sensor PCB (LED) which is attached to the bottom of the printer unit. Then remove the rivet to detach the sensor PCB from the printer unit.

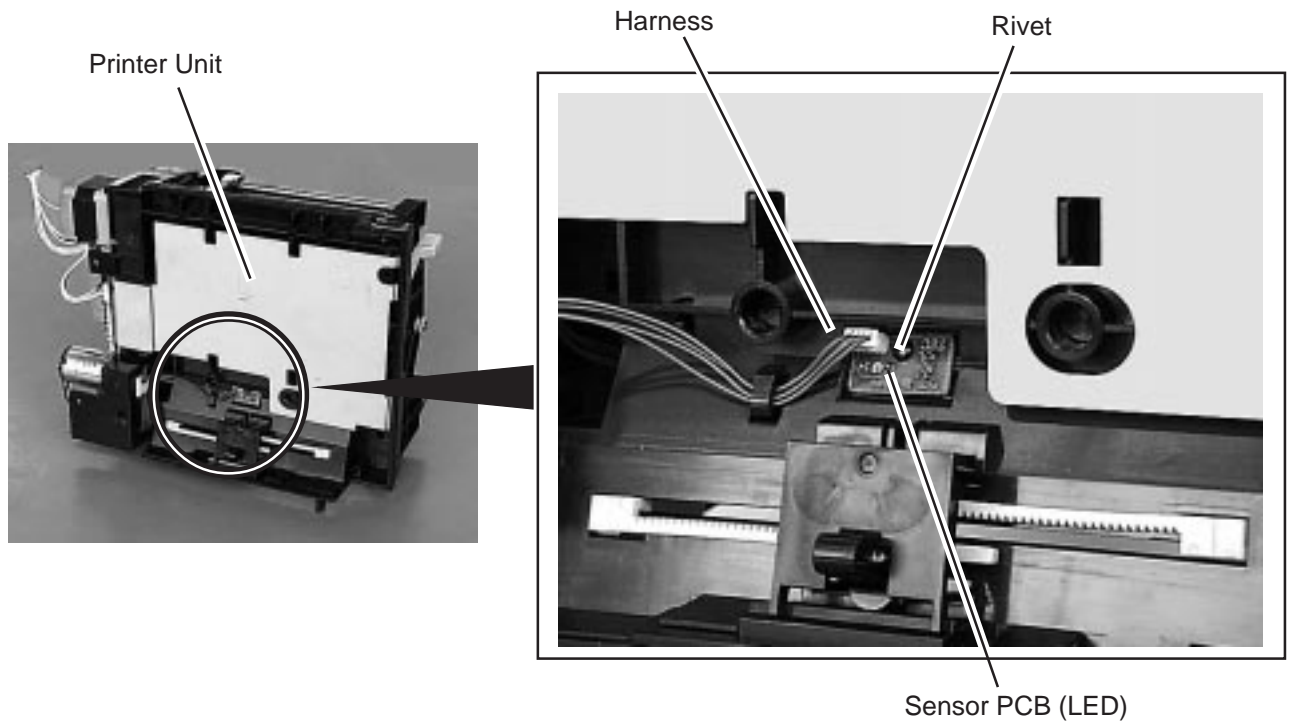


Fig. 2-23

- 6) Replace the sensor PCB (LED) with a new one, and then reassemble in the reverse order of removal.
- 7) After replacement, refer to Section 6.7 THRESHOLD SETTING in this manual to make a sensor adjustment.

2.6.2 B-452-HS Model

Replacing the Sensor PCB (TR)

- 1) Push down the head release lever R to open the print head block. (Refer to Section 2.4.)
- 2) Set the sensor knob to position 5 and lift the sensor holder.
- 3) Push out the rivet from the back side of the sensor holder and release the sensor PCB cover from the sensor holder.

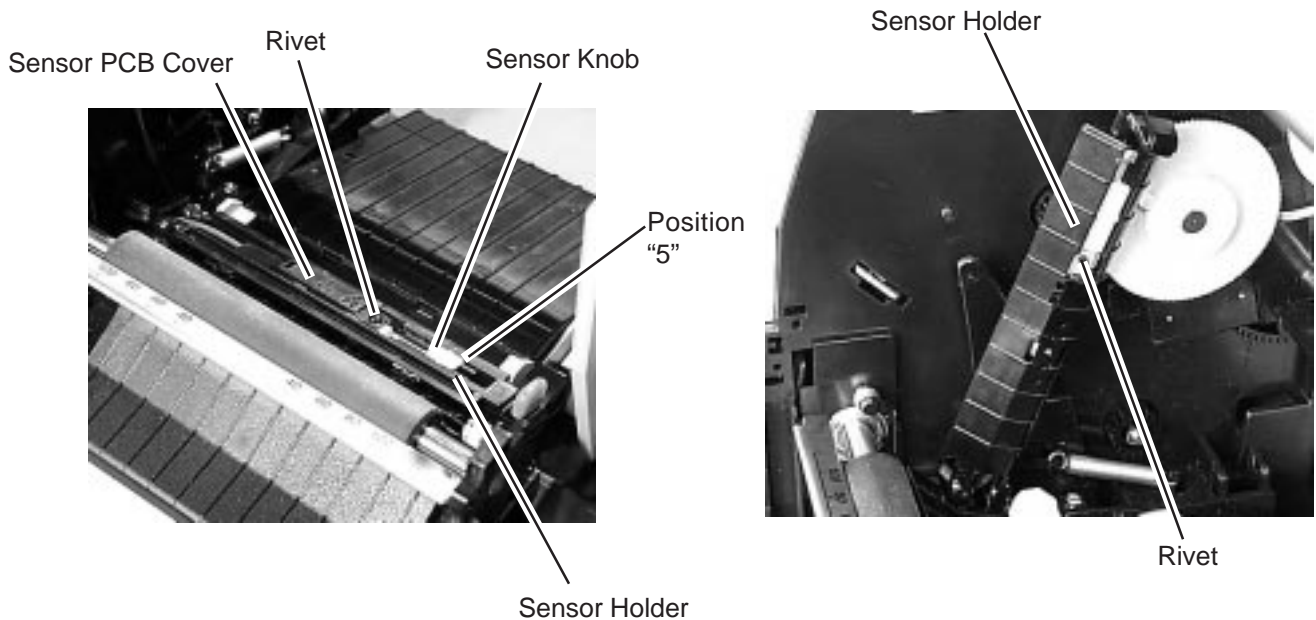


Fig. 2-24

- 4) Slide the sensor PCB (TR) to the left side to release it from the sensor holder, and disconnect the harness from the sensor PCB (TR).

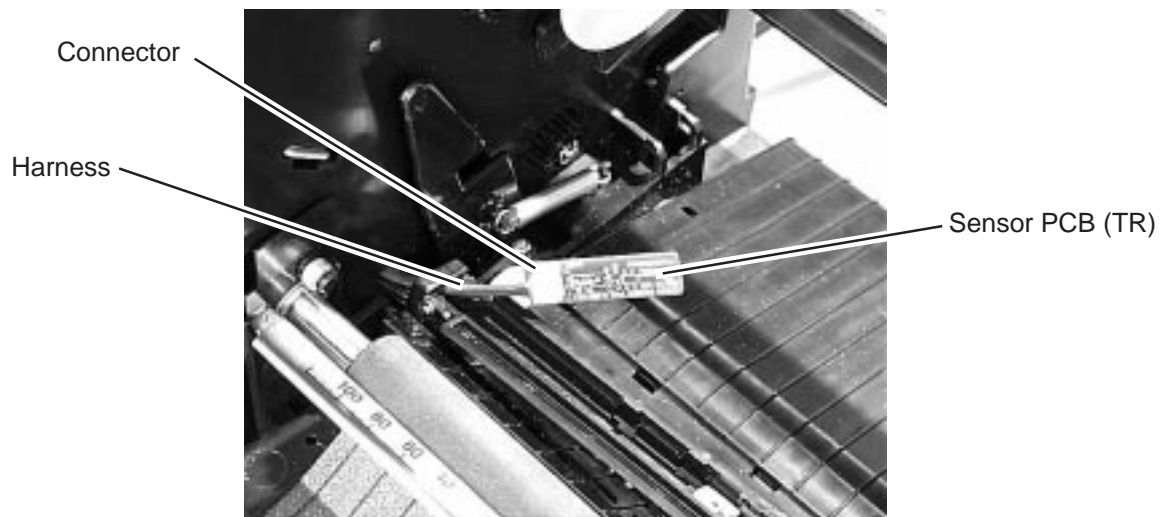


Fig. 2-25

- 5) Replace the sensor PCB (TR) with a new one, and then reassemble in the reverse order of removal.

NOTE: Secure the sensor PCB (TR) with the rivet together with the sensor PCB cover and slide button top.
- 6) After replacement, refer to Section 6.7 THRESHOLD SETTING in this manual to make a sensor adjustment.

Replacing the Sensor PCB (LED)

- 1) Push down the head release lever R to open the print head block. (Refer to Section 2.4.)
- 2) Push the sensor release lever to the direction indicated by the arrow and lift the sensor block.

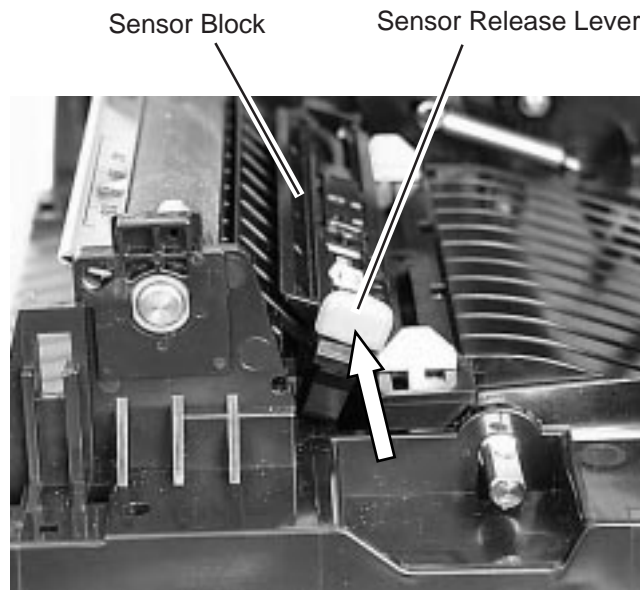


Fig. 2-26

NOTE: In the above picture, the head release lever R is removed to indicate the position of the sensor release lever clearly. In the actual procedure, the head release lever R does not have to be removed.

- 3) Set the media sensor knob to position 5.
- 4) Lift the sensor block by the tab.

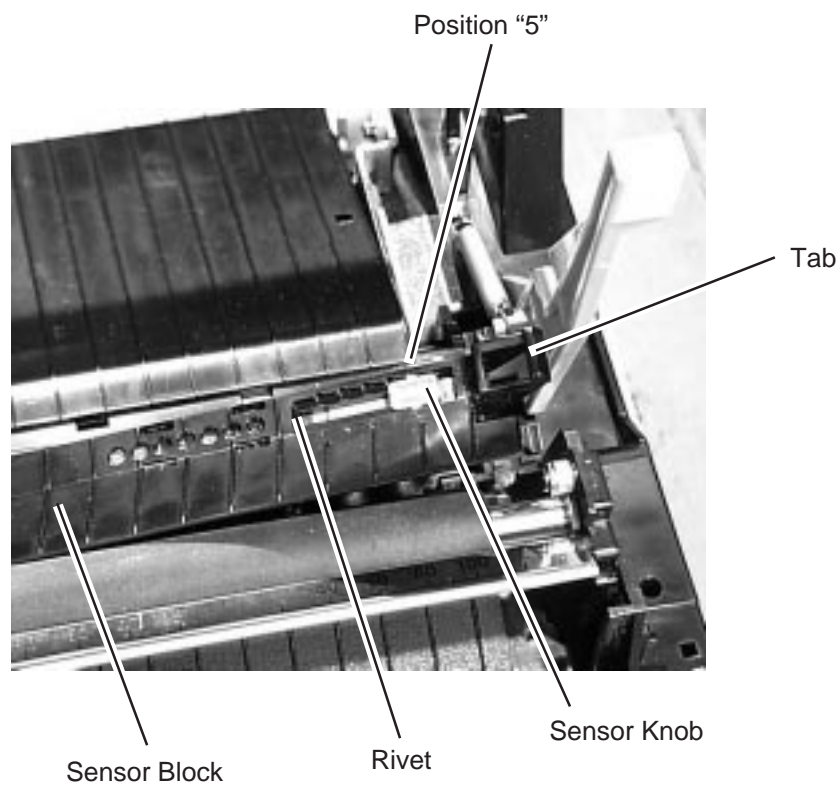


Fig. 2-27

- 5) Push out the rivet which secures the sensor PCB (LED) from the back side of the sensor block.
- 6) Disconnect the harness from the sensor PCB (LED) and remove the sensor PCB (LED) from the sensor block.

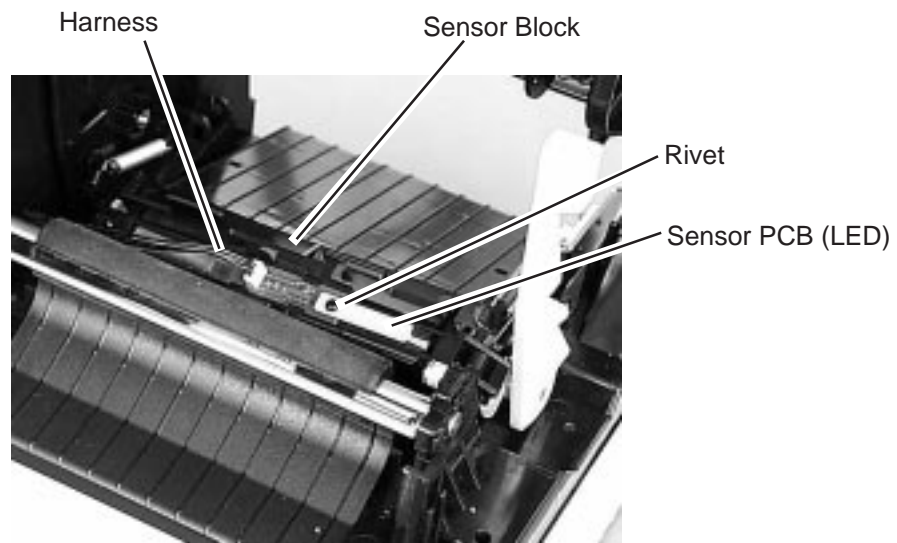


Fig. 2-28

- 7) Replace the sensor PCB (LED) with a new one, and then reassemble in the reverse order of removal.
NOTE: Secure the sensor PCB (LED) with the rivet together with the slide button bottom.
- 8) After replacement, refer to Section 6.7 THRESHOLD SETTING in this manual to make a sensor adjustment.

2.7 REPLACING THE 600 DPI EXPIO PC BOARD (FOR B-452-HS MODEL)

- 1) Open the top cover. (Refer to Section 2.1.)
- 2) Remove the top cover. (Refer to Section 2.1.)
- 3) Disconnect the harness and flat cable from CN1 and CN3 on the 600 DPI EXPIO PC board, respectively.

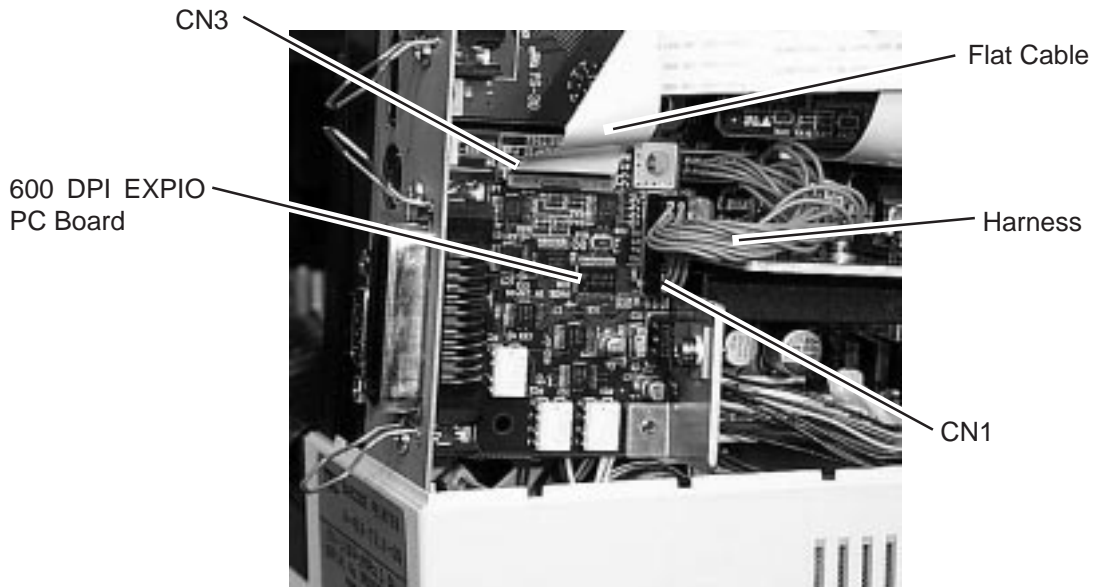


Fig. 2-29

- 4) Remove the two B-3x6 screws and detach the 600 DPI EXPIO PC board from the locking support that secures it to the CPU PC board.

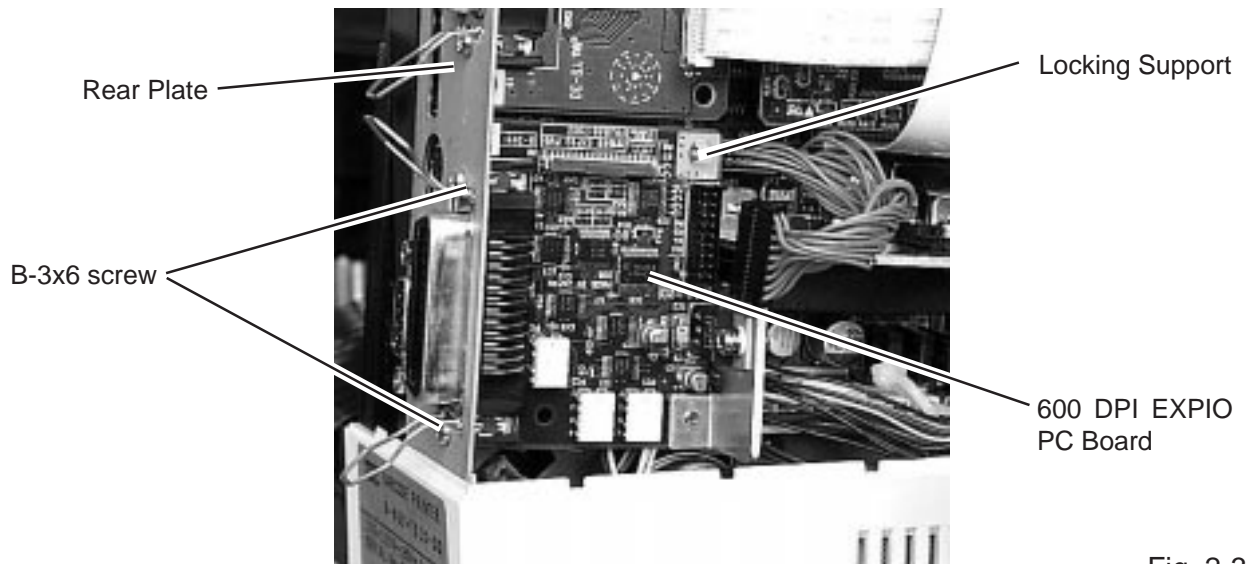


Fig. 2-30

- 5) Replace the 600 DPI EXPIO PC board with a new one, and then reassemble in the reverse order of removal.

3. INSTALLATION PROCEDURE FOR THE OPTIONAL EQUIPMENT

3.1 CUTTER MODULE (B-7204-QM)

WARNING!
<ol style="list-style-type: none"> 1. Disconnect the power cord before installing the cutter module. 2. Be careful not to injure your fingers when installing the cutter module.

3.1.1 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.



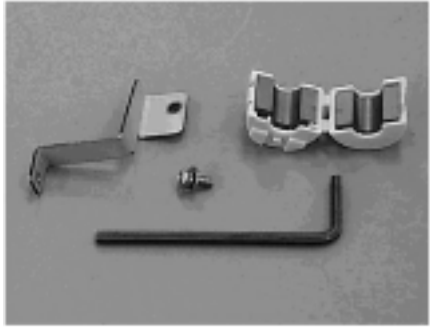


Cutter Unit (1 pc.) 	Cutter Harness (1 pc.) 	Double Sems Screw SMW-3x8 (1 pc.) Cutter Ground Plate B (1 pc.) Ferrite Core (1 pc.) Allen Key (1 pc.) 
Cutter Cover (1 pc.) 	Installation Manual (1 pc.) 	

Fig. 3-1

3.1.2 Installation Procedure

- 1) Turn the power off.
- 2) Open the top cover and remove the two PT-3x10 screws.

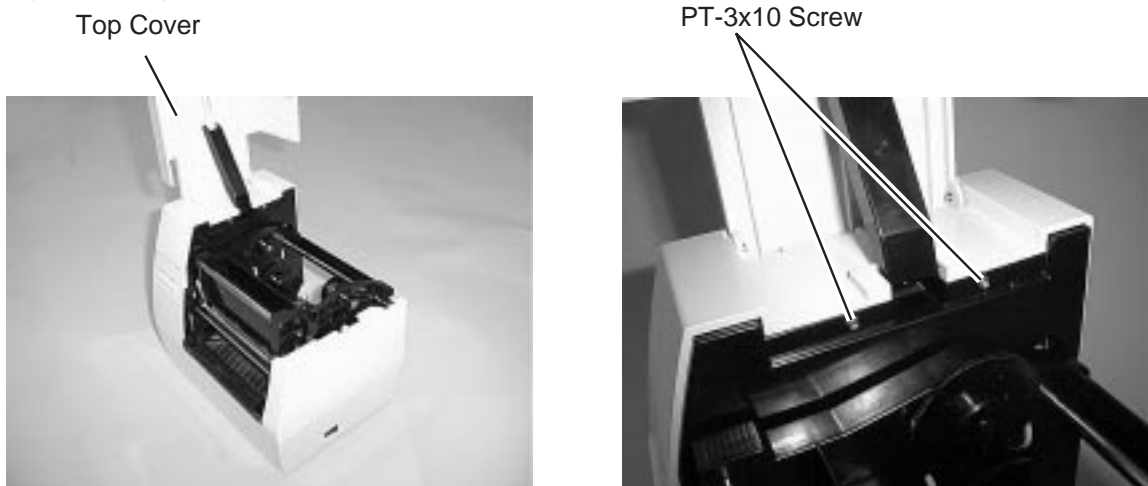


Fig. 3-2

- 3) Disconnect the KEY LED harness from CN14 on the CPU PC board and detach the side cover L.

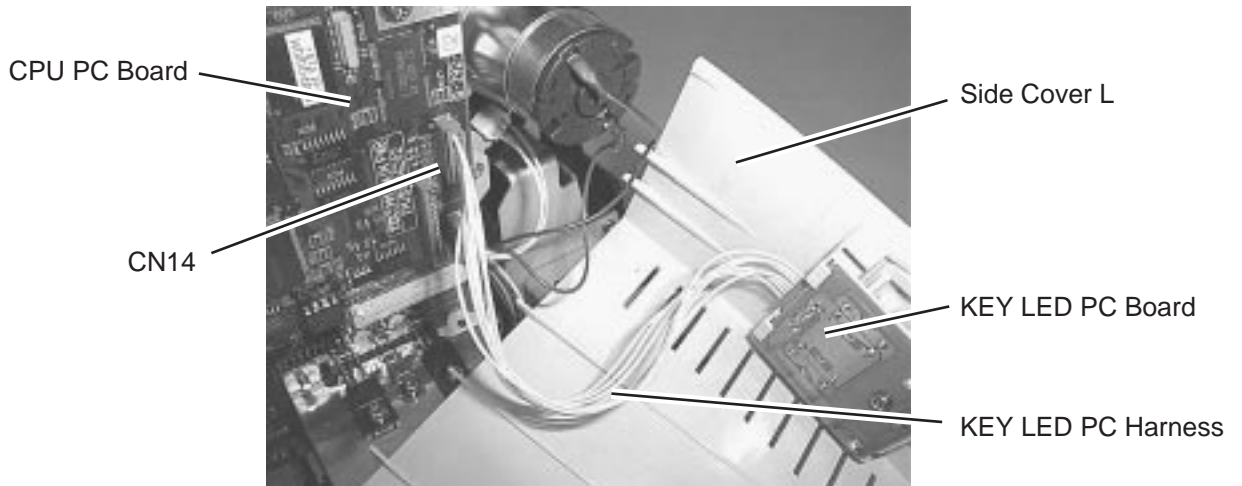


Fig. 3-3

- 4) Move the head release lever toward the front of the printer to open the print head block.

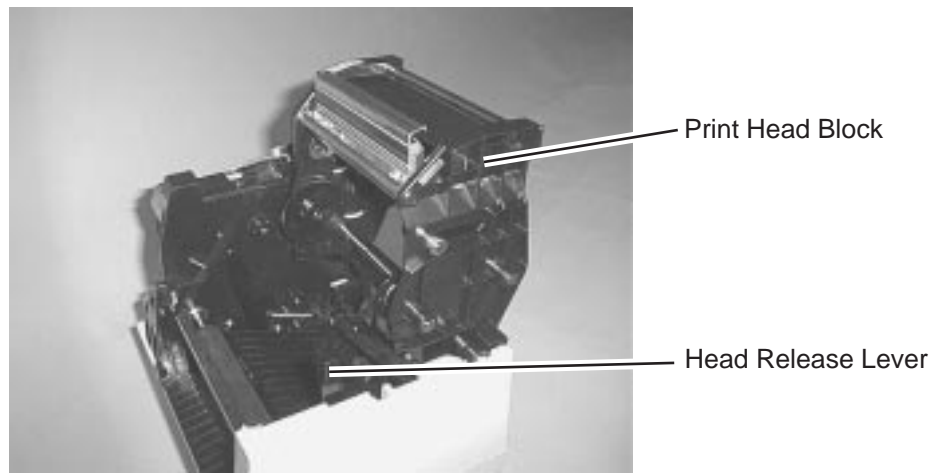


Fig. 3-4

- 5) Unhook and remove the platen block from the printer.

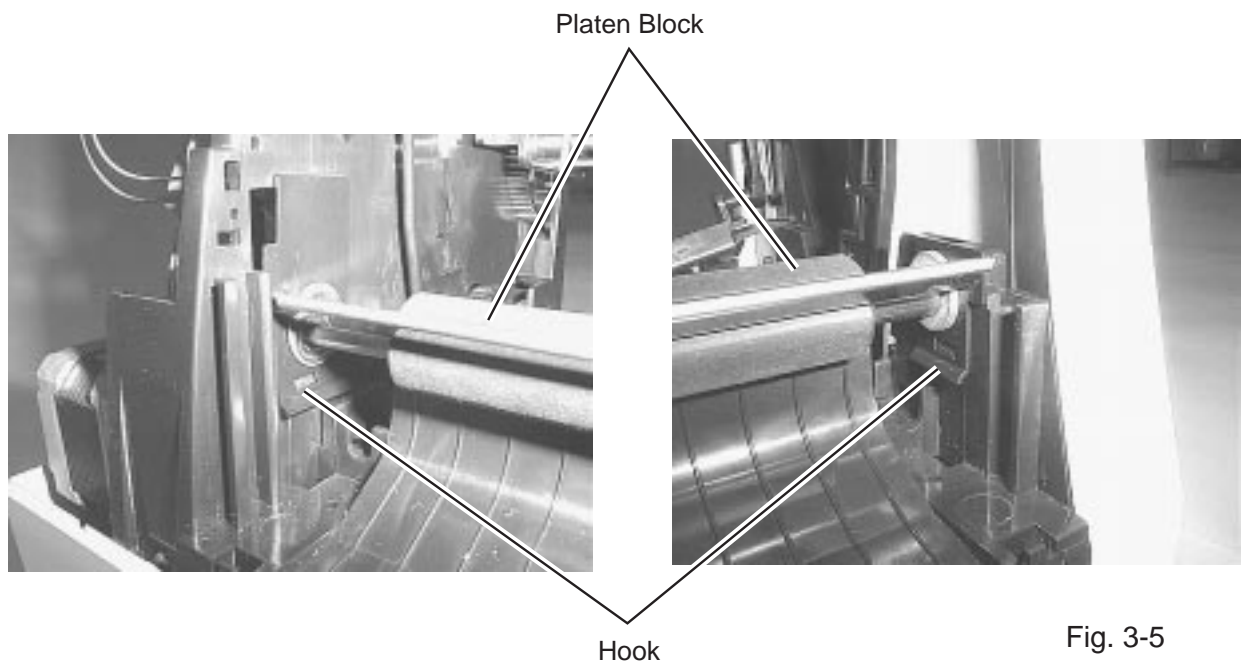


Fig. 3-5

6) Remove the paper scale from the platen block.

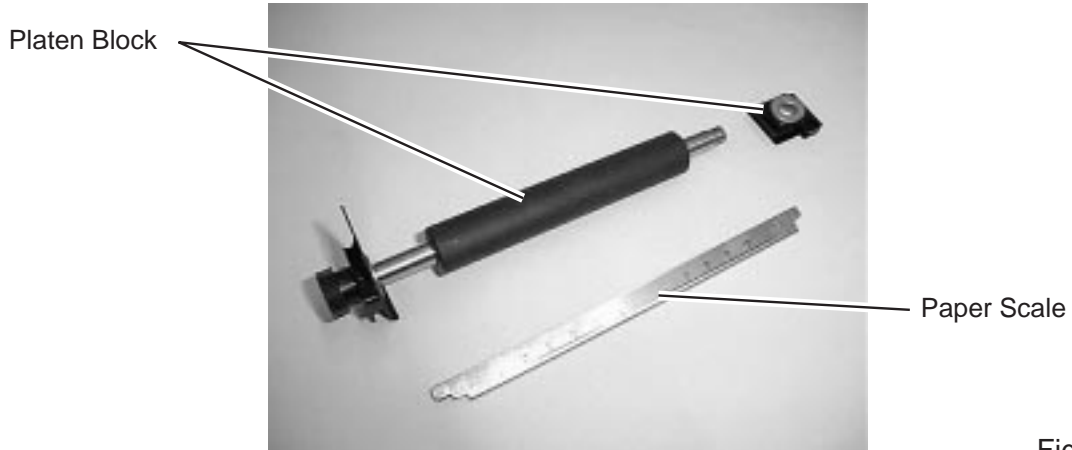


Fig. 3-6

NOTE: Store the removed paper scale in a safe place so that it may be replaced should the cutter module be removed in the future.

7) Replace the platen block.

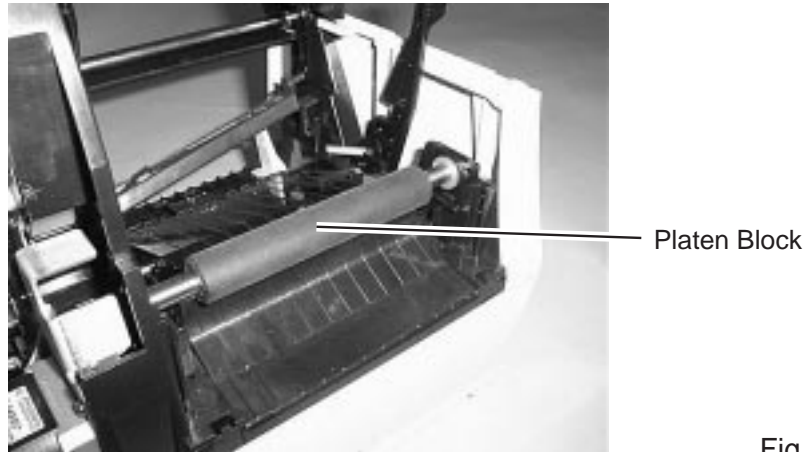


Fig. 3-7

8) Remove the PT-3x10 screw which secures the stepping motor ass'y. Secure the cutter ground plate B together with the stepping motor ass'y with the same screw.

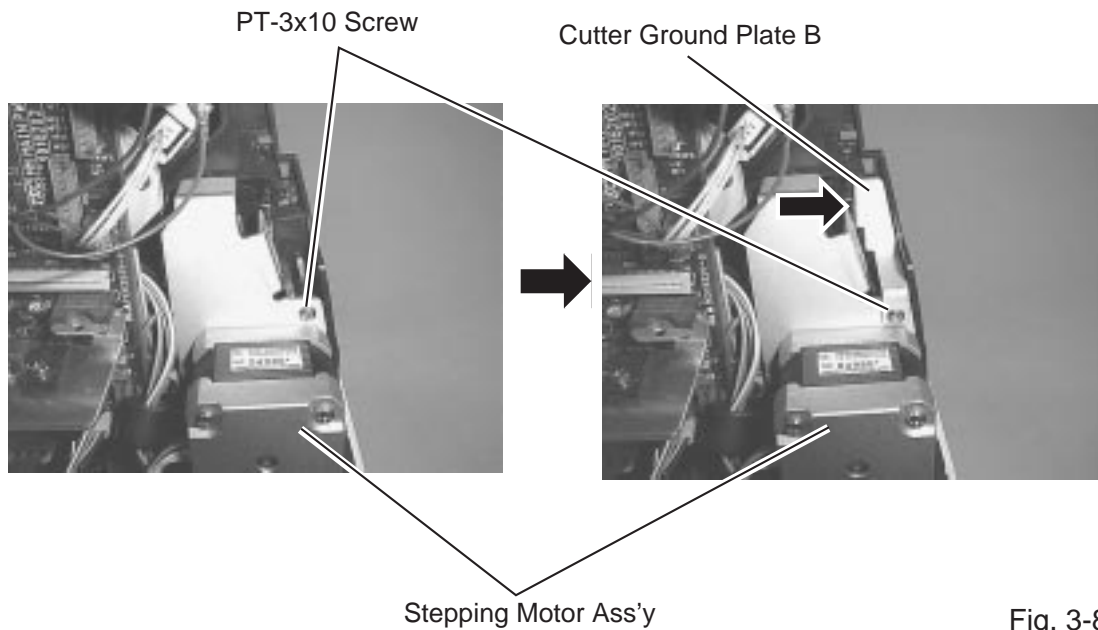


Fig. 3-8

- 9) Remove the cutter cover from the cutter unit by pressing the tab.

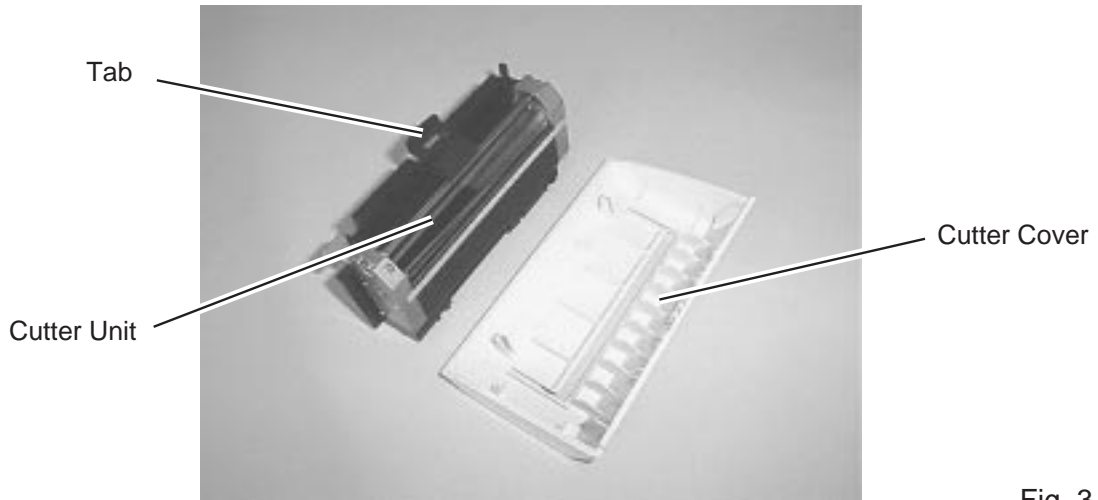


Fig. 3-9

- 10) Pass the cutter harness through the square hole indicated in the following picture so that the 13-pin connector comes to the CPU PC board side.

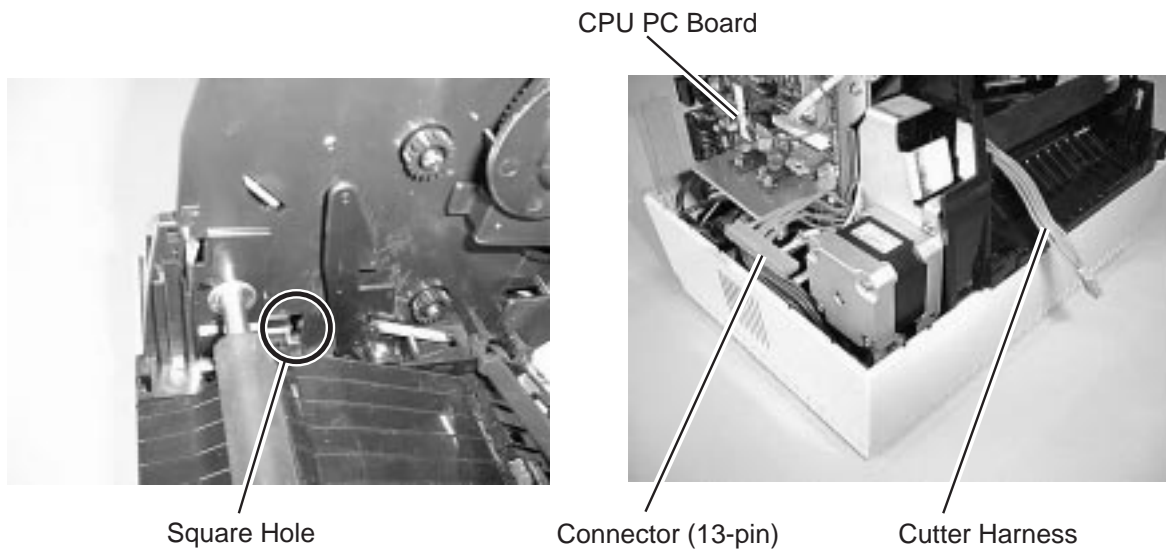


Fig. 3-10

- 11) Wind the cutter harness around the ferrite core one time, and connect it to CN22 on the CPU PC board.

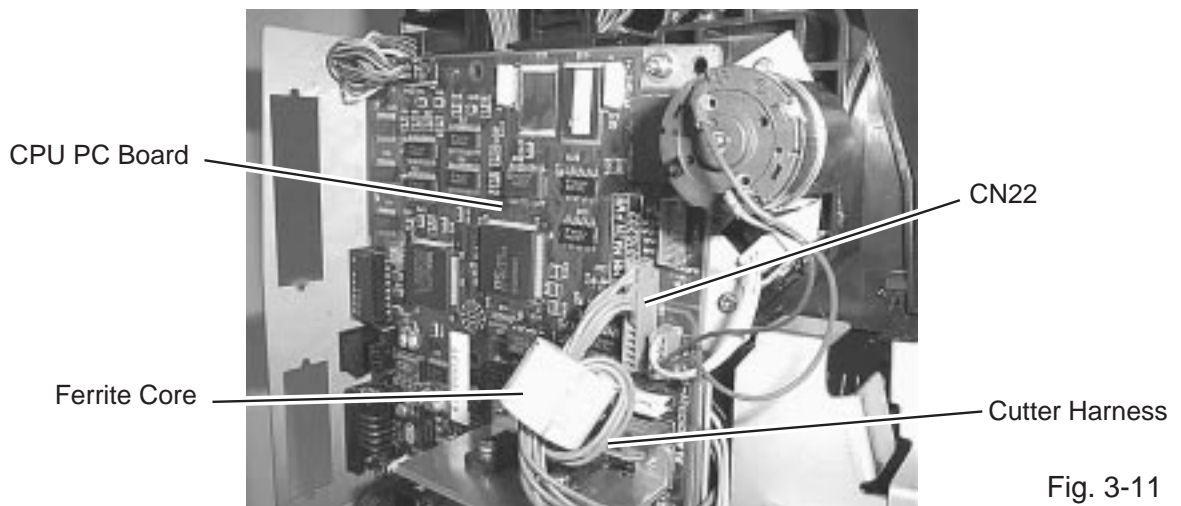


Fig. 3-11

12) Pass the cutter harness under the platen and connect it to the cutter unit.

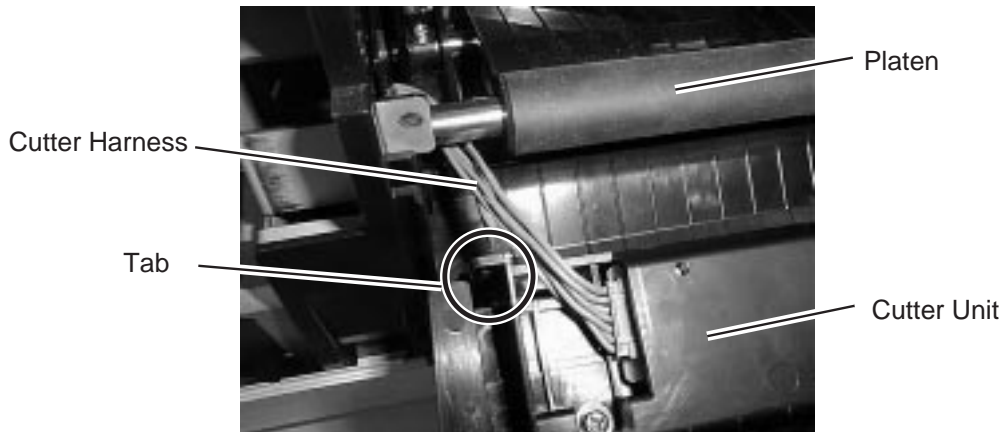


Fig. 3-12

NOTE: Be careful not to pinch the cutter harness by the tab of the cutter unit (enclosed portion) when installing the cutter unit.

13) Insert both sides of protruding portions of the cutter unit into the slits in front of the printer.

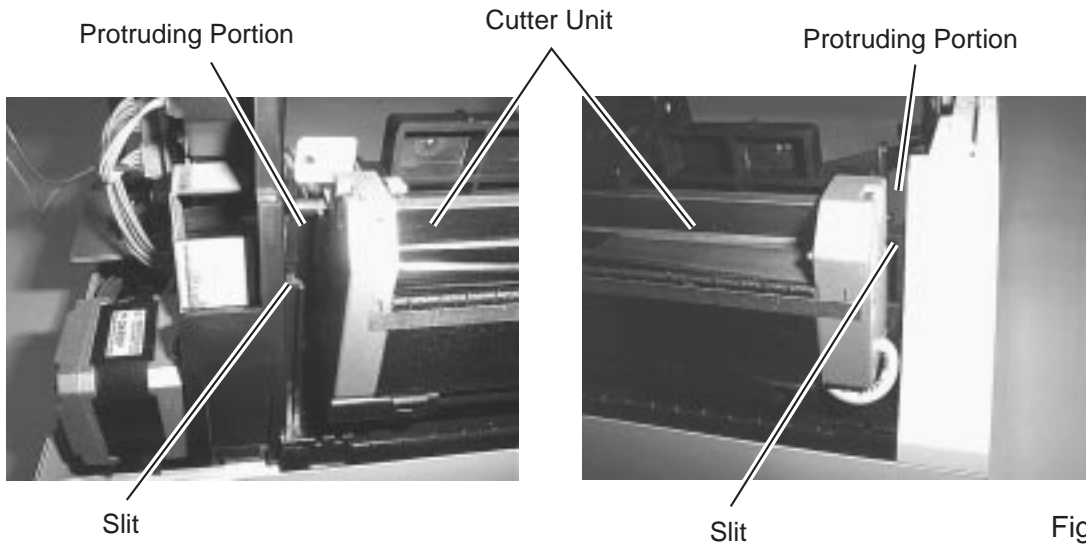


Fig. 3-13

14) Secure the cutter unit to the printer with the enclosed SMW-3x8 screw.

