

Color CAMM PRO

by ROLAND DIGITAL GROUP

Two black circles of different sizes are positioned to the left of the main title. The larger circle is behind the text 'PC-60' and 'USER'S MANUAL', and the smaller circle is in front of it.

PC-60

USER'S MANUAL

Thank you very much for purchasing the PC-60.

- To ensure correct and safe usage with a full understanding of this product's performance, please be sure to read through this manual completely and store it in a safe location.
- Unauthorized copying or transferral, in whole or in part, of this manual is prohibited.
- The contents of this operation manual and the specifications of this product are subject to change without notice.
- The operation manual and the product have been prepared and tested as much as possible. If you find any misprint or error, please inform us.
- Roland DG Corp. assumes no responsibility for any direct or indirect loss or damage which may occur through use of this product, regardless of any failure to perform on the part of this product.
- Roland DG Corp. assumes no responsibility for any direct or indirect loss or damage which may occur with respect to any article made using this product.

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.

The I/O cables between this equipment and the computing device must be shielded.

NOTICE

Grounding Instructions

Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Check with qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

Repair or replace damaged or worn out cord immediately.

Operating Instructions

KEEP WORK AREA CLEAN. Cluttered areas and benches invites accidents.

DON'T USE IN DANGEROUS ENVIRONMENT. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.

DISCONNECT TOOLS before servicing; when changing accessories, such as blades, bits, cutters, and like.

REDUCE THE RISK OF UNINTENTIONAL STARTING. Make sure the switch is in off position before plugging in.

USE RECOMMENDED ACCESSORIES. Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.

NEVER LEAVE TOOL RUNNING UNATTENDED. TURN POWER OFF. Don't leave tool until it comes to a complete stop.

For Canada

CLASS A NOTICE

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

CLASSE A AVIS

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.



ROLAND DG CORPORATION

1-6-4 Shinmiyakoda, Hamamatsu-shi, Shizuoka-ken, JAPAN 431-2103

MODEL NAME : See the MODEL given on the rating plate.

RELEVANT DIRECTIVE : EC MACHINERY DIRECTIVE (89/392/EEC)


EC LOW VOLTAGE DIRECTIVE (73/23/EEC)

EC ELECTROMAGNETIC COMPATIBILITY DIRECTIVE (89/336/EEC)

WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Windows is a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.
IBM is a registered trademark of International Business Corporation.
Macintosh is a registered trademark of Apple Computer, Inc. in the USA and other countries.

To Ensure Safe Use

About ⚠ WARNING and ⚠ CAUTION Notices

 WARNING	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.
 CAUTION	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly. * Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

About the Symbols

	The ⚠ symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. The symbol at left means "danger of electrocution."
	The ⚡ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. The symbol at left means the unit must never be disassembled.
	The ● symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. The symbol at left means the power-cord plug must be unplugged from the outlet.

⚠ WARNING



Do not disassemble, repair, or modify.

Doing so may lead to fire or abnormal operation resulting in injury.



Ground the unit with the ground wire.

Failure to do so may result in risk of electrical shock in the even of a mechanical problem



Use only with the power cord included with this product.

Use with other than the included power cord may lead to fire or electrocution.



Do not use with any electrical power supply that does not meet the ratings displayed on the unit.

Use with any other power supply may lead to fire or electrocution.



Do not use while in an abnormal state (i.e., emitting smoke, burning odor, unusual noise, or the like).

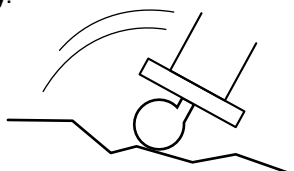
Doing so may result in fire or electrical shock. Immediately switch off first the sub power, then the main power, unplug the power cord from the electrical outlet, and contact your authorized Roland dealer or service center.

⚠ CAUTION



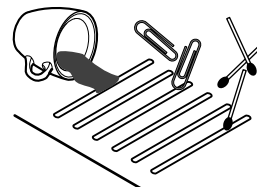
Install in a level and stable location.

Otherwise the unit may tip over and cause injury.



Do not allow liquids, metal objects or flammables inside the machine.

Such materials can cause fire.

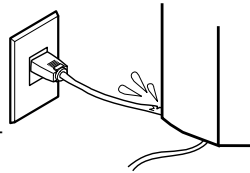


CAUTION



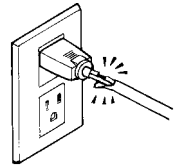
Do not injure or modify the electrical power cord, nor subject it to excessive bends, twists, pulls, binding, or pinching, nor place any object of weight on it.

Doing so may damage the electrical power cord, leading to electrocution or fire.



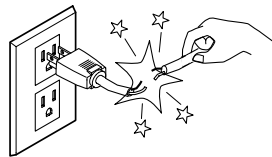
Do not use with a damaged power cord or plug, or with a loose electrical outlet.

Use with any other power supply may lead to fire or electrocution.



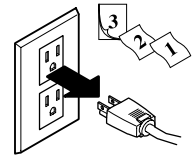
When unplugging the electrical power cord from a power outlet, grasp the plug, not the cord.

Unplugging by pulling the cord may damage it, leading to fire or electrocution.



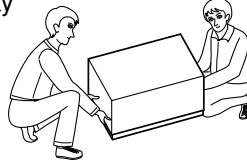
When not in use for prolonged periods, unplug the power cord from the electrical outlet.

Failure to do so may result in danger of shock, electrocution, or fire due to deterioration of the electrical insulation.



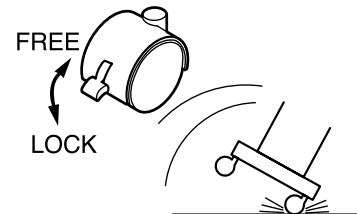
Unpacking, installing, or relocating the unit are operations which must be carried out by two or more persons holding the unit at its bottom surface on the left and right sides.

Failure to do so may result in dropping the unit, leading to injury.



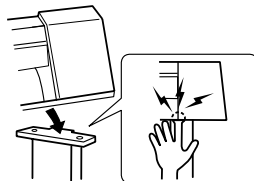
Release the caster locks for the stand before attempting to move.

Otherwise the unit may tip over and cause injury.



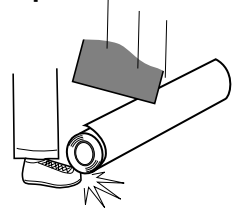
Use care to avoid pinching the fingers when placing the unit on the stand.

Doing so may result in injury.



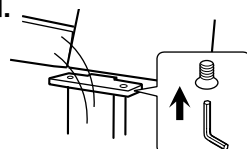
Roll material must be placed at a predetermined shaft position.

Failure to do so may result in falling of the roll, leading to injury.



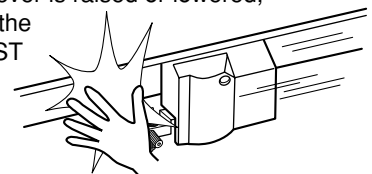
Use the joining screws to secure the unit to the stand.

Failure to do so may result in falling of the unit, leading to injury.



Do not allow hands or hair to come near the platen while the carriage is in motion.

Failure to do so may result in injury due to sudden movement of the carriage when the power is switched on, when the sheet loading lever is raised or lowered, or when the CUT TEST key is pressed.

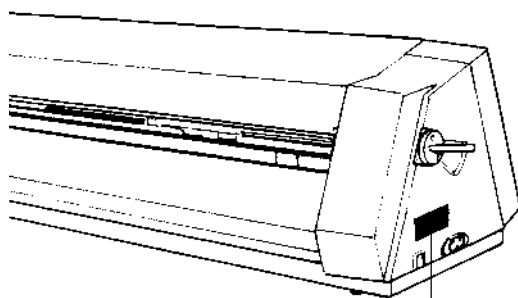
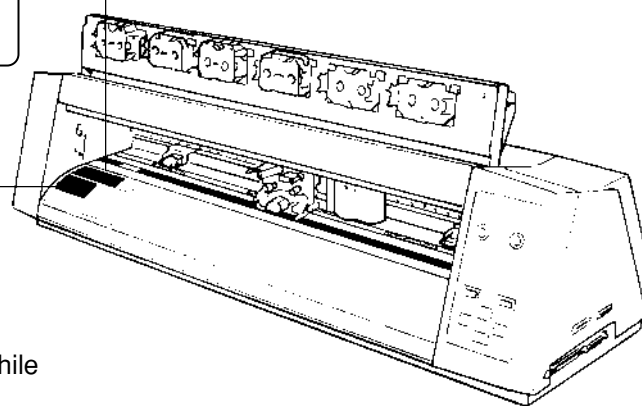
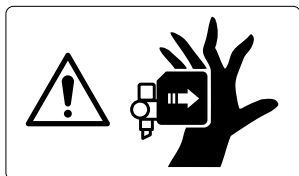


Do not touch the area around the printing carriage with the hands.

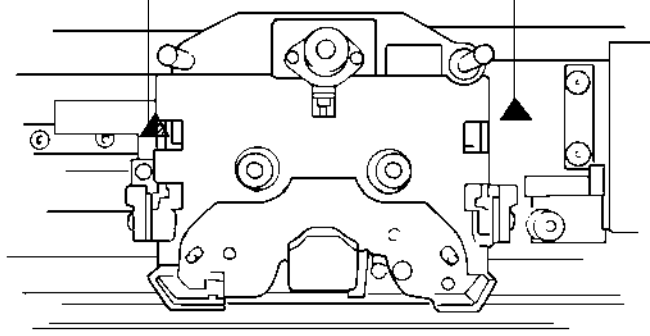
Failure to do so may result in burns.

About the Labels Affixed to the Unit

These labels are affixed to the body of this product.
The following figure describes the location.



Model name
Rating label
Use a rated power supply.



In addition to the **⚠ WARNING** and **⚠ CAUTION** symbols, the symbols shown below are also used.

NOTICE : Indicates information to prevent machine breakdown or malfunction and ensure correct use.

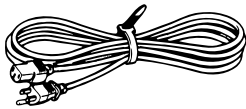


: Indicates a handy tip or advice regarding use.

Chapter 1 - Introduction

Checking Supplied Items

Check the following to make sure that you received all the items that were shipped along with the unit.



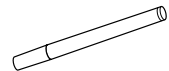
Power Cord



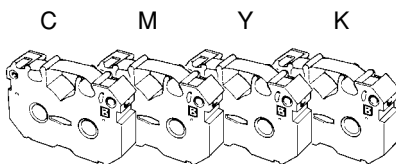
Blade
(Carbide)



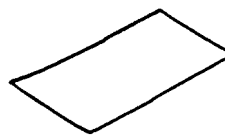
Blade Holder



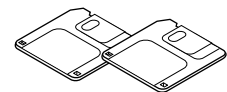
Head Cleaner



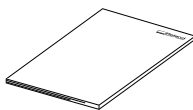
Thermal transfer ribbon cartridge



Material for Test Cuts



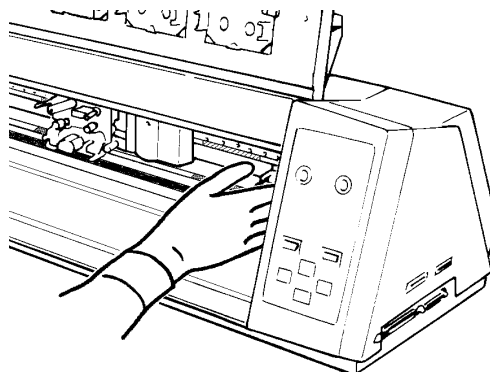
PC-60 DRIVER for windows® 95
PC-60 DRIVER for windows® 3.1



User's Manual

Part Names and Functions

NOTICE Do not put the hands inside the right-hand cover. Doing so may result in breakdown of the unit.



Front View

Printing Carriage

This is where a ribbon cartridge is mounted in the cartridge holder and printing is carried out.

Pinch Roller (Left)

Press material against the grit roller. When loading material, place the left roller inside the left edge of the material to correctly track it through the machine.

Cleaning pad

* Please do not remove this pad.
Removing it may result in breakdown.

Front cover

Opening the front cover during printing or cutting causes operation to be paused. Operation resumes when the front cover is closed. No printing or cutting is performed while the front cover is opened. When the front cover is closed, the unit detects the color and location of the installed ribbon cartridge.

Cartridge Holder

This is where the ribbon cartridge is installed.

Cutting Carriage

The blade holder is mounted here.

Pinch Roller (Right)

This presses the material against the grit roller.

Cutter Force Control Slider

This is used to set the blade force.

DIP Switches

Used to make various settings.

Material Alignment Sticker

Platen

Knife Guide

Grit Roller

Grit roller position indicator

Operation Panel

Serial (RS-422) Input Connector

When connecting a Macintosh to the PC-60, the recommended cable (Apple System Peripheral-8 Cable) is inserted here.

Serial (RS-232C) Input Connector

When connecting an IBM-compatible computer to the PC-60, a series (RS-232C) cable is inserted here.

Parallel (Centronics) Input Connector

In a parallel configuration, connect the parallel cable here. This cable carries data to your computer.

Rear View

Sheet Loading Lever

Used to raise or lower the pinch rollers when loading or unloading material. Automatic setup is performed by loading material and lowering the lever.

Power Connector (AC IN)

This connector accepts standard AC power cord.

Main Power Switch

Operation Panel

* "Material setup" refers to the state when material has been loaded and the sheet-loading lever has been lowered.

POWER LED

This lights up when the sub power source has been switched on.

POWER Key

This switches the sub power source on and off.

FRONT COVER LED

During setup, this flashes when the front cover is opened. Closing the front cover causes it to remain lit continuously.

BUSY LED

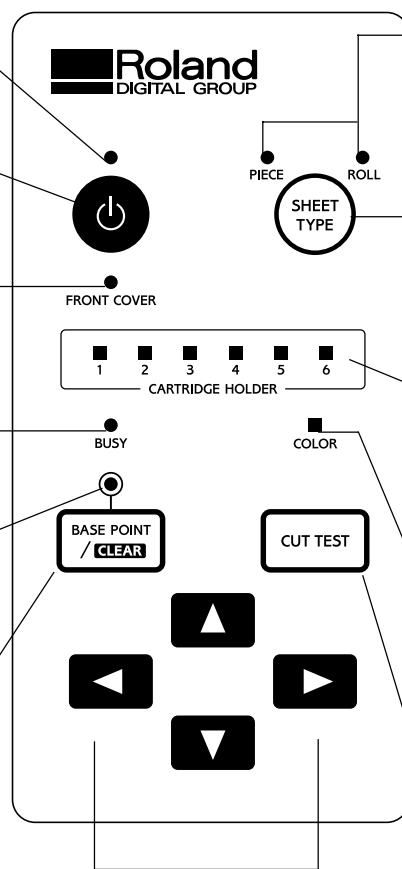
This flashes while receiving or deleting data.

