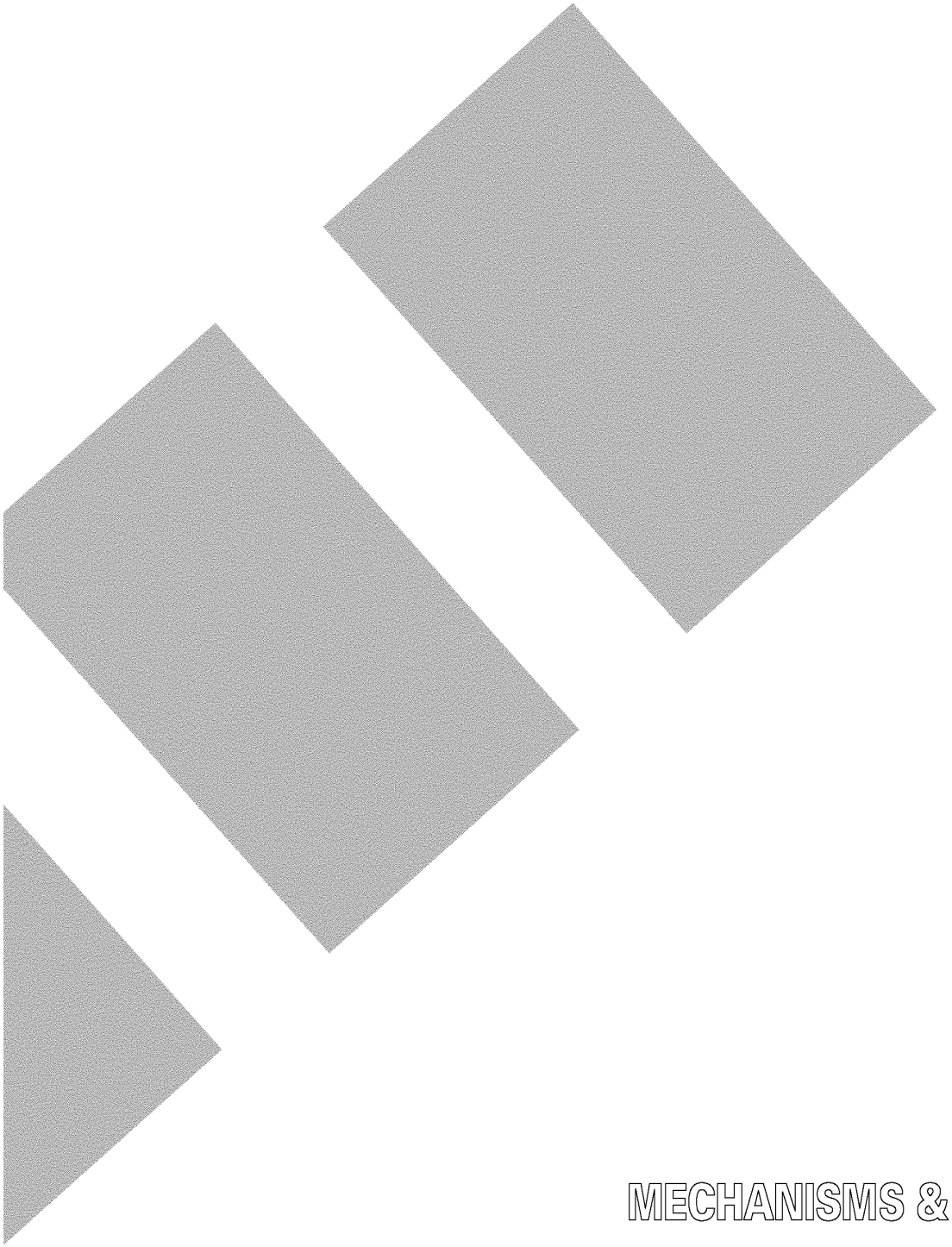
brother

SERVICE MANUAL

MODEL: PT-1900/1910/1850



MECHANISMS & ELECTRONICS

PREFACE

This publication is a service manual covering the specifications, general mechanisms, disassembly/reassembly procedure, and troubleshooting and error message of the Brother PT-1900/1910/1850. It is intended for service personnel and other concerned persons to accurately and quickly provide after-sale service for our PT-1900/1910/1850.

To perform appropriate maintenance so that the machine is always in best condition for the customer, the service personnel must adequately understand and apply this manual.

This manual is made up of four chapters and appendices.

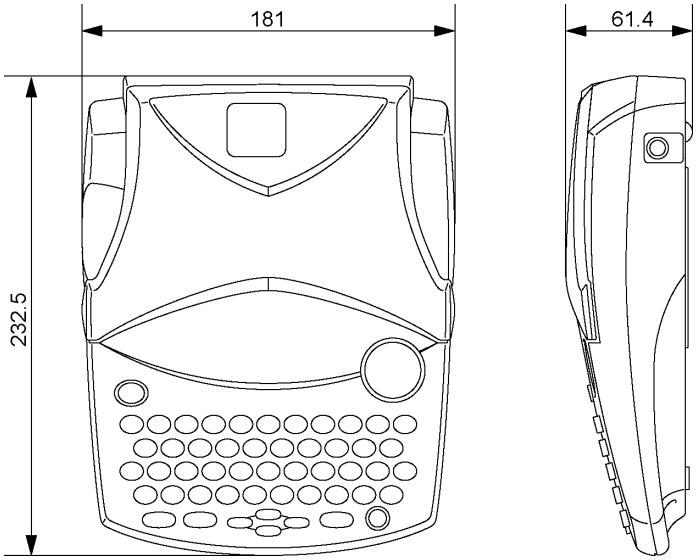
CONTENTS

CHAPTER I SPECIFICATIONS

1.1 MECHANICAL SPECIFICATIONS

1.1.1 External Appearance

(PT-1900/1910)



(PT-1850)

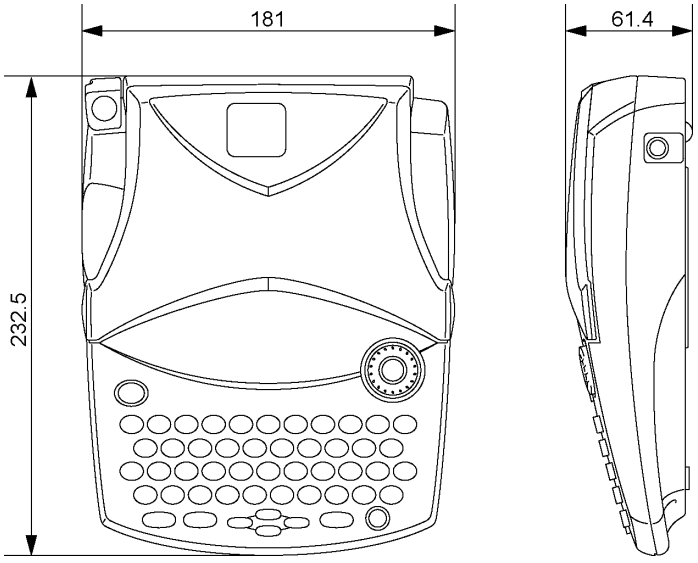


Fig. 1.1-1 PT-1900/1850

(1) Dimensions (W x D x H) 181 x 232.5 x 61.4 mm (7.13" x 9.15" x 2.42")

(2) Weight

Machine proper	Approx. 800 g
In package	Approx. 1.31 kg (PT-1900 (U.S.A./AUS))
	Approx. 1.35 kg (PT-1900 (CANADA)/1850)
	Approx. 2.7 kg (PT-1910/1850cc)
	(including batteries, a tape cassette, and user's manual)

1.1.2 Keyboard

(1)	Entry system	Rubber key pad
(2)	Number of alphanumeric and symbol keys	39
(3)	Number of function keys	12 (including “On/Off (⏻) ” key)
(4)	Key arrangement	See Fig. 1.1-2.
(5)	Navigation dial (PT-1850)	Rotary switch : 24 positions / cycle Set key : 1

1.1.3 Display

(1)	Display type	Liquid crystal display (LCD)
(2)	Display composition	16 x 59 dots
(3)	Number of indicators	20 (See Fig. 1.1-2.)
(4)	Dot size	0.65 mm(25.6 mils) wide by 0.65 mm(25.6 mils) high
(5)	Field-of-view angle adjustment	Fixed by a resistor

1.1.4 Printing Mechanism

(1)	Print method	Thermal transfer onto plastic tapes (laminate tape and non-laminated tape) or special tapes (instant lettering tape, non-laminated thermal film tape, iron-on transfer tape, and porous-stamp tape) (Fixed print head and tape feeding mechanism)
(2)	Print speed	10 mm/second (Typical)
(3)	Print head	
	Type	Thermal print head
	Heat generator	Consists of 112 heating elements vertically aligned (PT-1850 : 128 heating elements)
	Size of heating element	0.195 mm (7.7 mils) wide by 0.141 mm (5.6 mils) high

(4) Character size

Character size	Height x Width (dots)
Size 6	1.55 mm x 1.13 mm (11 x 8)
Size 9	1.97 mm x 1.41 mm (14 x 10)
Size 12	2.82 mm x 2.12 mm (20 x 15)
Size 18	4.51 mm x 3.38 mm (32 x 24)
Size 24	5.92 mm x 4.37 mm (42 x 31)
Big <12 mm>	7.61 mm x 5.64 mm (54x 40)
Size 36	9.02 mm x 6.77 mm (64 x 48)
Size 42	10.72 mm x 8.04 mm (76 x 57)
Big <18 mm>	13.54 mm x 10.30 mm (96 x 73)

* The height and width of the printed character are different depending on characters. The values in the above list refer to the values of ‘H’ of HELSINKI.

* The character size indicates the point size.

1.1.5 Tape Cassette

(1) Cassette — Cartridge type

(2) Types of tape cassettes

- Laminated tape cassette — Laminate tape, ink ribbon, and adhesive base tape
- Non-laminated tape cassette — Non-laminate tape and ink ribbon
- Instant lettering tape cassette — Instant lettering tape and ink ribbon
- Non-laminated thermal film tape cassette — Non-laminated thermal film tape
- Iron-on transfer tape cassette — Iron-on transfer tape and ink ribbon
- Stamp tape cassette — Porous-stamp tape and base paper
- Cloth tape cassette — Cloth tape and ink ribbon

(3) Tape size

	Width	Length
Laminate tape	6, 9, 12, 18 mm	8 m (5 m for the fluorescent coating tape)
Non-laminate tape	6, 9, 12, 18 mm	8 m
Iron-on transfer tape	18 mm	6 m
Porous-stamp tape	18 mm	3 m
Cloth tape	12 mm	4 m
Cleaning tape	18 mm	

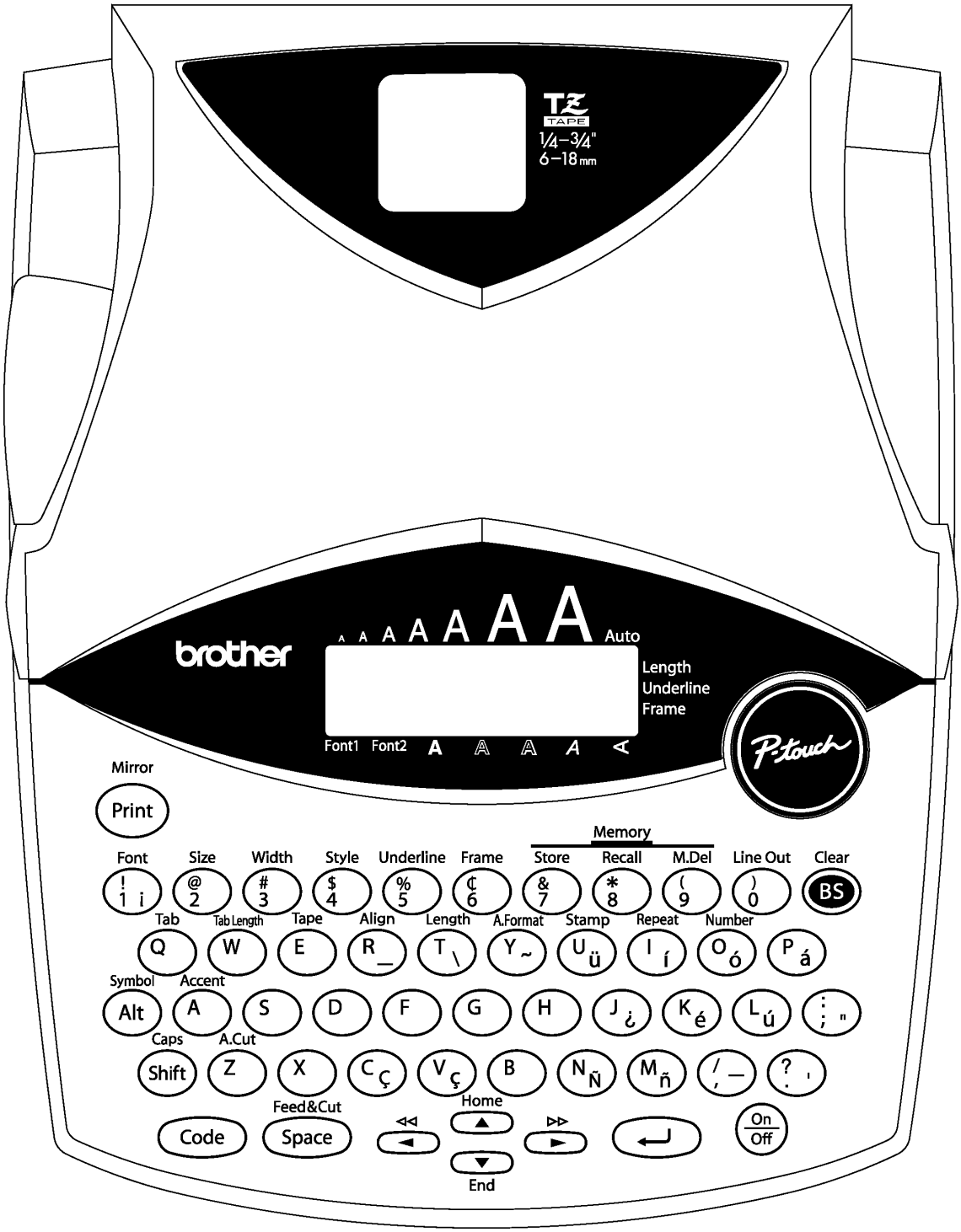
(4) Tape cassette packed with the machine

Laminated tape cassette containing a 12-mm-wide black ink ribbon, laminate tape, and adhesive base tape

1.1.6 Tape Cutter

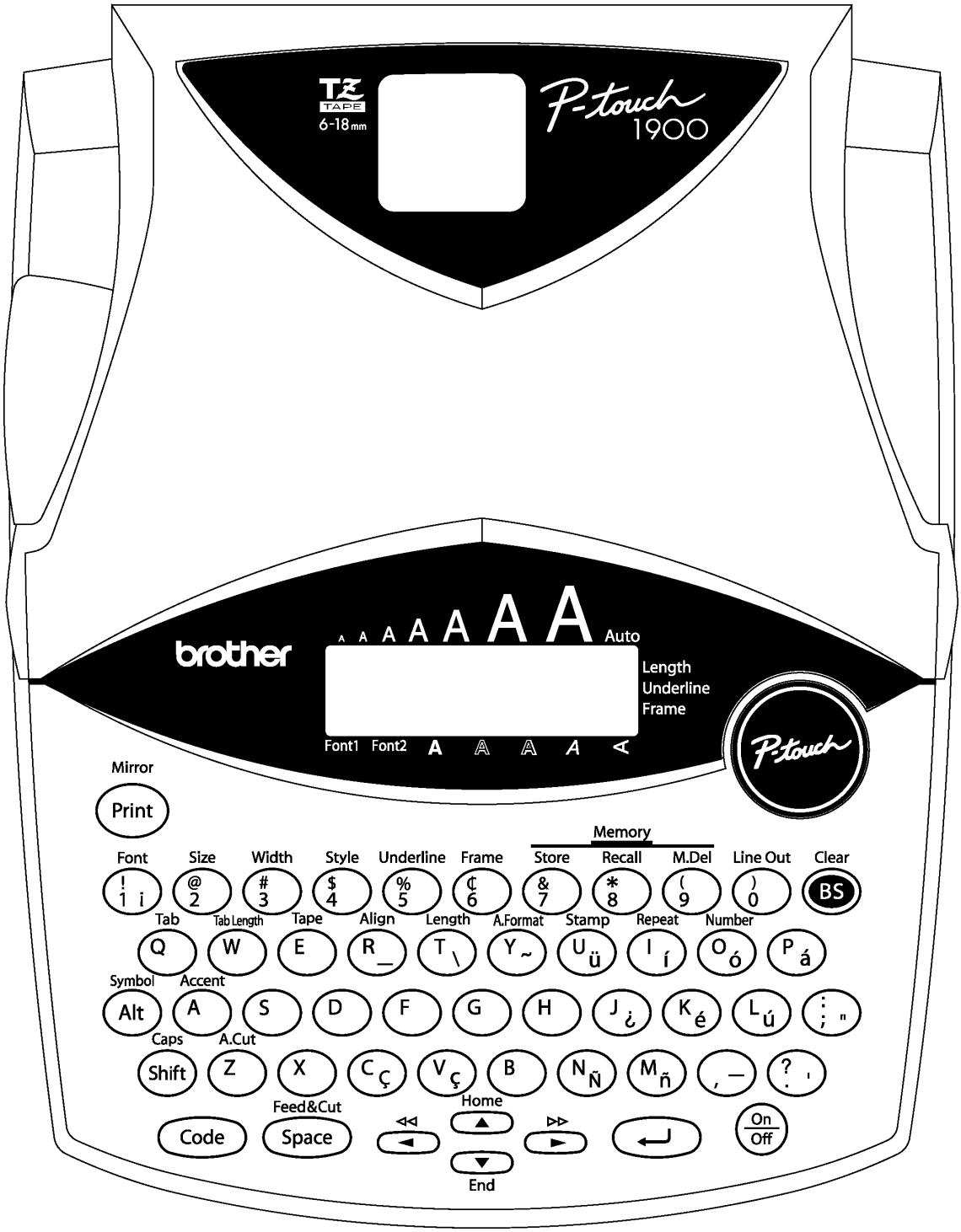
(1) Tape cutting — Automatic cutter (scissors type) (PT-1900/PT1910)
Manual cutter (scissors type) (PT-1850)

(2) Cutter unit — Not user-replaceable



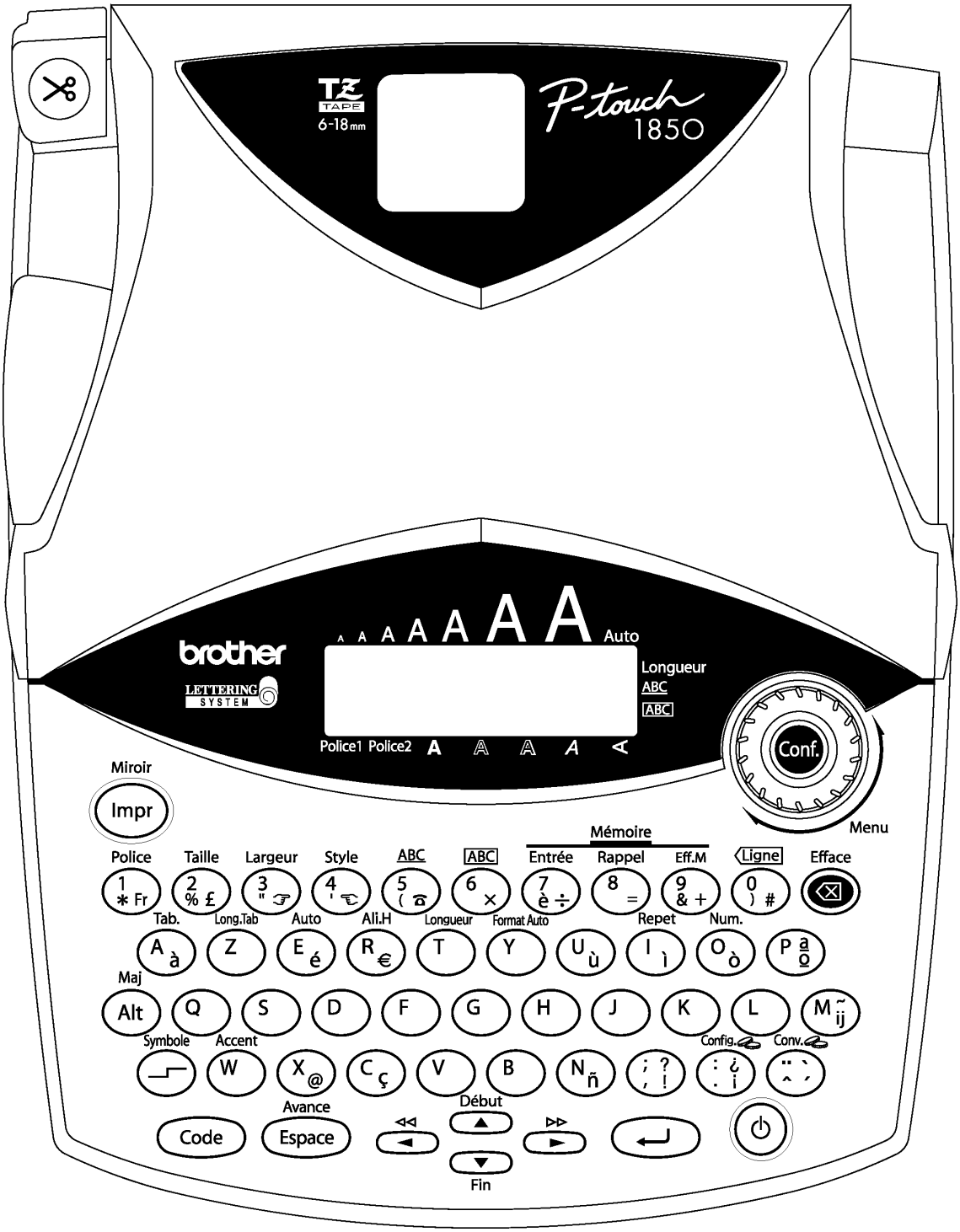
PT-1900 U.S.A. / CANADA
PT-1910 U.S.A.

Fig. 1.1-2 Key Arrangement (1)



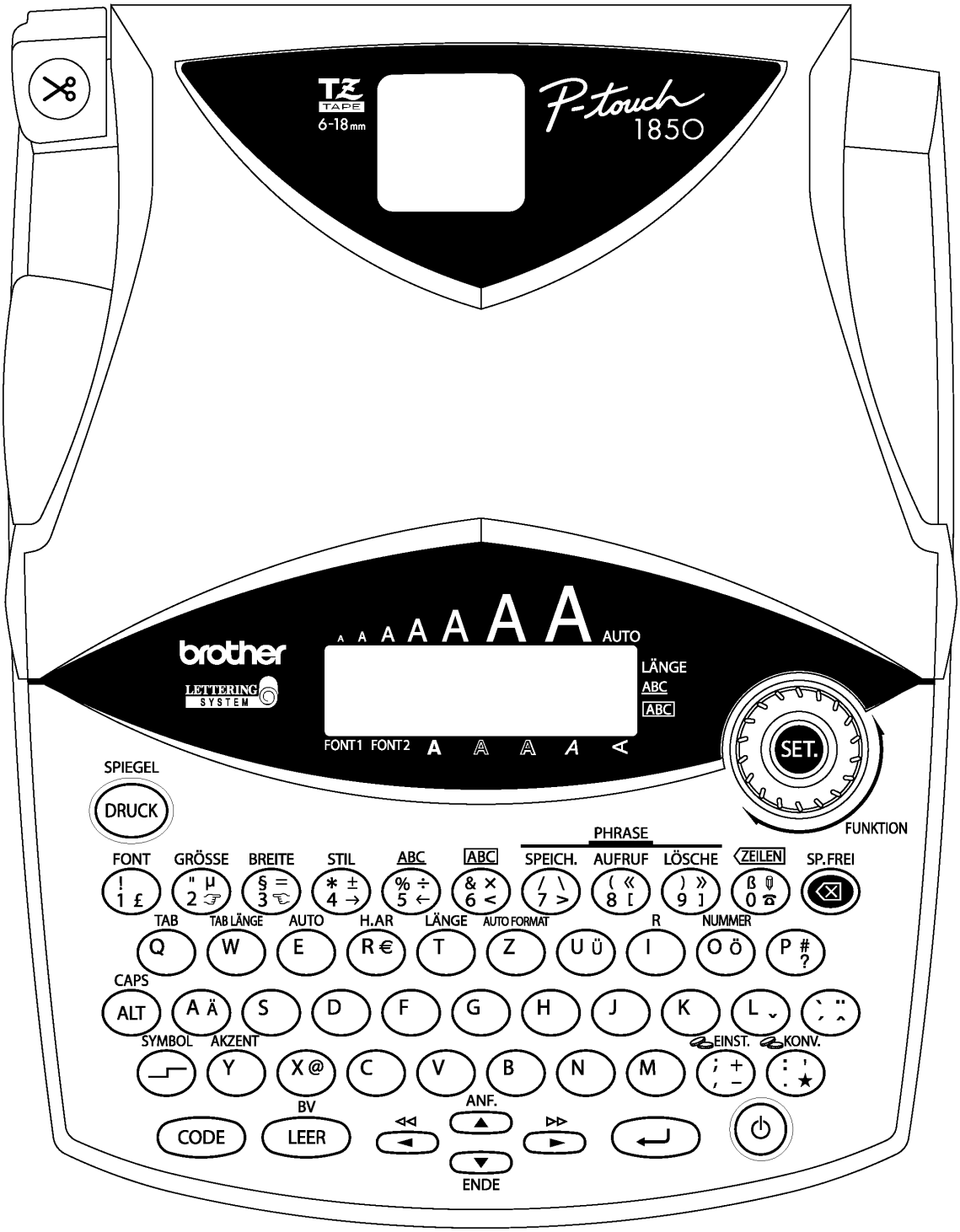
PT-1900 AUSTRALIA

Fig. 1.1-2 Key Arrangement (2)



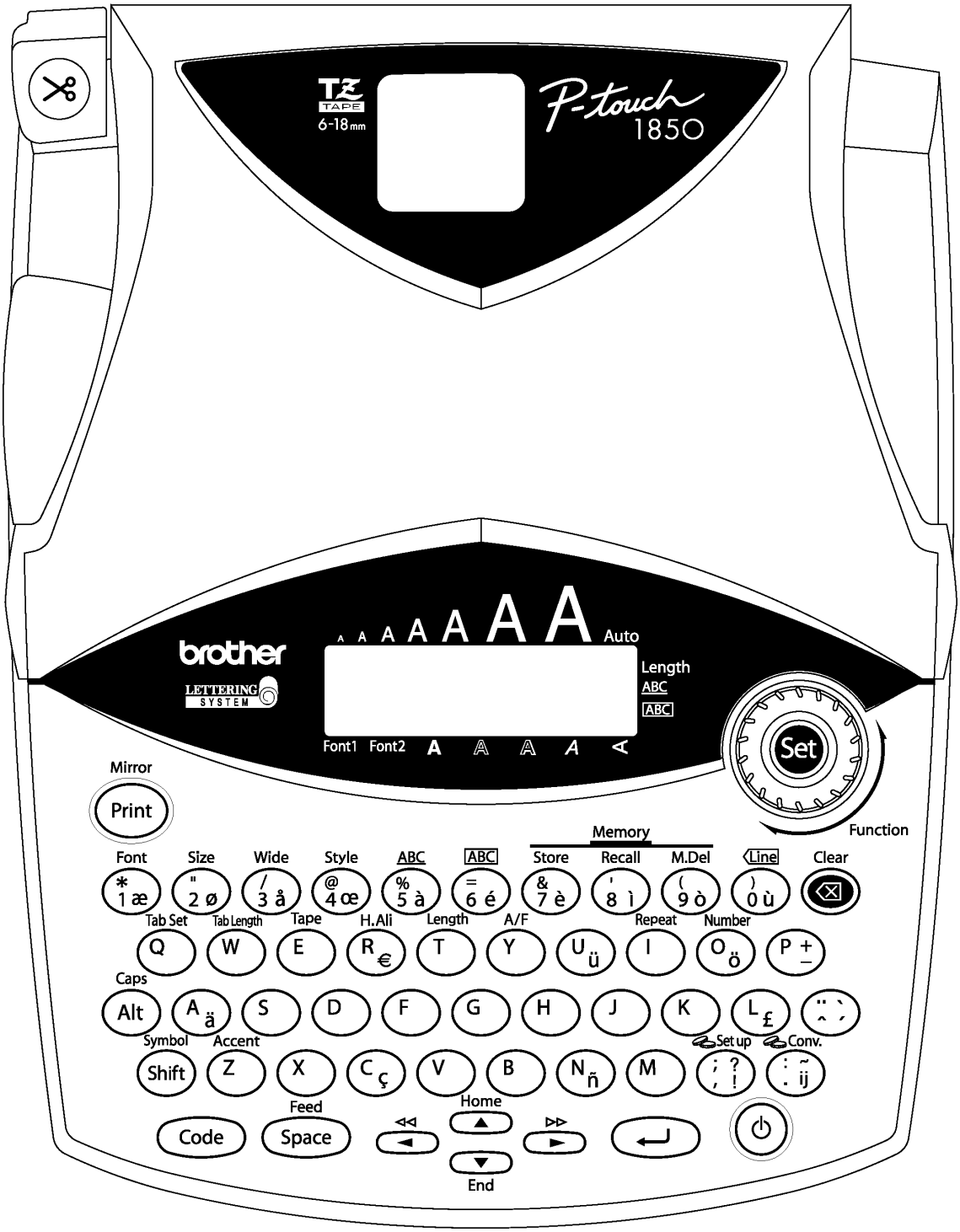
PT-1850 FRENCH

Fig. 1.1-2 Key Arrangement (3)



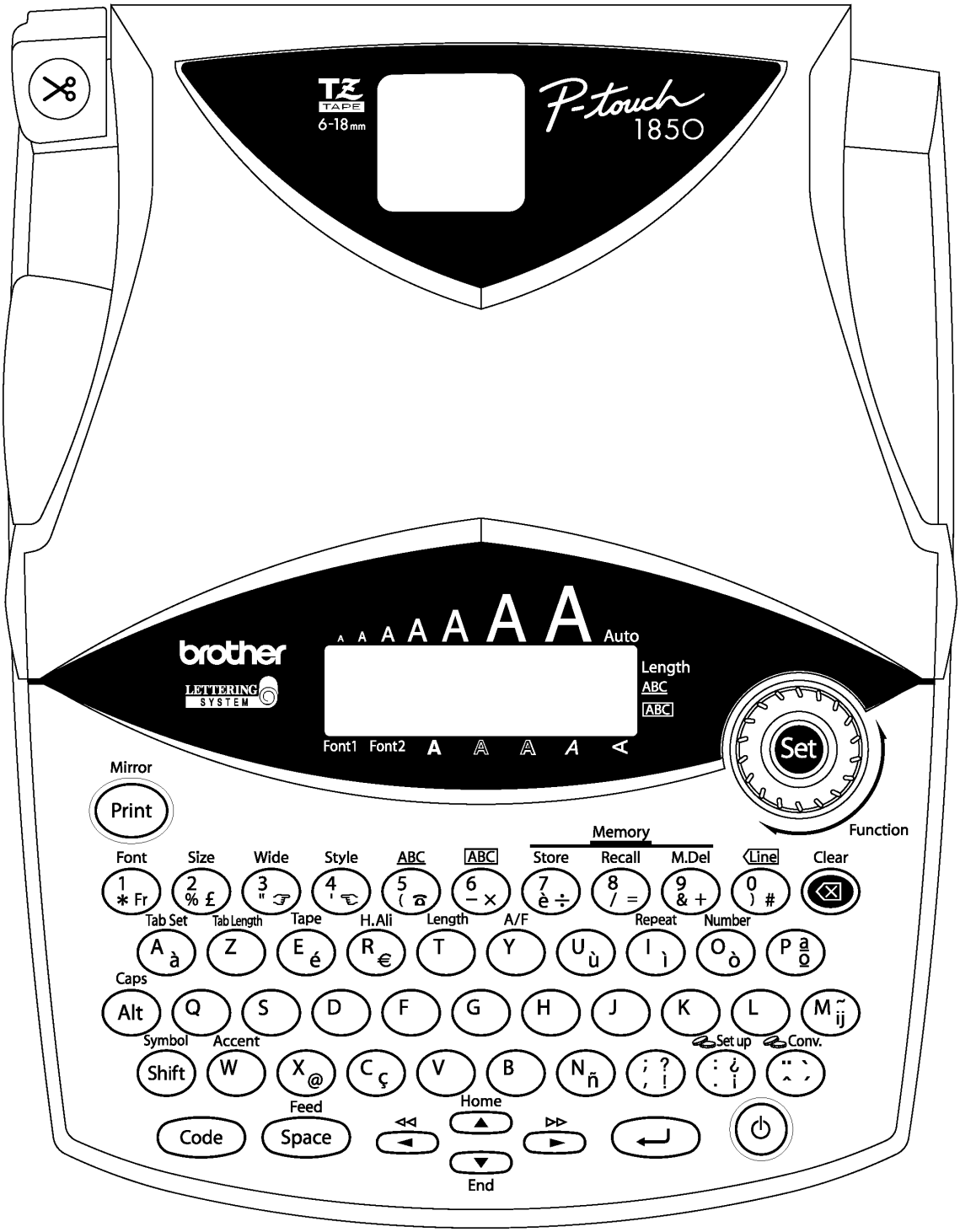
PT-1850 GERMAN

Fig. 1.1-2 Key Arrangement (4)



PT-1850 U.K.

Fig. 1.1-2 Key Arrangement (5)



PT-1850 BELGIUM

Fig. 1.1-2 Key Arrangement (6)

1.2 ELECTRONICS SPECIFICATIONS

1.2.1 Character Generator

(1)	Internal characters	U.S.A./CAN (PT-1900/1910)	179 characters
		U.K./ FRA/ BEL (PT-1850)	198 characters
		GER (PT-1850)	211 characters
(2)	Internal font	HELSINKI, BRUSSELS	
(3)	Internal memory	Text buffer	99 characters (PT-1900/1910/1850)
		File memory	300 characters (PT-1900/1910/1850)

1.2.2 Power Supply

(1)	Automatic power off	Yes
		Normal mode : 5 min. ± 30 sec.

1.3 KEY COMMANDS FOR SPECIAL FUNCTIONS

1.3.1 Initializing

Powering on the machine with both the Code and R keys held down will initialize the machine.

1.3.2 Demonstration Print

Pressing the D key with the Code key held down will start demonstration print. (This key command takes effect only when no data is entered.)

CHAPTER II GENERAL MECHANISMS

2.1 MAIN MECHANISM

2.1.1 Print Mechanism

(1) Structure of Thermal Head

This machine uses thermal transfer printing. The thermal print head has a heat generator consisting of 112 heating elements which are vertically aligned as shown in Fig. 2.1-1. Each heating element is 0.195 mm wide by 0.141 mm high.

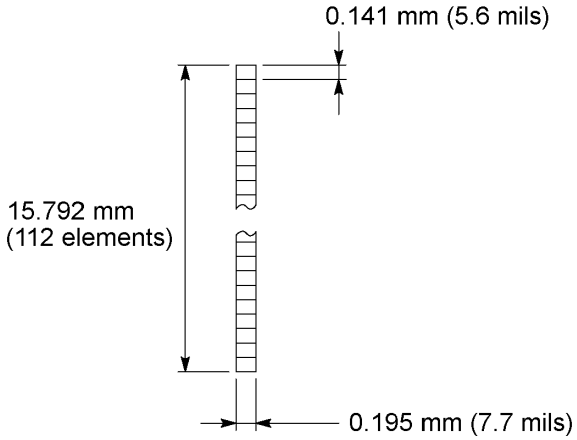


Fig. 2.1-1 Heat Generator of Thermal Head

(2) Printing Process

When the cylindrical rubber platen is pressed against the thermal print head with the tape* and ink ribbon** sandwiched inbetween, the CPU applies electric power to the selected ones of those 112 heating elements.