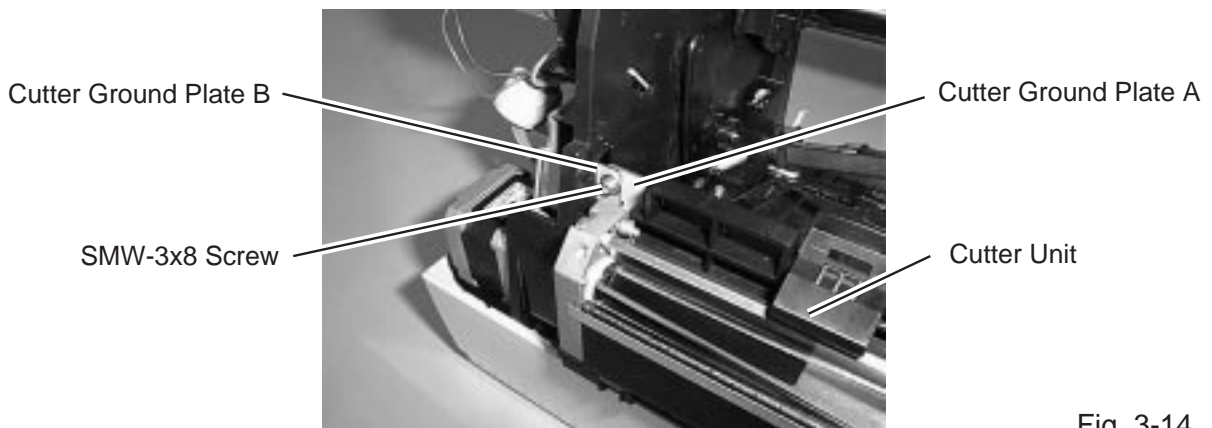


Fig. 3-14

NOTE: Install the cutter unit so that the cutter ground plate A is positioned behind the cutter ground plate B.

- 15) Fit the tabs on the reverse side of the cutter cover into the notches of the cutter unit to attach the cutter cover.

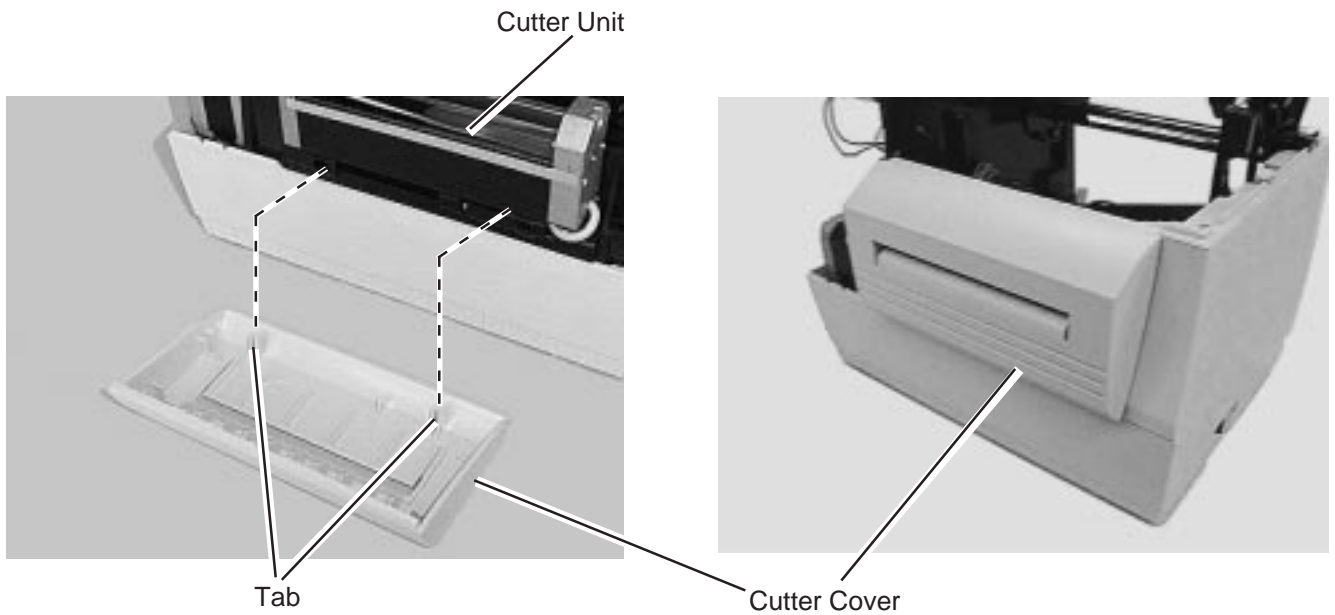


Fig. 3-15

- 16) Reassemble the top cover, side cover R and side cover L in the reverse order of removal.
NOTE: Be careful not to pinch the harnesses by the covers when installing the cutter module.

3.2 CENTRONICS INTERFACE BOARD (B-7704-C-QM)

3.2.1 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.

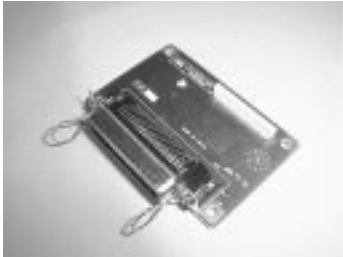



<p>Centronics I/F Board (1 pc.)</p> 	<p>Installation Manual (1 pc.)</p>  <p>Locking Support WLS-16-0 (1 pc.)</p> 	<p>CENTRO Flat Cable (1 pc.)</p> 
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Fig. 3-16

3.2.2 Installation Procedure

- 1) Turn the power off.
- 2) Open the top cover and remove the two PT-3x10 screws. (Refer to section 3.1.)
- 3) Disconnect the KEY LED Harness from CN14 on the CPU PC board and detach the side cover L. (Refer to section 3.1.)
- 4) Remove the blind plate from the rear of the side cover L. (For QQ model.)

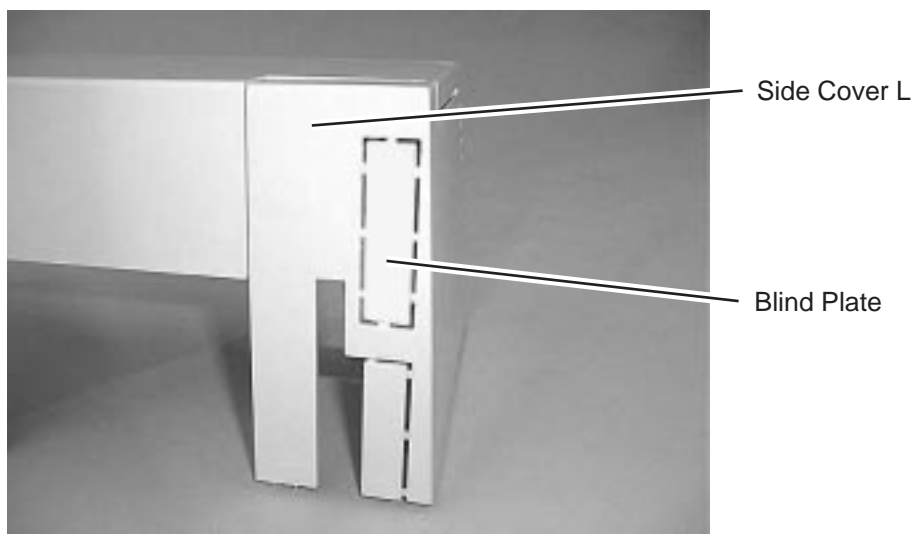


Fig. 3-17

- 5) Fit the enclosed locking support into the Centronics I/F board.
- 6) Secure the Centronics I/F board to the CPU PC board with the two B-3x6 screws and locking support as follows.

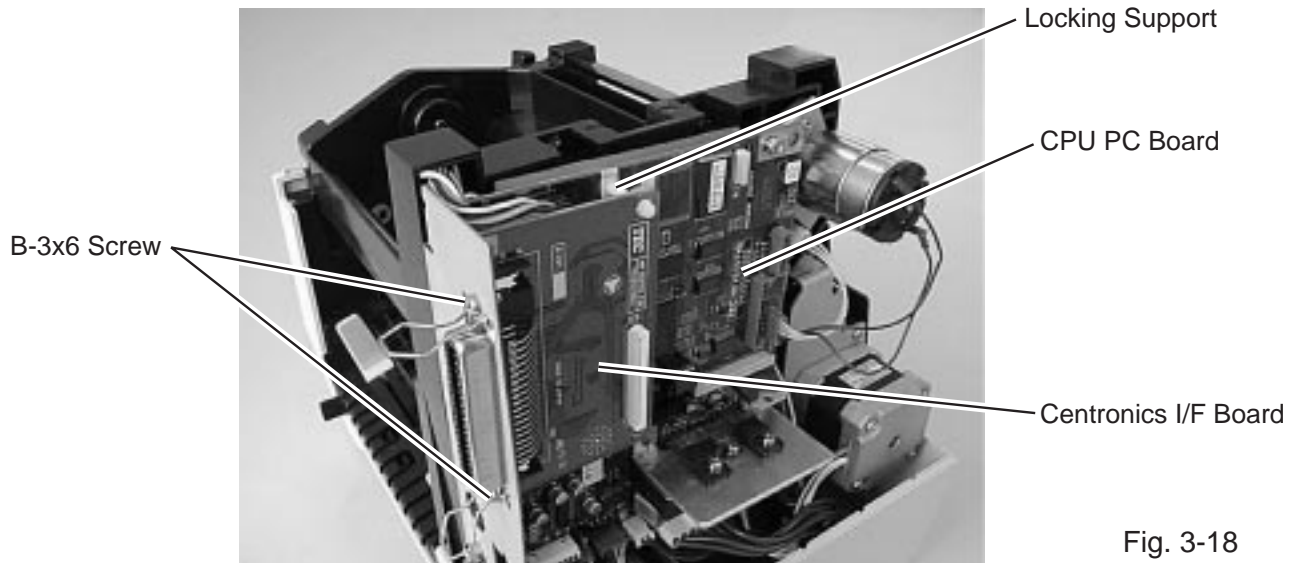


Fig. 3-18

- 7) Connect CN1 on the Centronics I/F board to CN11 on the CPU PC board with the CENTRO flat cable.

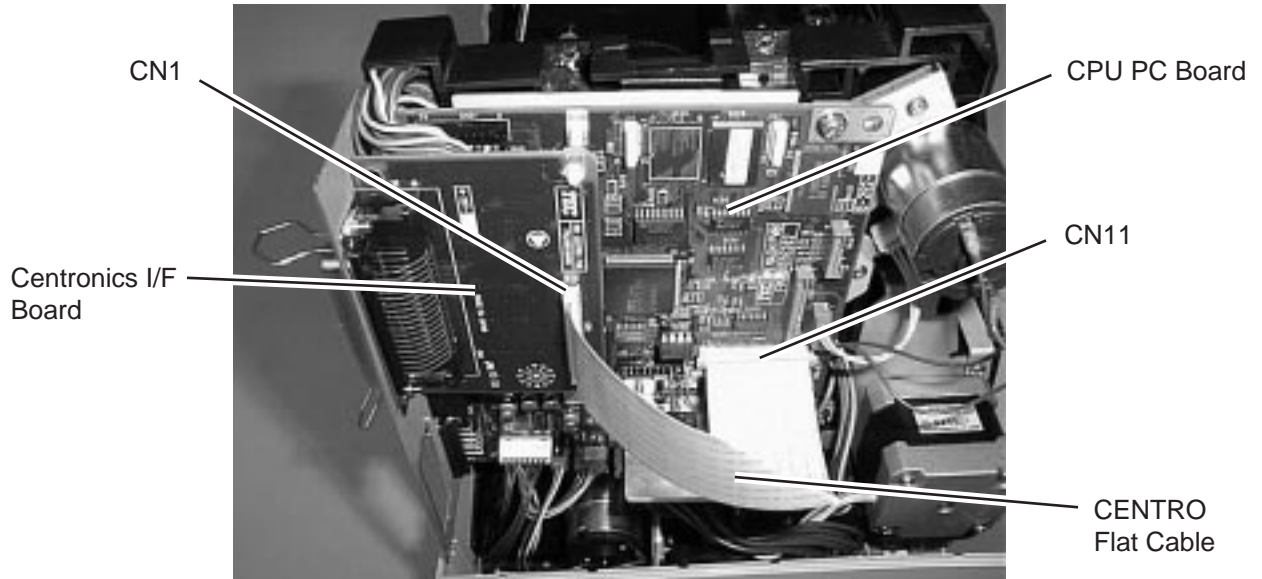


Fig. 3-19

- 8) Reassemble the top cover, and side cover L in the reverse order of removal.

- NOTES:**
1. Be careful not to pinch the harnesses by the covers when installing the Centronics I/F board.
 2. The Centronics interface board is installed in the B-452-HS model as standard.

3.3 EXPANSION I/O INTERFACE BOARD (B-7704-IO-QM)

3.3.1 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below





<p>Expansion I/O Interface Board (1 pc.)</p> 	<p>Installation Manual (1 pc.)</p> 	<p>Expansion I/O Cable (1 pc.)</p> 
	<p>Locking Support WLS-16-0 (1 pc.)</p> 	

Fig. 3-20

3.3.2 Installation Procedure

- 1) Turn the power off.
- 2) Open the top cover and remove the two PT-3x10 screws. (Refer to section 3.1.)
- 3) Disconnect the KEY LED harness from CN14 on the CPU PC board to detach the side cover L. (Refer to section 3.1)
- 4) Remove the blind plate from the rear of the side cover L.

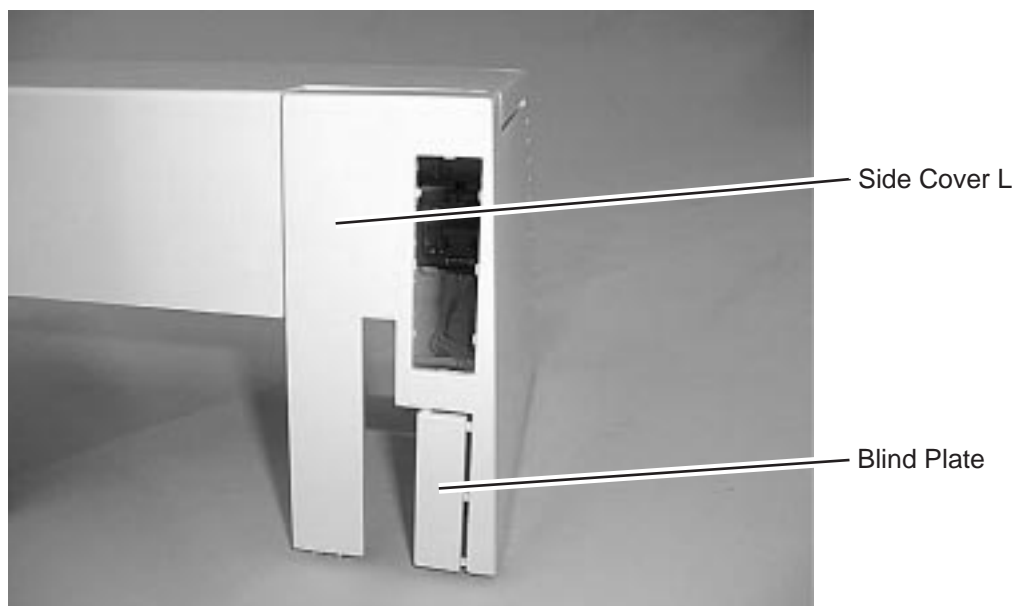


Fig. 3-21

- 5) Secure the expansion I/O interface board to the CPU PC board with the enclosed two B-3x6 screws and the locking support as follows.



Fig. 3-22

- 6) Connect CN1 on the expansion I/O interface board to CN7 on the CPU PC board with the expansion I/O cable.

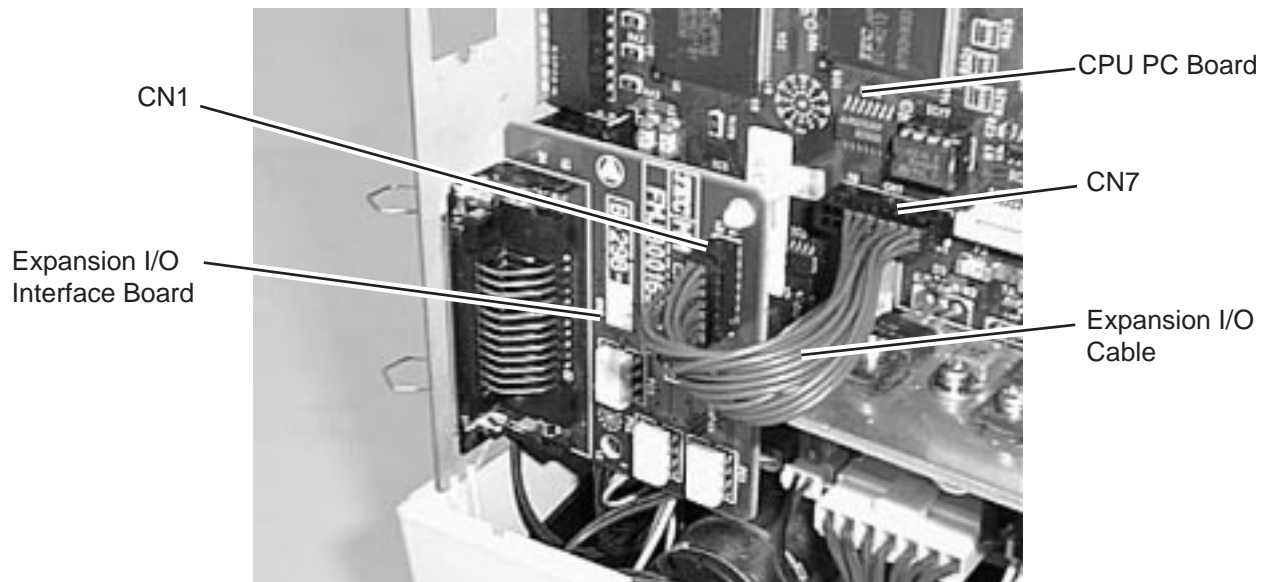


Fig. 3-23

- 7) Reassemble the top cover, and side cover L in the reverse order of removal.

- NOTES:**
1. Be careful not to pinch the harnesses by the covers when installing the expansion I/O interface board.
 2. The optional expansion I/O interface board can be installed on the B-452-TS model only.

3.4 EXPANSION MEMORY BOARD (B-7804-E1M-QM)

3.4.1 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.

NOTE: The B-7804-E1M-QM can be used for the products manufactured before August '99 (Serial No. 9Nxxxxxx or earlier).

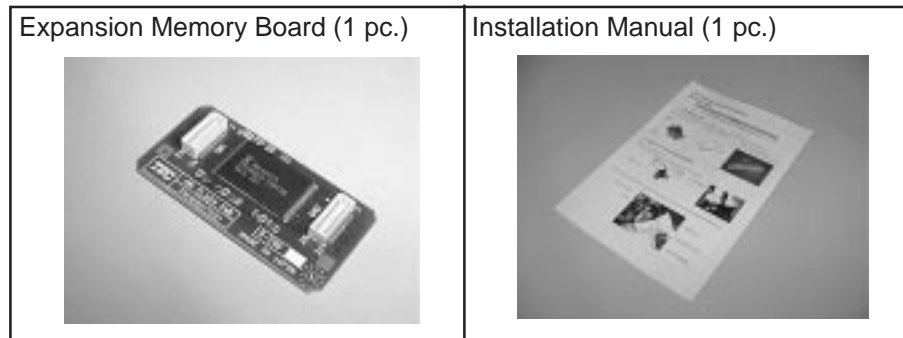


Fig. 3-24

3.4.2 Installation Procedure

- 1) Turn the power off.
- 2) Open the top cover and remove the two PT-3x10 screws. (Refer to section 3.1.)
- 3) Disconnect the KEY LED harness from CN14 on the CPU PC board to detach the side cover L. (Refer to section 3.1.)
- 4) Connect CN1 and CN2 on the expansion memory board to CN10 and CN6 on the CPU PC board, respectively.

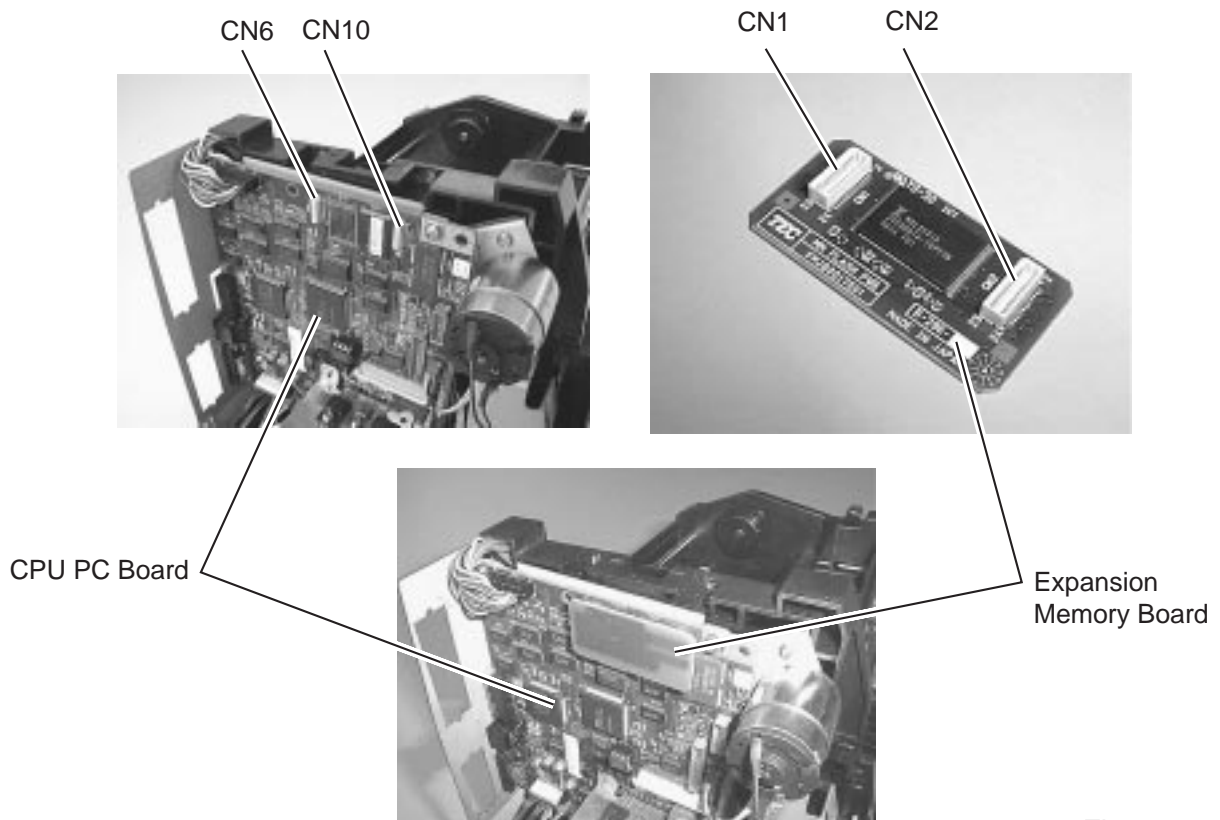


Fig. 3-25

- 5) Reassemble the top cover, and side cover L in the reverse order of removal.

NOTE: Be careful not to pinch the harnesses by the covers when installing the expansion memory board.

3.5 LAN I/F BOARD (B-7704-LAN-QM)

3.5.1 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.




<p>LAN Board (1 pc.)</p> 	<p>LAN Flat Cable (1 pc.) Locking Support (1 pc.) B-3 x 6 Screw (2 pcs.)</p> 	<p>Installation Manual (1 pc.)</p> 
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Fig. 3-26

3.5.2 Installation Procedure

- 1) Turn the power off.
- 2) Open the top cover and remove the two PT-3x10 screws. (Refer to section 3.1.)
- 3) Disconnect the KEY LED harness from the LED PC board to remove the side cover L.

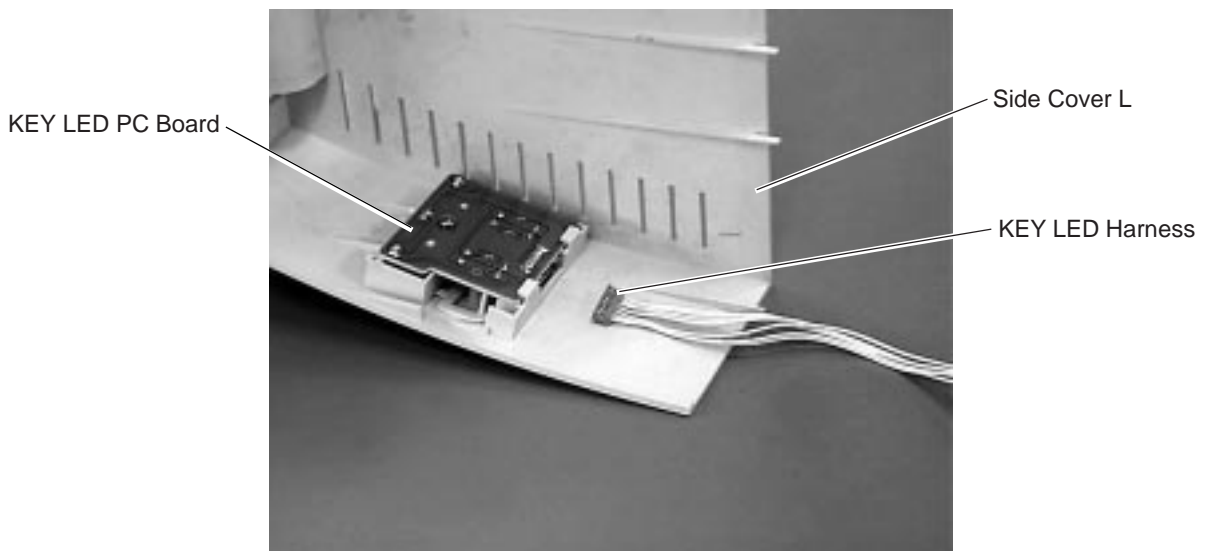


Fig. 3-27

- 4) Connect the LAN flat cable to CN11 on the CPU PC board in the orientation indicated below.

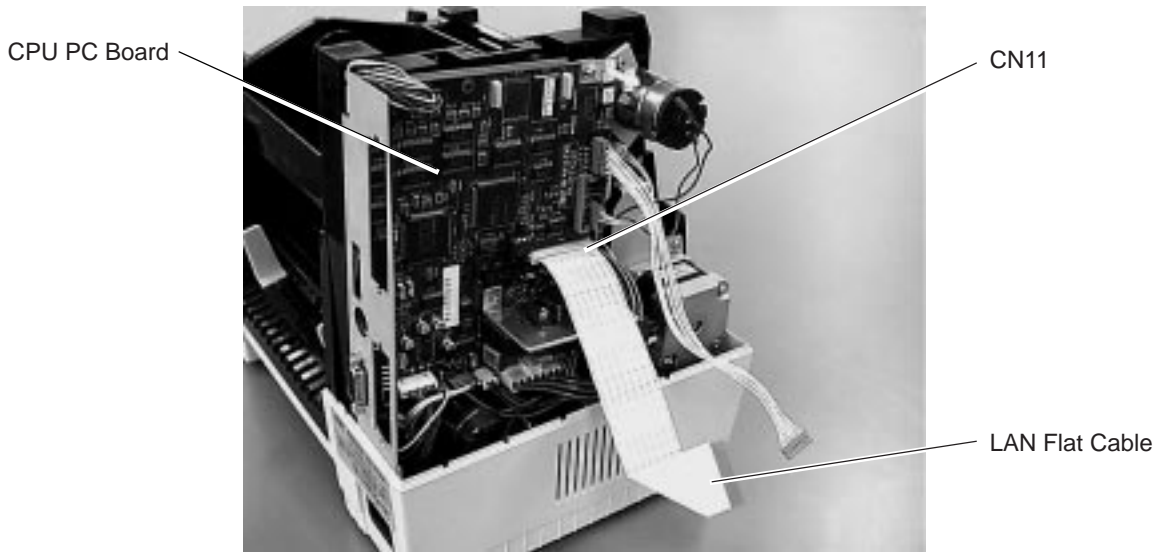


Fig. 3-28

- 5) Secure the LAN board to the CPU PC board with a locking support and two bind screws(B-3 x 6). Connect the other end of the LAN flat cable to J3 on the LAN board.

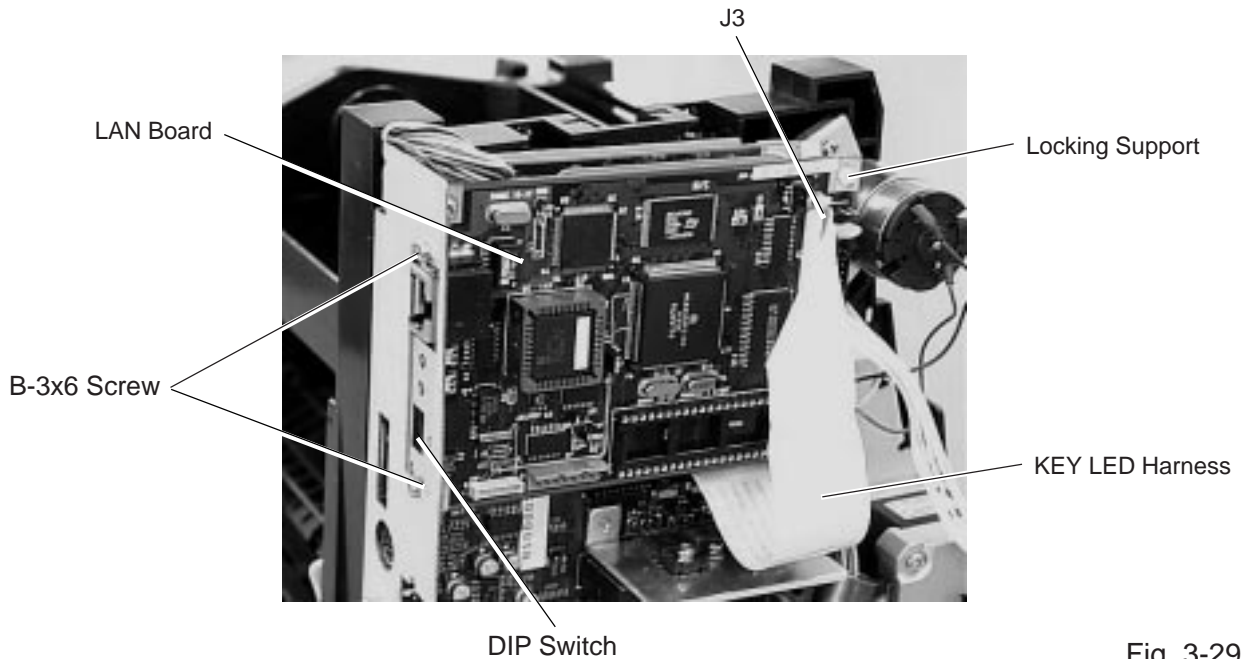


Fig. 3-29

NOTE: Do not change the setting of the DIP switch installed on the LAN board. (All off)

- 6) After installing the LAN board, reassemble in the reverse order of removal.

NOTE: The optional LAN I/F board can be installed on the B-452-TS model only.

3.6 PROGRAMMABLE KEYBOARD (KB-80-QM)

WARNING!

Be sure to turn the printer power OFF before connecting the KB-80-QM to the printer.

3.6.1 Installation Procedure

- 1) Turn off the printer power.
- 2) Connect the DIN cable of the KB-80-QM to the DIN connector of the B-450 printer.



Fig. 3-30

- 3) Turn on the printer power.

NOTE: *When making an user's application program, refer to the KB-80-QM Basic Specifications and Key Unit Interface Specifications.*

3.7 STRIP MODULE (B-7904-H-QM)

WARNING!

1. *Disconnect the power cord before installing the strip module.*
2. *Be careful not to pinch the harnesses with the covers or strip module. Damaged harnesses may be short-circuited, causing electric shock, fire, or machine failure.*

3.7.1 Packing List

All the following parts are supplied with the kit. Make sure you have all items shown below.

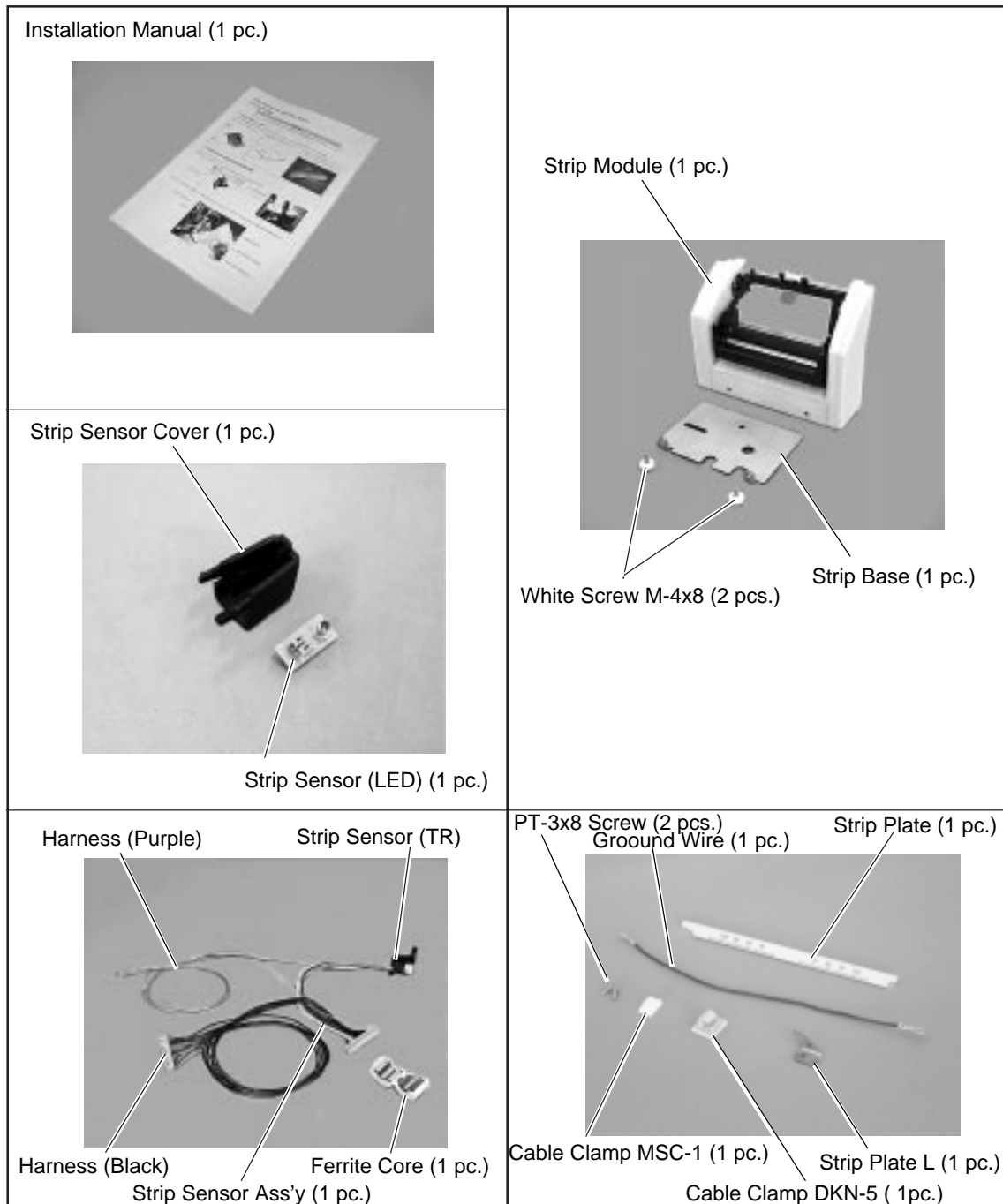


Fig. 3-31

3.7.2 Installation Procedure

- 1) Turn the power off.
- 2) Open the top cover and remove the two PT-3x10 screws. (Refer to Section 3.1.)
- 3) Disconnect the KEY LED harness from CN14 on the CPU PC board to detach the side cover L. (Refer to section 3.1.)
- 4) Remove the PT-3x10 screw to detach the side cover R. (Refer to section 2.3.)
- 5) Attach the enclosed cable clamps MSC-1 and DKN-5 as shown below.

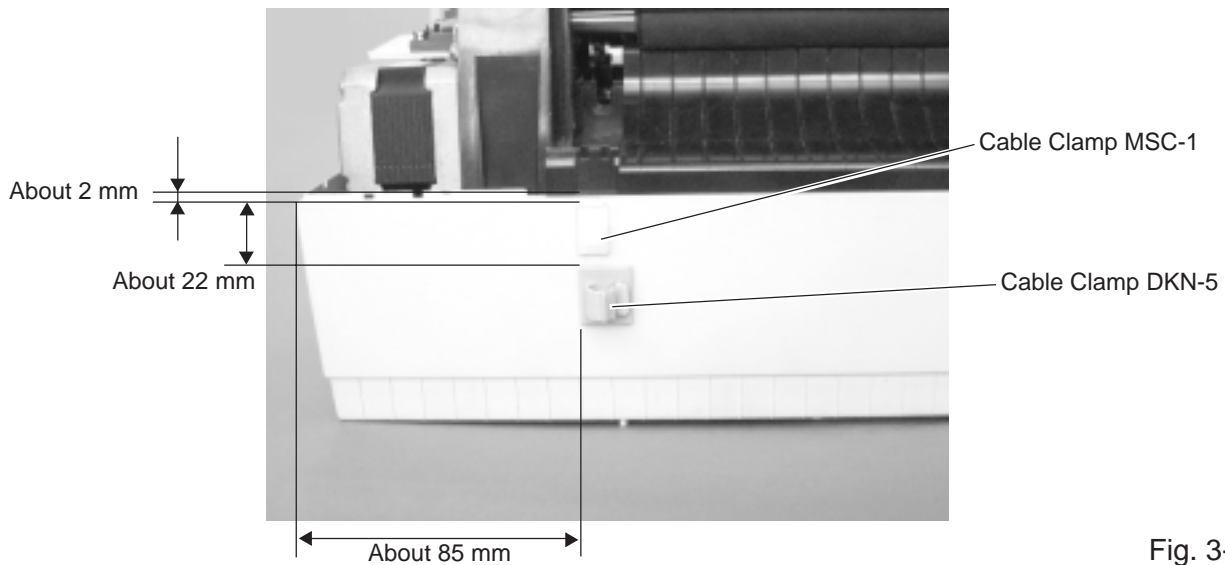


Fig. 3-32

- 6) For TS Model
Open the print head block, and then detach the paper guide base.

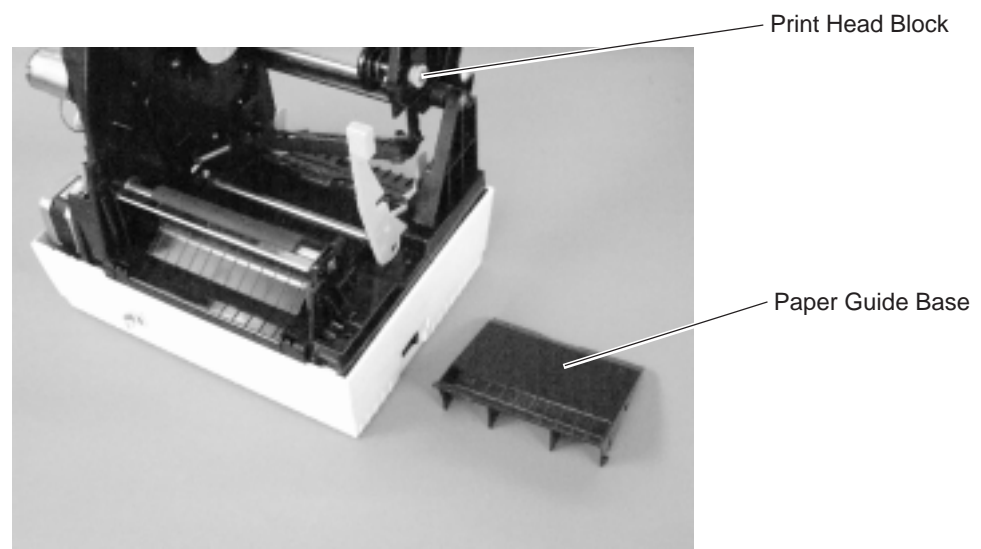


Fig. 3-33

For HS Model

Open the print head block. The sensor block is fixed to the printer by the two hooks enclosed by the circles in the figure below. Release the hooks by pushing them in the direction indicated by the arrows, and remove the sensor block.

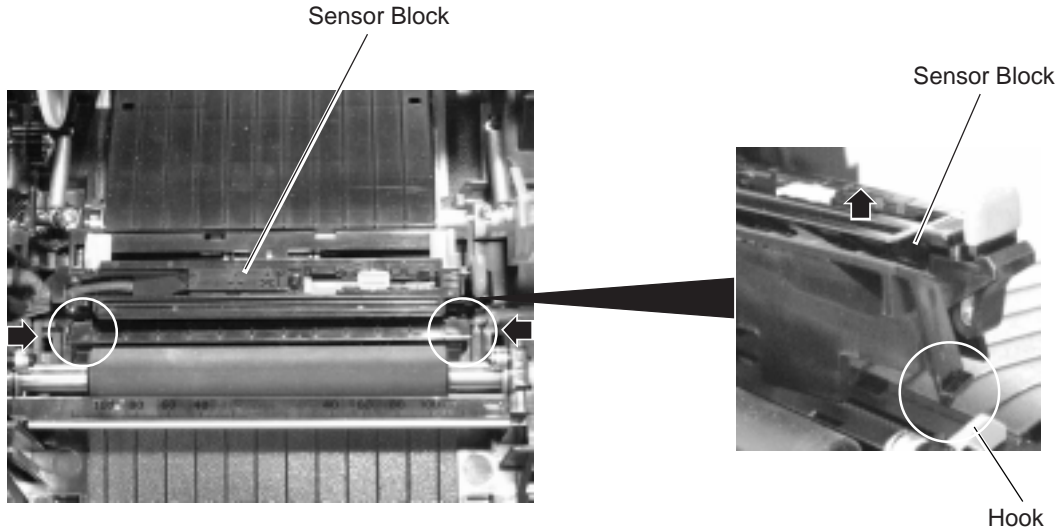


Fig. 3-34

- 7) Insert the two harnesses (black and purple) of the enclosed strip sensor ass'y and the ground wire into the square hole from the outside of the frame (CPU PC board side) to the inside of the frame (Platen side).

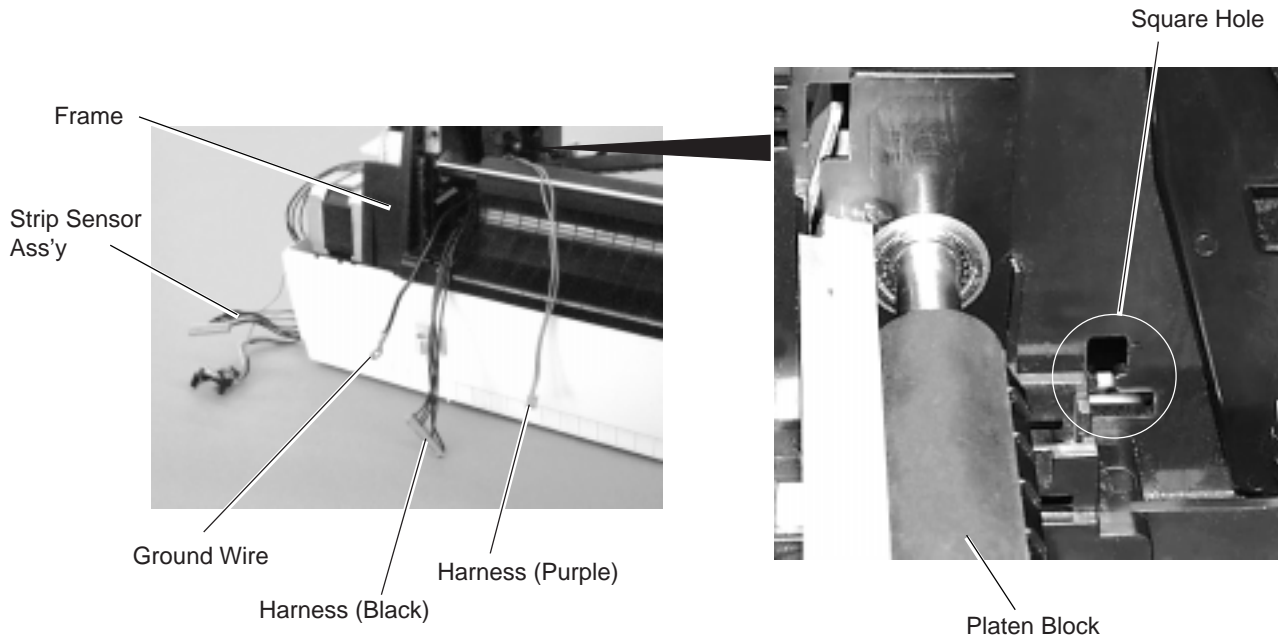


Fig. 3-35

NOTE: For the HS model, be careful that the strip sensor harness does not get entangled in the media sensor harness which has been led through the square hole. When the media sensor harness is entangled, it may be difficult to adjust the media sensor position.

- 8) Install the strip sensor harness (purple) under the three tabs, and then lead it to the front of the printer.