BASE POINT/ CLEAR LED

Setting a base point illuminates this LED. The LED flashes while data is being deleted.

BASE POINT/ CLEAR Key

Sets the current position of the blade to the base point for printing or cutting. This key can be used only after material has been loaded. Holding down this key until the CLEAR LED starts to flash deletes the data being received.



Cursor Keys

The , , , and keys are used to move the carriage.

PIECE LED / ROLL LED

The corresponding LED flashes when the material type is solenoid, then remains lit continuously when setup is completed.

SHEET TYPE Key

This selects either roll or piece material as the loaded medium. This key can be used only before material setup.

CARTRIDGE HOLDER LED

This lights up when a ribbon cartridge is installed. It flashes when the cartridge is installed incorrectly or the ink ribbon has been used up.

COLOR LED

This lights up when cartridges for all colors (CMYK) have been installed and full-color printing is possible. It flashes when a ribbon cartridge required for printing is not installed.

CUT TEST Key

This performs a cutting test (for verifying that blade force is correct). This key can be used only after material setup has been performed.

Error Codes

LED state								PC-60 status and operator action
POWER	PIECE	ROLL	FRONT COVER	CARTRIDGE HOLDER	BUSY	COLOR	BASE POINT / CLEAR	
	flashing	flashing						The pinch roller is not above the grit roller. The loaded material is displaced from the sensor. → See "3 Loading the Material".
	flashing							Printing of the loaded piece material has finished → Replace with a new piece material.
			flashing					The front cover is open. → Close the front cover.
				Corresponding LED is flashing				The ink ribbon at the corresponding location has been used up.
				Corresponding LED is flashing				The cartridge at the corresponding location is installed incorrectly. → See "5 Installing a Ribbon Cartridge".
						flashing		A ribbon cartridge needed for printing is absent. → Install the ribbon cartridge that is needed for printing. (See " The COLOR LED Flashes and Operation Stops... ")
				flashing		flashing		The ink ribbon at the has been used up and printing cannot continue. → Install a new ribbon cartridge of the same color. (See " The COLOR LED Flashes and Operation Stops... ")
					flashing		flashing	Data is being deleted
flashing	flashing	flashing	flashing	flashing	flashing	flashing	flashing	→ See "What to Do If..." .

* This chart can be copied and affixed to the top of the PC-60 to serve as a handy reference.

Set-up and Connections

⚠ WARNING



Ground the unit with the ground wire.

Failure to do so may result in risk of electrical shock in the even of a mechanical problem.



Do not use with any electrical power supply that does not meet the ratings displayed on the unit.

Use with any other power supply may lead to fire or electrocution.



Use only with the power cord included with this product.

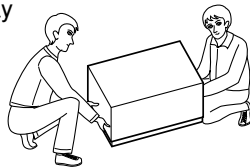
Use with other than the included power cord may lead to fire or electrocution.

⚠ CAUTION



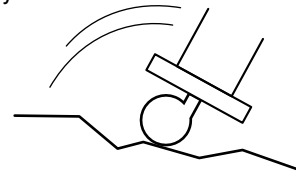
Unpacking, installing, or relocating the unit are operations which must be carried out by two or more persons holding the unit at its bottom surface on the left and right sides.

Failure to do so may result in dropping the unit, leading to injury.



Install in a level and stable location.

Otherwise the unit may tip over and cause injury.



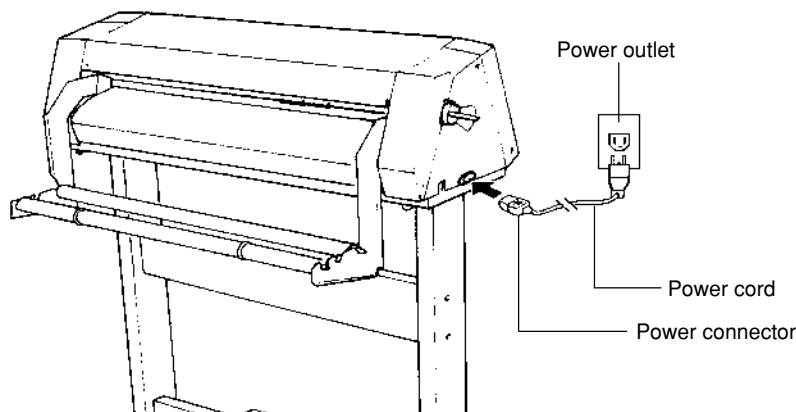
NOTICE Do not hold the upper portion of the PC-60 when installing or moving the unit.

Avoid installing the PC-60 in the following conditions, as this may result in damage to the machine.

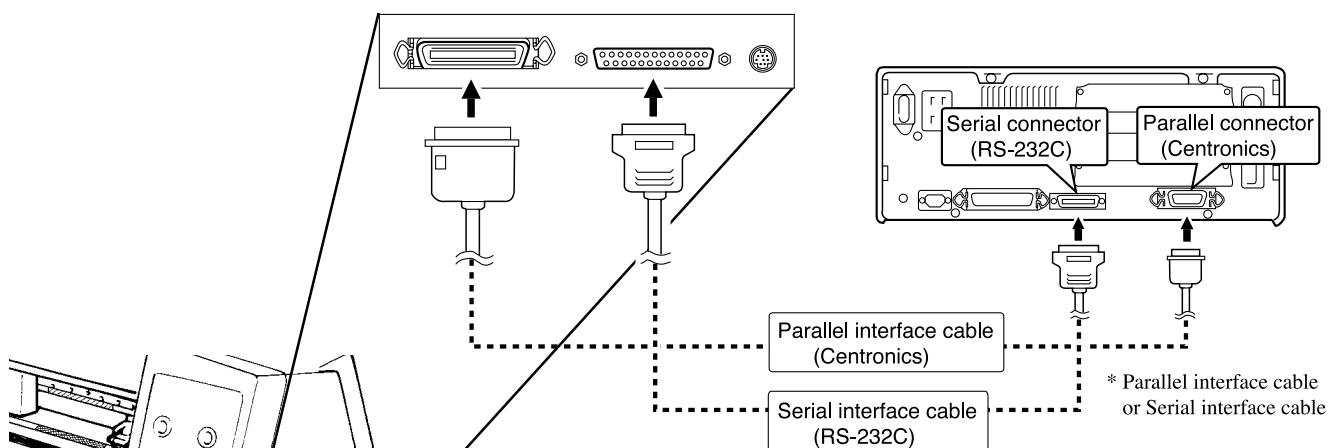
- Avoid use in locations subject to high levels of electrical noise (near motors, generators, transformers, and the like).
- Avoid use in locations subject to high humidity or dust.
- The unit becomes hot during use. Do not install in locations where heat radiation is inadequate (i.e., areas with poor ventilation).
- Do not install in locations subject to strong vibration.
- Do not install in a location exposed to direct sunlight or other strong light.

Always make sure that the main power switch is switched off on both the computer and the PC-60 whenever any cables are connected or disconnected.

When arranging setup space for the PC-60, make sure you have a space that is at least 1500 mm (59-1/16") wide, 750 mm (29-9/16") in depth, and 1500 mm (59-1/16") in height. Since the material moves during printing and cutting, make sure the unit is placed on a stable, sturdy surface. Also make sure there is nothing that can block the material at both front and rear.

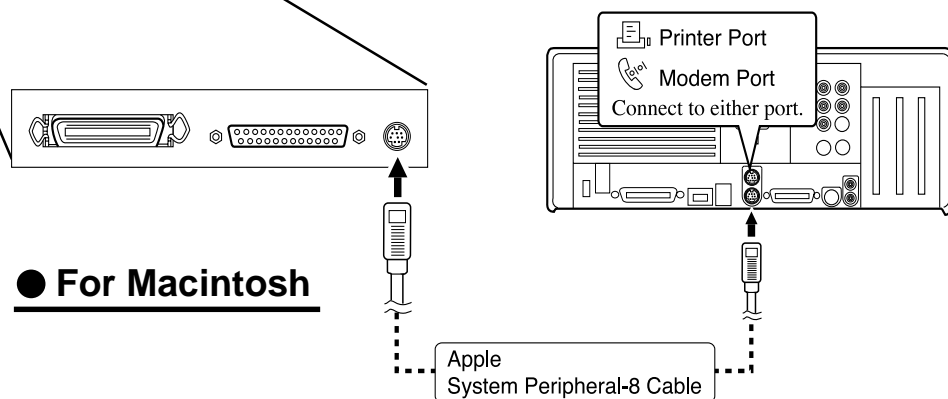


● For IBM PC or PC compatibles



* Cables are available separately. One which you are sure matches the model of computer being used should be selected.

● For Macintosh



Installing the DRIVER

- To perform printing or cutting from a software application, the appropriate software driver must be installed. If you're using Windows® 95 as your computing environment, install the "PC-60 DRIVER for windows® 95". If you're using Windows® 3.1, install the "PC-60 DRIVER for windows® 3.1".

- The file Readme.txt on the driver-installation disk contains late-breaking information that is not in the manual. Be sure to read through this file.
You can read this file using Notepad or another word processor.

- **Operating environment**

Personal computer with Windows® 95 or Windows® 3.1 installed.

- **Supported model**

Color CAMM PRO PC-60

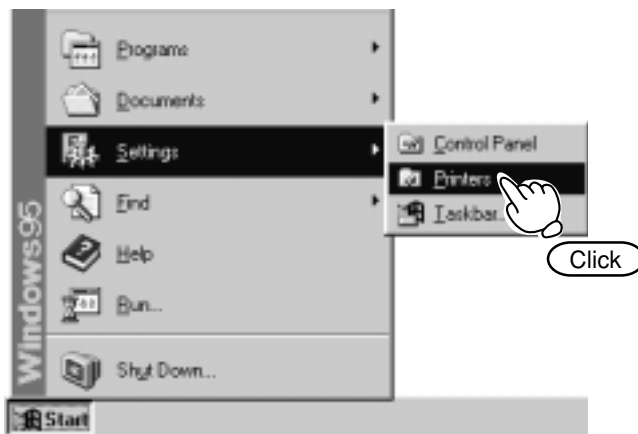
The following two sections -- "Using with Windows® 95" and "Using with Windows® 3.1" -- describe how to install and set up drivers and how to use the help screens for the respective computing environments.

● Using with Windows® 95

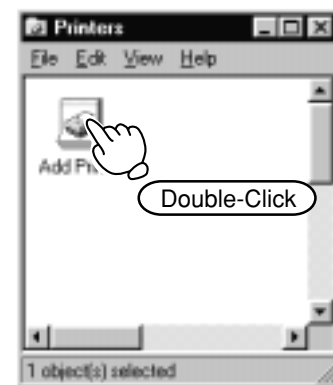
Installation

- 1 Switch on the computer and start windows® 95.
- 2 Insert the "PC-60 DRIVER for Windows® 95" disk included with the unit.

- 3 Click [Start].
Point to [Settings], then click [Printers].



- 4 Double-click the [Add Printer] icon.



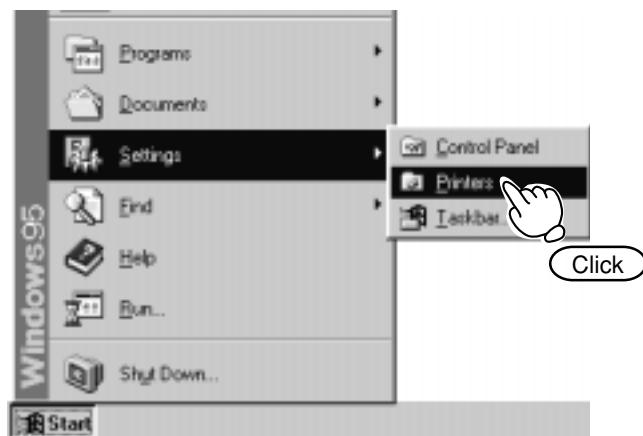
- 5 Click [Next >] and follow the messages to complete installation of the driver.



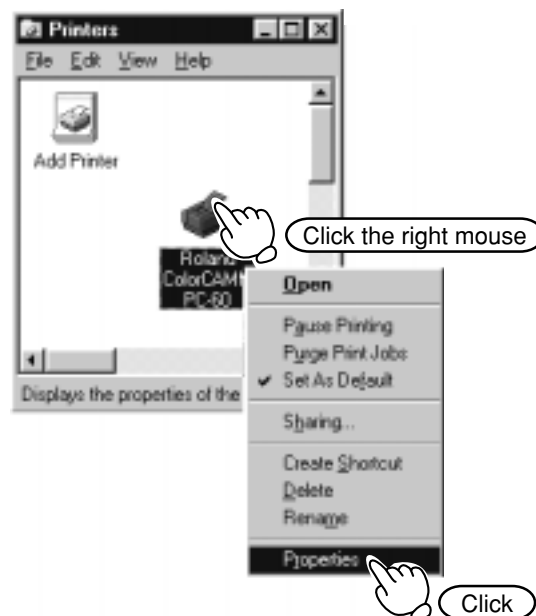
Driver Setup

Follow the steps below to select a port for the software driver.

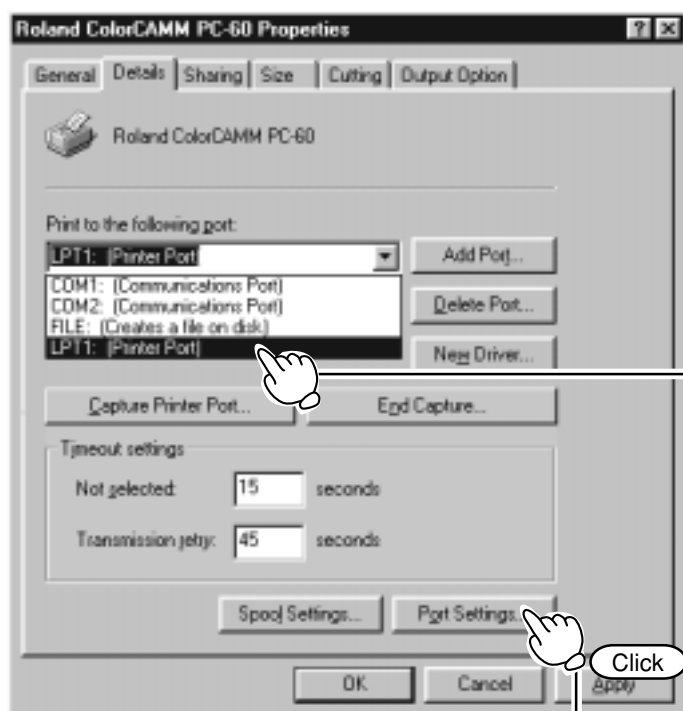
- 1 Click [Start].
Point to [Settings], then click [Printers].