* Laminate tape when using laminated tape cassettes.
Non-laminated tape when using non-laminated tape cassettes.
Instant lettering tape when using instant lettering tape cassettes.
Non-laminated thermal film tape when using non-laminated thermal film tape cassettes.
Iron-on transfer tape when using iron-on transfer tape cassettes.
Cloth tape when using cloth tape cassettes.

** When using non-laminated thermal film tape cassettes or stamp tape cassettes, no ink ribbon is sandwiched.

[For tape cassettes except non-laminated thermal film tape cassettes and stamp tape cassettes]

If the selected heating element(s) generates heat, the ink on the sandwiched ribbon will be melted and transferred to the tape, producing a dot(s) on the tape. The ink ribbon and the tape are advanced and then the next heating cycle is repeated, thus forming a character on the tape.

[For non-laminated thermal film tape cassettes]

If the selected heating element(s) generates heat, the thermal film tape develops itself to produce a dot on the tape. The tape is advanced and the next heating cycle is repeated, thus forming a character on the tape.

[For stamp tape cassettes]

If the selected heating element(s) generates heat, the porous-stamp tape will be melted so that a pore (pores) will be formed in the tape. The tape is advanced and the next heating cycle is repeated, thus forming a character of pores on the tape. The printed stamp tape can be used as the face of a stamp. When the stamp is pressed against the ink-pad, it will absorb ink through the pores.

For laminated tape cassettes, instant lettering tape cassettes, and iron-on transfer tape cassettes, the CPU processes the print data to generate a mirror image so that the printed character can be seen normally when viewed from the other side of the printed face of the tape.

(3) Character Formation

While the DC motor feeds the tape and ink ribbon (only the tape when using non-laminated thermal film tape cassettes or stamp tape cassettes) by 0.141 mm, the thermal head generates heat once. The feed amount is decided by sending each five pulses of the signal as one dot (0.141 mm) when the photo interrupter detects the encode gear assembled onto the motor shaft. The feed amount of 0.141 mm is smaller than the width (0.195 mm) of the heating elements so that the heat generated at one heating cycle will overlap with the next heating cycle. This forms a character having no gap between adjacent printed dots.

2.1.2 Roller Holder ASSY Setting & Retracting Mechanism

This mechanism consists of the roller release lever, roller holder release rod, and roller holder ASSY.

The roller holder ASSY supports the platen and the tape feed sub roller so that they can move perpendicularly to the head ASSY and the tape feed roller, respectively, as well as rotating freely.

Loading a tape cassette and closing the cassette cover pushes down the roller release lever which moves the roller holder release rod to the left (when viewed from the front of the machine). This pivots the roller holder ASSY around the shaft provided on the chassis so as to press the roller holder ASSY against the head ASSY side.

The platen is pressed perpendicularly against the head ASSY with the tape and ink ribbon (only the tape when using non-laminated thermal film tape cassettes or stamp tape cassettes) sandwiched inbetween under a uniform load by the platen (upper and lower) spring.

At the same time, the platen gear becomes engaged with the platen idle gear.

Also, the tape feed sub roller is pressed perpendicularly against the tape feed roller built in the tape cassette with the tape (and base paper when using laminated tape cassettes or stamp tape cassettes) sandwiched inbetween under a uniform load by the roller holder upper spring and roller holder lower spring. At the same time, the sub roller gear becomes engaged with the tape idle gear.

If you open the cassette cover, the roller release lever pops up, which shifts the roller holder release rod so that the roller holder ASSY is retracted from the head ASSY, providing you with enough space to replace the tape cassette.

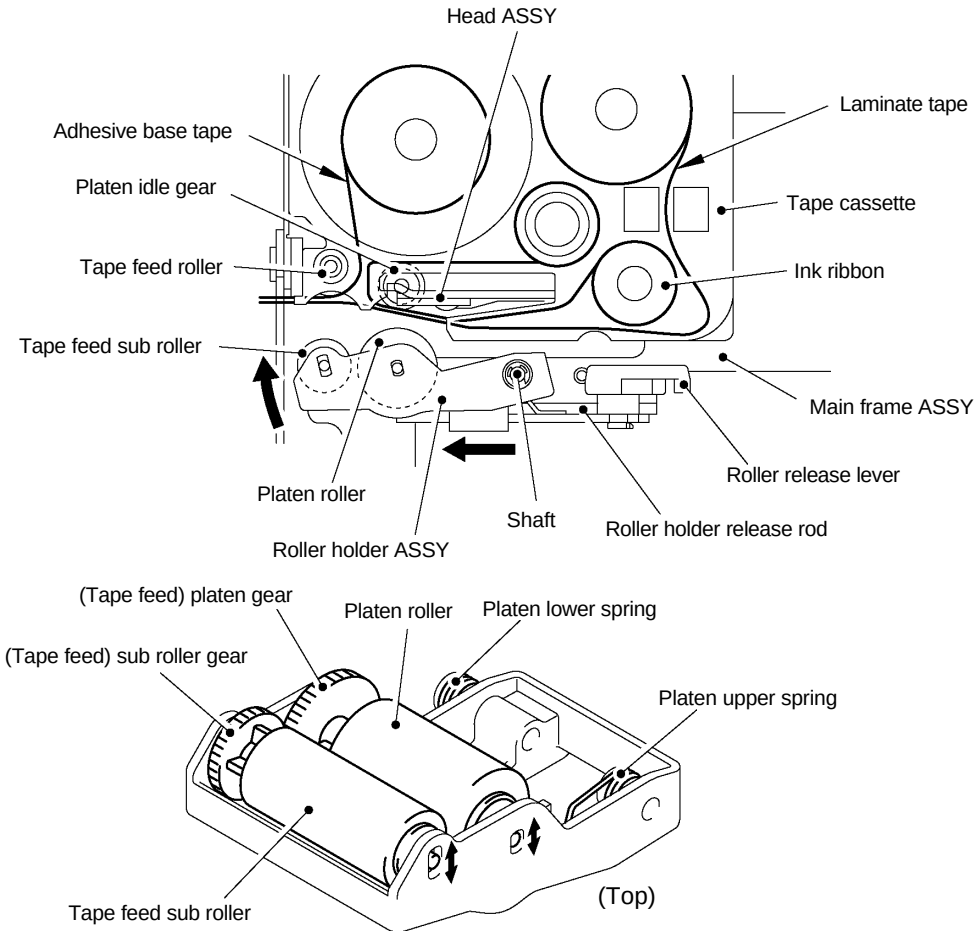


Fig. 2.1-2 Roller Holder ASSY Setting & Retracting Mechanism

2.1.3 Tape & Ribbon Feed Mechanism

This mechanism consists of a DC motor, gear train, and roller holder ASSY.

(1) Tape Feeding

When you load a tape cassette and close the cassette cover, the tape feed roller inside the cassette and the tape feed sub roller in the roller holder ASSY sandwich the tape (the laminate tape and adhesive base tape when using laminated tape cassettes) inbetween, as described in Subsection 2.1.2.

As the DC motor rotates, the rotation is transmitted via the gear train to the tape idle gear (which rotates the tape feed sub roller gear) and the platen idle gear (which rotates the tape feed platen gear). Accordingly, the sandwiched tape and ink ribbon will be advanced. (When a laminated tape cassette is mounted, the sandwiched laminate tape and adhesive base tape and ink ribbon will be advanced together.)

The feeding amount of the platen is slighty less than that of the tape feed sub roller.

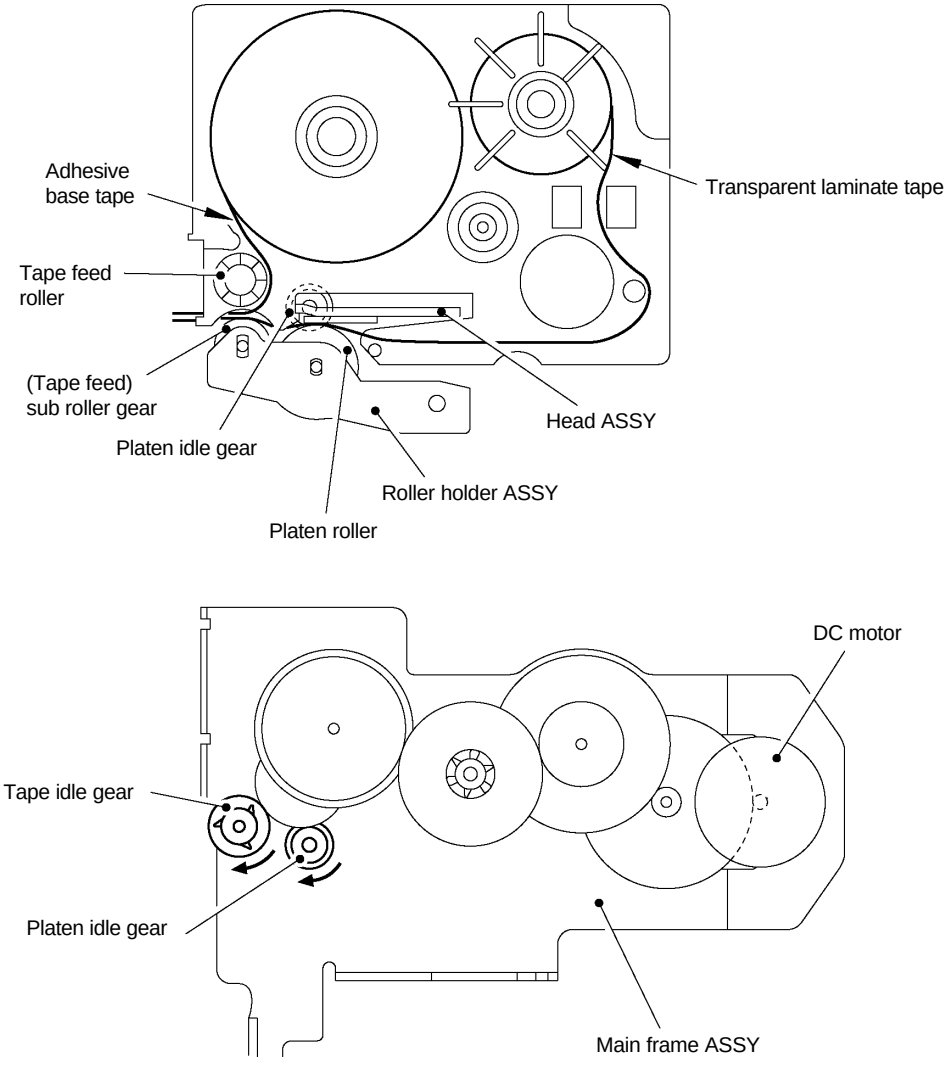


Fig. 2.1-3 Tape Feeding Mechanism

(2) Adhesive Base Tape Feeding (only for laminated tape cassettes)

A laminated tape cassette contains both a transparent laminate tape roll and a separate adhesive base tape roll.

When a transparent laminate tape and an adhesive base tape pass through the contact point (between the tape feed roller and tape feed sub roller), they are then bonded together into a single, printed tape. The ink printed on the laminate tape is, therefore, sealed up with the adhesive base tape.

(3) Ink Ribbon Feeding (except for non-laminated thermal film tape cassettes and stamp tape cassettes)

As the DC motor rotates, the ribbon drive cam located at the middle of the gear train rotates counterclockwise. When fitted on the ribbon drive cam, the ribbon take-up roll in the tape cassette also rotates to take up the ink ribbon.

To apply proper tension to the ink ribbon between the platen and the ribbon drive cam, the feed amount of the ribbon drive cam is slightly greater than that of the tape feed gear. The difference between the tape feed speeds at the platen and at the ribbon drive cam is absorbed by the clutch spring which is integrated in the ribbon drive cam and allows the cam to slip.

This way, the ink ribbon is kept tense, which enables the ribbon to clearly separate from the tape at the stabilized angle after printing.

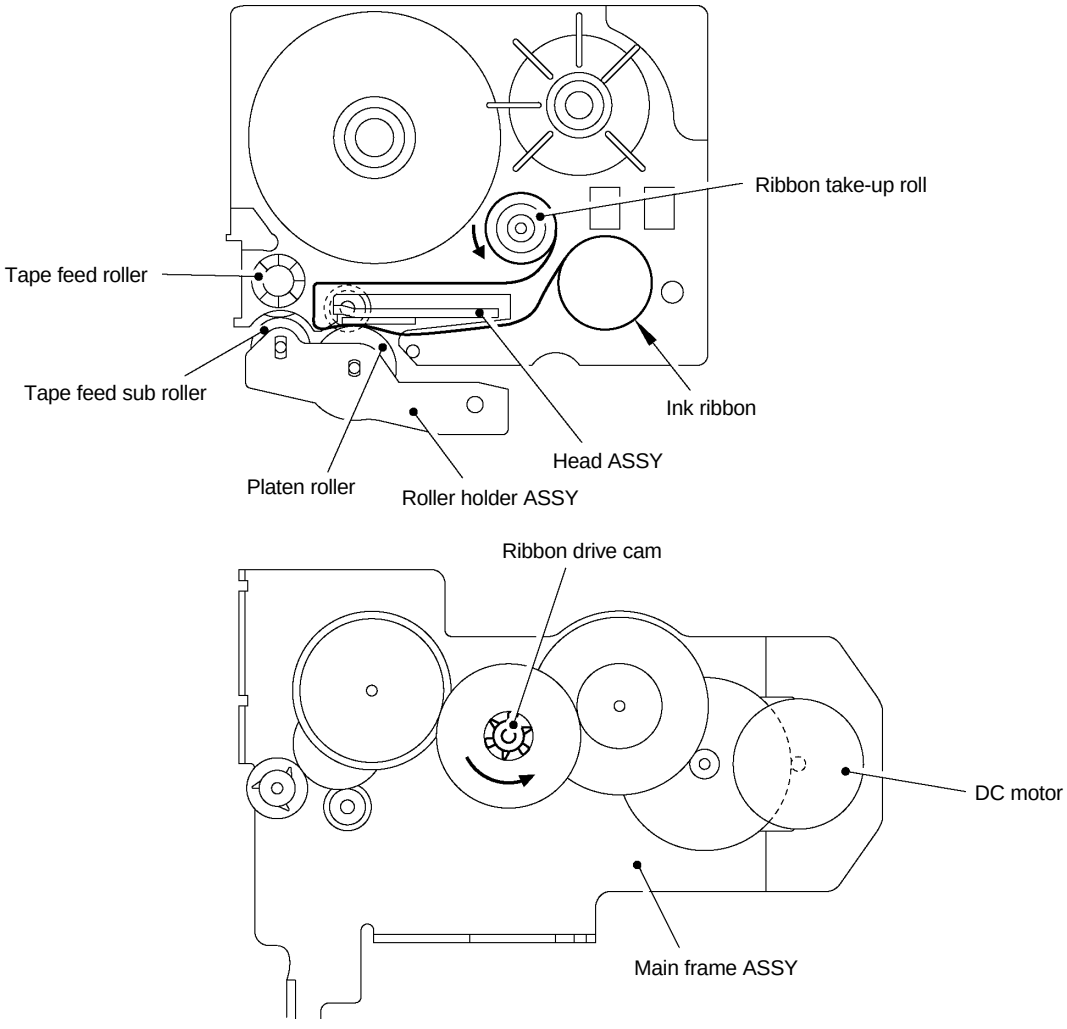


Fig. 2.1-4 Ribbon Feeding Mechanism

2.1.4 Automatic Tape Cutter Mechanism (PT-1900/1910)

The cutter ASSY consists of a stationary blade and a movable blade driven by the cutter motor.

Upon completion of printing and tape feeding, the CPU activates the cutter motor whose clockwise rotation is transmitted via the idle gears to the cutter moving gear.

As the cutter moving gear rotates counterclockwise, its boss "X" (which is fitted in the opening of the movable blade) actuates the movable blade to pivot it around shaft "Y." Consequently, the cutter cuts the printed tape routing through the movable and stationary blades, just like a scissors.

After that, the CPU keeps the cutter motor on. When the movable blade comes back to the home position, its end "Z" activates the cutter sensor actuator which presses the cutter sensor. The moment the CPU receives the sensor signal, it stops the cutter motor.

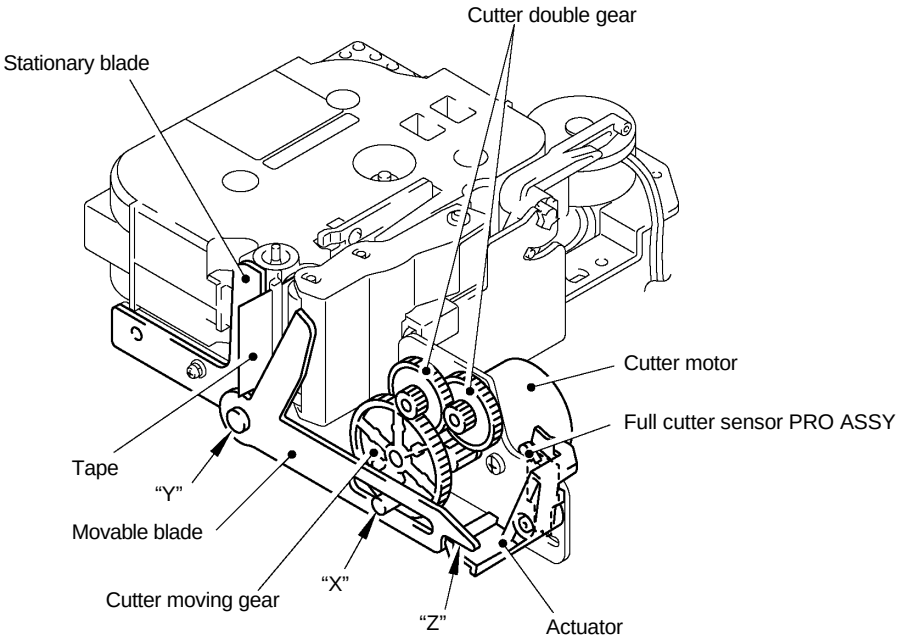


Fig. 2.1-5 Automatic Tape Cutter Mechanism (PT-1900/1910)

2.1.5 Tape Cutter Mechanism (PT-1850)

The cutter unit consists of a stationary cutter and a movable cutter.

Pressing the cutter lever actuates the movable cutter so that the cutter cuts the printed tape routing through the movable and stationary cutters, just like a scissors. Attached to the cutter lever, the cutter sensor arm turns up so that its tip comes into contact with the switch of the cutter sensor circuit on the cutter sensor holder ASSY, stopping printing and tape feeding.

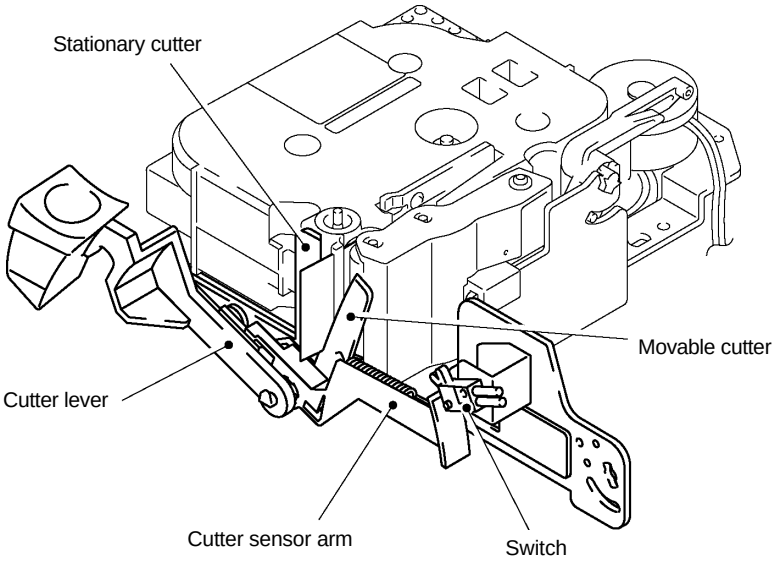


Fig. 2.1-6 Tape Cutter Mechanism (PT-1850)

2.1.6 Roller Holder ASSY & Cassette Cover Interlocking Mechanism

Closing the cassette cover pushes down the roller release lever and brings the top of the lever into the hooked section provided on the inside of the cassette cover.

As described in Subsection 2.1.2 “Roller Holder ASSY Setting & Retracting Mechanism”, the roller release lever shifts the roller holder release rod so that the roller holder ASSY is pressed towards the head ASSY side.

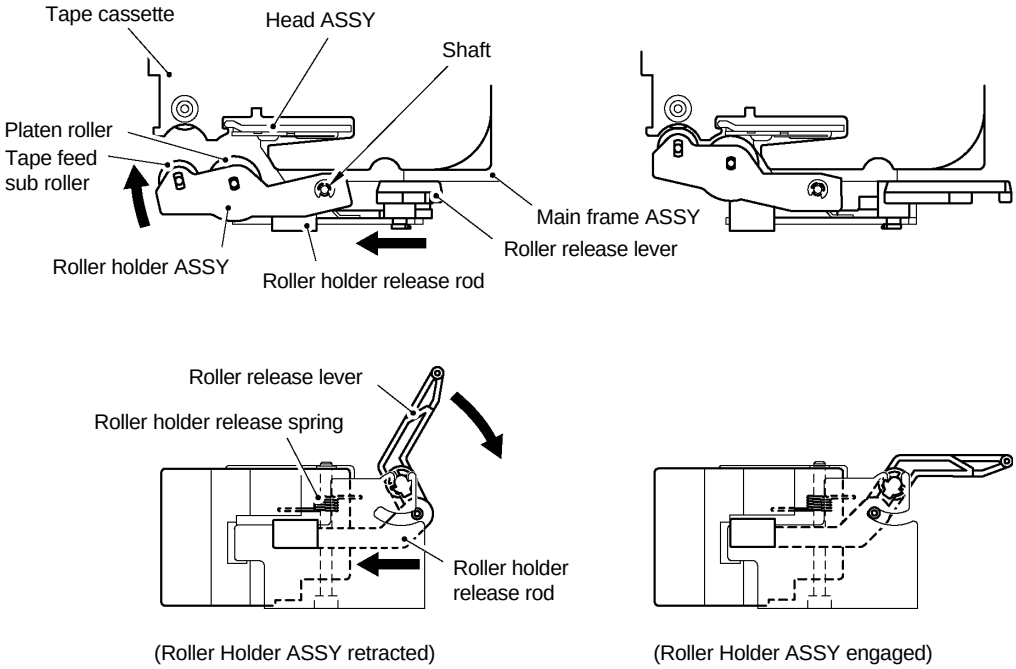
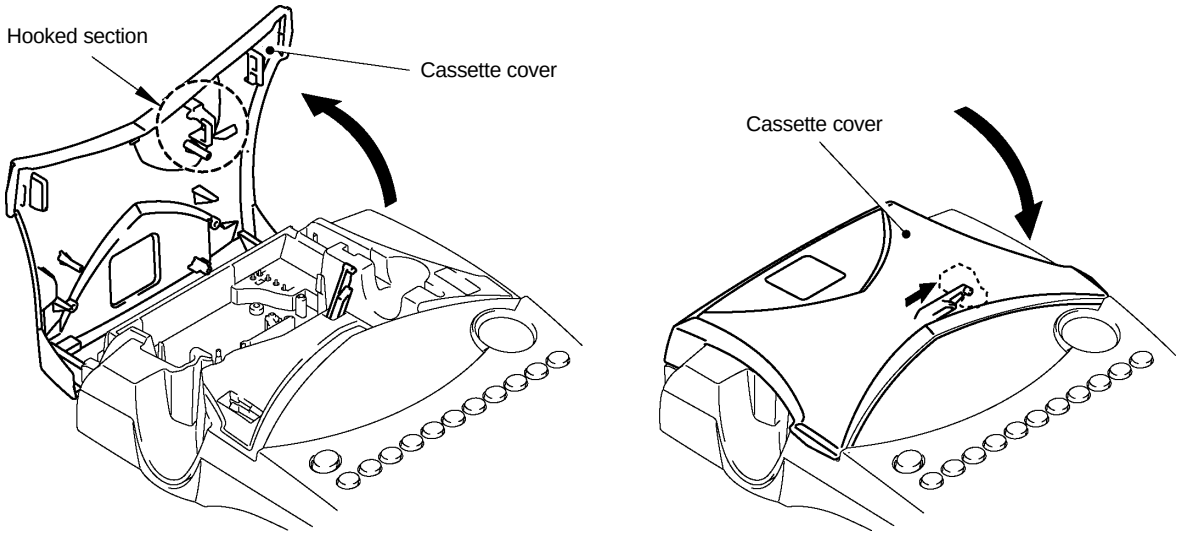


Fig. 2.1-7 Roller Release Lever and Roller Holder Release Rod

(PT-1900/1910)



(PT-1850)

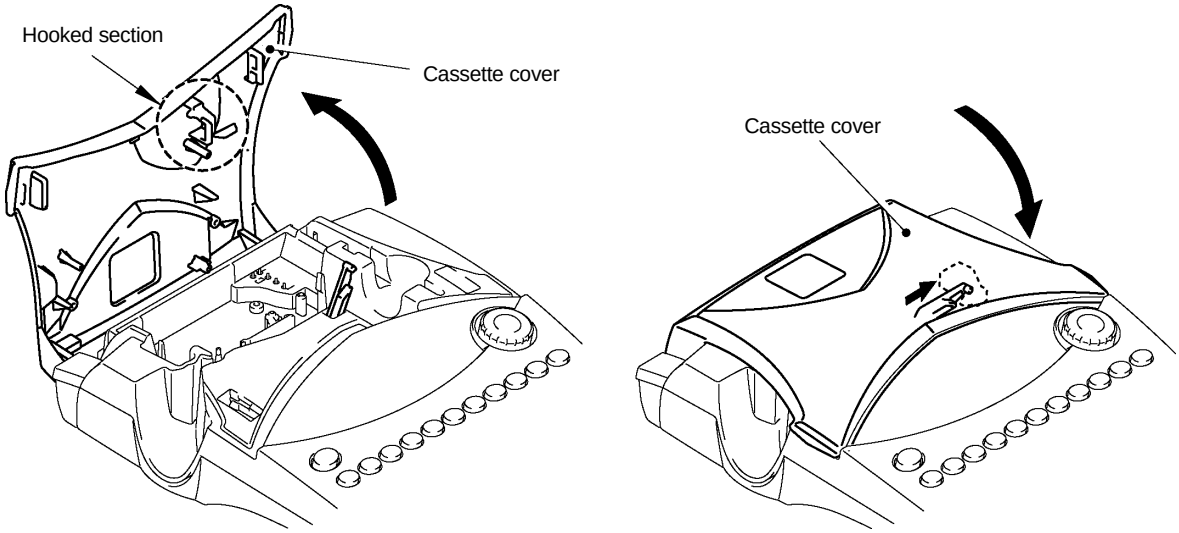


Fig. 2.1-8 Roller Holder ASSY & Cassette Cover Interlocking Mechanism

Opening the cassette cover pulls up the roller release lever placed in the hooked section of the cassette cover, which shifts the roller holder release rod so that the roller holder ASSY is retracted from the head ASSY side by the roller holder release spring.

2.2 OUTLINE OF CONTROL ELECTRONICS

2.2.1 Configuration of the Electronic Part

Fig. 2.2-1 shows a block diagram of the control electronics of the PT-1900/1910/1850. The control electronics consists of three printed circuit boards (main PCB, motor PCB, and power supply PCB), a tape feed motor, a cutter motor (PT-1900/1910), and a thermal print head assembly.

2.2.2 Main PCB

This manages all the PT-1900/1910/1850 components including an LCD, key pad, two DC motors (PT-1850: One DC motor), and thermal print head.

Note: When mounting the chips onto the PCB, use the lead-free solder.

2.2.3 Power Supply PCB

This has electrolytic capacitors (as filters for output lines), an AC adapter jack, battery terminal plates, and other related electronic devices to feed power to the control electronics and the DC motors from the AC adapter or batteries.

Note: When mounting the chips onto the PCB, use the lead-free solder.

2.2.4 Cassette Sensor

This supports the sensors that detect the tape width and ink ribbon type in the tape cassette.

2.2.5 DC Motors

This machine has two DC motors (PT-1850: One DC motor). One feeds tape and ink ribbon and the other drives the cutter to cut (PT-1900/1910) the tape.

2.2.6 Thermal Print Head

This is a thick-film thermal print head which integrates a heat generator (consisting of 128 heating elements vertically aligned) and driver circuitry.

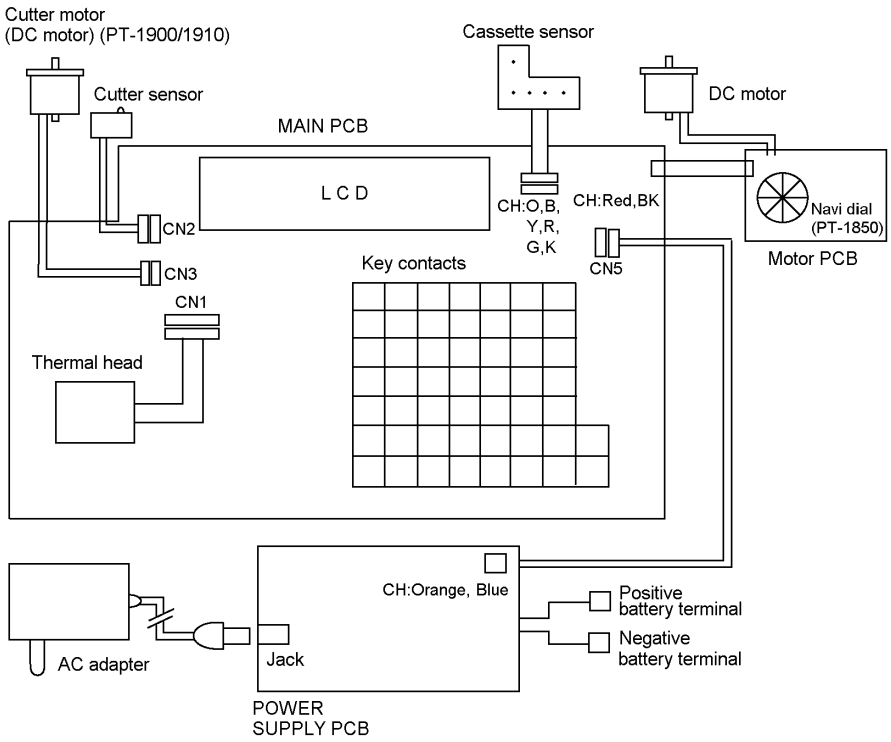


Fig. 2.2-1 Control Electronics of PT-1900/1910/1850

2.3 MAIN PCB

2.3.1 Block Diagram

Fig. 2.3-1 shows a block diagram of the main PCB. The main PCB consists of the following:

(1) CPU
(2) ROM (Masked)
(3) Key contacts matrix and solder points
(4) Power ON/OFF circuit and power saving circuit
(5) DC motor driver circuit
(6) Cutter motor driver circuit (PT-1900/1910)
(7) Thermal head drive circuit
(8) Voltage detector circuit and temperature sensor circuit
(9) Cassette sensor circuit
(10) Cutter sensor circuit
(11) Oscillator circuit
(12) Reset circuit
(13) LCD driver circuit
(14) Navi dial (PT-1850)

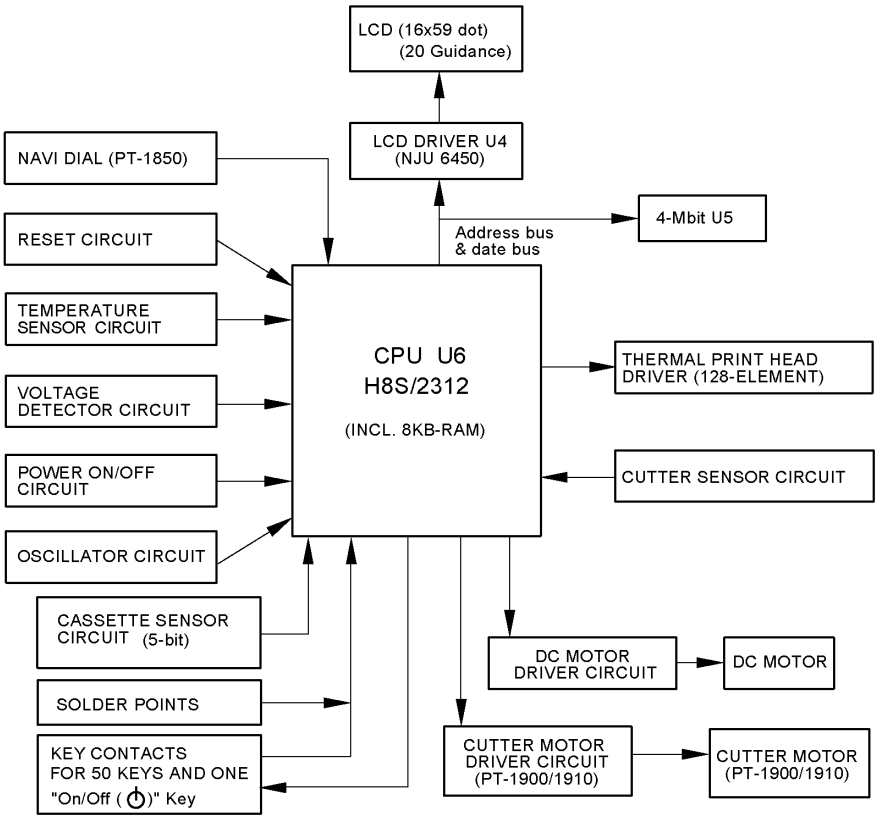


Fig. 2.3-1 Block Diagram of Main PCB

2.3.2 Solder Points

Solder points 1 through 5 customize the machine for the destination. Solder points A through C are used for the individual thermal head properties.

The CPU reads the solder point status once in the powering-on sequence to recognize the customization.

< Country Display >

The country display displays the country specifications as designated by the solder points (1 to 5.)

Country Specification	LCD Display	Solder Points				
		1	2	3	4	5
U.S.A./CAN/AUS	US	×	×	×	×	×
U.K.	UK	○	×	×	×	×
GERMAN	GE	×	○	×	×	×
FRENCH	FR	×	×	○	×	×
BELGIUM	BE	×	×	×	○	×

< Head Rank Display >

The head rank display displays the rank as designated by the solder points (A to C.)

The rank “B” is difined ad the setting for no soldering.

CAUTION: When soldering, use the lead-free solder.

2.4 POWER SUPPLY PCB

C1 for the logic circuitry and the thermal print head and motor drive sources.

Connecting the AC adapter plug with the AC jack J1 cuts off the power fed from the batteries and feeds power from the AC adapter.

Fig. 2.4-1 hows the polarity of the AC adapter plug.

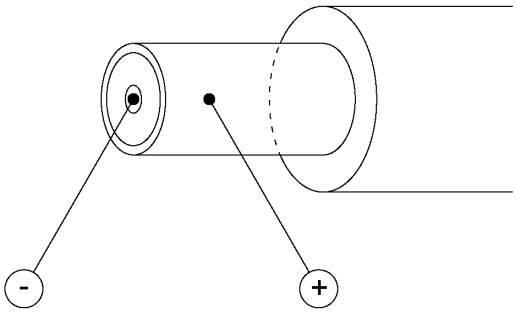


Fig. 2.4-1 AC Adapter Plug

CHAPTER III DISASSEMBLY & REASSEMBLY

3.1 DISASSEMBLY PROCEDURE

[1] Removing the Battery Lid and Batteries

(1) Turn the machine upside down.

(2) Press section “A” of the battery lid to remove, then take out batteries.

