CE2000-60/120

CUTTING PLOTTER

USER'S MANUAL

GRAPHTEC

PREFACE

Thank you for choosing a Graphtec CE2000 series cutting plotter.
This cutting plotter employs a digital servo drive system to achieve high-speed and high-precision cutting operations. Besides cutting marking film and other media, it can also be used as a pen plotter.
To ensure good cutting quality and optimum productivity, be sure to read this User's Manual thoroughly before use.

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- The specifications and other information in this manual are subject to change without notice.

- While every effort has been made to provide complete and accurate information, please contact your sales representative or nearest Graphtec vendor if you find any unclear or mistaken information or wish to make other comments or suggestions.

- Notwithstanding the stipulation in the preceding paragraph, Graphtec Corporation assumes no liability for damages resulting from either the use of the information contained herein or from use of the product.

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TO ENSURE SAFE AND CORRECT USE

• To ensure safe and correct use of your cutting plotter, read this Manual thoroughly before use.
• After having read this Manual, keep it in a handy location for quick reference as needed.
• Do not permit small children to touch the cutting plotter.
• The following describes important points for safe operation. Please be sure to observe them strictly.

Conventions Used in This Manual

To promote safe and accurate use of the cutting plotter as well as to prevent human injury and property damage, safety precautions provided in this manual are ranked into the three categories described below. Be sure you understand the difference between each of the categories.

⚠ **DANGER** : This category provides information that, if ignored, is highly likely to cause fatal or serious injury to the operator.

⚠ **WARNING** : This category provides information that, if ignored, is likely to cause fatal or serious injury to the operator.

⚠ **CAUTION** : This category provides information that, if ignored, could cause injury to the operator or physical damage to the cutting plotter.

Description of Safety Symbols

The ⚠ symbol indicates information that requires careful attention (which includes warnings). The point requiring attention is described by an illustration or text within or next to the ⚠ symbol.

The ⊘ symbol indicates action that is prohibited. Such prohibited action is described by an illustration or text within or next to the ⊘ symbol.

The ❶ symbol indicates action that must be performed. Such imperative action is described by an illustration or text within or next to the ❶ symbol.
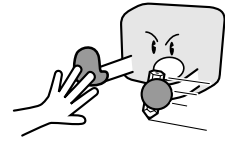
Safety Precautions

⚠ WARNING

During a cutting or plotting operation, do not touch the writing panel or moving parts such as the carriage.
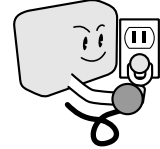- Such action may cause human injury.

Do not touch

Be sure to ground the earth terminal.
- If the cutting plotter is not grounded, the operator could suffer an electrical shock in case of current leakage.
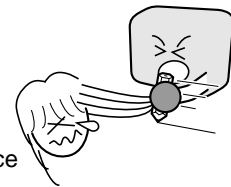
Ground the cutting plotter

Keep your hands, hair, etc. away from the writing panel and moving parts such as the carriage even if the cutting plotter is stopped, because it may suddenly start moving when data is received.
- Such action may cause human injury.

Keep your distance

Do not disassemble, repair, or remodel the cutting plotter.
- Such action may cause electrical shock or a fire hazard due to current leakage.
- Contact with the high-voltage parts within the cutting plotter may cause electrical shock.
- If the cutting plotter requires repair, contact your sales representative or nearest Graphtec vendor.
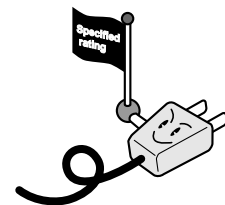
No disassembly
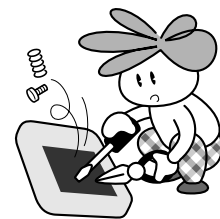
Do not connect the cutting plotter to a non-rated power supply.
- Use of a different supply voltage may result in electrical shock or a fire hazard due to current leakage.
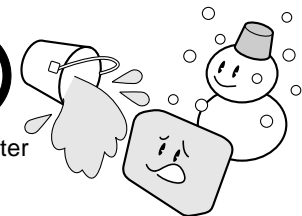
Prohibited

Do not use the cutting plotter in a location where it will be exposed to water, rain or snow.
- Such location may cause electrical shock or a fire hazard due to current leakage.

Avoid water

Beware of electrical shock

Safety Precautions (Continued)

⚠ WARNING

If the cutting plotter generates smoke, is too hot, emits a strange odor, or otherwise functions abnormally, do not continue using it. Turn off its power and unplug its power cord from the electrical socket.
- Use of the cutting plotter in such status may result in a fire hazard or electrical shock.
- After confirming that smoke is no longer being generated, contact your sales representative or nearest Graphtec vendor to request repair.
- Never try to perform repair yourself. Repair work by inexperienced personnel is extremely dangerous.
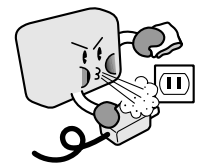
Prohibited
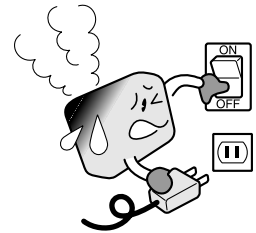
Do not allow dust or metallic matter to adhere to the power plug.
- A dirty power plug may result in electrical shock or a fire hazard due to current leakage.
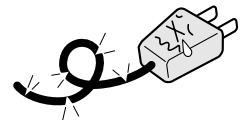
Prohibited

Beware of electrical shock

Do not use the power cord if it is damaged.
- Use of a damaged cord may result in electrical shock or a fire hazard due to current leakage.
- Replace the power cord with a new one.

Unplug the power cord from the socket

Be careful when handling the cutter blade.
- Touching the blade with your bare hand may cause injury.
- During a cutting operation, keep away from the cutter blade.

Avoid contact

Safety Precautions (Continued)

⚠ CAUTION

Do not use or store the cutting plotter in a location exposed to direct sunlight or the direct draft of an air conditioner or heater.
• Such location may impair the performance of the cutting plotter.

Prohibited

Do not use the cutting plotter in an excessively dusty or humid location.
• Such location may impair the performance of the cutting plotter.

Prohibited

Do not place any receptacle containing water or other fluid on top of the cutting plotter.
• Fluid falling inside the cutting plotter may cause electrical shock or a fire hazard due to current leakage.
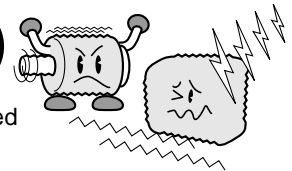
Avoid water

Beware of electrical shock

Do not use the cutting plotter in a location subject to excessive mechanical vibration or electrical noise.
• Such location may impair the performance of the cutting plotter.
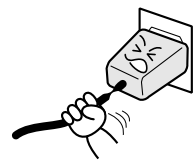
Prohibited

When disconnecting the power cord or an interface cable, do not pull on the cord/cable.
• Such action will damage the cord/cable, resulting in a fire hazard or electrical shock. Be sure to hold the power cord's plug or the interface cable's connector.
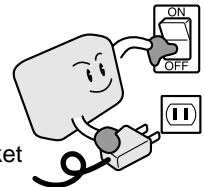
Prohibited

If water or foreign matter enters inside the cutting plotter, do not continue using it. Turn off its power and unplug its power cord from the electrical socket.
• Use of the cutting plotter in such status may result in electrical shock or a fire hazard due to current leakage.
• Contact your sales representative or nearest Graphtec vendor to request repair.

Unplug the power cord from the socket
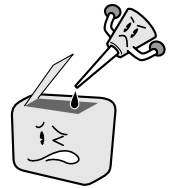
Safety Precautions (Continued)

⚠ CAUTION

Do not attempt to lubricate the cutting plotter's mechanisms.
• Such action may cause it to break down.
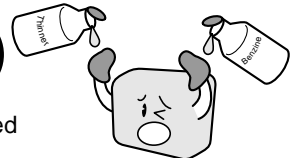
Prohibited

Do not clean the cutting plotter using a volatile solvent such as thinner or benzine.
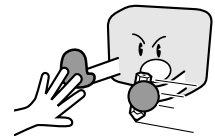• Such action may impair its performance.