- 2 Click the right mouse button on [Roland Color CAMM PC-60] and select [Properties].



- 3 Click the [Details] tab and select a port.



If a parallel connection is used for [Print to the following port:], select "LPT1: (Printer Port)".
If a serial connection is used, select COM1: or COM2:.

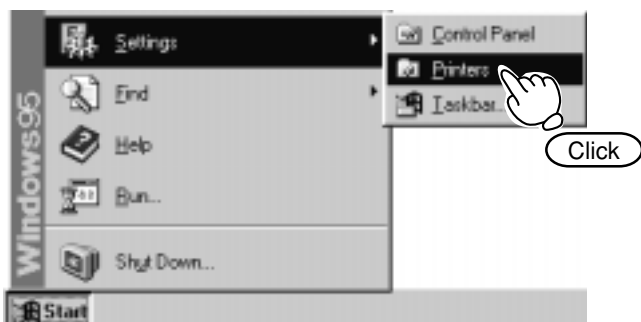
If you're using a serial connection, click [Port Settings...] and make the settings for the communication parameters.

Using Help

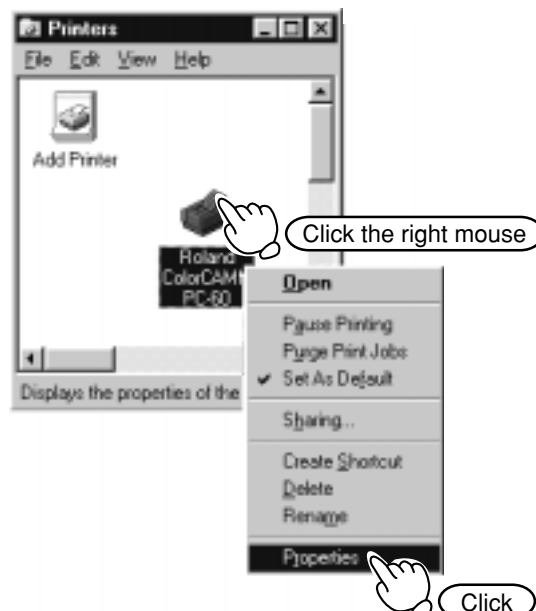
If there is something you're not sure about or don't understand when setting up the driver, you can refer to the help screens for that topic.

Available topics include details of the various settings as well as the "Printing and Cutting Guide" and "If you Think There's a Problem...."

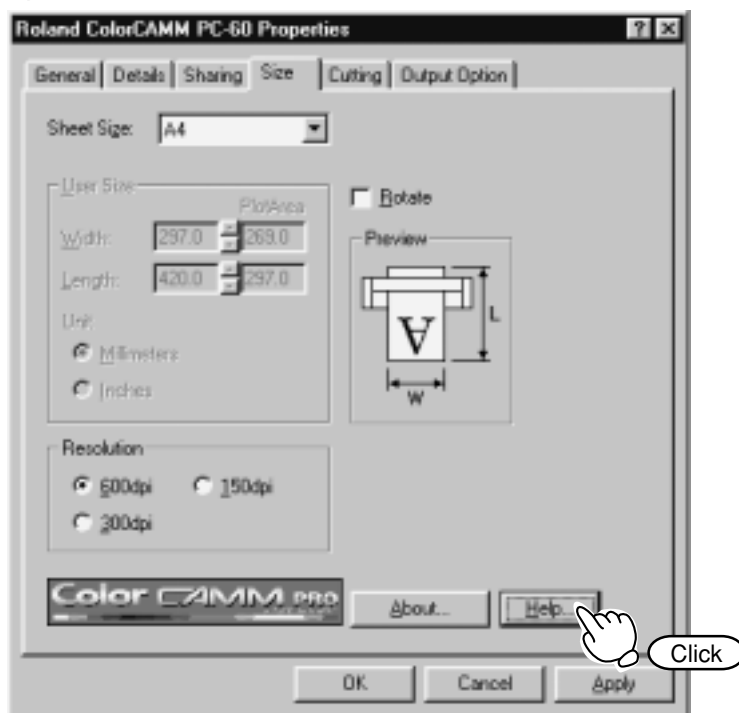
- 1 Click [Start].
Point to [Settings], then click [Printers].



- 2 Click the right mouse button on [Roland Color CAMM PC-60] and select [Properties].

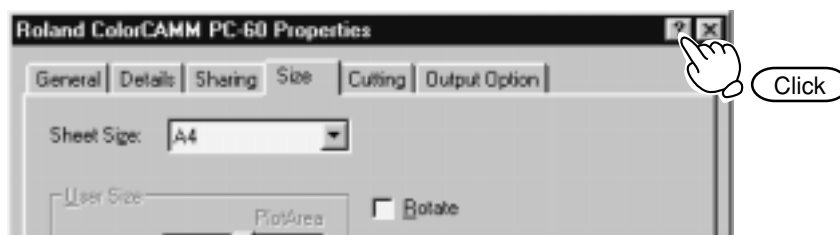


- 3 Click the [Size] tab, then click [Help...].



For Windows® 95 Only

Clicking [?] in the upper-right corner of the window makes the mouse pointer change to a question mark ("?"). You can then move the "?" pointer over any item you wish to learn more about, then click on the item to display an explanation of it.



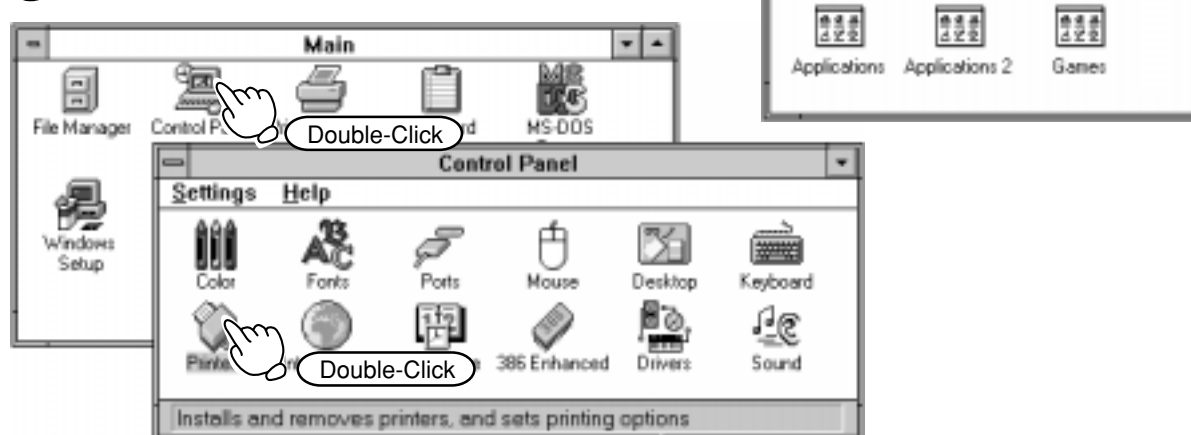
● Using with Windows® 3.1

Installation

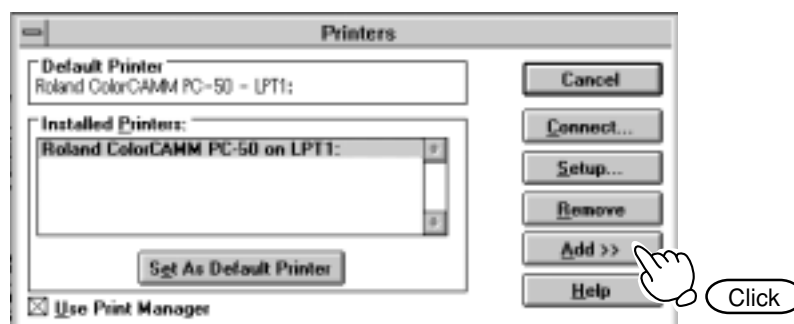
1 Switch on the computer and start windows® 3.1.

2 In Program Manager, double-click on the icon for the Main group.

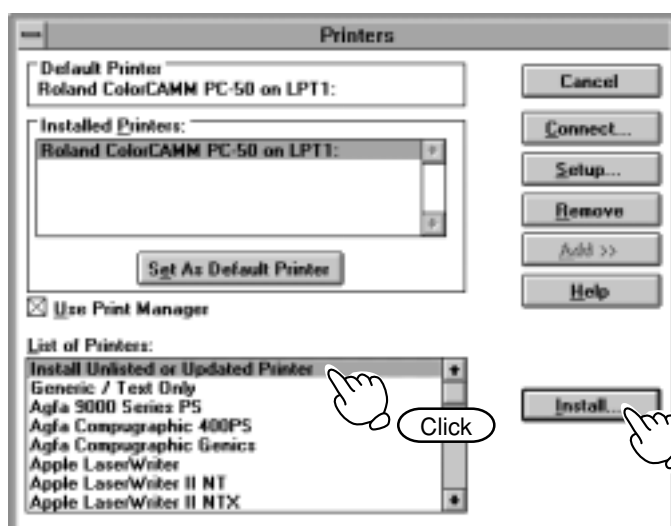
3 Double-click on the Control Panel icon, then double-click on Printers.



4 Click [Add >>].



5 Under [List of Printers:], select [Install Unlisted or Updated Printer]. Then click [Install...].

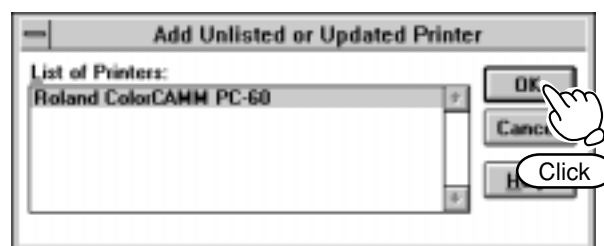


6 Insert the "PC-60 DRIVER for Windows® 3.1" disk included with the unit.

- 7** Use the keyboard to enter "A:\\" as the name of the drive containing the disk, then click [OK].



- 8** Choose [Roland Color CAMM PC-60] and click [OK].



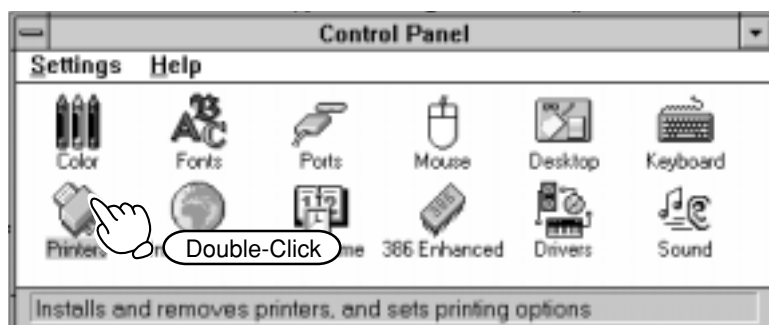
* The explanation in this manual assume that you are using Drive "A".

If your drive-name assignments differ from the ones shown above, make the appropriate changes.

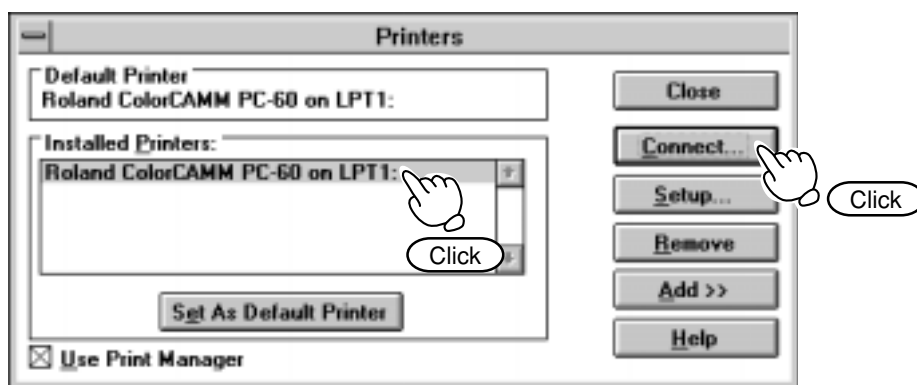
Driver Setting

Follow the steps below to select a port for the software driver.

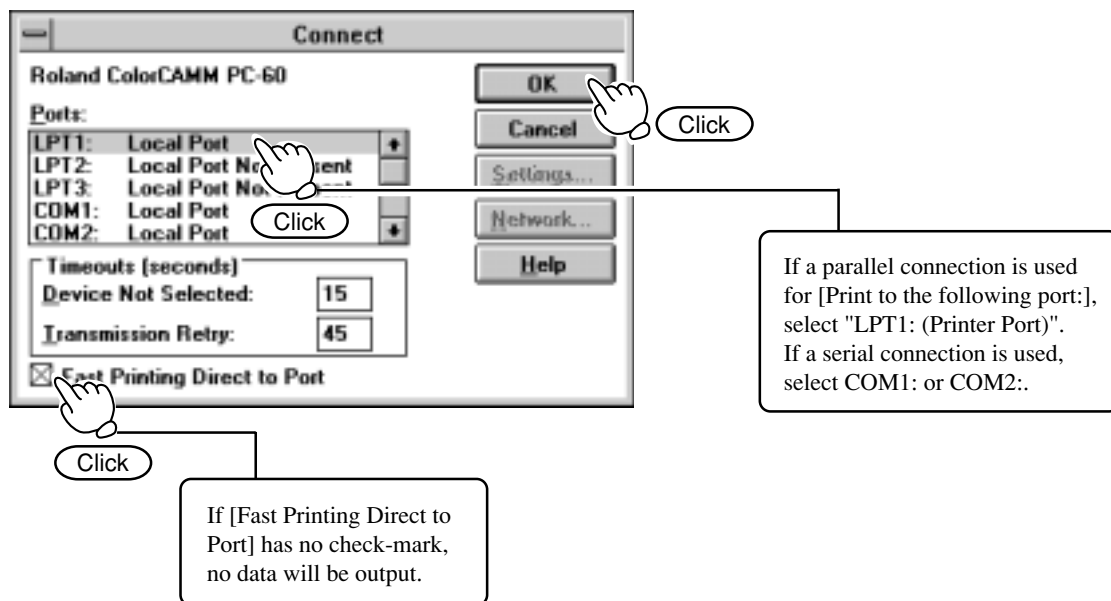
- 1** In Program Manager, double-click [Main], then [Control Panel], then [Printers].