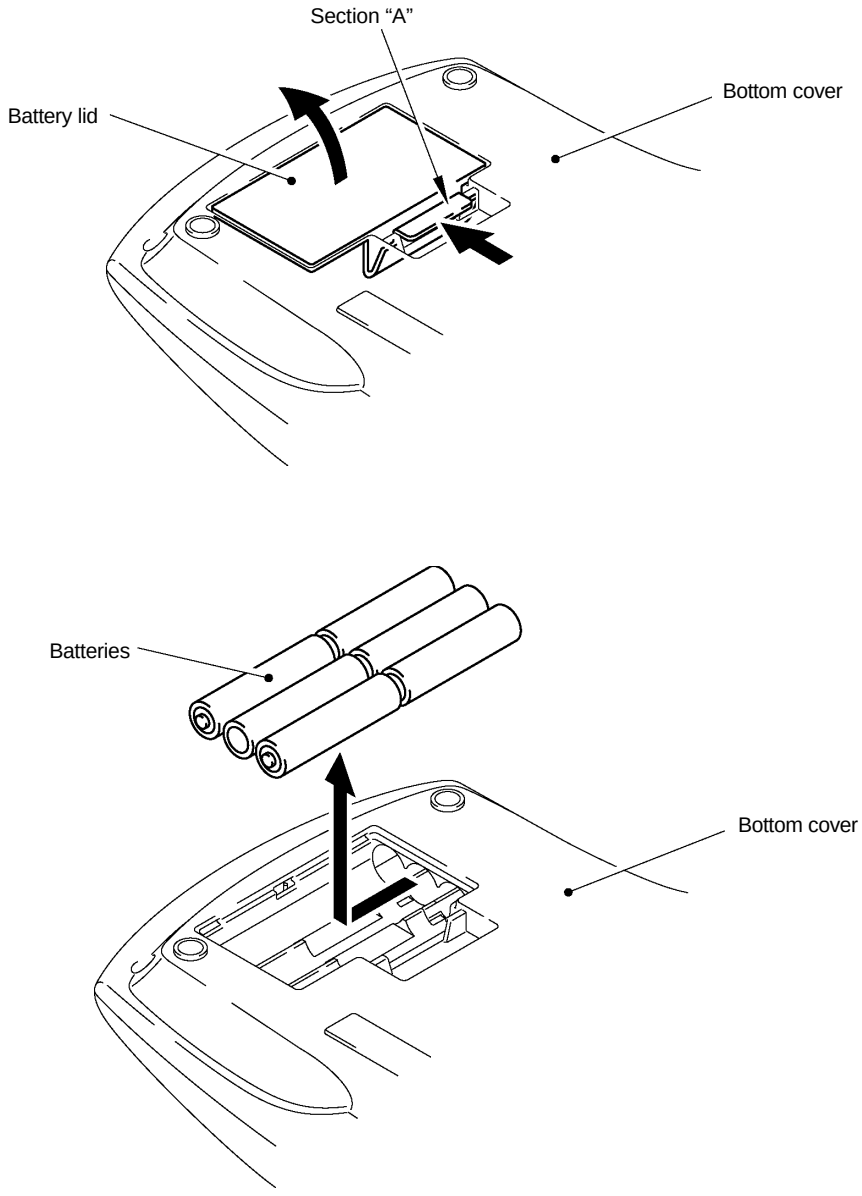


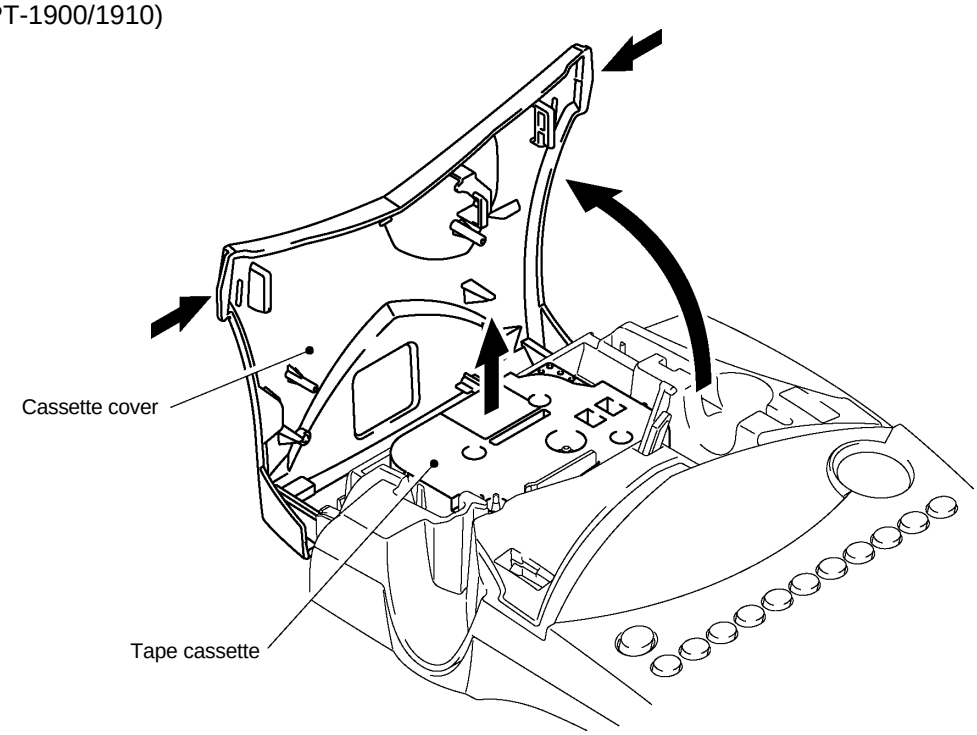
Fig. 3.1-1 Removing the Battery Lid and Batteries

[2] Removing the Tape Cassette and Tape Separator Stick

(1) Place the machine rightside up and open the cassette cover fully.

(2) Pull the tape cassette up and out of the machine.

(PT-1900/1910)



(PT-1850)

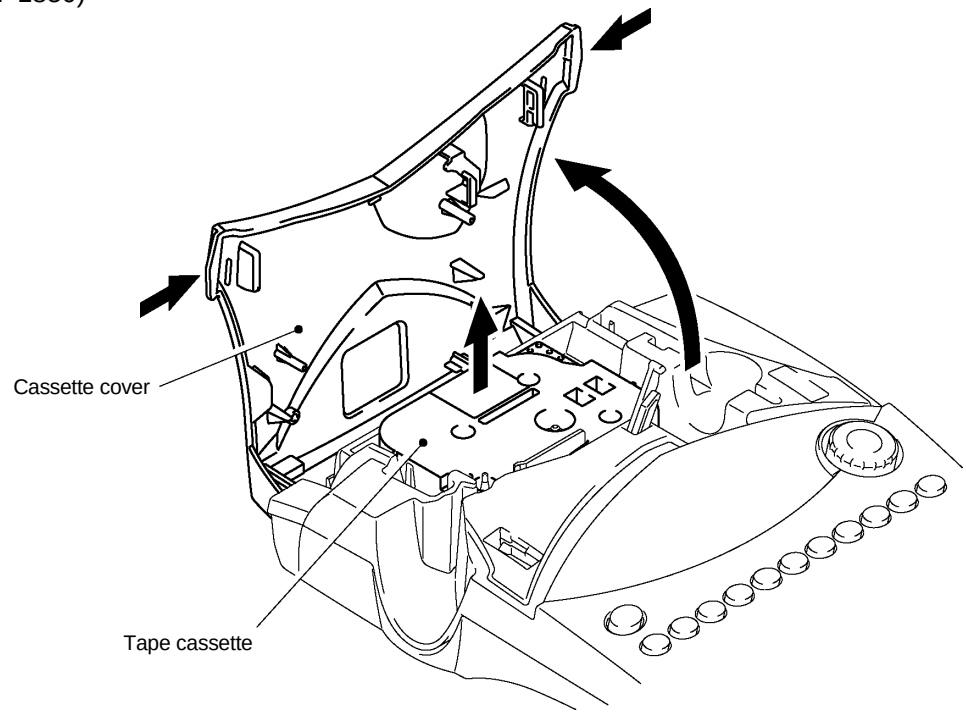
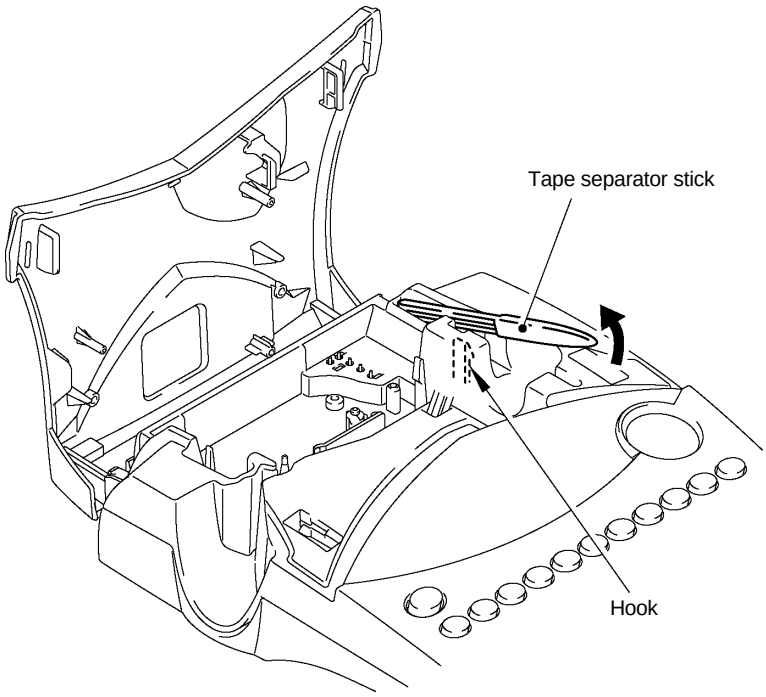


Fig. 3.1-2 Removing the Tape Cassette

(3) Pull the tape separator stick up.

(PT-1900/1910)



(PT-1850)

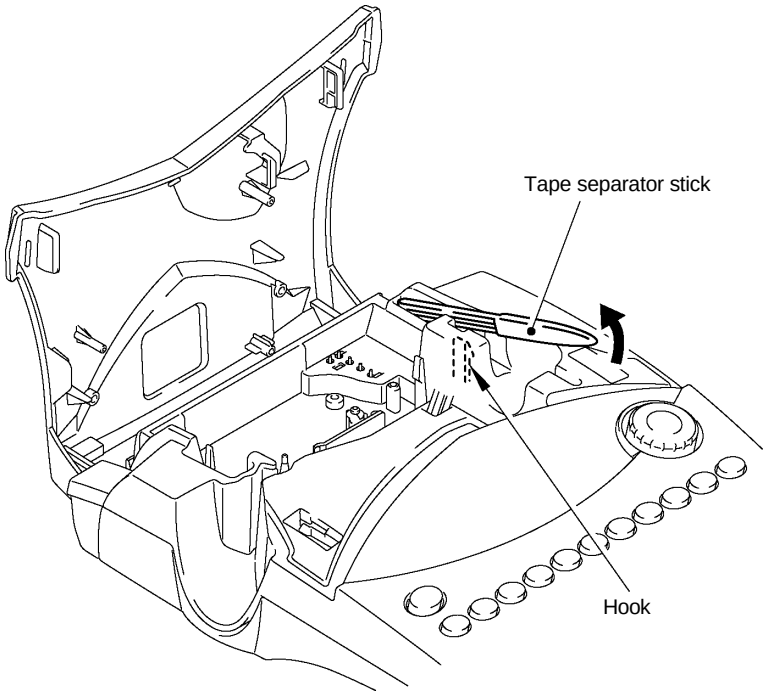


Fig. 3.1-3 Removing the Tape Separator Stick

[3] Removing the Bottom Cover

(1) Close the cassette cover while pressing down section “B”.

(2) Turn the machine upside down.

(3) Remove four screws from the bottom cover.

(4) Apply your fingers to the bottom cover and pull it up.

(PT-1900/1910)

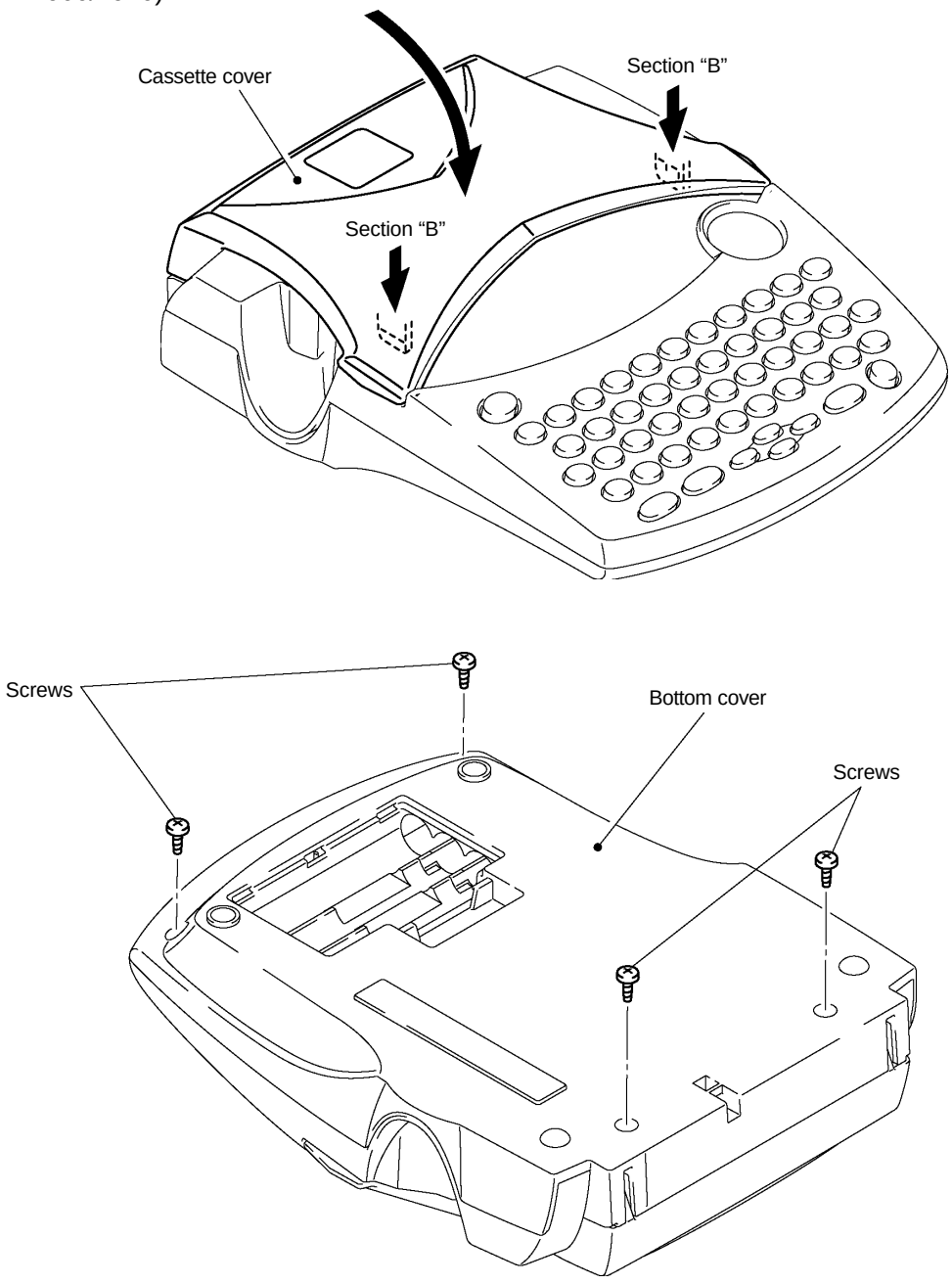


Fig. 3.1-4 Removing the Bottom Cover (1) (PT-1900/1910)

(PT-1850)

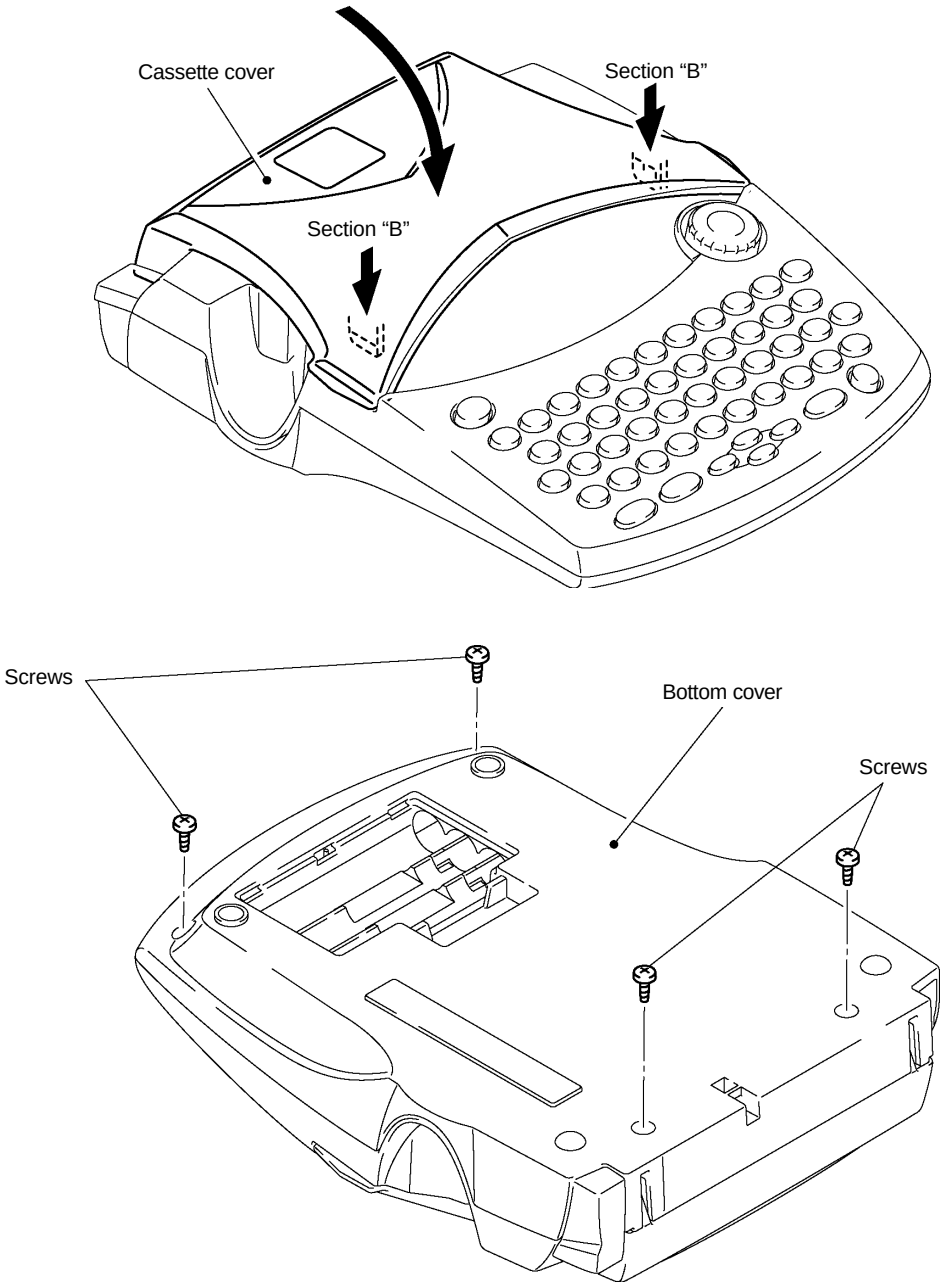


Fig. 3.1-5 Removing the Bottom Cover (1) (PT-1850)

(5) Separate the bottom cover from the upper cover.

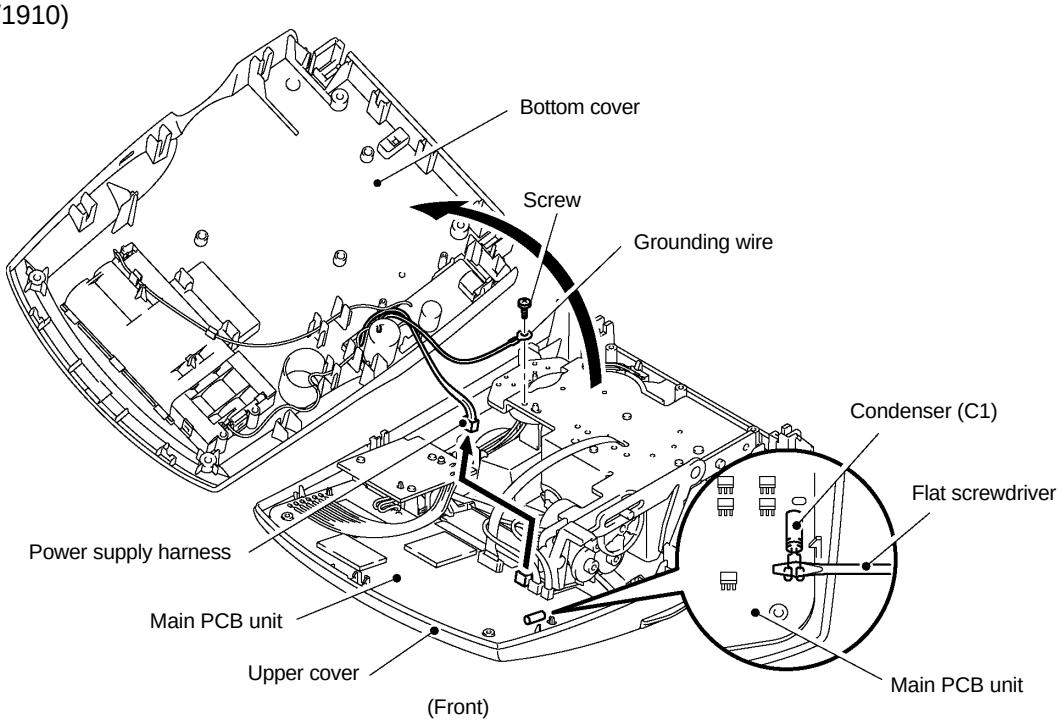
(6) Open the bottom cover to the left as shown below.

(7) Discharge the condenser (C1) on the main PCB unit with tool like a flat screwdriver.

(8) Disconnect the power supply harness from the main PCB unit.

(9) Remove the screw that secures the grounding wire to the main frame ASSY.

(PT-1900/1910)



(PT-1850)

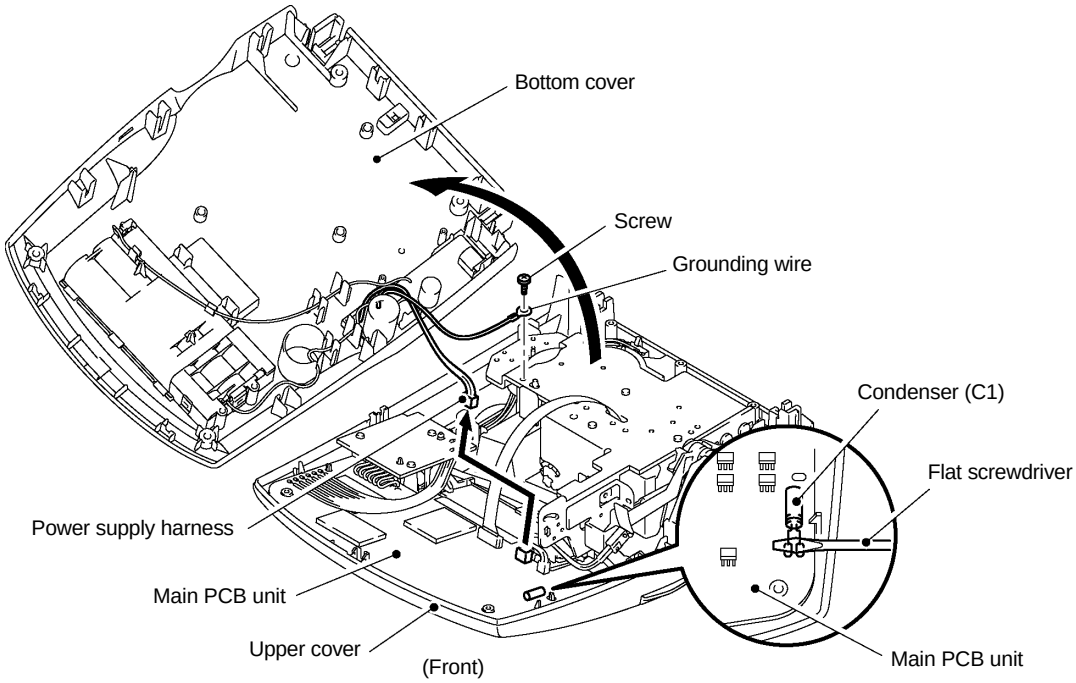


Fig. 3.1-6 Removing the Bottom Cover (2)

Note: Check that the lower feet are tightly attached to the bottom cover without any gaps, peeling-off, or overreaching.

[4] Removing the Cassette Cover, Main Frame ASSY

CAUTION: During the following job, handle the connectors and harnesses gently so as not to damage them.

(1) Take off the cassette cover from the upper cover. The roller release lever will pop up.

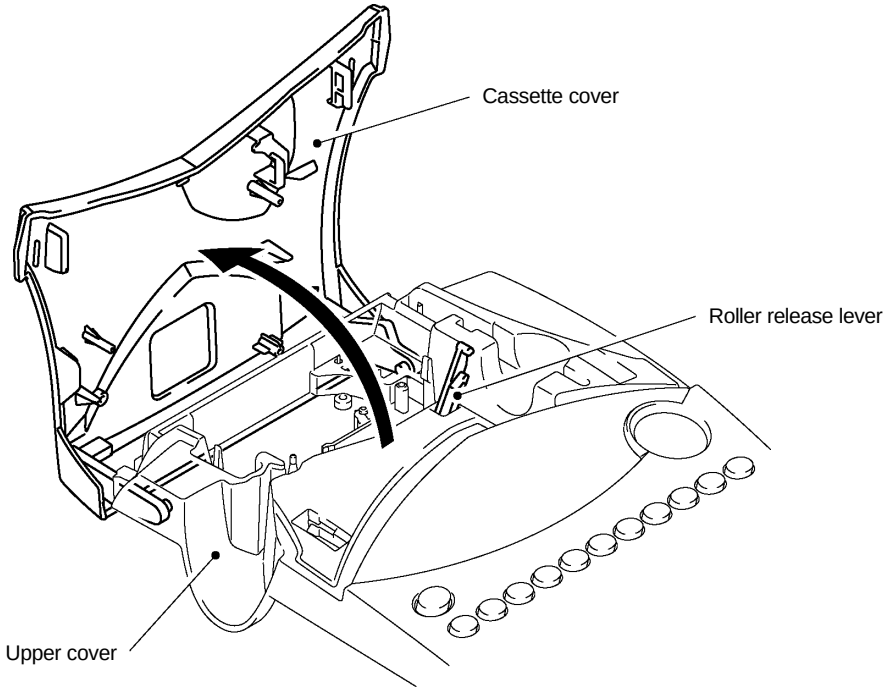
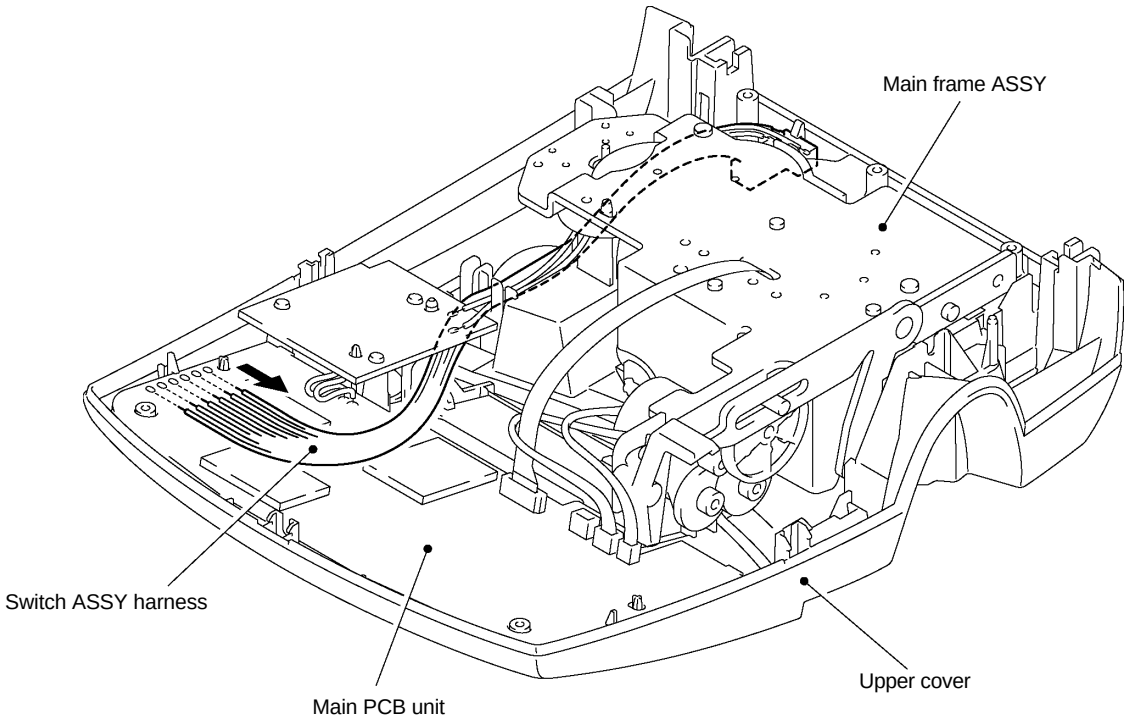


Fig. 3.1-7 Removing the Cassette Cover

(2) Remove the switch ASSY harness which is soldered at 6 places, from the main PCB unit.

Note: However, if only the main frame ASSY is removed, the soldered switch ASSY must not be removed.

(PT-1900/1910)



(PT-1850)

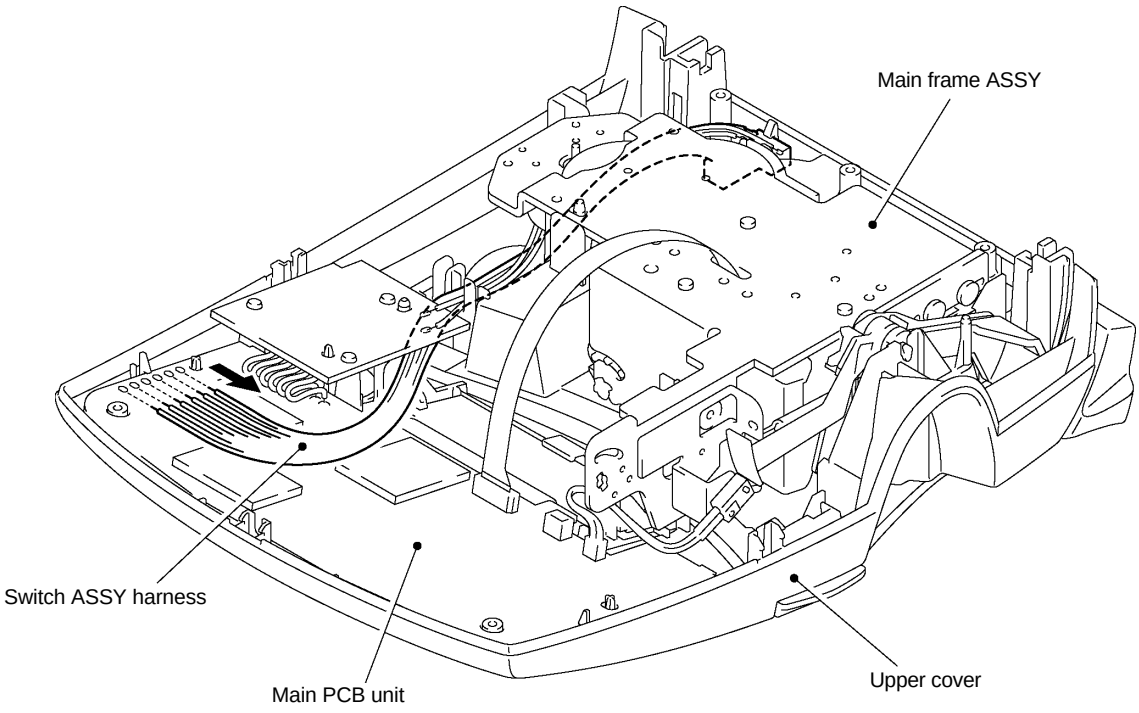


Fig. 3.1-8 Removing the Main Frame ASSY (1)

(4) Disconnect the following harnesses from the main PCB unit.
- Cutter motor harness (PT-1900/1910 only)
- Full cutter sensor harness (PT-1900/1910 only)
- Cutter sensor harness (PT-1850 only)

(5) Remove the harness the DC motor PCB by melting the solder.
- DC motor harness

(6) Disconnect the head cable from the main PCB unit.

(7) Remove the two screws of the main frame ASSY.

(8) Lift the main frame ASSY up and out of the upper cover.