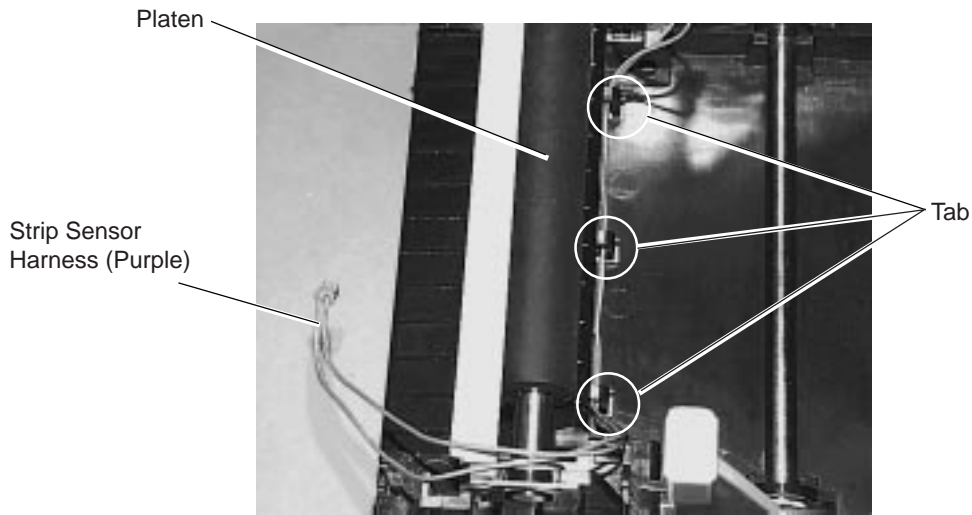


Fig. 3-36

- 9) Connect the strip sensor harness (purple) to the strip sensor (LED), and then fit the strip sensor (LED) to the strip sensor cover.

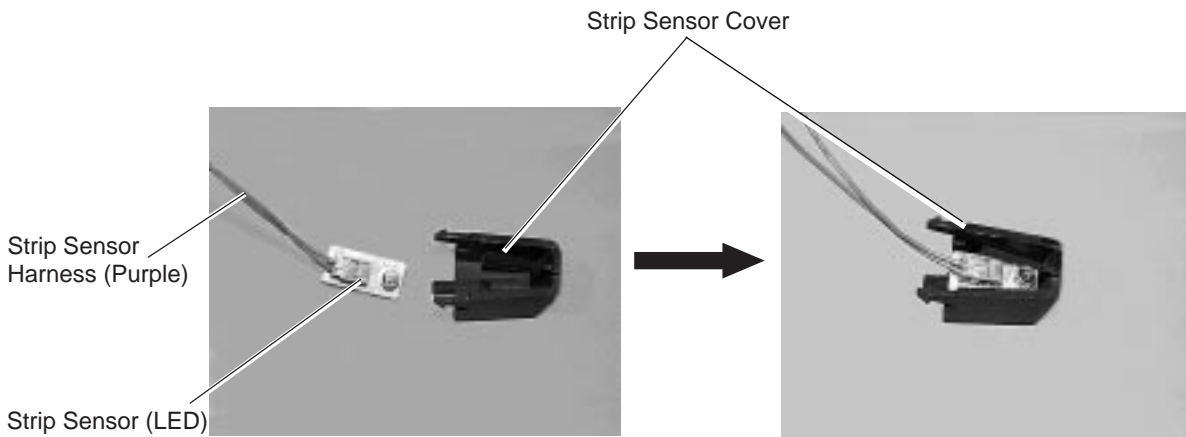


Fig. 3-37

10) Fit the strip sensor cover to the four holes in the right side of the printer.

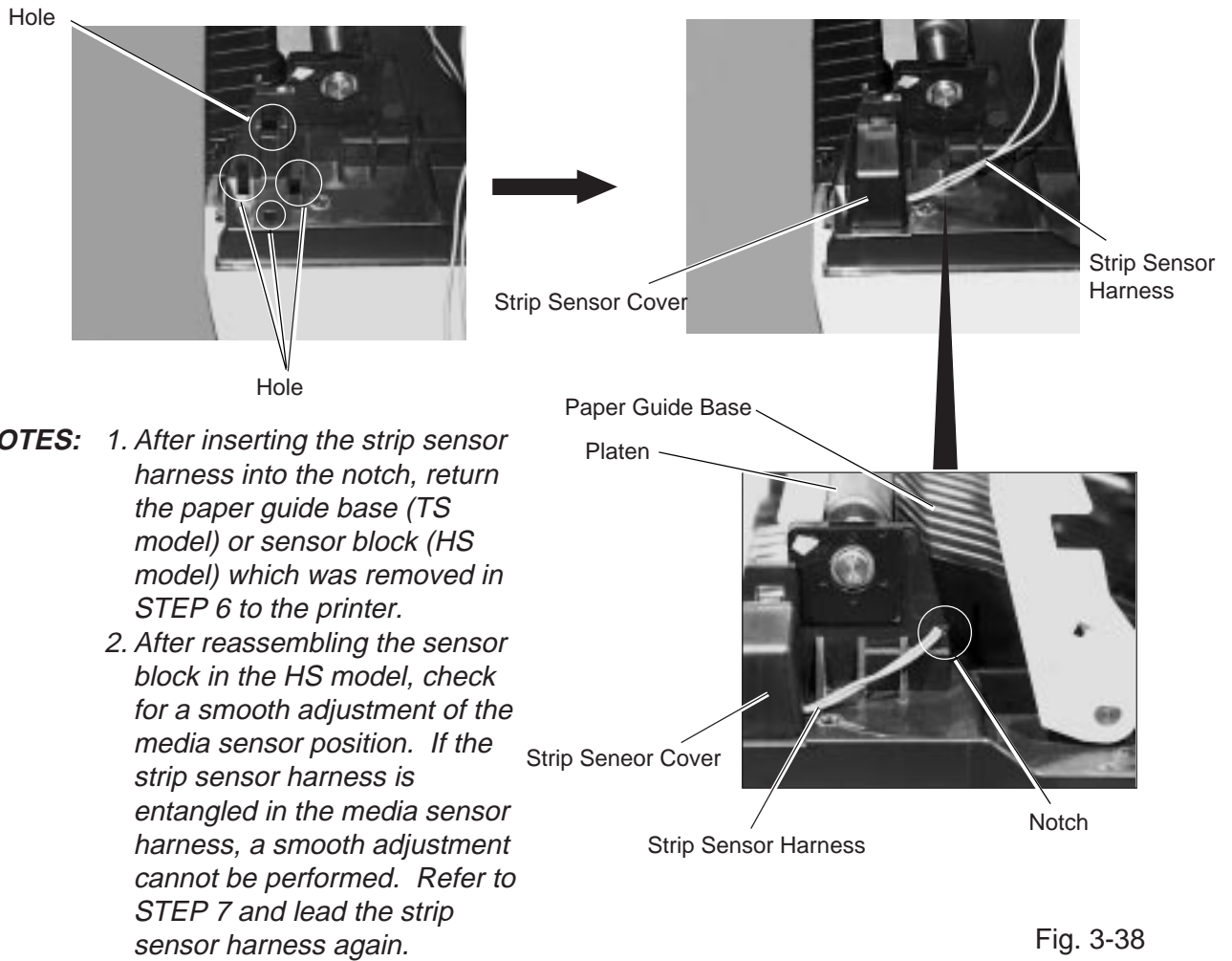


Fig. 3-38

11) Lead the strip sensor harness (black) and the ground wire under the platen, and then fix them with the cable clamp MSC-1 and the cable clamp DKN-5.

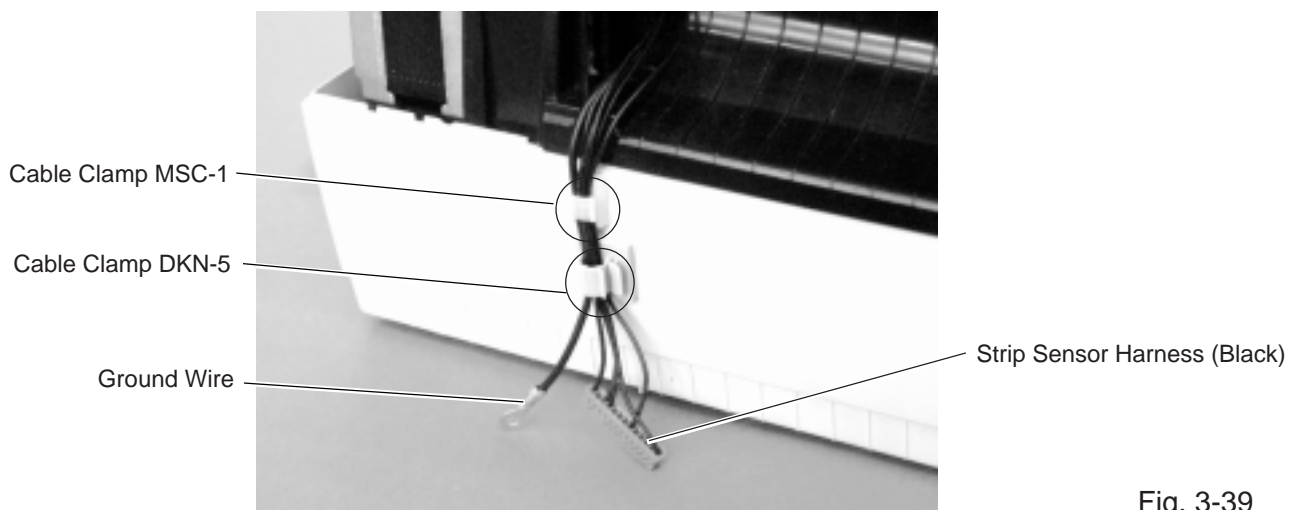


Fig. 3-39

12) Insert the projection on the bottom of the printer into a small hole in the strip base.

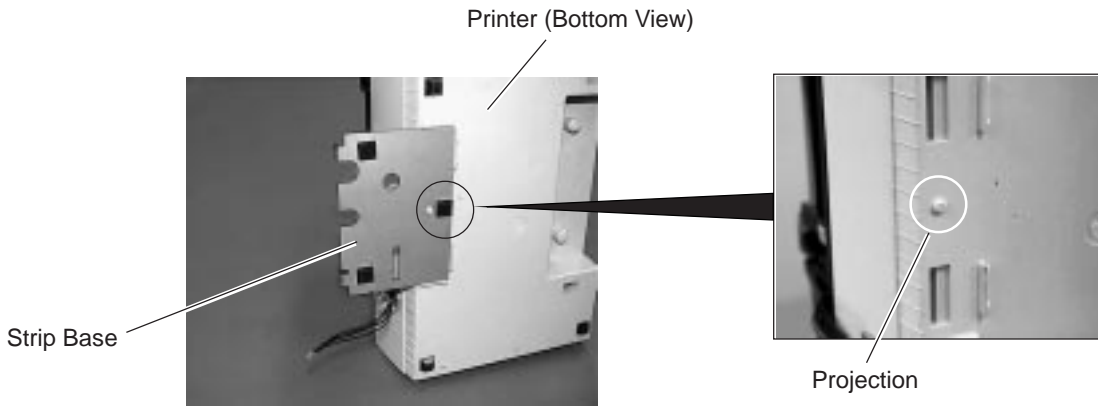


Fig. 3-40

13) Connect the strip sensor harness (black) to the connector of the strip module, and secure the ground wire to the strip module with the screw as shown in the figure below.

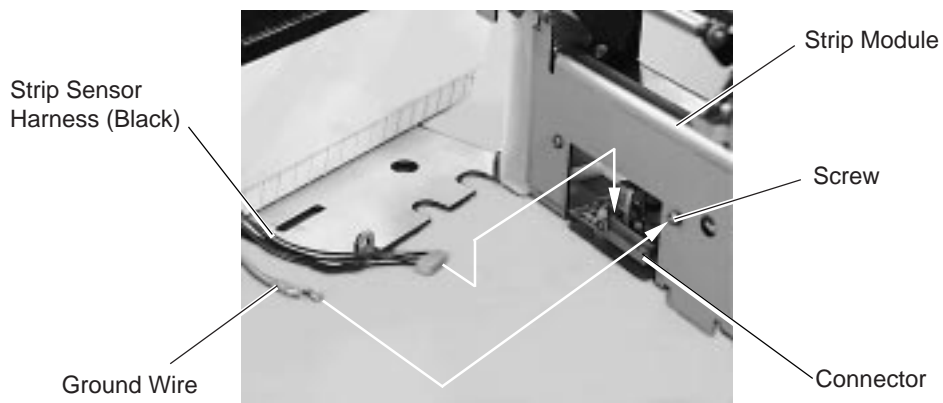


Fig. 3-41

14) Unhook and remove the platen block from the printer by pulling it up.

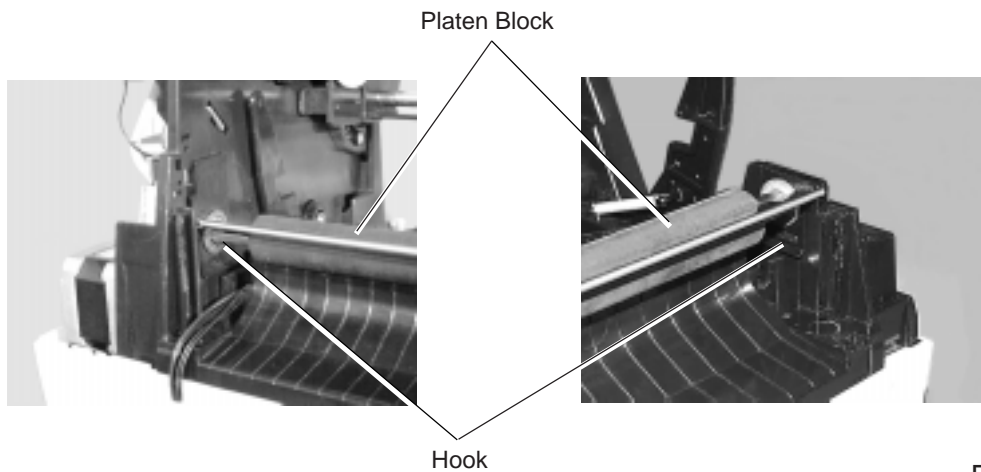


Fig. 3-42

- 15) Exchange the paper scale of the platen block with the enclosed strip plate.

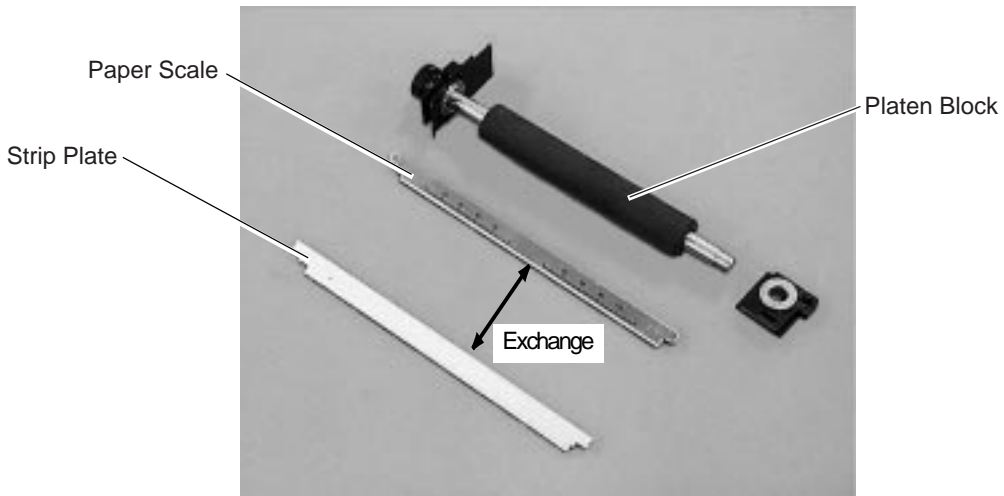


Fig. 3-43

- 16) Attach the strip module to the printer so that the upper guide plate of the right side of the strip module is inserted into slit B and the lower guide plate on the left side of the strip module is inserted into slot A.

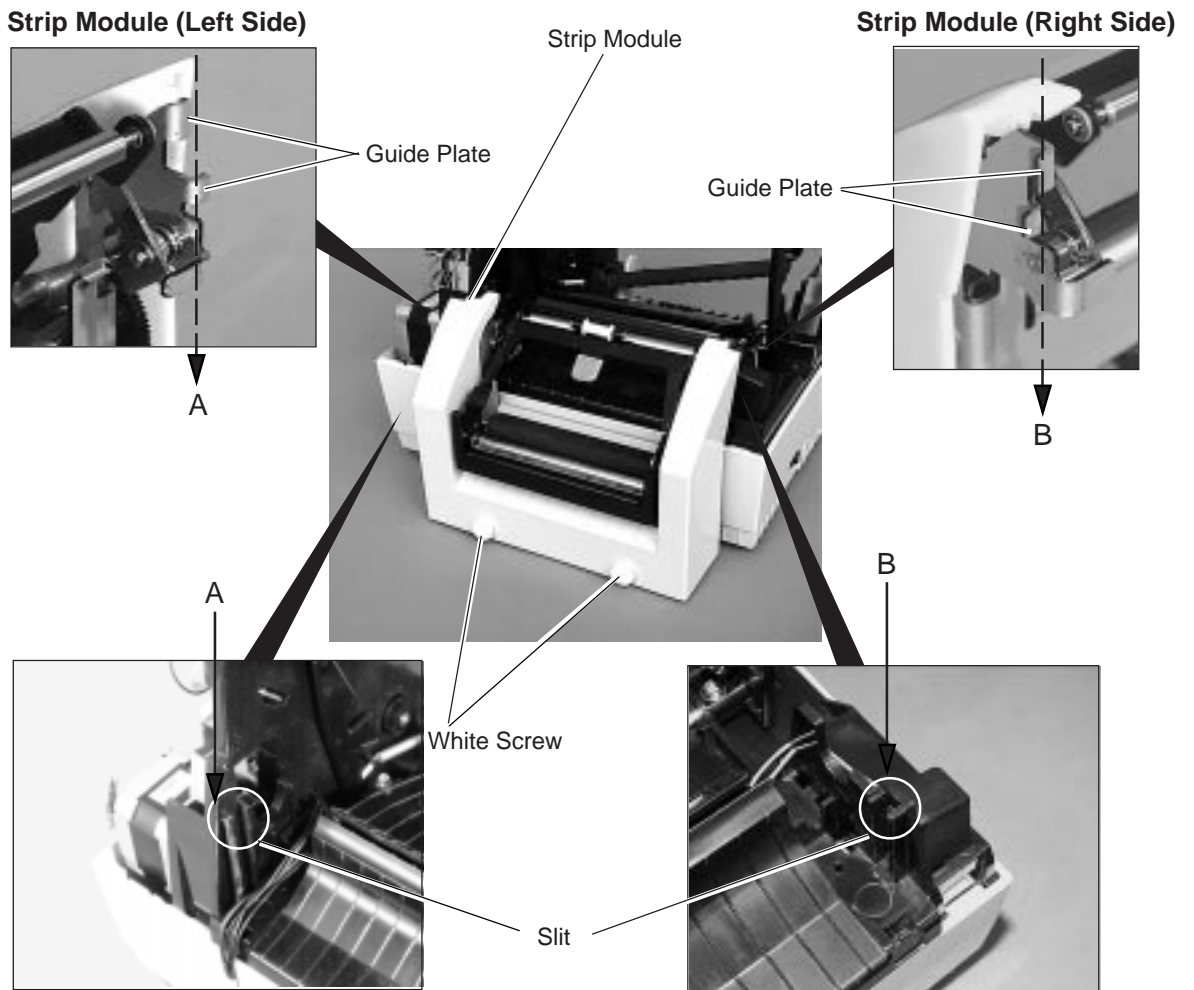


Fig. 3-44

17) Secure the strip module with the enclosed PT-3x8 screw to the printer.

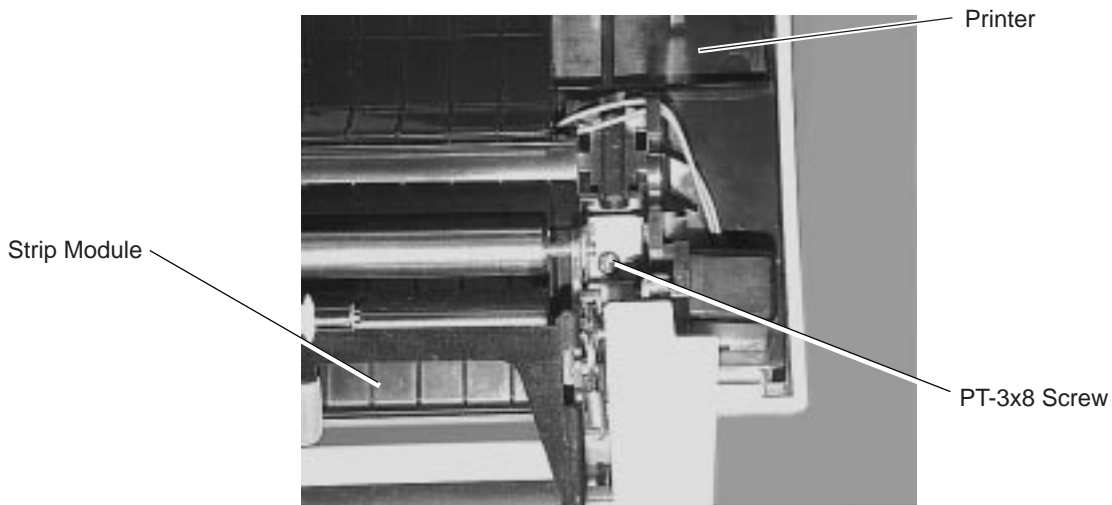


Fig. 3-45

18) Unhook the strip lever by pushing it, and open the strip module.

19) Put aside the strip sensor harness (black) and the ground wire to attach the strip plate L to the frame base with the enclosed PT-3x8 screw. Ensure that the strip plate L holds the plate behind the hook plate L.

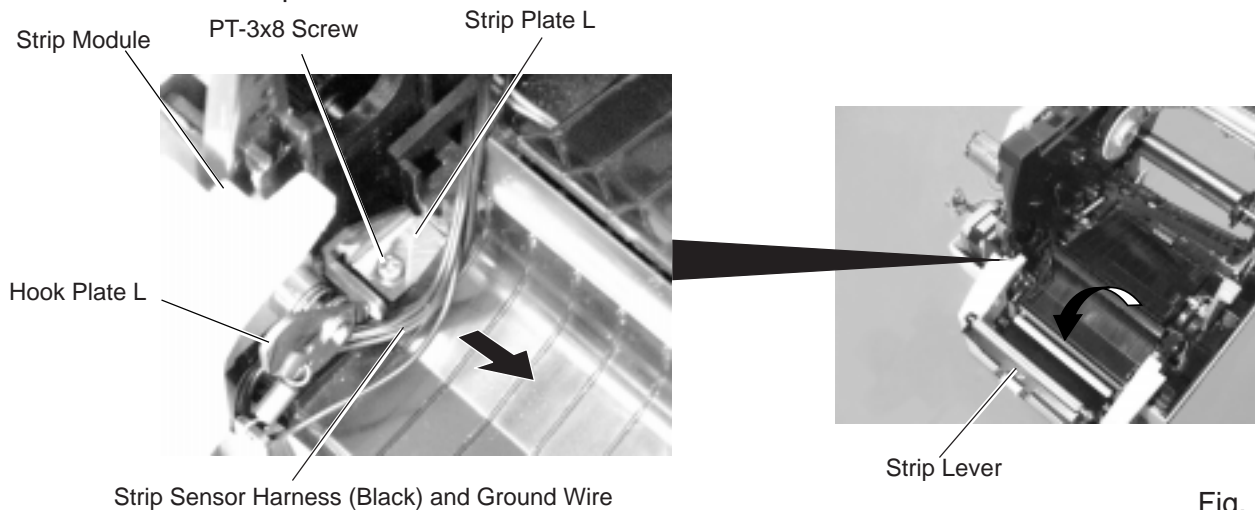


Fig. 3-46

20) Take out slack of the strip sensor harness (black) and the ground wire by pulling them from the CPU PC board side.

CAUTION:
 Do not pull the harness too strong. Damaged harness may cause a machine failure.

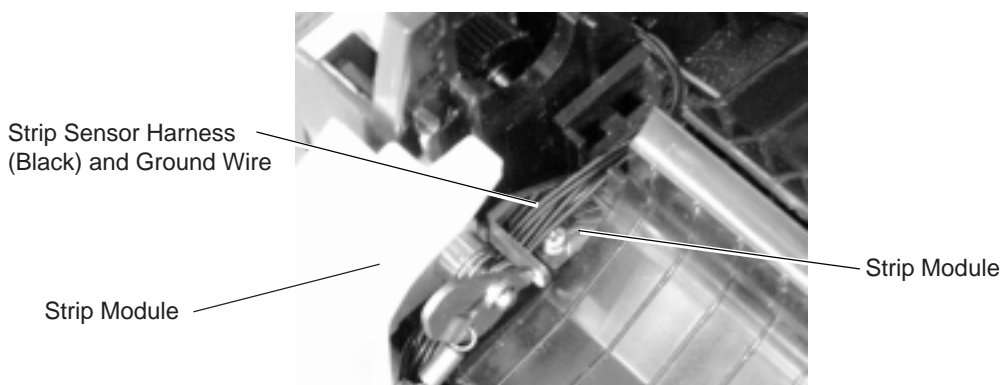
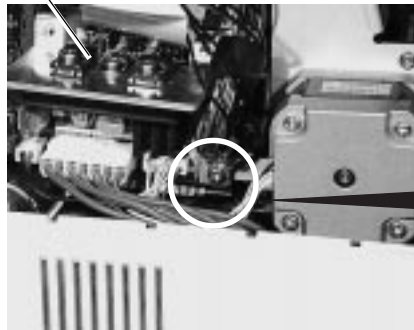


Fig. 3-47

- 21) Fix the ground wire to the CPU PC board with the PT-3x10 screw which secure the CPU PC board.

CPU PC Board



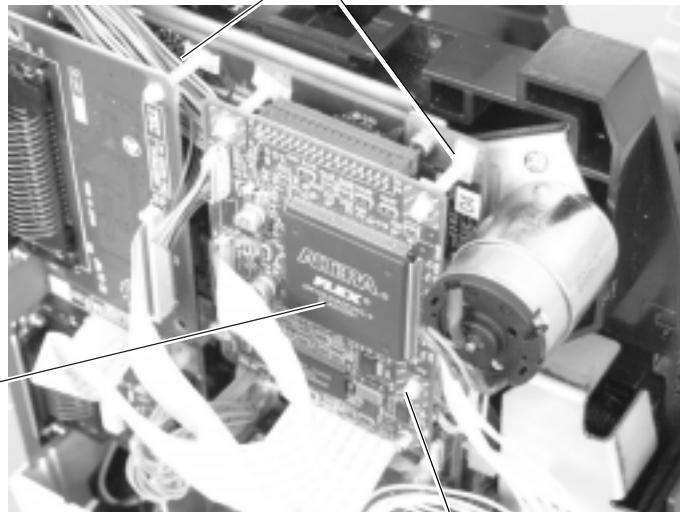
Ground Wire

PT-3x10 Screw

Fig. 3-48

- 22) For HS model only
 Release the head control PC board from the three locking supports that secure it to the CPU PC board.

Locking Support



Head Control PC Board

Locking Support

Fig. 3-49

- 23) Wind the strip sensor around the enclosed ferrite core one time, and connect the strip sensor harness (13 pins) to CN22 on the CPU PC board. Then, fit the strip sensor (TR) into the holes of the frame base.

CN22

Strip Sensor (TR)

Strip Sensor (TR)



CPU PC Board

Connector (13 pin)

Strip Sensor Ass'y

Ferrite Core



Hole

Fig. 3-50

24) Return the platen block detached in STEP14 to the printer, and close the print head block.

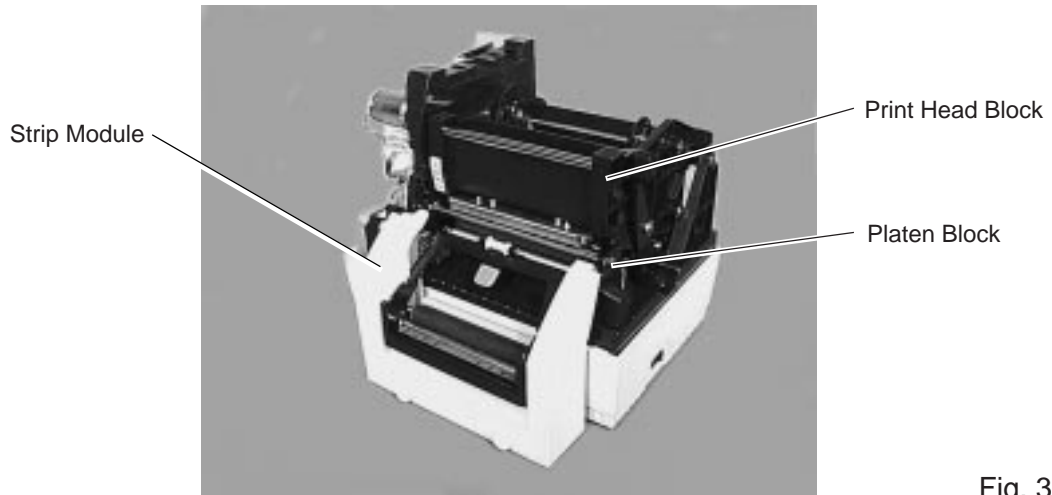


Fig. 3-51

25) Reassemble the side covers L and R and the top cover in the reverse order of removal. (Refer to Steps 2 to 4.) For the HS model, do not forget to reassemble the head control board that was removed in STEP 22.

4. TROUBLESHOOTING

Problems	Cause	Solution
Power is not turned ON.	<ol style="list-style-type: none"> 1. Input voltage to the printer is not within the rated voltage. 2. Output voltage from the printer is not within the rated voltage. 3. CPU PC Board is not applied with voltage. 4. Failure of CPU PC board. 	<ul style="list-style-type: none"> • Replace the power cord or power inlet. • Replace the PS unit. • Replace the power harness. • Replace the CPU PC board.
LED does not light.	<ol style="list-style-type: none"> 1. Failure of the KEYLED PC board. 2. Failure of the KEYLED harness. 3. Failure of the CPU PC board. 	<ul style="list-style-type: none"> • Replace the KEYLED PC board. • Replace the KEYLED 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. 4. Alignment adjustment of the print head is improper. 	<ul style="list-style-type: none"> • Use the paper approved by TOSHIBA TEC. • Clean the print head. • Fasten the head lever completely. • Re-adjust the print head.
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 of the CPU PC board. 4. Failure of the software. 5. Failure of the printer cable. 6. Failure of the HEAD CONTROL PC board. (HS model) 	<ul style="list-style-type: none"> • Replace the print head. • Connect the harness completely, or replace the harness. • Replace the CPU PC board. • Check the program. • Replace the printer cable. • Replace the HEAD CONTROL PC Board.
Dot missing.	<ol style="list-style-type: none"> 1. Broken element of the print head. 2. Broken wires of the print head cable. 3. Failure of the CPU PC board. 4. Failure of the HEAD CONTROL PC board. (HS model) 	<ul style="list-style-type: none"> • Replace the print head. • Replace the print head harness. • Replace the CPU PC board. • Replace the HEAD CONTROL PC Board.
Blurred print.	<ol style="list-style-type: none"> 1. Poor quality of paper. 2. Dust is attached to the paper. 	<ul style="list-style-type: none"> • Use only TOSHIBA TEC specified paper. • Clean the print head and remove the dust from the paper.
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. Failure of the feed gap sensor or blackmark sensor. 5. Labels cannot be stripped off the backing paper or the backing paper with labels cannot be would properly. 6. The cutter mechanism is not installed properly. 7. Failure of the stepping motor. 	<ul style="list-style-type: none"> • Set the paper properly. • Use the paper approved by TOSHIBA TEC. • Re-adjust the sensor. • Replace the feed gap sensor or black mark sensor. • Replace the take-up motor or black mark sensor. • Install the cutter mechanism properly. • Replace the stepping motor or CPU 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 the CPU PC board.

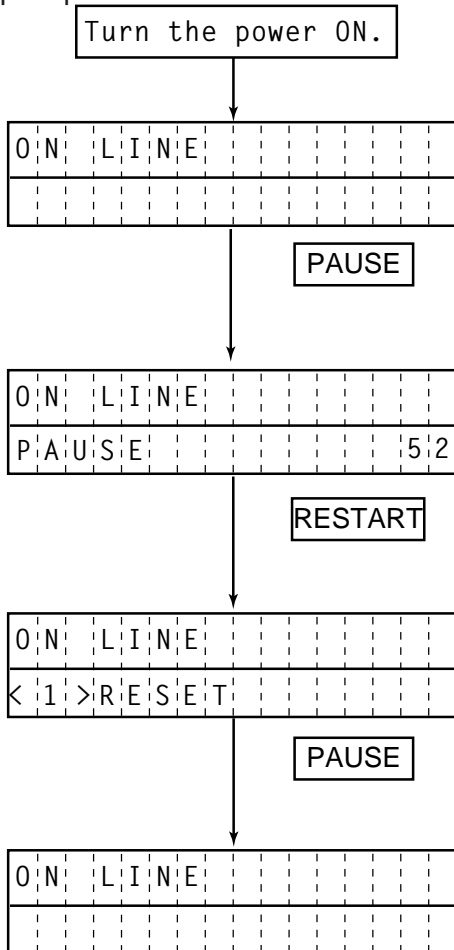
5. ON LINE OPERATION

5.1 RESET OPERATION

5.1.1 When using the KB-80-QM optional keyboard

This operation restores the printer to the initial status.

• Sample operation



- (1) The printer is in stand-by or printing.
- (2) Press the **[PAUSE]** key on the printer. (When the KB-80-QM optional keyboard is connected, press and hold the **[PAUSE]** key for at least 3 seconds.)
- (3) The printer enters the pause state.
- (4) Press and hold the **[RESTART]** key for at least 3 seconds.
- (5) A reset menu is displayed.
- (6) Press the **[PAUSE]** key.
- (7) The printer is restored to the initial state.

- 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 and pause 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.

■ Key Function Table

Key Name	Function
[FEED] Key	Feeds a piece of paper. Feeds the paper to the print start position. When printing is performed with the print position misaligned, the printer cannot print data on a proper position, therefore, feed one or two pieces of paper to set the paper to the proper position before printing. Also sets the feed speed adjustment value.
[RESTART] Key	Restarts the label issue after a pause or an error. Restores the printer to the status after turning the power ON. Issues the label while the printer is on-line.
[PAUSE] Key	Pauses the label issue.

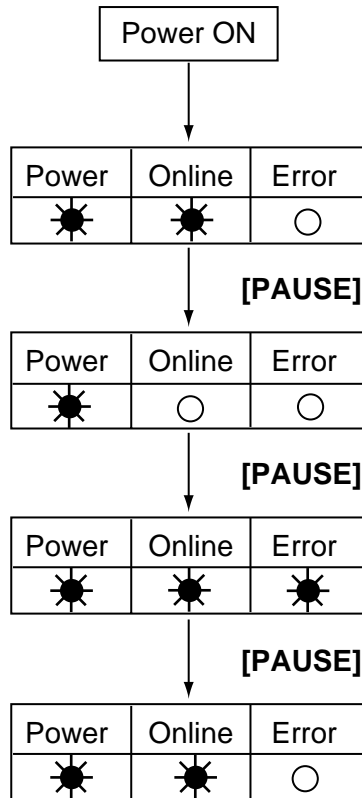
■ Display Indication Table

No.	LCD Message	Printer Status	Restoration by pressing the [RESTART] Key. Possible / Impossible
1	ON LINE	On-line mode	-
2	HEAD OPEN	The head is opened in on-line mode.	-
3	PAUSE ****	In a pause state	Possible
4	COMMS ERROR	A parity, overrun or framing error occurred during RS-232C communication.	Possible
5	PAPER JAM ****	A paper jam occurred during paper feed.	Possible
6	CUTTER ERR ****	An error occurred at the cutter module.	Possible
7	NO PAPER ****	The label has run out.	Possible
8	HEAD OPEN ****	Paper feed or issue is attempted with the head block opened.	Possible
9	EXCESS HEAD TEMP	The print head is too hot.	When the print head temperature becomes under 60°C, printing restarts automatically.
10	RIBBON ERR ****	Ribbon error (Ribbon error, ribbon break)	Possible
11	FLASH WRITE ERR.	An error has occurred when writing data into the flash memory.	Impossible
12	FORMAT ERROR	A deletion error occurred while formatting the flash memory.	Impossible
13	MEMORY OVERFLOW	No more data can be saved in the flash memory.	Possible
14	SYNTAX ERROR	Undefined command is retrieved.	Possible
15	STACK FULL ****	The stacker is full of paper.	Impossible
16	STACKER ERR ****	Printing was attempted while the stacker is off.	Impossible
17	THERM.UNCONNECT	Environment temperature thermistor is disconnected.	Impossible
18	HEAD ERROR	The print head has broken elements.	Impossible

**** : Remaining number of labels to be printed.

5.1.2 When using the operation panel

To abort paper issue and clear the data transferred from the PC to the printer, use the following procedure to reset the printer.



☀: ON
○: OFF

(1) Turn the power on.

The printer is in idle state or printing.

(2) Press the **[PAUSE]** key.

The printer enters the pause mode or stops printing.

(3) Press and hold the **[PAUSE]** key for 3 seconds or more in the pause state.

This LED state indicates the printer is in reset mode.

(4) Press the **[PAUSE]** key.

The printer returns to the initial state.

- NOTES:**
1. When the printer is restorable, it will enter the reset mode after the **[PAUSE]** key is pressed and held for 3 seconds or more.
 2. If the **[PAUSE]** key is released within 3 seconds while in pause or error state, the printer will start printing, not enter the reset mode. In case of errors such as paper end and cutter error, the printer will return to the initial state.

■ Key Function Table (Operation Panel)

Key Name	Function
[FEED] Key	Feeds a piece of paper. Feeds the paper to the print start position. When printing is performed with the print position misaligned, the printer cannot print data on a proper position, therefore, feed one or two pieces of paper to set the paper to the proper position before printing. Also sets the feed speed adjustment value.
[PAUSE] Key	Pauses the label issue and printing. Restarts printing after a pause or an error.

■ LED Function Table (Operation Panel)

LED Name	Function
[POWER] LED	Indicates that the printer is ON.
[ON LINE] LED	Indicates that the printer is communicable.
[ERROR] LED	Indicates that the printer is in an error status.

■ LED Indication Table (Operation Panel)

No.	LED Indication			Printer Status	Restoration by pressing the [PAUSE] key Possible/Impossible	Status request reset command reception Possible/Impossible
	POWER	ON LINE	ERROR			
1	★	★	○	On-line mode	-	Possible
	★	⊛	○	On-line mode (during communication)	-	Possible
2	★	○	○	The head cover is opened in on-line mode.	-	Possible
3	★	○	○	Pause	Possible	Possible
4	★	○	★	A parity, overrun or framing error occurred during RS-232C communication.	Possible	Possible
5	★	○	★	A paper jam occurred during paper feed.	Possible	Possible
6	★	○	★	An error occurred at the cutter module.	Possible	Possible
7	★	○	★	The paper has run out.	Possible	Possible
8	★	○	★	Paper feed or issue is attempted with the print head block opened.	Possible	Possible
9	★	○	★	The print head is too hot.	When the print head temperature becomes under 60°C, printing restarts automatically.	Possible
10	★	○	★	Ribbon error (ribbon end, ribbon break)	-	Possible
11	★	★	○	Writable character and PC command registration mode	Impossible	Possible
12	★	○	★	An error occurred when writing data into the flash memory.	Impossible	Possible
13	★	○	★	A deletion error occurred while formatting the flash memory.	Impossible	Possible
14	★	○	★	No more data can be saved in the flash memory.	Possible	Possible
15	★	○	★	Undefined command is retrieved.	Impossible	Possible
16	★	○	★	A zero-dividing error occurred.	Impossible	Impossible
17	★	○	★	A momentary power failure occurred.	Impossible	Impossible
18	★	○	★	Backup EEPROM is not read/written properly.	Impossible	Impossible
19	★	○	★	The stacked paper is full.	Possible	Possible
20	★	○	★	The label issue is attempted when the stacker power is OFF.	Possible	Possible
21	★	○	★	The connector of the environmental temperature thermistor comes off.	Impossible	Possible
22	★	○	★	The print head has broken elements.	Possible	Possible

★ : ON
○ : OFF
⊛ : BLINK

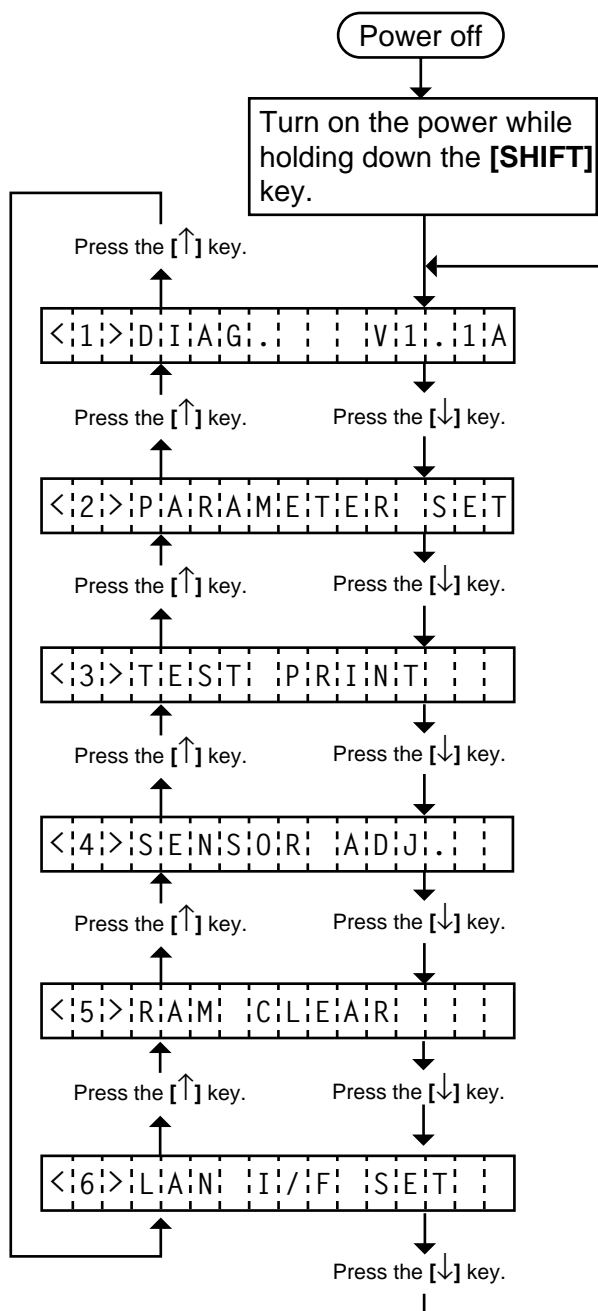
6. DIAG. TEST OPERATION

6.1 OUTLINE OF THE DIAG. TEST OPERATION

6.1.1 When using the KB-80-QM optional keyboard

In system mode the diag. test operation is used to diagnose the printer and to set the parameters by using the [F1], [↑], [↓] and [→] keys on the operation panel. Diag. test operation is started from the power off state. For further details, please refer to the corresponding pages.

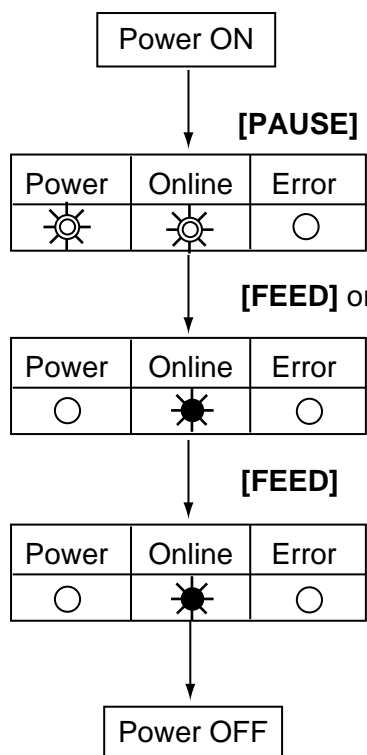
NOTE: Every size in this manual is written in millimeter. To obtain the size in inch, divide by 25.4.



- Self Test Mode (See page 6-3)
 Data from the maintenance counter and automatic diagnosis are printed on the paper. The result of the head broken element check is indicated in the display.
- Parameter Setting Mode (See page 6-11)
 Fine adjustment of the feed length, cut/strip position, reverse feed, X axis, print tone and the threshold of the black mark sensor and the feed gap sensor, selection of character font, font zero, strip wait status, communication mode and the language of LCD message, and feed speed adjustment are available in this mode.
- Test Print Mode (See page 6-38)
 Print condition and test print type (slant lines, characters, and bar codes) are selectable.
- Sensor Setting Mode (See page 6-47)
 A thermistor check and the setting 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 6-49)
 Data from the maintenance counter is cleared and parameter setting is initialized in the RAM clear mode.
- LAN I/F Setting Mode (See page 6-54)
 Each parameter setting of the LAN I/F is available in this mode. (This mode is valid when the LAN I/F board is installed into the printer.)