Prohibited

During cutting or plotting, provide enough space around the cutting plotter so that the medium will not hit any objects in its vicinity.
• Such contact may cause cutting or plotting to go out of alignment.

Contact prohibited

When using indoor lighting such as a fluorescent lamp or an electrical lamp, provide a distance of at least one meter between the cutting plotter and the light source.
• Closer proximity of such a light source may cause the sensor to malfunction and prevent proper size detection of the media.

When using the cutter, be sure not to extend its blade more than necessary.
• An overly extended blade will damage the cutting mat and adversely affect the cutting quality.

When manually moving the pen carriage in order to load a medium or other reasons, move the pen carriage slowly.
• Moving it quickly may cause damage to the cutting plotter.

■ For CE2000-60 models

WARNING:

Only computers or peripherals (computer input/output devices, terminals, printers, etc.) certified as complying with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules, may be attached to this product when this product is operated in a residential environment. Operation with non-certified peripherals is likely to result in interference to radio and TV.

The United States Federal Communications Commission has specified that the following notice must be brought to the attention of users of this product.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

"This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct interference by one or more of the following measures:

- – Reorient or relocate the receiving antenna.
- – Increase the separation between the equipment and receiver.
- – Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- – Consult the dealer or an experienced radio/TV technician for help."

USE SHIELDED CABLES

To comply with FCC Class B requirements, all external data interface cables and connectors must be properly shielded and grounded. Proper cables and connectors are available from GRAPHTEC's authorized dealers or manufacturers of computers or peripherals.
GRAPHTEC is not responsible for any radio or television interference caused by using cables and connectors other than those recommended or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

■ For CE2000-120 models

WARNING:

The United States Federal Communications Commission has specified that the following notice must be brought to the attention of users of this product.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT
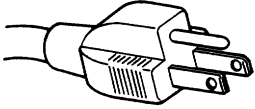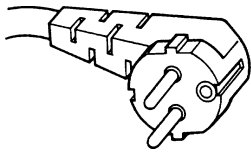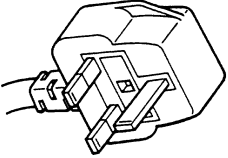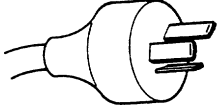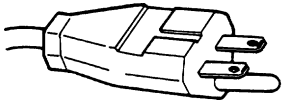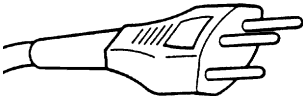
NOTE : This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment 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.

USE SHIELDED CABLES

To comply with FCC Class A requirements, all external data interface cables and connectors must be properly shielded and grounded. Proper cables and connectors are available from GRAPHTEC's authorized dealers or manufacturers of computers or peripherals. GRAPHTEC is not responsible for any interference caused by using cables and connectors other than those recommended or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

Selecting a Power Cable

Be sure to refer to the following table if you wish to use a cable other than the one supplied as an accessory.

Plug Configuration	Plug Type	Reference Standards	Power Cable
	North America 125 V 10 A	ANSI C73.11 NEMA 5-15 UL498/817/62 CSA22.2 NO.42/21/49	UL Listed Type SJT No.18AWG × 3 300 V, 10 A
	Europe 250 V 10 A	CEE(7)VII IEC320 CEE13	TYPE: H05VV-F 3 × 1.0 mm^2
	UK 250 V 5 A	BS1363 BS4491 BS6500	TYPE: H05VV-F 3 × 1.0 mm^2
	Australia 250 V 10 A	AS3112 AS3109 AS3191	TYPE: OD3CFC 3 × 1.0 mm^2
	North America 250 V 15 A	ANSI C73.20 NEMA 6-15 UL 198.6	UL Listed Type SJT No.18AWG × 3 300 V, 10 A
	Switzerland 250 V 6 A	SEV1011 SEV1004 SEV1012	TYPE: H05VV-F 3 × 0.75 mm^2

Contents

1 INTRODUCTION

1.1 Overview

The CE2000-60/120 is a cutting plotter that was developed for the specific purpose of cutting color adhesive-backed film.

It is equipped with various functions that aim at improving the cutting quality. To ensure good cutting quality and optimum productivity, be sure to read this User's Manual thoroughly before use.

1.2 Standard Accessories

After unpacking the cutting plotter, check that the standard accessories listed below are all present. If an accessory is missing, please promptly contact your sales representative or nearest Graphtec vendor.
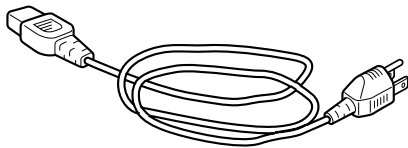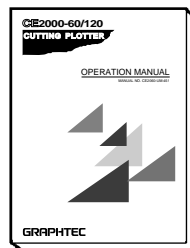
Power cord: 1   Operation Manual: 1   User Guide CD-ROM: 1
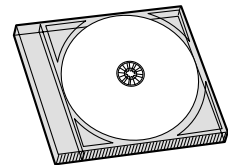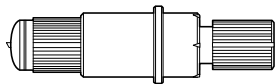
Cutter pen plunger: 1   Cutter blade: 1 (CB09UA)   Roll media tray: 1
                                                      (CE2000-60 only)
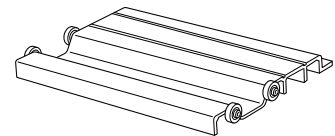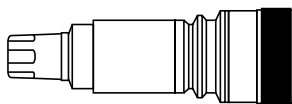
Media cutter: 1   Water-based fiber-tip pen: 1

Stand   **:** 1 (CE2000-120 only, packed in a separate box).
Stopper   **:** 2 (CE2000-120 only, packed together with main unit).
Stock roller : 2 (CE2000-120 only, packed together with main unit).

1.3 Assembling Your Plotter (CE2000-120)

Before You Begin Assembly (When Using the Basket)

If you will be mounting the optional basket, assemble the basket after you have completed Step (1) in the section entitled "Assembling the Stand."

(1) Mount the center bar (③) onto the R side foot (①) and L side foot (②).

> **NOTE:** At such time, loosely fasten the hexagon bolts.
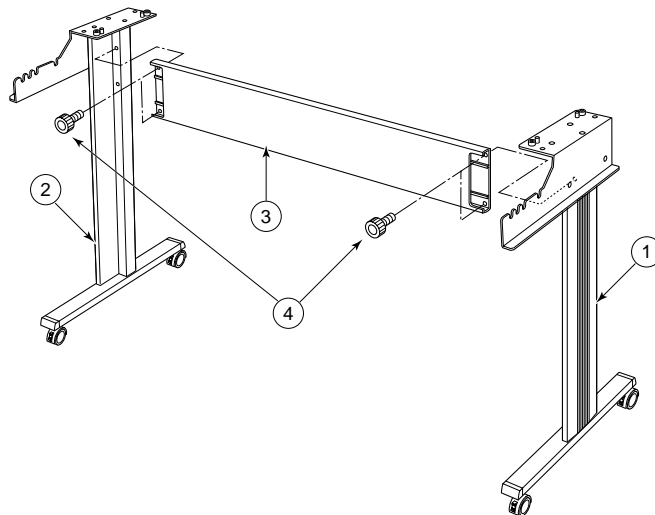
(2) Place the CE2000-120 main unit onto the stand, then secure it in place using hexagon bolts.

> **NOTE:** While adjusting the positions of the temporarily fastened R and L side feet, mount the main unit onto the stand by fitting the stand's pins into the corresponding holes in the main unit.