(PT-1900/1910)

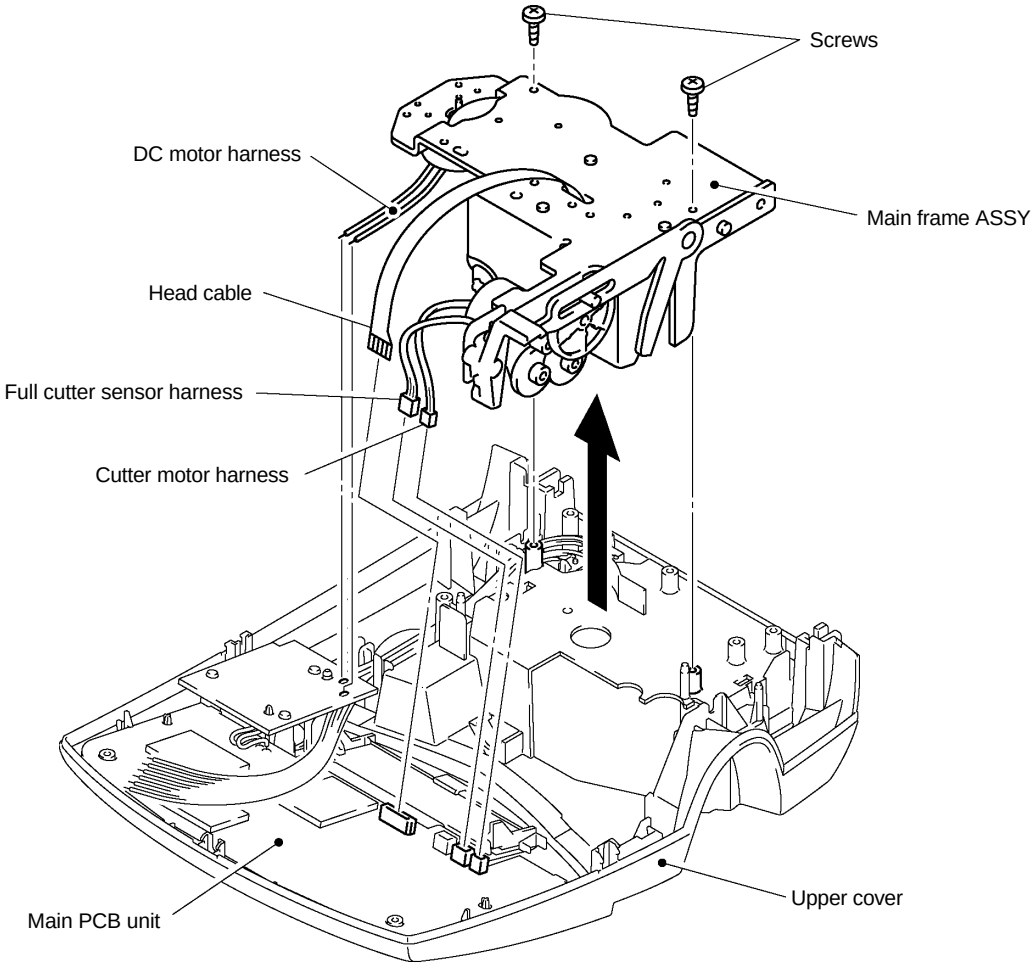


Fig. 3.1-9 Removing the Main Frame ASSY (2) (PT-1900/1910)

(9) Remove the cutter lever from the upper cover. (PT-1850 only)

(PT-1850)

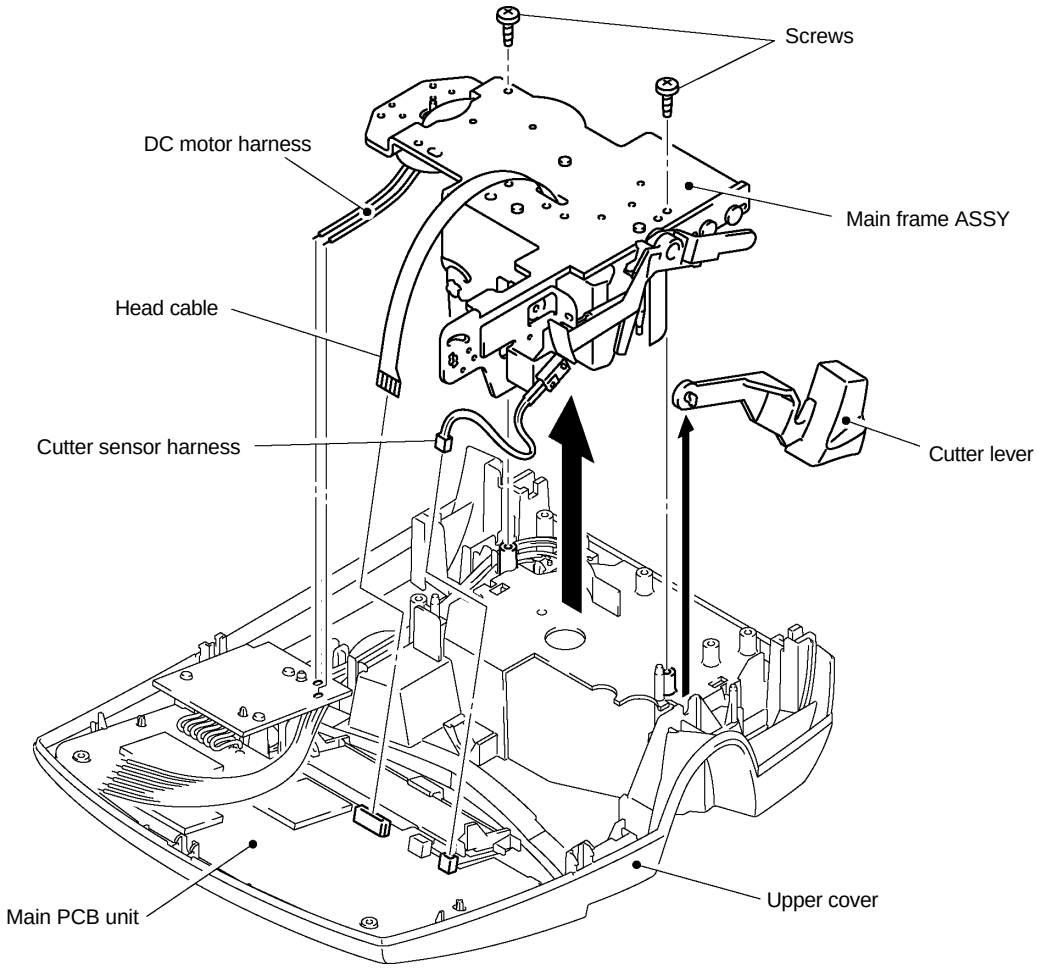
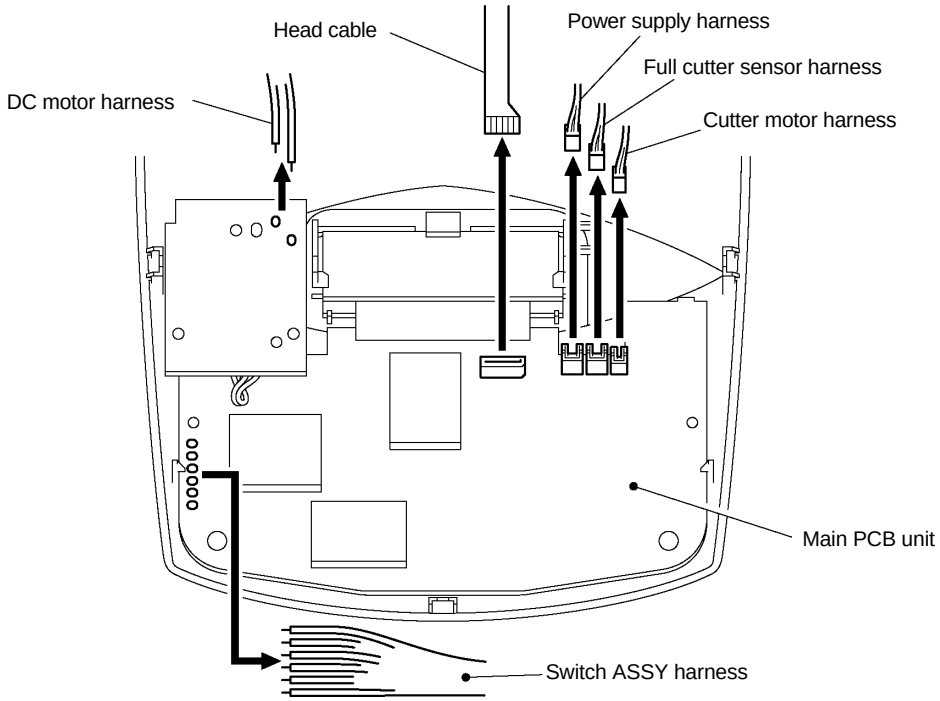


Fig. 3.1-10 Removing the Main Frame ASSY (2) (PT-1850)

(PT-1900/1910)



(PT-1850)

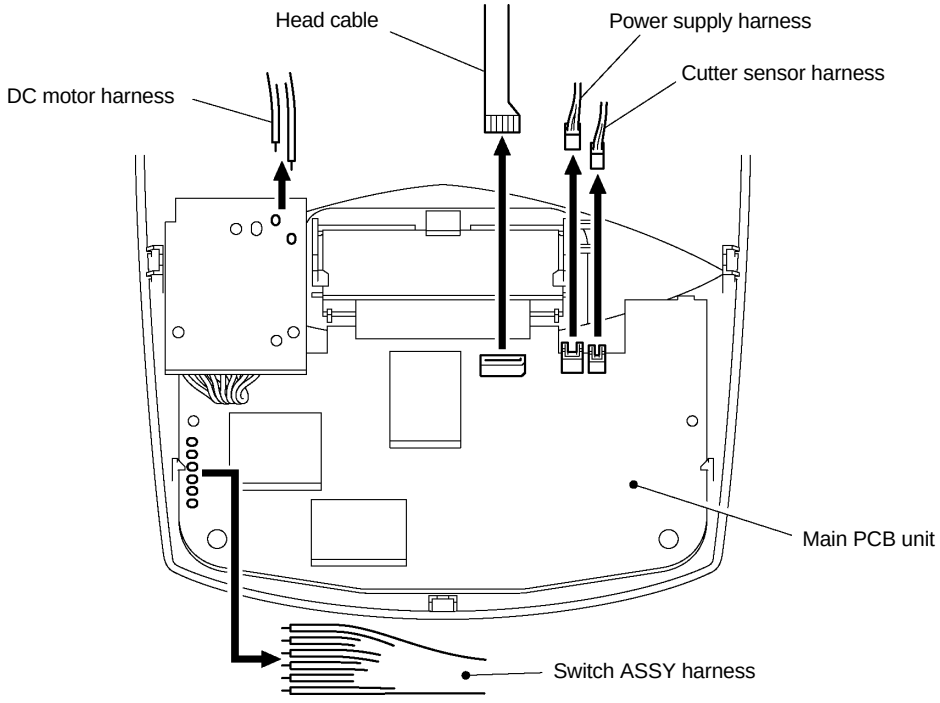


Fig. 3.1-11 Removing the Main Frame ASSY (3)

■ Disassembling the Main Frame ASSY

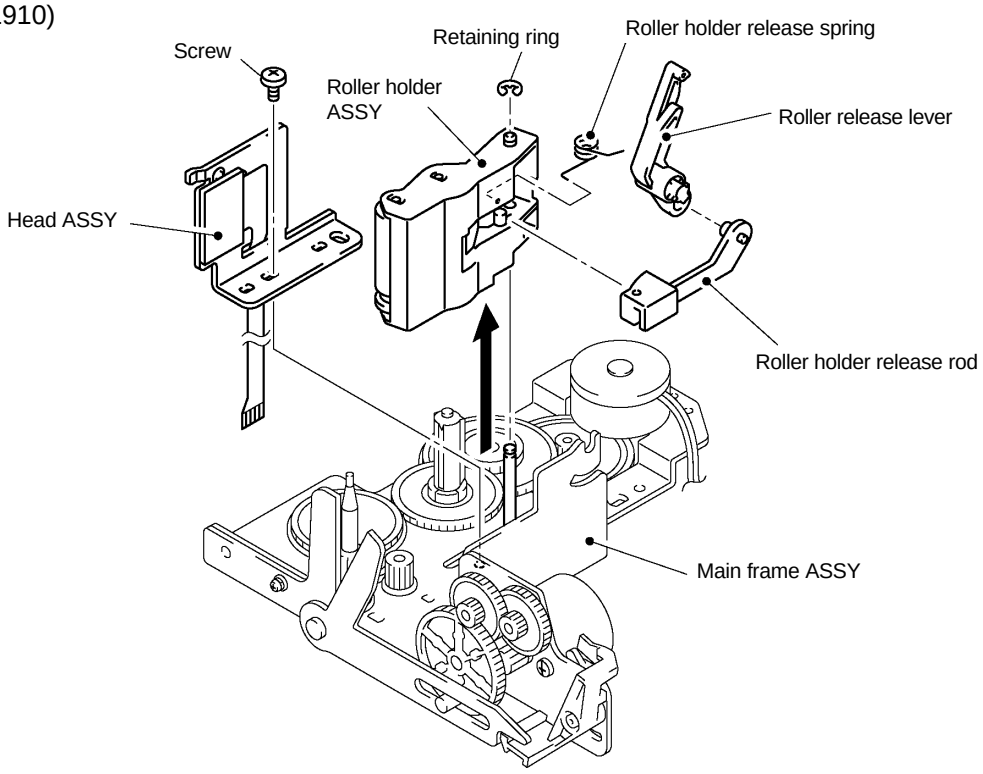
Removing the roller holder release rod, roller release lever, roller holder ASSY, and head ASSY

(1) Remove the retaining ring from the roller holder ASSY.

(2) Lift up the roller release lever as shown below and pull up the roller holder ASSY together with the roller release lever and roller holder release rod, making sure that the roller holder release spring does not go flying off.

(3) Remove screw from the head ASSY, then take off the ASSY.

(PT-1900/1910)



(PT-1850)

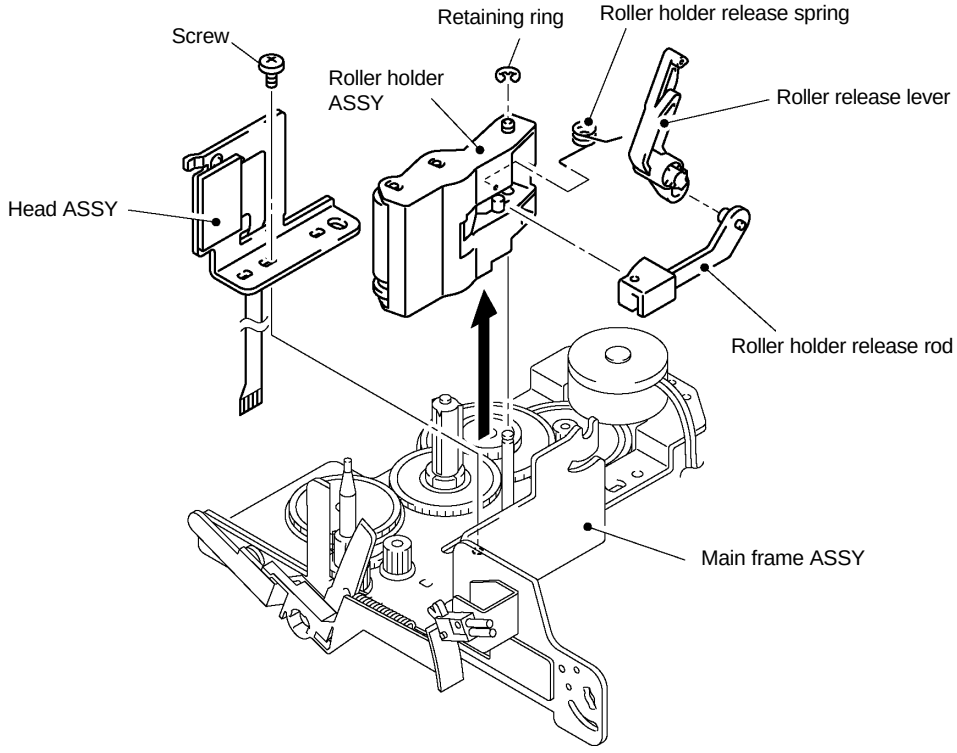


Fig. 3.1-12 Disassembling the Roller Holder ASSY and Head ASSY

Removing the DC motor ASSY

(1) Remove two screws from the main frame ASSY, then take off the DC motor ASSY.

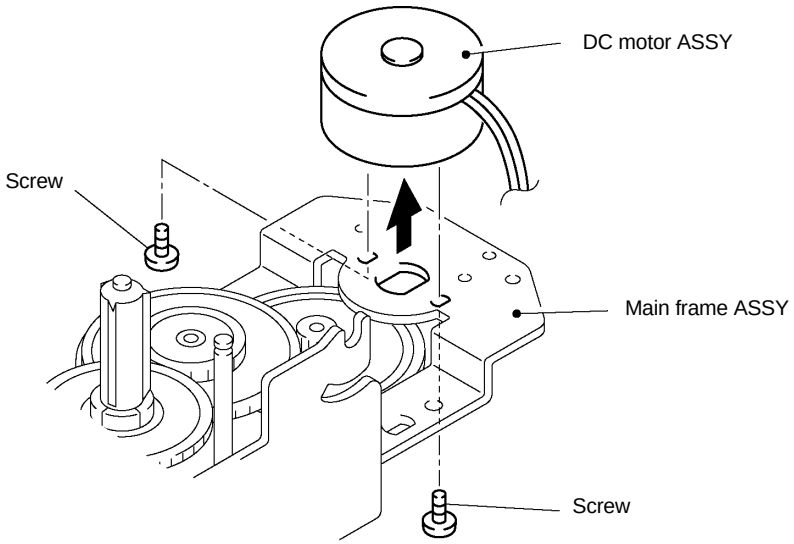


Fig. 3.1-13 Removing the DC Motor ASSY

Removing the cutter ASSY, cutter motor ASSY, and full cutter sensor PRO ASSY

WARNING: Be careful with the cutter blades.

(1) Remove screw “a” and take off the cutter ASSY.

(2) Remove the washer (by using a pin) and take off the cutter moving gear and cutter double gears.

Note: Once deformed excessively, the washer becomes unusable and a new one should have to be put back in.

(3) Remove two screws “b” and take off the cutter motor ASSY, taking care not to damage the motor gear.

(4) Remove screw “c” and take off the full cutter sensor PRO ASSY.

(5) Turn the actuator counterclockwise and remove it from the chassis ASSY 2300.

(PT-1900/1910)

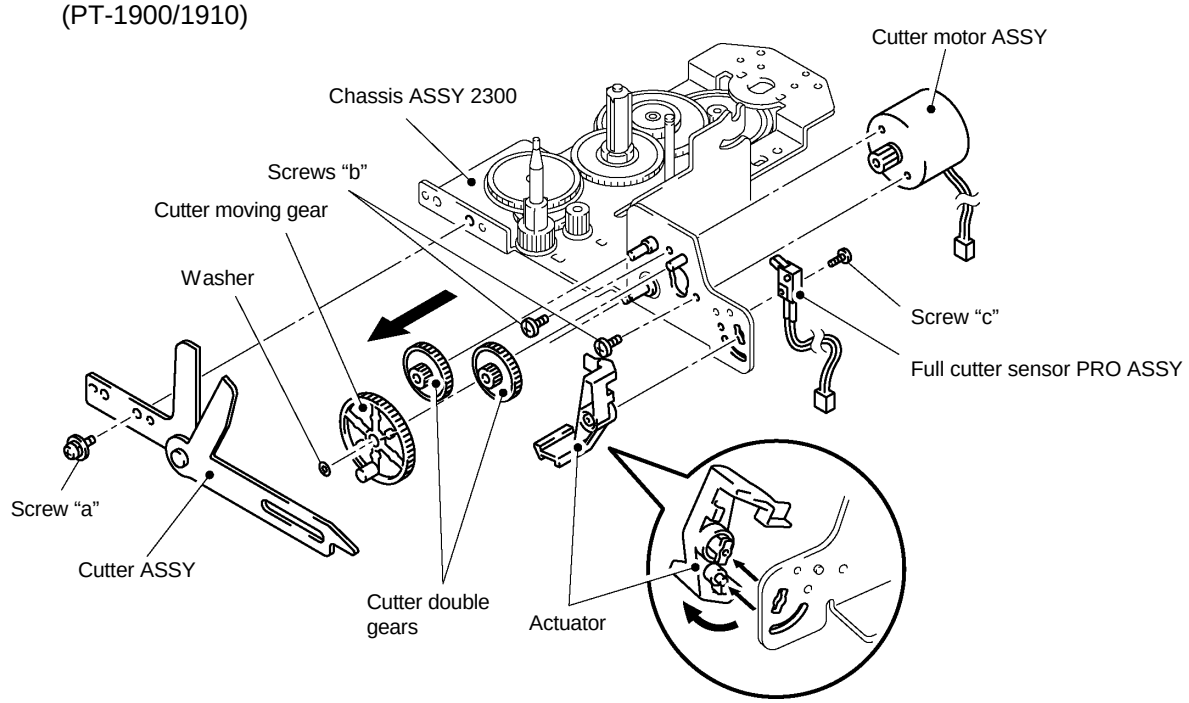


Fig. 3.1-14 Removing the Cutter ASSY (PT-1900/1910)

Removing the cutter ASSY and cutter sensor folder ASSY

WARNING: Take care not to touch the cutter of the cutter ASSY.

(1) Remove screw “a” and take off the cutter sensor folder ASSY.

(2) Release the three hooks to remove the cutter sensor arm.

(3) Remove the spring.

(4) Remove screw “b”, and remove the cutter ASSY from the chassis ASSY 1850.

CAUTION: To remove the screw “b”, push down the left end of the movable cutter to turn it counterclockwise, taking care not to push it down excessively or let the left end of the spring touch the cutting edge of stationary cutter.

(PT-1850)

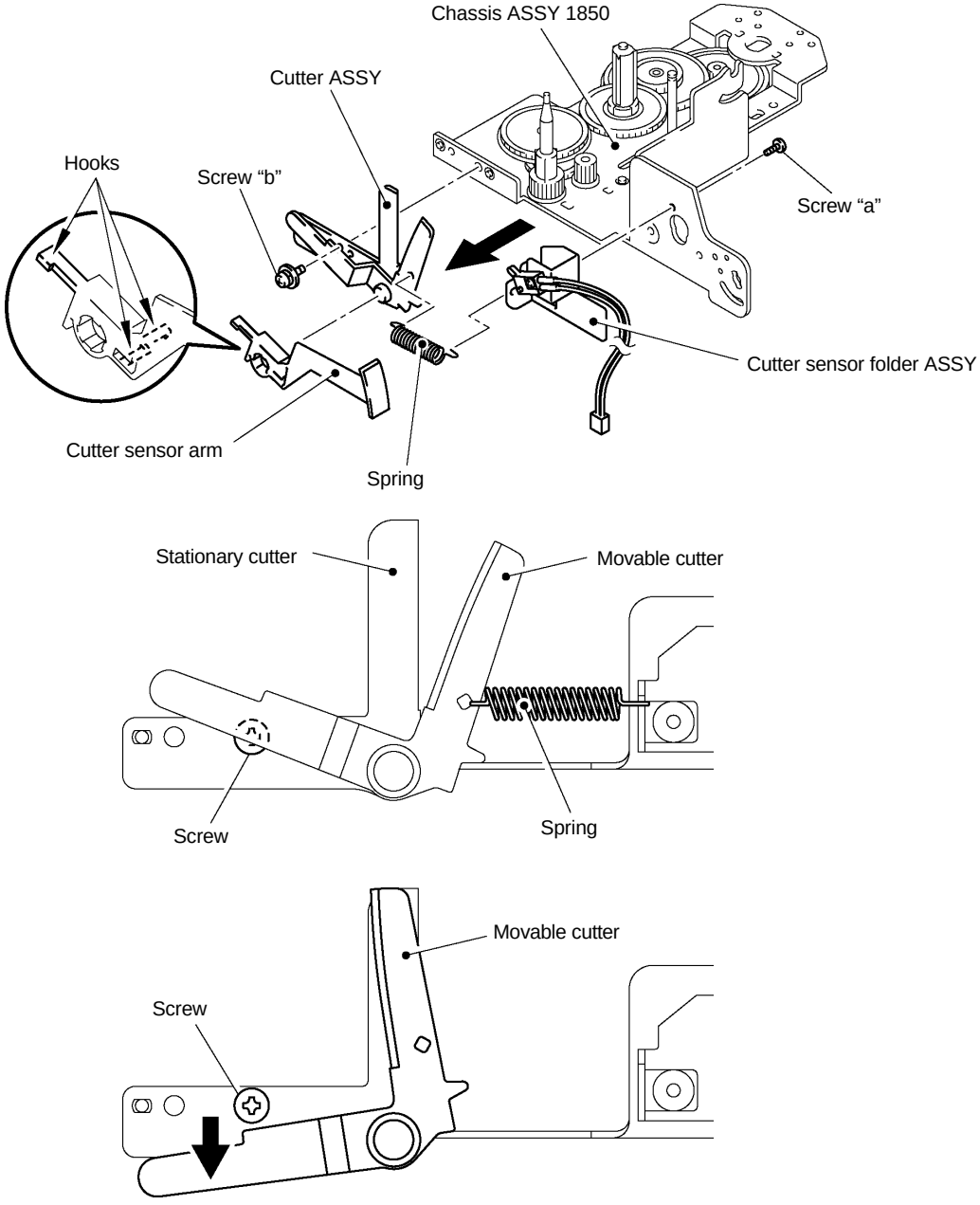


Fig. 3.1-15 Removing the Cutter ASSY (PT-1850)

[5] Removing the Main PCB Unit and Rubber Key Pad

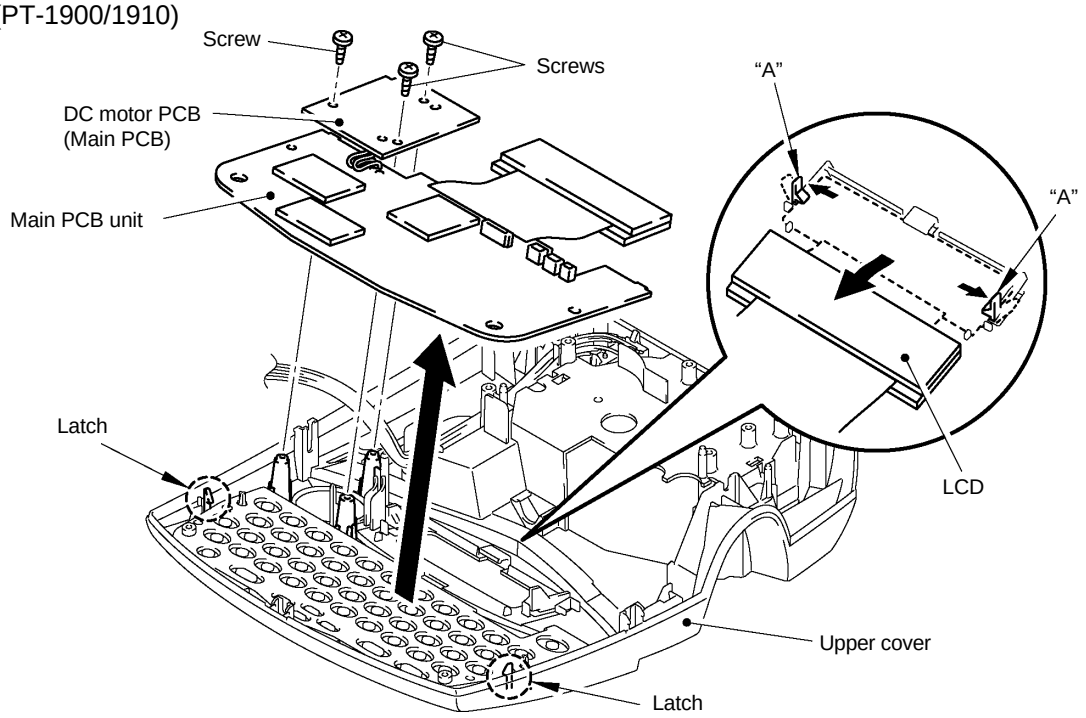
When you handle the PCB, it is recommended that an anti-static mat be used. If you have built up a static charge, touching the PCB without any anti-static control may damage the LSI and other electronic devices.

(1) Remove three screws to remove the DC motor PCB from the upper cover.

(2) Unhook the two latches to release the main PCB unit.

(3) Pull the positions “A” outwards to pull the LCD with the main PCB unit in the direction of the arrow shown in the figure below and remove the main PCB unit.

(PT-1900/1910)



(PT-1850)

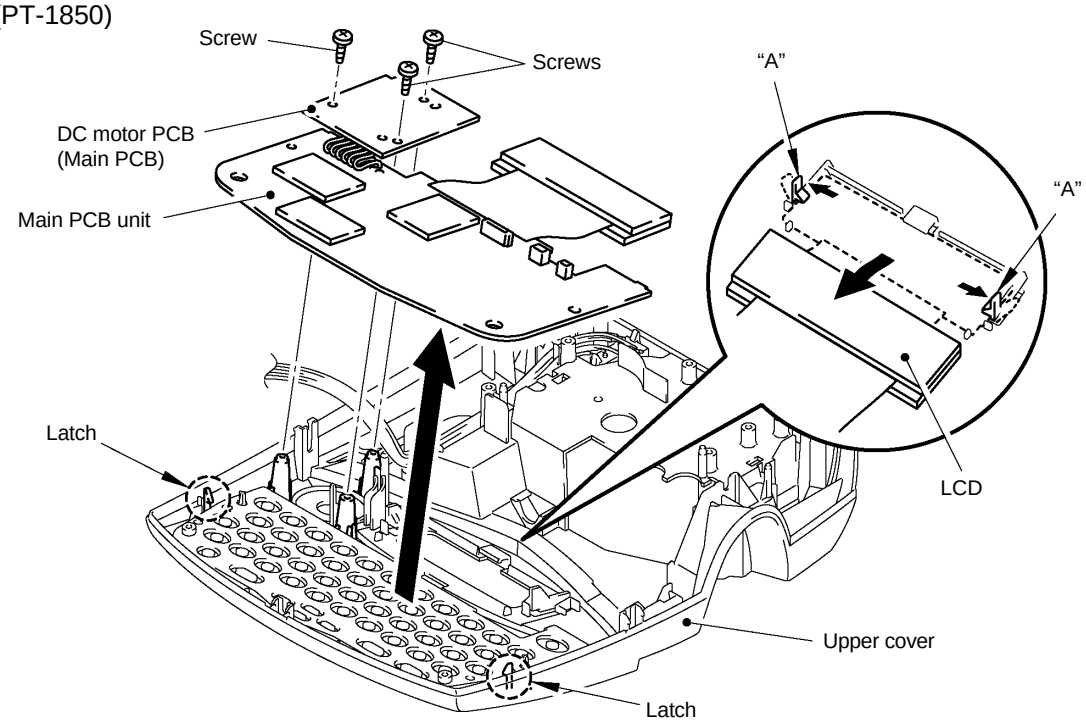


Fig. 3.1-16 Removing the Main PCB Unit and DC Motor PCB (1)

(4) Remove the navi dial from the DC motor PCB. (PT-1850)

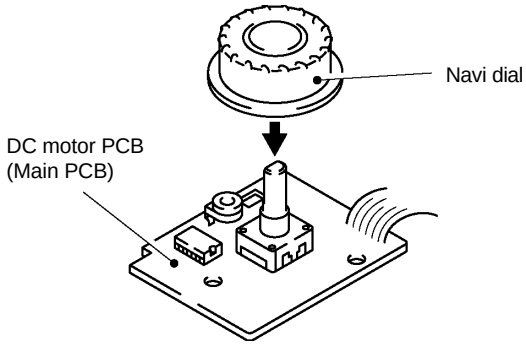
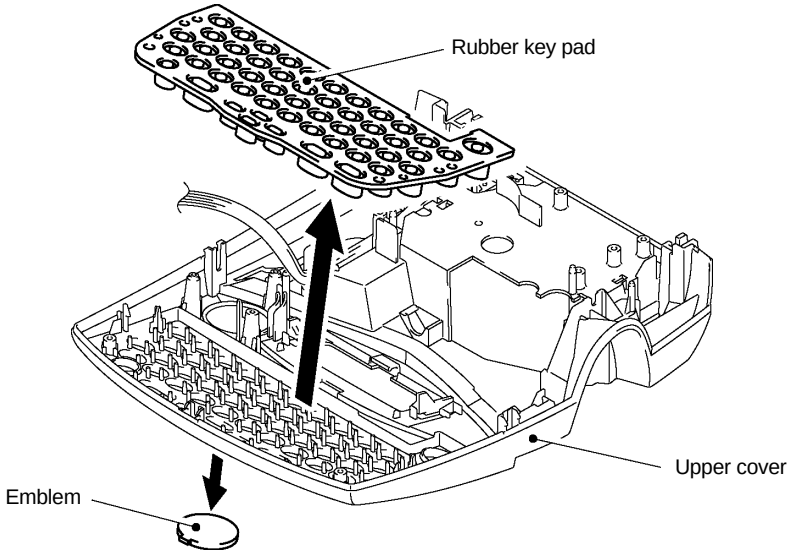


Fig. 3.1-17 Removing the Main PCB Unit and DC Motor PCB (2)

(5) Lift up the rubber key pad.

(6) Remove the emblem from the upper cover. (PT-1900/1910)

(PT-1900/1910)



(PT-1850)

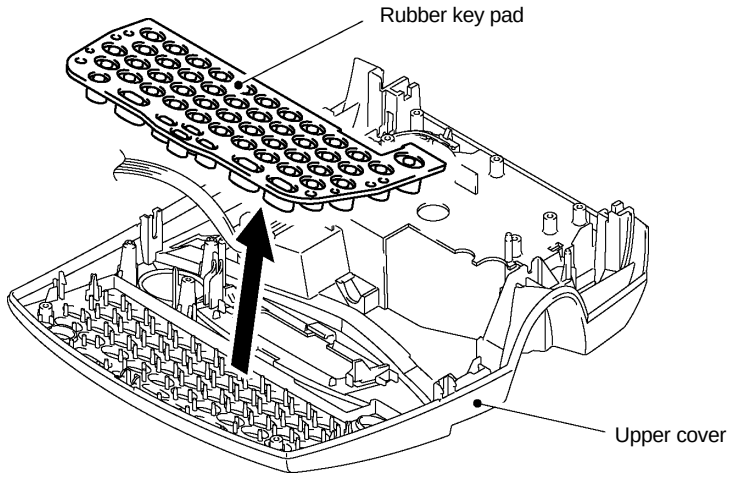


Fig. 3.1-18 Removing the Rubber Key Pad

[6] Removing the Switch ASSY

(1) Remove the switch ASSY harness from “A” position of the upper cover.

(2) Remove the switch ASSY from the upper cover by pulling the three pawls outwards.

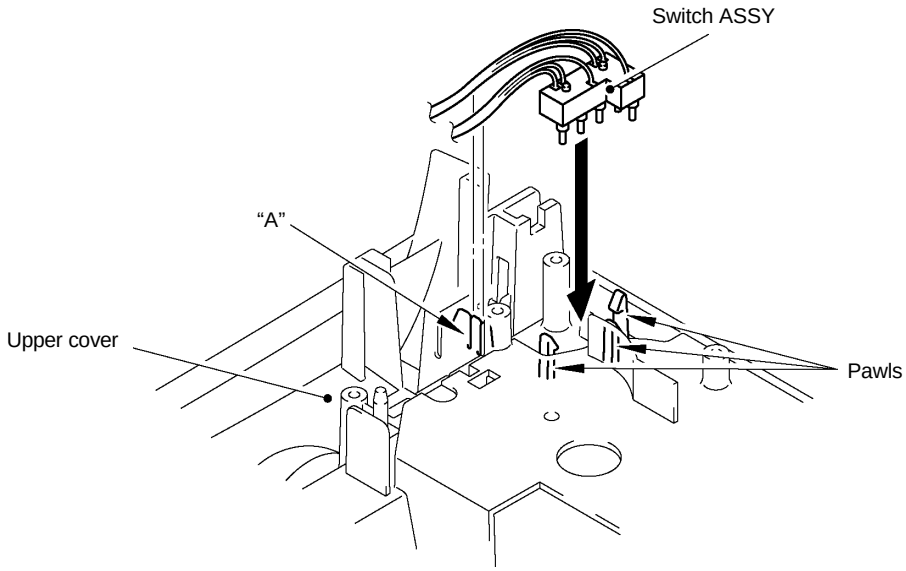


Fig. 3.1-19 Removing the Switch ASSY

[7] Removing the Blind Cover

Remove the blind cover from the bottom cover by pulling the three pawls outwards.

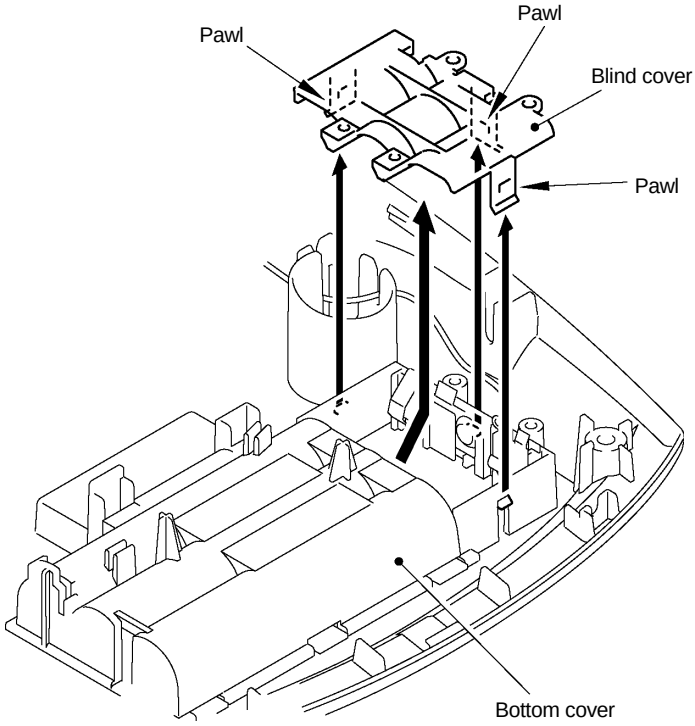


Fig. 3.1-20 Removing the Blind Cover

[8] Removing the Power Supply PCB

(1) Remove the positive (+) and negative (-) terminals of the battery power cords from the bottom cover.

Note: When handling those terminals, do not grip the cords but the terminal plates.

(2) Remove the one screw from the power supply PCB.

