

SHARP®

PRINTER/CASSETTE INTERFACE
DRUCKER/KASSETTEN-INTERFACE
IMPRIMANTE/INTERFACE DE MAGNETOCASSETTE
INTERFAZ DE IMPRESORA/CASSETTE
STAMPANTE/INTERFACCIA PER CASSETTE

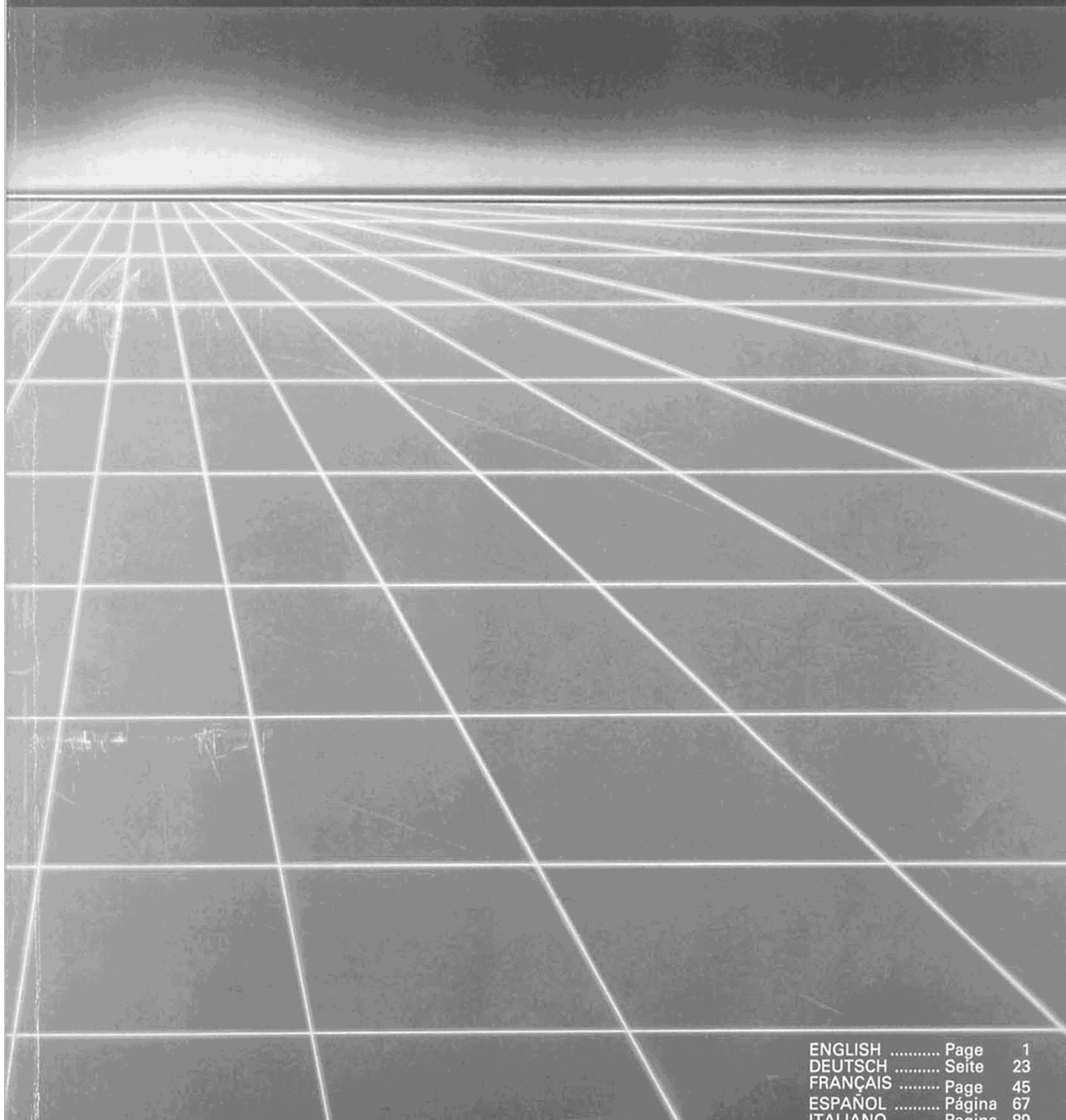
MODEL
MODELL
MODELE
MODELO
MODELLO

CE-1600P

OPERATION MANUAL
MANUAL DE MANEJO

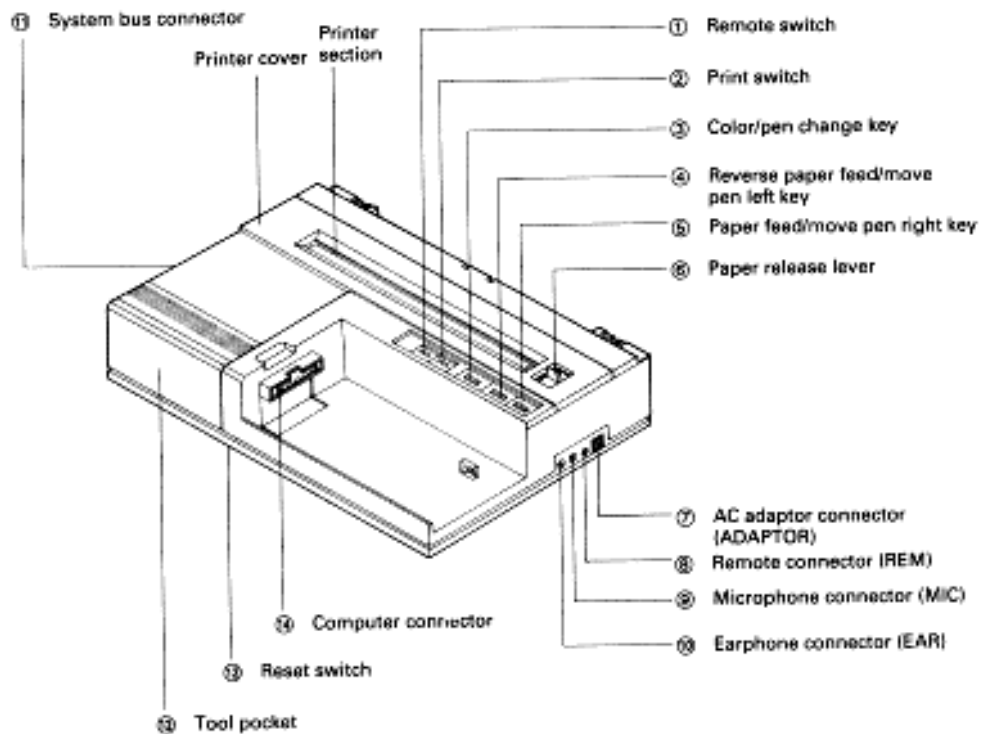
BEDIENUNGSANLEITUNG
MANUALE DI ISTRUZIONI

MODE D'EMPLOI



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SWITCH AND CONNECTOR NAMES AND FUNCTIONS



(1) Remote switch

This switch enables or disables the remotes control function.

When the switch is ON, the tape recorder on the remote connector can be controlled by the computer.

When the switch is OFF, the remote control function is disabled, and the tape recorder must be controlled manually.

(2) Print switch

Before executing a calculation set the print switch to P to print the calculation result or expression.

If the switch is set switch to ●, printing will be disabled.

Printing caused by the execution of program instructions will be performed regardless of the setting of this switch.

(3) Color/pen change key

Press this key to change print colors (that is, pens). Press this key and the **SHIFT** key on the computer at the same time, to enter printer pen change mode. The pen will be moved to pen change position (see the section concerning mounting and changing pens). Press this key and the **SHIFT** key at the same time again to leave pen change mode, and return the printer to normal operating condition.

(4) Reverse paper feed/move pen left key

Press this key to feed paper in the reverse direction.

Press this key and the **SHIFT** key at the same time, and the pen will move to the left while the keys are held down. To stop the pen, release the Reverse paper feed/move pen left key.

(5) Paper feed/move pen right key

When this key is pressed the pen moves to the center of the printer and paper feeds forward. When the key is released, the pen returns to its previous position.