Secure the center bar by tightening its hexagon bolts.
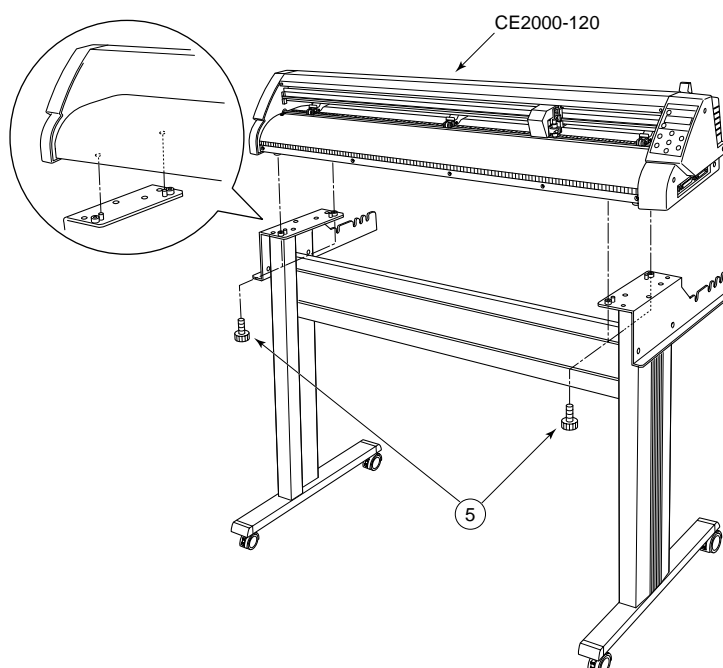
(3) After passing each roll shaft ($\textcircled{4}$) through a stopper ($\textcircled{7}$) and plastic hexagon screw ($\textcircled{8}$), mount each roll shaft as shown in the figure above to complete the assembly procedure.

E-Ring

8

7

6
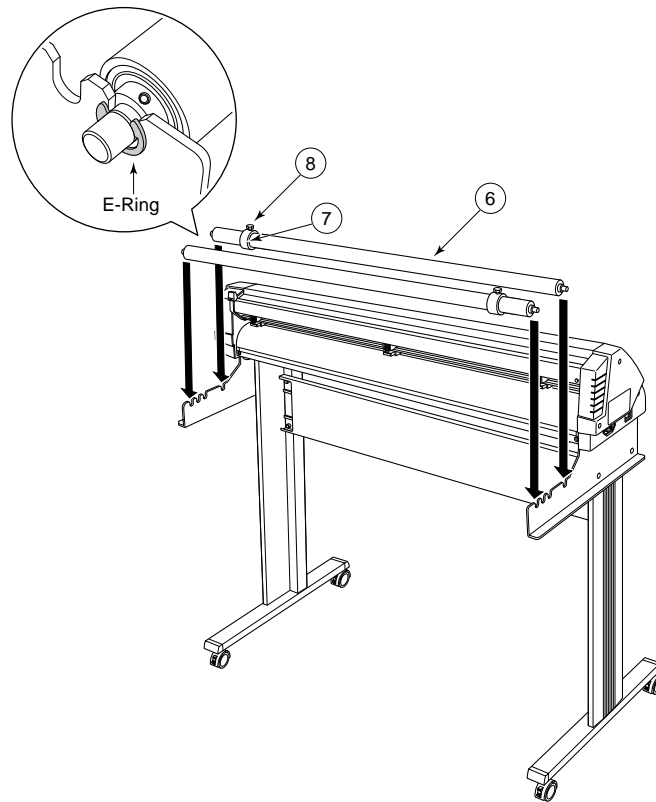
2 NAMES OF THE MAIN PARTS

2.1 Front View

■ **CE2000-60**

Push rollers   Pen holder   Media set lever
Pen carriage   Control panel

Serial connector
Parallel connector

Cutting mat   Grit rollers
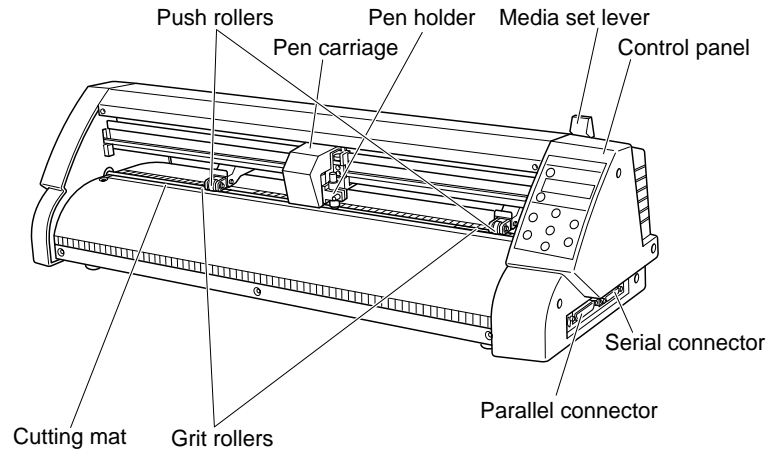
Cutting mat	: Cutting or plotting is performed on this mat.
Grit rollers	: Feeds the medium forward or backward.
Push rollers	: Pushes the medium against the grit rollers.
Pen holder	: Holds the cutter pen and moves it up and down.
Medium set lever	: Raises or lowers the push rollers when loading a medium.
Control panel	: Used to operate the cutting plotter and set its functions.
Parallel connector	: Used to connect a Centronics-compatible parallel interface cable.
Serial connector	: Used to connect an RS-232C serial interface cable.
Pen carriage	: Moves pen left & right.

■ **CE2000-120**
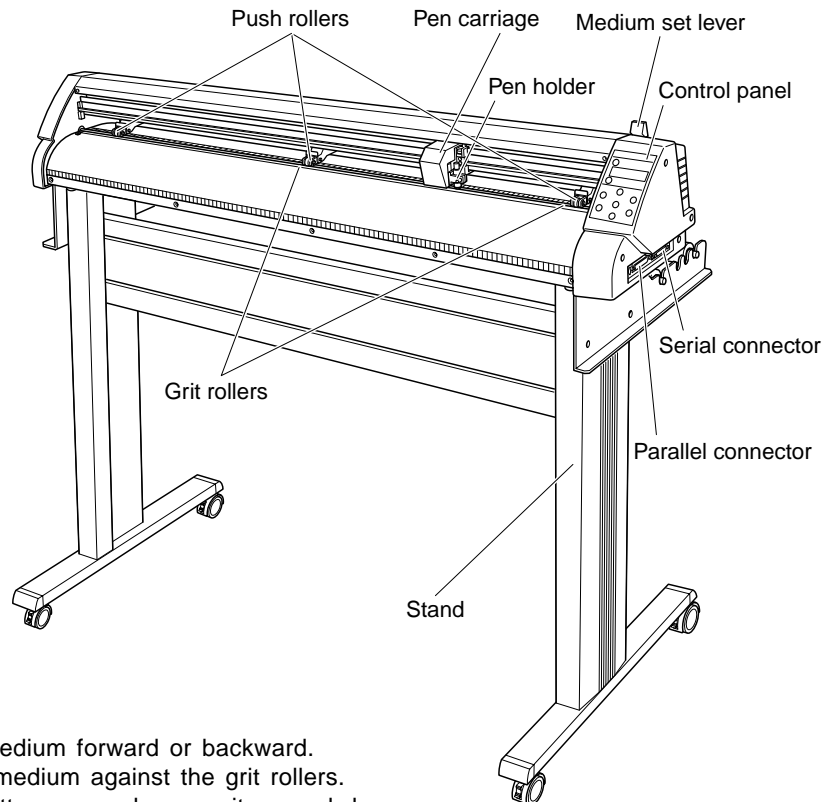
Push rollers   Pen carriage   Medium set lever
Pen holder   Control panel

Serial connector

Grit rollers

Parallel connector

Stand

Grit rollers	: Feeds the medium forward or backward.
Push rollers	: Pushes the medium against the grit rollers.
Pen holder	: Holds the cutter pen and moves it up and down.
Medium set lever	: Raises or lowers the push rollers when loading a medium.
Control panel	: Used to operate the cutting plotter and set its functions.
Parallel connector	: Used to connect a Centronics-compatible parallel interface cable.
Serial connector	: Used to connect an RS-232C serial interface cable.
Pen carriage	: Moves pen left & right.
Stand	: The main unit is placed on this stand (a stand is optional for the CE2000-60 model).