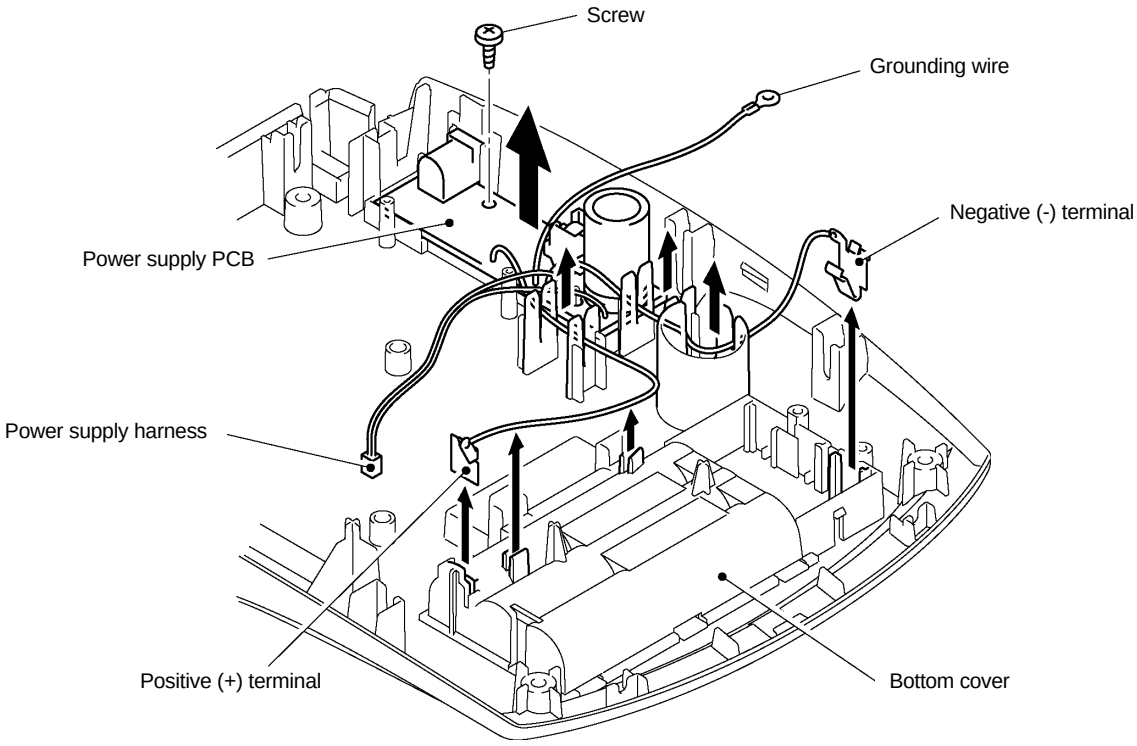


Fig. 3.1-21 Removing the Power Supply PCB

[9] Removing the Battery Terminals

(1) Remove the battery terminal “A” as shown below (left).

(2) As shown below (right), remove the battery terminal “B” while pressing section “A” with the tip of a flat screwdriver.

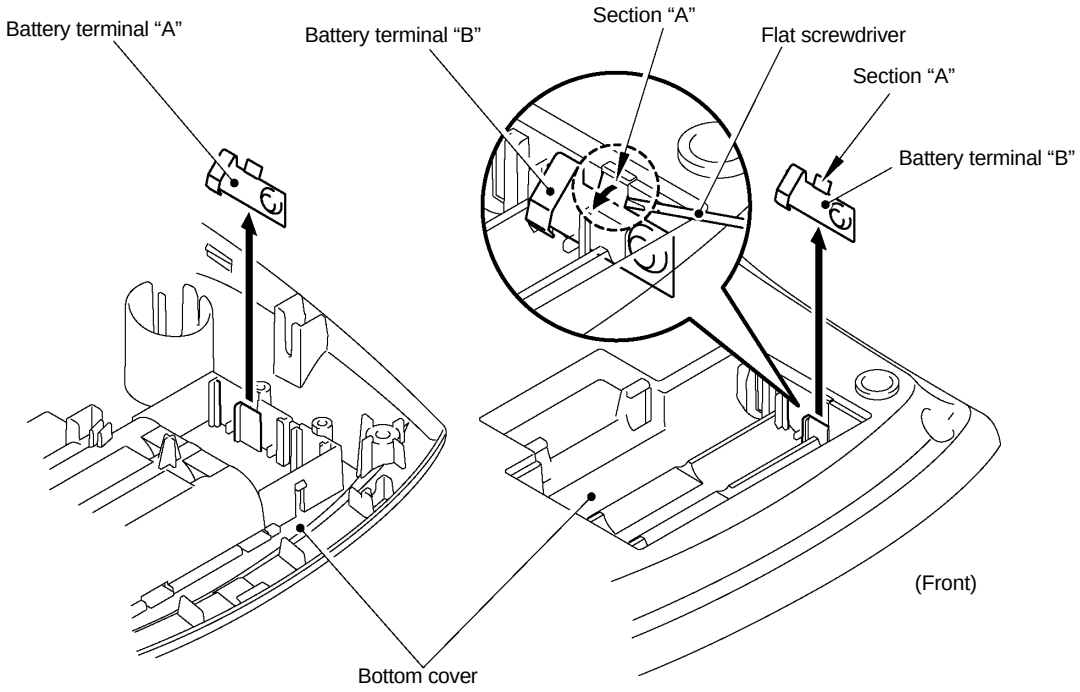


Fig. 3.1-22 Removing the Battery Terminals

3.2 REASSEMBLY PROCEDURE

[1] Installing the Battery Terminals

(1) Place the bottom cover upside down and fit battery terminal “A” into the bottom cover as shown below (left). Make sure that pawled sections “A” catches the bottom cover.

(2) Fit a battery terminal “B” into the bottom cover as shown below (right).

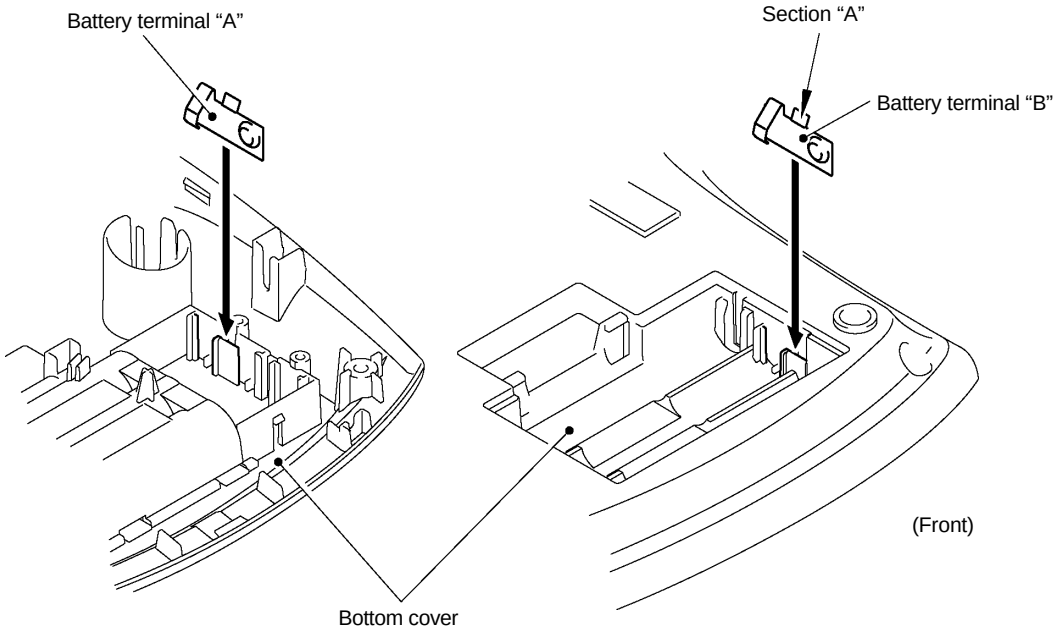


Fig. 3.2-1 Installing the Battery Terminals

[2] Installing the Power Supply PCB

(1) Fit the positive (+) and negative (-) terminals of the battery power cords into the bottom cover.

Note 1: When handling those terminals, do not grip the cords but the terminal plates.

Note 2: Route the battery power cords through the two ribs provided on the bottom cover. (Refer to Fig.3.2-3.)

(2) Secure the power supply PCB to the bottom cover with one screw.

Tightening torque: 294±98 mN•m (3±1 kgf•cm)

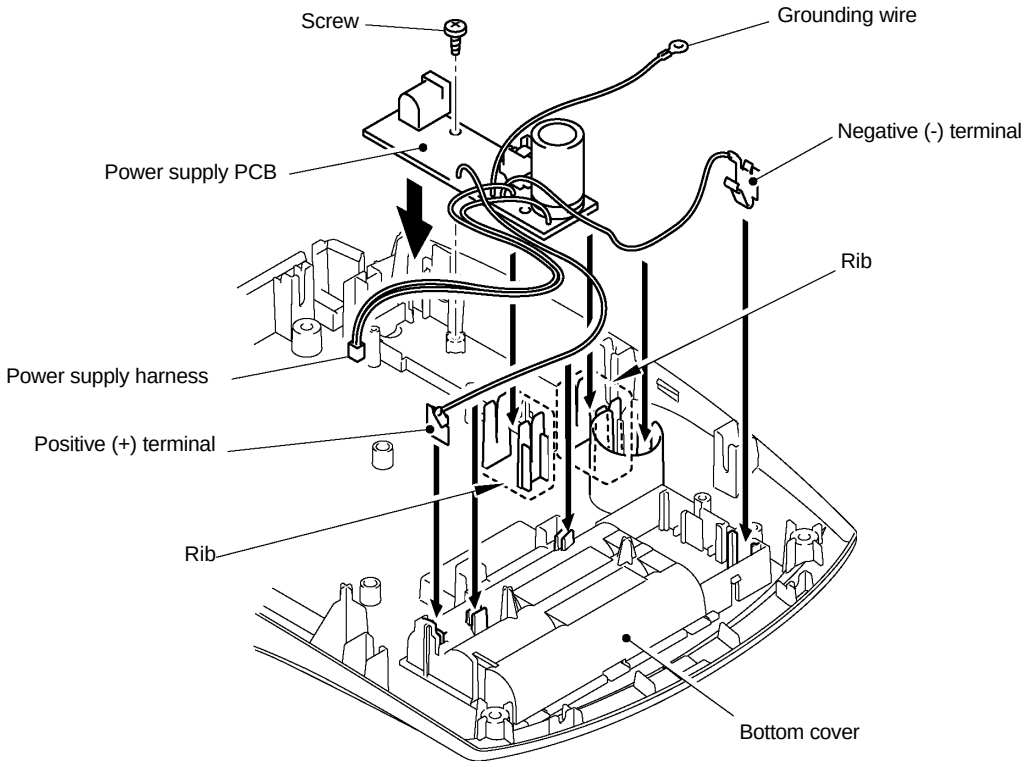


Fig. 3.2-2 Installing the Power Supply PCB (1)

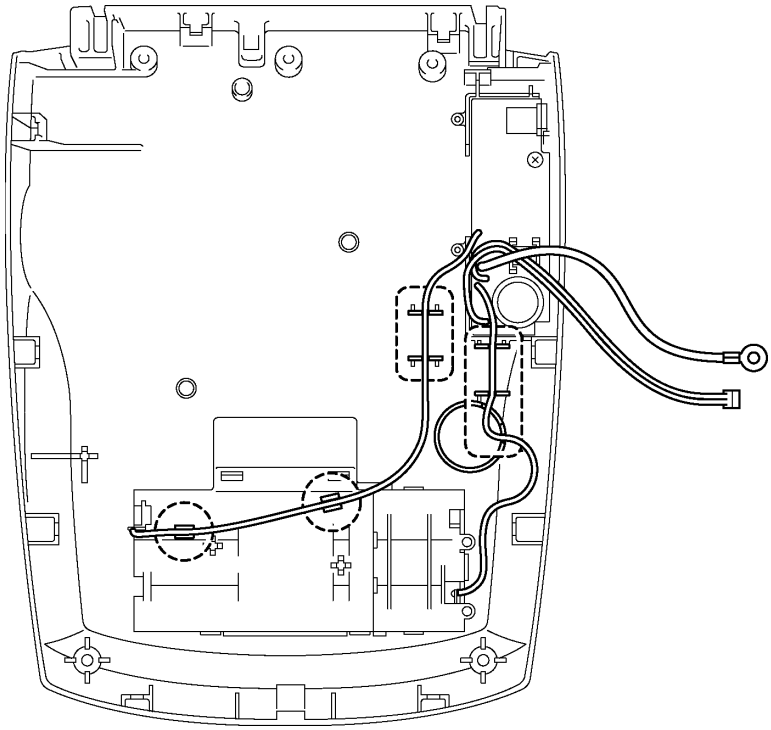


Fig. 3.2-3 Installing the Power Supply PCB (2)

[3] Installing the Blind Cover

Fit two holes “A” of the blind cover over the pins provided on the bottom cover and push down the blind cover until pawls “B” catch the hooks on the bottom cover.

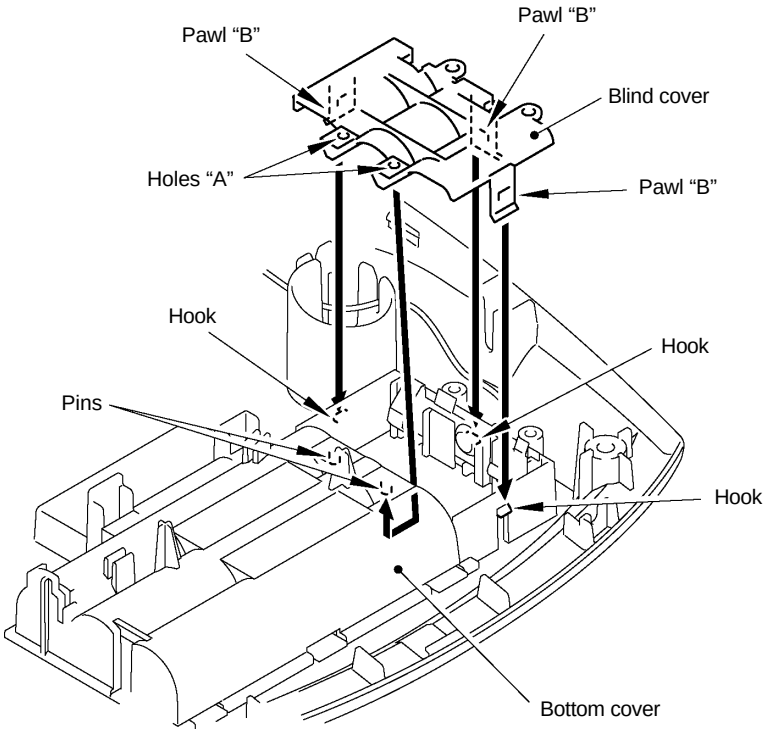


Fig. 3.2-4 Installing the Blind Cover

[4] Installing the Switch ASSY

(1) Put the switch ASSY into the upper cover so that the switch ASSY is hooked onto the three pawls of the upper cover completely.

(2) Hook the switch ASSY harness into the two ribs on the upper cover.

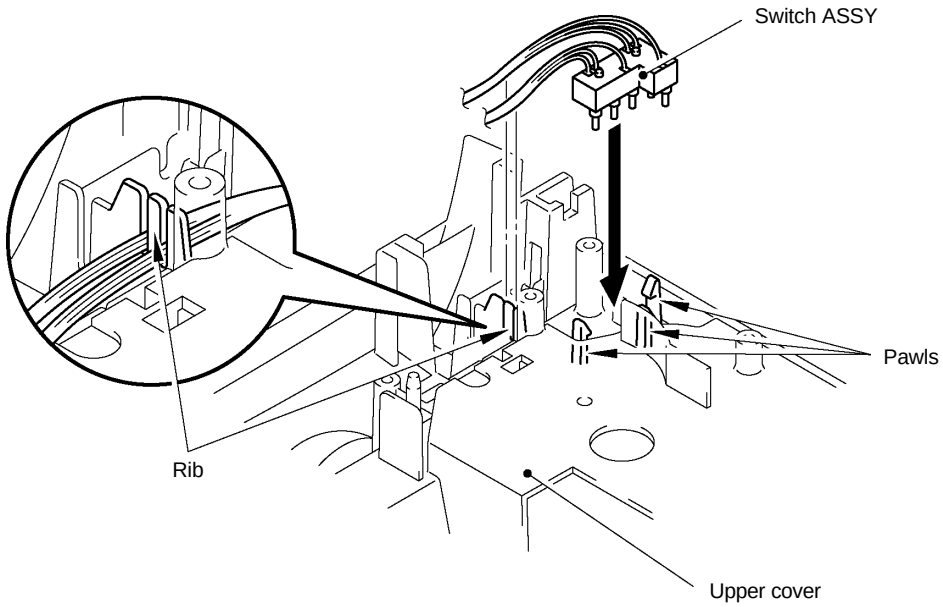


Fig. 3.2-5 Installing the Switch ASSY

(2) Press and release each of those switch ASSY with your finger to check that they pop up normally.

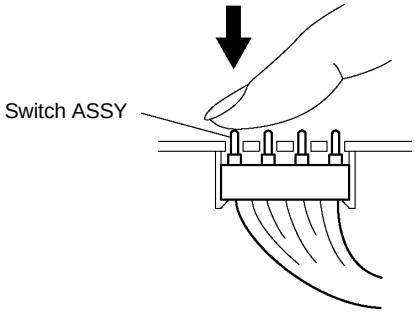


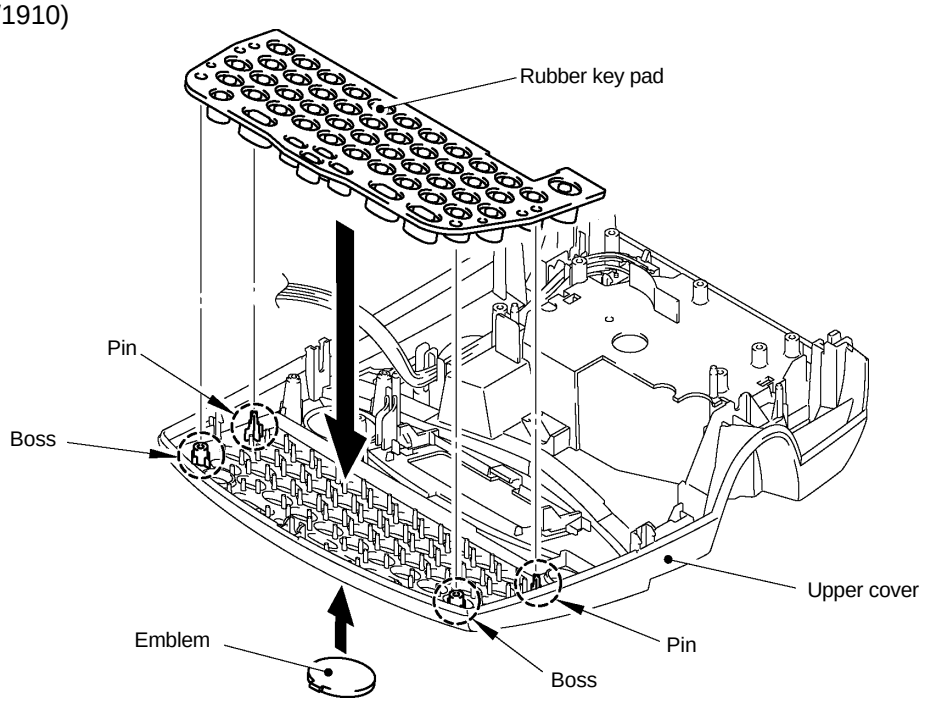
Fig. 3.2-6 Checking the Switch ASSY

[5] Installing the Rubber Key Pad

(1) Assemble the emblem onto the upper cover.

(2) Place the rubber key pad so that it is fitted over the two bosses and two pins provided on the upper cover.

(PT-1900/1910)



(PT-1850)

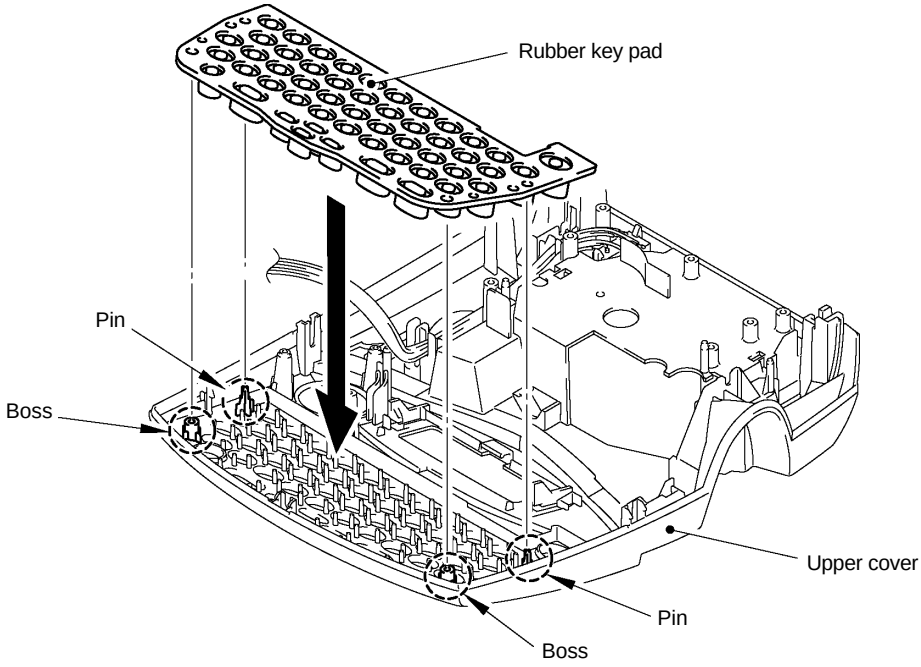


Fig. 3.2-7 Installing the Rubber Key Pad

[6] Installing the Main PCB Unit

(1) Put the navi dial onto the DC motor PCB. (PT-1850 only)

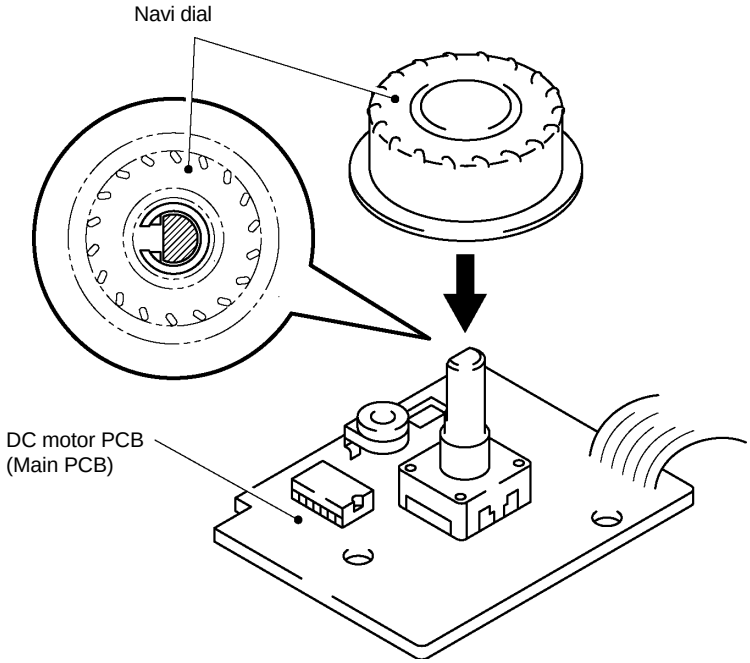


Fig. 3.2-8 Installing the Main PCB Unit (1)

(2) Pull the positions “A” outwards to put the LCD with the main PCB unit into the position “B”.

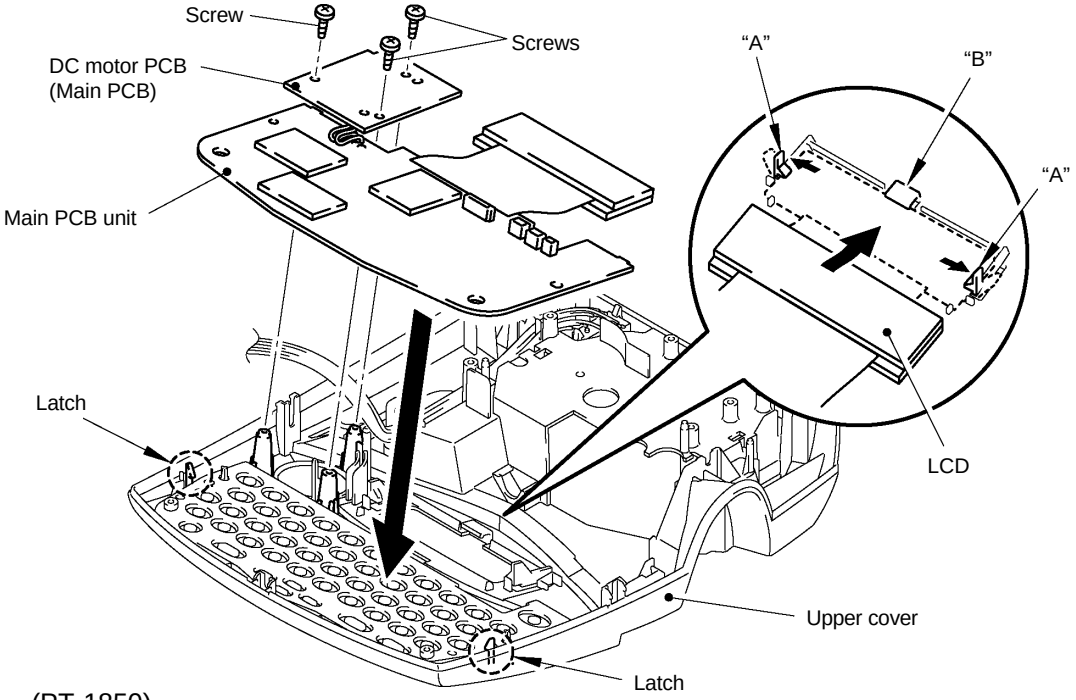
(3) Check that there is no foreign material or dust on the key contacts on the main PCB unit.

Note : Make sure that the two latches of the upper cover catch the main PCB unit.

(4) Secure the DC motor PCB onto the upper cover with three screws.

Note : After reassembling the main PCB unit, ensure that the navi dial is rotated smoothly. (PT-1850 only)

(PT-1900/1910)



(PT-1850)

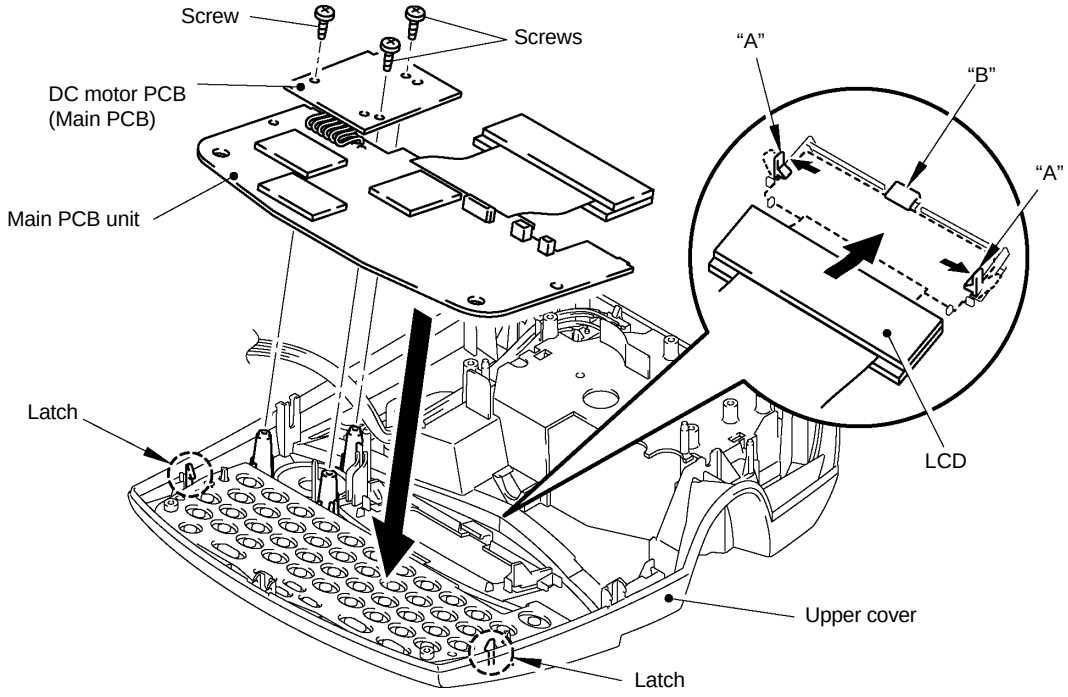


Fig. 3.2-9 Installing the Main PCB Unit (2)

[7] Installing the Main Frame ASSY

(1) If the main frame ASSY has been disassembled, assemble the components by referring to the following pages.

(2) Assemble the cutter lever onto the upper cover.

(3) Pull down the roller release lever to the vertical position and set the main frame ASSY onto the upper cover. (For making the following jobs easier, push the roller release lever to the horizontal position.)

(4) Secure the main frame ASSY to the upper cover with two screws.

Tightening torque: 392±98 mN•m (4±1 kgf•cm)

(5) Put the switch ASSY harness into the “A” of the upper cover.

(6) Connect the following harnesses to the main PCB unit:

- Full cutter sensor harness (PT-1900 only)
- Cutter motor harness (PT-1900 only)
- Cutter sensor harness (PT-1850 only)

(7) Connect the head cable to the main PCB unit.

Note: Be sure to route the cutter sensor harness between the cutter motor and the main frame as illustrated below. This will prevent the harness from getting hooked over the boss provided on the bottom cover when reinstalling the bottom cover.

(8) Solder the DC motor harness to the DC motor PCB.

Note : Be careful to the direction of the motor harness (+),(-) and not to stick out from the designated place when soldering.

CAUTION: When soldering, use the lead-free solder.

(PT-1900/1910)

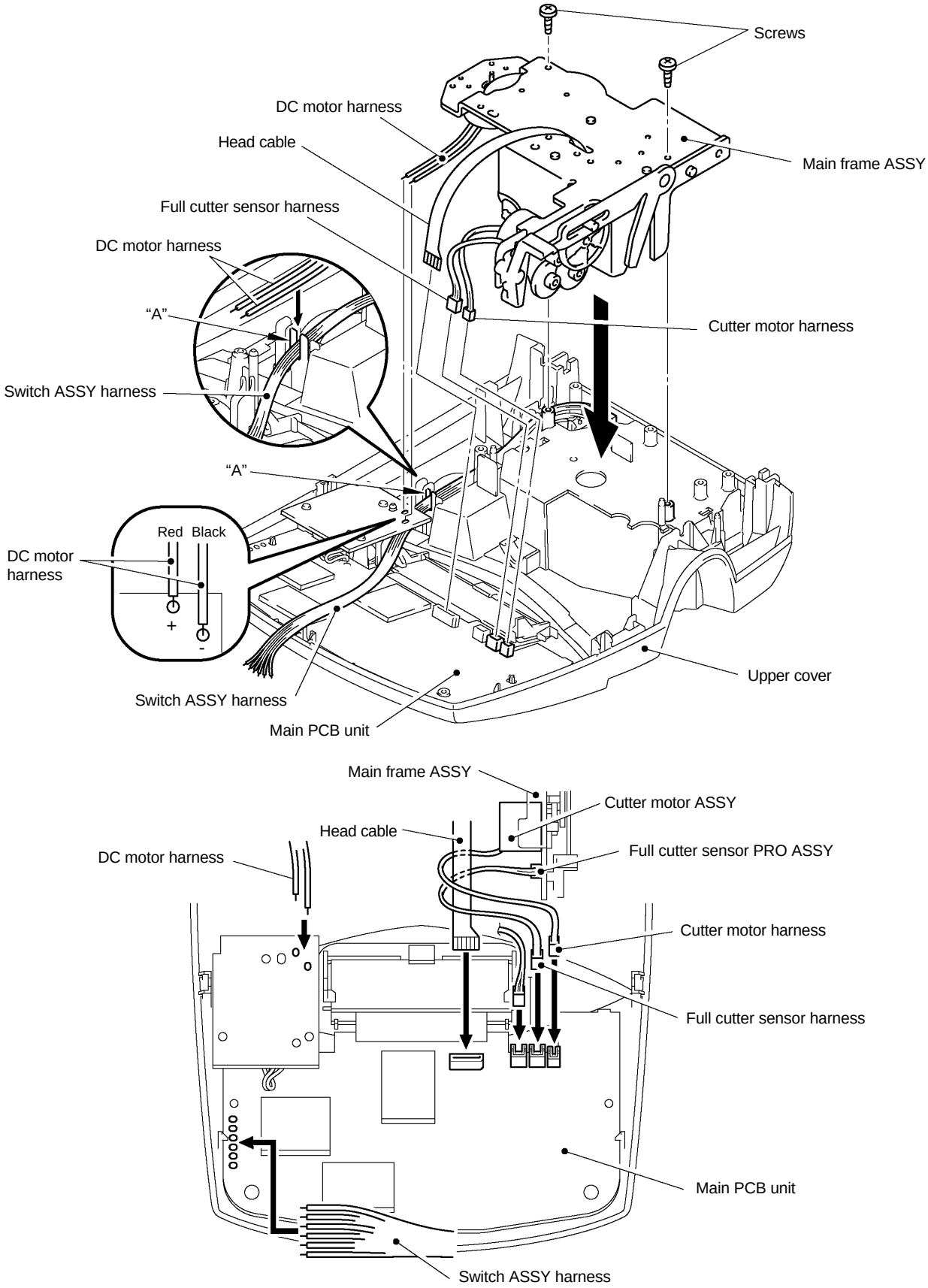


Fig. 3.2-10 Installing the Main Frame ASSY (1) (PT-1900/1910)

(PT-1850)

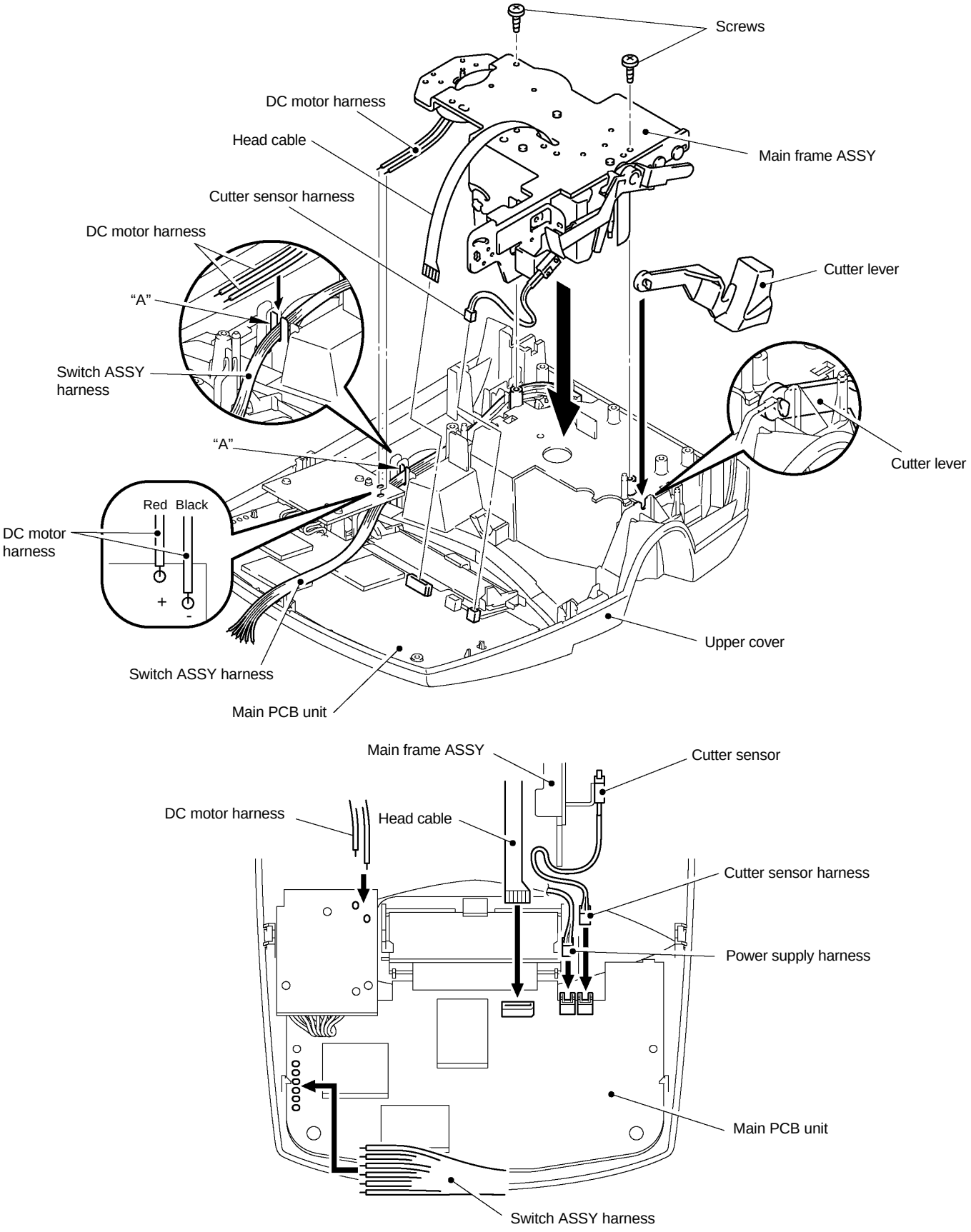


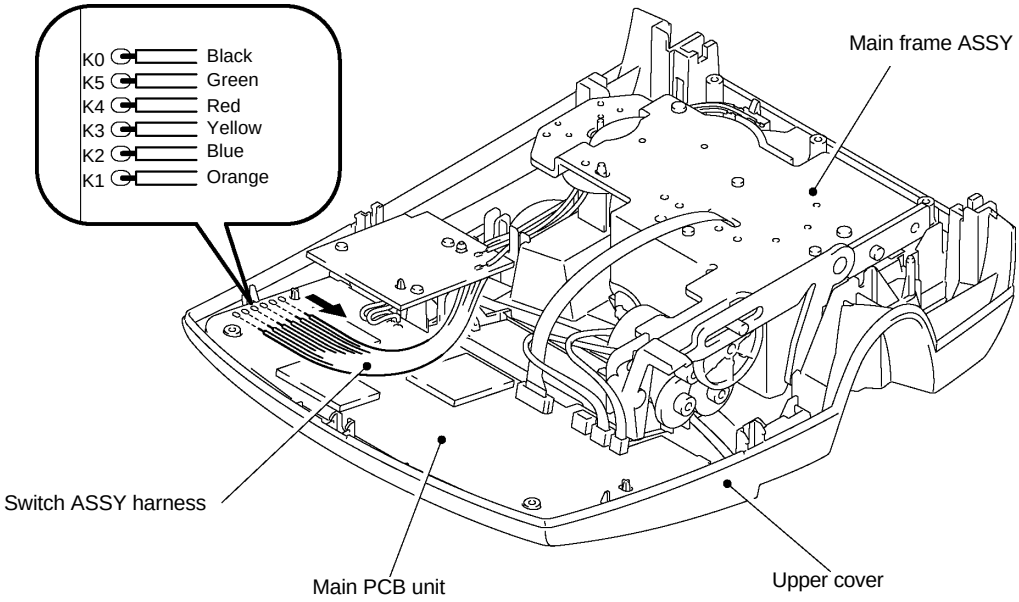
Fig. 3.2-11 Installing the Main Frame ASSY (1) (PT-1850)

(7) Solder the six switch ASSY harnesses onto the main PCB unit.