Press this key and the **SHIFT** key on the computer at the same time, and the pen will move to the right while both keys are held down. To stop the pen, release the paper feed/move pen right key.

(6) Paper release lever

This lever is used to adjust paper vertically or horizontally.

When the lever is pulled, the paper is released and can be moved freely. Adjust the paper and push back the lever before printing.

(7) AC adaptor connector (ADAPTOR)

This connector is for the provided AC Adaptor EA-160.

(8) Remote connector (REM)

This connector is for a remote tape recorder to be used by remote control. (Use the cable with black plug ends).

(9) Microphone connector (MIC)

This connector is used to record the data or a program on tape, and is cabled to the microphone connector of the tape recorder. (Use the cable with red plug ends).

(10) Earphone connector (EAR)

This connector is used to read the data or program recorded on the tape, and is cabled to the earphone connector of the tape recorder (EAR). (Use the cable with grey plug ends).

(11) System bus connector

A signal can be input or output through the system bus connector at the left side of the computer.

(12) Tool pocket

This pocket is used to hold tools. Remove this pocket when an optional floppy disk drive, CE-1600F, is used (see the section concerning how to mount a floppy disk drive).

(13) Reset switch (back of the printer)

This switch is used to reset everything when an abnormal condition has occurred in the connected computer. Note that if this switch is pressed, data stored in the computer will be initialised. Refer to the computer manual before using this switch.

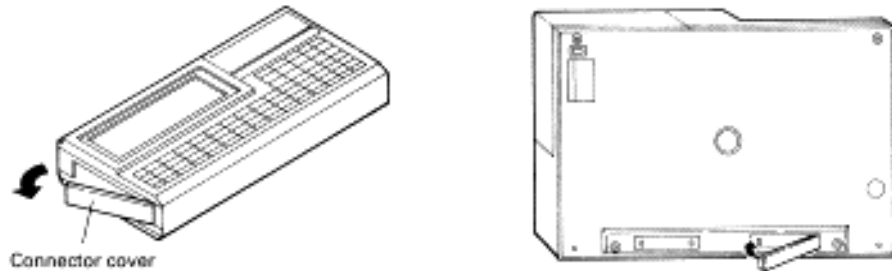
(14) Computer connector

This connector is used to connect the computer to the printer.

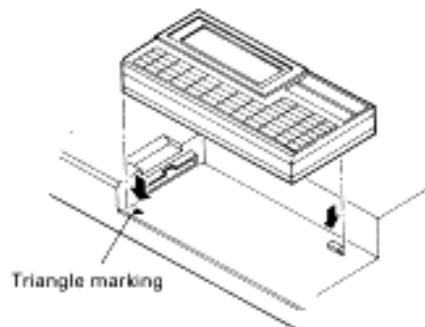
HOW TO MOUNT THE COMPUTER

This printer cannot be used without a computer. Use the following procedure to mount the computer on the printer.

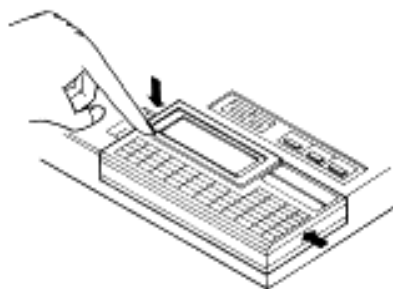
- (1) Turn off the computer (press the OFF key on the computer).
- (2) Remove the connector cover on the left side of the computer, and put the cover in the receptacle in the bottom of the printer.



- (3) Put the computer into the rectangular recessed area on the front of the printer. The left side of the computer should align with the triangle marking as shown in the figure. Make sure the computer is aligned squarely in the recess, and the small projection on the printer fits into the slot in the bottom of the computer. (If not, move the computer slightly left or right).

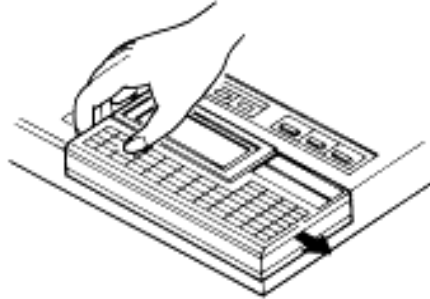


- (4) Connect the computer connector to the printer by sliding the computer to the left while gently pushing down on the left side of the computer faceplate.
 - Make sure the computer is connected securely, but do not push too hard.