2.2 Rear View

■ **CE2000-60**

Power switch

Roll media tray   Roll media tray guide rail   AC power inlet

Roll media tray   : Holds a roll medium for feeding to the cutting plotter.
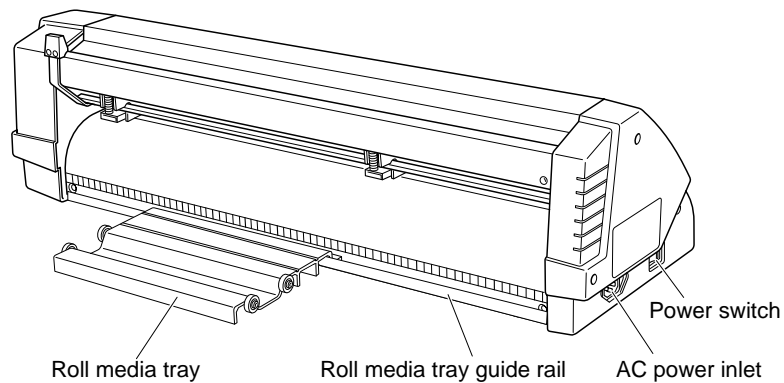**Roll media tray guide rail** : Used to mount the roll media tray.
AC power inlet   : Connects one end of the power cord to the cutting plotter.
Power switch   : Controls the on/off status of the power supply to the cutting plotter.

■ **CE2000-120**
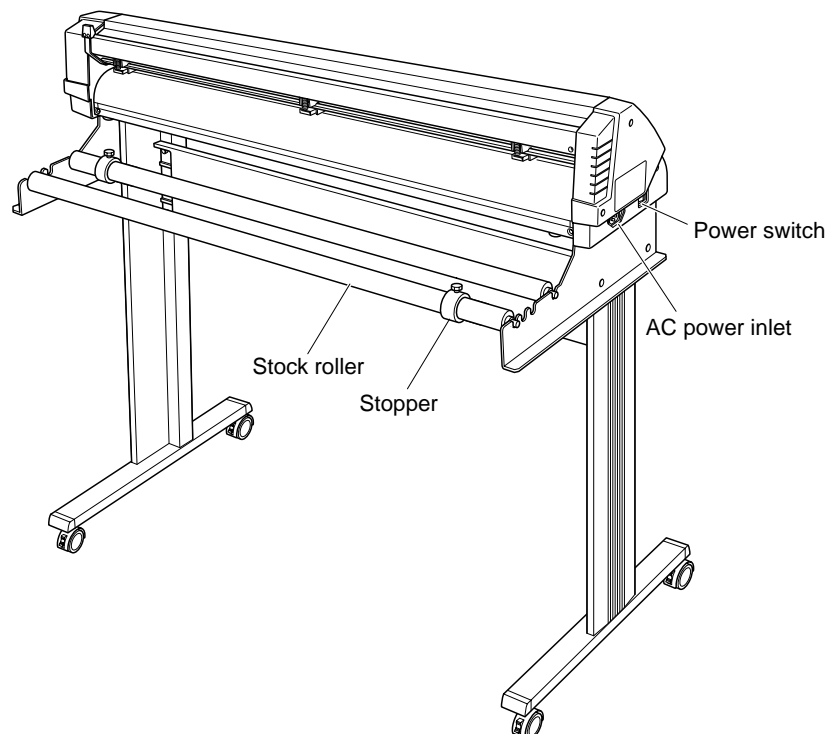
Power switch

AC power inlet

Stock roller

Stopper

AC power inlet : Connects one end of the power cord to the cutting plotter.
Power switch : Controls the on/off status of the power supply to the cutting plotter.
Stopper : Used to adjust the position of roll film by preventing the film from sliding from side to side.
Stock roller : Holds the roll film for feeding to the cutting plotter.

2.3 Control Panel

GRAPHTEC

⊕ F1 / ORIGIN

▲ F2 / TEST

○ POWER
○ PROMPT

PAUSE
○
⏸

NEXT PAGE 📖

ENTER
↵

POSITION
△ ◁ ▷ ▽
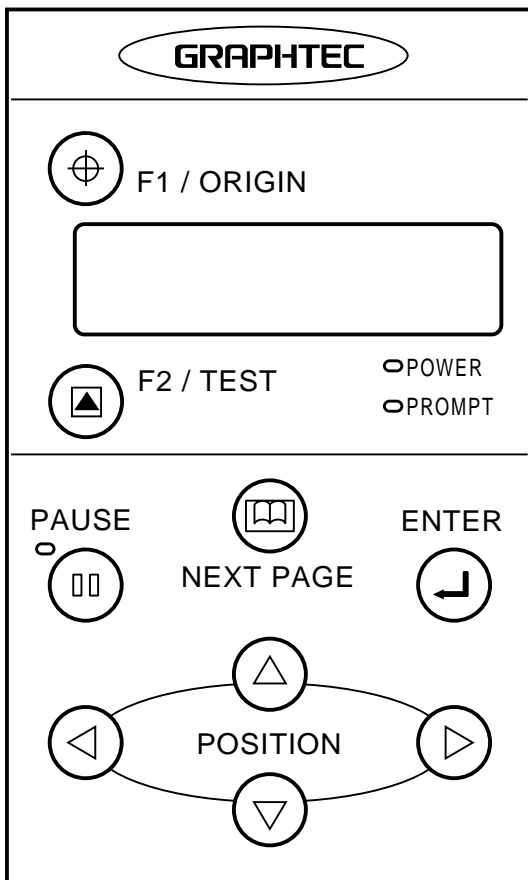
Lamps

○ POWER : Remains lit while the cutting plotter is being supplied with power.

○ PROMPT : Lights upon the receipt of plot data specifying a coordinate point outside of the effective plotting area.

Panel Keys

⊕ F1/ORIGIN : Press this function key to reposition the origin point or to select a menu function in PAUSE status.

▲ F2/TEST : Press this function key to run a cutting test for checking the cutting conditions or to select a menu function in PAUSE status.

📖 NEXT PAGE : Press this function key to switch through COND1 to COND4. When a menu is being displayed in PAUSE status, press this key to proceed to the next menu.

PAUSE : This key functions differently according to the current operating status.
○ ⏸ Press it once to enter the PAUSE status and light up the PAUSE lamp. Press it again to cancel the PAUSE status and turn off the PAUSE lamp.
Press this key when you wish to discontinue cutting or plotting or set functions at menus on the display panel.

ENTER
↵ : After setting a cutting or plotting condition, press this key to register the setting.
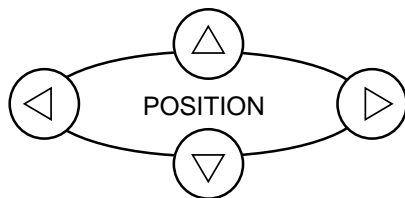
△ ◁ POSITION ▷ ▽ : These keys function differently according to the current operating status.
When the cutting plotter is not in PAUSE status, they are used to move the pen carriage.
When the cutting plotter is in PAUSE status, they are used to change the settings of functions at menus on the display panel.

Setting the Multilingual Display

Your cutting plotter's display can be set to one of six different languages: English, French, German, Italian, Japanese, or Spanish. To access the language selection menu, hold down the ↵ ENTER and ⊕ F1/ORIGIN keys while turning on the power. Hold down the keys until a two-line language display menu appears. Next, press the ▽ POSITION key to move through the six language selections. When the desired language is displayed, press the ↵ ENTER key to register your selection.