Note: Be careful to the direction of the switch ASSY harness and not to stick out from the designated place when soldering switch ASSY harness.

CAUTION: When soldering, use the lead-free solder.

(PT-1900/1910)



(PT-1850)

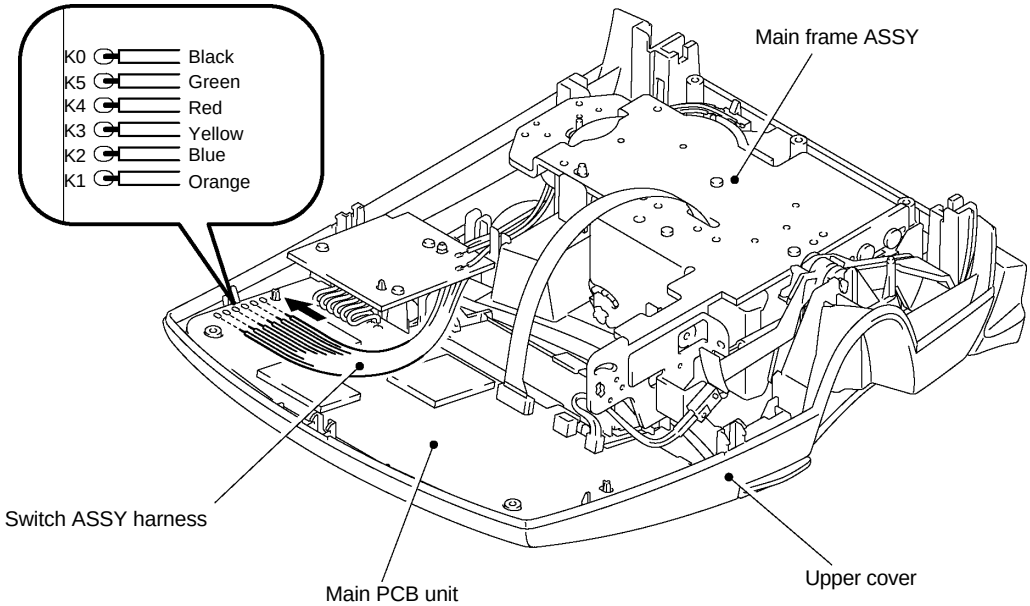


Fig. 3.2-12 Installing the Main Frame ASSY (2)

■ Assembling the Components of the Main Frame ASSY

Installing the full cutter sensor PRO ASSY, cutter motor ASSY, and cutter ASSY

(1) Fit the actuator into the hole provided in the chassis ASSY 2300 and turn it clockwise.

(2) Secure the full cutter sensor PRO ASSY to the chassis ASSY 2300 with screw “c”.

Tightening torque: 147±49 mN•m (1.5±0.5 kgf•cm)

(3) Secure the cutter motor ASSY with two screws “b” with its harness facing down.

Tightening torque: 147±49 mN•m (1.5±0.5 kgf•cm)

(4) Set the cutter double gears and cutter moving gear into place, then fit the washer in the cutter moving gear.

(5) Secure the cutter ASSY with screw “a” so that the long hole provided in the moving blade becomes fitted over the boss of the cutter moving gear.

Tightening torque: 588±98 mN•m (6±1 kgf•cm)

WARNING: Be careful with the cutter blades.

(6) Make sure that the cutter ASSY is fitted on the side of the chassis ASSY 2300 without any gap.

(7) Apply half of a rice-sized pinch of grease (Silicon grease G501) to the boss of the cutter moving gear or the inside edge of the long hole provided in the moving blade.

(PT-1900/1910)

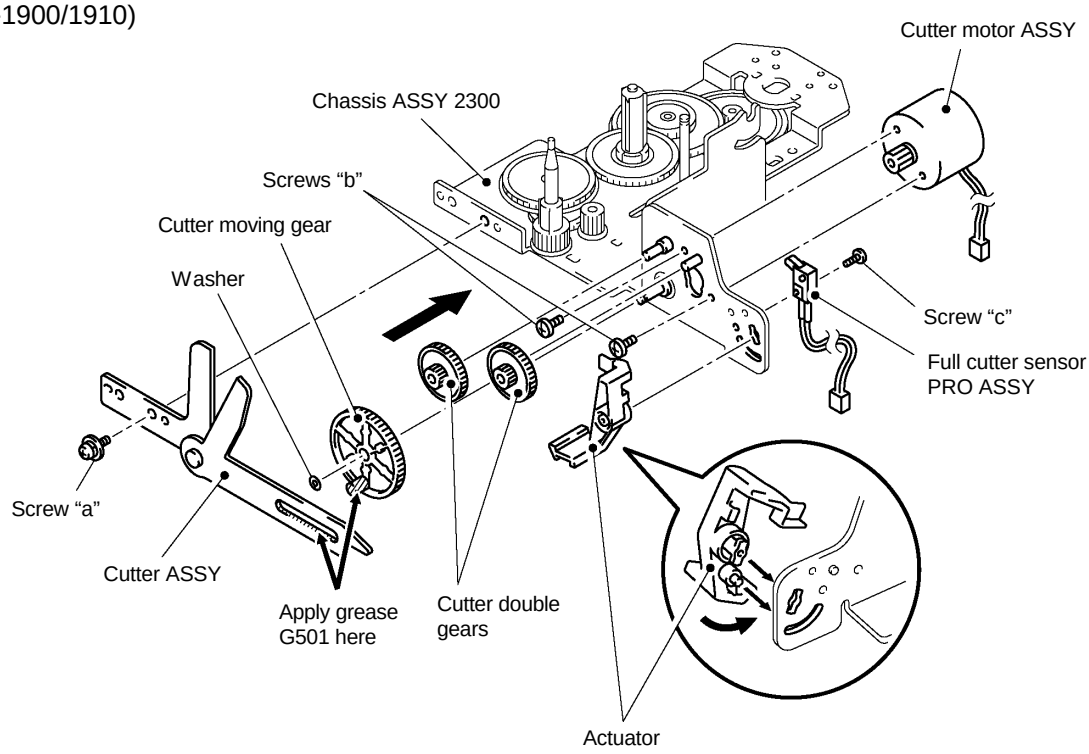


Fig. 3.2-13 Installing the Cutter ASSY (PT-1900/1910)

Installing the cutter sensor folder ASSY and cutter ASSY

WARNING: Take care not to touch the cutter of the cutter ASSY.

(1) Secure the cutter ASSY to the chassis ASSY 1850 with screws“b”.

Tightening torque: 588±98 mN•m (6±1 kgf•cm)

(2) Hook the spring as shown below.

(3) Make sure that the cutter ASSY is fittes on the side of the chassis ASSY 1850 without any gap.

(4) Catch the three hooks on the cutter sensor arm onto the cutter ASSY to assemble the cutter sensor arm.

(5) Secure the cutter sensor folder ASSY onto the chassis ASSY 1850 with screw “a”.

Tightening torque: 147±49 mN•m (1.5±0.5 kgf•cm)

(PT-1850)

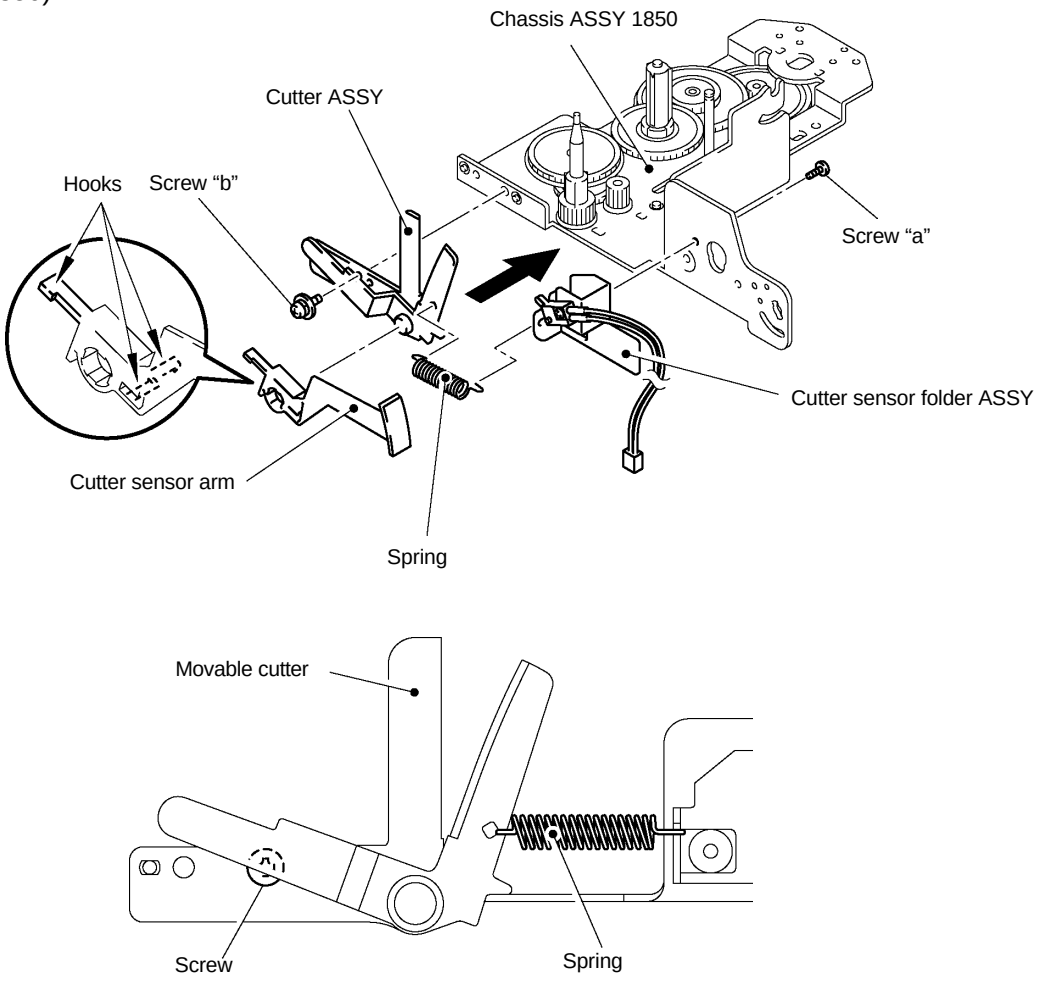


Fig. 3.2-14 Installing the Cutter ASSY (PT-1850)

Installing the DC motor ASSY

(1) Install the DC motor ASSY to the chassis ASSY with two screws, taking care not to damage the gear.

Tightening torque: 147±49 mN•m (1.5±0.5 kgf•cm)

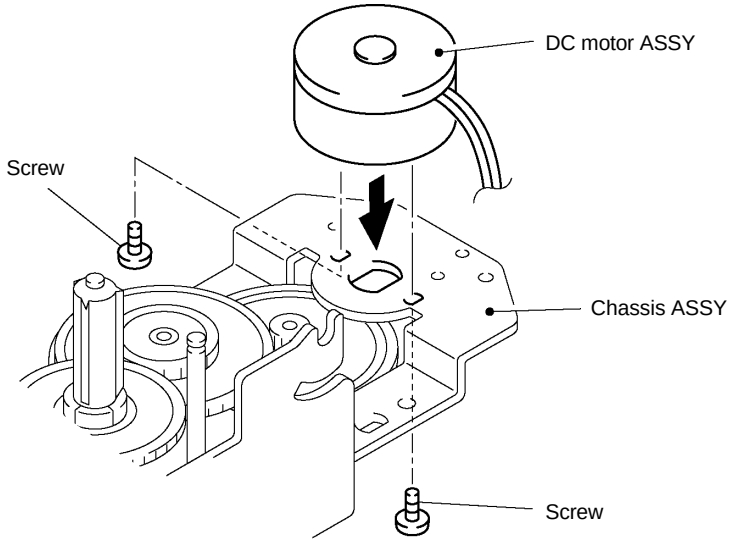


Fig. 3.2-15 Installing the DC Motor ASSY

Installing the head ASSY, roller holder ASSY, and roller holder release rod, roller release lever

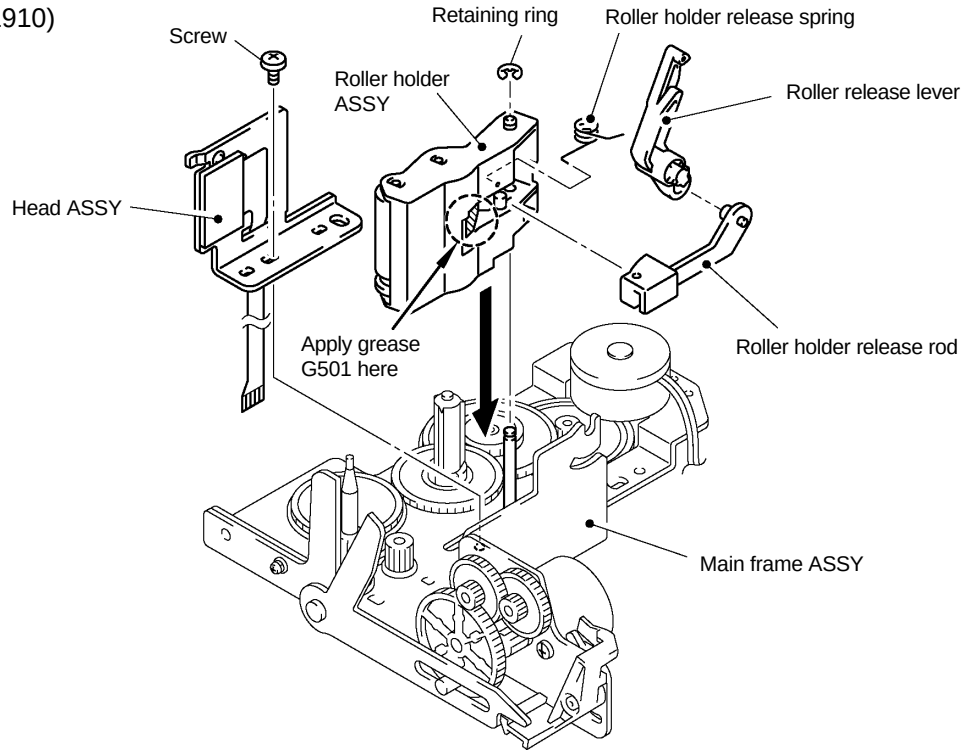
(1) Secure the head ASSY to the main frame ASSYwith screw.

Tightening torque: 490±98 mN•m (5±1 kgf•cm)

(2) Apply half of a rice-sized pinch of grease (Silicon grease G501) to the roller holder ASSY (slideway for the roller holder release rod).

(3) First fit the roller holder release spring and the assembly of the roller release lever and roller holder release rod onto the roller holder ASSY as shown below. Then install them to the main frame ASSY and set the retaining ring.

(PT-1900/1910)



(PT-1850)

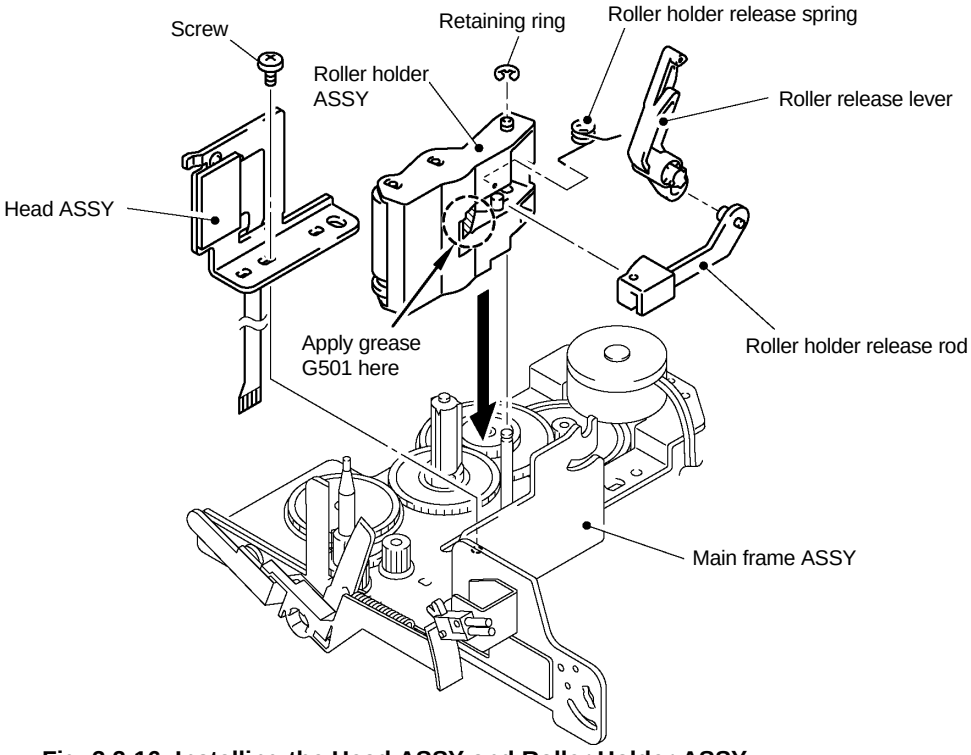


Fig. 3.2-16 Installing the Head ASSY and Roller Holder ASSY

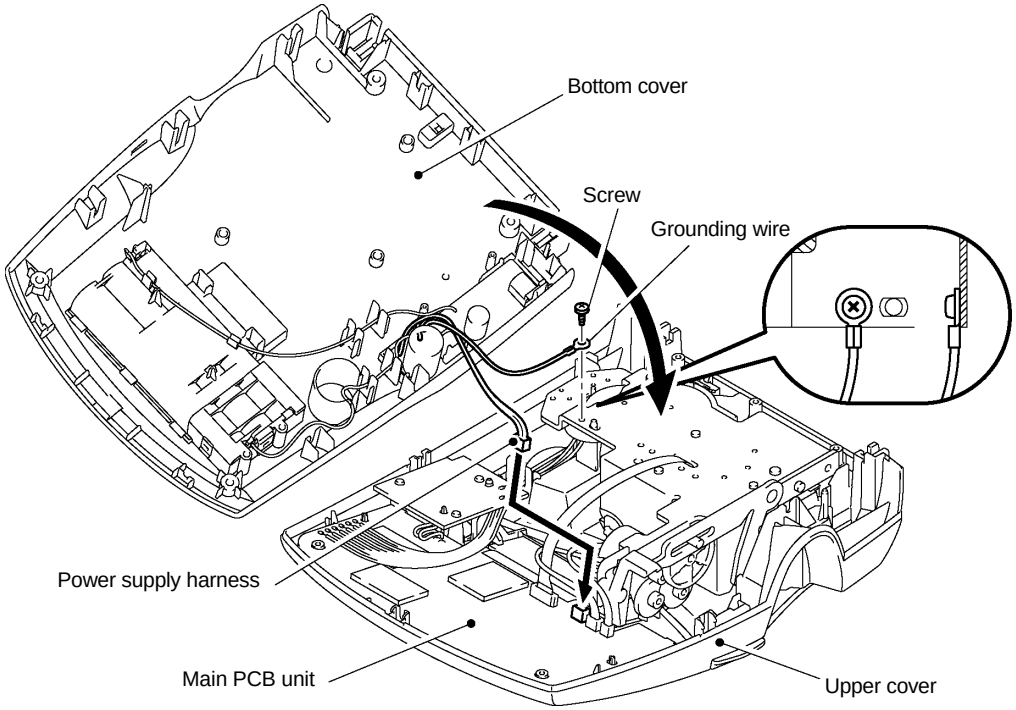
[8] Installing the Bottom Cover

(1) Connect the power supply harness to the main PCB unit.

(2) Align the front edge of the bottom cover with that of the upper cover, then push down the bottom cover until it snaps into place.

Note: Take care not to pinch the cords between those covers.

(PT-1900/1910)



(PT-1850)

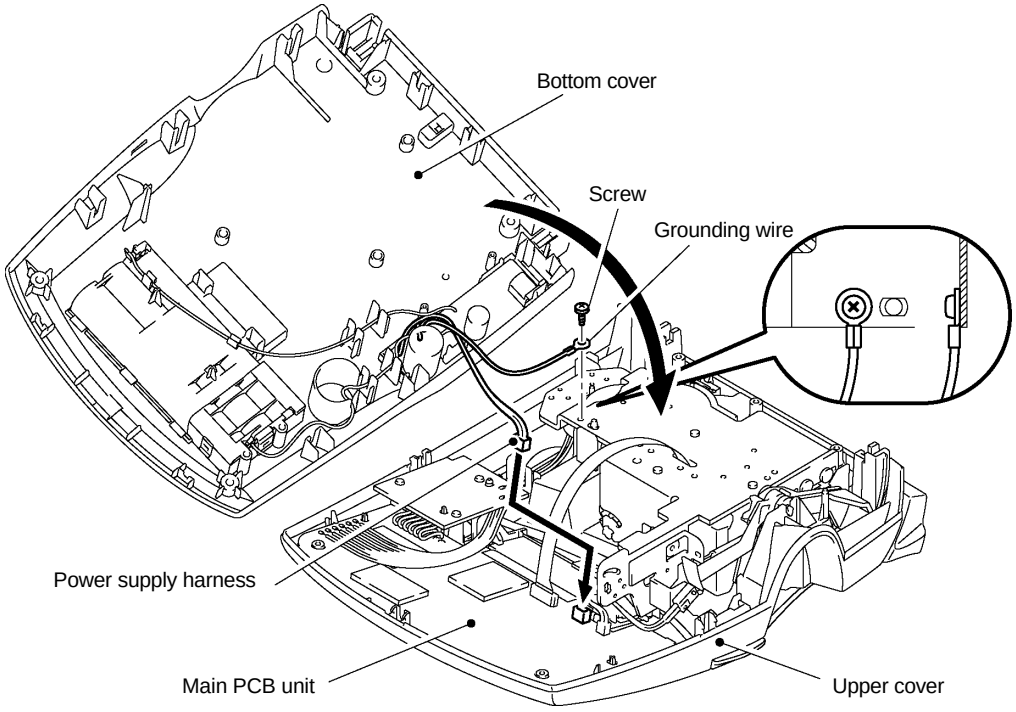
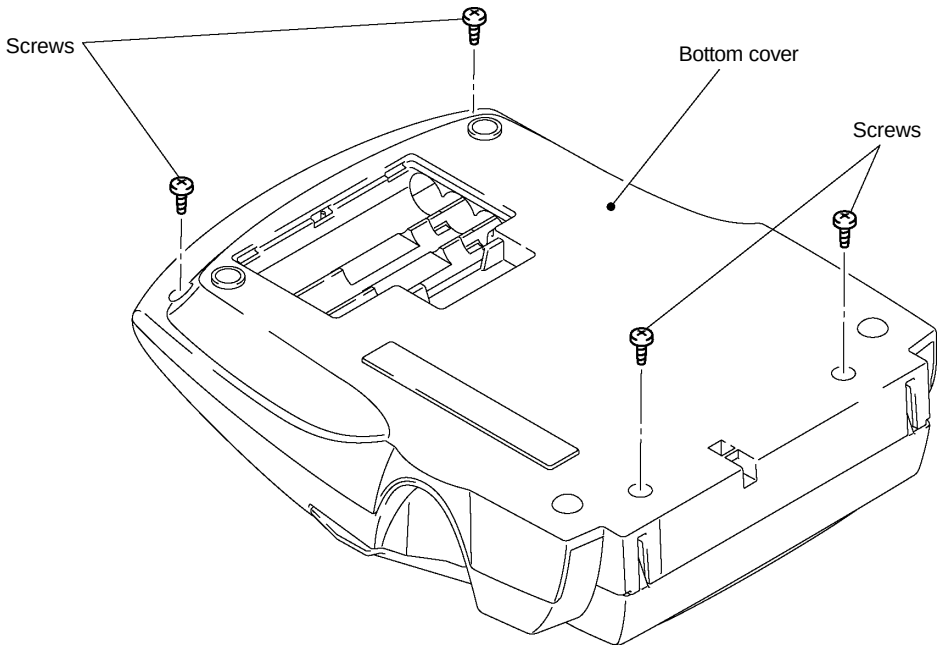


Fig. 3.2-17 Installing the Bottom Cover (1)

(4) Secure the bottom cover with four screws.
Tightening torque: 392±98 mN•m (4±1 kgf•cm)

(PT-1900/1910)



(PT-1850)

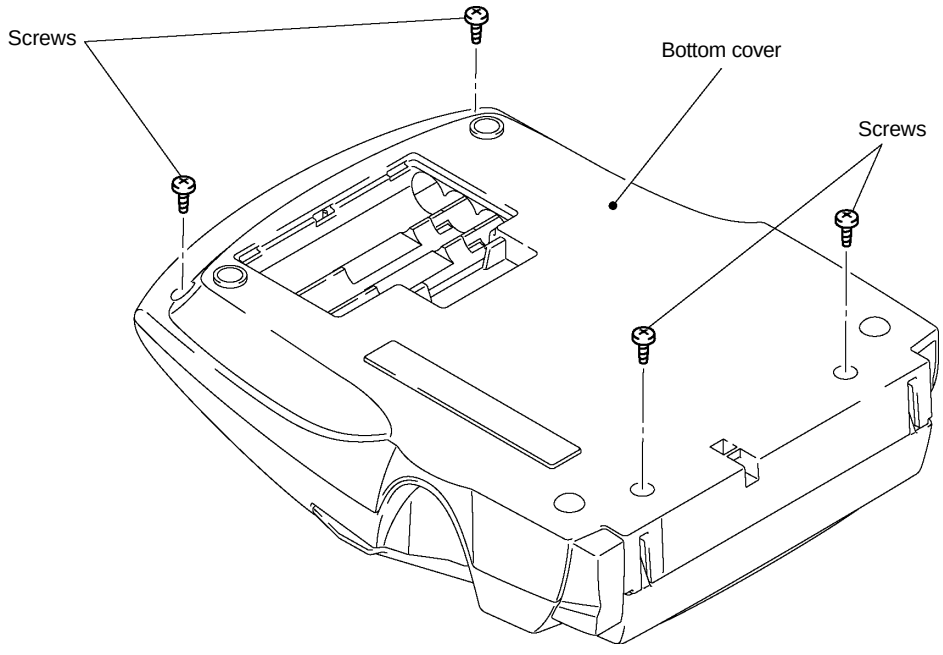


Fig. 3.2-18 Installing the Bottom Cover (2)

[9] Installing the Cassette Cover

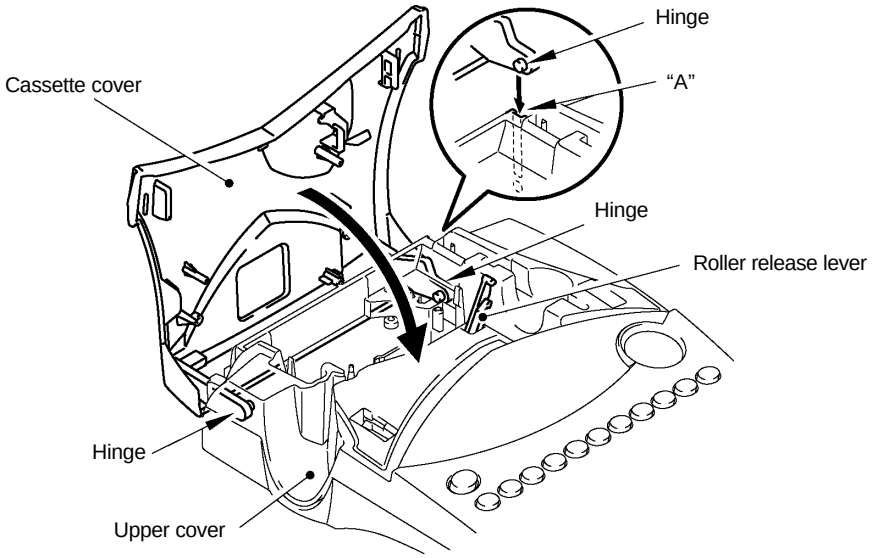
(1) Place the machine rightside up.

(2) Lift up the roller release lever.

(3) Hold the cassette cover at an angle shown below and slide down its hinges until they become fitted into the bottoms of the grooves provided in the bottom cover.

(4) Close the cassette cover.

(PT-1900/1910)



(PT-1850)

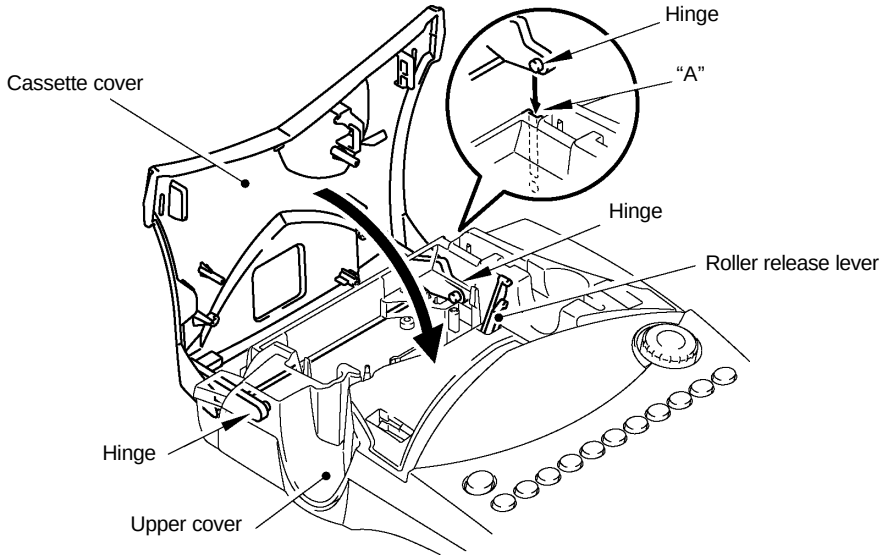


Fig. 3.2-19 Installing the Cassette Cover

[10] Installing the Tape Cassette and Tape Separator Stick

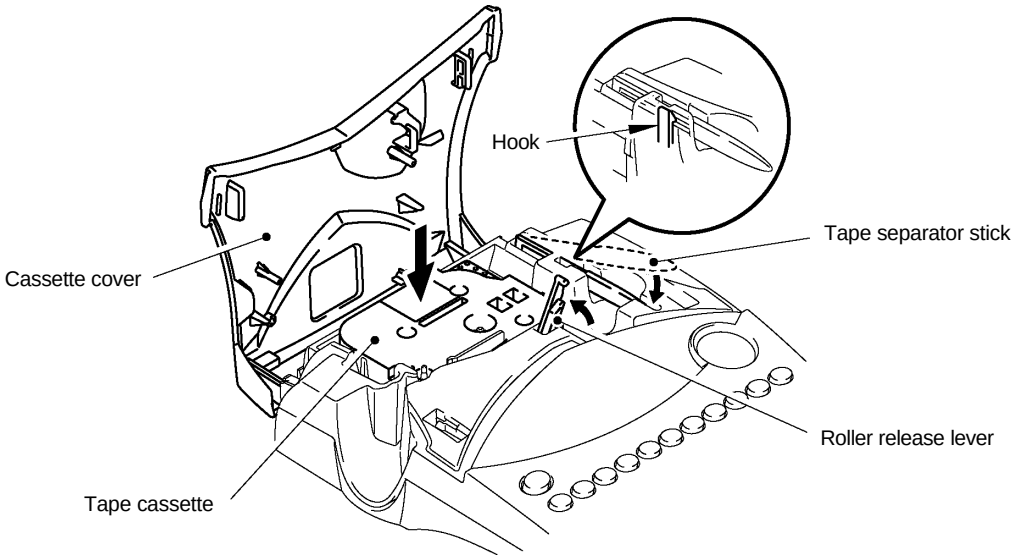
(1) Fully open the cassette cover. The roller release lever pops up.

(2) Insert the tape separator stick into the right side of the main body.

(3) Load a tape cassette.

(4) Close the cassette cover. (The roller holder ASSY will be pressed against the head.)

(PT-1900/1910)



(PT-1850)

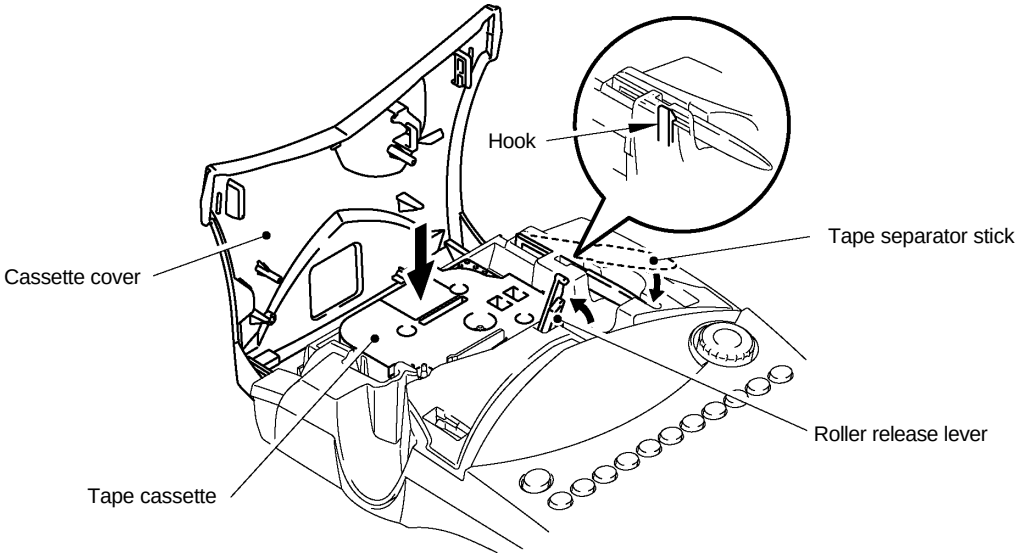


Fig. 3.2-20 Installing the Tape Cassette and Tape Separator Stick

[11] Loading Batteries and Installing the Battery Lid

(1) Load batteries.