NOTE: The parameter setting for each mode is displayed on the second line.

6.1.2 When using the operation panel



(1) Turn the power ON while pressing and holding the **[PAUSE]** key.

(2) Self diagnosis is performed.

(3) Start a self diagnosis print.
 • In case of thermal transfer print, press the **[FEED]** key.
 • In case of thermal direct print, press the **[PAUSE]** key.

(4) Start the test print by pressing the **[FEED]** key.

(5) Turn the power OFF.

- NOTES:**
- When an error occurs during printing, the error LED is lit and printing is stopped. The error can be cleared by pressing the **[PAUSE]** key and the printer restores to the copy/print tone selection. Auto-reissue is not performed after the error is cleared.
 - The default parameter at power on is as below:
 - ISSUE COUNT: 1
 - PRINT SPEED: 2 inch/sec.
 - SENSOR: None
 - TYPE: Batch
 - LABEL LENGTH: 76mm (B-452-TS model) / 105 mm (B-452-HS model)
 - Even if the auto paper feed has been performed in online mode, an auto reverse feed is not performed when starting a test print.
 - After a self diagnosis print, an auto reverse feed is not performed for printing the first paper in online mode.
 - After the print head is raised and lowered, the auto paper feed is canceled.
 - Regarding the details of the self diagnosis print and test print, refer to sections 6.2 and 6.4, respectively. (Only slant lines (3 dot) are printed at the test print.)

6.2 SELF TEST MODE (When using the KB-80-QM Optional Keyboard)

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

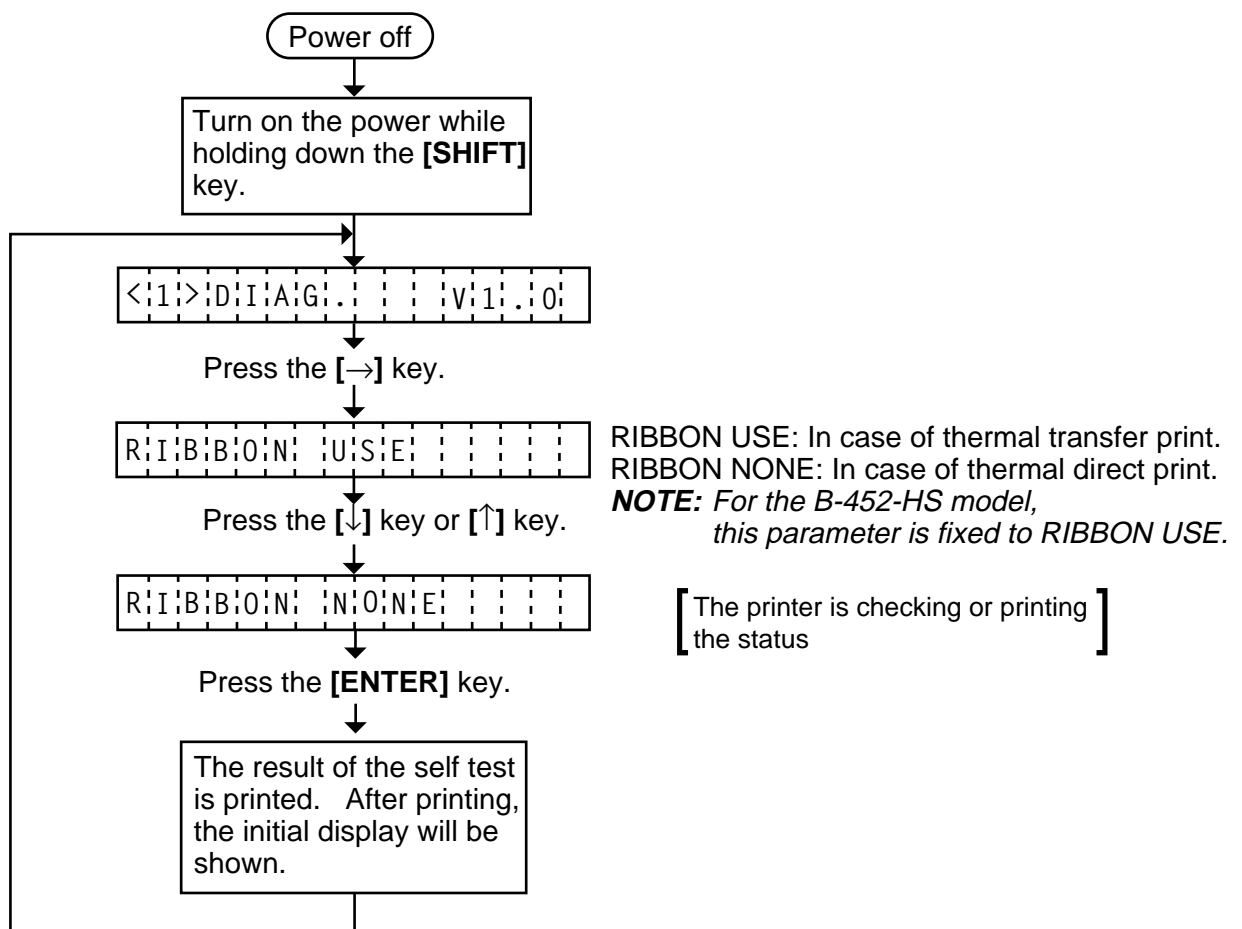
6.2.1 Maintenance Counter and Automatic Diagnostic Printings

Maintenance Counter Printing

The data from (1) to (35) on a sample print A is printed. This data is the printer status and the value set in the parameter setting mode.

Automatic Diagnostic Printing

The data from (1) to (12) on a sample print B is printed.



- 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> DIAGNOSTIC Software Version No.". Printing is not automatically resumed after the error is cleared.
 2. Both label and tag paper can be used for printing.

■ **Sample Print A**

[Print Condition]

- Preset count : 1
- Print speed : 2"/sec.
- Sensor : No sensor
- Supply length : 76 mm (TS model)
105 mm (HS model)
- Issuing mode : Batch printing

(1)	TL FEED	0.0km	[PC]		
(2)	FEED	0.0km	FEED	+0.0mm	(19)
(3)	PRINT	0.0km	CUT	+0.0mm	(20)
(4)	CUT	64	BACK	+0.0mm	(21)
(5)	RIBBON	0h	TONE (T)	+0step	(22)
(6)	232C ERR	255	TONE (D)	+0step	(23)
(7)	SYS ERR	0	[KEY]		
(8)	PW FAIL	0	FEED	+0.0mm	(24)
(9)	PRINT SPEED		CUT	+0.0mm	(25)
	[PC]	+1.0%	BACK	+0.0mm	(26)
	[KEY]	+0.0%	TONE (T)	+0.0mm	(27)
(10)	X ADJ.	+0.0mm	TONE (D)	+0step	(28)
(11)	RIBN ADJ. [PC]	+0	+0 [KEY]	+0+0	
(12)	FONT	[PC1254]	[0]	[¥]	
(13)	SPEED	[9600]	PARITY	[EVEN]	(29)
(14)	CONTROL	[XON/XOFF]			
(15)	CODE	[AUTO]	STATUS	[OFF]	(30)
(16)	THRESHOLD R	1.0V	T	0.7V	
(17)	KANJI	[TYPE1]	EURO CODE	FFH	(31)
(18)	STACKER	[OFF]	TT BLOCK	[13]	(32)
(33)	GAIJI BLK	[15]	PCSAV BLK	[0]	(34)
(35)	RBN TYP	[00]			

Fig. 6-1

1) Maintenance Counter

#	Item	Count Condition	Range
(1)	Total paper distance covered	Counted when the feed motor drives to feed, print and issue the paper. (Counted also during back feed.) [See NOTE 2].	0.0 to 3200.0 km
(2)	Paper distance covered		0.0 to 200.0 km
(3)	Print distance	Counted while printing. (Feeding and issuing paper, 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)	Ribbon motor drive time	Counted when the Ribbon motor is driven to feed, print, etc. [See NOTE 4.]	0 to 2000 hours
(6)	RS-232C hardware error count	Counted when a parity, overrun or framing error occurs. [See NOTE5.]	0 to 255 hours
(7)	System error count	Counted when a zero-dividing error occurs or undefined command is retrieved.	0 to 15 times
(8)	Momentary power failure count	Counted when a momentary power failure occurs.	0 to 15 times

- NOTES:**
1. Item from (2) through (8) are initialized to "0" after RAM clear.
 2. If the distance is 8.2 m or less (TS model)/4.1 m (HS model) or less, it is rounded down and no data is added to the memory at power off. If the distance is less than 0.5 km, "0.0 km" is printed.
 3. If the count is 31 counts or less, it is rounded down and no data is added to the memory at power off.
 4. If the driving time is 32 sec. or less, it is rounded down and no data is added to the memory at power off.
 5. 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
(9)	Feed speed adjustment	-10.0 % to +10.0 %
(10)	X axis fine adjustment	-99.5 mm to +99.5 mm
(11)	Ribbon Motor Drive Voltage	-15 step to 0 step
(12)	Character code selection	PC-850 PC-851 PC-1252 LATIN9 PC-8 PC-855 PC-1253 ARABIC PC-852 PC-1250 PC-1254 PC-857 PC-1251 PC-1257
	Font zero selection	0: No slash used. Ø: Slash used.
	Code 5CH Selection	¥: ¥ \: \
(13)	Baud Rate	2400: 2400 BPS 4800: 4800 BPS 9600: 9600 BPS 19200: 19200 BPS
(14)	Transmission control mode	XON/XOFF: XON/XOFF READY/BUSY: READY/BUSY (DTR) XON+READY AUTO: XON+READY/BUSY XON/XOFF AUTO: XON/XOFF READY/BUSY RTS READY/BUSY (RTS)
(15)	Control Code Selection	AUTO: Automatic selection ESC LF NUL: ESC LF NUL mode {!}: Mainframe mode
(16)	Threshold Manual Fine (R) Adjustment for the Black Mark Sensor	0.0 V to 4.0 V
	Threshold Manual Fine (T) Adjustment for the Feed Gap Sensor	0.0 V to 4.0 V
(17)	Kanji Code Selection	TYPE1: Windows Code TYPE2: Original Code
(18)	Stacker Selection	ON: With Stacker OFF: Without Stacker
(19)	Feed Length Fine Adjustment (PC)	-10.0 mm to +10.0 mm (B-452-TS) -50.0 mm to +50.0 mm (B-452-HS)
(24)	Feed Length Fine Adjustment (KEY)	-10.0 mm to +10.0 mm
(20)	Cut/Strip Position Fine Adjustment (PC)	-10.0 mm to +10.0 mm (B-452-TS) -50.0 mm to +50.0 mm (B-452-HS)
(25)	Cut/Strip position Fine Adjustment (KEY)	-10.0 mm to +10.0 mm
(21)	Back Feed Length Fine Adjustment	-9.9 mm to +9.9 mm
(26)	(PC), (KEY)	
(22)	Print Tone Fine Adjustment (T)	-10 step to +10 step
(27)	Thermal Transfer (PC), (KEY)	
(23)	Print Tone Fine Adjustment (D)	-10 step to +10 step
(28)	Thermal Direct	
(29)	Parity	None: None EVEN: Even
(30)	Strip Status	OFF: Strip wait status is not sent to PC ON: Strip wait status is sent to PC.
(31)	Euro Code	20 H to FF H
(32)	TT BLOCK	The number of blocks used for True type font: 0 to 15 (B-452-TS)/0 to 13 (B-452-HS)

#	Item	Contents
(33)	GAIJI BLOCK	The number of blocks used for Bitmap writable character: 0 to 15 (B-452-TS) / 0 to 13 (B-452-HS)
(34)	PCSAV BLOCK	The number of blocks used for PC Save: 0 to 15 (B-452-TS) / 0 to 13 (B-452-HS)
(35)	Ribbon type selection	Fixed to "00".

■ **Sample Print B**

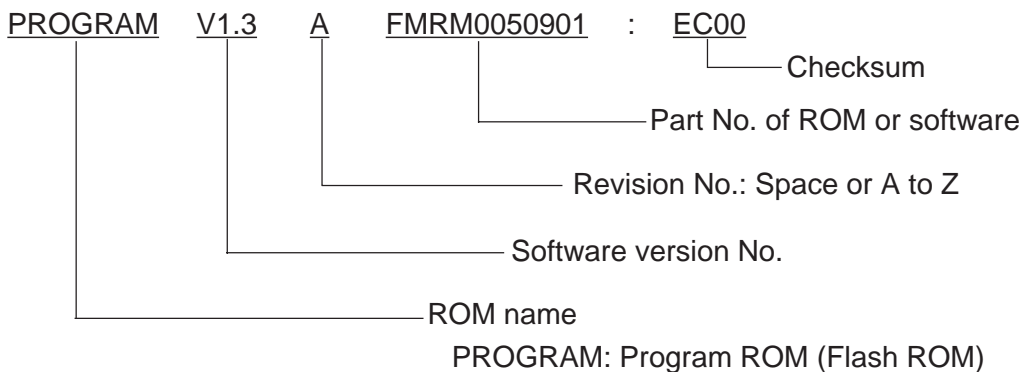
[Print Condition]

- Preset count : 1
- Print speed : 2"/sec.
- Sensor : No sensor
- Supply length : 76 mm (TS model)
105 mm (HS model)
- Issuing mode : Batch printing

(1)	PROGRAM	V1.3	FMRM0050901	:	EC00 (5300)	(4)
(2)	FONT	CA00	HDCNF	9F9A		
(3)	KANJI	9D00				
(5)	EEPROM	0K				
(6)	DRAM	2048KB				
(7)	SENSOR1	00000000,00010110				
(8)	SENSOR2	[H]28°C [A]28°C [R]3.9V [T]1.6V [RANK]10				
(9)	PE LV.	[R]1.8V [T]4.5V				
(10)	DIP SW	00010110				
(11)	DIN	NG				
(12)	EXP. I/O	NG				

(1) PROGRAM ROM Check

Fig. 6-2



- 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.

(2) FONT ROM Check



(3) KANJI ROM Check



- NOTES:**
1. Checksum varies according to the software version.
 2. When the KANJI ROM or KANJI OUTLINE ROM is not installed, the checksum becomes "0000".
 3. The last two digits of the checksum are not 0.

(4) HDCNF Check (B-452-HS model only)

HDCNF 9F9A
 └── Print Head Historical Control Configuration data

(5) EEPROM Check

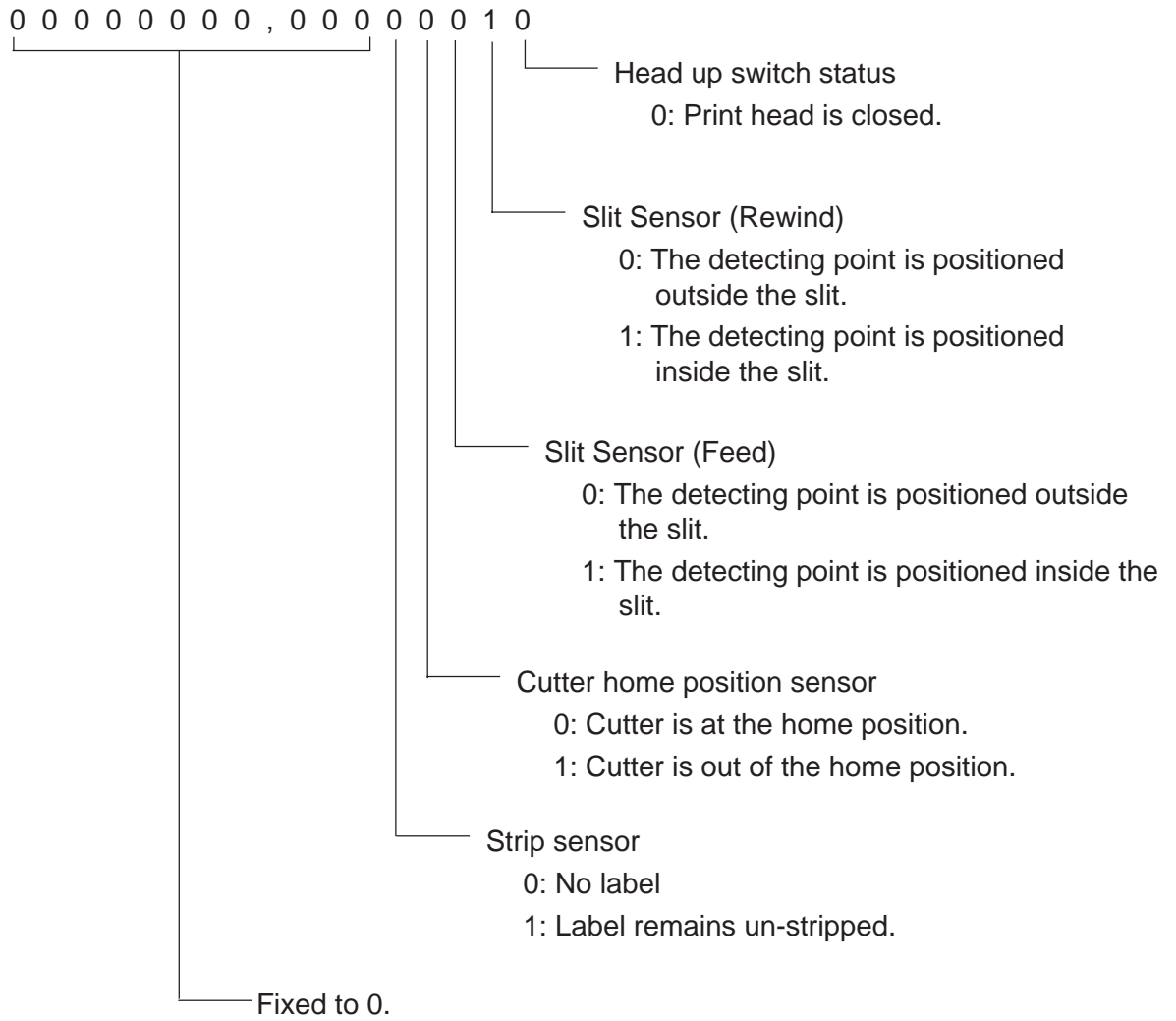
EEPROM OK
 └── Read/write check
 OK: Data in the check area can be properly read/
 written.
 NG: Data in the check area cannot be properly
 read/written.
 └── EEPROM: Backup memory

(6) DRAM Check

DRAM 2048KB
 └── Readable/writable area
 └── DRAM: Image buffer memory or work memory

NOTE: If an error is detected during DRAM check, the display of readable/writable area will stop when the error occurs.

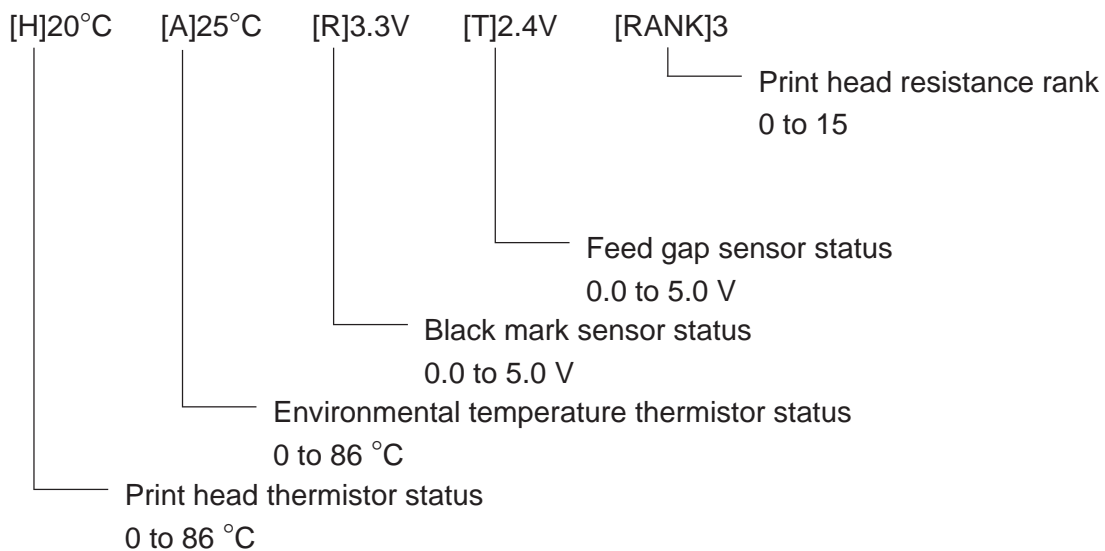
(7) Sensor 1 Check



■ Description of each sensor/switch

Sensor/Switch	Description
Head up switch	Indicates whether the print head is closed.
Cutter home position switch	Indicates whether the cutter is at the home position or not.
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.

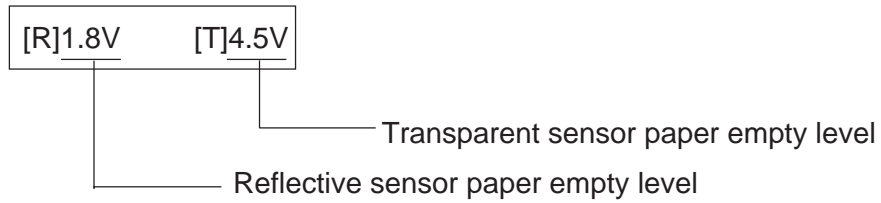
(8) SENSOR 2 Check



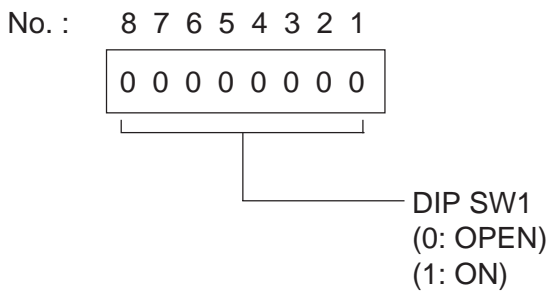
■ Print head resistance rank

Resistance Rank	Average resistance (Ω)	
	B-452-TS model	B-452-HS model
0	1731 to 1759	1584 to 1611
1	1703 to 1730	1612 to 1638
2	1674 to 1702	1639 to 1665
3	1645 to 1673	1666 to 1692
4	1617 to 1644	1693 to 1719
5	1588 to 1616	1720 to 1746
6	1559 to 1587	1747 to 1773
7	1531 to 1558	1774 to 1800
8	1502 to 1530	1801 to 1827
9	1473 to 1501	1828 to 1854
10	1444 to 1472	1855 to 1881
11	1416 to 1443	1882 to 1908
12	1387 to 1415	1909 to 1935
13	1358 to 1386	1936 to 1962
14	1330 to 1357	1963 to 1989
15	1301 to 1329	1990 to 2016

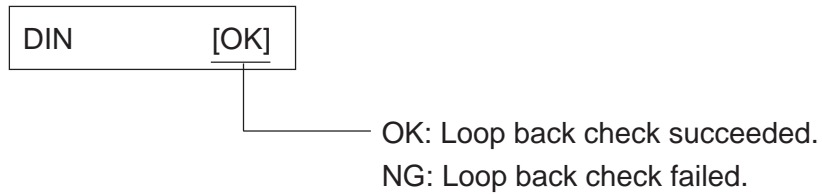
(9) Paper Empty Level Check



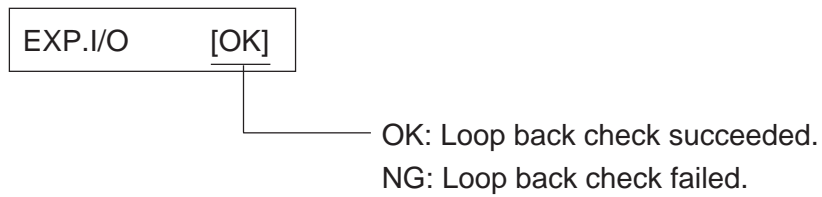
(10) DIP SW Check



(11) Loop back check with the DIN cable

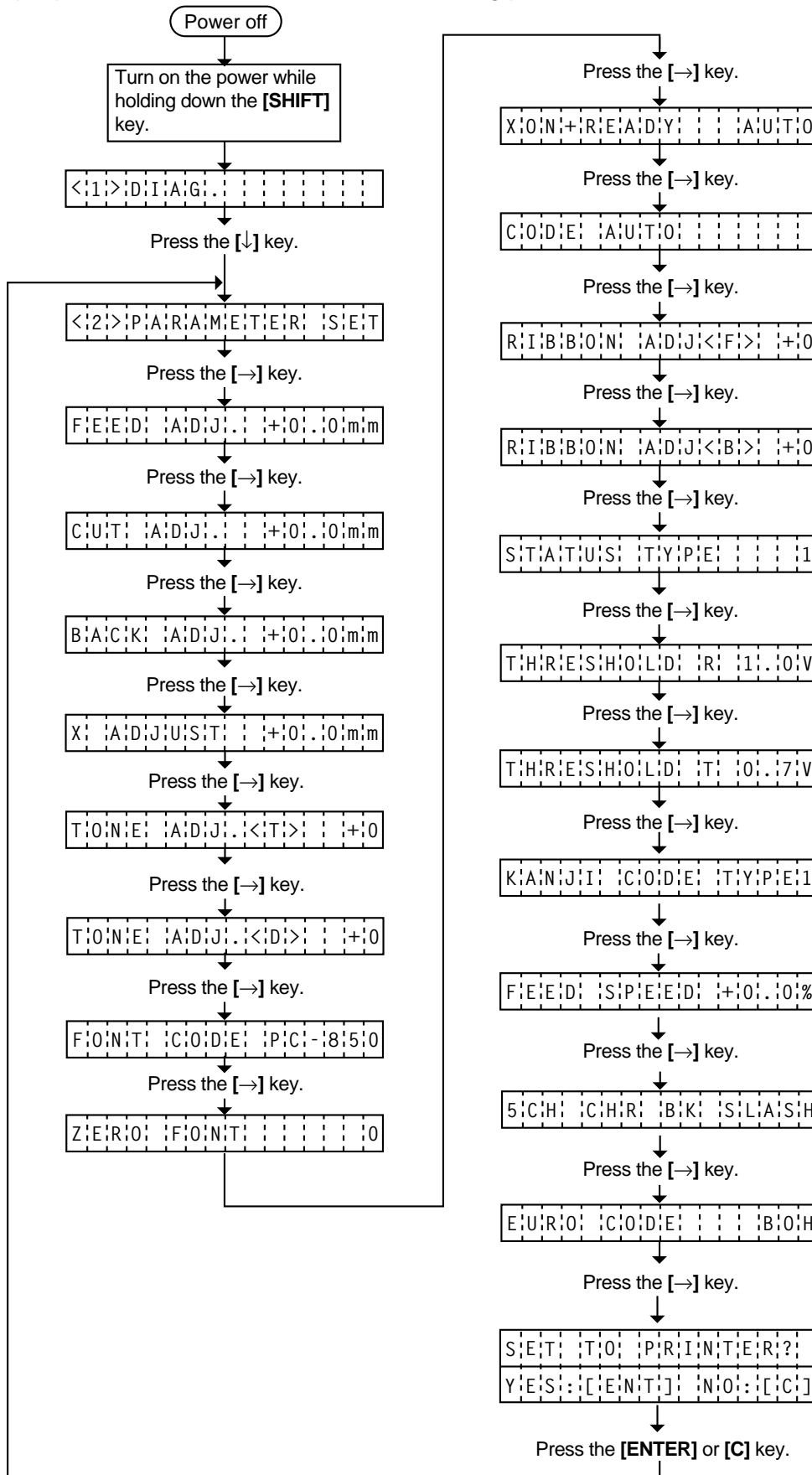


(12) Loop back check with the Expansion I/O



6.3 PARAMETER SETTING MODE (When using the KB-80-QM Optional Keyboard)

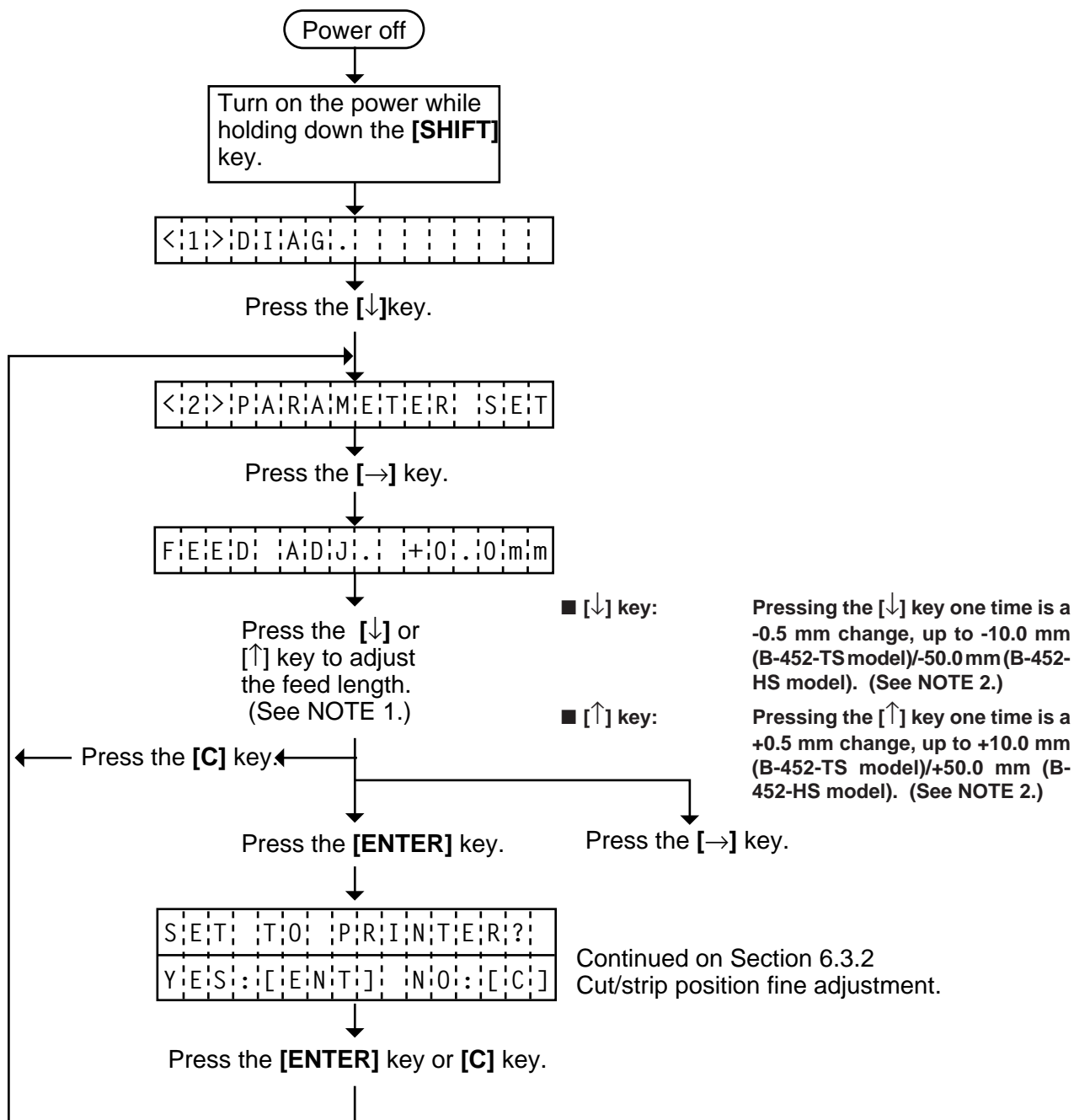
The following 19 items are set in the parameter setting mode. The values set in this mode are printed on the sample print of the maintenance counter. Setting procedure and functions are provided below.



■ Parameter Setting Mode Table

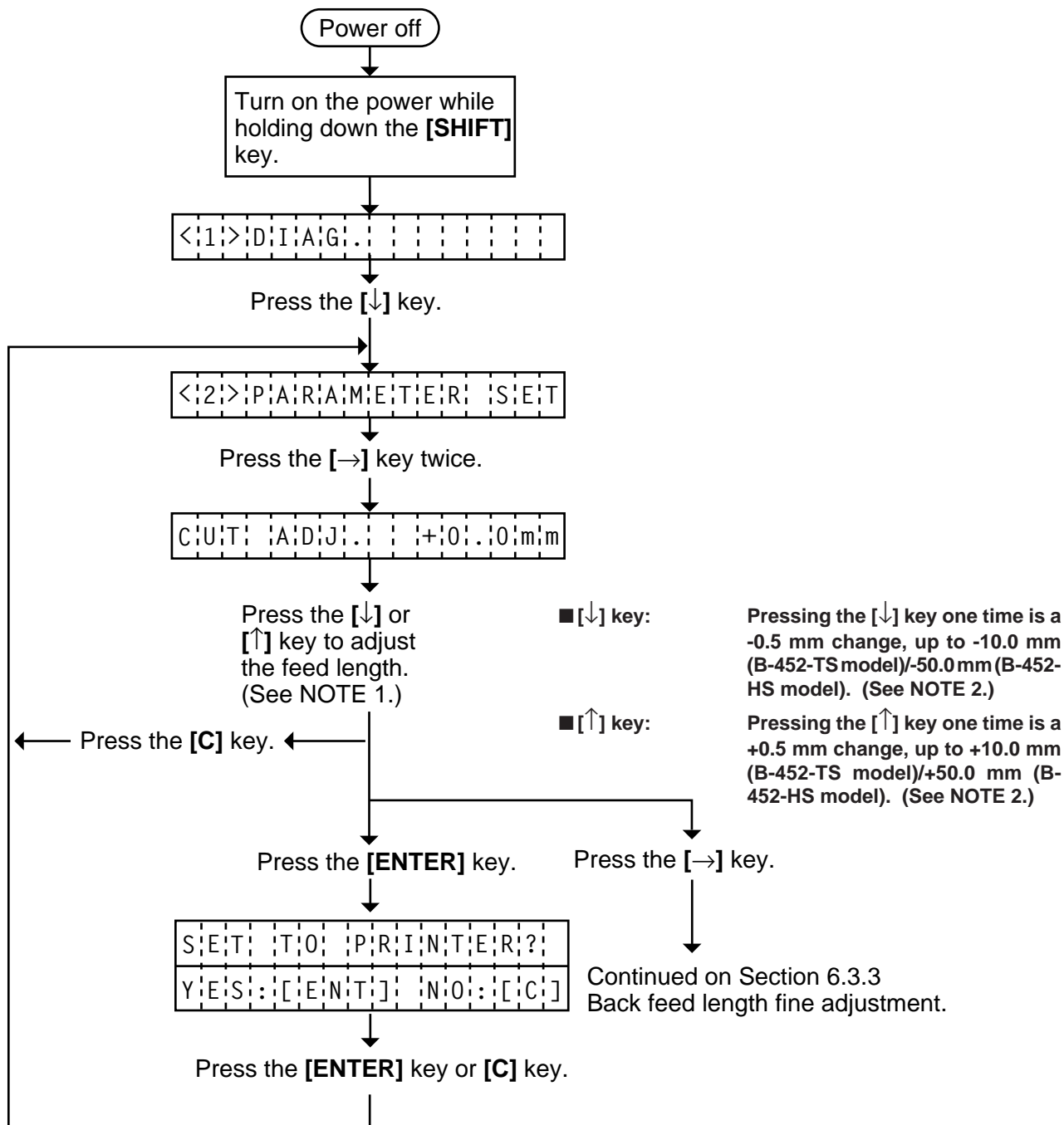
Mode Name	Function
FEED ADJ.	Using this parameter the feed length is fine adjusted.
CUT ADJ.	Using this parameter the cut position or strip position is fine adjusted.
BACK ADJ.	Using this parameter the back feed length from the cut/strip position to the home position is fine adjusted.
X ADJUST	This setting is used to finely adjust print position in the X axis.
TONE ADJ. <T>	Using this parameter the print tone is fine adjusted at the thermal transfer printing. The longer the print pulse width, the darker the print tone becomes. The shorter, the lighter the print tone becomes.
TONE ADJ. <D>	Using this parameter the print tone is fine adjusted at the thermal direct printing. 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 is selected from. PC-8, PC-850, PC-851, PC-852, PC-855, PC-857, PC-1250, PC-1251, PC-1252, PC-1253, PC-1254, PC-1257, ARABIC, LATAIN9
ZERO FONT	The font zero either 0 or ø is selected.
XON+READY	Transmission control mode of the serial interface is selected.
CODE	The command code out of AUTO, ESC/LF/NUL, or {;} is selected.
RIBBON ADJ. <F>	Using this parameter the ribbon motor voltage (take-up side) is fine adjusted.
RIBBON ADJ. 	Using this parameter the ribbon motor voltage (feed side) 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.
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	Unavailable
FEED SPEED	Feed speed is adjusted to prevent shrunk printing.
EURO CODE	The EURO font code is selected.
5CH CHR	Character Code 5CH is set to ¥ (YEN) or \ (back slash)

6.3.1 Feed Length Fine Adjustment



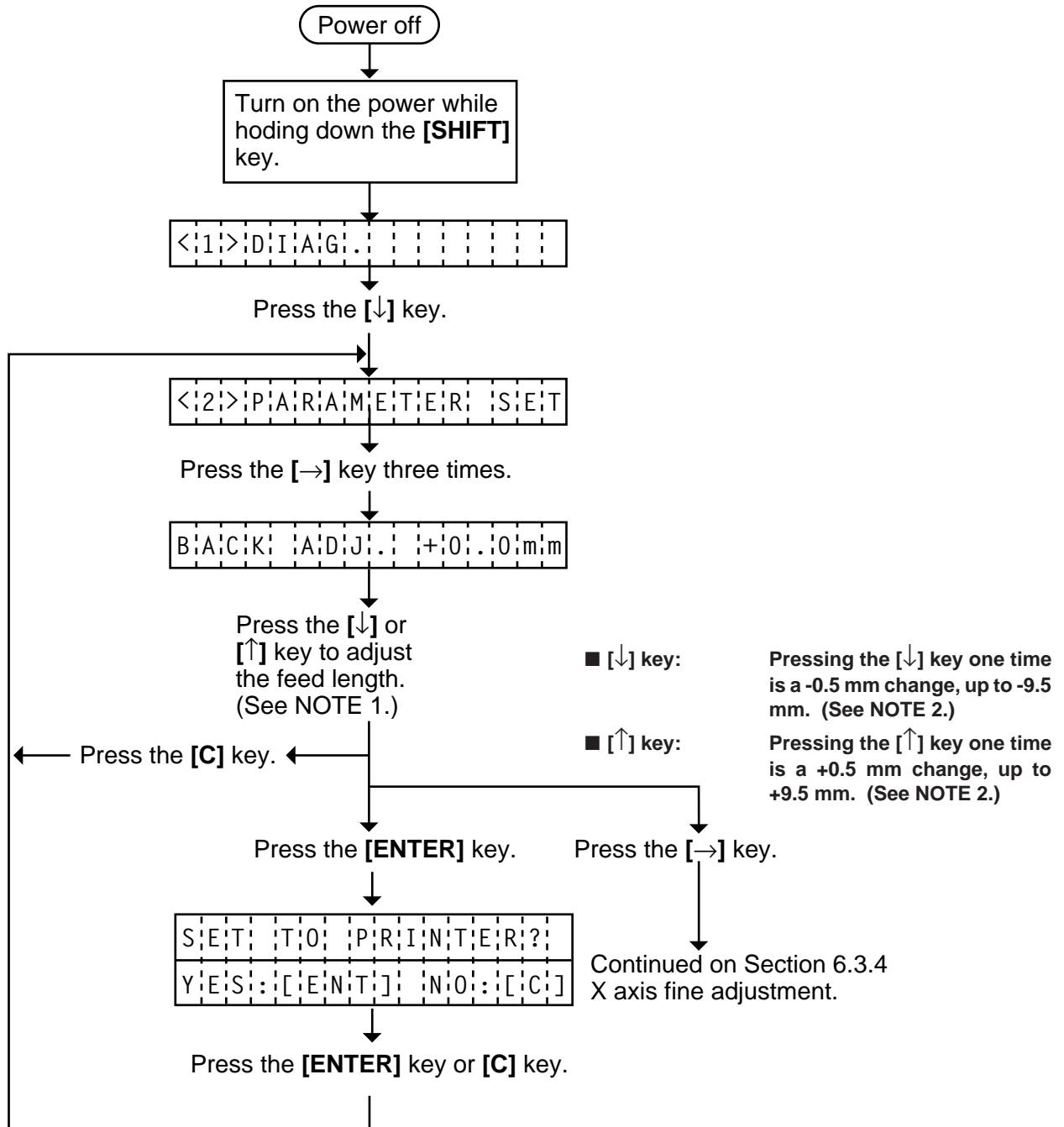
- NOTES:**
1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment ±10.0 mm (B-452-TS)/±50.0 mm (B-452-HS) = Key fine adjustment value (± 10.0 mm) + PC fine adjustment value (B-450-TS: ± 10.0 mm/ B452-HS: ±50.0 mm)
When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
 3. A change feed value is stored in keyboard memory by pressing the [→] key.

6.3.2 Cut/Strip Position Fine Adjustment



- NOTES:**
1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment ± 10.0 mm (B-452-TS)/ ± 50.0 mm (B-452-HS) = Key fine adjustment value (± 10.0 mm) + PC fine adjustment value (± 10.0 mm: B-452-TS/ ± 50.0 mm: B-452-HS)
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 keyboard memory by pressing the [→] key.
 4. When using label with length of less than 33 mm, calculate the cut position fine adjustment value using the expression provided on page 6-17.

6.3.3 Back Feed Length Fine Adjustment



- NOTES:**
1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment $\pm 9.9 \text{ mm} = \text{Key fine adjustment value } (\pm 9.5 \text{ mm}) + \text{PC fine adjustment value } (\pm 9.9 \text{ mm})$
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 keyboard memory by pressing the [→] key.

■ Feed Length Fine Adjustment Example

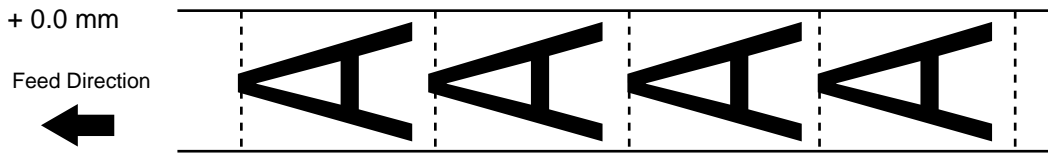


Fig. 6-3

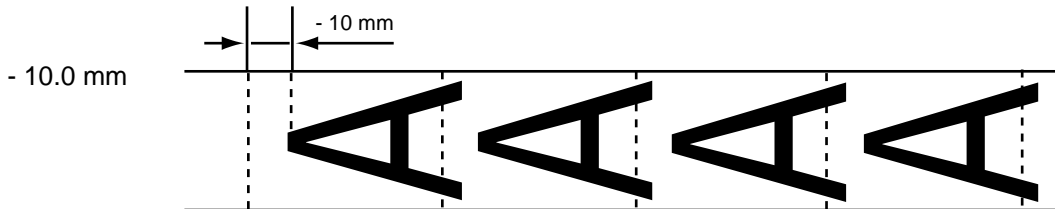


Fig. 6-4

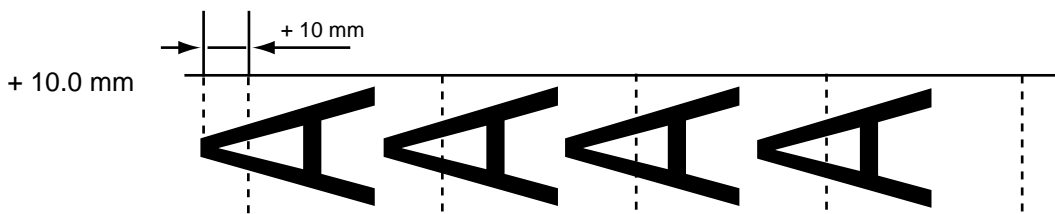


Fig. 6-5

■ Cut Position Fine Adjustment Example

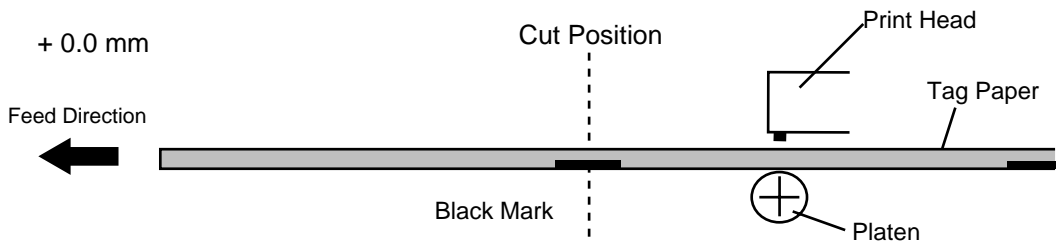


Fig. 6-6

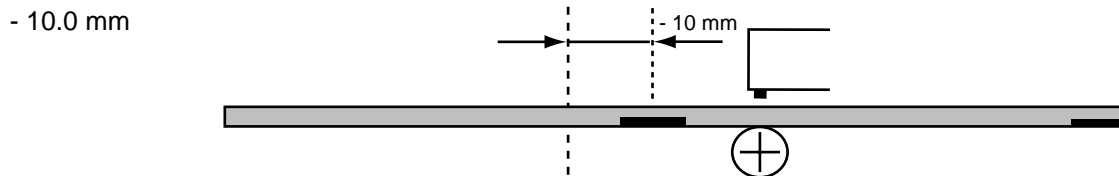


Fig. 6-7

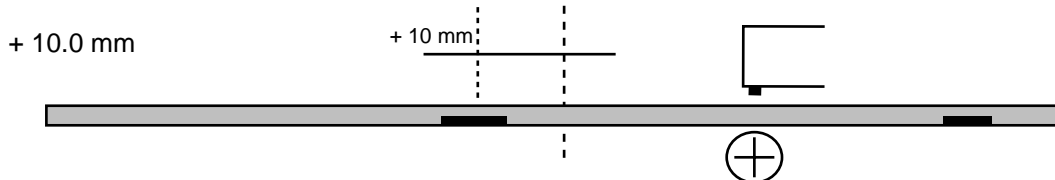


Fig. 6-8

■ When using a label with a length of less than 33 mm :

Case 1

Condition: Issue command [ESC]XS, feed command [ESC]T and eject command [ESC]IB are received.