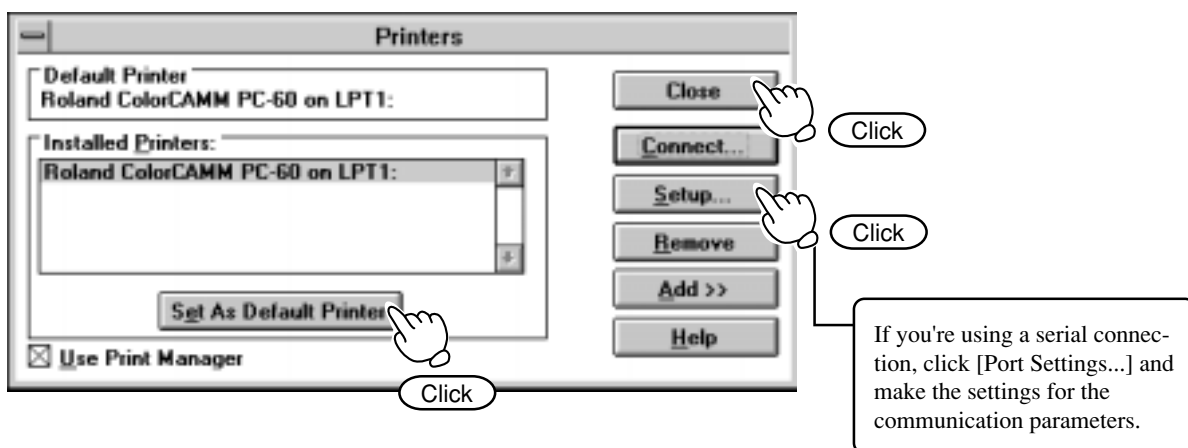
- 2** Under [List of Printers:], select [Roland Color CAMM PC-60] and click [Connect...].



- 3** Make the setting for the connection destination.
After making the settings, turn on [Fast Printing Direct to Port] and click [OK].



- 4** Click [Set As Default Printer], then click [Close].

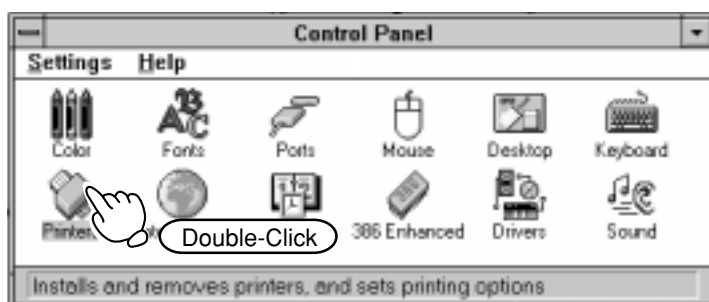


Using Help

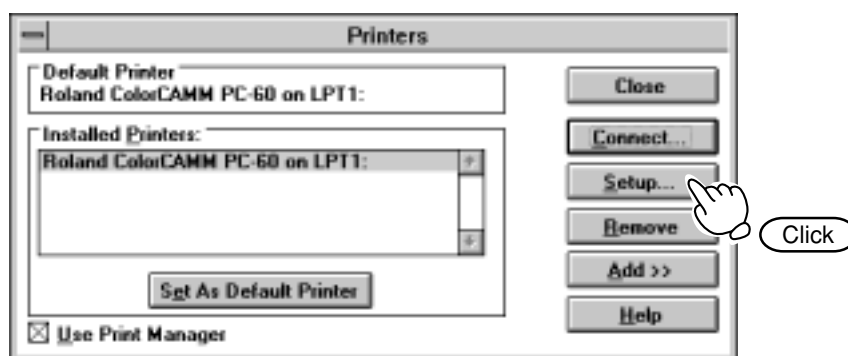
If there is something you're not sure about or don't understand when setting up the driver, you can refer to the help screens for that topic.

Available topics include details of the various settings as well as the "Printing and Cutting Guide" and "If you Think There's a Problem...."

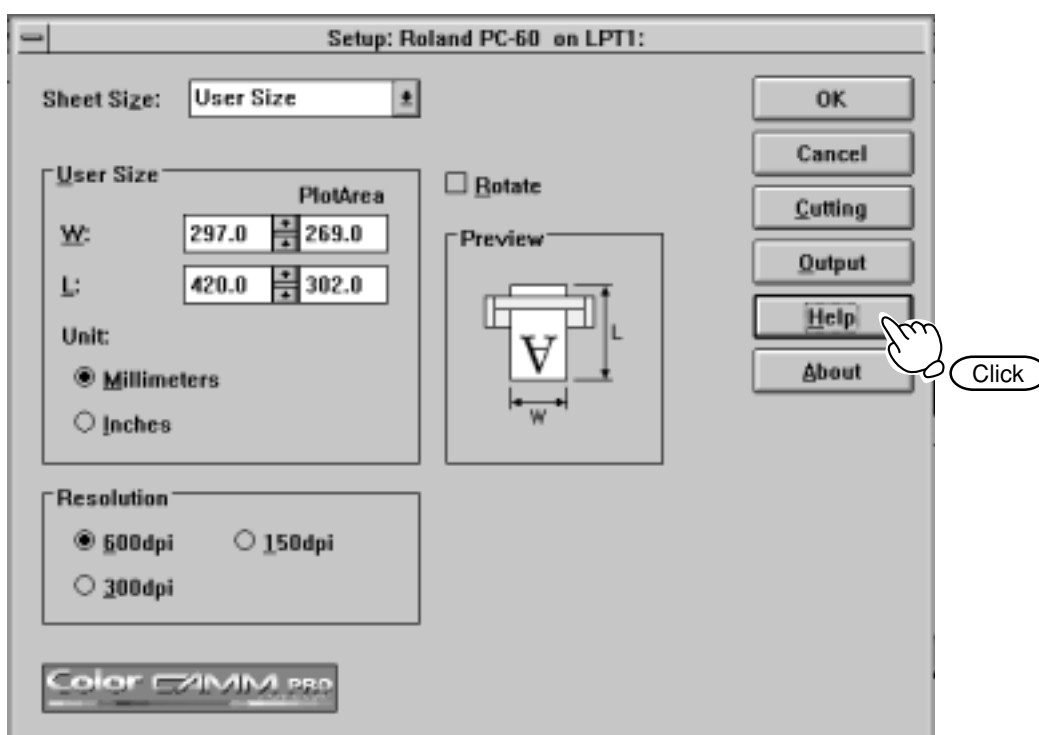
- 1 In Program Manager, double-click [Main], then [Control Panel], then [Printers].



- 2 Click [Setup...].




- 3 Click [Help].



Chapter 2 - Basic Operation

1 DIP Switch Settings

NOTICE DIP switches settings must be made only when the sub power is turned off  key.

OFF ↔ ON



DIP SW	Function	OFF	ON
SW-1	RS-232C Baud rate	9600	19200
SW-2	RS-232C Parity	Disable	Enable
SW-3	RS-232C Parity	ODD	EVEN
SW-4	RS-232C Handshake	Hardwire	XON/XOFF
SW-5	RS-422 Baud rate	57.6K	115.2K
SW-6	Front edge sense	Disable	Enable
SW-7	Blade offset	0.25 mm	0.5 mm
SW-8	Prefeed mode	Enable	Disable
SW-9	RESERVED	—	—
SW-10	RESERVED	—	—

All DIP switches are set to OFF when shipped from the factory.
The DIP switches are located on the right face of the unit, near the bottom.

SW-1-4 : Sets the communication parameters for a serial (RS-232C) connection. When the PC-60 is connected to the computer through the serial port, be sure that the communication parameters for SW-1 to SW-4 are set correctly, matching the computer port settings. (Data length is fixed to 8 bits. Stop bits is 1 or 2.)

SW-5 : This sets the baud rate (transmission speed) when using a serial (RS-422) connection. Set this switch to match the computer's communication parameters.

SW-6 : If "ROLL" has been selected using the SHEET TYPE key on the control panel, then during setup the unit detects the front most edge of the material moves the front sensor to this front edge. This eliminates leaving any margin on the front part of the material, for more effective use of the material.

SW-7 : Sets the amount of offset for the cutter blade. Set to OFF when using a tool with a blade offset of 0.25 mm, or to ON when using a tool with a blade offset of 0.5 mm.

SW-8 : This "familiarizes" the unit with the material before performing printing or cutting, thereby eliminating any misalignment during material feed. This is normally set to OFF (enabled).

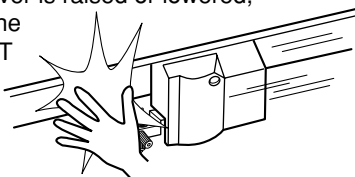
2 Powering On

⚠ CAUTION



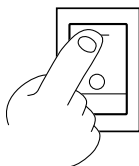
Do not allow hands or hair to come near the platen while the carriage is in motion.

Failure to do so may result in injury due to sudden movement of the carriage when the power is switched on, when the sheet loading lever is raised or lowered, or when the CUT TEST key is pressed.




- 1 When using the unit for the first time, switch on the main power switch on the left-hand side of the unit. (At this time, all LEDs flash once.)

Press the side of the switch marked “-”.



Leave the main power switch on, and use the sub power switch for switching the unit on and off on an everyday basis.

- 2 Make sure the sheet loading levers are raised, then press the  key (the sub power switch) on the control panel.



The POWER LED lights up

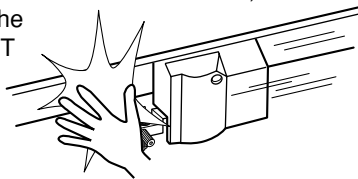
3 Loading the Material

⚠ CAUTION



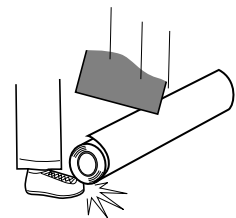
Do not allow hands or hair to come near the platen while the carriage is in motion.

Failure to do so may result in injury due to sudden movement of the carriage when the power is switched on, when the sheet loading lever is raised or lowered, or when the CUT TEST key is pressed.



Roll material must be placed at a predetermined shaft position.

Failure to do so may result in falling of the roll, leading to injury.

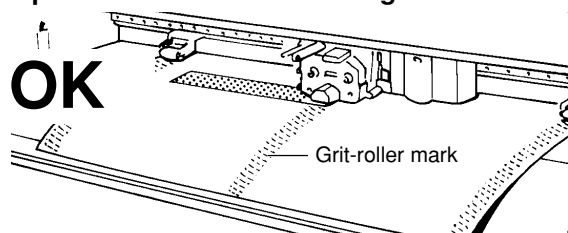


NOTICE Please do not try to move the tool carriage by hand once the power has been turned on. Doing so may result in breakdown of the unit.

Actions such as the following must never be attempted, because they may lead to damage of the printing head.

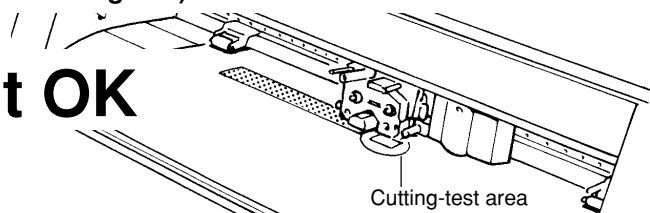
- Do not attempt to print on a material that has grit-roller marks.

Not OK



- Do not attempt to print at a location where cutting has been performed (such as an area used for a cutting test).


Not OK

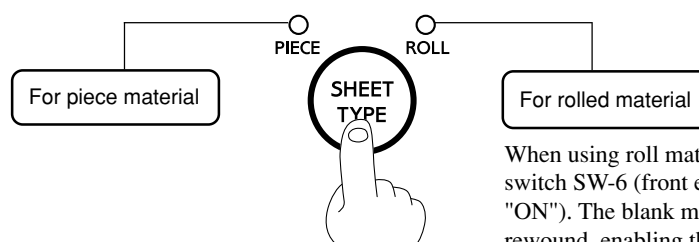


- Do not use material that is dusty or scratched.

Ink adhesion may suffer if the material's printing surface is not clean. If dirt or oils from the hand are transferred to the material when it is loaded, use a cloth moistened with alcohol to wipe the material clean before printing.

1

Use the  key to select the material type.

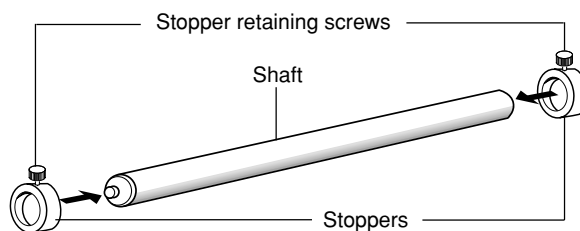


When using roll material, it is recommended that DIP switch SW-6 (front edge sensing) be enabled (set to "ON"). The blank margin toward the front of the unit is rewound, enabling the sheet to be used without waste.

2 Only when using rolled material

- 1 Pass the stopper onto the shaft to match the width of the roll material to be used. (The shafts (2 pieces), stoppers (2 pieces), and stopper retaining screws (2 pieces) are included with the stand.)

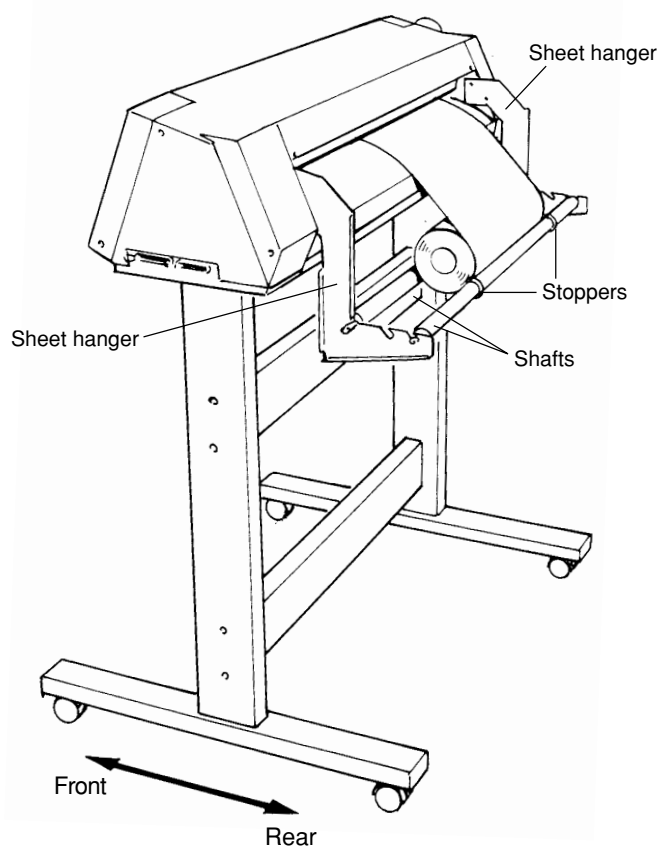
When fitting the stoppers onto the shaft, loosen the stopper retaining screws and pass the stoppers onto the end of the shaft where the hole is present.