3

SETTING UP THE CUTTING PLOTTER

3.1 Connecting to Your Computer

The cutting plotter and a computer are connected using an interface cable. At the computer, the interface cable is connected to either the printer (Centronics-compatible parallel) port or the serial (RS-232C) port. Determine which port to use according to the requirements of your application software and/or which of your computer's communication ports are available for use.

Use either a Centronics-compatible parallel interface cable or a serial interface cable. Obtain a Graphtec-authorized interface cable that is compatible with your computer and can be connected to either the computer's printer or serial port. (The interface cables are optional.)

Centronics Parallel Interface

Caution : Make sure that the interface cable is no longer than 2 meters.

Step 1

Check that the Power switch is turned off (its "O" side is down).
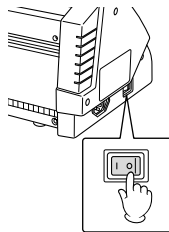
Step 2

Connect the cable between the cutting plotter and the computer. Data cannot be properly transferred if the cable is connected in reverse, so be sure that its connectors are correctly oriented.
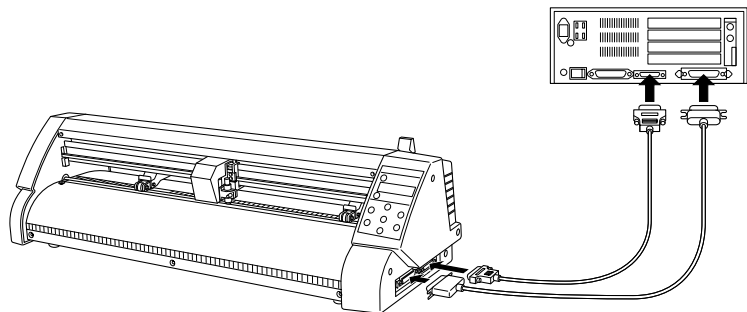
After turning on the cutting plotter as described on the next page, load the medium and select the interface conditions.

3.2 Turning on the Power

Step 1

Check that the Power switch is turned off (its "O" side is down).
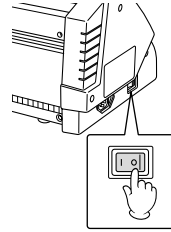
Step 2

Connect the female plug of the power cord provided to the cutting plotter's AC power inlet and connect its male plug to an electrical socket. Be sure to ground the cutting plotter.
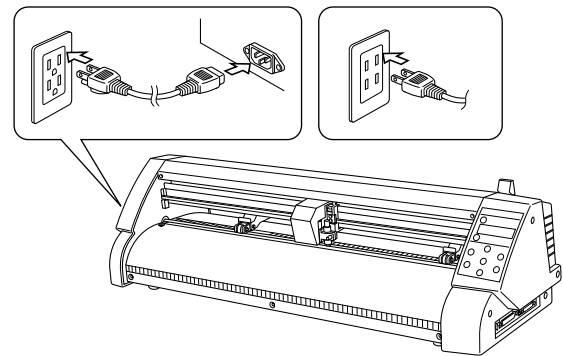
Step 3

Turn on the cutting plotter by pressing the "|" side of its Power switch (the control panel's POWER lamp lights).
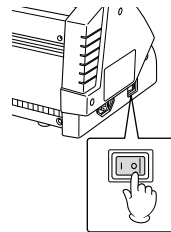
Step 4

If no medium has been loaded, the message below appears to prompt you to load a medium.

```
LOAD MEDIA!
```

If a medium has been loaded, the menu below appears for selecting the media mode.

```
▲ROLL 1
▼ROLL 2
```

For instructions on loading a medium and selecting the media mode, see Section 3.3, "Loading the Medium."

3.3 Loading the Medium

The cutting plotter can use film in rolls or in single sheets. Loading the desired medium by following the pertinent instructions.

3.3.1 Loading a Roll Medium

■ **CE2000-60**

Step 1

Lower the media set lever to raise the push rollers.
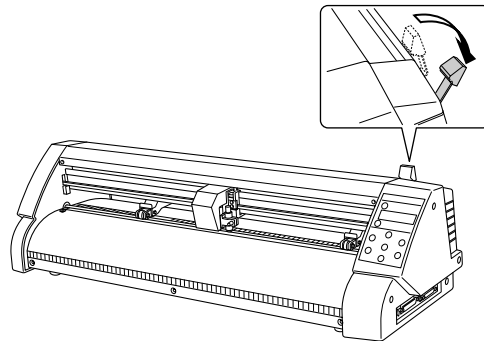
Step 2

Place the roll medium on the tray and then pass the medium's leading edge from the back of the cutting plotter so it emerges from the front while making sure to remove any slack in the medium's conveyance path.
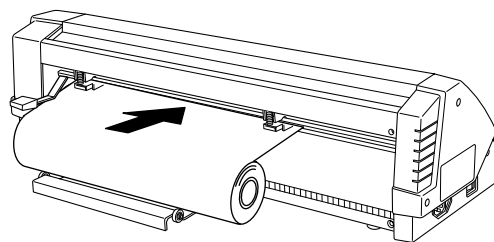
NOTE: Load the medium so that it passes over the media sensor.

Media sensor

Step 3

At this point, pull the leading edge out of the front of the cutting plotter so that it completely covers the media sensor. If its leading edge has been pulled out so much that slack cannot be provided at the back of the plotter, turn the roll to adjust the length of the medium in front of the cutting plotter by retracting the leading edge.

Media sensor

Step 4

Adjust the position of the right and left push rollers to suit the width of the medium. Position each push roller at its corresponding edge of the medium so that it is above the grit roller. Move the push rollers so that they are positioned inside the push roller alignment marks provided. (To move the push rollers, the media set lever must be in lowered position.)

Push roller alignment mark

If the "RELOAD MEDIA!" message appears when you lower the media set lever, the right pinch roller is not positioned over the wider grit roller on the right. This message also appears if the left pinch roller is not positioned over a grit roller or is positioned over the wider grit roller on the right. Check that the right pinch roller is positioned over the wider grit roller on the right and that the left pinch roller is positioned over a grit roller other than the wider one on the right.

Step 5

After ensuring that there is no slack in the medium's conveyance path, raise the media set lever to lower the push rollers. As shown in the figure, provide slack in the medium for a length corresponding to the length of the medium you intend to cut or plot.

Provide slack

Step 6

If the cutting plotter has already been turned on when the push rollers are lowered by raising the media set lever, a menu for selecting the media mode appears. Select the media mode (ROLL 1 or ROLL 2) to suit the roll medium you have just loaded.

```
▲ROLL 1
▼ROLL 2
```

To select ROLL 1, press the ⊕ F1/ORIGIN key.
To select ROLL 2, press the ▲ F2/TEST key.
When ROLL 1 is selected, the leading edge and side edges of the medium are detected. Select this mode when you wish to begin cutting from the medium's leading edge. In this case, the origin point is positioned along the leading edge.
When ROLL 2 is selected, only the medium's side edges are detected. Select this mode when you wish to begin cutting at a point past the medium's leading edge. In this case, the position of the pen carriage at the time the medium was loaded becomes the origin point.

Step 7

After the medium size has been detected, the cutting plotter awaits cutting data.
If the INTERFACE conditions and COMMAND mode have not been selected yet, select these settings at this time (see Section 3.4, "Selecting the COMMAND Mode and INTERFACE Conditions"). If they have already been set, proceed to adjust the cutter pen. After the cutter pen has been adjusted (see Chapter 4, "PREPARING FOR A CUTTING OPERATION"), the cutting plotter is ready to perform cutting so send cutting data from your application software at the computer.