Label pitch: 33.0 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 33.0 mm. When using a label with a length of less than 33 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

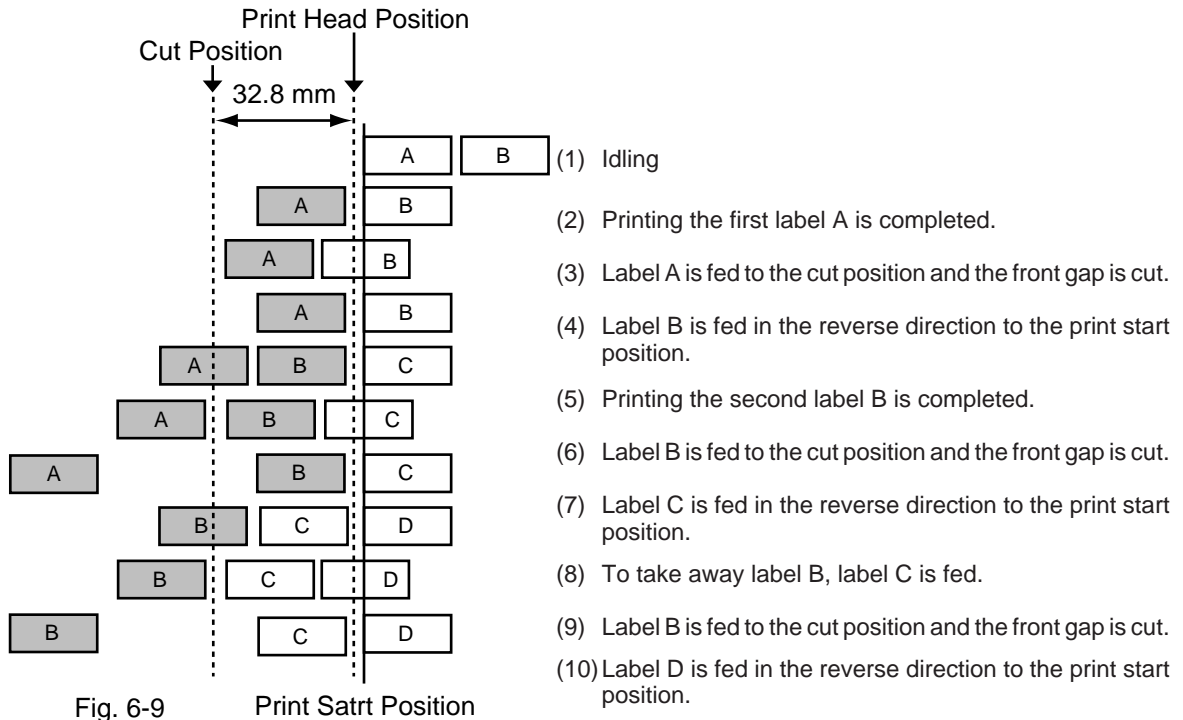


Fig. 6-9

■ Strip Position Fine Adjustment Example

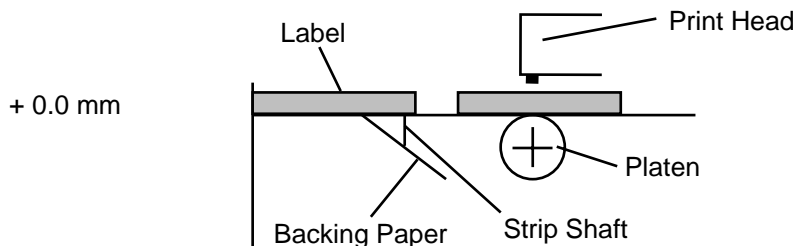


Fig. 6-10

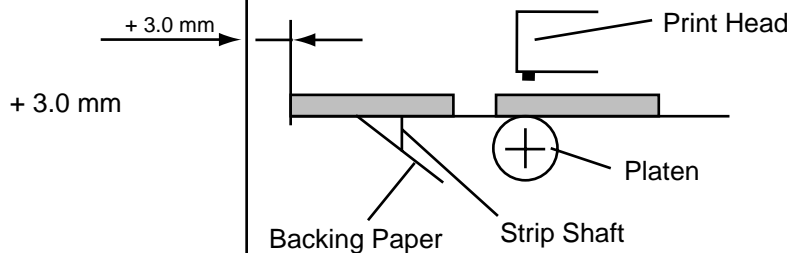


Fig. 6-11

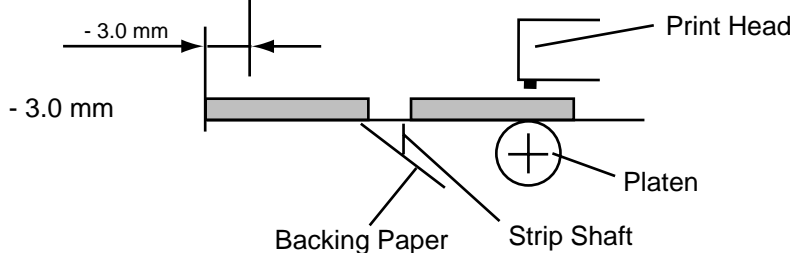


Fig. 6-12

NOTE: The print stop position when printing the label in strip mode varies according to label length as 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 2mm. 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.

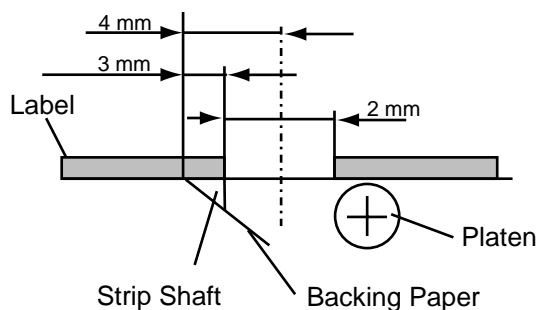


Fig. 6-13

■ Back Feed Length Fine Adjustment Example

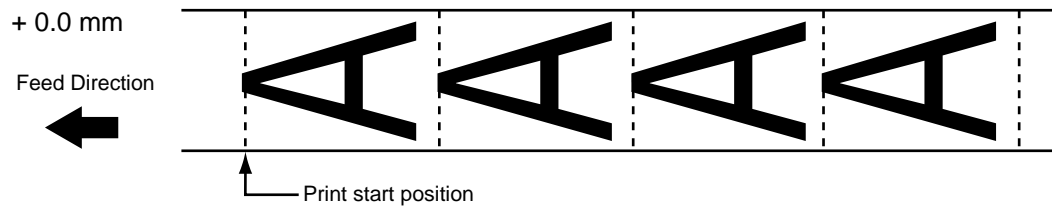


Fig. 6-14

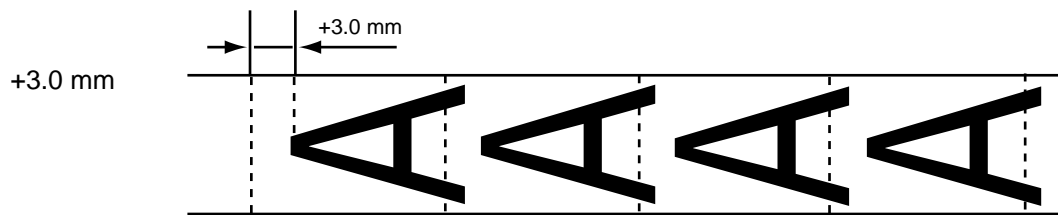


Fig. 6-15

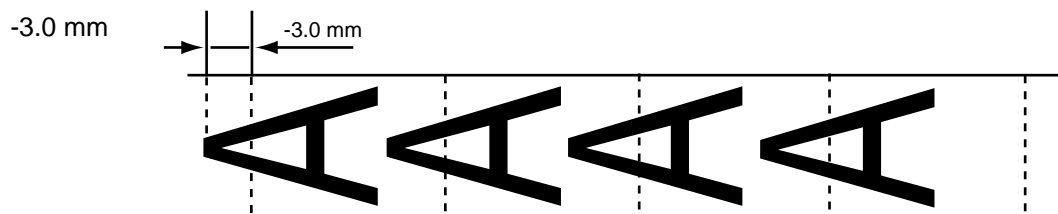
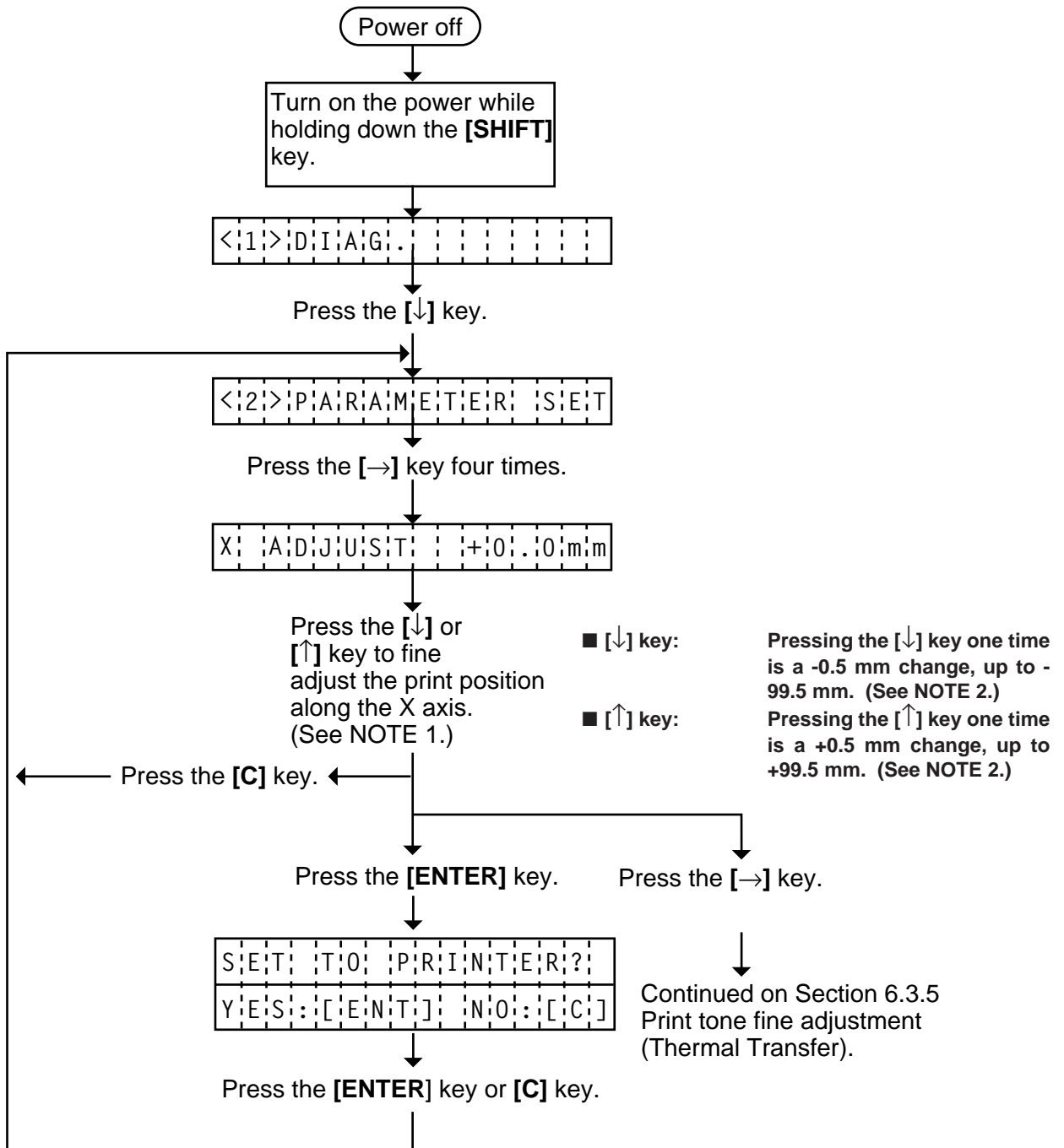


Fig. 6-16

6.3.4 X Axis Fine Adjustment



- NOTES:**
1. Holding the [↓] key or [↑] 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 keyboard memory by pressing the [→] key.

■ X Axis Fine Adjustment Example

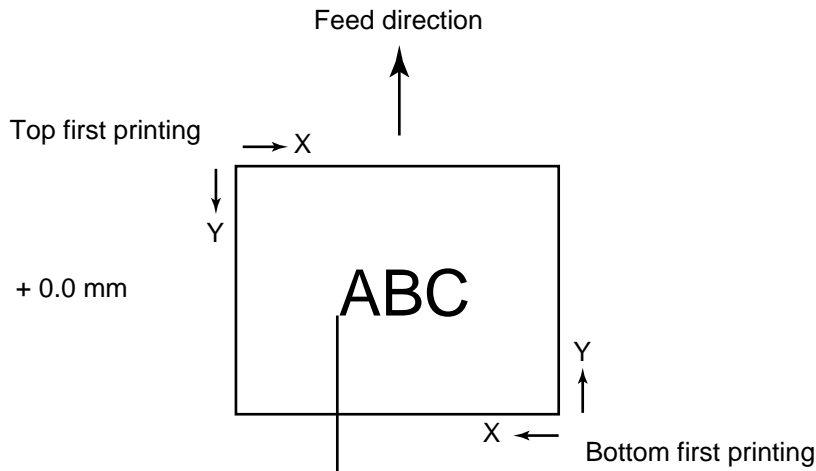


Fig. 6-17

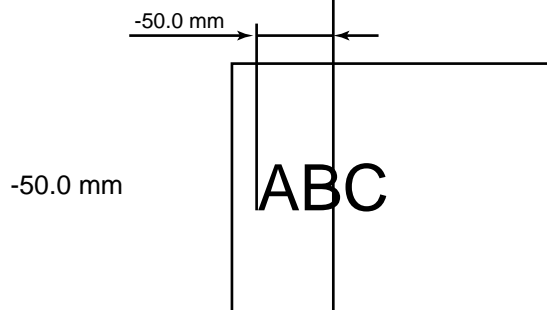


Fig. 6-18

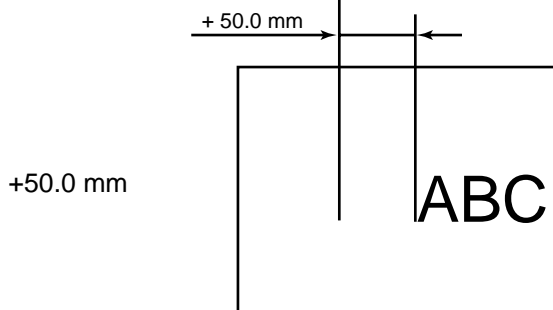
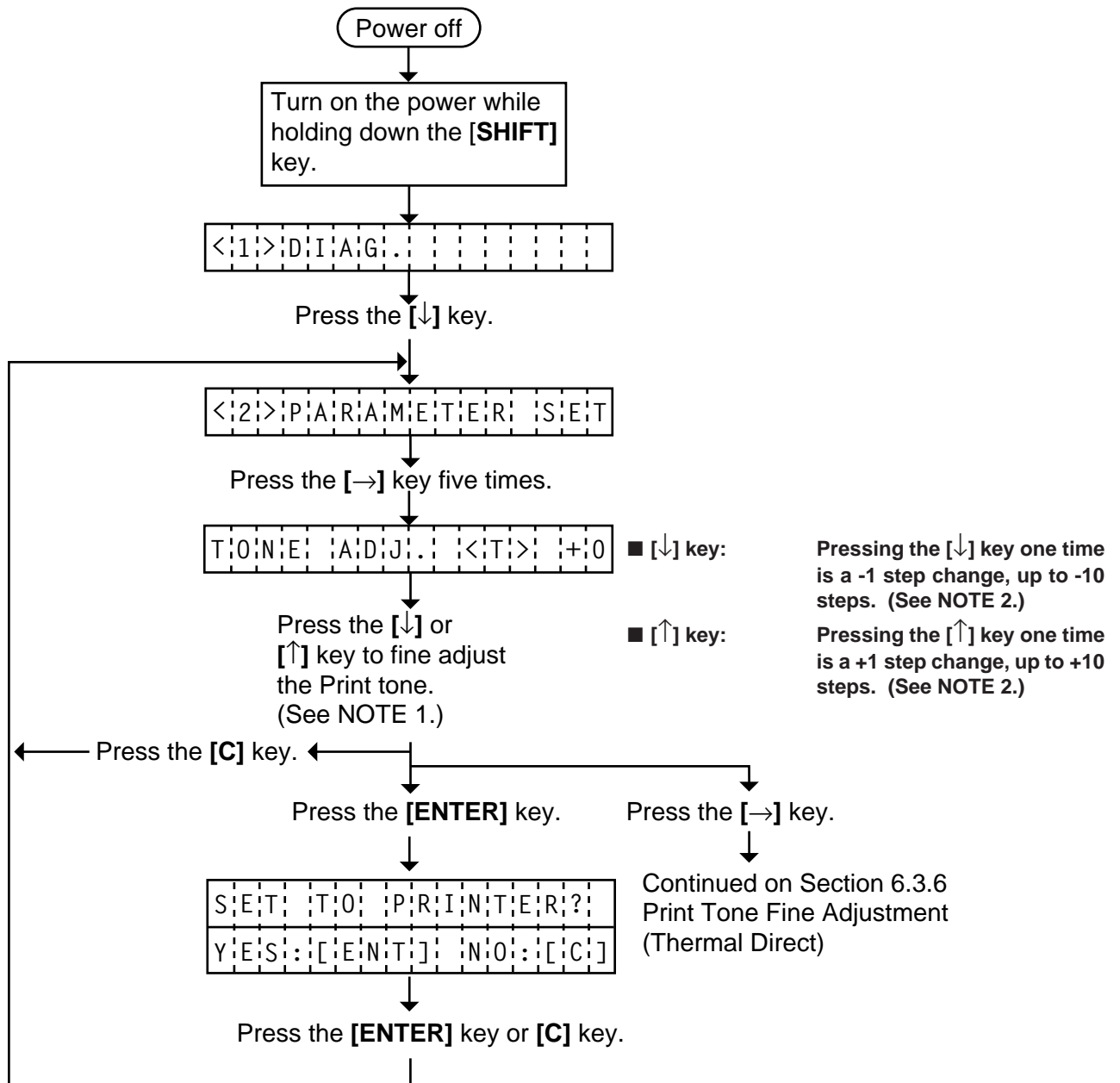


Fig. 6-19

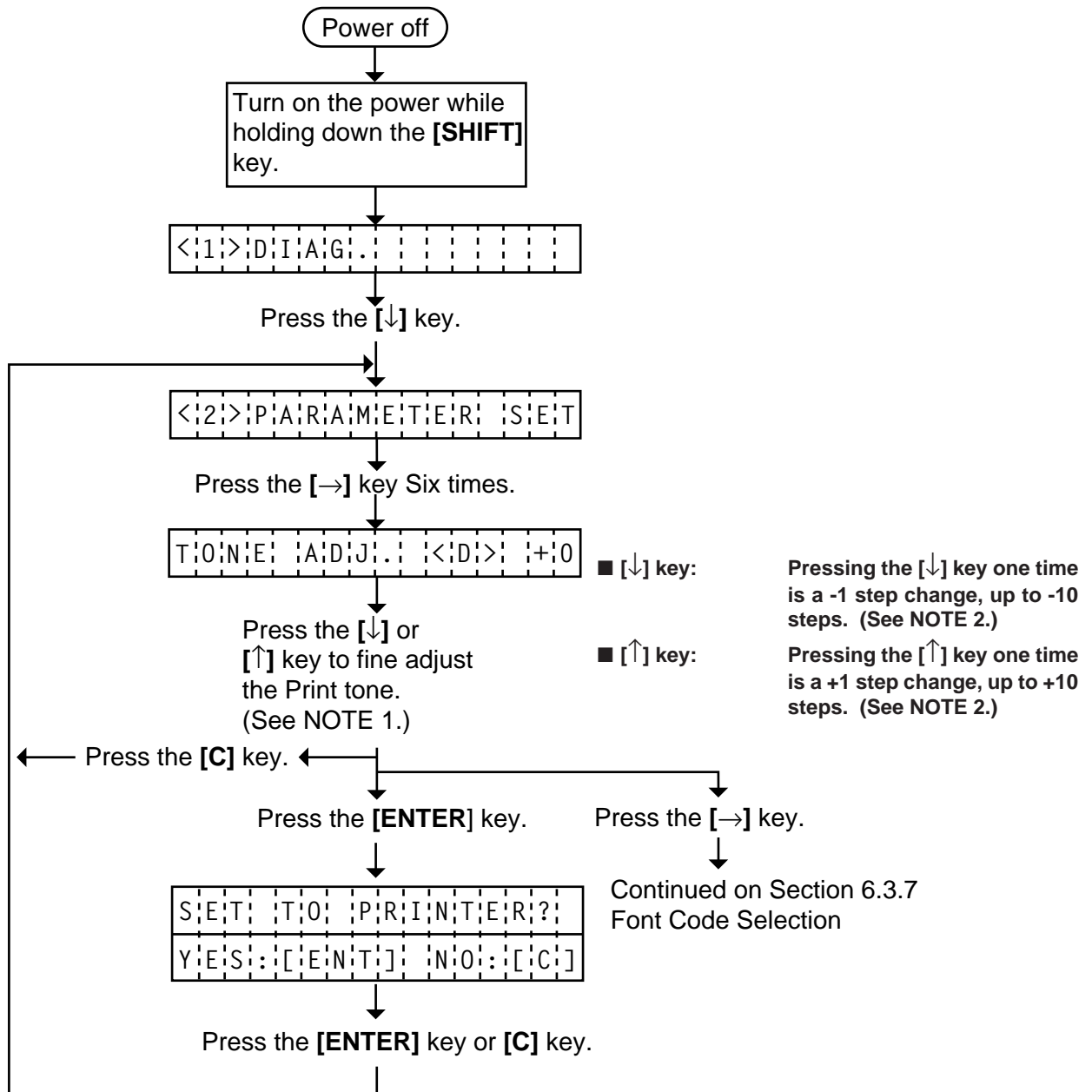
- NOTES:**
1. The X axis fine adjustment is performed to fine adjust the X axis of the drawing in the left or right direction.
 2. Adjust the X axis in the effective print range. (After the value reaches the coordinate "0", the value remains unchanged even if the subsequent fine adjustment is performed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

6.3.5 Print Tone Fine Adjustment (Thermal Transfer Print)



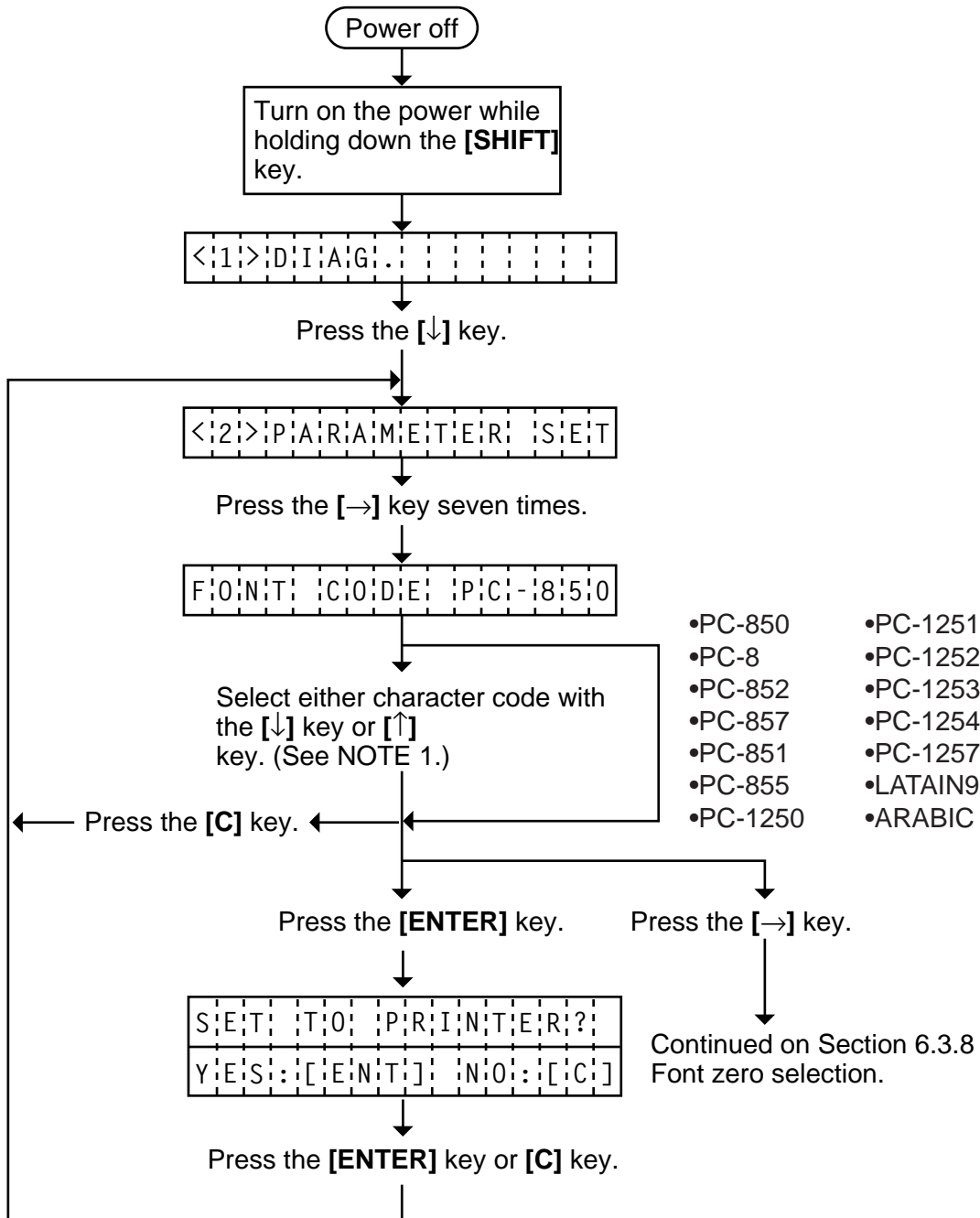
- NOTES:**
- 1 Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 - 2 Max. fine adjustment ± 10 steps = key fine adjustment value (± 10 steps) + PC fine adjustment value (± 10 steps)
When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
 3. A changed print tone value is stored in keyboard memory by pressing the [→] key.

6.3.6 Print Tone Fine Adjustment (Thermal Direct Print)



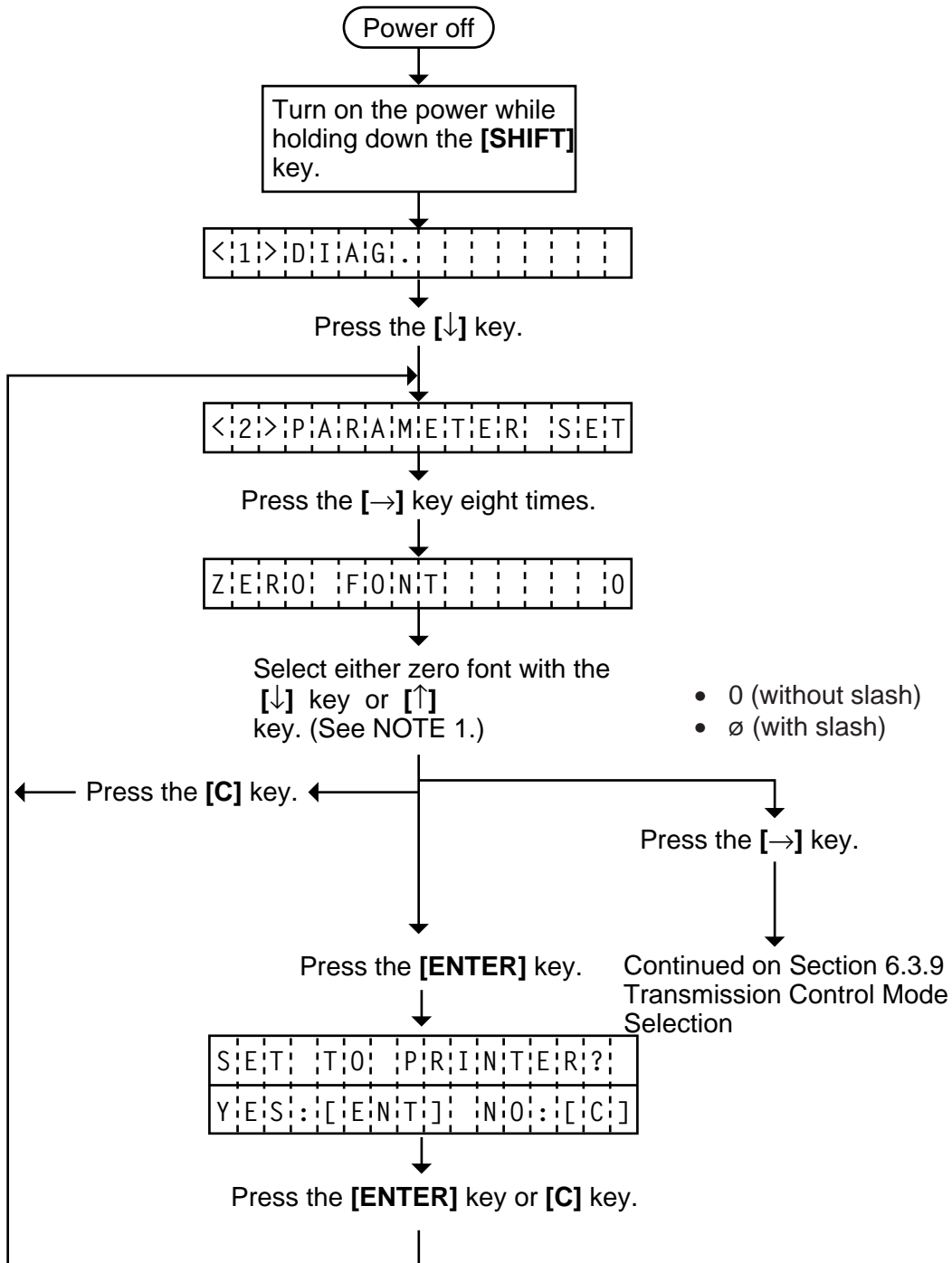
- NOTES:**
- 1 Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. Max. fine adjustment ± 10 steps = key fine adjustment value (± 10 steps) + PC fine adjustment value (± 10 steps)
When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
 3. A changed print tone value is stored in keyboard memory by pressing the [→] key.

6.3.7 Font Code Selection



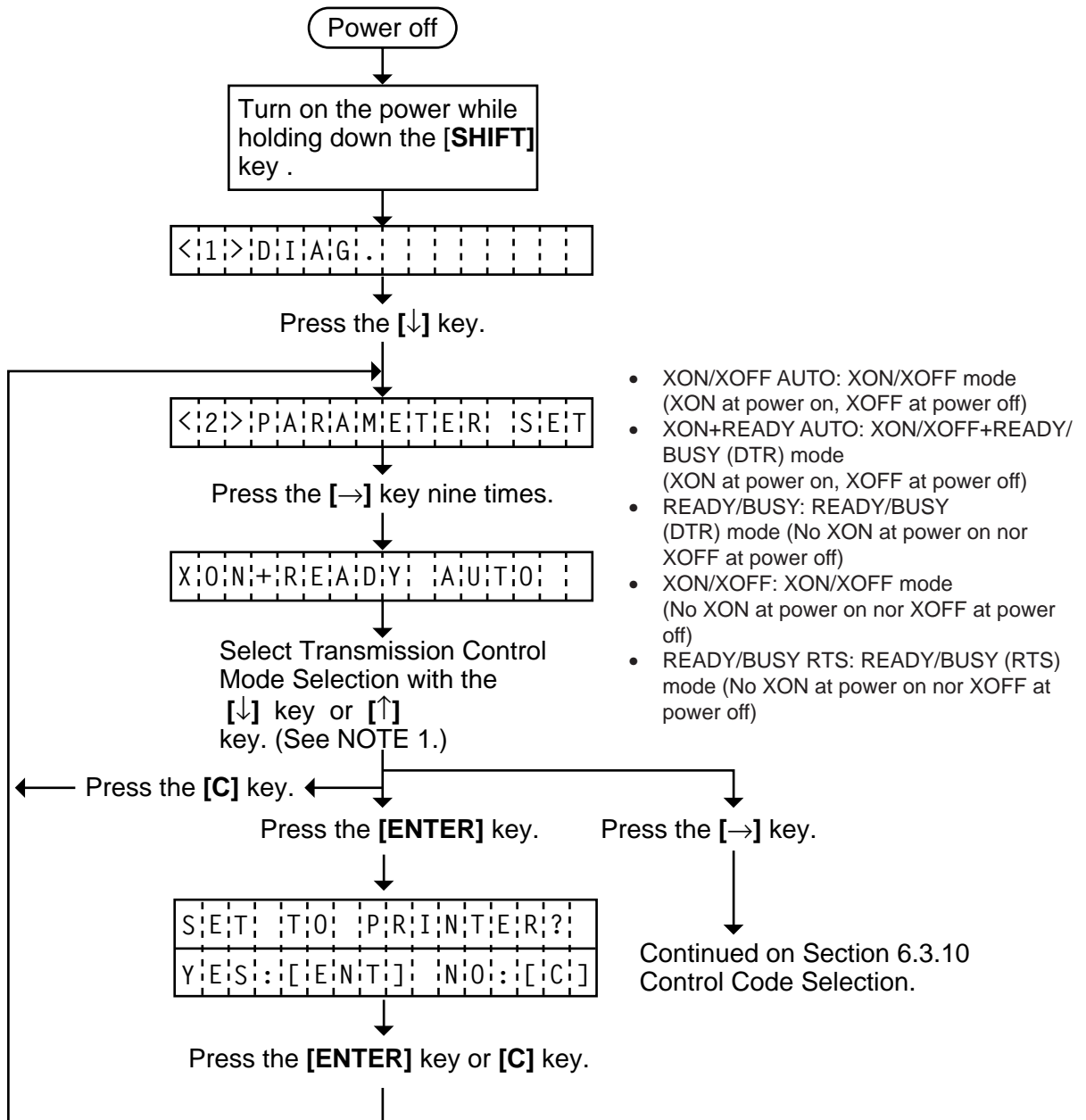
NOTES: 1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed font code is stored in keyboard memory by pressing the [→] key.

6.3.8 Font Zero Selection



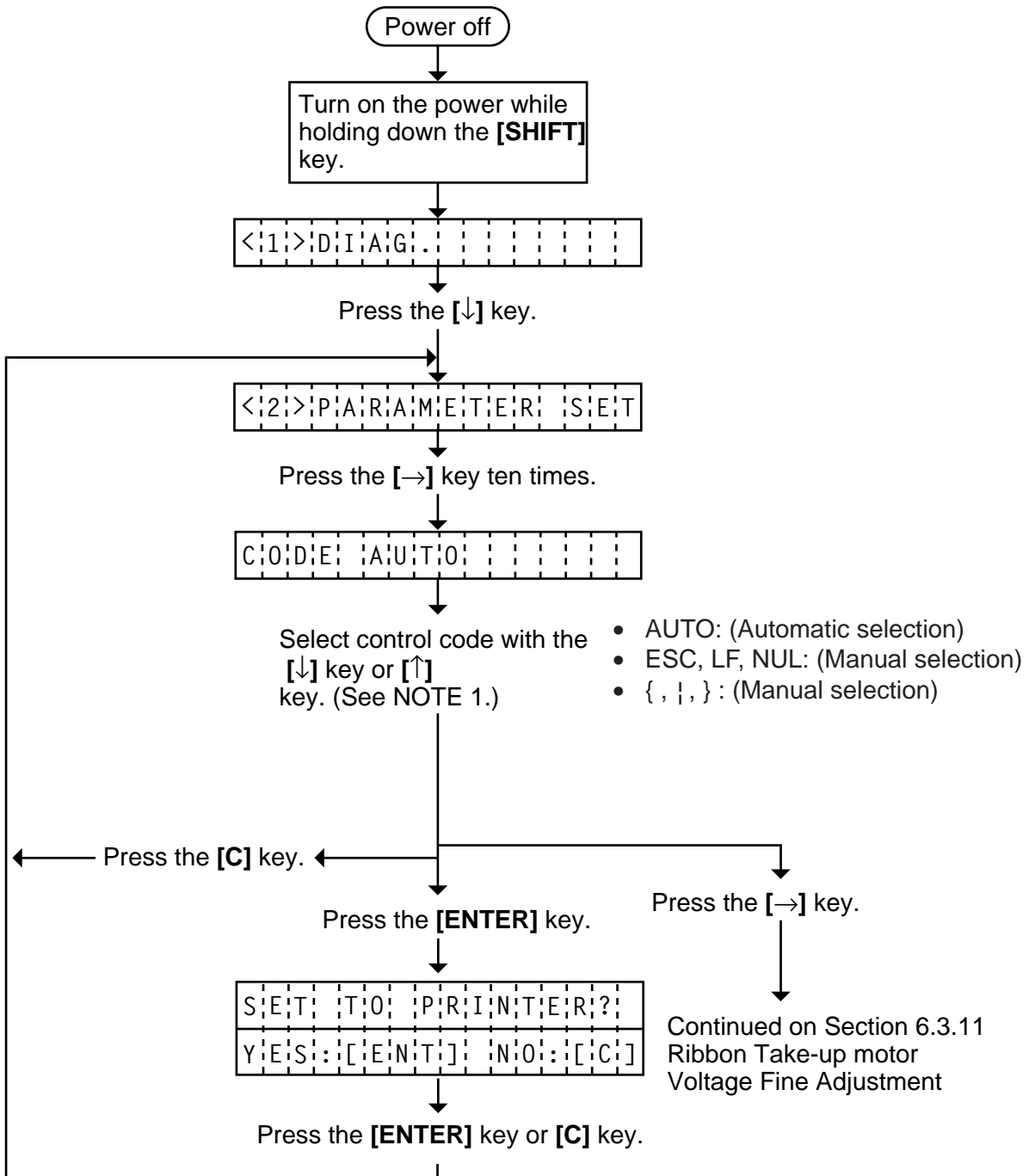
- NOTES:** 1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
2. A changed zero font is stored in keyboard memory by pressing the [→] key.

6.3.9 Transmission Control Mode Selection



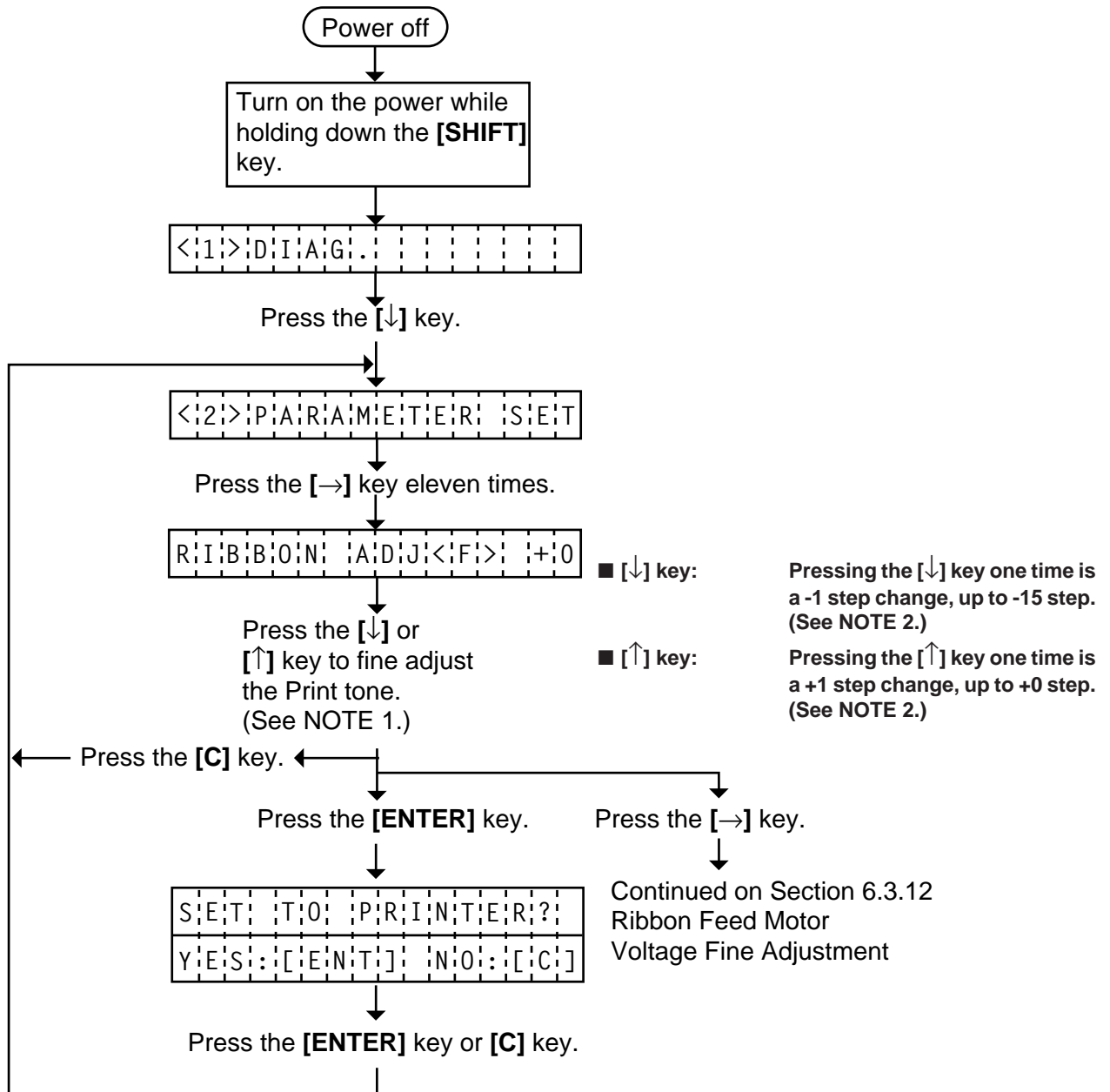
- NOTES:**
1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed transmission control mode is stored in keyboard memory by pressing the [→] key.