(2) Fit the front end of the battery lid into the bottom cover and push down the lid.

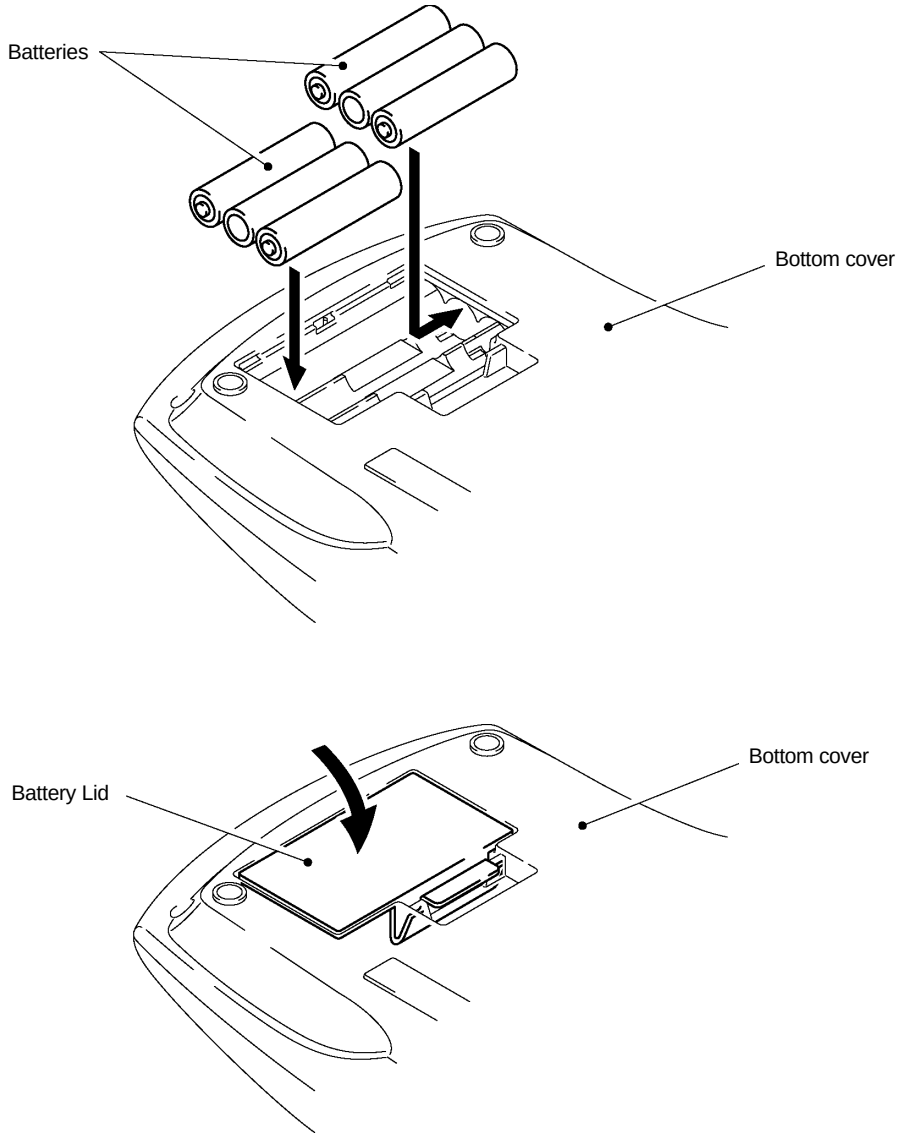


Fig. 3.2-21 Loading Batteries and Installing the Battery Lid

[12] Demonstration Print and Final Check

1. Starting the Inspection Mode

First, press the “ON/OFF” key while pressing the “Code” and “R” keys, and release the “ON/OFF” key, then “Code” and “R” keys so that the RAM is cleared, and the machine performs normally. Then, when the power is OFF, press the “ON/OFF” key while pressing the “Code” and “K” keys and release the “ON/OFF” key, then the “Code” and “K” keys so that the machine goes into the inspection mode. (When the machine goes into the inspection mode, the display as shown in Fig.2 appears.)

If the following errors occur, take an appropriate action to recover from them.

1.1 Checking the ROM, Temperature and Solder

Check the ROM, temperature and solder points.

If the ROM is not connected correctly, the “ROM PROBLEM” message is displayed, and the check is finished.

If the room temperature is out of the specified range (10°C to 40°C), the “TEMP NG” message is displayed, and the check is finished.

If the same kind of two or more solder points is ON, or the solder point is not correct, the message as shown in Fig.1 is displayed, and the check is finished.

Fig. 1

2. Inspection Mode

The mode is used after the machine is repaired or assembled.

The mode includes the following nine modes; Information Mode, Key Inspection Mode, Jog Dial Inspection Mode (for PT-1850 only), Cassette Sensor Inspection Mode, Cut Mode, Print 1 Mode, Print 2 Mode, Motor Mode, Voltage Check Mode. For the details on the Motor Mode and Voltage Check Mode, they are omitted in this section because they are not related to the inspection.

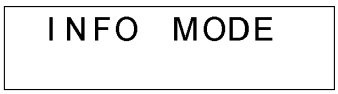


Fig. 2

2.1 Information Mode

The display as shown in Fig.2 is indicated when the machine goes into the inspection mode, or when the “1” key is pressed.

By pressing the “↵” key in the Information mode, the country and head rank are displayed, and the input power supply is checked.

2.1.1 Country Display

The country display shows the country specification as designated by the solder points (1 to 5).

ROM Specification	Country Specification	LCD Display	Solder Points				
			1	2	3	4	5
	U.S.A./CAN/AUS	US	X	X	X	X	X
	U.K.	UK	○	X	X	X	X
	GERMAN	GE	X	○	X	X	X
	FRENCH	FR	X	X	○	X	X
	BELGIUM	BE	X	X	X	○	X

2.1.2 Head Rank Display

The head rank shows the rank as designated by the solder points (A to C).
The "B" rank is defined as the setting for no soldering.

Rank	LCD Display	Solder Points		
		A	B	C
B	0	X	X	X
	B	X	○	X
A	A	○	X	X
C	C	X	X	○

2.1.3 Power Supply Voltage Check Display (Inspection Voltage 9.0±0.1V)

The "○" mark is displayed if the voltage is in the specified range of the input voltage. If it is out of the specified range, the "X" mark is displayed.

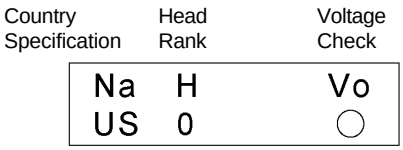
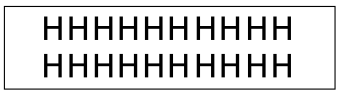


Fig. 3 Display Example of the Information Mode

2.1.4 LCD Check Display

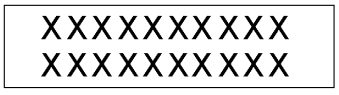
The LCD check 1 as shown in Fig. 4 is displayed when pressing the "↵" or "0" key.



All guidance off

Fig. 4

The LCD check 2 as shown in Fig. 5 is displayed when pressing the "↵" key.



All guidance on

Fig. 5

The LCD check 2 as shown in Fig. 6 is displayed by pressing the " ↵ " key.
(All guidance is ON.)

Fig. 6

Shift to "2.2. Cassette Sensor Inspection Mode" by pressing the " ↵ " key. (Fig.7 display)

2.2 Cassette Sensor Inspection Mode

The display as shown in Fig.7 is indicated by pressing the " ↵ " or "2" key in the display of Fig.6.

Fig. 7

Shift to the Key inspection mode by pressing the " ↵ " key. (Fig.8 display)

Fig. 8

The status of the five sensor switches is displayed. ON: 1, OFF: 0

Shift to the Key inspection mode by pressing the " ↵ " key. (Fig.9 display)

2.3 Key Inspection Mode

2.3.1 The display as shown in Fig.9 is indicated by pressing the " ↵ " or "3" key in the display of Fig.8.

Fig. 9

Shift to the Key inspection mode by pressing the " ↵ " key. (Fig.10 display)

Press the “Print” key, (1st row) L → R, (2nd row) R → L, (3rd row) L → R, (4th row) R → L, (5th row) L → R in this order.

The key to be pressed is displayed on the LCD (Fig.10 display), and the key to be pressed next is displayed if pressing the key correctly. If not, the key to be pressed next and “ X ” mark are displayed. (Fig.11 display)

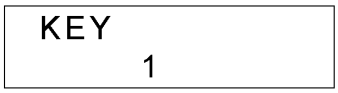


Fig. 10

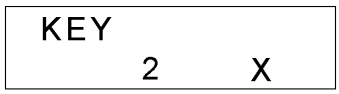


Fig. 11

When completing to check all keys, the display as shown in Fig.12 is indicated, and the “ ○ ” mark is printed. (For U.S.A./CANADA/AUSTRALIA model only)

For the European models, after implementing the operation described in 2.3.2, the Fig.12 display is indicated, and the “ ○ ” mark is printed.

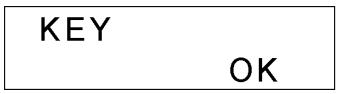


Fig. 12

2.3.2 Jog Dial Inspection Mode

To enter the jog dial inspection mode, do not print the“ ○ ” mark when “OK” is displayed after all keys are checked, or press the “Jog” key.
When rotating the jog dial, the arrow (← , →) is shifted following the direction of the rotation. (Fig.13)
First, move the cursor to the left hand side by three points and press the “Set” key.
If the left mode performs correctly, it is shifted to the right mode. Check the right mode as well.
If the right mode also performs correctly, “OK” is displayed and printed. Then, cut the tape and shift to “2.4. Cut Mode”. (Fig.14 display)

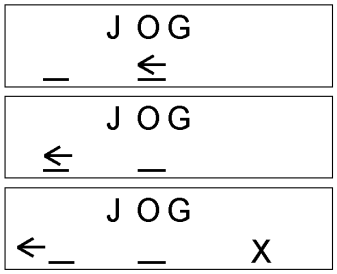


Fig. 13

2.4 Cut Mode

The display as shown in Fig.14 is indicated by pressing the " ↵ " key or "4" key in the display of Fig.13.

Fig. 14

The display as shown in Fig.15 is indicated by pressing the " ↵ " key, and the tape is fed. After the tape is fed, cut the tape automatically (or manually). "CUT 1" is displayed at that time.

Fig. 15

After cutting the tape, the display as shown in Fig.16 is indicated, and the tape is fed. After the tape is fed, cut the tape automatically (or manually).

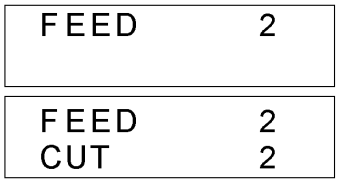


Fig. 16

After cutting the tape, the display as shown in Fig.17 is indicated, and the tape is fed. After the tape is fed, cut the tape automatically (or manually).

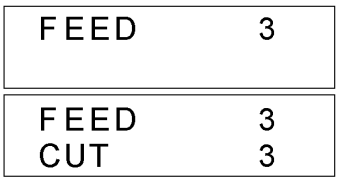


Fig. 17

After cutting the tape, shift to "2.5. Print 1 Mode". (Fig.18 display)

2.5 Print 1 Mode

The display as shown in Fig.18 is indicated by cutting the tape or pressing the “5” key in the display of Fig.17.

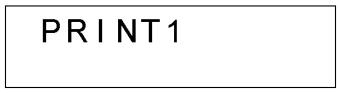


Fig. 18

Printing is started by pressing the “ ↵ ” key. (Fig.18 display)
After printing, all memory is initialized, and the power is turned OFF.

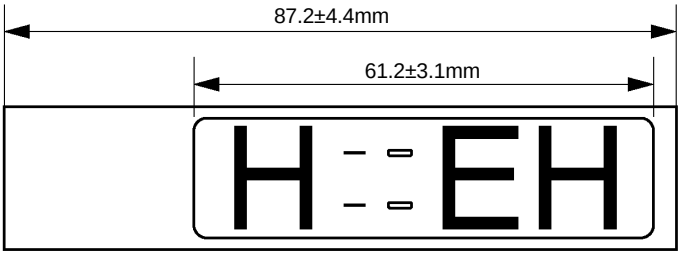


Fig. 19 Print Sample

Check the printed fonts and tape length of the print sample after the tape is cut.
If the cut tape is out of the specified range, insert the tip of a flat screwdriver through the hole and rotate the trimmer (VR1) on the DC motor PCB to adjust the tape feeding length.
Rotating the VR1 clockwise will shorten the tape feeding length; rotating it counterclockwise will lengthen it.

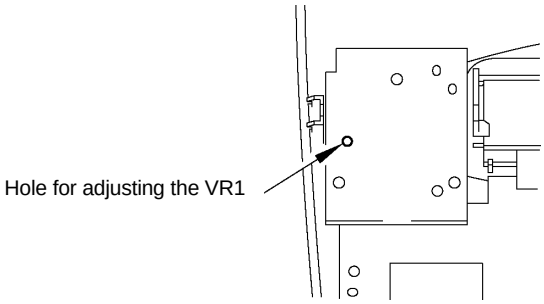


Fig. 20

CHAPTER IV TROUBLESHOOTING AND ERROR MESSAGE

4.1 TROUBLESHOOTING

This section gives the service personnel some of the troubleshooting procedures to be followed if an error or malfunction occurs with this machine. It is impossible to anticipate all of the possible troubles which may occur in future and determine the troubleshooting procedures, so this chapter covers some sample troubles. However, those samples will help service personnel pinpoint and repair other defective elements if he/she analyzes and examines them well.

4.1.1 Precautions

Be sure to observe the following precautions to prevent the secondary problems from happening during troubleshooting:

(1) Get a good idea of what the trouble is. Whenever more than one trouble source is found, plan the most reasonable repairing procedure after reviewing the relationship between them.

(2) When supplying power to this machine having problems from either a set of batteries or the AC adapter, make sure that its output voltage level is 11 to 13V under no load.

(3) When supplying power from a stabilized power unit, use the power unit with approx. 3A capacity and choose the output level of 11 to 13V. When connecting it to this machine, be careful with the polarity.

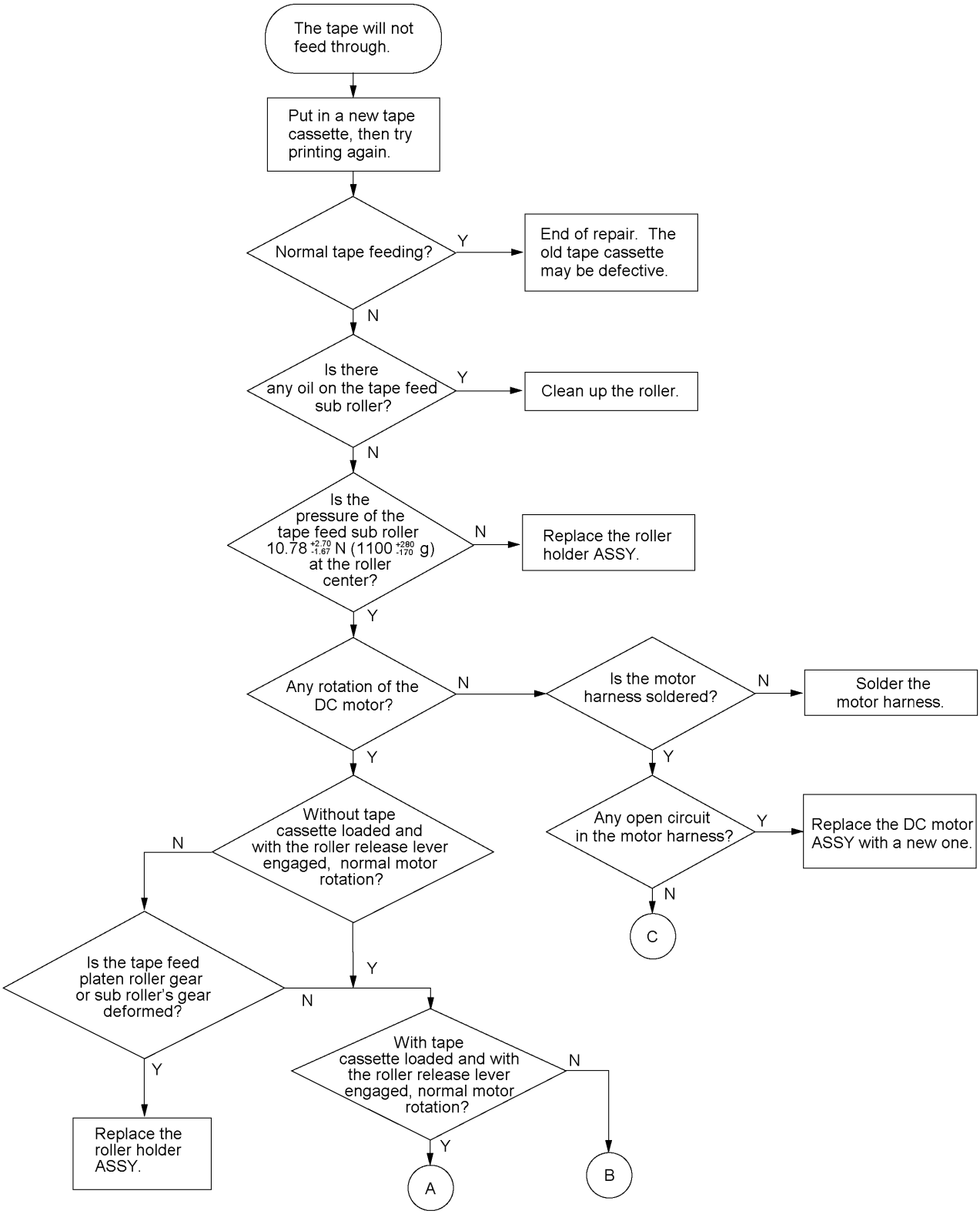
(4) When using a circuit tester for testing the conductivity, remove all of the batteries and the AC adapter from this machine.

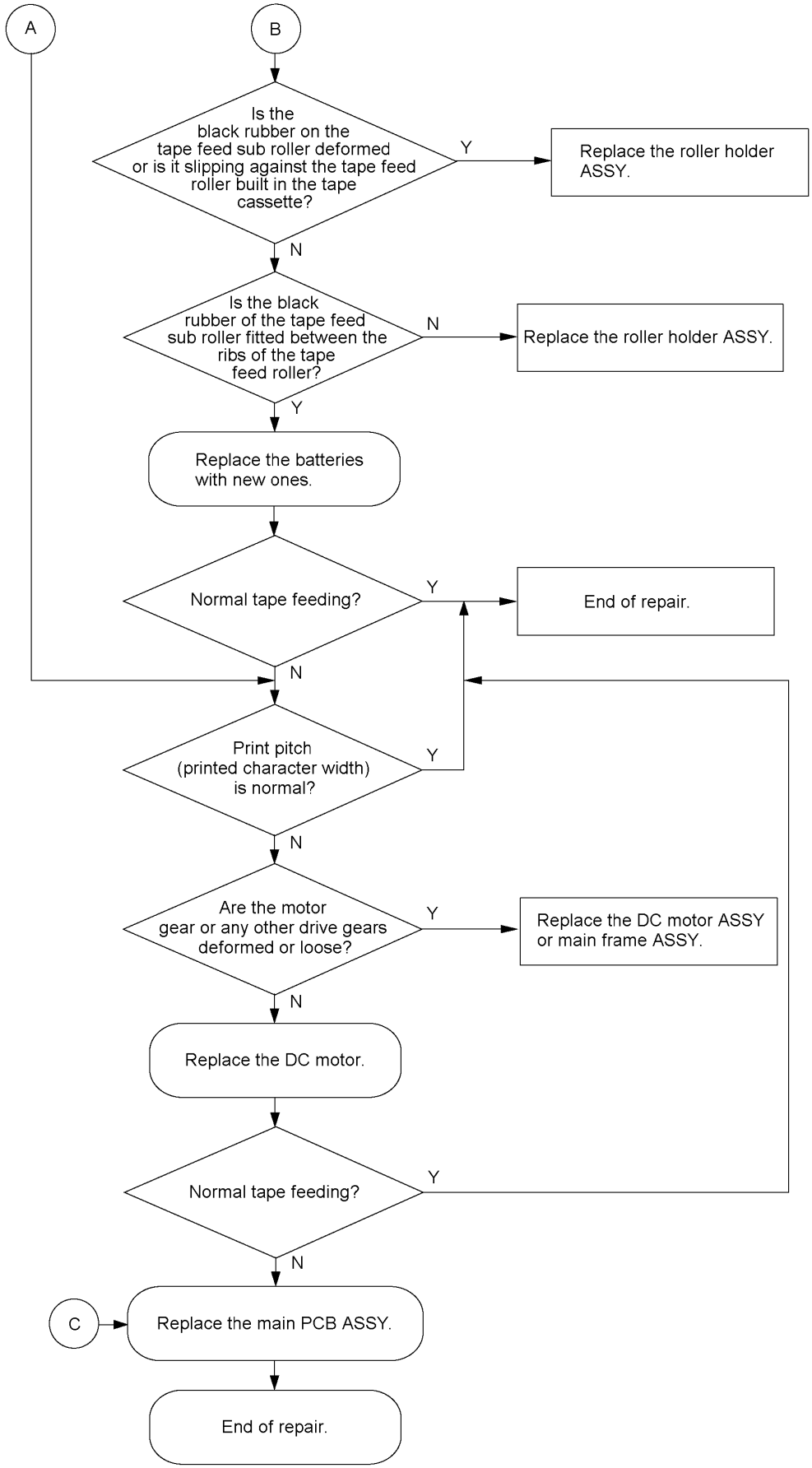
4.1.2 After Repairing

After repairing the defective section, be sure to check again (CHAPTER III , [12] Demonstration Print and Final Check) to see if the repaired section works correctly. Also make a note of the troubleshooting procedure so that it will be handy should problems occur in the future.

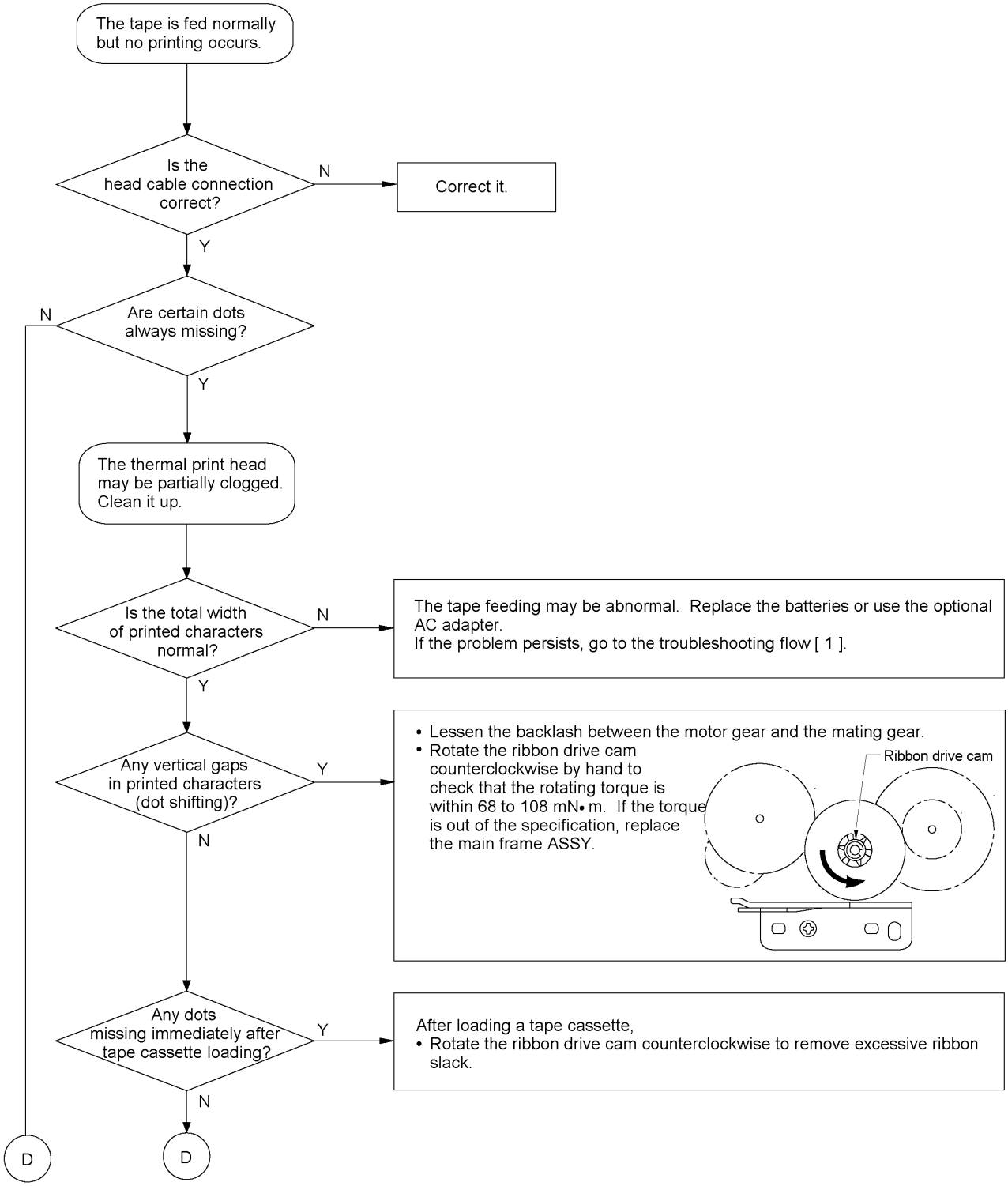
4.1.3 Troubleshooting Flows

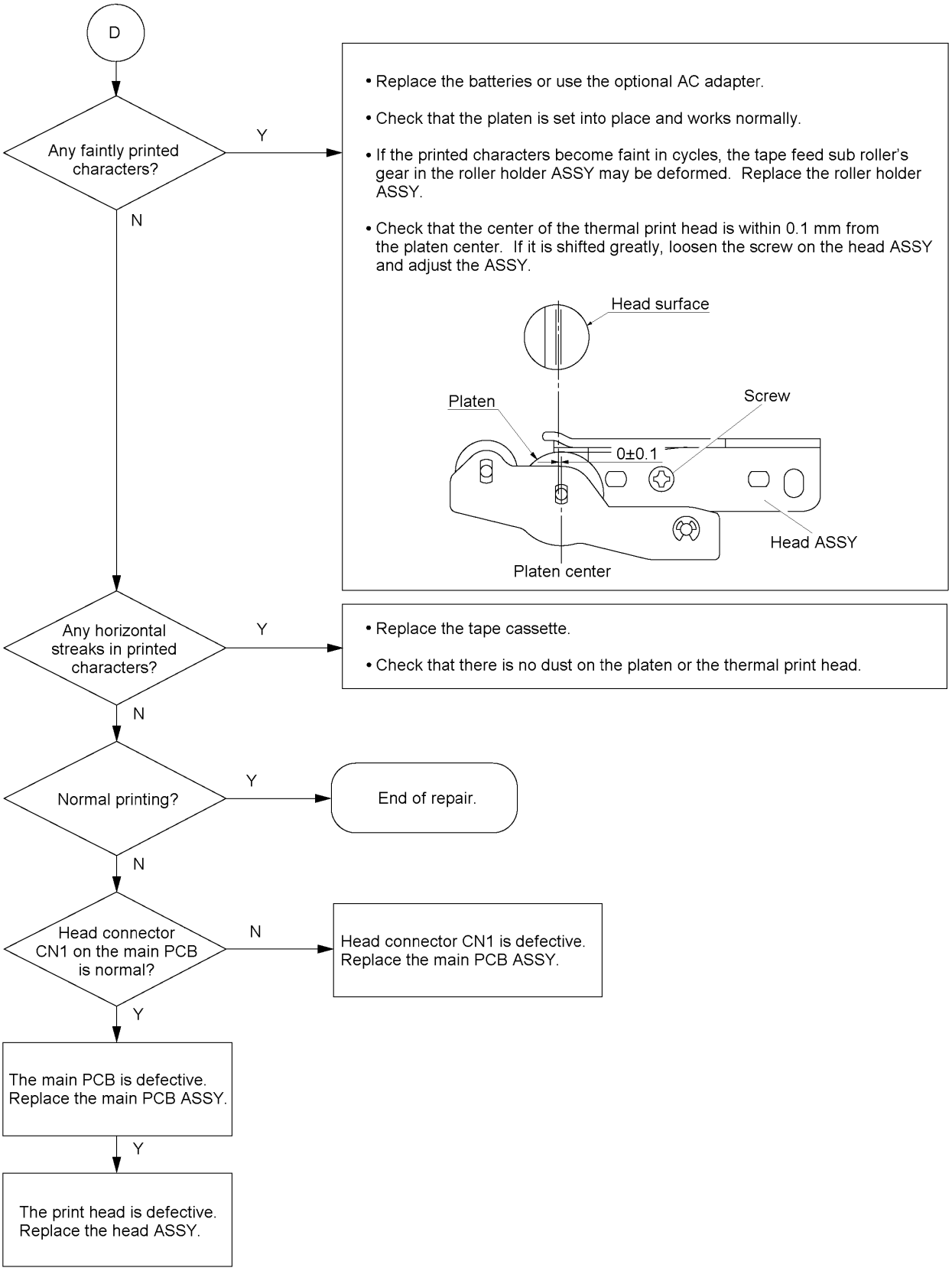
[1] Tape feeding failure



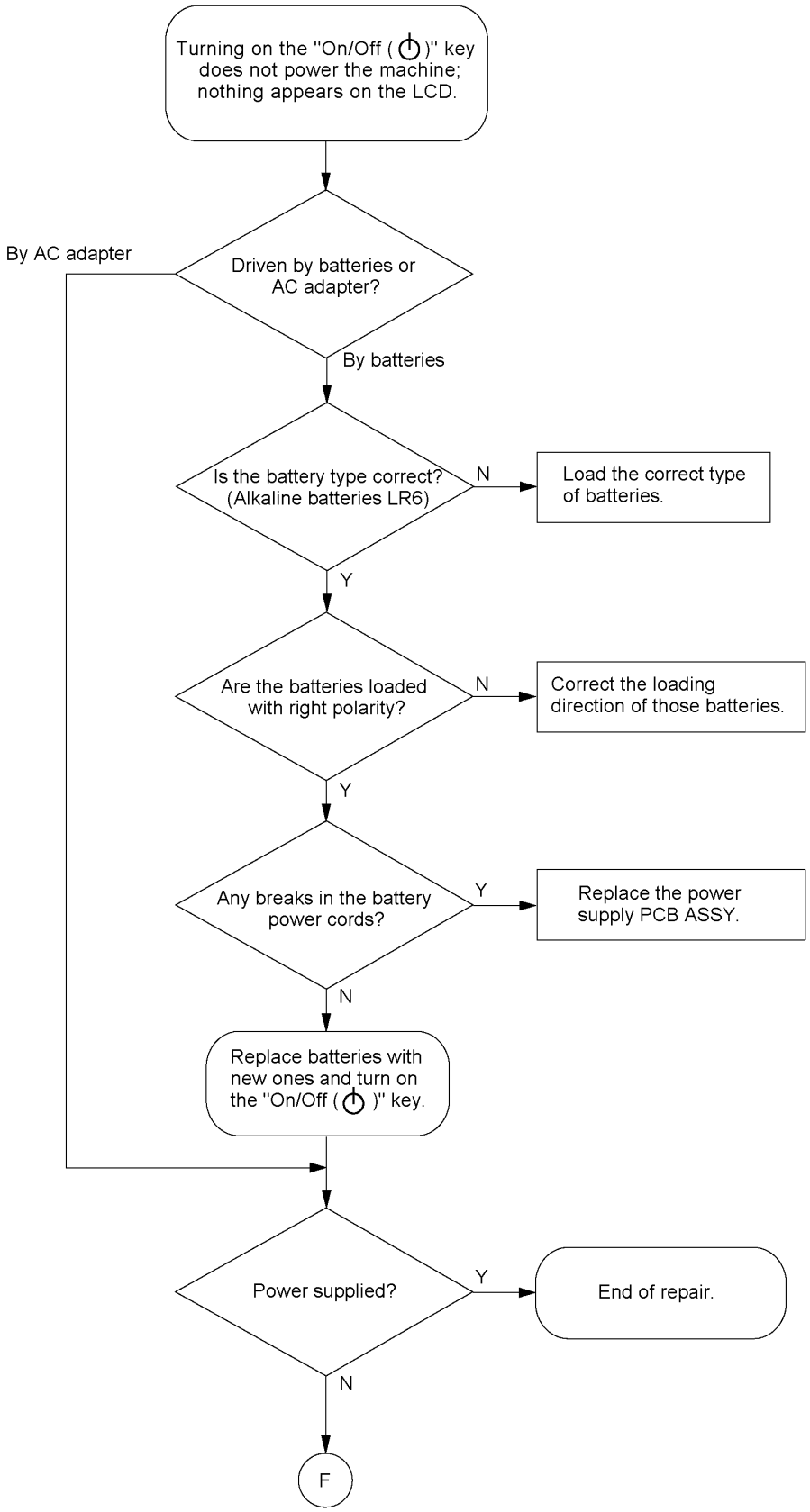

A
B
Is the black rubber on the tape feed sub roller deformed or is it slipping against the tape feed roller built in the tape cassette?
Y
Replace the roller holder ASSY.
N
Is the black rubber of the tape feed sub roller fitted between the ribs of the tape feed roller?
N
Replace the roller holder ASSY.
Y
Replace the batteries with new ones.
Normal tape feeding?
Y
End of repair.
N
Print pitch (printed character width) is normal?
Y
N
Are the motor gear or any other drive gears deformed or loose?
Y
Replace the DC motor ASSY or main frame ASSY.
N
Replace the DC motor.
Normal tape feeding?
Y
N
C
Replace the main PCB ASSY.
End of repair.