- 2 Install the two shafts on the sheet hanger and place the roll material on top of the shafts.

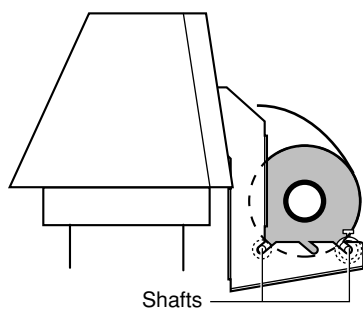


If the DIP switch has been set to disable the prefeed function, then pull out from the roll the length of material required for cutting. (If the prefeed function is enabled, there is no need to pull out material.)

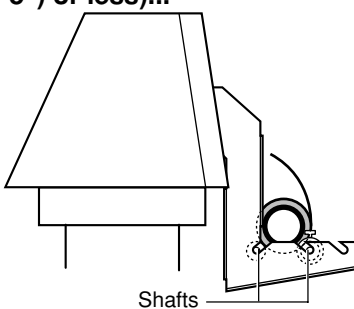


Side view of loaded roll material

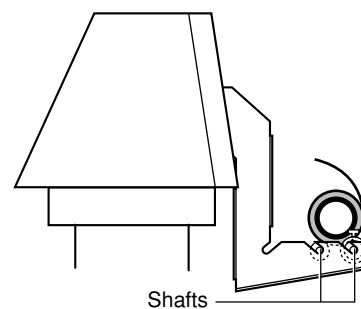
When using a thick roll of material



When only a small amount of material remains (material diameter is 72 mm (2-7/8") or less)...



Not OK

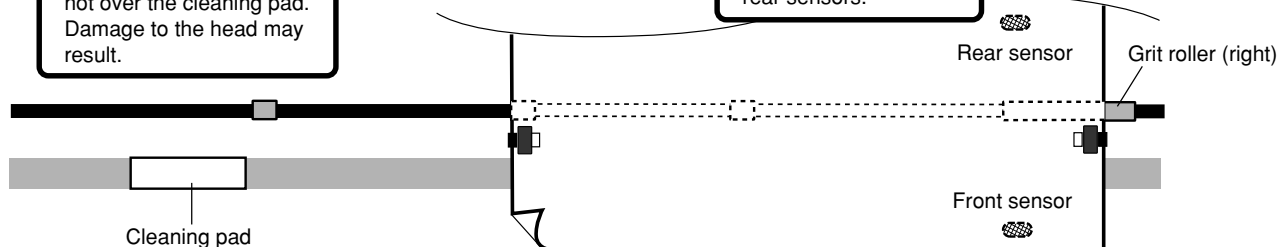


3 Loading the Material



- 3** Position so that the left-hand edge of the material lies over any one of the grit rollers. Move the material from side to side and position so that the right-hand edge of the material lies over the rightmost grit roller.

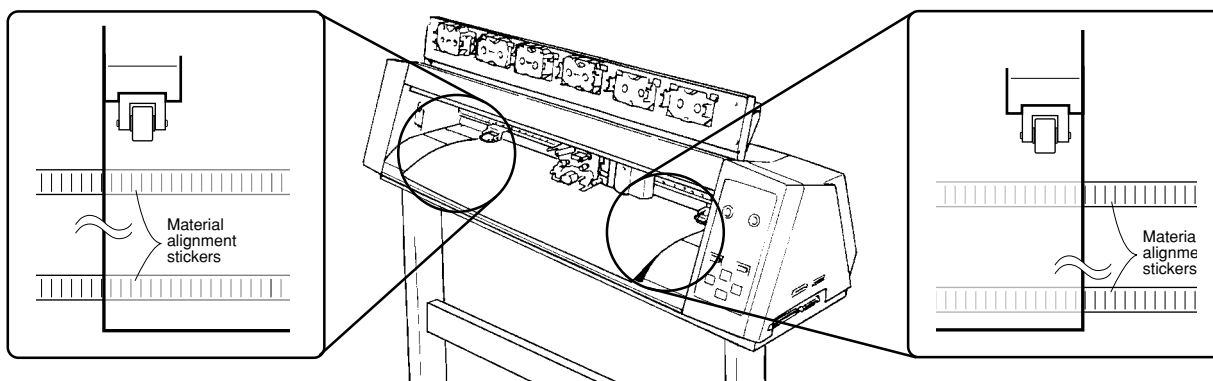
Make sure the material is not over the cleaning pad. Damage to the head may result.

Make sure the material lies over the front and rear sensors.

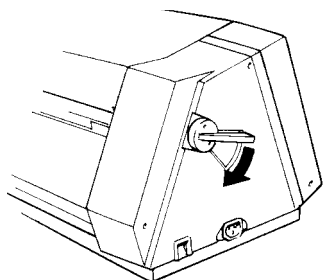


- 4** Load the material so that it lies straight and is aligned with the guideline stickers, then move the left and right pinch rollers so that they are above the grit rollers. (If the grit rollers are hidden by the material, align the pinch rollers with the grit roller position indicators.)

If the pinch roller is hidden by the carriage, be sure to use the  and  cursor keys to move the carriage out of the way. Attempting to move the carriage by hand may damage the unit.



- 5** Lower the sheet loading levers to secure the material in place.

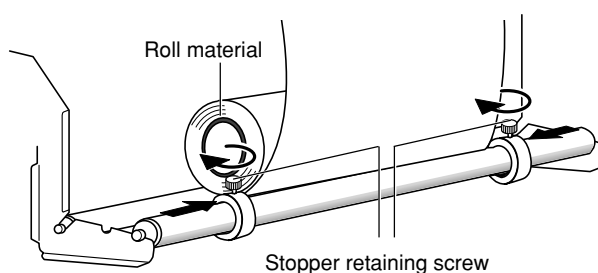


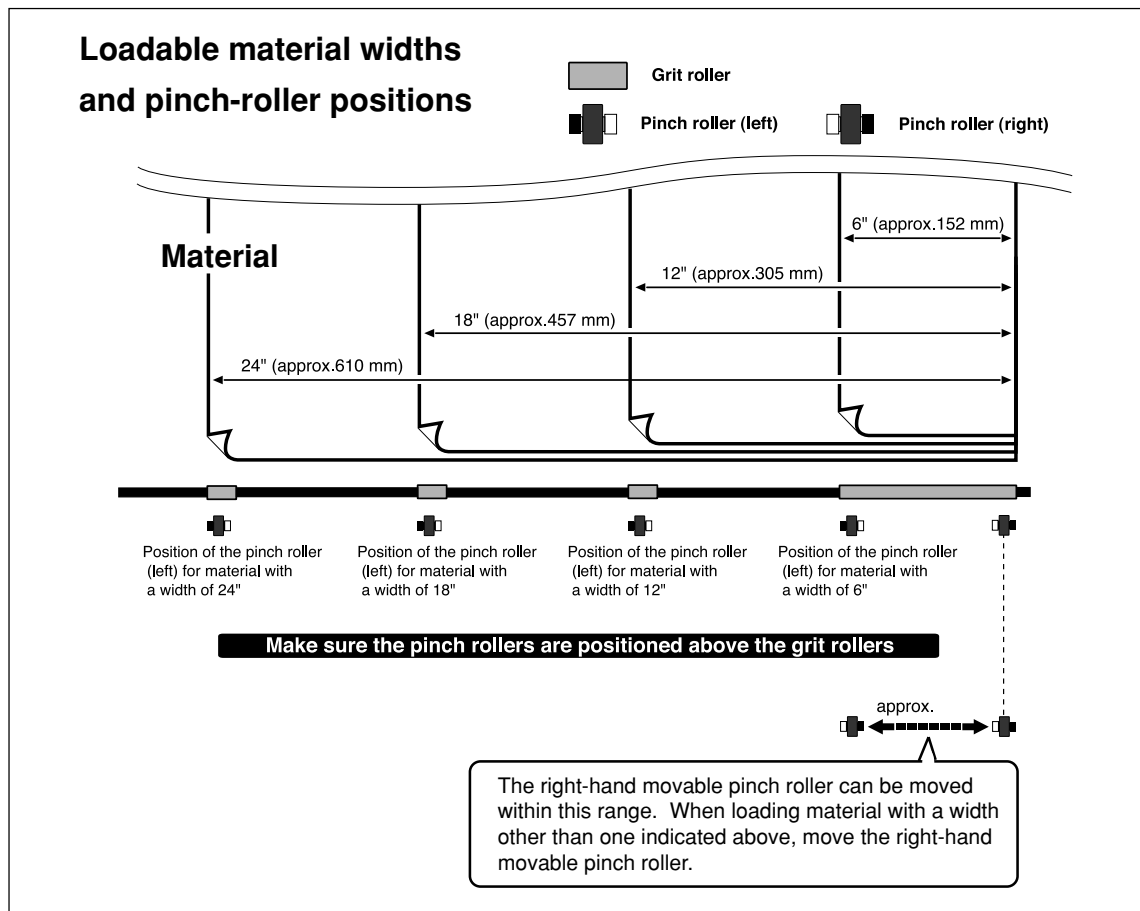
Setup is finished.

When the sheet loading lever is lowered, the carriage begins to move. The width of the material is detected, and the carriage stops at the material's right-hand edge. When no setting is made for BASE POINT, the point where the unit stops here becomes the base point.

- 6** **Only when using rolled material**

Attach the stoppers to the edges of the roll material and tighten the screws to secure in place.





If the PIECE LED and ROLL LED flash at the same time

Possible causes are given below.

- The pinch rollers are not above the grit rollers.
 → Refer to step 3 of "3 Loading the Material" and position the pinch rollers correctly above the grit rollers.
- The loaded material does not cover the front and rear sensors.
 → Refer to step 3 of "3 Loading the Material" and position the material correctly over the front and rear sensors.

To Perform Long Printing/Cutting

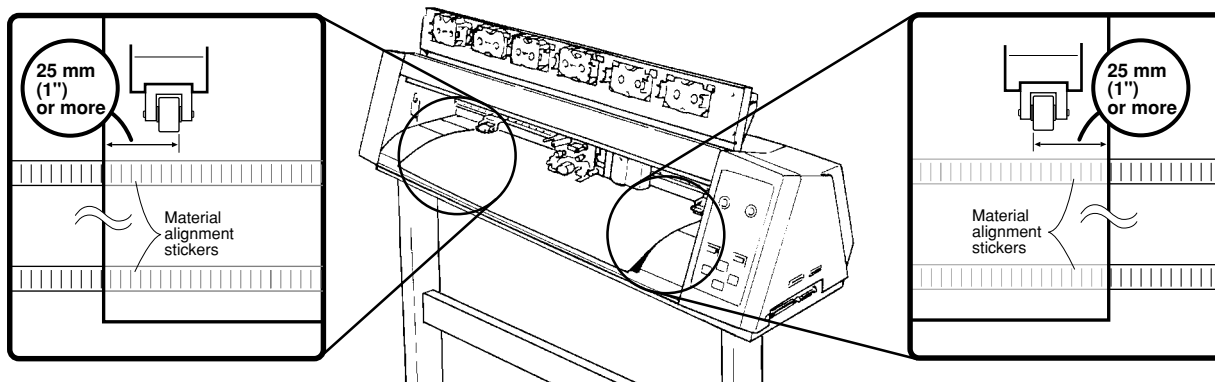
When performing printing or cutting over a length of 1.5 m (60") or more, first feed out the required length of material. Then follow the steps below to load the material.

If the DIP switch (SW-8) has been set to disable the prefeed function, skip steps 6 and 7.

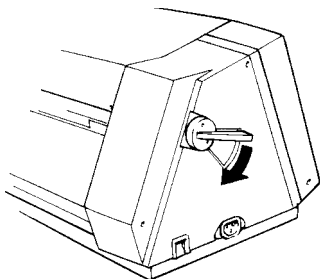
1 Use material that is wider by 50 mm (2") or more than the width of the printing or cutting to be performed.

2 Perform steps 1 through 4 of "3 Loading the Material".

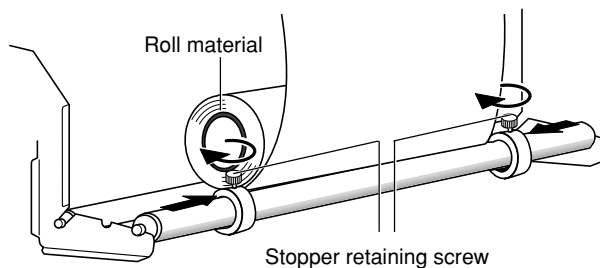
3 Position the pinch rollers as shown in the figure.



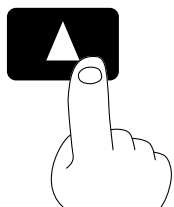
4 Lower the sheet loading levers to secure the material in place.



5 Attach the stoppers to the edges of the roll material and tighten the screws to secure in place.

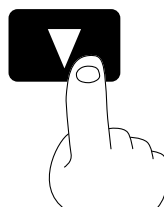


6 Feed out the length of material to be printed or cut.



Make sure that the material remains held by the pinch rollers. If the material does come loose from the pinch rollers, set it in place again.

7 Return the fed-out material.



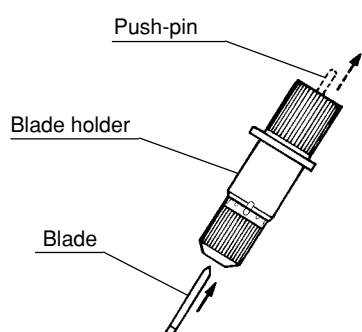
Make sure the material lies over the front and rear sensors.

4 Installing a Blade

NOTICE Do not touch the tip of the blade. This could impair the cutting performance of the blade.

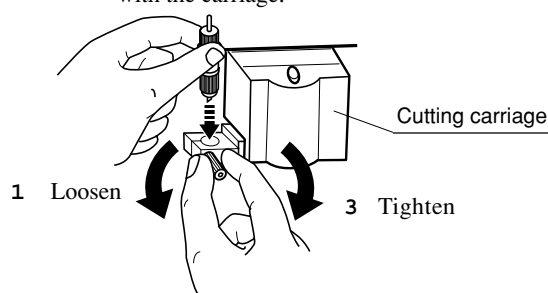
To mount the tool holder, insert the tool holder until its collar lies flush against the upper portion of the mounting hole.

- 1** Insert blade into the blade holder until it snaps into place with an audible click.



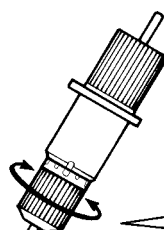
- 2** Support the tool-securing screw from below and install the blade holder.

* Insert the blade holder until the collar is flush with the carriage.