Dismounting the Computer

Remove the computer as shown in the figure, after turning the computer off. Do not press or pull any keys while removing the computer.



Note:

Always turn off the computer before mounting or dismounting the computer. If the computer is turned on during mounting or dismounting, the computer may be damaged.

POWER

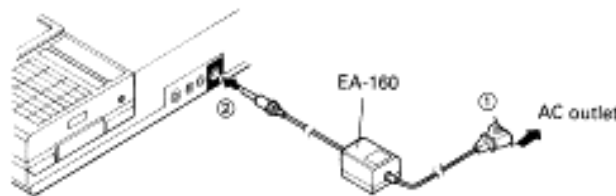
The provided AC adaptor (EA-160) for this printer can be plugged into any ordinary house AC wall socket to power the printer.

A rechargeable battery is built into the printer, and can be charged with the EA-160.

- The rechargeable battery in this printer may be low if the printer has not been used for a long time, or if the printer has just been bought. Use the provided AC adaptor EA-160 to recharge the battery.

How to Connect, Battery Charging

Press the OFF key to turn off the computer if it is mounted on the printer, and connect the AC adaptor to an AC outlet using the sequence shown in the figure below.



It takes 8 hours to charge the battery whether the computer is on or off. However, if the printer or floppy disk drive is used during charging, charging time may be longer. When the built-in battery is fully charged, approximately 250 lines can be printed (character size 2, the character "5" printed 40 times per line with a black pen).

If the computer is mounted on the printer and the computer battery becomes low, power will be provided by the printer to the computer. The optional floppy disk drive is powered by the printer.

When to Recharge the Battery

If the computer is mounted, the following message will be displayed when the battery voltage becomes too low (low battery condition). Recharge the battery as soon as possible.

(1) The following message will be displayed when the computer is turned **ON** if the battery is low.

**NEW O? CHECK 4 or
CHECK 4**

(2) The following message will be displayed if the battery voltages get too low while using the computer.

ERROR 80 or ERROR 78

The printer stops and will not work while one of the above messages is displayed. This condition will be cleared if the computer is turned on after connecting the AC adaptor and recharging the battery. (Use the **ON** and **OFF** keys to clear the problem).

If the computer is already turned on, press the **SHIFT** and **BREAK/ON** keys to clear the problem condition.

Note:

CHECK 4 means 'check CE -1600P malfunction'. If CHECK 4 is still displayed after the AC adaptor has been connected and the battery is recharged, see if something has fallen into the printer and is causing a malfunction.

Notes on Charging

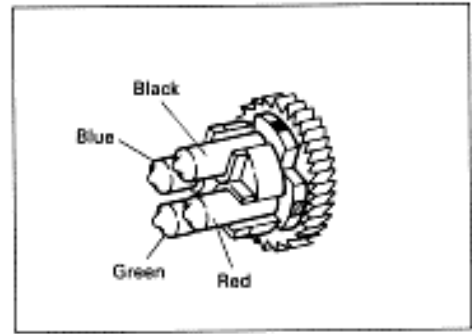
- When the printer is used for the first time, or after being stored for a long time, even if the battery is fully charged the battery may not run as long as the time stated. Do not be concerned with this condition because, after being recharged a few times, the power stored in the battery will increase until it equals the time stated.
- Charge the battery at least once or twice every 3 months to prevent the battery life time from shortening.
- Do not recharge for a long time (24 hours, for instance) This may degrade the battery performance.
- Charge the printer only when the room temperature is between 5°C and 40°C (41°F and 104°F). Charging when the temperature is outside of the above range may degrade the performance of battery.
- If the battery has been through a lot of charge/discharge cycles, and the available battery time after each charging is decreasing, then the end-of-life of the built in battery has been reached.

Notes on AC adaptor

- The provided AC adaptor, EA -160, cannot be used with equipment other than that specified by our company. Use with other equipment may damage the equipment or cause it,s battery to expiode.
- AC adaptors other than the EA-1 60 cannot be used with this printer. Use of otter adaptors may cause the battery to explode.
- The EA-1 60 can be used with the PC-1 600. Use the EA-1 60 adaptor with a PC-1 600 when this printer is not in use.