6.3.10 Control Code Selection



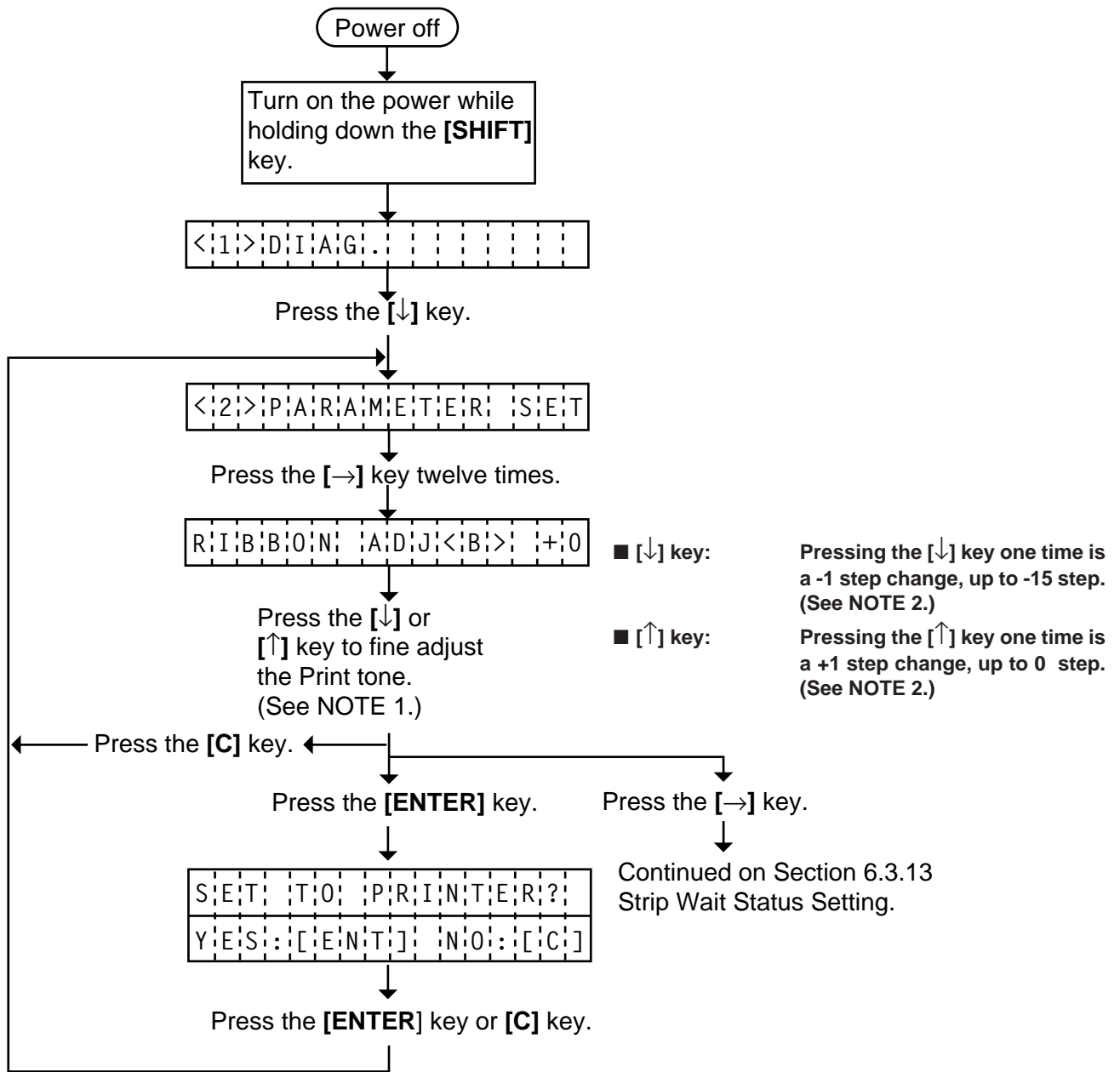
NOTES: 1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed control code is stored in keyboard memory by pressing the [→] key.

6.3.11 Ribbon Take-up Motor Voltage Fine Adjustment



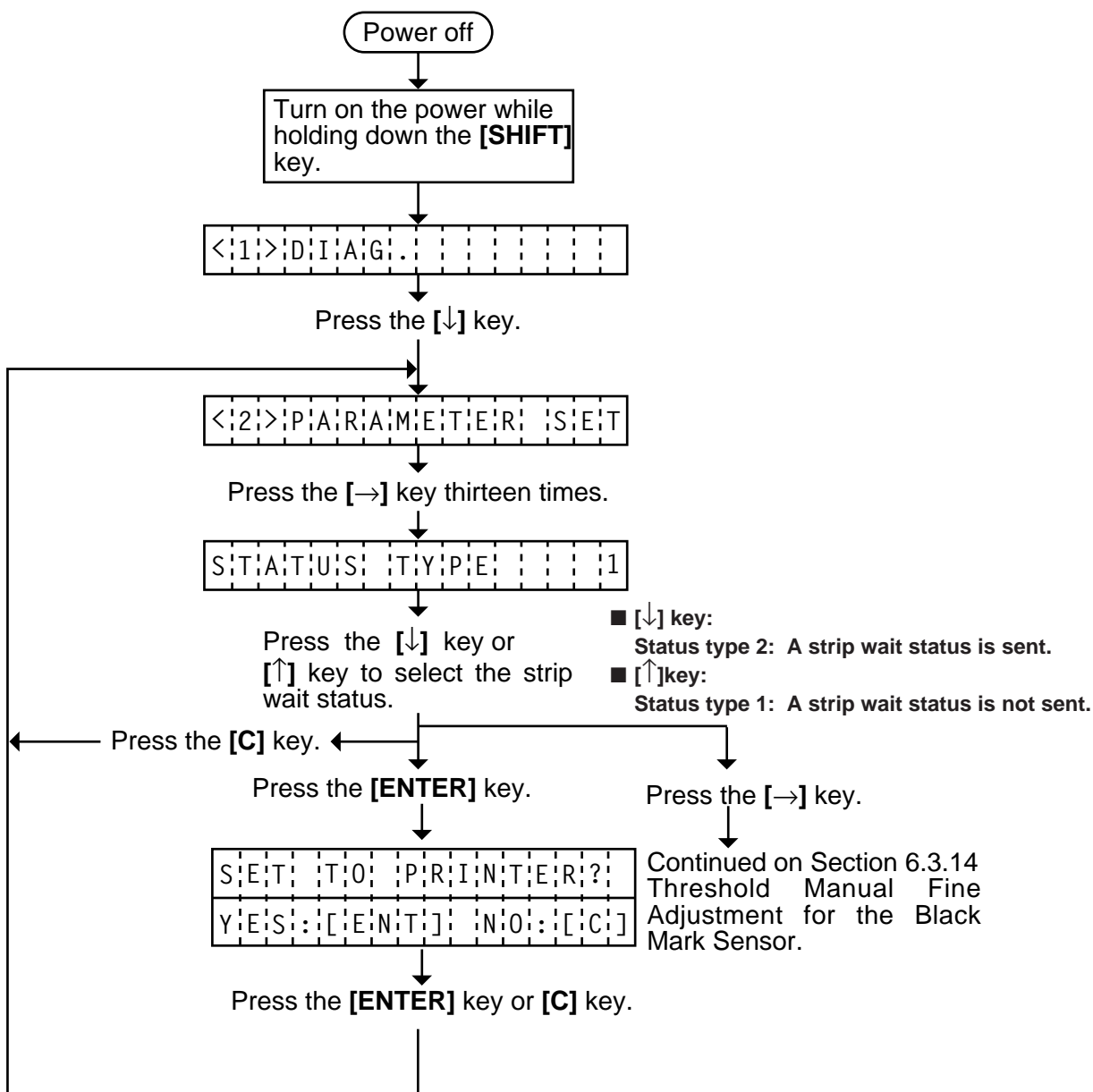
- NOTES:**
- 1 Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed fine adjustment voltage is stored in keyboard memory by pressing the [→] key.

6.3.12 Ribbon Feed Motor Voltage Fine Adjustment



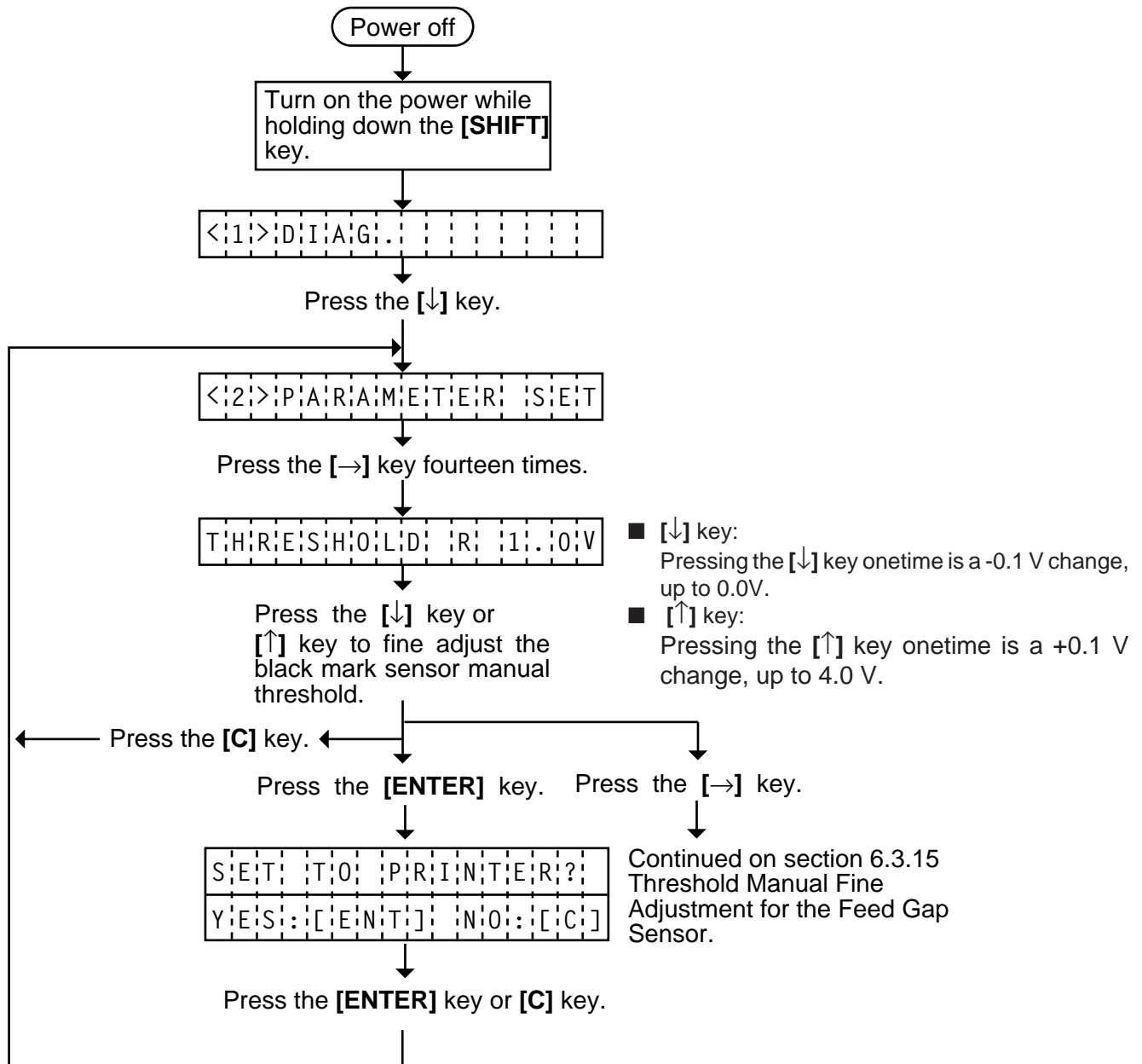
- NOTES:**
- 1 Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed fine adjustment voltage is stored in keyboard memory by pressing the [→] key.

6.3.13 Strip Wait Status Setting



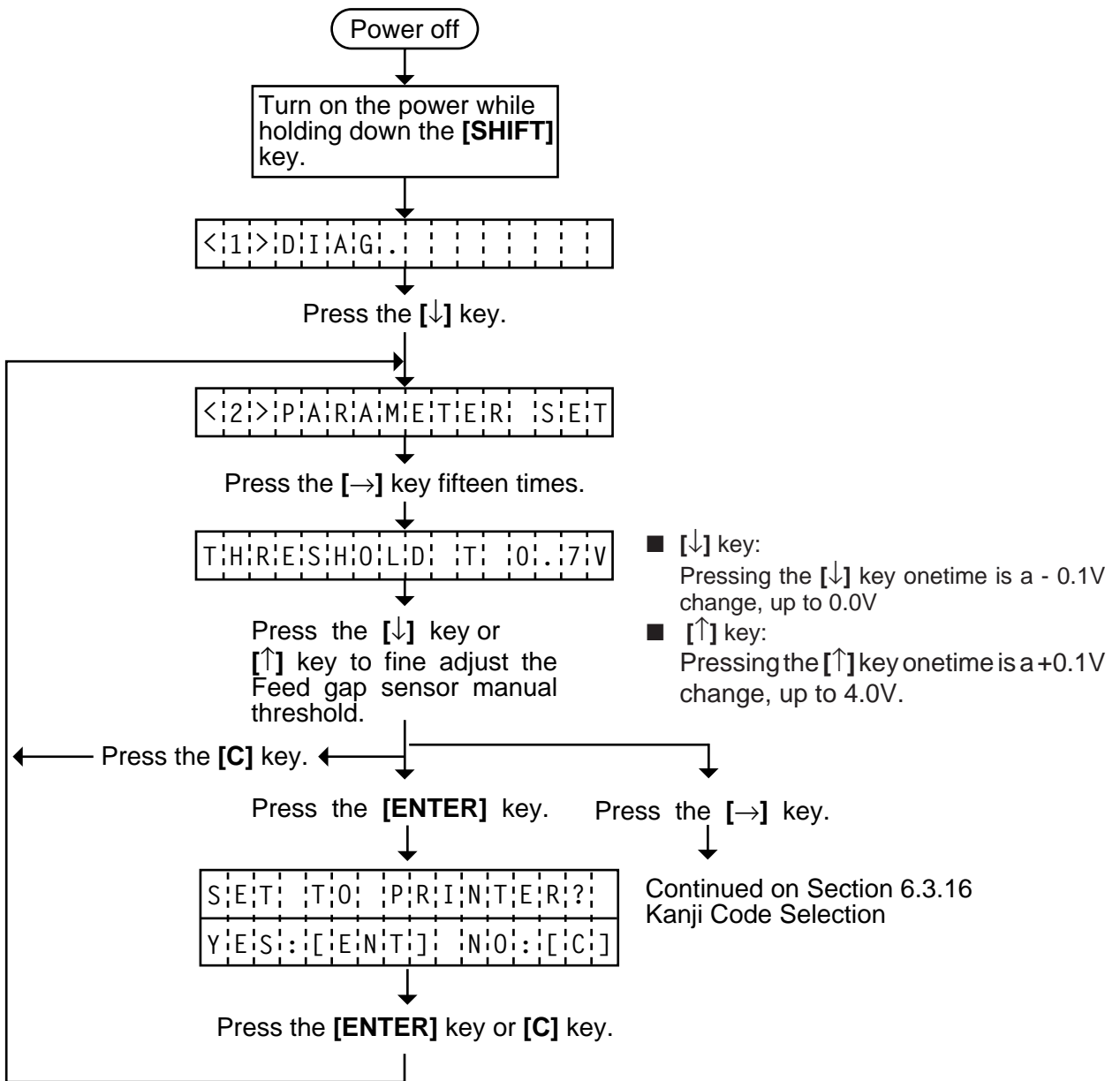
- NOTES:**
1. When the status type 1 is selected, the printer will send (00H) in response to the status request command sent from the PC while a label stays at the strip sensor (when idling, after feeding, or all printing finished).
 When the status type 2 is selected, the printer will send (05H) in 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.
 2. A changed strip wait status is stored in keyboard memory by pressing the [→] key.

6.3.14 Threshold Manual Fine Adjustment for the Black Mark Sensor



NOTE: 1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed threshold fine adjustment voltage is stored in keyboard memory by pressing the [→] key.

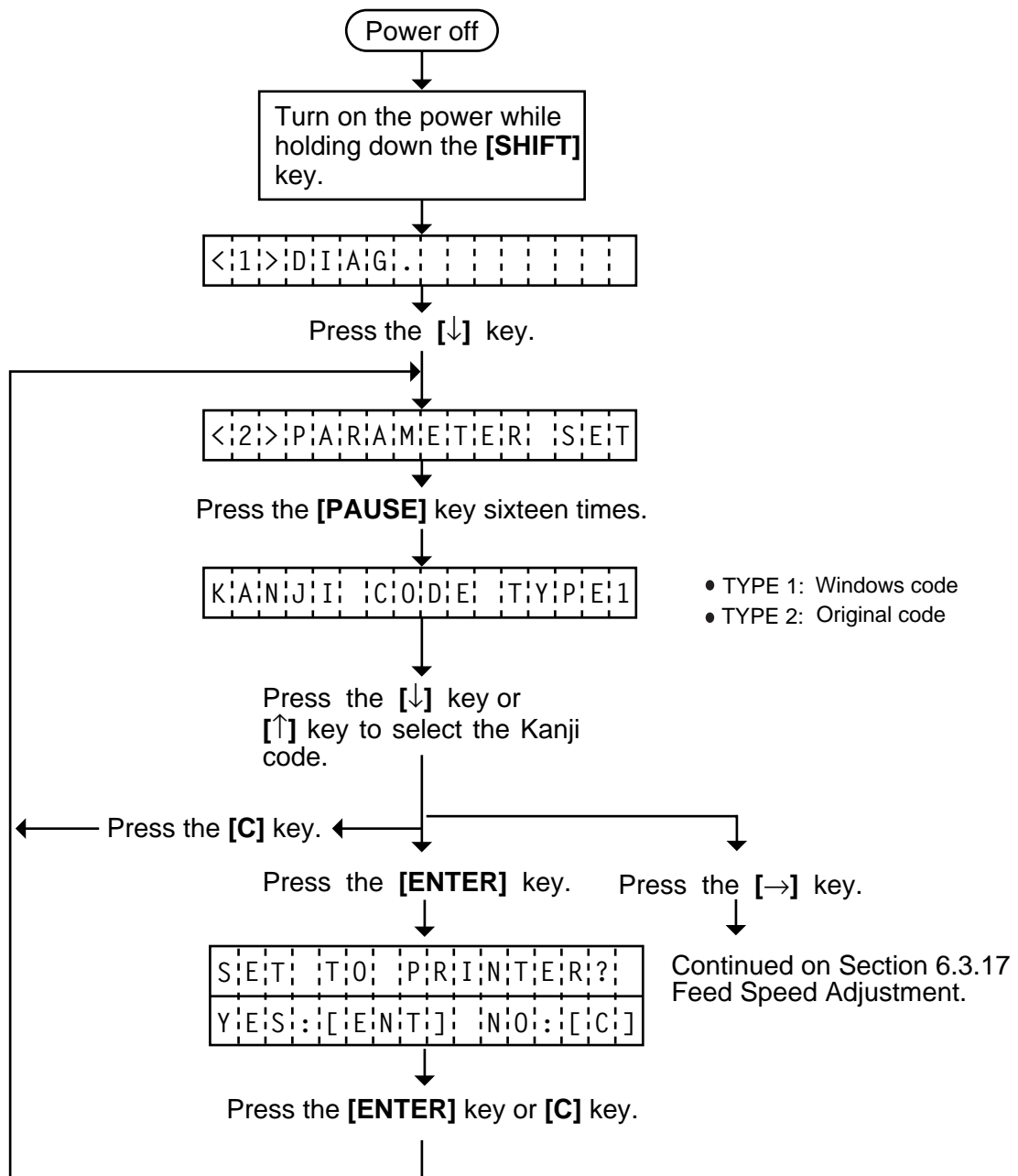
6.3.15 Threshold Manual Fine Adjustment for the Feed Gap Sensor



NOTE:

1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
2. A changed threshold fine adjustment voltage is stored in keyboard memory by pressing the [→] key.

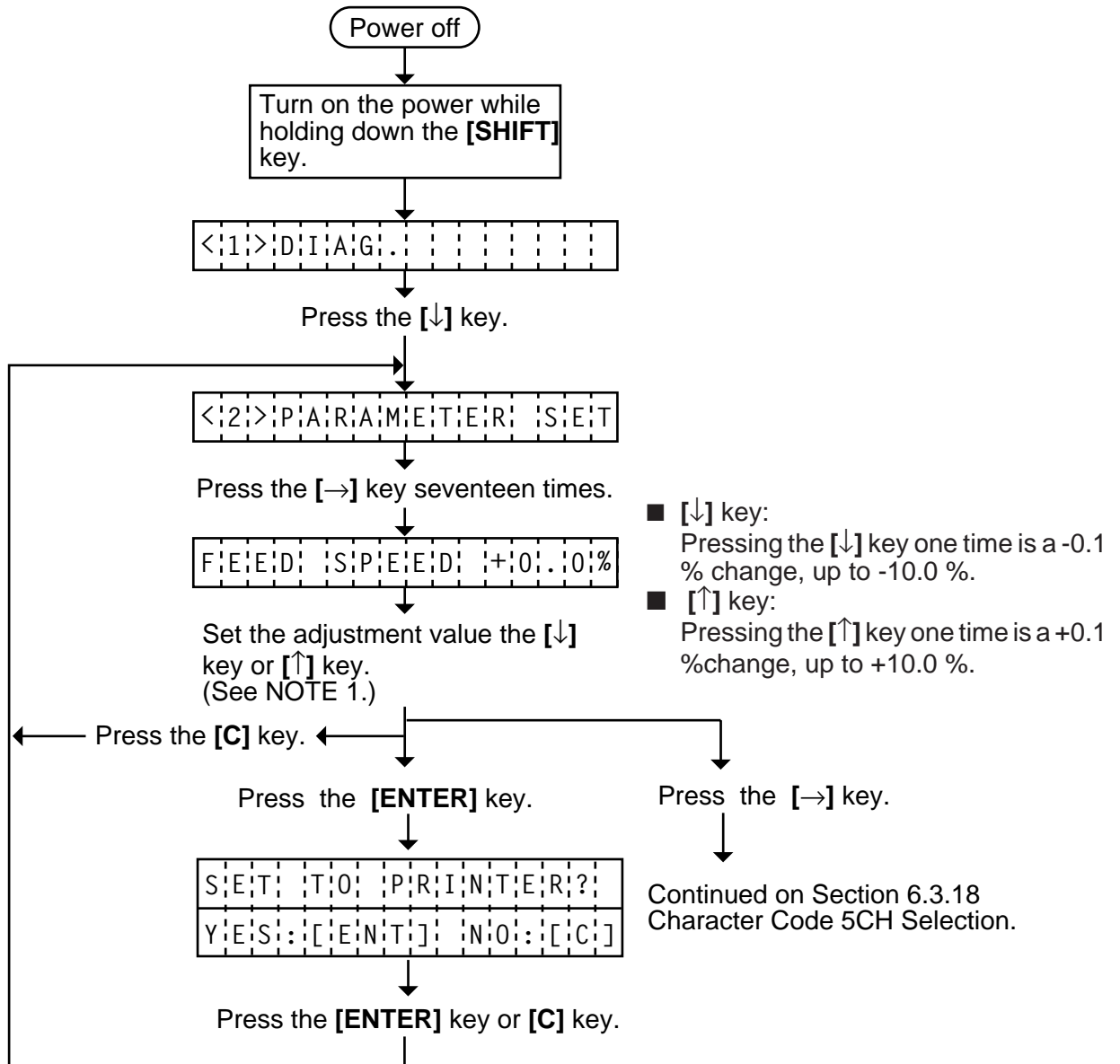
6.3.16 Kanji Code Selection



- NOTE:**
1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed Kanji code is stored in keyboard memory by pressing the [→] key.

6.3.17 Feed Speed Adjustment

After using the printer for a long period of time, the platen will abrade, causing a shrunk printing. In such case, use the following procedure to store a fine adjustment value of timing pulse cycle which drives the stepping motor in EEPROM. This value will optimize the platen rotation to correct the print position.



NOTE: 1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
2. A changed feed speed is stored in keyboard memory by pressing the [→] key.

[Example of Adjustment]

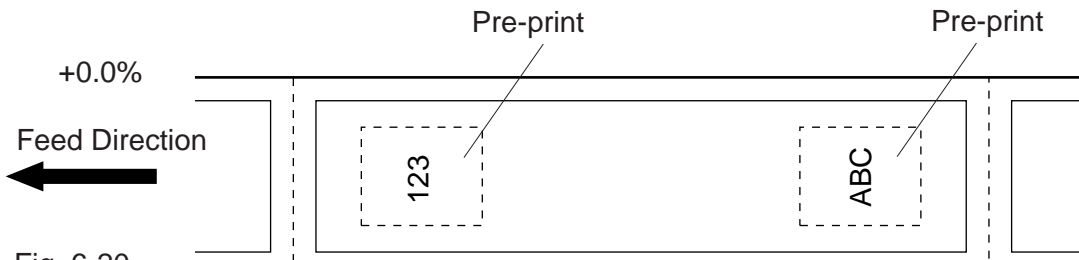


Fig. 6-20

↓ Print out became shrunk.

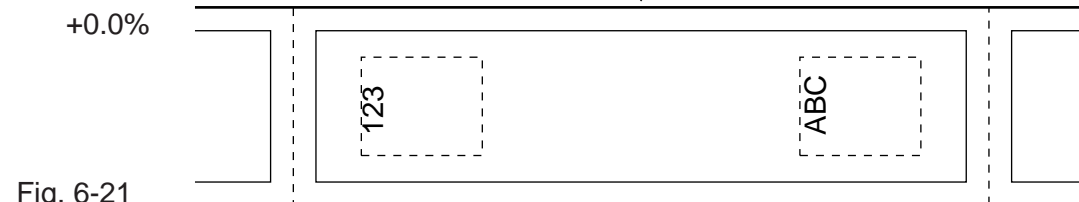


Fig. 6-21

Print is out of position due to a shrunk printing.

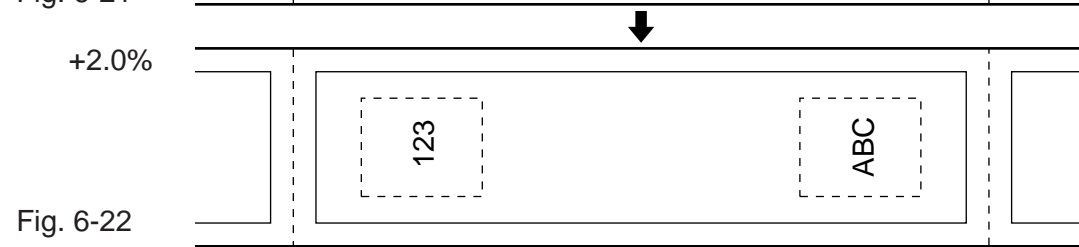
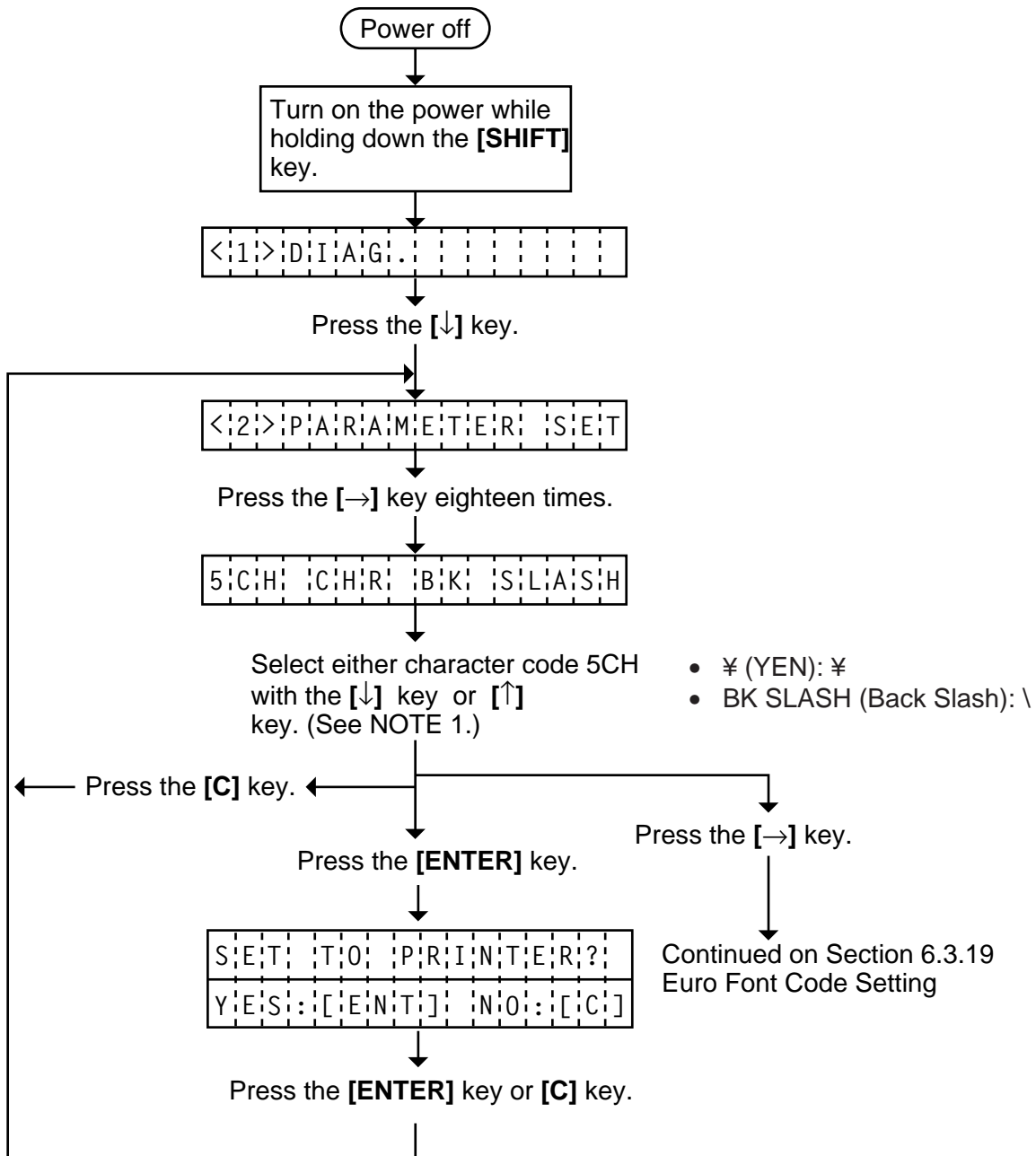


Fig. 6-22

Adjust the feed speed to print in the correct position.

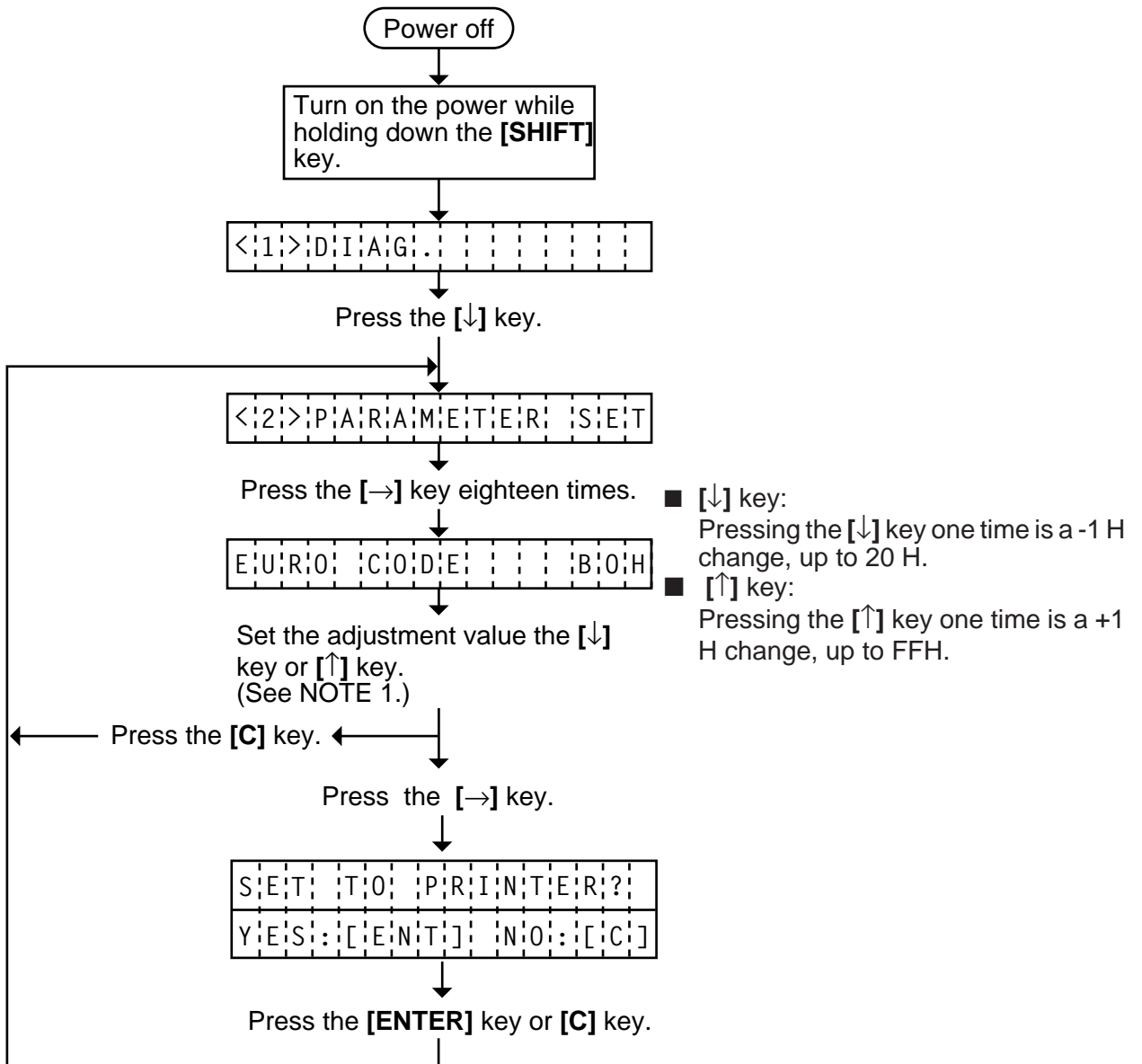
↑ The top edge of one label/tag

6.3.18 Character Code 5CH Selection



- NOTES:**
1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 2. A changed zero font is stored in keyboard memory by pressing the [→] key.

6.3.19 Euro Font Code Setting



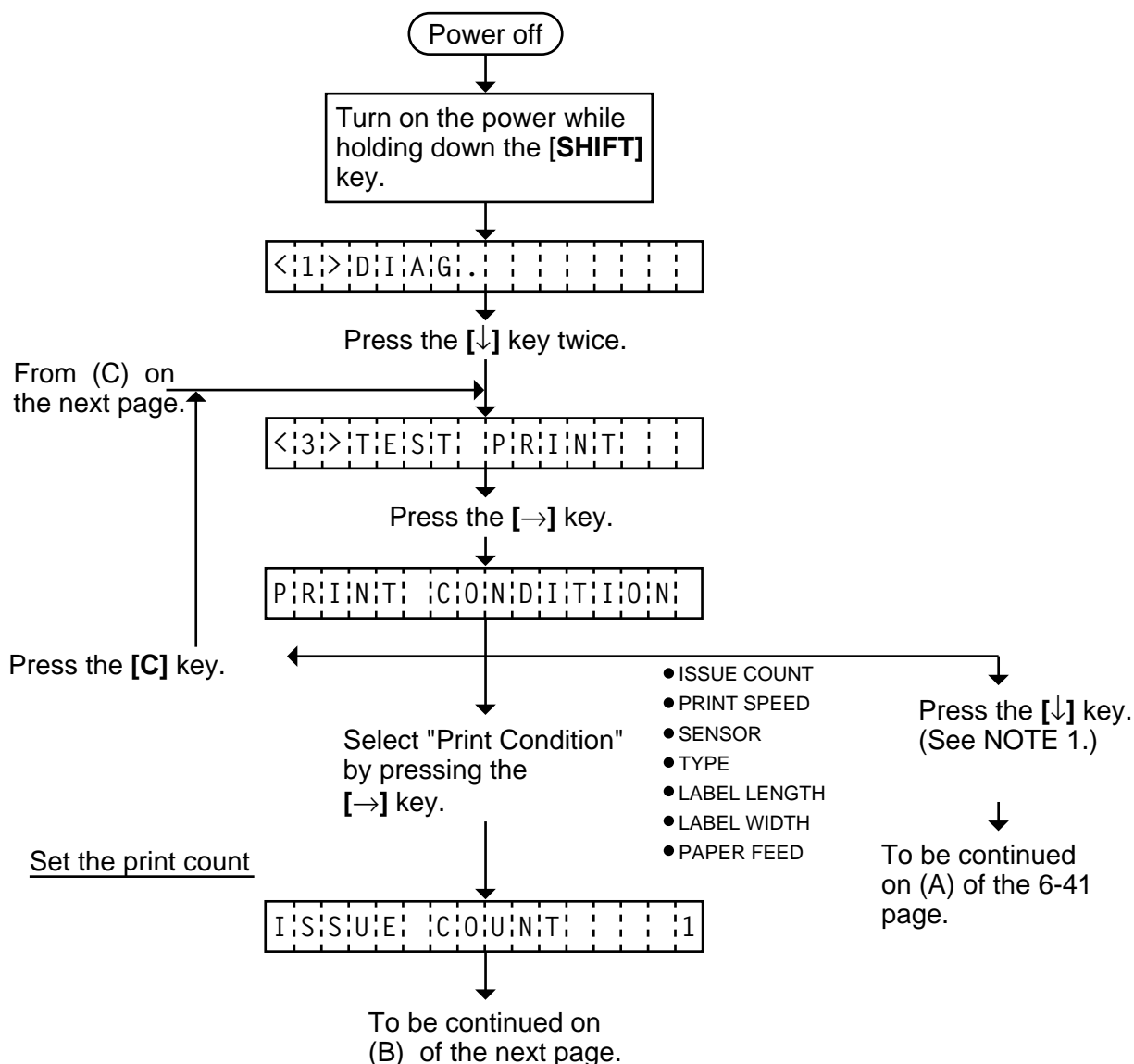
NOTE: 1. Holding the [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
2. A changed Euro font code is stored in keyboard memory by pressing the [→] key.

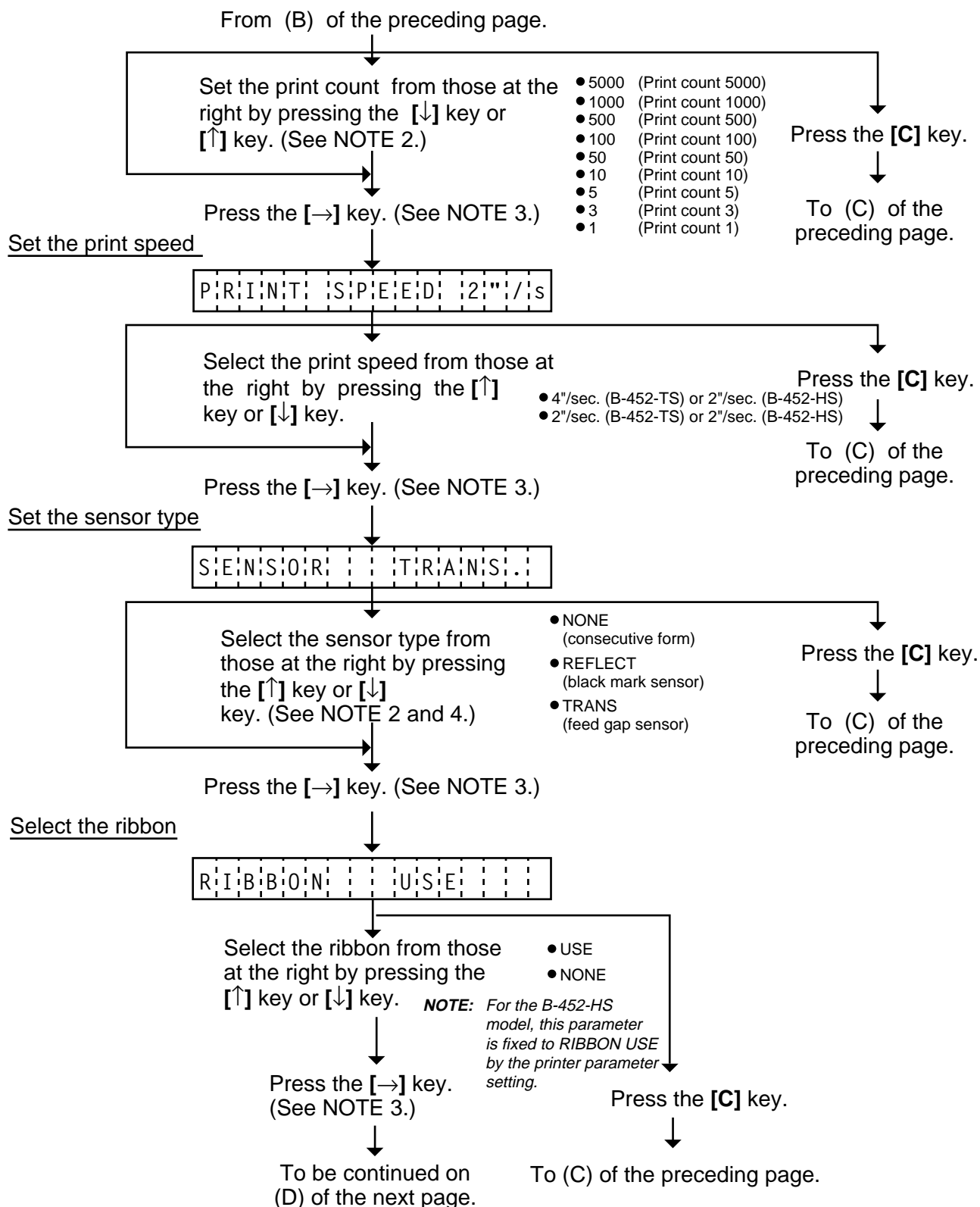
6.4 TEST PRINT MODE (When using the KB-80-QM Optional Keyboard)

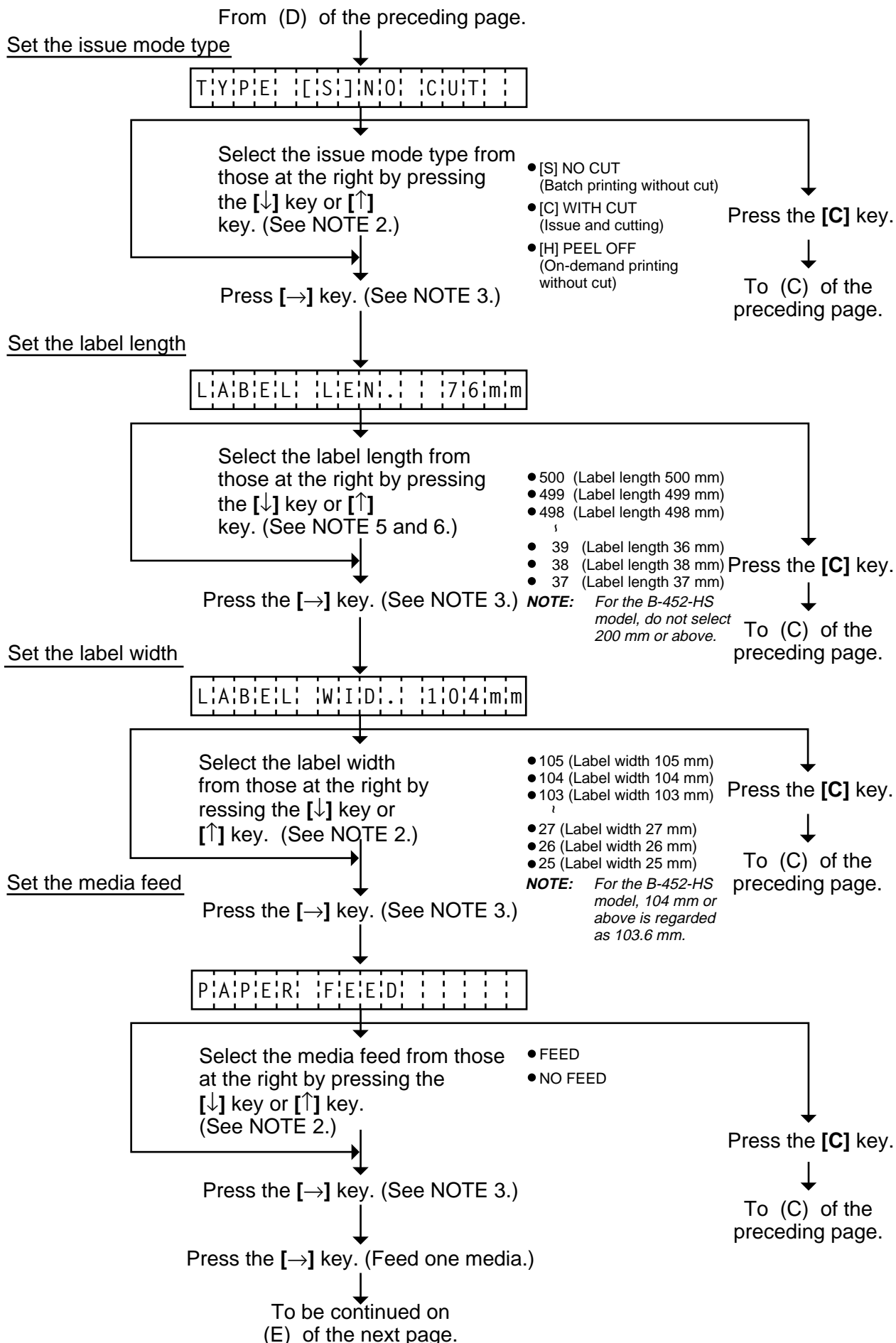
Eight kinds of test prints are provided in the test print mode. When performing the test print, 7 parameters should be set. The default parameter at power on is as below:

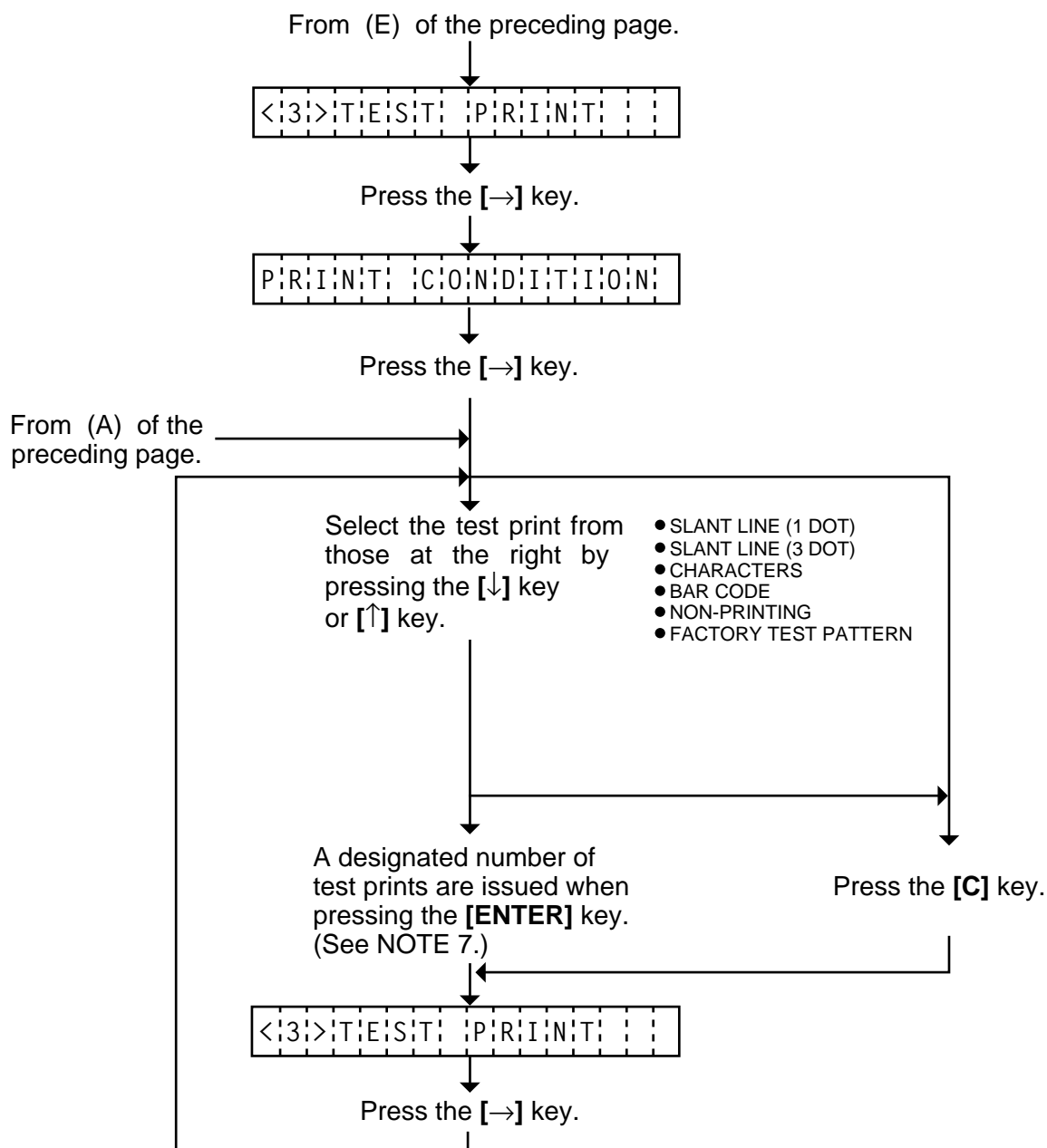
- ISSUE COUNT : 1
- PRINT SPEED : 2 inch/sec.
- SENSOR : Transmissive sensor (Feed gap sensor)
- TYPE : Batch (without cut)
- LABEL LENGTH : 76 mm
- LABEL WIDTH : 104 mm
- PAPER FEED : Feed

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 [↓] key or [↑] key down for more than 0.5 seconds enables a fast forward.
 3. A selected print condition is activated when the [→] 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 [↓] key changes the label length -1 mm, pressing the [↑] 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 [C] key and the display shows "<3> TEST PRINT". Printing is not automatically resumed after the error is cleared.