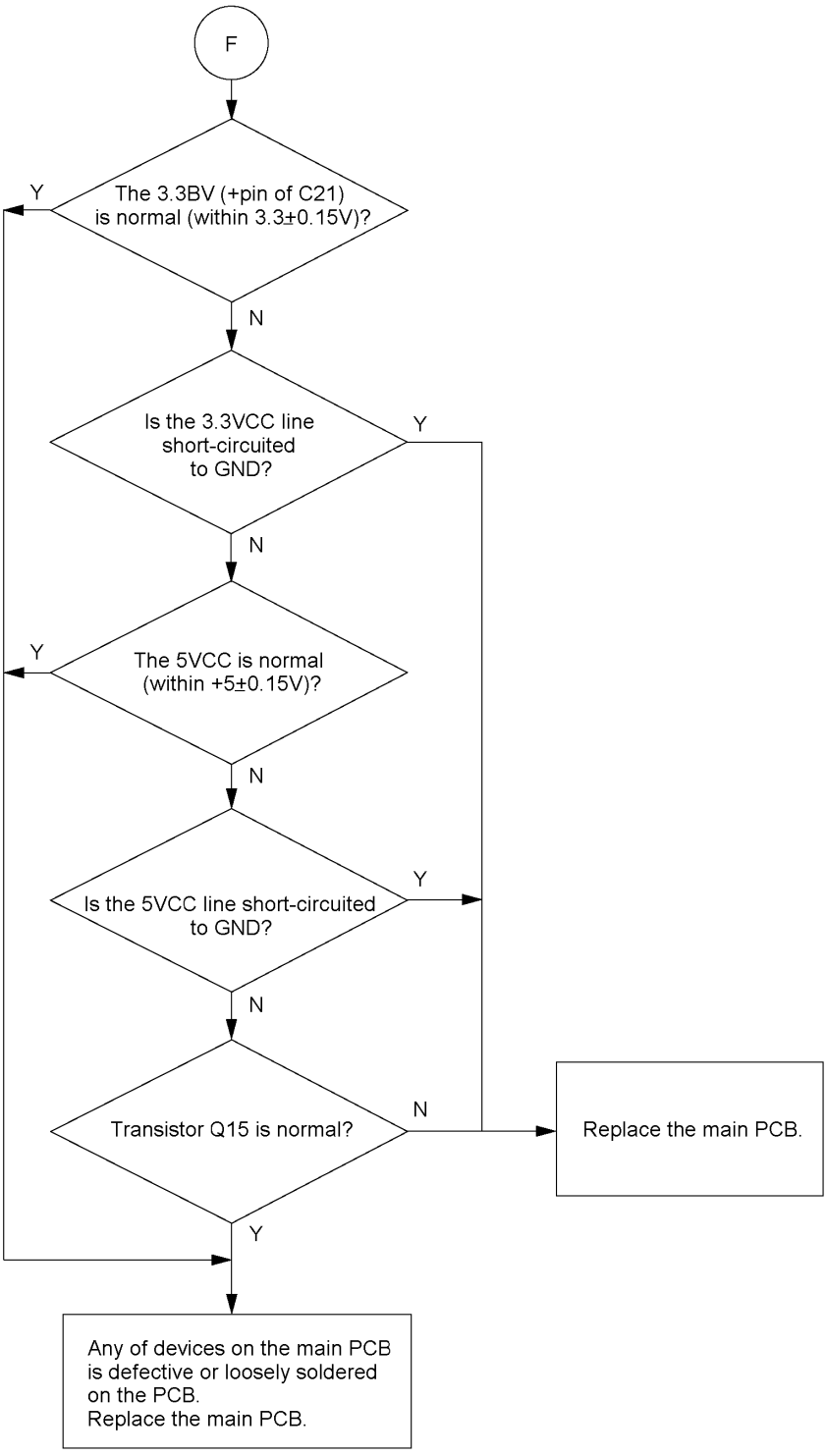
[2] Printing failure



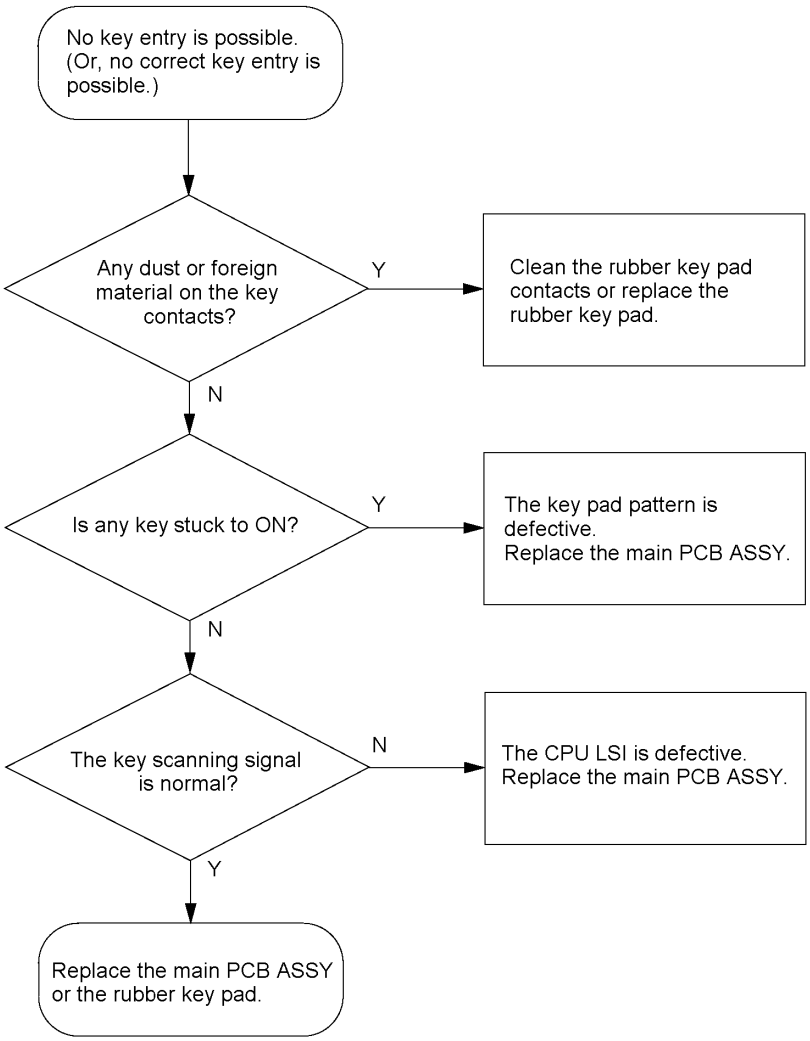

D
Any faintly printed characters?
Y
N
• Replace the batteries or use the optional AC adapter.
• Check that the platen is set into place and works normally.
• If the printed characters become faint in cycles, the tape feed sub roller's gear in the roller holder ASSY may be deformed. Replace the roller holder ASSY.
• Check that the center of the thermal print head is within 0.1 mm from the platen center. If it is shifted greatly, loosen the screw on the head ASSY and adjust the ASSY.
Head surface
Platen
Screw
0±0.1
Head ASSY
Platen center
Any horizontal streaks in printed characters?
Y
N
• Replace the tape cassette.
• Check that there is no dust on the platen or the thermal print head.
Normal printing?
Y
N
End of repair.
Head connector CN1 on the main PCB is normal?
N
Y
Head connector CN1 is defective. Replace the main PCB ASSY.
The main PCB is defective. Replace the main PCB ASSY.
Y
The print head is defective. Replace the head ASSY.

[3] Powering failure (Nothing appears on the LCD.)

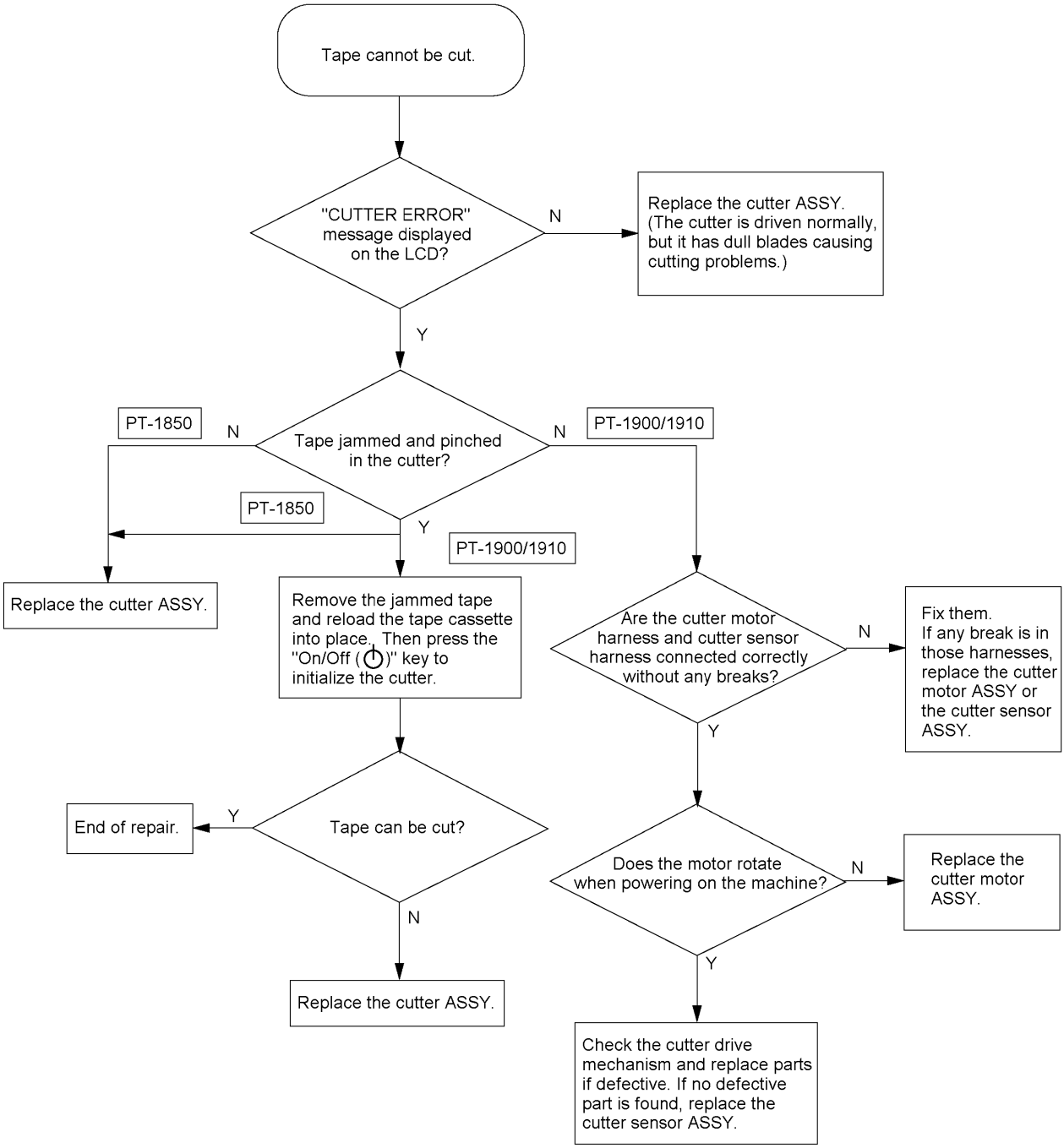



F
The 3.3BV (+pin of C21) is normal (within 3.3±0.15V)?
Y
N
Is the 3.3VCC line short-circuited to GND?
Y
N
The 5VCC is normal (within +5±0.15V)?
Y
N
Is the 5VCC line short-circuited to GND?
Y
N
Transistor Q15 is normal?
N
Replace the main PCB.
Y
Any of devices on the main PCB is defective or loosely soldered on the PCB.
Replace the main PCB.

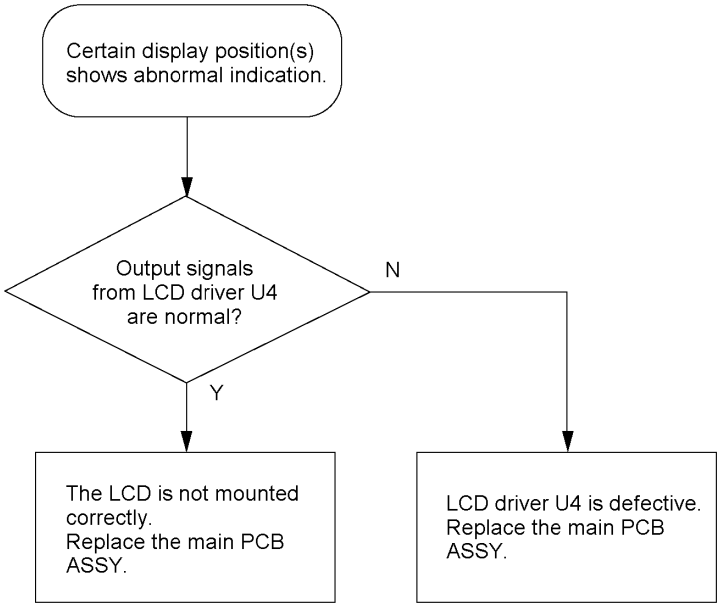
[4] No key entry possible



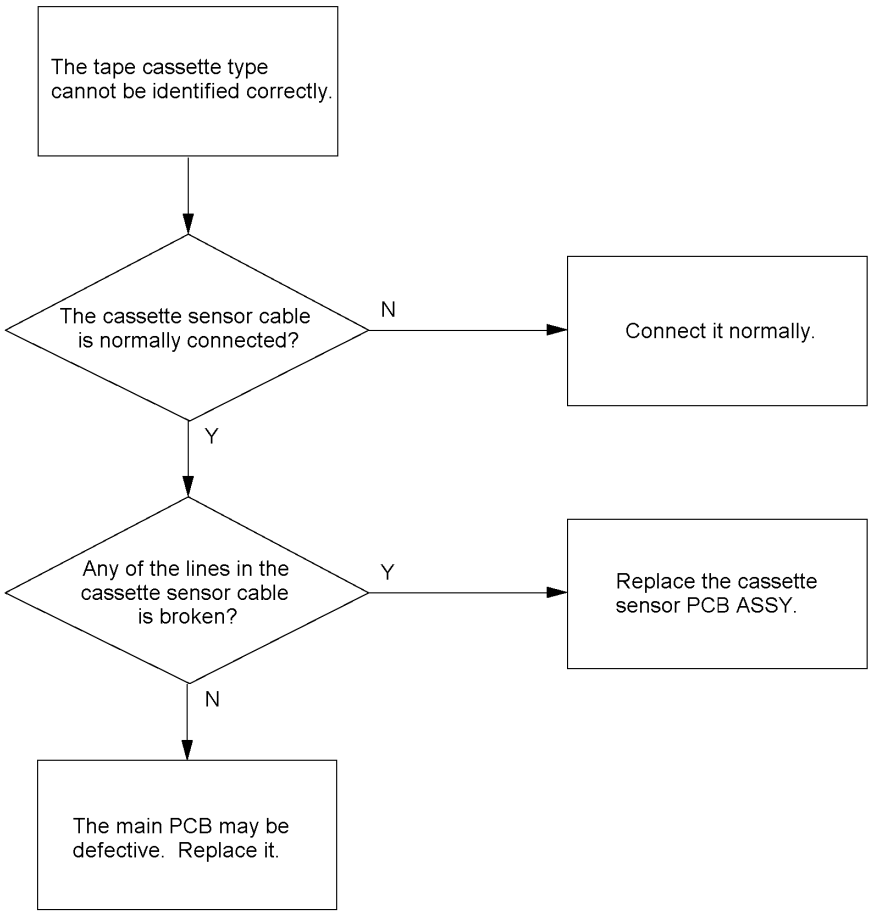
[5] Tape cutting failure



[6] Abnormal LCD indication



[7] Tape cassette type not identified



4.2 ERROR MESSAGE

4.2.1 Error Message List

The error message list is shown as follows.

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
When the power is ON (CODE+K): Check system finds any problem in the ROM. (checksum for all ROM data)	ROM _____ PROBLEM! __	PROBLEME ___ ROM! _____	ROM - _____ FEHLER! ____	ROM _____ PROBLEM! __	PROBLÈME _ ROM! _____
When the power is ON (CODE+K): The same kind of two or more solder points is ON, or the solder point is not correct.	SOLDER _ X _ _____	SOLDER _ X __ _____	SOLDER _ X __ _____	SOLDER _ X __ _____	SOLDER _ X __ _____
When the power is ON: The wrong adapter which supplies higher voltage is used. <Supplement> When the message is disappeared, the system is turned OFF after approx. two seconds.	WRONG____ ADAPTER! __	CHANGER ____ ADAPTATEUR	FALSCHER ___ ADAPTER! ___	CHANGE ___ ADAPTOR! __	CHANGER ___ ADAPTATEUR
While printing: The batteries are weak. (The message is displayed after printing.) <Supplement> After the message is disappeared, the machine returns to the text input mode.	BATTERIES_ WEAK! _____	PILES _____ USEES! _____	BATTERIEN __ SCHWACH! __	BATTERIES_ WEAK!_____	PILES _____ USÉES! _____
While feeding the tape: The batteries are weak. (The message is displayed after feeding.) <Supplement> After the message is disappeared, the machine returns to the text input mode.					

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
While printing: The batteries are empty. (The message is displayed while printing.) <Supplement> After the message is disappeared, the machine returns to the text input mode.	REPLACE ___ BATTERIES!	REMPLACER __ PILES! _____	BATTERIEN ___ WECHSELN! __	REPLACE ___ BATTERIES!	REMPLACER _ PILES! _____
While feeding the tape: The batteries are empty. (The message is displayed while feeding.) <Supplement> After the message is disappeared, the machine returns to the text input mode.					
When the power is ON: The system is turned OFF while printing. <Supplement> After the message is disappeared, the opening message is displayed.					
Text input mode: When pressing the normal “Character” key The text buffer memory is full.	BUFFER ___ FULL! _____	MEMOIRE ____ PLEINE! _____	SPEICHER ___ VOLL! _____	BUFFER ___ FULL! _____	MÉMOIRE ____ PLEINE! _____
Text input mode: When pressing the dead “Character” key The text buffer memory is full.					
Text input mode: When pressing the “Space” key The text buffer memory is full.					
Text input mode: When pressing the “Return” key The text buffer memory is full.					
Text input mode: When pressing the “Tab Set” key The text buffer memory is full.					
Text input mode: When pressing the “Accent” key The text buffer memory is full.					
Text input mode: When pressing the “Symbol” key The text buffer memory is full.					

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Symbol input mode: When pressing the “Set” key The text buffer memory is full. <Supplement> After the message is disappeared, the machine returns to the text input mode.	BUFFER ___ FULL! _____	MEMOIRE ____ PLEINE! _____	SPEICHER ___ VOLL! _____	BUFFER ___ FULL! _____	MÉMOIRE ____ PLEINE! _____
Symbol input mode: When pressing the “Code+Set” keys The text buffer memory is full. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Accent input mode: When pressing the “Set” key The text buffer memory is full. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Accent input mode: When pressing the “Code+Set” keys The text buffer memory is full. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Function select mode: When pressing the “Set” key A “Symbol” or “Accent” is selected when the text buffer memory is full. <Supplement> After the message is disappeared, the machine returns to the text input mode.				########## ##########	########## ##########
Currency data input mode: When pressing the “Set” key When the text buffer memory is full. <Supplement> After the message is disappeared, the machine returns to the text input mode.					

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Text input mode: When pressing the "Return" key More than 5 lines are entered.	5 __ LINE ___ LIMIT! _____	TROP__ DE ___ LIGNES! _____	MAX. __ 5 ____ ZEILEN! _____	########## ##########	########## ##########
Dead mode: When pressing the "Return" key More than 5 lines are entered. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Currency data input mode: When pressing the "Set" key More than 5 lines are entered. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Text input mode: When pressing the "Return" key More than 4 lines are entered.	########## ##########	########## ##########	########## ##########	4 __LINE ____ LIMIT! _____	TROP__ DE ___ LIGNES! _____
Text input mode: When pressing the "Print" key There is no data in the text buffer memory.	BUFFER _____ EMPTY! _____	MEMOIRE ___ VIDE! _____	SPEICHER ___ LEER! _____	BUFFER ____ EMPTY! ____	MÉMOIRE ___ VIDE! _____
Text input mode: When pressing the "Length" key There is no data in the text buffer memory. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed length print setting mode.					
Text input mode: When pressing the "Repeat" key There is no data in the text buffer memory.					
Text input mode: When pressing the "Number" key There is no data in the text buffer memory.					

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Function select mode: When pressing the “Set” key The “Length” setting is selected when there is no data in the text buffer memory. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed length print setting mode.	BUFFER —— EMPTY! ——	MEMOIRE — VIDE! ———	SPEICHER — LEER! ———	########## ##########	########## ##########
Function select mode: When pressing the “Set” key The “Repeat” or “Number” setting is selected while there is no data in the text buffer memory. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Text input mode: When pressing the “Print” or “Feed (& Cut)” keys The tape cassette is not installed.	TAPE —— EMPTY! —	PAS _ DE — RUBAN! ——	BAND ——— LEER! ———	NO——— TAPE! ——	PAS _ DE — RUBAN! ——
Text input mode: When pressing the “Length” key The tape cassette is not installed. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed length print setting mode.					
Print copies select mode: When pressing the “Print” or “Set” keys The tape cassette is not installed.					
Final number setting mode: When pressing the “Print” or “Set” keys The tape cassette is not installed.					

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Function select mode: When pressing the “Set” key The “Length” setting is selected when no tape cassette is installed. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed longth print setting mode.	TAPE EMPTY!	PAS DE RUBAN!	BAND LEER!	########## ##########	########## ##########
While printing: The tape is cut automatically when no tape cassette is installed. <Supplement> After the message is disappeared, the machine returns to the text input mode.	########## ##########	########## ##########	########## ##########	NO TAPE!	PAS DE RUBAN!
While feeding the tape: The tape is cut automatically when no tape cassette is installed. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Text input mode: When pressing the “Print” key The text length is longer than the label length to be set. (The input characters are too many or too big.)	TEXT_TOO LONG!	TROP LONG!	TEXT_ZU LANG!	TEXT TOO_LONG!	TROP LONG!
Print copies select mode: When pressing the “Print” or “Set” keys The text length is longer than the label length to be set. (The input characters are too many or too big.) <Supplement> After the message is disappeared, the machine returns to the text input mode.					

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Final number setting mode: When pressing the "Print" or "Set" keys The text length is longer than the label length to be set. (The input characters are too many or too big.) <Supplement> After the message is disappeared, the machine returns to the text input mode.	TEXT—TOO — LONG! ———	TROP——— LONG! ———	TEXT— ZU—— LANG! ———	TEXT——— TOO–LONG! –	TROP——— LONG!———
Text input mode: When pressing the "Print" key When two or more lines are input, the text cannot be printed because the installed tape is not enough wide.	LINE _____ LIMIT! _____	TROP__ DE __ LIGNES! ____	ZUVIELE _____ ZEILEN! _____	LINE _____ LIMIT!_____	TROP_ DE___ LIGNES! ____
Text input mode: When pressing the "Length" key When two or more lines are input, the text cannot be printed because the installed tape is not enough wide. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed length print setting mode.					
Print copies select mode: When pressing the "Print" or "Set" keys When two or more lines are input, the text cannot be printed because the installed tape is not enough wide. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Final number setting mode: When pressing the "Print" or "Set" keys When two or more lines are input, the text cannot be printed because the installed tape is not enough wide. <Supplement> After the message is disappeared, the machine returns to the text input mode.					

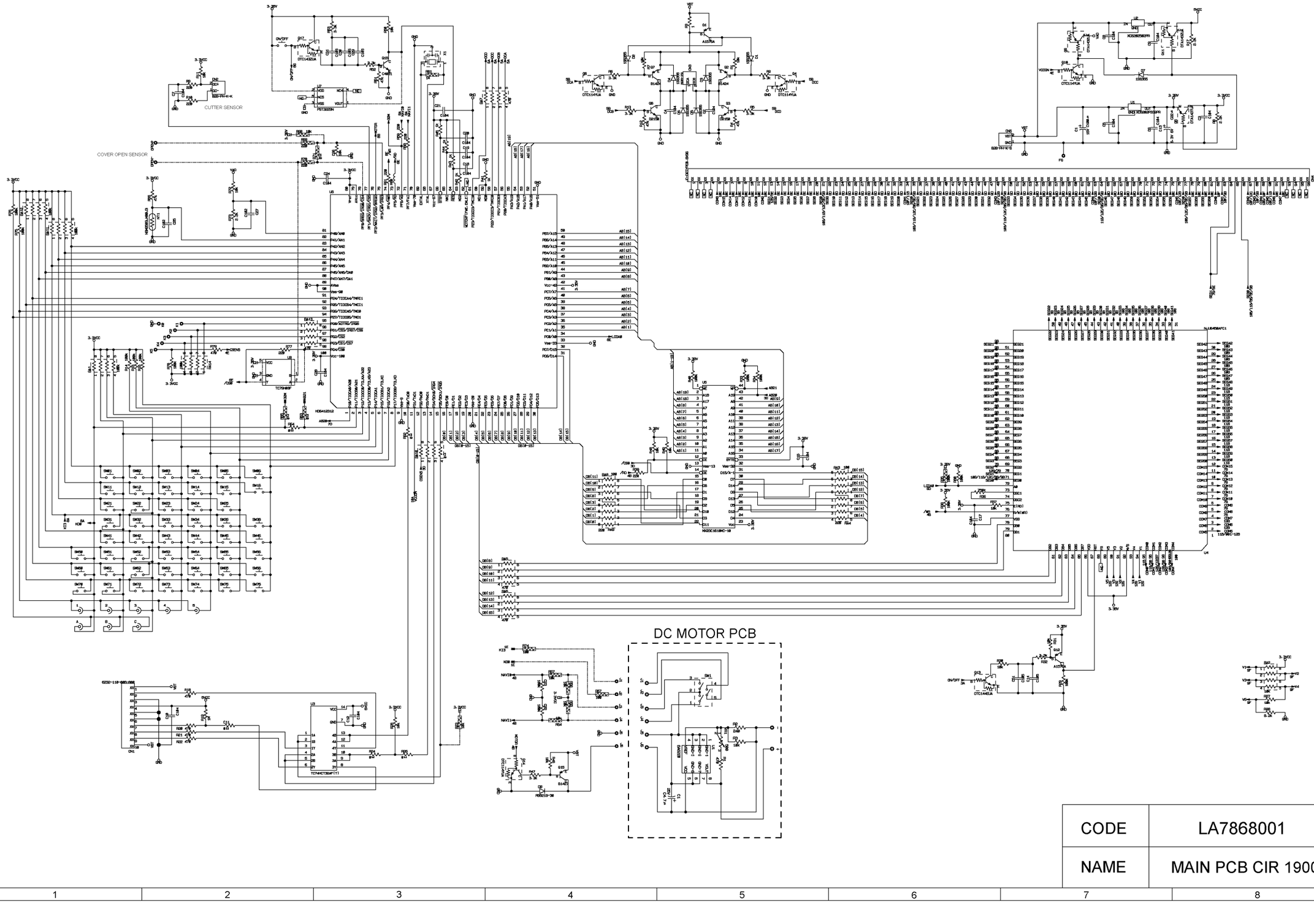
Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Function select mode: When pressing the “Set” key The “Length” setting is selected, when two or more lines are input, and the text cannot be printed because the installed tape is not enough wide. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed length print setting mode.	LINE ——— LIMIT! ———	TROP— DE — LIGNES! ——	ZUVIELE —— ZEILEN! ——	########## ##########	########## ##########
Text input mode: When pressing the “Print” key The text you try to print is more than 1 meter.	LENGTH ____ LIMIT! ———	LONGUEUR __ LIMITE! ———	ZU ——— LANG! ———	LENGTH____ LIMIT! ———	LONGUEUR_ LIMITÉE! ____
Text input mode: When pressing the “Length” key The text you try to print is more than 1 meter. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed length print setting mode.					
Print copies select mode: When pressing the “Print” or “Set” keys The text you try to print is more than 1 meter. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Final number setting mode: When pressing the “Print” or “Set” keys The text you try to print is more than 1 meter. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Fixed length print setting mode: When pressing the “Set” key The setting you try to set is out of the possible range. (Out of the specified range)					

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Tab setting mode: When pressing the “Set” key The setting you try to set is out of the possible range. (Out of the specified range)	LENGTH ____ LIMIT! _____	LONGUEUR __ LIMITE! _____	ZU _____ LANG! _____	LENGTH____ LIMIT! _____	LONGUEUR _ LIMITÉE! ____
Function select mode: When pressing the “Set” key. The “Length” setting is selected when the label length is more than 1m in printing. <Supplement> After the message is displayed for 0.5 seconds, the machine enters the fixed length print setting mode.				########## ##########	########## ##########
Text input mode: When pressing the “Number” key When the “Number” setting is selected, the cursor is placed under the character other than number, or under the return mark or tab mark.	WRONG _____ CHAR! _____	CARACTERE __ INVALIDE ____	FEHL - _____ EINGABE _____	INVAL . _____ CHRS! _____	CARACTÈRE __ INVALIDE! ____
Function select mode: When pressing the “Set” key When the “Number” setting is selected, the cursor is placed under the character other than number, or under the return mark or tab mark. <Supplement> After the message is disappeared, the machine returns to the text input mode.				########## ##########	########## ##########
Text input mode: When pressing the “Number” key The cursor is placed on the end of the text.	NOT _____ HERE! _____	PAS _____ ICI _____	NICHT _____ MÖGLICH! ___	CAN’T_____ HERE! _____	PAS _____ ICI _____
Function select mode: When pressing the “Set” key When the “Number” setting is selected, the cursor is placed on the end of the text. <Supplement> After the message is disappeared, the machine returns to the text input mode.				########## ##########	########## ##########

Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
Text input mode: When pressing the "Recall" key No file is registered in the text memory.	NO FILES!	PAS DE FICHIER!	KEINE PHRASE!	NO FILES!	PAS DE FICHIER!
Text input mode: When pressing the "M. DEL" key No file is registered in the text memory.					
Memory select mode: When pressing the "Set" key When the "Recall" or "Clear" setting is selected, no file is registered in the text memory. <Supplement> After the message is disappeared, the machine returns to the text input mode.				########## ##########	########## ##########
File number select mode: When pressing the "Set" key The memory full error occurs when registering the file. <Supplement> After the message is disappeared, the machine returns to the text input mode.	MEMORY FULL!	MEMOIRE PLEINE!	SPEICHER VOLL!	MEMORY FULL!	MÉMOIRE PLEINE!
Text input mode: When pressing the "Print" or "Feed (&Cut)" keys The tape cutter is closed.	CUTTER ERROR!	ERREUR COUPE!	MESSER FEHLER!	CUTTER ERROR!	ERREUR COUPE!
Print copies select mode: When pressing the "Print" or "Set" keys The tape cutter is closed. <Supplement> After the message is disappeared, the machine returns to the text input mode.					
Final number setting mode: When pressing the "Print" or "Set" keys The tape cutter is closed. <Supplement> After the message is disappeared, the machine returns to the text input mode.					

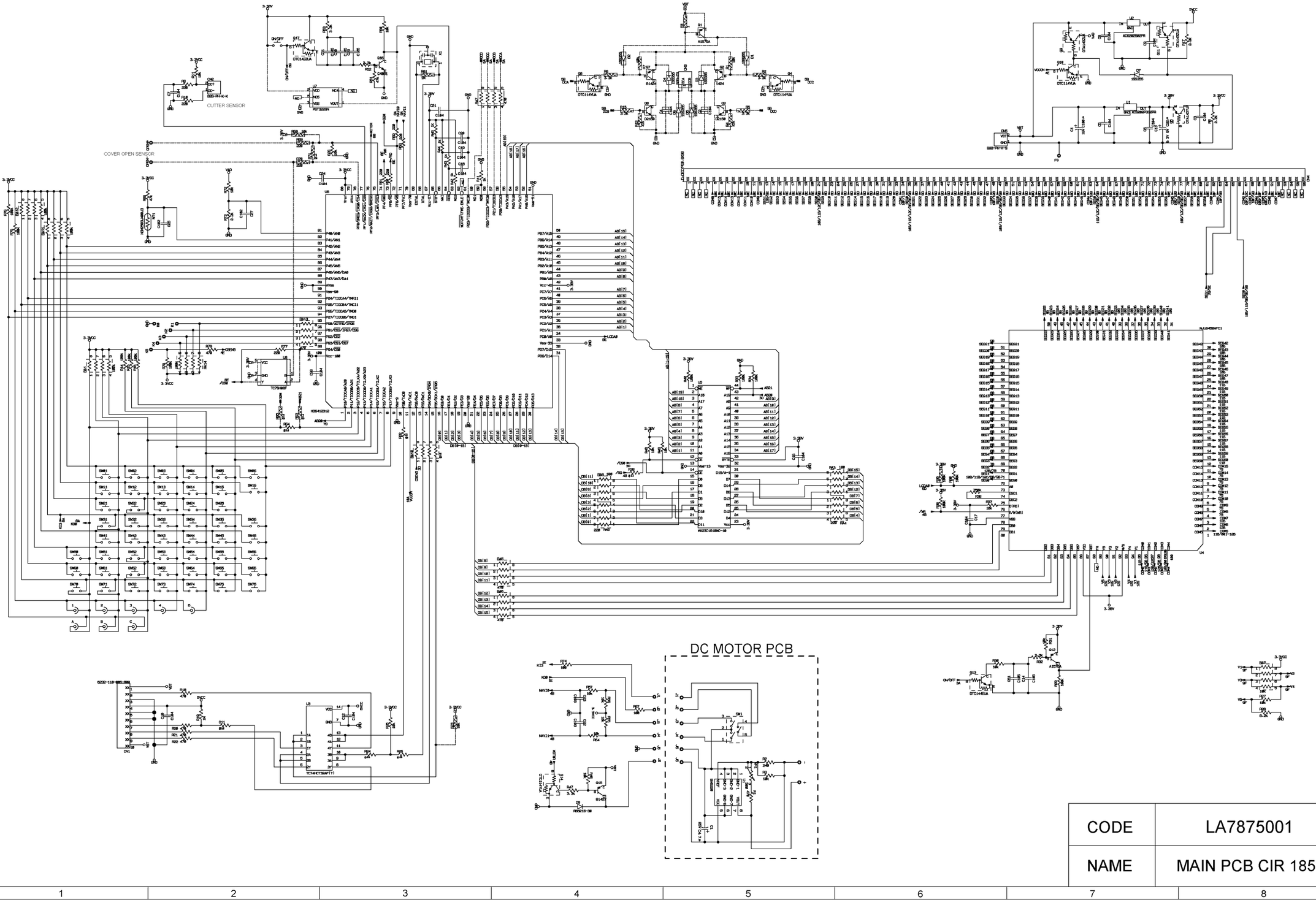
Error Conditions	Display				
	U.K./BELGIUM	FRENCH	GERMAN	U.S.A./ AUSTRALIA	CANADA
* To recover from the error, turn the power OFF/ON. The error has priority over the no tape error.	CUTTER ERROR!	ERREUR COUPE!	MESSER FEHLER!	CUTTER ERROR!	ERREUR COUPE!
Text input mode: When pressing the "Tab Set" key More than 50 tab marks are set.	TAB LIMIT!	TAB . MAX!	ZU_VIELE TAB . - STOPS	TAB LIMIT!	TABULATION MAXI!
Currency data input mode: When pressing the "Set" key The output result is more than 10 digits. <Supplement> After the message is disappeared, the machine returns to the text input mode.	OVERFLOW	SURCAPA.	KAPAZITÄT ERSCHÖPET_	########## ##########	########## ##########
Currency data input mode: When pressing the "Set" key The exchange rate is set to 0. <Supplement> After the message is disappeared, the machine returns to the text input mode.	DIVIDE_BY ZERO_ERROR	ERREUR ZERO	FEHLER! KURS=0	########## ##########	########## ##########
Text input mode: When pressing the "Length" key The text cannot be printed because the installed tape is not enough wide. <Supplement> After the message is displayed for 0.5 seconds, the machine enters to the fixed length print setting mode.	TEXT_TOO HIGH!	TROP HAUT!	TEXT_ZU HOCH!	TEXT TOO_HIGH!	TROP HAUT!
Function select mode: When pressing the "Set" key When the "Length" setting is selected, the text cannot be printed with the width of the installed tape. <Supplement> After the message is displayed for 0.5 seconds, the machine enters to the fixed length print setting mode.				########## ##########	########## ##########

Appendix 1.A Main PCB CIR 1900 (PT-1900/1910)



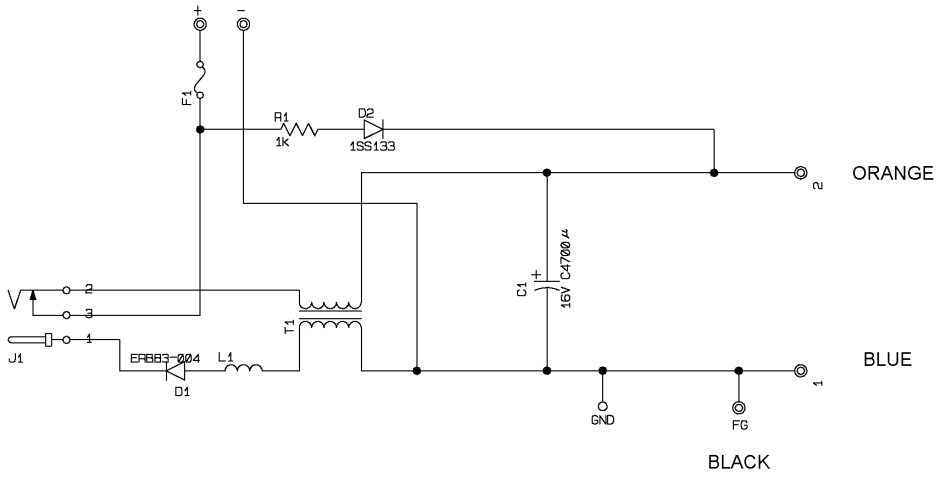
CODE	LA7868001
NAME	MAIN PCB CIR 1900

Appendix 1.B Main PCB CIR 1850 (PT-1850)



CODE	LA7875001
NAME	MAIN PCB CIR 1850

Appendix 1.C Sub PCB



CODE	LA7867001
NAME	POWER SUPPLY CIR 1900/1850

Apr., 2002
8V2034BE0
Printed in Japan