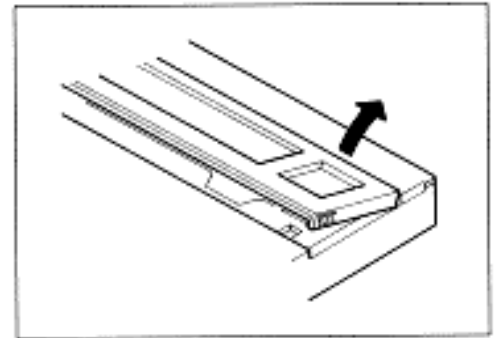
MOUNTING AND CHANGING PENS


Four colors can be printed by using four ball-point pens. The mounting of a pen is shown in the figure. (The pen color is indicated on the pen holder.)

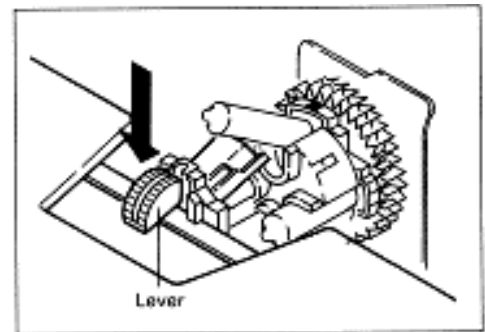


Follow the procedure given below when mounting or changing the pens.

- (1) Remove the printer cover

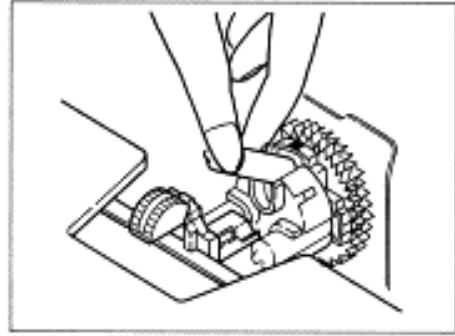



- (2) Turn the computer on and press the **SHIFT** and  keys at the same time. The printer will enter pen change mode, and the pen holder will move to the pen change position.



- (3) To remove a pen, press the pen removal lever. Only the pen at the top of the pen holder can be removed.

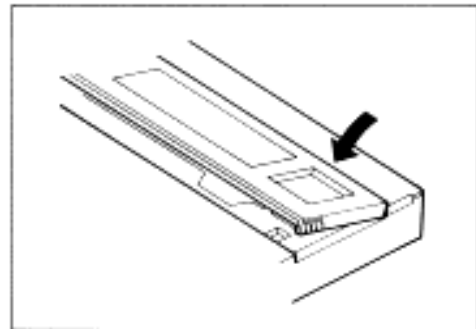
- (4) Mount a new pen.
- Use the color of pen indicated on the pen holder.



- (5) Press only the  key when removing or mounting the next pen. The pen holder will rotate, and the next pen will move to the top of the pen holder. Remove and mount a pen by following the procedure mentioned in (3) or (4).

- (6) Press the **SHIFT** and keys at the same time when you have finished changing pens. Pen change mode will be exited, and the pen holder will return to its previous position.

- (7) Replace the printer cover.



Cautions

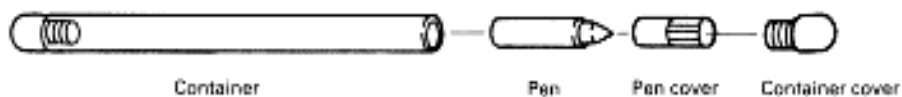
Handling the printer

- Do not touch the platen, pen holder, or gear. If touched, figure drawing precision may be degraded, and the printer may malfunction, or a pen may fall out.
 - If a pen falls into the printer, hold the printer upside down, or use the hole at the bottom of the printer to get the pen out. Tilt the printer, until the pen falls out of the hole.
- If the pen holder is rotated by hand, pens may fall out or may not work normally. Turn off the computer, and then turn it back on.