8. When "AUTO PRINT" is selected, 5 pcs. of the 3-dot slant line labels, bar code labels and character labels are printed respectively after one label is fed.

■ Test Print Sample

• Slant line (1 dot)

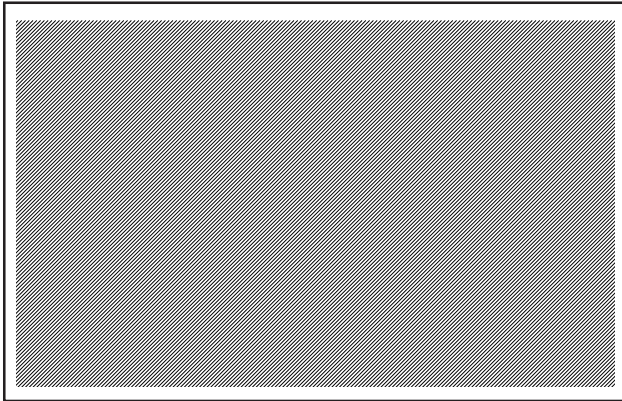


Fig. 6-23

• Slant line (3 dot)

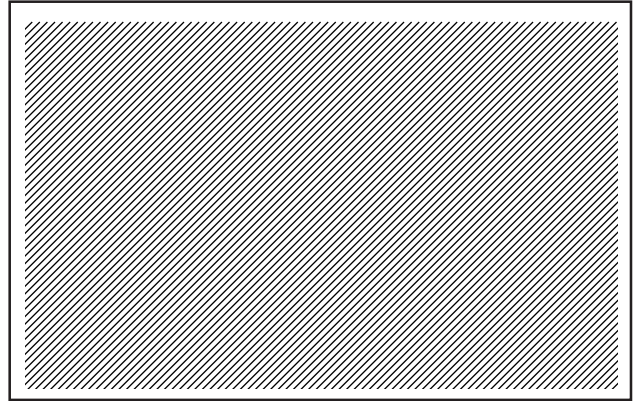


Fig. 6-24

• Characters

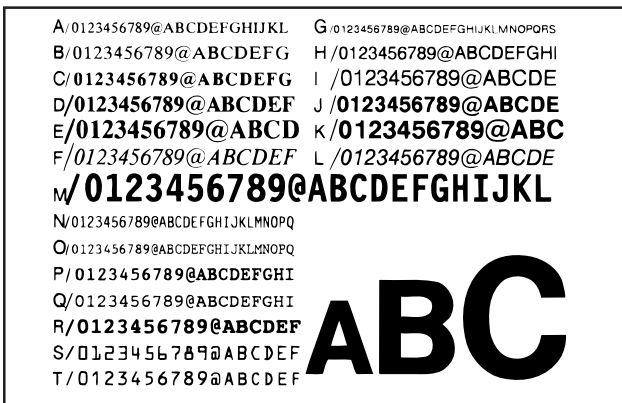


Fig. 6-25

• Bar code



Fig. 6-26

• Factory Test Pattern

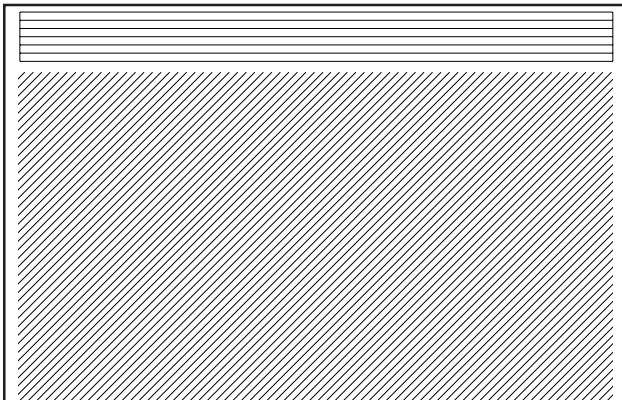


Fig. 6-27

■ Auto paper feed

At a test print with the cut mode being specified, the auto paper feed (advancing the paper four about 10 mm to prevent the leading edge of the paper from winding onto the platen) is performed after printing or feeding. The following table shows whether or not the auto paper feed and auto reverse feed is performed after changing the test print mode to the following mode:

Issue mode	Auto paper feed	Auto reverse feed
Batch	None	Performed if the paper has been advanced.
Cut	Performed	Performed if the paper has been advanced.
Strip	None	None (even if the paper has been advanced.)
Self diagnosis print	None	None (even if the paper has been advanced.)

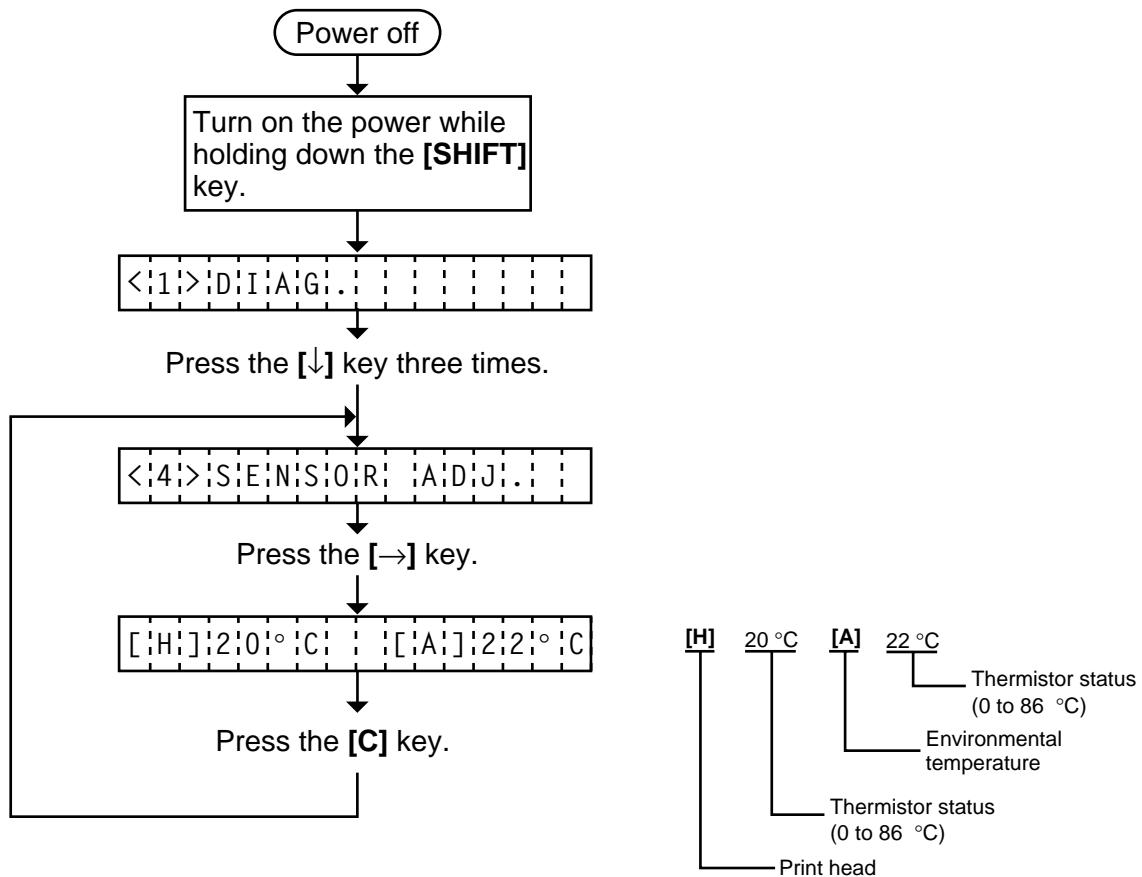
- NOTES:**
1. Even if the auto paper feed has been performed in online mode, an auto reverse feed is not performed when starting a test print.
 2. Even if the auto paper feed has been performed in test print mode, an auto reverse feed is not performed in online mode.
 3. After a self diagnosis print, an auto reverse feed is not performed for printing the first paper in online mode.
 4. After the print head is raised and lowered, the auto paper feed is canceled.

6.5 SENSOR SETTING MODE (When using the KB-80-QM Optional Keyboard)

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

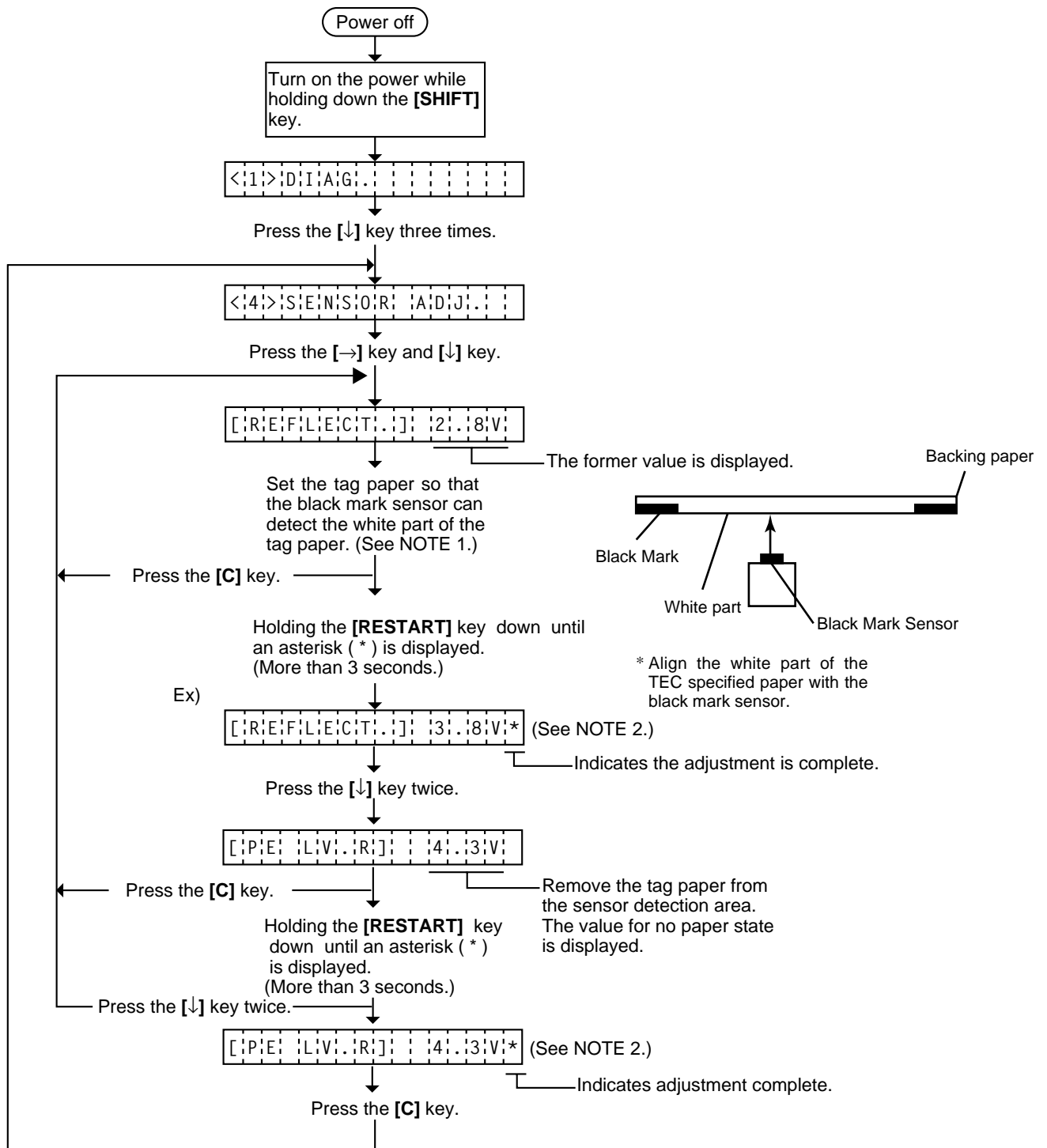
Thermistor check should be performed to check the environmental temperature and print head temperature after the excess head temp. error occurs or batch printing is performed for a long time.



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

6.5.2 Black Mark Sensor Adjustment

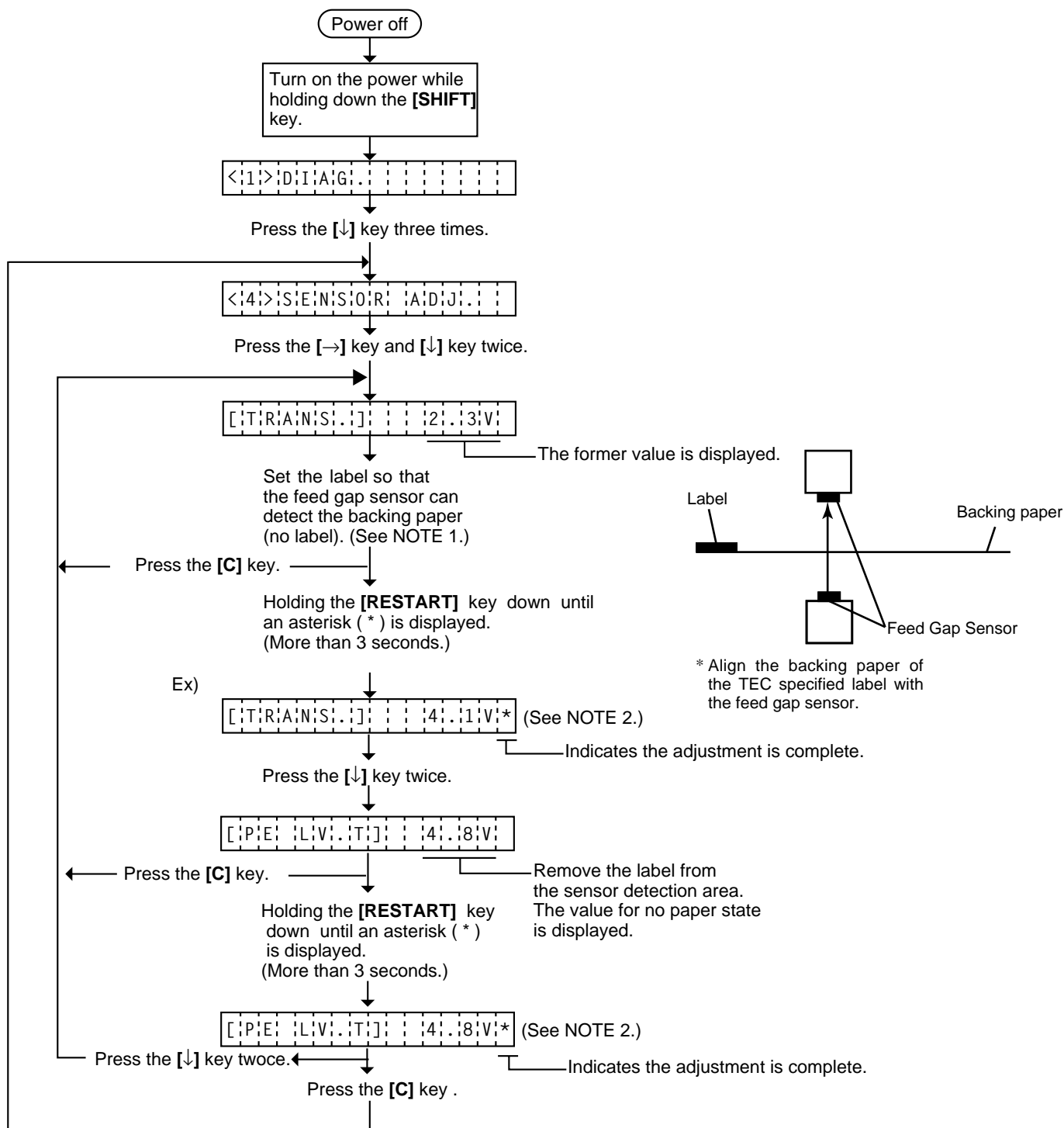
Black mark sensor setting should be performed after replacing the CPU PC board or changing the tag paper to other maker's one, or when a paper feed error occurs.



- NOTES:**
1. Be 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 [↓] key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

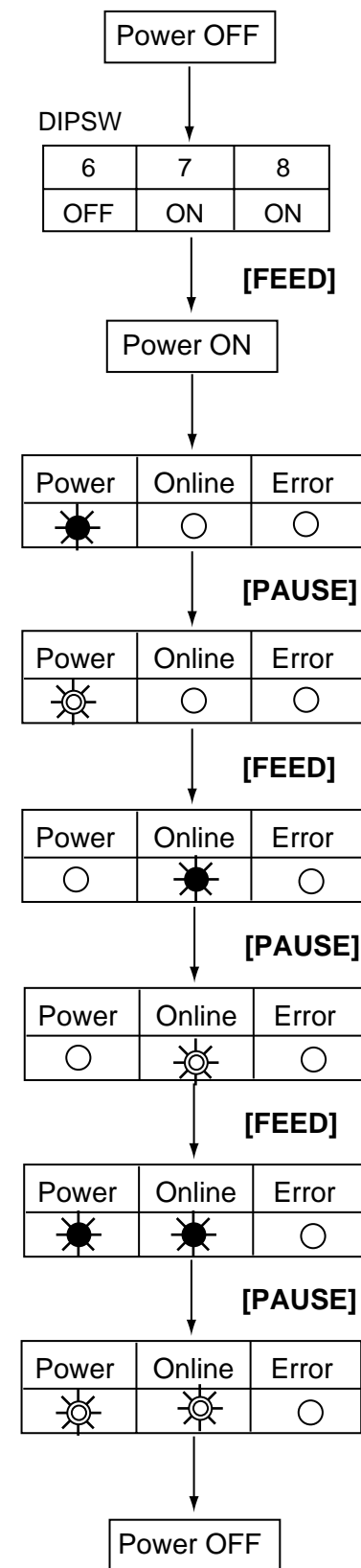
6.5.3 Feed Gap Sensor Adjustment

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. Be 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 [↓] key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

6.6 SENSOR SETTING MODE (When using the operation panel)

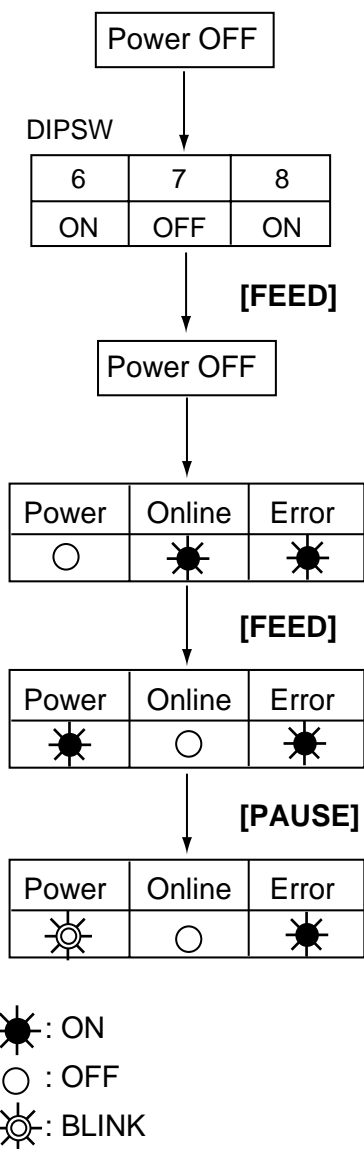


● : ON
 ○ : OFF
 ⊙ : BLINK

- (1) Turn the power OFF.
- (2) Set the DIP switches to enter the manual threshold setting mode.
- (3) Turn the power ON while pressing and holding the **[FEED]** key.
- (4) The printer enters the sensor setting mode.
- (5) Adjust the black mark sensor.
Set the tag paper so that the sensor can detect the white part of the paper.
- (6) Press and hold the **[PAUSE]** key for 3 seconds or more.
- (7) The power LED blinks when the black mark sensor adjustment is completed.
- (8) Press the **[FEED]** key.
- (9) Adjust the feed gap sensor.
Remove a few labels from the label roll and set it so that the sensor can detect the backing paper.
- (10) Press and hold the **[PAUSE]** key for 3 seconds or more.
- (11) The online LED blinks when the feed gap sensor adjustment is completed.
- (12) Press the **[FEED]** key.
- (13) Enter the sensor settings. (Enter the paper end.)
Remove the paper from the printer.
- (14) Press and hold the **[PAUSE]** key for 3 seconds or more.
- (15) The power LED and online LED blinks when the two sensors entry is completed.
- (16) Turn the power OFF.
- (17) Set the DIP switches to original position.

6.7 THRESHOLD SETTING (When using the operation panel)

For the printer to maintain a constant print position it uses the transmissive sensor to measure the amount of light passing through the gap between labels. When the paper is pre-printed, the darker (or more dense) inks can interfere with this process causing paper jam errors. To eliminate this problem a minimum threshold can be set for the sensor in the following way.



- (1) The power is off.
- (2) Set the DIP switches to enter the manual threshold setting mode.
- (3) Turn the power ON while pressing and holding the **[FEED]** key.

The transmissive sensor is selected.

- (4) Press the **[FEED]** key.
The reflective sensor is selected.
The sensor type is switched by pressing the **[FEED]** key. Load the pre-printed label roll in the usual way.

- (5) Press and hold the **[PAUSE]** key.
The paper will feed through the printer until the **[PAUSE]** key is released. Release the **[PAUSE]** key after more than 1.5 labels have been fed. (Threshold setting is completed by this operation. In case of the transmissive sensor threshold setting, the ONLINE LED blinks).

- (6) Turn the power OFF.
- (7) Set the DIP switches to original position.

NOTES:

1. To set the threshold properly, be sure to feed more than 1.5 labels. Insufficient paper feeding may result in an incorrect threshold setting. In this case, repeat the procedure.
2. While the print head is raised, the **[PAUSE]** key does not work.
3. If the paper runs out or a cutter error occurs, it will not be detected during the paper feed.
4. If the printer does not print in the correct position even after the threshold setting, the transmissive sensor adjustment may be wrong. In this case, re-adjust the transmissive sensor, and then set the threshold again. (When the backing paper is thick, the transmissive sensor adjustment is required.)

6.8 RAM CLEAR MODE (When using the KB-80-QM Optional Keyboard)

In RAM clear mode, various data written on the EEPROM 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.

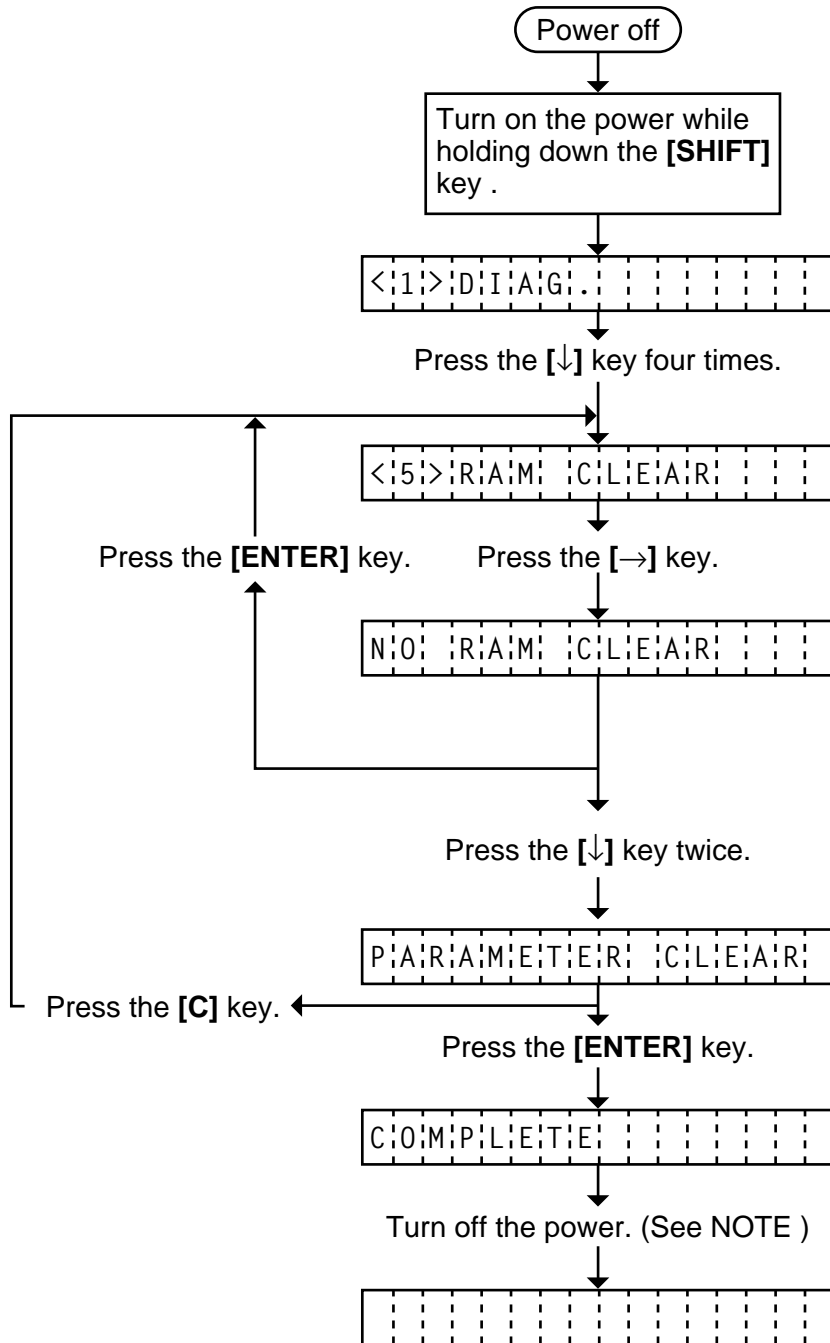
■ RAM Clear Mode Table

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, 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 border="1"> <thead> <tr> <th>Item</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Paper distance covered</td> <td>0 km</td> </tr> <tr> <td>Print distance</td> <td>0 km</td> </tr> <tr> <td>Cut count</td> <td>0 times</td> </tr> <tr> <td>Ribbon Motor Drive time</td> <td>0 hours</td> </tr> <tr> <td>RS-232C hardware error count</td> <td>0 times</td> </tr> <tr> <td>System error count</td> <td>0 times</td> </tr> <tr> <td>Momentary power failure count</td> <td>0 times</td> </tr> </tbody> </table>	Item	Initial Value	Paper distance covered	0 km	Print distance	0 km	Cut count	0 times	Ribbon Motor Drive time	0 hours	RS-232C hardware error count	0 times	System error count	0 times	Momentary power failure count	0 times										
Item	Initial Value																										
Paper distance covered	0 km																										
Print distance	0 km																										
Cut count	0 times																										
Ribbon Motor Drive time	0 hours																										
RS-232C hardware error count	0 times																										
System error count	0 times																										
Momentary power failure count	0 times																										
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 border="1"> <thead> <tr> <th>Item</th> <th>Initial Value</th> </tr> </thead> <tbody> <tr> <td>Feed length fine adjustment (PC)</td> <td>0 mm</td> </tr> <tr> <td>Cut/strip position fine adjustment (PC)</td> <td>0 mm</td> </tr> <tr> <td>Back feed length fine adjustment (PC)</td> <td>0mm</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 (PC)</td> <td>0 step</td> </tr> <tr> <td>Feed length fine adjustment (KEY)</td> <td>0 mm</td> </tr> <tr> <td>Cut/strip position fine adjustment (KEY)</td> <td>0 mm</td> </tr> <tr> <td>Back feed length fine adjustment (KEY)</td> <td>0 mm</td> </tr> <tr> <td>Print tone fine adjustment (Thermal Transfer) (KEY)</td> <td>0 step</td> </tr> <tr> <td>Print tone fine adjustment (Thermal Direct) (KEY)</td> <td>0 step</td> </tr> <tr> <td>Ribbon motor Drive voltage fine adjustment (KEY)</td> <td>0 step</td> </tr> </tbody> </table>	Item	Initial Value	Feed length fine adjustment (PC)	0 mm	Cut/strip position fine adjustment (PC)	0 mm	Back feed length fine adjustment (PC)	0mm	Print tone fine adjustment (Thermal Transfer) (PC)	0 step	Print tone fine adjustment (Thermal Direct) (PC)	0 step	Ribbon motor drive voltage Fine Adjustment (PC)	0 step	Feed length fine adjustment (KEY)	0 mm	Cut/strip position fine adjustment (KEY)	0 mm	Back feed length fine adjustment (KEY)	0 mm	Print tone fine adjustment (Thermal Transfer) (KEY)	0 step	Print tone fine adjustment (Thermal Direct) (KEY)	0 step	Ribbon motor Drive voltage fine adjustment (KEY)	0 step
Item	Initial Value																										
Feed length fine adjustment (PC)	0 mm																										
Cut/strip position fine adjustment (PC)	0 mm																										
Back feed length fine adjustment (PC)	0mm																										
Print tone fine adjustment (Thermal Transfer) (PC)	0 step																										
Print tone fine adjustment (Thermal Direct) (PC)	0 step																										
Ribbon motor drive voltage Fine Adjustment (PC)	0 step																										
Feed length fine adjustment (KEY)	0 mm																										
Cut/strip position fine adjustment (KEY)	0 mm																										
Back feed length fine adjustment (KEY)	0 mm																										
Print tone fine adjustment (Thermal Transfer) (KEY)	0 step																										
Print tone fine adjustment (Thermal Direct) (KEY)	0 step																										
Ribbon motor Drive voltage fine adjustment (KEY)	0 step																										

Mode Name	Function	
PARAMETER CLEAR	Item	Initial Value
	X axis fine adjustment	0 mm
	Character code selection	PC-850
	Font zero selection	"0" (without slash)
	Code 5CH selection	"∖"
	Transmission control mode	XON + READY Auto mode
	Control code selection	Auto
	Strip wait status setting	OFF
	Status response	ON
	Threshold manual fine adjustment for the black mark sensor	1.0 V
	Threshlod manual fine adjustment for the feed gap sensor	0.7 V
	Label pitch	76.2 mm (B-452-TS) 104.8 mm (B-452-HS)
	Effective printing length	74.2 mm (B-452-TS) 99.8 mm (B-452-HS)
	Effective printing width	105.7 mm (B-452-TS) 103.6 mm (B-452-HS)
	Sensor type	Transmissive sensor (Feed gap sensor)
	Feed speed	2 inch/sec.
	Issue mode	Standard (Batch printing)
	PC save automatic calling	ON
	Kanji code selection	Type 1
	Feed speed adjustment value (on the PC)	0%
	Feed speed adjustment value (on the printer)	0%
	Euro code	B0H
	True type font block	Not initialized
PC Save BLOCK	Not initialized	
Bitmap writable character BLOCK	Not initialized	

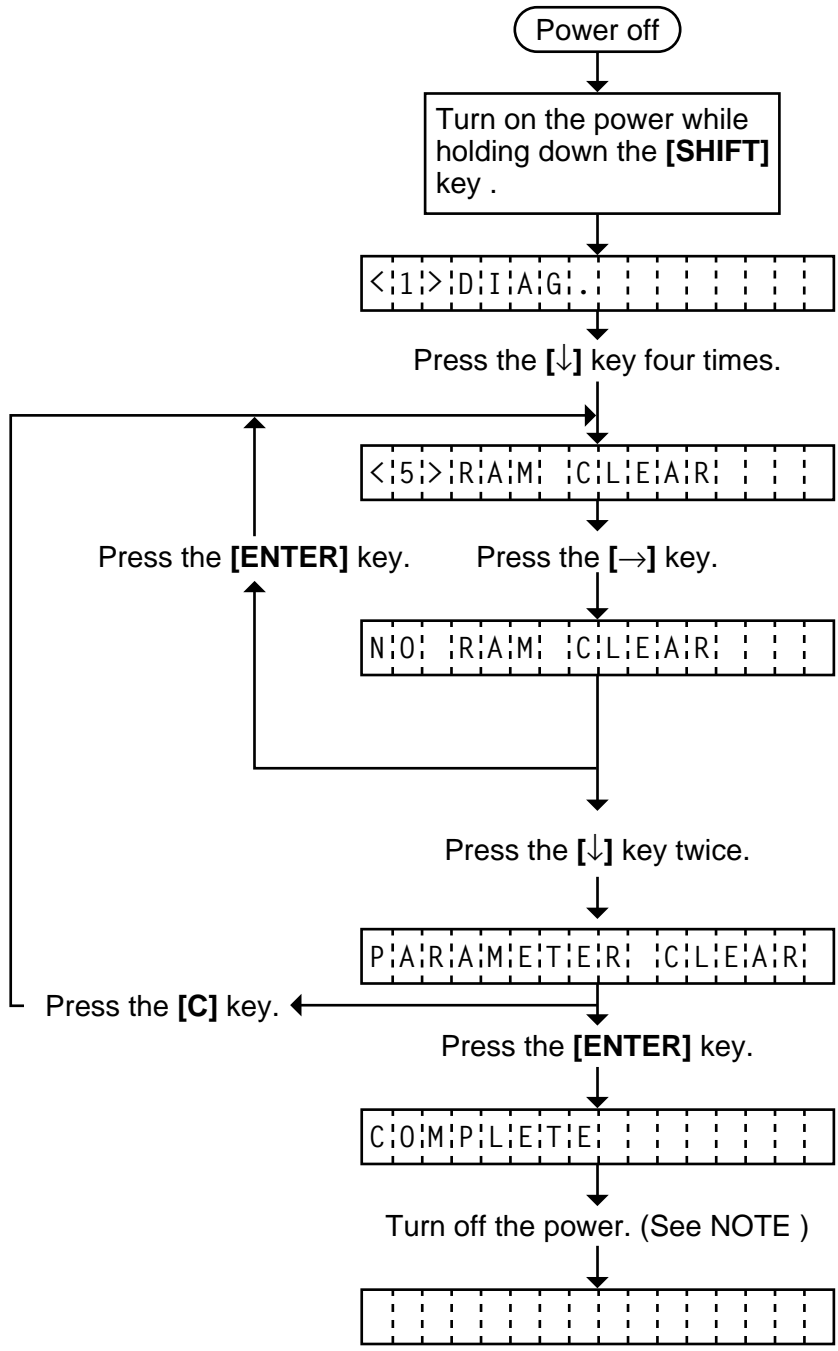
- NOTES:**
1. Total paper distance covered (TL FEED) and the adjustment value for the sensors cannot be cleared.
 2. Data stored on the flash memory card cannot be cleared with this procedure. To clear data on the flash memory card, send the format command to initialize the card. For details, refer to the Expansion I/O 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.

6.8.1 Maintenance Counter Clear



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

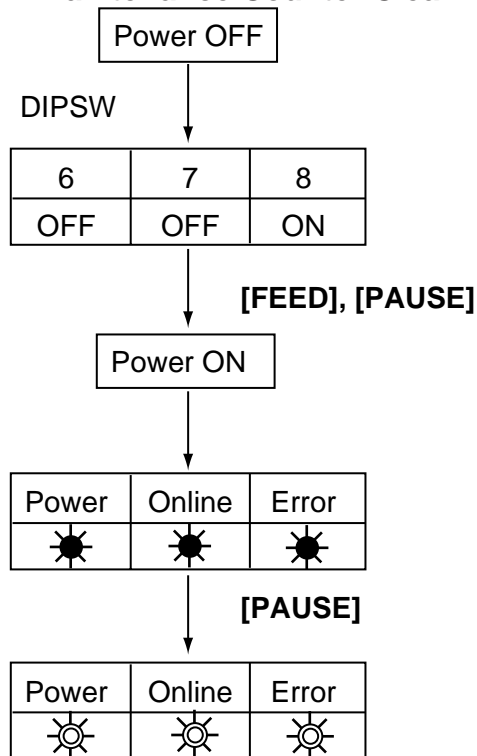
6.8.2 Papameter Clear



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

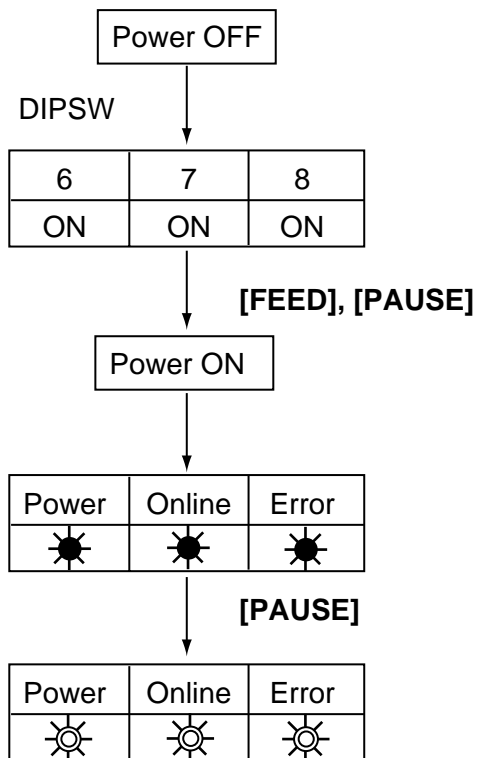
6.9 RAM CLEAR MODE (When using the operation panel)

6.9.1 Maintenance Counter Clear



- (1) Turn the power OFF.
- (2) Set the DIP switches to enter the maintenance counter clear mode.
- (3) Turn the power ON while pressing and holding the **[FEED]** and **[PAUSE]** keys.
- (4) The printer enters the RAM clear mode.
- (5) Perform the RAM clear, by holding **[PAUSE]** key.
- (6) The RAM clear is completed, when all 3 LED's blinks.
- (7) Turn the power OFF.
- (8) Set the DIP Switches to original position.

6.9.2 Parameter Clear



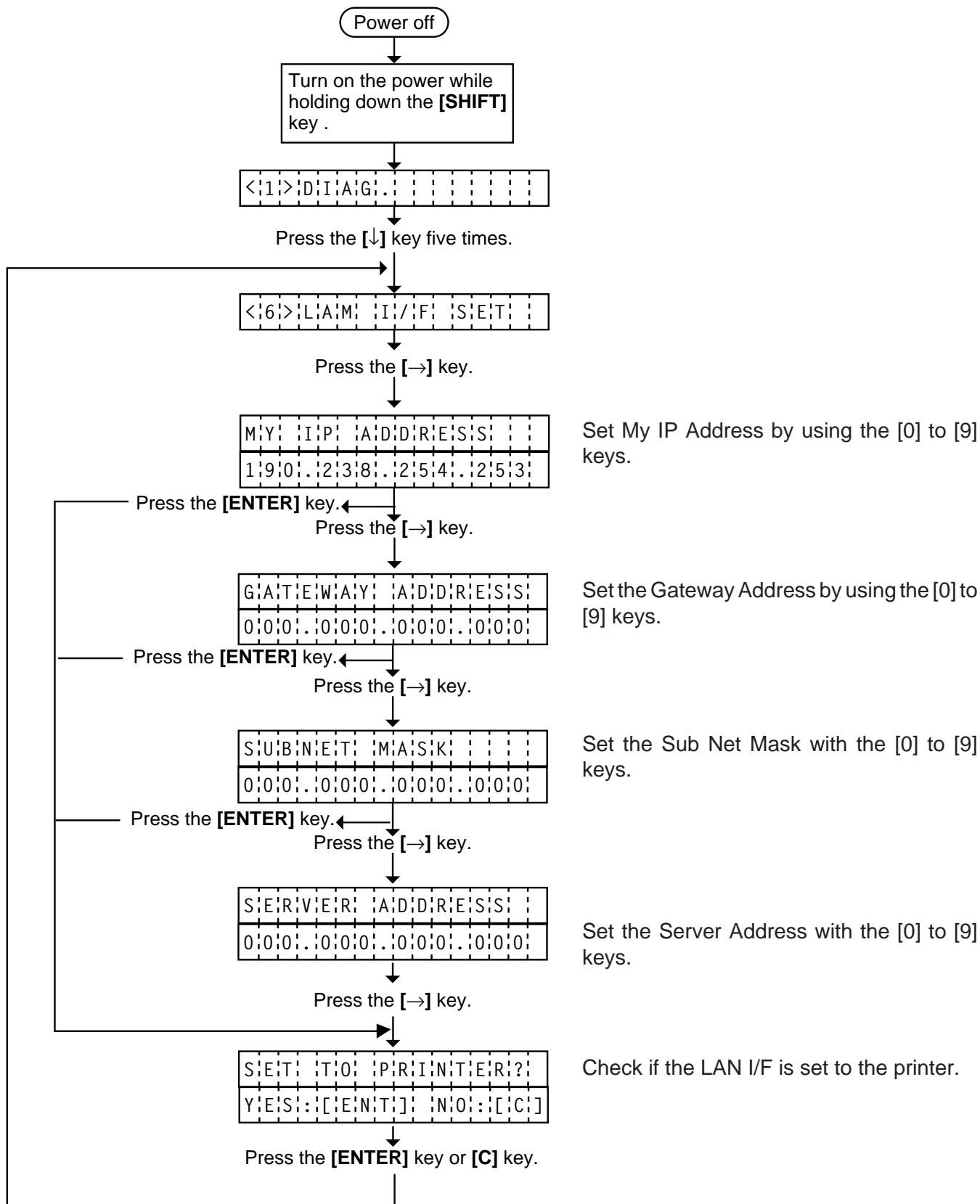
- (1) Turn the power OFF.
- (2) Set the DIP switches to enter the parameter clear mode.
- (3) Turn the power ON while pressing and holding the **[FEED]** and **[PAUSE]** keys.
- (4) The printer enters the RAM clear mode.
- (5) Perform the RAM clear, by holding **[PAUSE]** key.
- (6) The RAM clear is completed, when all 3 LED's blinks.
- (7) Turn the power OFF.
- (8) Set the DIP Switches to original position.