■ CE2000-120

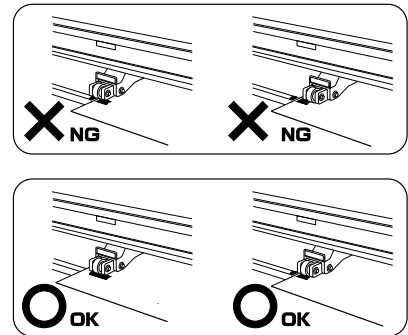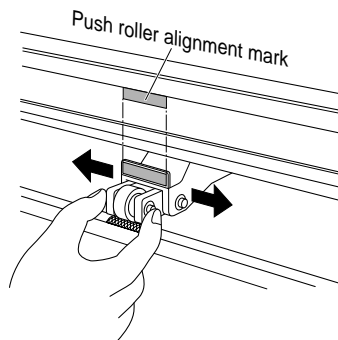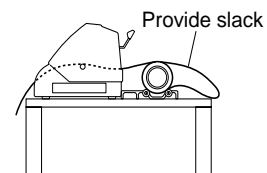### Step 1

Lower the media set lever to raise the push rollers.
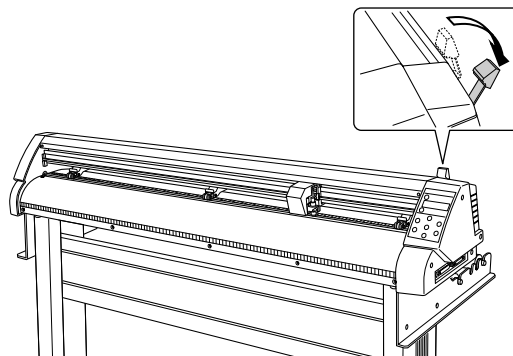
Step 2

Trap the medium's edges between the two stoppers and then firmly fix each stopper in place by tightening its plastic hexagon screw. Gently pull the leading edge of the film toward you to remove any slack in the film as it is fed along the conveyance path from the main unit.
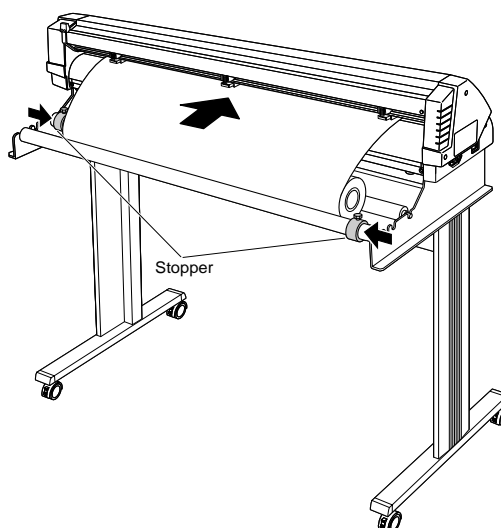
Stopper

> **NOTE:** In the case of a medium with a paper core that extends beyond the side edges of the medium itself, the medium may ride over the stoppers when the remaining supply of the medium runs low. When using this type of medium, be sure to replace it with a new roll right before the medium starts riding over the stoppers.

Step 3

At this point, pull the leading edge out of the front of the cutting plotter so that it completely covers the media sensor. If its leading edge has been pulled out so much that slack cannot be provided at the back of the plotter, turn the roll to adjust the length of the medium in front of the cutting plotter by retracting the leading edge.

Media sensor
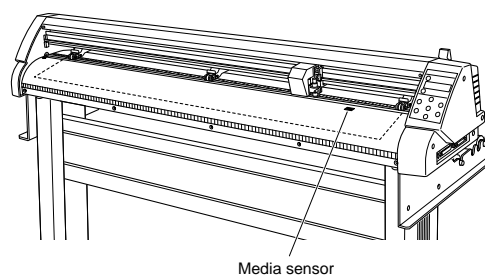
Adjust the position of the right and left push rollers to suit the width of the medium. Position each push roller at its corresponding edge of the medium so that it is above the grit roller. Move the push rollers so that they are positioned inside the push roller alignment marks provided. (To move the push rollers, the media set lever must be in lowered position.)

Position the push roller (2) so that it is at the midpoint of the film and is also over the center grit roller. The film is held in place using the three rollers called push rollers (1), (2), and (3).

Position the push roller (2) so that it is at the midpoint of the film and is also over the center grit roller.

Similar to the push rollers (1) and (3) in the figure below, position the push roller (2) over a grit roller.

If the "RELOAD MEDIA!" message appears when you lower the media set lever, the right pinch roller is not positioned over the wider grit roller on the right. This message also appears if the left pinch roller is not positioned over a grit roller or is positioned over the wider grit roller on the right. Check that the right pinch roller is positioned over the wider grit roller on the right and that the left pinch roller is positioned over a grit roller other than the wider one on the right.

Step **5**

If the cutting plotter has already been turned on when the push rollers are lowered by raising the media set lever, a menu for selecting the media mode appears. Select the media mode (ROLL 1 or ROLL 2) to suit the roll medium you have just loaded.

```
▲ROLL 1
▼ROLL 2
```

To select ROLL 1, press the ⊕ F1/ORIGIN key.
To select ROLL 2, press the ▣ F2/TEST key.
When ROLL 1 is selected, the leading edge and side edges of the medium are detected. Select this mode when you wish to begin cutting from the medium's leading edge. In this case, the origin point is positioned along the leading edge.
When ROLL 2 is selected, only the medium's side edges are detected. Select this mode when you wish to begin cutting at a point past the medium's leading edge. In this case, the position of the pen carriage at the time the medium was loaded becomes the origin point.
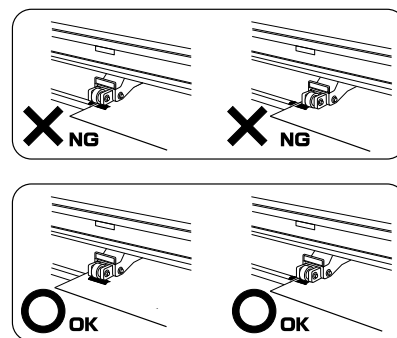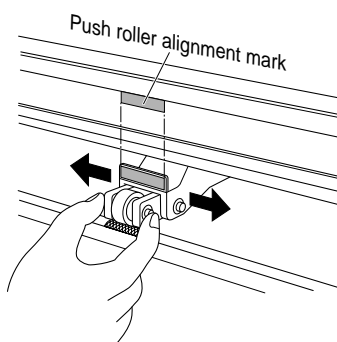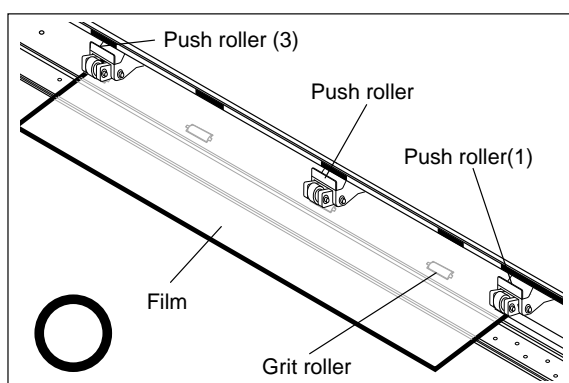
Step 6

After the medium size has been detected, the cutting plotter awaits cutting data.
If the INTERFACE conditions and COMMAND mode have not been selected yet, select these settings at this time (see Section 3.4, "Selecting the COMMAND Mode and INTERFACE Conditions"). If they have already been set, proceed to adjust the cutter pen. After the cutter pen has been adjusted (see Chapter 4, "PREPARING FOR A CUTTING OPERATION"), the cutting plotter is ready to perform cutting so send cutting data from your application software at the computer.