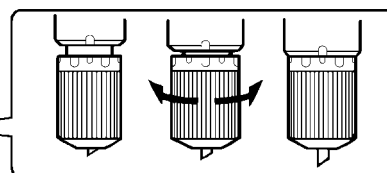


Adjusting the Cutter Blade

Adjust the blade as shown in the figure to obtain the ideal amount of blade extension for the material to be cut.



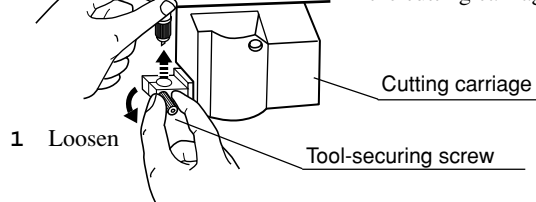
* One full rotation moves the blade 0.5 mm up or down. (Scale shows gradations of 0.1 mm)



When cutting is performed after printing, the cap tip of the blade holder may scratch the printed surface. If this is the case, lengthen the cutter blade extension.

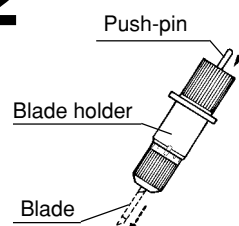
Removing a Blade

- 1** **2** Remove the blade holder from the cutting carriage.



Leave the tool-securing screw loose. Tightening the screw makes it more difficult to install the blade holder.

2



Press the push-pin and remove the blade from the blade holder.

If a blade was used, wipe the blade with a soft cloth to remove any material that may cling to it.

5 Installing a Ribbon Cartridge

NOTICE Ribbon cartridges must be installed in cartridge holders, and not mounted directly on the printing carriage.

Do not allow the marker seals on the ribbon cartridges to be soiled or scratched. Such damage may result in faulty operation.

When performing full-color printing, install ribbon cartridges for four colors (CMYK).

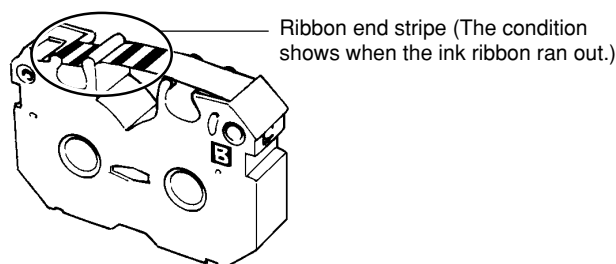
When closing the front cover, close gently by pressing with the hand, being careful not to let your fingers get pinched.

Do not allow the hands to touch the ink ribbons when opening or closing the front cover.

The PC-60 can perform printing using either resin or wax ribbons. Please give attention to the matters described below. Failure to do so may make it impossible to achieve attractive printing results.

- Do not attempt printing with a mixture of resin and wax ribbons. Use only one type of ribbon at any given time.
- Make sure that the type of ink ribbon installed (resin or wax) matches the setting for the driver (resin or wax).
- Resin ribbons and wax ribbons are suited to different types of media.
Please select a medium that is appropriate for the type of ribbon in use.

Please do not use a cartridge when it shows the ribbon end stripe as illustrated.



The PC-60 can automatically determine the color of an ribbon cartridge, so it doesn't matter which color cartridges are mounted in which of the six cartridge holders.

Also, when more than one ribbon cartridge of the same color have been installed, the unit gives priority to the leftmost cartridge as seen from the front. In such cases, if the first cartridge runs out of ink ribbon during printing, the unit simply selects the next cartridge and continues printing.

● Selecting Ribbon cartridges

Process Color Printing

Full-color printing is performed using the process colors C (cyan), M (magenta), Y (yellow), and K (black). Install the four CMYK ribbon cartridges in the cartridge holders. When all CMYK colors have been loaded, the COLOR LED lights up to signal that full-color printing is enabled.

For the software driver, select Process Colors. (Please refer to the help file for the PC-60 DRIVER.)

Special Color Printing

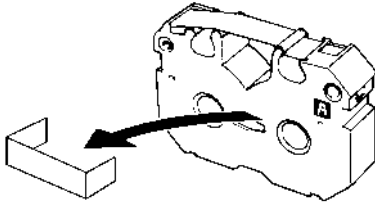
This is used when you wish to add emphasis to one area or perform printing with limited colors.

For the software driver, select Special Colors. (Please refer to the help file for the PC-60 DRIVER.)

Ribbon cartridges for special colors are sold separately.

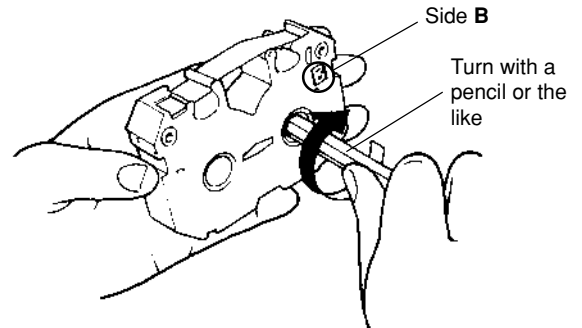
● Installing Ribbon Cartridges

- 1** When installing a new ribbon cartridge, remove the stopper.

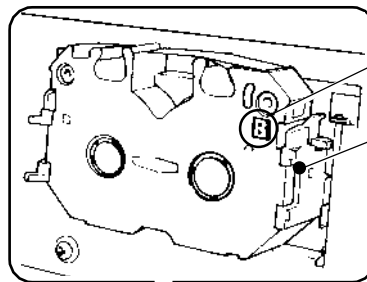
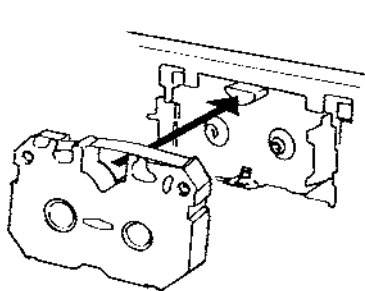


- Do not attempt to rewind the ink ribbon. Rewinding the ink ribbon may cause it to break.
- A used ribbon cartridge cannot be reused. Do not attempt to turn over and reinstall a used ribbon cartridge, or to rewind the ink ribbon and reuse the cartridge.

- 2** Take up slack in the ink ribbon as shown in the figure.



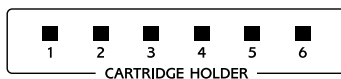
- 3** Open the front cover and fit the cartridge in the cartridge holder. Gently press into place with the fingers.



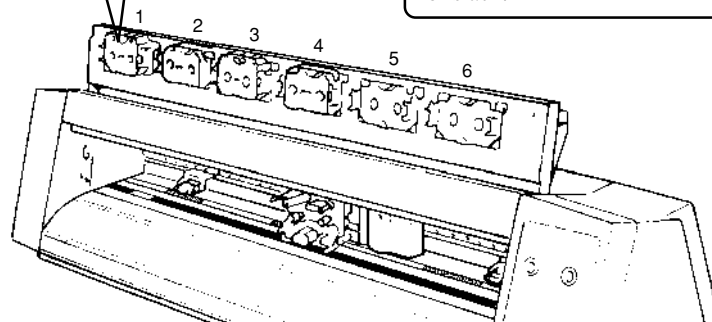
Make sure side **B** is facing up.

The cartridge is held in place by the tabs on the left and right.

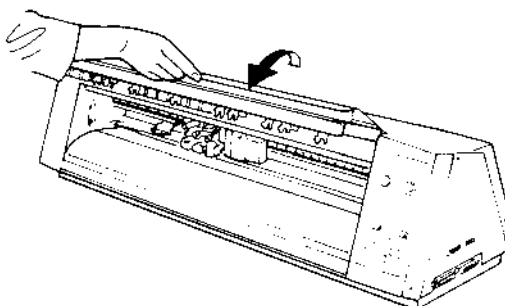
Make sure that the cartridge is securely held in place by the tabs on the left and right sides, and that the ink ribbon is free of slack.



From left to right, the CARTRIDGE HOLDER LEDs correspond to cartridge holders 1 through 6.



- 4** Gently close the front cover.



The FRONT COVER LED flashes if the front cover is not shut securely. Make sure the LED is lighted.

The COLOR LED Flashes and Operation Stops...

● The COLOR LED and a CARTRIDGE HOLDER LED flash at the same time

The ink ribbon has been used up. Follow the steps below to replace with a new ribbon cartridge.

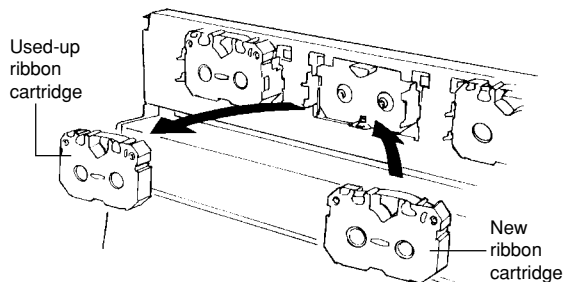
- 1** Operation stops when the ink ribbon runs out. If this happens, the COLOR LED and the CARTRIDGE HOLDER LED corresponding to the cartridge that has run out of ink ribbon flash at the same time.



Example:
In this case, the cartridge installed
at "2" has run out of ink ribbon.



- 2** Open the front cover and replace with a new ribbon cartridge of the same color.



* When a cartridge of a different color is installed, the COLOR LED flashes and printing is not resumed.

- 3** Printing resumes when the front cover is closed.

● Only the COLOR LED flashes

A ribbon cartridge of the color selected for the driver is not loaded. Install a ribbon cartridge of the driver-specified color.

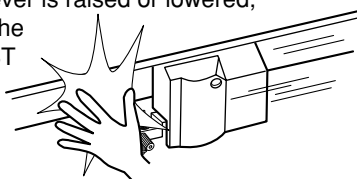
6 Cut Test & Self-test

⚠ CAUTION



Do not allow hands or hair to come near the platen while the carriage is in motion.

Failure to do so may result in injury due to sudden movement of the carriage when the power is switched on, when the sheet loading lever is raised or lowered, or when the CUT TEST key is pressed.



Cut Test

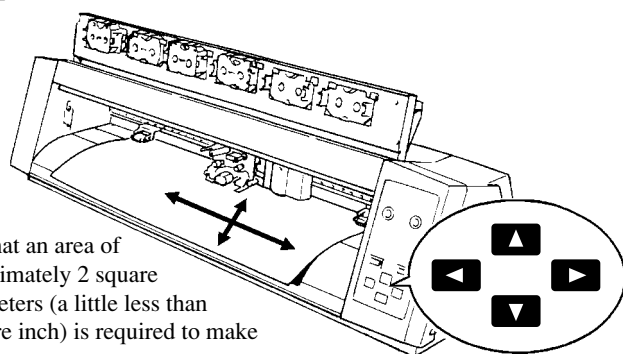
When carrying out cutting for the first time, or when the material or tool has been changed, a cutting test is performed to verify how the tool cuts.

1

Move the blade-force knob on the right-hand side of the unit all the way to the front (for minimum blade force).

2

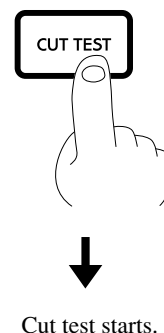
Open the front cover and move the tip of the blade to the location within the cutting area where the cutting test is to be performed.



* Note that an area of approximately 2 square centimeters (a little less than a square inch) is required to make a test cut.

3

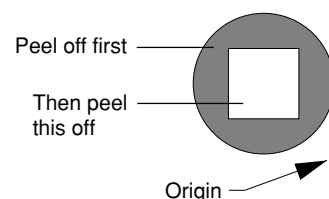
Press the CUT TEST key.



4

- 1 First peel off the round section (shaded as shown).
→ When it can be peeled by itself, without disturbing the square, the cutter force is set appropriately.
- 2 Next, peel off the square, and look at the backing behind it.
→ The optimum blade pressure is correct if you can clearly make out the lines left by the blade.

Adjust the cutter force control slider until results as shown above are obtained.
(Gradually increase the cutter force until you reach the optimum level.)





Self-test

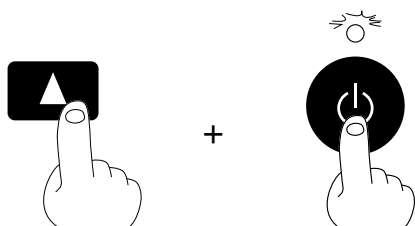
The PC-60 is equipped with a “self-test” function to allow you to check whether or not it is capable of operating normally. If the PC-60 is not performing correctly, follow the steps below to perform a self-test.

A computer is not required in order to carry out the self-test.

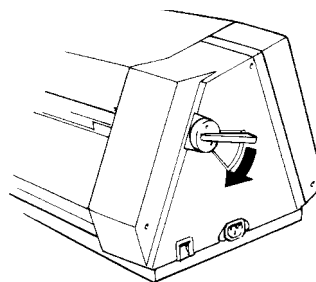
1 Leave on the main power for the PC-60, and switch off the sub power.

2 Install blade holders and four-color (CMYK) ribbon cartridges on the PC-60.

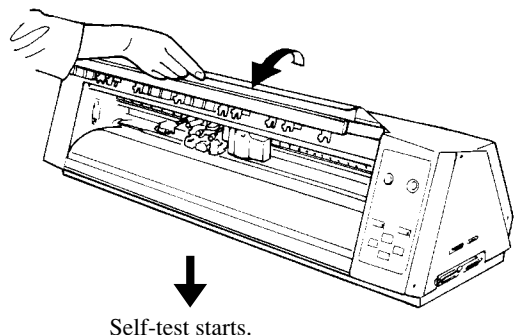
3 Hold down the  key on the panel while you turn the  key (sub power) on.



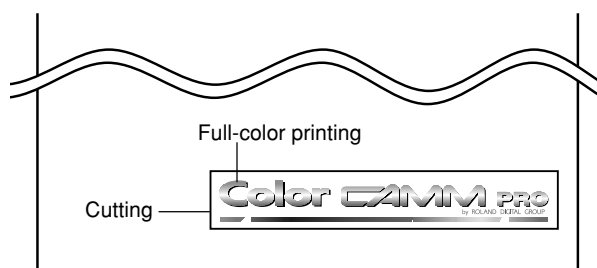
4 Load material and lower the sheet loading lever.



5 Gently close the front cover.



6 Operations is normal if the figure shown at below.



After the operation check has finished, raising the sheet loading lever cancels the operation check mode. After that, the unit just as it does when the power has been switched on in the normal manner.