NOTE: Regarding the details of the maintenance counter and parameter settings after RAM clear, refer to section 6.8 RAM CLEAR MODE.

● : ON
 ○ : OFF
 ○ (with radiating lines) : BLINK

6.10 LAN I/F SETTING MODE (When using the KB-80-QM optional keyboard)

Each address setting of LAN I/F (The following operations can be performed when the LAN I/F PC board is installed to the printer.) is available in this mode.

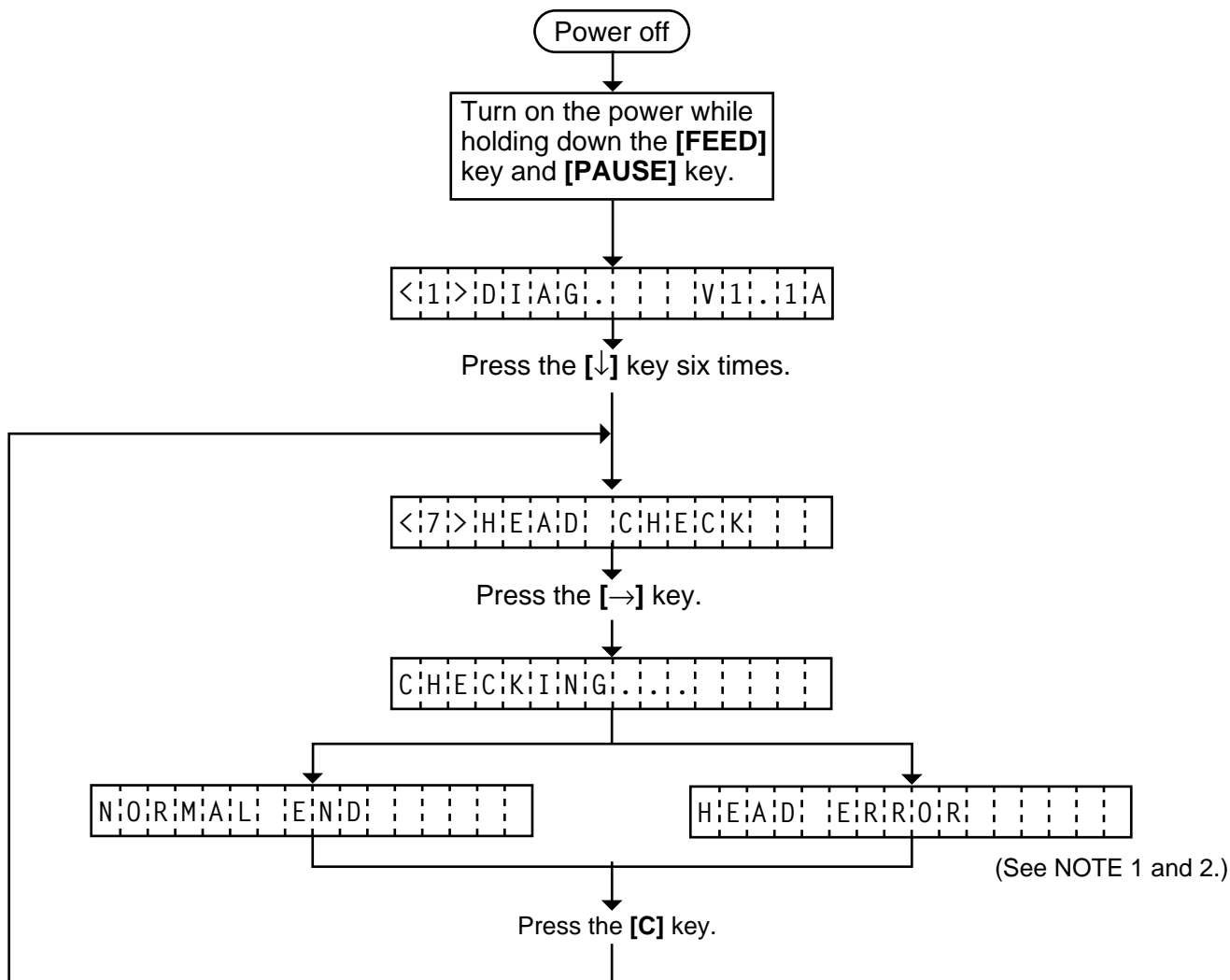


■ LAN I/F Initial Setting before shipment

Parameter	Initial
Operation Mode	Socket Mode
Data format for socket communication	Transparent Clear the receive buffer at connection.
My IP Address (Common)	190.238.254.254
Sub Net mask (Common)	0.0.0.0 (Not Used)
Gateway IP Address (Common)	0.0.0.0 (Not Used)
TCP Port No. for communication by RS-232C I/F	1111
TCP Port No. for communication by Centronics I/F	2222
Client Connection	Enable (Used)
Server IP Address	0.0.0.0 (Not Used)
TCP port No. of server	0 (Not Used)
RS-232C I/F Protocol	Baud Rate: 38400 bps Data Length: 8 bits Parity : Even Stop Bit: 1 bit Protocol: XON/XOFF without flow control
Connection Retry count	10 times
Connection Trigger	Connected by the receive data. Disconnected by the timer.
Disconnection Timer value	90 seconds

6.11 HEAD BROKEN ELEMENT CHECK (B-452-HS MODEL)

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 2.4 Replacing the Print Head.
 2. After replacing the print head, clear the maintenance counter as described in Section 6.6.1 and perform a test print in Section 6.4 TEST PRINT MODE.
 3. The B-452-TS model does not support this function. If this function is tried, the LCD will display "NOT SUPPORTED".

7. PROGRAM DOWN LOAD FOR PRINTER

The program for the printer has been written onto the flash ROM. If the program is updated, due to the additional/change of the specification, download the program from the PC to the printer with download floppy disk and RS-232C interface or Centronics interface.

7.1 FLOPPY DISK

- 1) Media: 3.5 inch (2HD, 1.44 MB)
- 2) Program Disk: 1 disk (this floppy disk contains the main program to be written onto the printer and the tool program for download.) The system disk is provided for the printer.

7.2 SETUP

The transmission control code must be set to either automatic selection or manual selection ({,l,}). You cannot perform a down load with any other control codes. Refer to Section 6.3.10 Control Code Selection.

7.2.1 Connecting the Printer to the PC

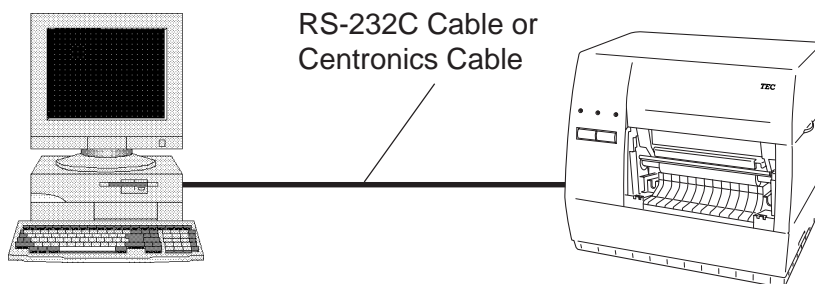


Fig. 7-1

- Windows 95 or later version
- Set the communication parameters as follows:
Baud rate: 9600 BPS
Parity: EVEN

7.2.2 Program Download FDK (3.5", 2 HD, 1.44 MB)

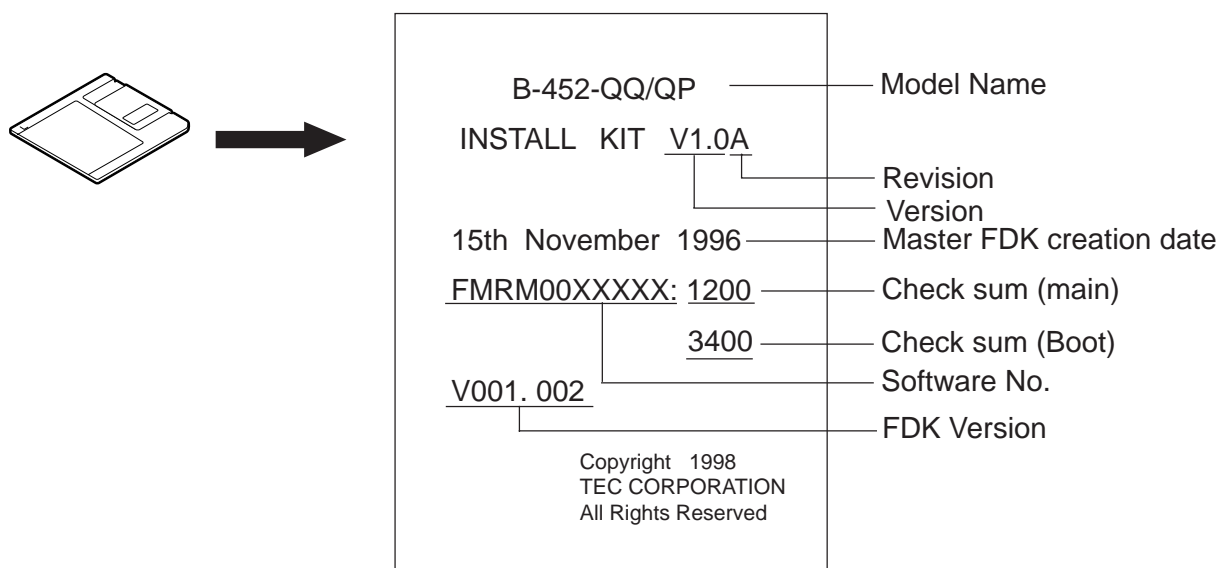
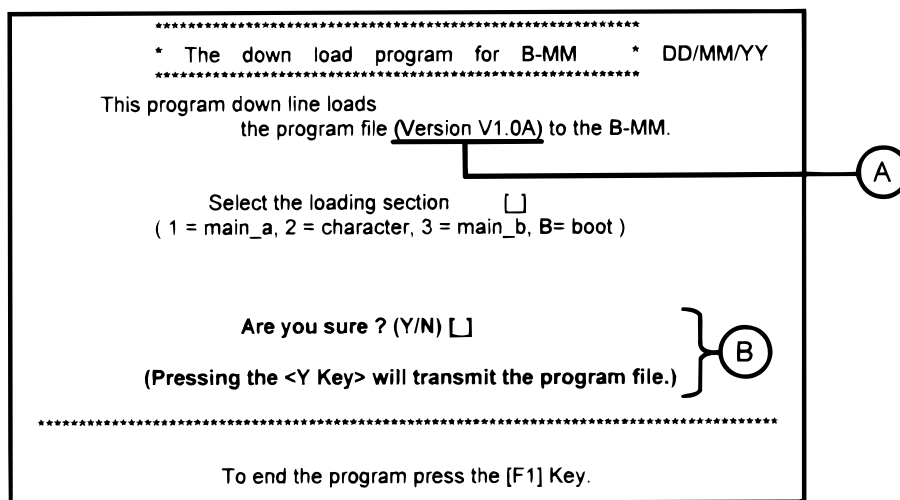


Fig. 7-2

7.3 DOWN LOAD PROCEDURE (DOS Version)

- (1) Turn off the printer.
- (2) Set the DIP switch #8 ON to enter the program download mode.
- (3) Turn the PC power on.
- (4) Turn the printer power on.
- (5) Insert the program down load floppy disk into the PC.
- (6) Change the drive to A. Type
- (7) Start the exe file "BMMS". Type
Or copy the contents of the floppy disk in to the hard disk and start the program in the hard disk.
- (8) After starting the exe file "BMMS", the following menu is displayed. Ⓐ indicates the main program version.



- (9) Select the program.
 - (10) Start the program transmission.
 - (11) While the main program is being transmitted, the following message is displayed in line Ⓑ .
** Now transmitting (###/###KB)**
 - (12) When the transmission is successfully completed, the following message is displayed in line Ⓒ .
End of Transmission. Continue (Y/N) ? []
- To continue
 - ① Turn the printer power off and exchange the printer with another one.
 - ② Turn the printer power on.
 - ③ Start the main program transmission.
 - To terminate

- (13) When an error occurs, the following message is displayed together with the error code in line ③.
 The following error occurred during transmission. (ERROR=###)
 Press any key to retry.

└── Error
code

Doing so will revert to the displayed described in step (6). Refer to the error code to find the cause of the error. then retry the down load.

- (14) Turn off the printer.
 (15) Set the DIP switch #8 to off.
 (16) After terminating the down load, refer to the Maintenance Manual Section 6.2 SELF TEST MODE and perform diagnostic printing. Check that the printer operates properly and the main program version and checksum is printed on the label.

7.4 ERROR CODE

Error Code (#)	Error	Remarks
06	Communication error (Error is detected during command analysis.)	Status from the printer
07	Communication error (Parity error, overrun error or framing error occurred during communication with RS-232C.)	
50	Write error occurred during formatting of the flash ROM.	
51	Delete error occurred while data was being written onto the flash ROM.	
57	Checksum error occurred in the transmission program data.	
88	Undefined status is received when a wating data in RS-232C.	Error detected in PC
90	A parameter error occurred.	
92	An overrun error occurred in RS-232C.	
93	A parity error occurred in RS-232C.	
94	A framing error occrred in RS-232C.	
95	A break is detected in RS-232C.	
97	COM1 open error occurred in RS-232C.	
98	Undefined status is received against the loading setup command.	
99	Undefined status is received when the loading operation is terminated.	

Check the following when an error occurs:

- The printer power is turned on.
- The RS-232C cable is connected properly.
- The DIP SW on the CPU PC board is set correctly.

7.5 DOWNLOAD PROCEDURE (WINDOWS Version)

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

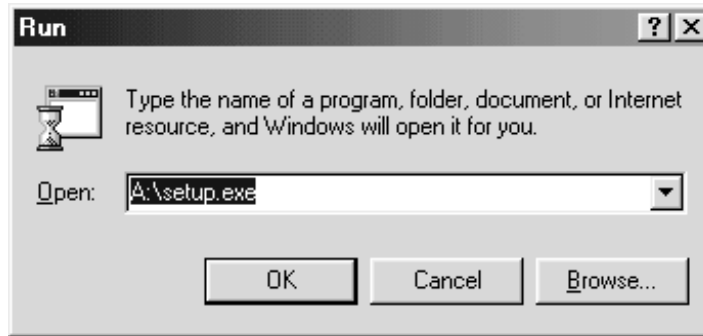


Fig. 7-3

- 5) When requested, insert Setup Disk (2/2).



Fig. 7-4

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

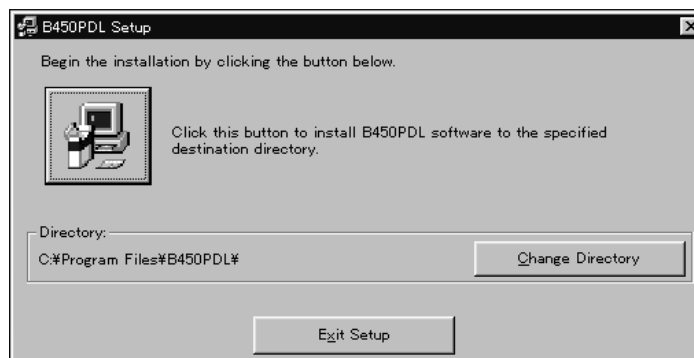


Fig. 7-5

- 7) 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.

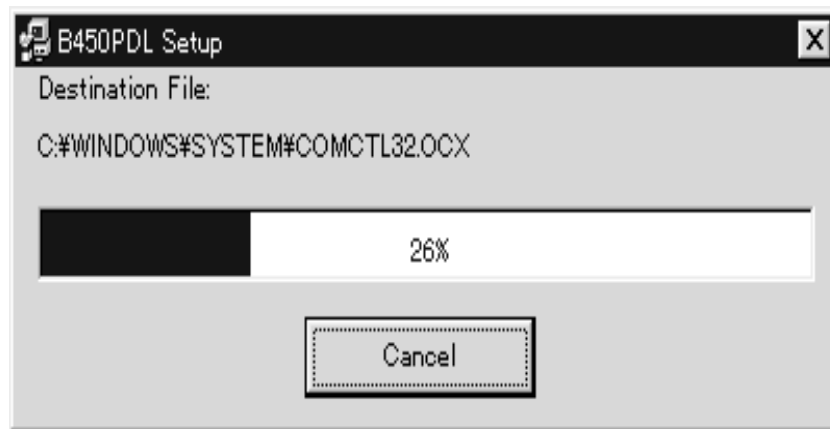


Fig. 7-6

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

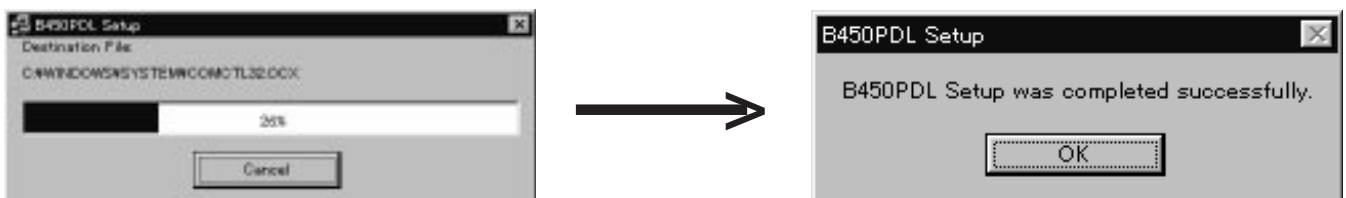


Fig. 7-7

- 9) Set the baud rate and parity to 9600 bps and EVEN, respectively (only for RS-232C Interface).
- 10) Connect the printer to the PC with the RS-232C cable or Centronics Cable.
- 11) Turn the printer power on.
- 12) Copy the binary file in the Program Download FDK to the directory of B450PDL. The directory is created in the Program Files as a default.
- 13) Click on the START button to access the program menu.
- 14) Highlight "Programs" then highlight "B450PDL" and click on install program for B-452 as shown in the screen display below.

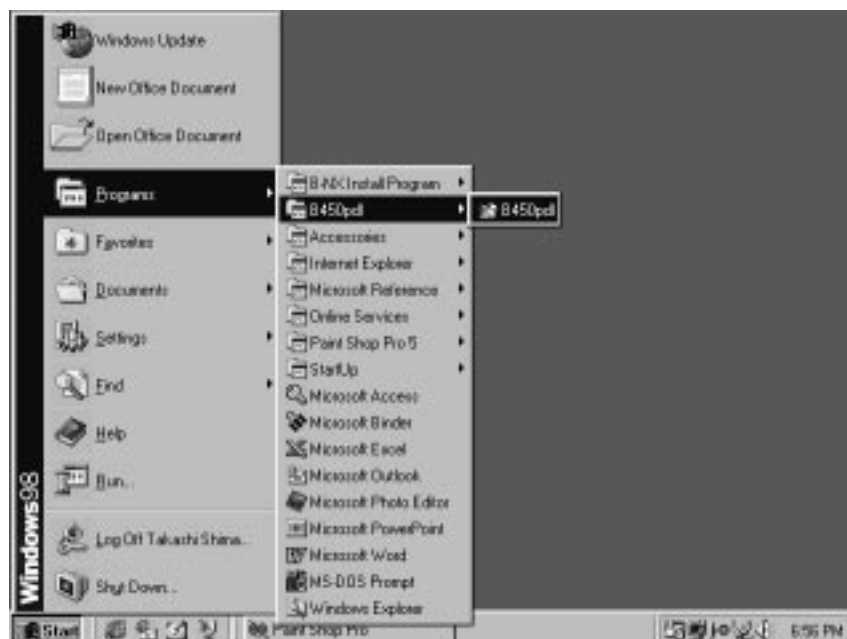


Fig. 7-8

15) **For B-452-TS model**

Select the download section and device.

For the RS-232C interface, select COM1 or COM2 port. For the centronics interface, select LPT1 port.

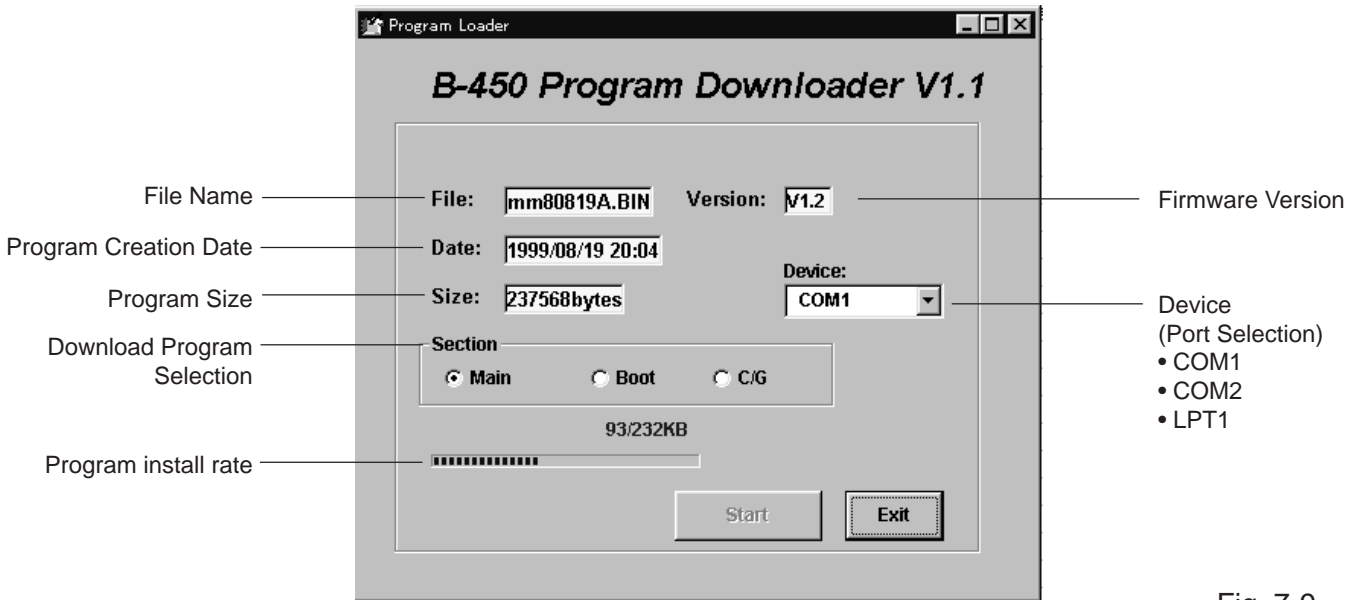


Fig. 7-9

FOR B-452-HS MODEL

Select the folder which contains the program to be downloaded.

Select the download section and device

For the RS-232C interface, select COM1 or COM2 port. For the centronics interface, select LPT1 port.

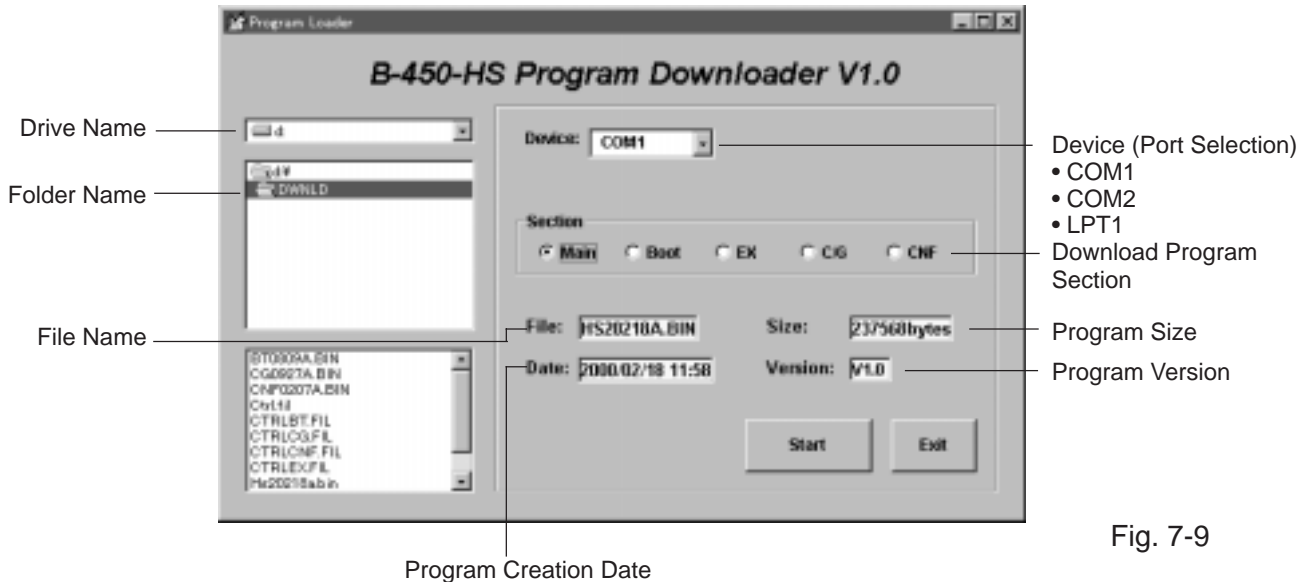
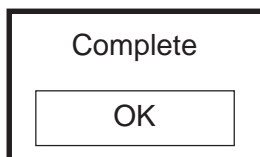


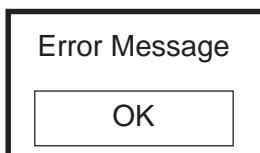
Fig. 7-9

16) Click on the [Start] button.

- 17) The program is downloaded to the PC.
 18) When the download is completed successfully, "Complete" is displayed.



- 19) When the download failed, an error message is displayed.



7.6 ERROR MESSAGE

When the download failed, the following error messages are displayed.

- Using the RS-232C Interface

Error Message	Error	Remarks
Command Error	Command error (Error is detected during command analysis.)	Status from the printer.
Printer COM Error	Communication error (Parity, overrun, or framing error occurred during communication.)	
Write Error	A write error occurred while data was being written onto the flash ROM.	
Erase Error	A delete error occurred while the flash ROM is formatted.	
Checksum Error	A checksum error occurred in the transmission program data.	
Printer Off	The printer power is OFF or the communication cable is not connected properly.	Status from the PC.
PC COM Error	A COM open error or hardware error occurred.	
Unknown Status	Undefined status was received.	

- Using the Centronics Interface

Error Message	Error	Remarks
Device Time Out	The printer power is OFF or the interface cable is not connected properly.	Status from the PC.
'LPT1:' Open Error!!	A LPT open error occurred.	Status from the PC.

8. PROGRAM DOWN LOAD FOR KEYBOARD

8.1 OUTLINE

The file loading loads (writes) BASIC program file or data file sent from the PC via an RS-232C cable to the flash memory. This section describes how to use the file loading.

8.2 SETUP

- 1) The KB-80-QM enters the downloading mode in the maintenance mode.
- 2) The loading preparation command is sent from the PC via an RS-232C port (D-SUB).
- 3) The loading data is sent.

Communication conditions

Communication speed: 19200BPS

Data length: 8 bit

Parity: EVEN

Stop bit: 1 bit

Flow control: None

8.3 BLOCK DIAGRAM FOR FILE LOADING (CONNECTION)

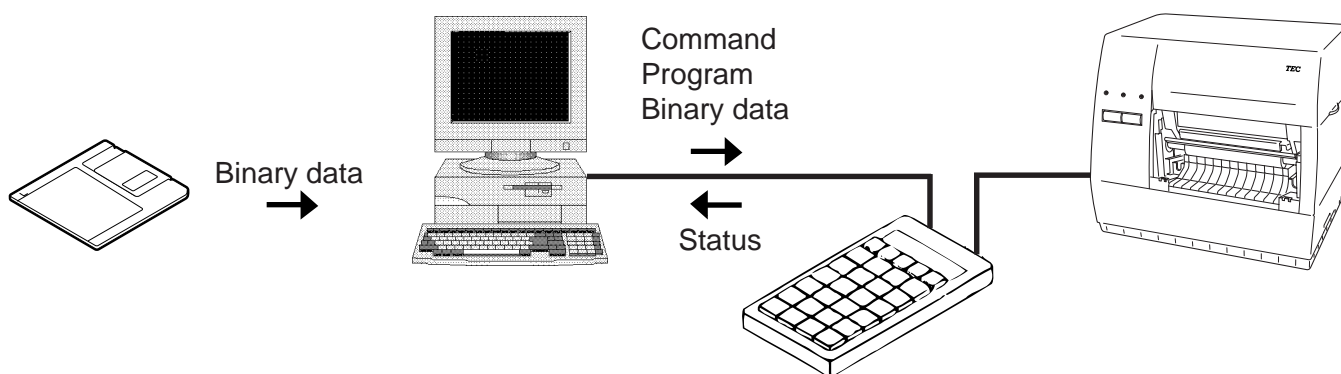
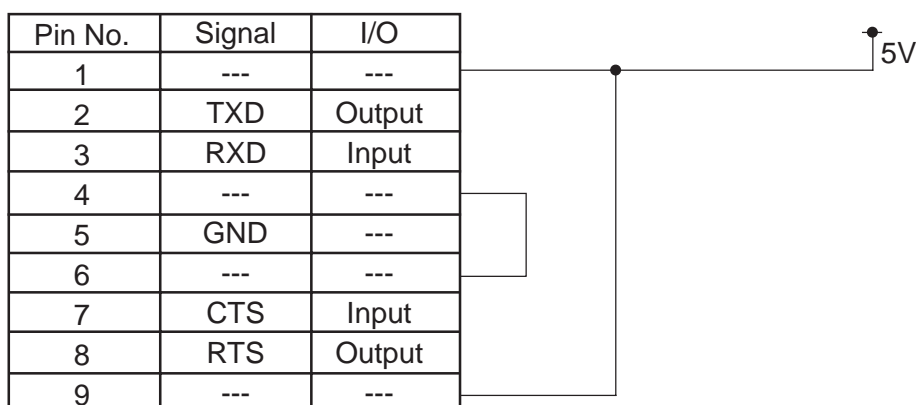


Fig. 8-1

- 1) Turn off the printer and your PC.
- 2) Connect the DIN cable of the KB-80-QM to the DIN connector of the B-450 printer.
- 3) Connect KB-80-QM and your PC with the serial cable (D-SUB).
- 4) Turn on the printer and your PC.

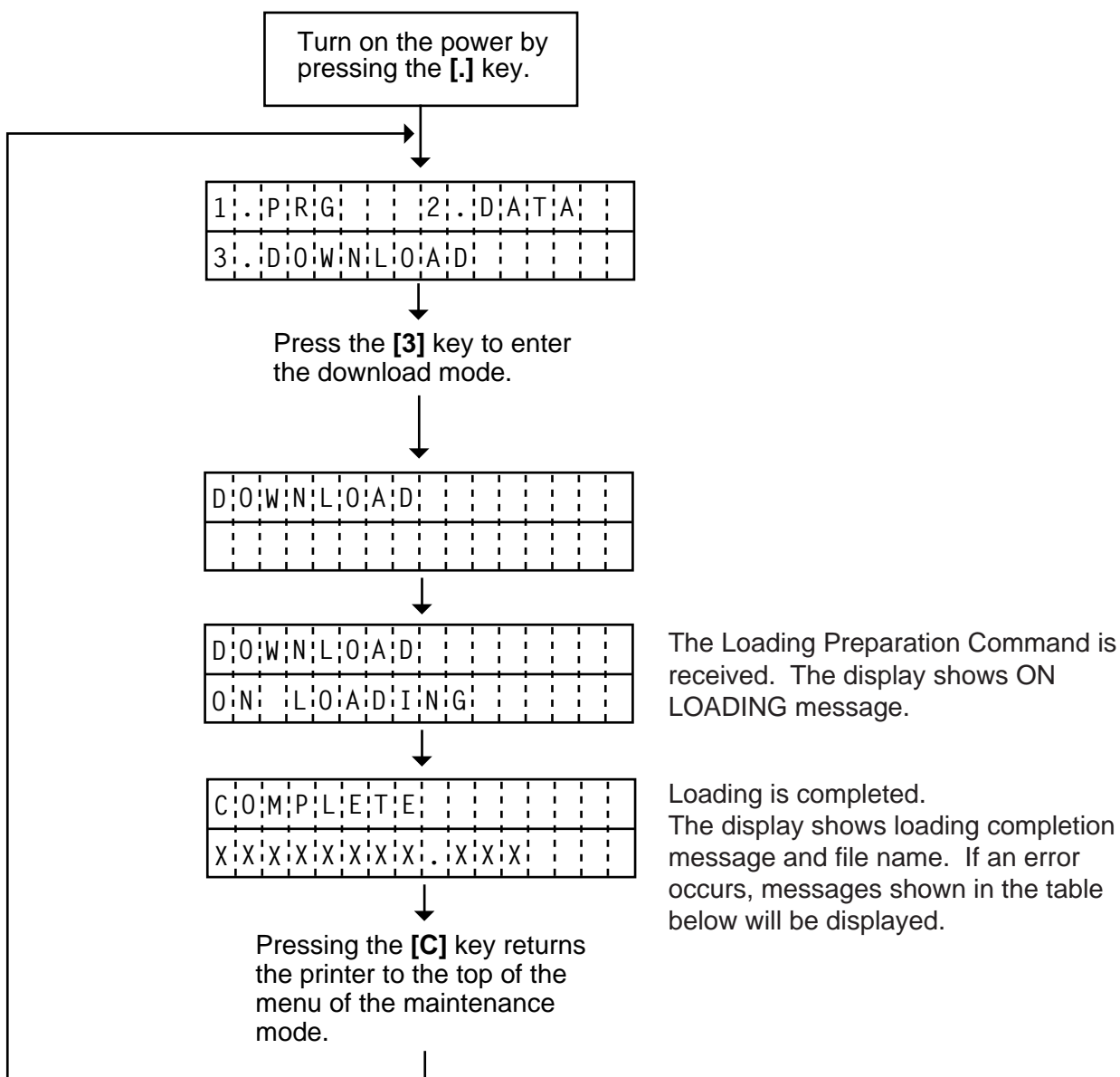
NOTE: Pin configuration of KB-80-QM D-SUB connector:

To PC KB-80-QM D-SUB female (Locking screw: inch)



8.4 DOWN LOAD PROCEDURE

8.4.1 Program download mode



NOTE: Error message

Message	Description
COMMAND ERROR	Communication command error
FILE SIZE OVER	File size out of range
ILLEGAL FILE No.	File No. out of range
DUPLICATE NAME	A file with the same name already exists. (Overwriting data is OK.)
WRITE ERROR	Write error of the flash memory
ERASE ERROR	Erase error of the flash memory

8.4.2 Program file maintenance mode (Deleting program files)

Turn on the power by pressing the [.] key.

1	:	P	:	R	:	G	:	:	:	2	:	:	D	:	:	A	:	:	:	:	:	:	:	:	:	
3	:	:	:	D	:	:	:	O	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Press the [1] key to enter the program file maintenance mode.

P	:	:	:	R	:	:	:	O	:	:	:	:	G	:	:	:	:	R	:	:	:	:	:	:	:	:	:
S	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

The display shows the file name of the system mode program.
(Note: System mode program file is unable to be deleted.)

Press the [↓] key and file name of program 1 will be displayed.

P	:	:	:	R	:	:	:	O	:	:	:	:	G	:	:	:	:	R	:	:	:	:	:	:	:	:	:
1	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Perform the communication check by pressing the [↓] key.
File name of program 2 will be displayed.
Each time when the [↓] key is pressed, the file name of the next program will be displayed.

Press the [↓] key and File name of program 2 will be displayed.

P	:	:	:	R	:	:	:	O	:	:	:	:	G	:	:	:	:	R	:	:	:	:	:	:	:	:	:
2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Delete the file by pressing the [C] key.
Confirm that the deletion is executed.

2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
D	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Press the [ENTER] key to execute the deletion.

2	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

Pressing the [↓] key shows the next program file name.

8.5 DOWNLOAD PROCEDURE (WINDOWS Version)

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

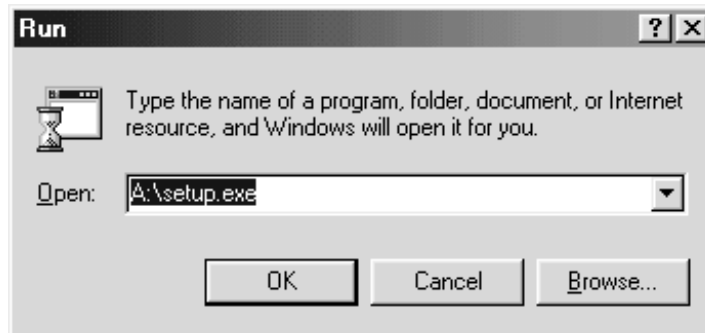


Fig. 8-2

- 5) When requested, insert Setup Disk (2/2).



Fig. 8-3

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



Fig. 8-4

- 7) After click on 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

- 8) The following program group selection screen appears. If no change is required, click on the Continue button.

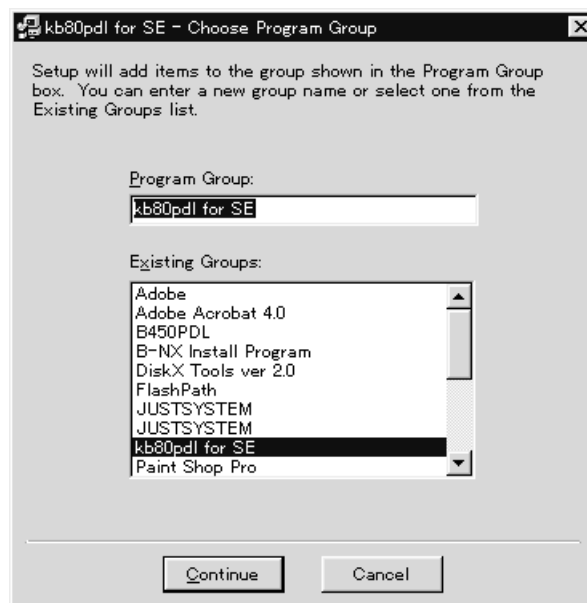


Fig. 8-6

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

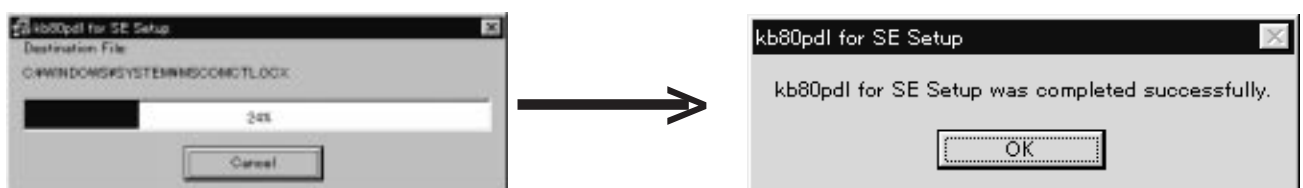


Fig. 8-7

- 10) Connect the printer to the PC with the RS-232C cable.
- 11) Turn the printer power on.
- 12) Copy the all files in the Program Download FDK to the directory of “kb80pdl for SE”.
The directory is created in the Program Files as a default.
- 13) Click on the START button to access the program menu.
- 14) Highlight “Programs” then highlight “kb80pdl for SE” and click on install program for kb80pdl for SE as shown in the screen display below.

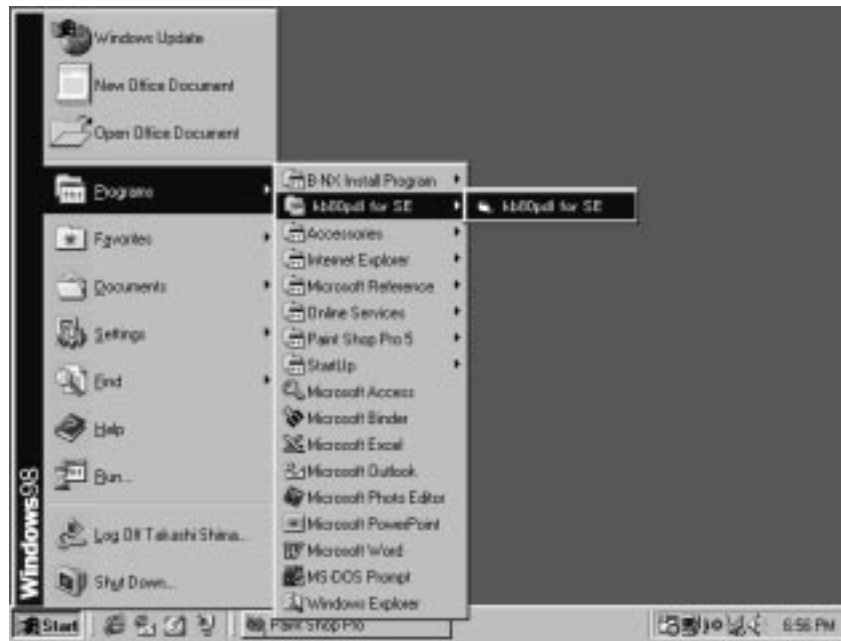


Fig. 8-8

- 15) Select the directory and download section.
- 16) Click on the [Start] button.

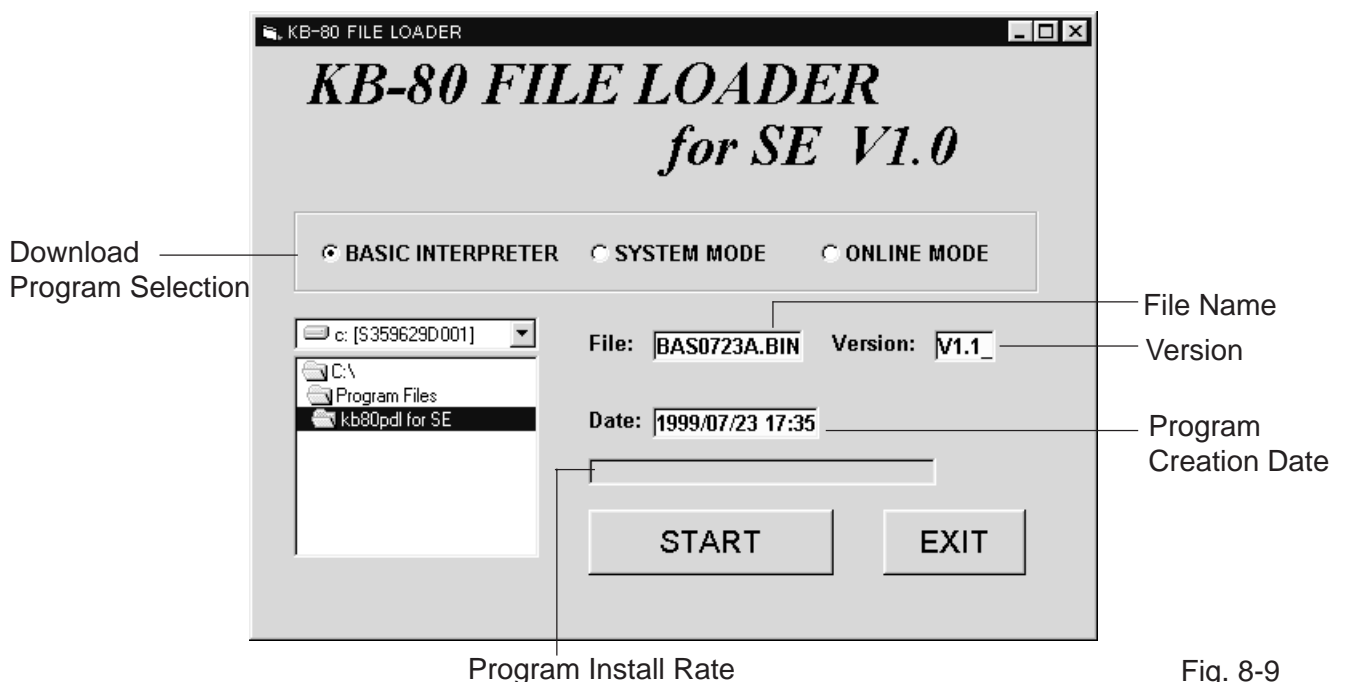


Fig. 8-9

- 17) The program is downloaded to the PC.
- 18) When the download is completed successfully, “Complete” is displayed.