Handling the pens



Mount pens only when the printer is to be used. After printing, put the pens in their containers, and put the container covers on.

If pens are left in the printer for a long time, the ink in the pen may dry up.



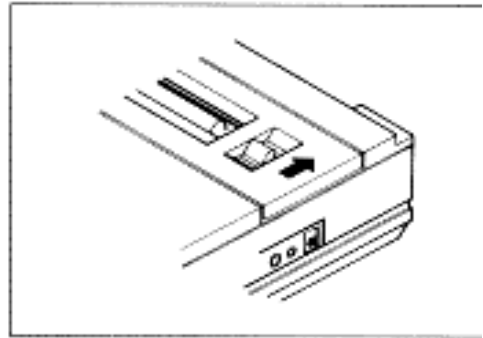
For information concerning purchase of new pens, see the section concerning optional parts.

LOADING THE PAPER

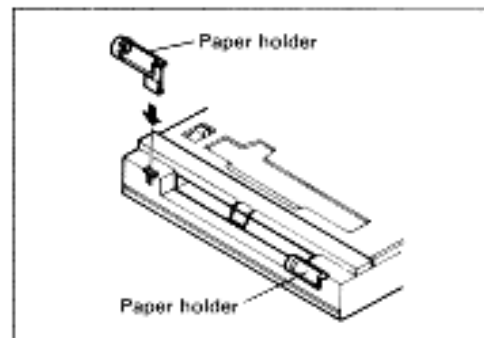
This printer can use either roll or cut paper for printing. Use the  key and  key and follow the Procedure below to put paper in the Printer.

- When cut paper is used, the paper holders and paper roll shaft need not be used.

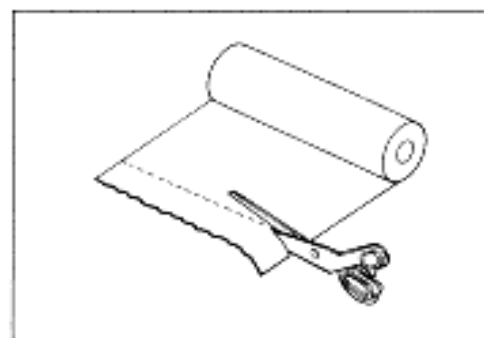
(1) Turn on the printer, and push the release lever back.



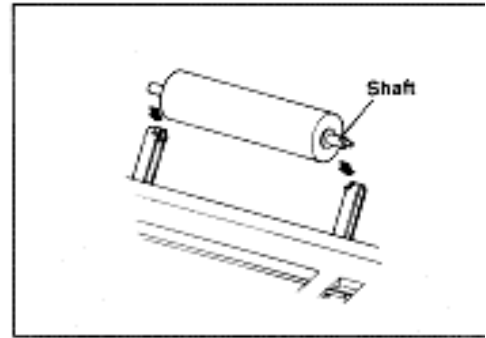
(2) Mount the paper holders at the back of the printer. Make sure the notches in the outside ends face each other, so that the paper roll shaft will drop in.



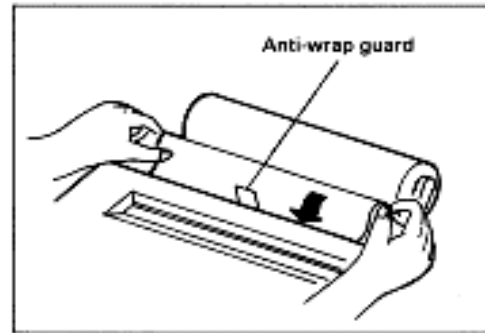
(3) Cut a clean, straight edge across the paper.



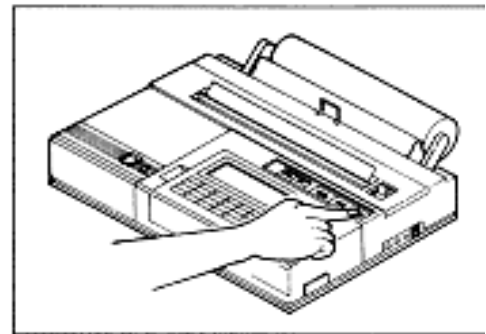
- (4) Put the paper roll shaft through the roll of paper and drop it into the paper holders. The smaller end of the shaft must be in the right paper holder. (If the shaft is reversed, it will not fit in the paper holders.)