3.3.2 Loading Single Sheets

■ **CE2000-60**

Step 1

Lower the media set lever to raise the push rollers.
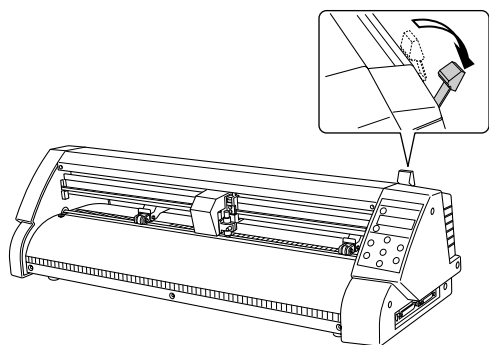
Step 2

While using the front and rear medium alignment scales as guidelines, load one sheet of the medium so that its leading and trailing areas are positioned identically.
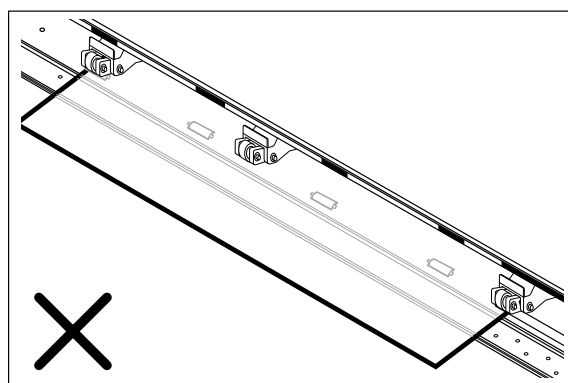

Medium alignment scales
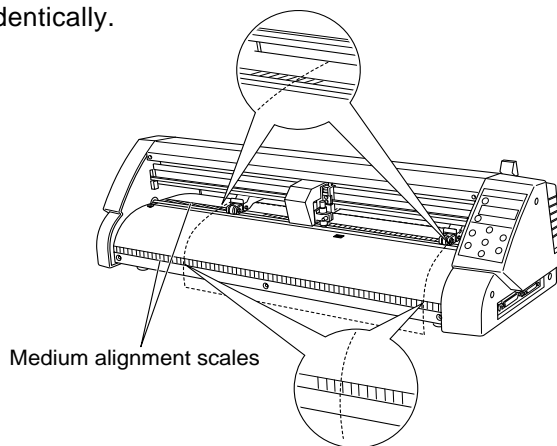
Step 3

Adjust the position of the right and left push rollers to suit the width of the medium. Position each push roller at its corresponding edge of the medium so that it is above the grit roller. Move the push rollers so that they are positioned inside the push roller alignment marks provided. (To move the push rollers, the media set lever must be in the lowered position.)

Push roller alignment mark

Step 4

If the cutting plotter has already been turned on when the push rollers are lowered by raising the media set lever, a menu for selecting the media mode appears.

```
▲ROLL 1
▼ROLL 2
```

Press the [NEXT PAGE] key to proceed the display below.

```
▲SHEET
```

Press the (⊕) F1/ORIGIN key to select the SHEET mode in which the leading and trailing edges of the media are detected.

Step 5

After the medium size has been detected, the cutting plotter awaits cutting data.

If the INTERFACE conditions and COMMAND mode have not been selected yet, select these settings at this time (see Section 3.4, "Selecting the COMMAND Mode and INTERFACE Conditions"). If they have already been set, proceed to adjust the cutter pen. After the cutter pen has been adjusted (see Chapter 4, "PREPARING FOR A CUTTING OPERATION"), the cutting plotter is ready to perform cutting so send cutting data from your application software at the computer.

■ CE2000-120

Step 1

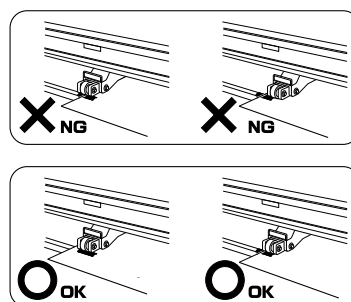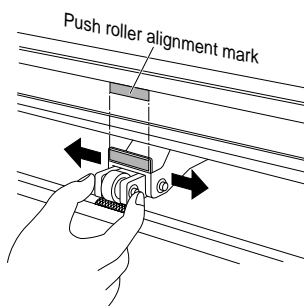Lower the media set lever to raise the push rollers.

Step 2

While using the front and rear medium alignment scales as guidelines, load one sheet of the medium so that its leading and trailing areas are positioned identically.

Medium alignment scales

Step 3

Adjust the position of the right and left push rollers to suit the width of the medium. Position each push roller at its corresponding edge of the medium so that it is above the grit roller. Move the push rollers so that they are positioned inside the push roller alignment marks provided. (To move the push rollers, the media set lever must be in lowered position.)

Push roller alignment mark

Position the push roller (2) so that it is at the midpoint of the film and is also over the center grit roller. The film is held in place using the three rollers called push rollers (1), (2), and (3).

Position the push roller (2) so that it is at the midpoint of the film and is also over the center grit roller.

Similar to the push rollers (1) and (3) in the figure below, position the push roller (2) over a grit roller.

If the "RELOAD MEDIA!" message appears when you lower the media set lever, the right pinch roller is not positioned over the wider grit roller on the right. This message also appears if the left pinch roller is not positioned over a grit roller or is positioned over the wider grit roller on the right. Check that the right pinch roller is positioned over the wider grit roller on the right and that the left pinch roller is positioned over a grit roller other than the wider one on the right.

Step 4

If the cutting plotter has already been turned on when the push rollers are lowered by raising the media set lever, a menu for selecting the media mode appears.

```
▲ROLL 1
▼ROLL 2
```

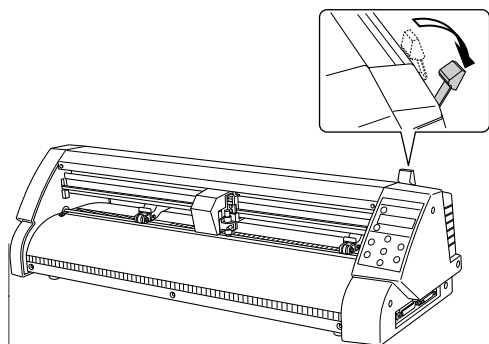Press the 🔳 NEXT PAGE key to proceed the display below.

```
▲SHEET
```

Press the ⊕ F1/ORIGIN key to select the SHEET mode in which the leading and trailing edges of the media are detected.
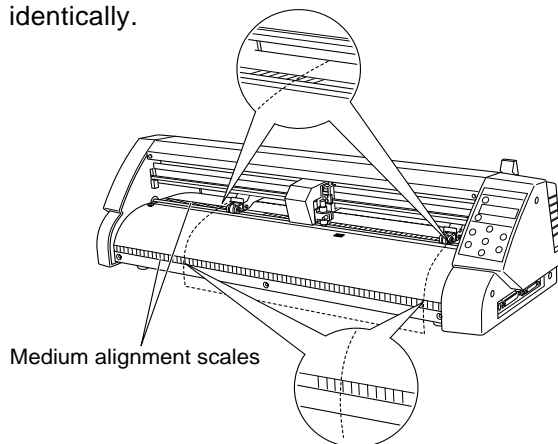
Step 5

After the medium size has been detected, the cutting plotter awaits cutting data.
If the INTERFACE conditions and COMMAND mode have not been selected yet, select these settings at this time (see Section 3.4, "Selecting the COMMAND Mode and INTERFACE Conditions"). If they have already been set, proceed to adjust the cutter pen. After the cutter pen has been adjusted (see Chapter 4, "PREPARING FOR A CUTTING OPERATION"), the cutting plotter is ready to perform cutting so send cutting data from your application software at the computer.
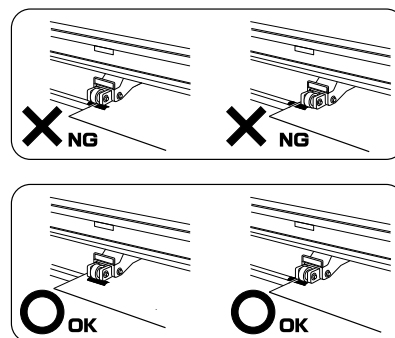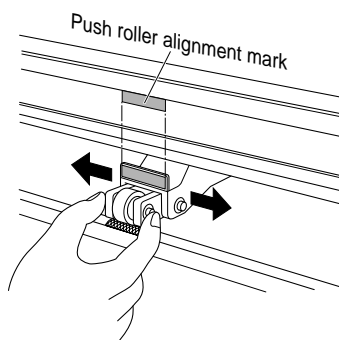
3.4 Selecting the COMMAND Mode and INTERFACE Conditions

3.4.1 Selecting the COMMAND Mode

Before sending data from the computer, you must set up the cutting plotter so that it can recognize the format (command mode) of data sent by the application software. The cutting plotter can recognize two data formats (command modes): Graphtec commands (GP-GL) or HP-GL. Select the COMMAND mode to suit your application.