7 Setting the Base Point

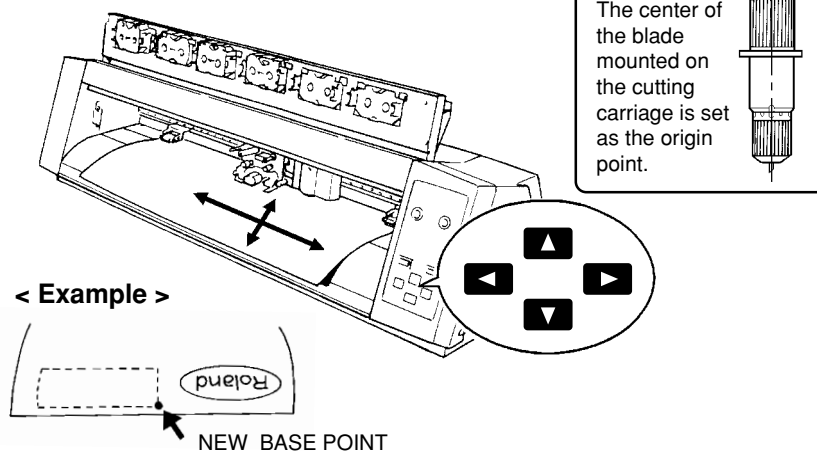
The BASE POINT key is used to set the base point for printing or cutting.

The base point can be set anywhere you like on the material, making it possible to print or cut unused portions of the material.

The base point can be set after finishing material setup (and lowering the sheet loading lever).

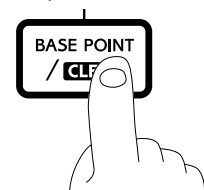
The base point setting remains in effect until the setup is canceled (by raising the sheet loading lever), page feed is performed, or a new base point is set.

- 1 Open the front cover and move the carriage to a new base point for printing or cutting. The BASE POINT setting can be only when in the printing or cutting area. Take care to ensure that the front edge of the sheet does not come loose from the front sensor.

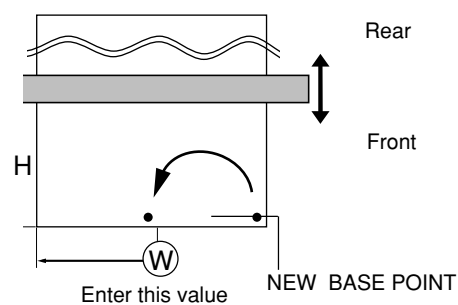


- 2 With the front cover remaining open, press the BASE POINT key.

The BASE POINT LED lights up



* If the base point has been moved, enter the value for **W** in the figure at right as the sheet size width for the driver. If this value is not corrected, output results may be cut off before reaching their normal end.



8 Downloading Printing/Cutting Date

NOTICE When printing a line that is horizontal with respect to the direction of material feed, set the line width to 0.15 mm (0.0059") or more. Printing with a line width less than 0.15 mm (0.0059") may cause the ink ribbon to snap.

The unit will begin printing/cutting when it receives printing/cutting data sent from the computer.
For more details, please refer to the help file for the PC-60 DRIVER or the documentation for the application software you're using.

9 Pausing and Stopping Operation

Printing or cutting is Paused

Open the
front cover.



The FRONT
COVER LED
flashes and
operation pauses.

Printing or cutting is Resumes

Close the
front cover.



The FRONT
COVER LED
lights up and
printing or
cutting resumes.

To Terminate printing or cutting

- 1 Halt transmission of printing or cutting instructions from the computer.
- 2 Hold down the CLEAR key until the CLEAR LED starts to flash.



LED status
Remains continuously lit during
data clear
Goes dark when data clear has
ended



Printing or cutting instructions already sent from the computer to the PC-60 are deleted, and operation stops.

* After stopping an operation, if the unit does not function normally when the next batch of data is sent, switch the power off and back on.

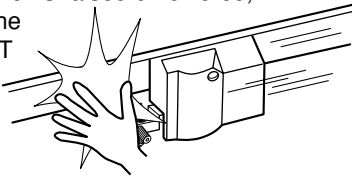
10 Cutting Off or Detaching the Material

⚠ CAUTION




Do not allow hands or hair to come near the platen while the carriage is in motion.

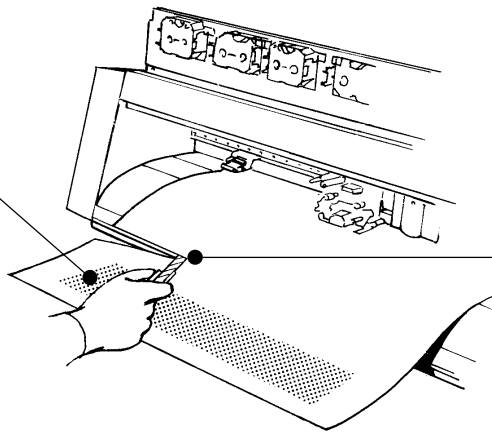
Failure to do so may result in injury due to sudden movement of the carriage when the power is switched on, when the sheet loading lever is raised or lowered, or when the CUT TEST key is pressed.



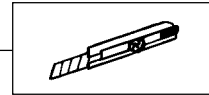
Cutting Off a Piece of Material from a Roll

Use the procedure shown in the figure to cut off a piece of material while leaving the rest of the roll loaded on the unit.

- 1 Use the  key to feed the portion that has been printed or cut.



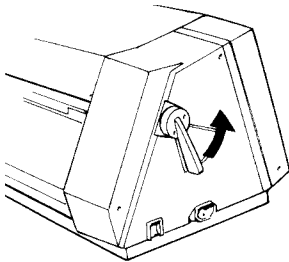
- 2 Cut off the material by with a commercially available cutter knife, using the knife guide groove to guide the tip of the blade.



Removing the Material

1

Open the front cover and raise the sheet loading lever.

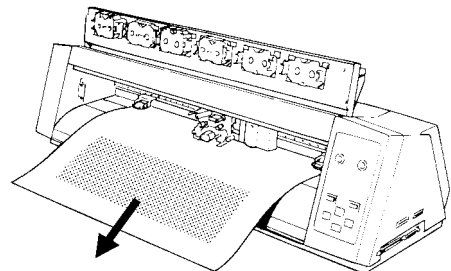


Canceling the setup

The carriage moves to the left.

2

Remove the material.



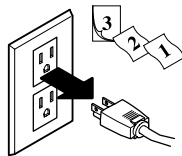
11 Powering Off

⚠ CAUTION




When not in use for prolonged periods, unplug the power cord from the electrical outlet.

Failure to do so may result in danger of shock, electrocution, or fire due to deterioration of the electrical insulation.



NOTICE Do not switch off the main power while printing is in progress. Doing so causes the printing head to remain in contact with the sheet, which may damage the head.

When switching off the main power, use the  key to turn off the sub power, make sure the POWER LED has gone out, and then switch off the main power.

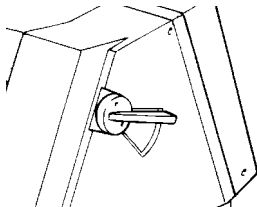
When the unit is not in use, keep the pinch rollers raised. The pinch rollers may be deformed if left engaged.

Before unplugging the power cord, make sure the sub power switch and the main power switch have both been turned off.


Power Off in Daily Operation

1

Make sure the sheet loading lever has been raised.



2

Hold down the  key on the control panel until the LED starts to flash, and switch off the sub power.


* In everyday use, the main power is normally always left on and not switched off.



The sub power automatically switches off when an hour elapses with no operation being performed.

When Not Use for a Prolonged Period

1

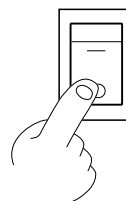
Hold down the  key on the control panel until the LED starts to flash, and switch off the sub power.



2

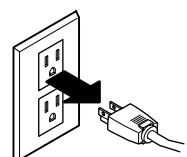
Make sure the flashing POWER LED has gone out, then switch off the main power.

Press the side of the switch marked with “●”.



3

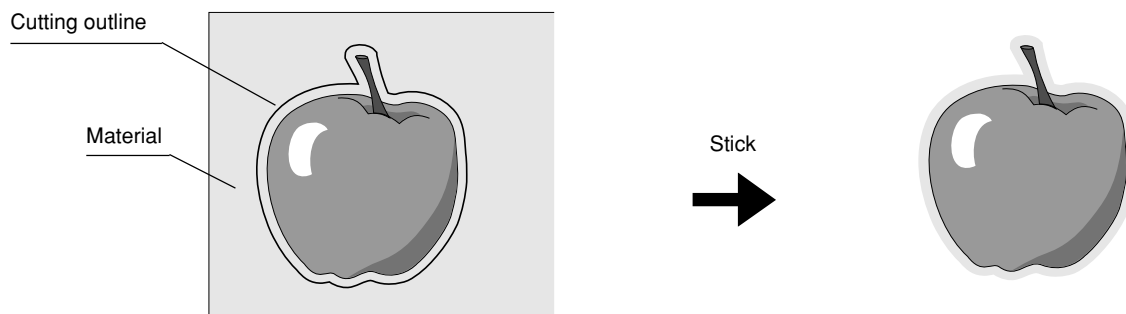
Unplug the power cord from the electrical outlet.



Chapter 3 - User's Reference

Tips and Tricks for Printing/Cutting

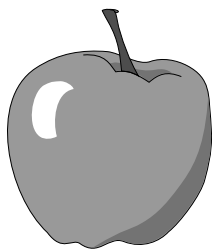
Removing the blank space surrounding a picture



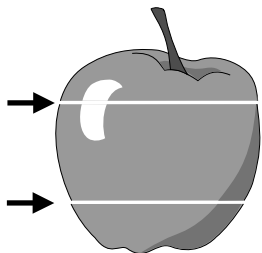
Adding color to a border



Correcting Line Pitch



Line pitch: Correct



Line pitch is too wide, and spaces appear between lines.

How to Correct Line Pitch

- 1 Hold down the BASE POINT key on the panel while you turn the POWER key (sub power) on. The BASE POINT LED and the POWER LED lights up.
- 2 Pressing the and keys changes the displayed CARTRIDGE HOLDER LEDs.
- 3 Referring to the table below, use the and keys to determine the amount of offset between lines. (Offset can only be used for narrow line pitch than the default value, which is no offset.)
- 4 The setting is completed when the POWER key is used to switch off the sub power.

The setting that has been made is stored in memory even after the power is switched off. To change the setting, simply repeat the procedure just described.

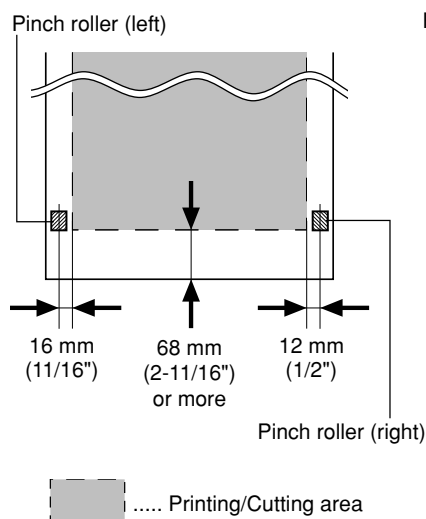
Dark:
Flashing:

Pitch (Corresponding number of dots)	CARTRIDGE HOLDER LED					
	1	2	3	4	5	6
Default (no offset)						
-0.1						
-0.2						
-0.3						
-0.4						
-0.5						
-0.6						
-0.7						
-0.8						
-0.9						
-1.0						
-1.1						
-1.2						
-1.3						
-1.4						
-1.5						
-1.6						
-1.7						
-1.8						
-1.9						
-2.0						
-2.1						
-2.2						
-2.3						
-2.4						
-2.5						
-2.6						
-2.7						
-2.8						
-2.9						

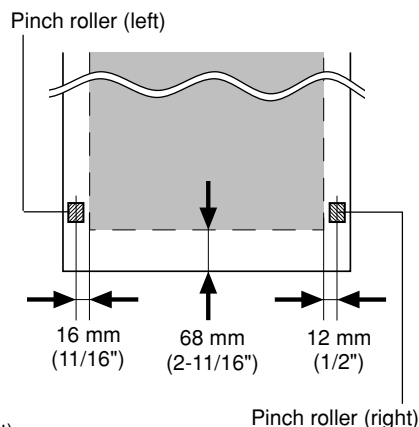
* Distance accuracy cannot be guaranteed when line-pitch correction has been performed.

About the Printing/Cutting Area

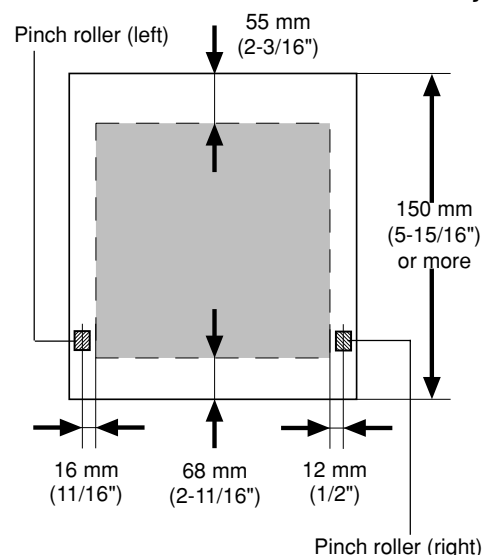
Factory default



When DIP switch SW-6 (front edge sense) is ON (enabled)



When PIECE (material fragment) has been selected with the SHEET TYPE key



About the Blade

If the blade becomes dull

When the blade starts to lose its sharpness, try gradually increasing the cutter force.

Increasing the cutter force temporarily allows the blade to perform better. However, once the blade is dull, it is time to replace it.

Average blade life

The life of a blade varies, depending on the amount of cutting it performs.

The total cutting length can vary considerably, depending on the thickness, toughness, and type of adhesive of the cut material. Set an appropriate cutter force, one that is well matched to the material and the hardness of the blade. This will extend the life of the blade.

Excessive cutter forces can cause the blade to wear out quickly. Care should be taken.

The table below provides a rough guide to appropriate cutting conditions and expected blade life.

Please note that making the settings for conditions shown below will not necessarily achieve attractive cutting results in all circumstances. Before performing actual cutting, please carry out a cutting test and adjust as required (see "6 Cut Test & Self-test").

Blade	Material	Pen-force scale	Speed	Blade compensation	Life of a blade
ZEC-U1005	General Signal Vinyl	1—7	20 cm/sec. (7.874"/sec.)	0.25 mm (0.00984")	8000 m (314960")
ZEC-U5025	General Signal Vinyl	MIN—4	20 cm/sec. (7.874"/sec.)	0.25 mm (0.00984")	4000 m (157480")

Care and Maintenance

CAUTION



Do not touch the area around the printing carriage with the hands.
Failure to do so may result in burns.

NOTICE Be sure to switch off the main power for the PC-60 before attempting to clean the unit and platen or using head cleaner to clean the printing head.

Never attempt to oil or lubricate the mechanism.