- (5) Pull up the anti-wrap guard, and insert the paper straight into the paper opening.
- Insert cut paper centred in the paper opening, so that the left and right margins will be equal.



- (6) Press the key until the top of the paper comes out the front of the printer. If the paper will not feed through, pull it out, cut off the edge if it is badly crumpled, and try again.

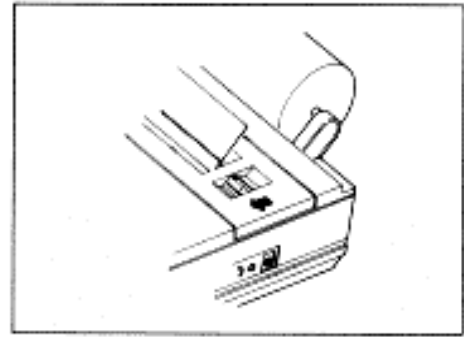


- (7) Release the key  after the paper feeds through. If too much paper feeds through, press the  key to reverse feed the paper

- (8) Put the anti-wrap guard back down.

Release lever

When the release lever is pulled, paper in the printer can be moved freely.
This lever is used to adjust the paper position.



Note:

Push the release lever back before printing. If the lever is pulled forward while printing, the paper may not print or feed-correctly.

Paper

This printer can use either roll or cut paper.

Use only the type of roll paper specified by our company.

Roll paper: EA-4AR1 (width: 210 mm, diameter: 40 mm)

EA-1LR1 (width: 216 mm, diameter: 40 mm; used exclusive in Canada)

Cut paper:

Quality: Fine paper

Thickness: 60pm through 110pm (recommended: 70pm)

Size: Letter size (length: 280 mm, width: 216 mm)

Note:

The life of the pens and the print quality may vary with the type of paper used. The ink may blur or blot depending on how absorbent the paper is (grease on the paper will prevent fine printing because water based ink is used).

For information about purchasing paper, see the section concerning optional parts.

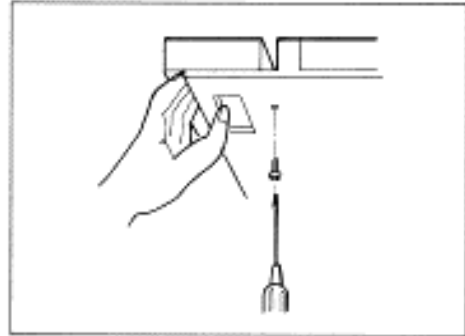
HOW TO MOUNT A FLOPPY DISK DRIVE

The optional floppy disk drive CE-1600F can be used as an external storage device by the computer by mounting the disk drive on the printer. Follow the procedure given below to mount a CE-1600F.

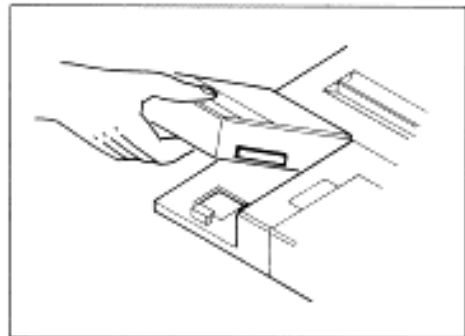
(1) Removal of the tool pocket

Since the CE-1600F must be mounted where the tool pocket is, begin by removing the pocket.

- (1) Remove the screw at the bottom of the printer with a Phillips screw driver. (Keep this screw because it is used to mount the CE-1600F.)



- (2) Take off the pocket, as shown in the figure.

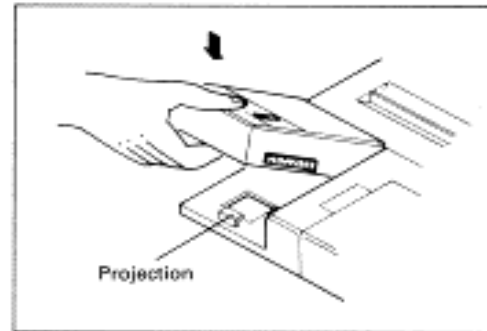


(2) Mounting the CE-1600F

- Turn off the printer before mounting the CE-1600F (push the **OFF** key on the computer to turn it off).

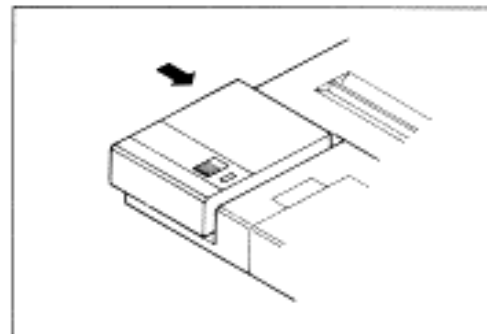
(1) Insert the CE -1600F at a slant, as shown in the figure.

(2) Insert the CE -1600F slowly, making sure the small projection on the printer fits into the slot in the bottom of the CE -1600F (If not, move the CE -1600F slightly to the left or right.)



(3) Push the CE-1600F in from the left side to mate the connectors. (Be sure the CE-1600F is securely connected, but do not push too hard.)

(4) Lock the CE-1600F in place with the screw removed in step one.



Note:

Do not press on the top of the CE-1600F, or it may malfunction.

- Follow a similar procedure for removing the CE-1600F, as was used for removing the pocket.

For information about purchasing a CE-1600F, see the section concerning optional parts.

SPECIFICATIONS

Model	: CE-1600F
Product name	: Printer/cassette interface
Printing type	: X Y axis plotter type
Characters per line	: 160 characters per line maximum (smallest character size)
Printing colors	: 4 colors (black, blue, red, green)
Character size	: 9 types from 0.8 mm x 1.2 mm to 7.2 mm x 10.8 mm
Printing directions	: 4 (up, down, left, right)
Minimum pen movement	: 0.2 mm
Printing speed	: 5 characters per second (average of 96 ASCII characters: character size; 2: color; black) Note that the printing speed may change depending on the printout contents or printing program.
Printing paper (option)	: Roll paper EA4AR1 (width; 210mm (8-1/4,,): diameter; 40mm (1-9/16,,) or less) EA-1LR1 (width; 216mm (8-1/2,,): diameter; 40mm (1-9/16,,) or less) used exclusively in Canada Cut paper (A4 or letter size)
Power	: Local voltage (with AC adaptor EA-160) Built-in rechargeable battery (recharging: local voltage with AC adaptor EA-160) 6V (DC); 5.7 W
Printing lines	: 250 lines approx. (after 8 hours charging) (character size; 2: 40 character's per line: temperature; 20°C (68°F))
Ambient operating temperature	: 5°C to 40°C (41°F to 104°F)
Dimensions	: Width: 320 mm (12-19/32,,) Depth: 221.5 mm (8-23/32,,) Height: 46 mm (1 -13/16,,)
Weight	: 1.6kg (3.53 lbs.) (including the pocket)
Accessories provided	: AC adaptor EA-160 (1), hard case (1), roll paper (1), pens (black, blue, red, green: 2 sets), tape recorder connection cable (1), paper holders (2), paper roll shaft (1), operation manual (1)

Printer Error

A slight error may occur when printing a figure. This is caused by a mechanical inaccuracy of the printer. The error along the X axis (right and left) is greater than along the Y axis (up and down).

To draw a more accurate figure, reduce the number of times the paper is moved along the Y axis (move up or down) when programming.

Optional parts

The following optional parts are available. Ask for the name and type of the product at the nearest SHARP store.

	Product name	Model	Remarks
1	Roll paper	EA-4AR1	Width: 210 mm Diameter: 40 mm
		EA-1LR1 (only in Canada)	Width: 216 mm Diameter: 40 mm
2	Ball-point pen set	EA-850B	4 black pens
3	Ball-point pen set	EA-850C	A set of black, blue, red, green pens
4	Floppy disk drive	CE-1600F	2.5 inch floppy disk drive unit
5	Cassette tape recorder	CE-152	—