Cleaning the printing head

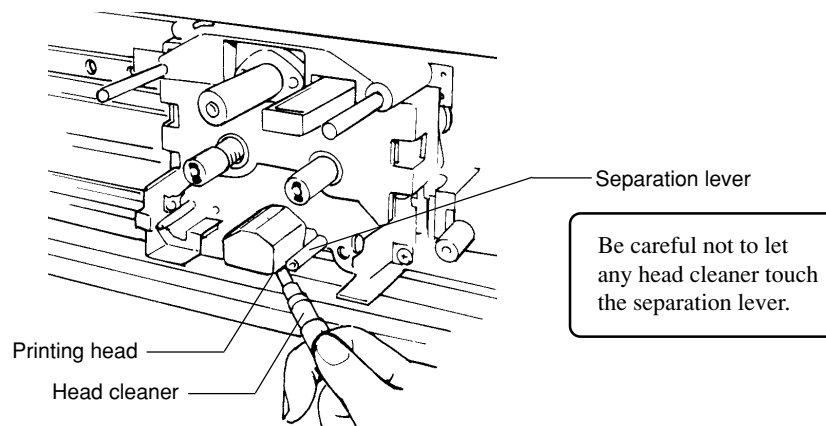
The PC-60 automatically performs cleaning of the printing head.

The head is cleaned with the cleaning pad on the front-left surface of the unit when an ink-ribbon cartridge is replaced. Ordinary grime is removed by this automatic cleaning, but when soiling is severe, the head cleaner included with the unit should be used to remove it.

The method described below is used to perform cleaning with the head cleaner.

NOTICE Drops of cleaning fluid may spray out when the cap is opened. Hold away from the platen when opening the cap. The platen may be discolored by any cleaning fluid that comes in contact with it. (The cleaning fluid is non-toxic.)

Use the included head cleaner to remove grime from the printing head.



Cleaning the main unit

For routine cleaning, use a soft piece of cloth.

Cleaning the platen

If the platen becomes soiled, wipe it clean with a dry, soft cloth.

Do not wipe with a head cleaner or alcohol.

Use care when cleaning to avoid damaging the surface of the platen. Printing quality may suffer.

The Cleaning Pad


If the cleaning pad on the left edge of the unit's front surface is damaged, the printing head may be destroyed.

If the cleaning pad is damaged by a blade or the like, replace it with a new cleaning pad.

Continuing to use a cleaning pad that has deteriorated may impair printing quality.

As a general guideline, the cleaning pad should be replaced with a new one after printing about 50 m of material (24" in width).

What to Do If...

NOTICE If you want to completely stop the operation of the PC-60, press the  key.
If the sub power cannot be switched off, then switch off the main power. In such cases, however, the printing head remains in contact with the sheet, and attempting to pull out the sheet or move the carriage while in this state which may damage the head.

If the PC-60 doesn't run...

PC-60	Is the PC-60 sub power on?	Turn on the sub power (See “2 Powering On”) .
	Is the sheet loading lever not in the lowered position?	If the sheet loading lever has not been lowered, load the material correctly and lower the sheet loading lever.
	Has the front cover not been closed?	Close the front cover. Operation is paused while the front cover is open. The FRONT COVER LED flashes while the front cover is open.
	If connected via the serial port, do the communication parameters for the PC-60 match those of the computer?	Set the DIP switches correctly (see “1 DIP Switch Settings”) .
	Has the ribbon been used up?	Replace with a new ribbon cartridge (see “The COLOR LED Flashes and Operation Stops...”) .
	Has the piece material been replaced with another one?	Printing of the piece material now loaded has finished. When this happens, the PIECE LED flashes to signal that the sheet needs to be changed.
Connection cable	Are the computer and the PC-60 linked with the right cable?	The type of cable you need is determined by your computer and the software you are using. Even if the computer is the same, running different software may require a different cable. Use the cable specified in your software.
	Is the cable making a secure connection?	Connect securely (See “Set-up and Connections”) .
Software	Has the correct driver selection been made for the application software?	Select the appropriate PC-60 driver.
	Are the settings for the driver software correct?	Make the correct settings for the output port and communication parameters (see “Installing the DRIVER”).

Clean, attractive printing is impossible

Is the printing head dirty?	Clean the printing head (see “ Care and Maintenance”). If cleaning will not improve the printing quality, the printing head might reach to the end of its life. Contact your dealer for replacement of the printing head.
Is the surface of the platen dirty or scratched?	Clean the platen (see “ Care and Maintenance”).
Is the material dirty?	Remove superficial soiling, then load the material.
Is the material free of dust or damage?	Material that is dusty or damaged may not only fail to yield attractive printing results, but may even destroy the printing head. When preparing material for storage, take care to ensure that it is protected from dust.

What to Do If...

Is the cleaning pad free of dust or damage?	A dusty or damaged cleaning pad may destroy the printing head. Gently wipe away any adhering dust or grime. Also, if the cleaning pad becomes damaged, replace it immediately.
Has the cleaning pad deteriorated?	Continuing to use a cleaning pad that has deteriorated may impair printing quality. As a general guideline, the cleaning pad should be replaced with a new one after printing about 50 m of material (24" in width).
Has the material been sufficiently acclimated before use?	The material may shrink or expand due to absorption of moisture in the air. If such shrinking or expansion occurs during printing, the printed pattern may be misaligned. Pull out the amount of roll material to be used, and allow to stand for 30 minutes to an hour. The amount of time required for acclimation varies according to the type of material.
Has a used-up ink ribbon been flipped over or rewound and reused?	A used ribbon cartridge cannot be reused. Do not attempt to turn over and reinstall a used ribbon cartridge, or to rewind the ink ribbon and reuse the cartridge.
Have the ribbon cartridges been installed correctly?	Correctly load the cartridge in the cartridge holder. Ribbon looseness or slack in the ribbon can also have a negative effect on attractive printing. (See "5 Installing a Ribbon Cartridge").
A cartridge change error occurs	
Have the ribbon cartridges been installed correctly?	Correctly install the ribbon cartridges. (See "5 Installing a Ribbon Cartridge").
Cartridge detection is incorrect	
Has a marker seal on a ribbon cartridge become dirty?	Wipe off any grime on marker seals.
Are ribbon cartridges designed exclusively for the PC-60 being used?	Use only exclusive PC-60 ribbon cartridges.
Full-color printing is impossible	
Is the full set of four-color ribbon cartridges (CMYK) installed?	Full-color printing cannot be performed unless all four colors (CMYK) are available. Load the ribbon cartridges for cyan, magenta, yellow, and black in the cartridge holders (See "5 Installing a Ribbon Cartridge").
Have the correct settings been made for the software driver?	Specify Process Color at the driver setup screen. (Please refer to the help file for the PC-60 DRIVER.)
Does the computer have enough memory?	If the computer runs out of memory during operations, try closing other open applications or restarting Windows®. If you still get a message about insufficient memory, check how much free space is left on your hard drive. Windows® normally uses a portion of the hard drive as virtual memory, and so an error message may appear if the hard drive runs out of free space. If this happens, delete unneeded files or move them to a different drive to free up more space. If you've followed the steps above and still get an error message about insufficient memory, installing more RAM in your computer is recommended.

The Material is not cut properly

Are the blade and blade holder installed correctly and securely?	Install these so that there is no looseness (see “4 Installing a Blade”).
Is the blade chipped?	If it is, replace it with a new one (see “4 Installing a Blade”).
Check if there are any dirty deposits on the blade.	If dirty, remove and clean the blade.
Make sure you are using an appropriate cutter force setting.	Perform a “cutting test,” then adjust the cutter force slider as necessary to obtain the optimum cutter force (see “6 Cut Test & Self-test”).

The material slips away from the pinch rollers during operation

Is the loaded material straight, and not at an angle?	If the loaded material is crooked, it may come loose from the pinch rollers during feed operations. Make sure the material is straight by aligning it with the guideline stickers when loading (See “3 Loading the Material”).
Is lengthy printing or cutting (1.5 m or more) being performed?	The material can be made less likely to come loose by moving the pinch rollers inward by a small amount. Also, make the DIP switch setting to enable the prefeed function (SW-8), or, alternatively, use key operations after loading the material to feed the material by the amount to be used to make sure that the material will not come loose from the pinch rollers, and then perform the actual printing or cutting. (See “To Perform Long Printing/Cutting”) .
Is roll material being used?	When using roll material, make the DIP switch setting to enable the prefeed function (SW-8 -- see “1 DIP Switch Settings”). If the prefeed function has been disabled, pull out from the roll the amount to be used, and then carry out printing or cutting. Slippage of the material may occur if the PC-60 has to pull out the material wound on the roll as it performs printing or cutting.
Make sure that the left and right edges of the material do not touch the inner surfaces of the PC-60 during operation. Such contact may damage the material, and could also make it impossible to advance the material—thus causing it to slip.	





Printing or cutting stops before the normal end is reached

Has the material been displaced from the sensors at the front or rear?	If the material becomes separated from the front or rear sensor during printing or cutting, operation stops. Be sure to use material of adequate size for the current printing or cutting job (See “About the Printing/Cutting Area”) .
Has a ribbon cartridge run out of ribbon?	If there is no more ink ribbon left for printing, replace the ribbon cartridge with a new one (See “The COLOR LED Flashes and Operation Stops...”) .
Has a ribbon cartridge of the color selected for the driver been loaded?	If a ribbon cartridge of the driver-specified color is not installed, the COLOR LED flashes and printing stops. Install a ribbon cartridge of the color selected for the driver (See “The COLOR LED Flashes and Operation Stops...”) .

All LEDs flash at the same time

The unit may have malfunctioned.	When a fatal error has occurred, all LEDs flash five times, then the LEDs at any two locations flash once. All operations except for switching off the main power are disabled at this time. Switch the main power off and back on. If the unit still doesn't recover, note which two LEDs flash once and contact your vendor or the nearest Roland DG Corp. Sales Center.
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Specifications of PC-60

PC-60		
Mechanism	Media-movement method, Thermal-transfer serial, Automatic cartridge-changing type	
Acceptable Media Width	50 mm—610 mm (2"—24")	
Maximum Work Area	571.6 mm x 24,998 mm (22-1/2"—984-1/8")	
Acceptable Media Type	Adhesive vinyl, thickness 0.23 mm—0.06 mm (0.00906"—0.00237")	
Tools	Cutter: blade & blade holder. Printing ribbon: thermal transfer ribbon cartridge.	
Number of installed cartridges	6 pieces	
Cutter Force	30 gf—200 gf	
Cutting Speed	10 mm/sec.—200 mm/sec. (0.393"/sec—7.874"/sec)	
Printing Speed	Max.130 mm/sec. (5.118"/sec)	
Cutting Resolution (Software Resolution)	0.025 mm/step (0.000984"/step)	
Printing Resolution	600 dpi	
Cutting Accuracy (Distance Accuracy)	Less than ± 0.3 % of distance traveled or ± 0.3 mm (± 0.0118 "), whichever is greater	
Registration Between Printing & Cutting	Less than ± 0.3 mm (± 0.0118 ") (Excluding expansion or contraction of the media, and excluding times when material is been reloaded)	
Interface	Parallel (Centronics), Serial (RS-232C, RS-422) (The data received first after switching on the power is used to determine automatically whether the parallel or serial interface is being used.)	
Memory	2 Mb	
Control Switches	POWER, SHEET TYPE, BASE POINT/CLEAR, CUT TEST,  ,  ,  , 	
LED	POWER, PIECE, ROLL, FRONT COVER, CARTRIDGE HOLDER, COLOR, BUSY, BASE POINT/CLEAR	
Power-saving function	Automatic power-off function	
Power consumption	0.9 A/110 V, 0.8 A/117 V, 0.45 A/220 V, 0.45 A/230 V, 0.45 A/240 V	
Acoustic noise level	Printing/Cutting mode: less than 60 dB (A) Standby mode: less than 40 dB (A) (According to ISO 7779)	
Dimensions	Main unit	1016 mm (W) x 326 mm (D) x 266 mm (H) (40" (W) x 12-7/8" (D) x 10-1/2" (H)) When cover is open: 1016 mm (W) x 326 mm (D) x 355 mm (H) (40" (W) x 12-7/8" (D) x 14" (H))
	With stand	1016 mm (W) x 326 mm (D) x 1125 mm (H) (40" (W) x 12-7/8" (D) x 44-5/16" (H)) When cover is open: 1016 mm (W) x 326 mm (D) x 1214 mm (H) (40" (W) x 12-7/8" (D) x 47-13/16" (H))
Weight	Main unit	26 kg (57.3 lb.)
	With stand	45 kg (99.2 lb.)
Operating Temperature	15—30°C (59—86°F)	
Operating Humidity	35%—70% (non-condensing)	
Accessories	Power Cord, Thermal transfer ribbon cartridge, Blade (Carbide), Blade Holder, Material for Test Cuts, Head Cleaner, PC-60 DRIVER for windows® 95, PC-60 DRIVER for windows® 3.1, User's Manual	

Interface Specifications

[Parallel]																			
Standard Input Signals Output Signals Level of Input/Output Signals Transmission Method	In compliance with the specifications of Centronics STROBE (1 BIT), DATA (8 BIT) BUSY (1 BIT), ACK (1 BIT) TTL level Asynchronous																		
[Serial]																			
Standard Transmission Method Transmission Speed Parity Check Data Bits Stop Bits	RS-232C specifications Asynchronous, duplex data transmission 9600, 19200 (Selected using DIP switches.) Odd, Even, or None (Selected using DIP switches.) 8 bits (fixed) 1 or 2 bits																		
Standard Transmission Method Transmission Speed Parity Check Data Bits Stop Bits Start Bits Handshake Recommended cable Input signals	RS-422 specifications Asynchronous 115.2 Kbps, 57.6 Kbps (Selected using DIP switches.) None (fixed) 8 bits (fixed) 1 bits (fixed) 1 bits (fixed) Hardwire (DTR & CTS) (fixed) Apple System Peripheral-8 Cable <div data-bbox="651 1122 884 1352"> </div> <table data-bbox="963 1111 1283 1391"> <thead> <tr> <th>PIN No.</th><th>Signal Name</th></tr> </thead> <tbody> <tr><td>1</td><td>DTR</td></tr> <tr><td>2</td><td>CTS</td></tr> <tr><td>3</td><td>TxD-</td></tr> <tr><td>4</td><td>GND</td></tr> <tr><td>5</td><td>RxD-</td></tr> <tr><td>6</td><td>TxD+</td></tr> <tr><td>7</td><td>N.C.</td></tr> <tr><td>8</td><td>RxD+</td></tr> </tbody> </table>	PIN No.	Signal Name	1	DTR	2	CTS	3	TxD-	4	GND	5	RxD-	6	TxD+	7	N.C.	8	RxD+
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