Step 1

After loading a medium, check that the menu below is displayed.

```
COND1   PEN   12
==  READY   ==
```

Step 2

Press ⏸ PAUSE key to enter PAUSE status.
Press the (▣) key until the menu below appears.
NEXT PAGE

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 3

Press the ⊕ F1/ORIGIN key (INTERFACE) to display the menu below.

```
▲RS-232C
▼COMMAND
```

Step 4

Press the (▣) F2/TEST key (COMMAND) to display the menu below.

```
■GP-GL
 HP-GL   COMMAND
```

The blinking square cursor indicates the currently selected command mode.

Step 5

To select the GP-GL command mode, press the ⊕ F1/ORIGIN key.
To select the HP-GL command mode, press the (▣) F2/TEST key.
When the cursor appears in front of the desired command mode, press the (↵) ENTER key.

Step 6

If you have changed the COMMAND setting, the menu for selecting the media mode appears.

```
▲ROLL 1
▼ROLL 2
```

Select the mode to suit the currently loaded medium as described in Section 3.3, "Loading the Medium."

Step 7

If the COMMAND setting is GP-GL, proceed to select the STEP SIZE.
If the COMMAND setting is HP-GL, proceed to select the ORIGIN POINT.

3.4.2 Selecting the STEP SIZE or ORIGIN POINT

The STEP SIZE Setting

The STEP SIZE setting is only required when the COMMAND setting is GP-GL. In GP-GL command mode, it is possible to change the minimum unit of distance which the cutter pen or pen can travel to one of four settings: 0.01, 0.025, 0.05, or 0.1 mm. The default setting is 0.1 mm, so change this setting if your application specifies a different step size (also referred to as "programmable resolution).

The ORIGIN POINT setting

The ORIGIN POINT setting is only required when the COMMAND setting is HP-GL. This setting allows you to position the origin point at the lower left or center of the effective cutting/plotting area. The default setting is L.L. (Lower Left), so change this setting if your application specifies a different origin position.

Step 1

At the menu shown in Step 3, press the ⬚ NEXT PAGE key.
If the COMMAND setting is GP-GL, the menu below appears.

```
▲STEP SIZE
```

If the COMMAND setting is HP-GL, the menu below appears.

```
▲ORIGIN POINT
```

Step 2 (Selecting the STEP SIZE)

Press the ⊕ F1/ORIGIN key (STEP SIZE) to display the menu below.

```
STEP SIZE
0.100 mm
```

To change the STEP SIZE setting, use the △ and ▽ POSITION keys.
When the desired STEP SIZE is displayed, press the ↵ ENTER key.

Step 2 (Selecting the ORIGIN POINT)

Press the ⊕ F1/ORIGIN key (ORIGIN POINT) to display the menu below.

```
■LOWER LEFT
 CENTER  ORIG PT
```

A blinking square cursor indicates the currently selected ORIGIN POINT.
To move the origin to the lower left, press the ⊕ F1/ORIGIN key (L.L.)
To move the origin to the center, press the ▲ F2/TEST key (CENTER).
When the blinking cursor is positioned in front of the desired setting, press the ↵ ENTER key.

3.4.3 Selecting the Interface Conditions

It is necessary to select the INTERFACE conditions if you are using the RS-232C serial interface. INTERFACE settings include the data transfer rate (baud rate), data length, parity mode, and handshaking mode. The INTERFACE conditions you select for the cutting plotter must match those of the computer's operating system. This section describes the procedure for selecting the cutting plotter's INTERFACE conditions. For information about the proper settings for your application or computer's operation system, refer to the manual provided with your application or operating system.

Step 1

After loading a medium, check that the menu below is displayed.

```
COND1   PEN   12
==   READY   ==
```

Step 2

Press ⌾(PAUSE) key to enter PAUSE status.

Press the ⌷(NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 3

Press the ⊕ F1/ORIGIN key (INTERFACE) to display the menu below.

```
▲RS-232C
▼COMMAND
```

Step 4

Press the ⊕ F1/ORIGIN key (RS-232C) to display the menu below.

```
        RS-232C
960■   N   8   H
```

The parameter which can be changed is indicated by the blinking square cursor. Use the ◁ and ▷ keys to move the cursor to the desired parameter, then use the △ and ▽ keys to change its setting as described in Step 5.

Step 5

The INTERFACE conditions consist of the baud rate, parity mode, data length, and handshaking mode.
The baud rate can be set to 9600, 4800, 2400, 1200, 600, or 300 bps.
The parity mode can be set to N (None), E (Even parity), or O (Odd parity).
The data length can be set to 8 or 7 bits.
The handshaking mode can be set to H (hard-wired handshaking) or Xon/Xoff handshaking. When the COMMAND setting is HP-GL, however, ENQ/ACK handshaking can also be selected.
Be sure to set all of the INTERFACE conditions to match the corresponding settings of the application software and the computer's operating system.

Step 6

When all of the displayed settings are satisfactory, press the ↵(ENTER) key.
Press the ⌾(PAUSE) key to return to READY status.

4 PREPARING FOR A CUTTING OPERATION

Before you start cutting, it is important that you become familiar with the types and features of the cutter blades which can be used with the cutting plotter. By selecting the optimum combination of cutter blade and film, you can achieve higher cutting quality.

⚠ **CAUTION**

To avoid cutting your fingers, always handle the cutter blade with caution.
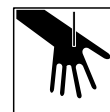
4.1 Types and Features of Cutter Blades

Part no. and material	Blade diameter and offset	Compatible plunger	Features
CB09UA (Supersteel)	0.9-mm diameter 0.45 mm offset	PHP32-CB09N	The standard blade for cutting color adhesive-backed film. Suitable for cutting film with a thickness under 0.25 mm. Max. cutting distance: approx. 4,000 m.
CB15U (Supersteel)	1.5-mm diameter 0.75 mm offset	PHP32-CB15N	Capable of cutting thicker film than possible with the CB09UA blade. Suitable for cutting film with a thickness of 0.25 mm to 0.5 mm.

4.2 Replacing the Cutter Blade and Adjusting Its Length

The cutting plotter performs cutting using a cutter blade that is mounted in a cutter pen plunger. The cutter pen plungers come in two diameters to suit the cutter blade to be mounted (the 0.9-mm cutter pen plunger comes standard). Be sure to mount the cutter blade in its corresponding cutter pen plunger.

⚠ **CAUTION**

To avoid cutting your fingers, always handle the cutter blade with caution.

Structure of the Cutter Pen Plunger

Cutter blade   Plunger

Plunger cap   Blade length adjustment knob
(blue : for 0.9-mm diameter blades)
(red : for 1.5-mm diameter blades)
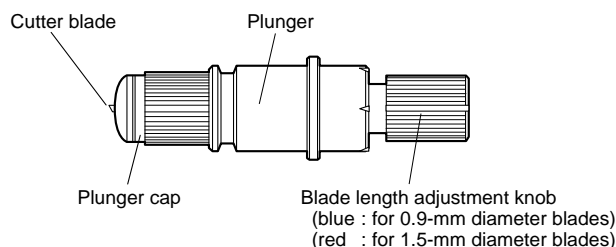
Replacing the Cutter Blade

Step 1

Turn the blade length adjustment knob to retract the blade inside the plunger.

Blade length adjustment knob (red)

Blade length adjustment knob (blue)

Plunger for 1.5-mm dia. blades

Plunger for 0.9-mm dia. blades

1.5-mm diameter cutter blade

0.9-mm cutter blade

Spring

1.5-mm plunger cap
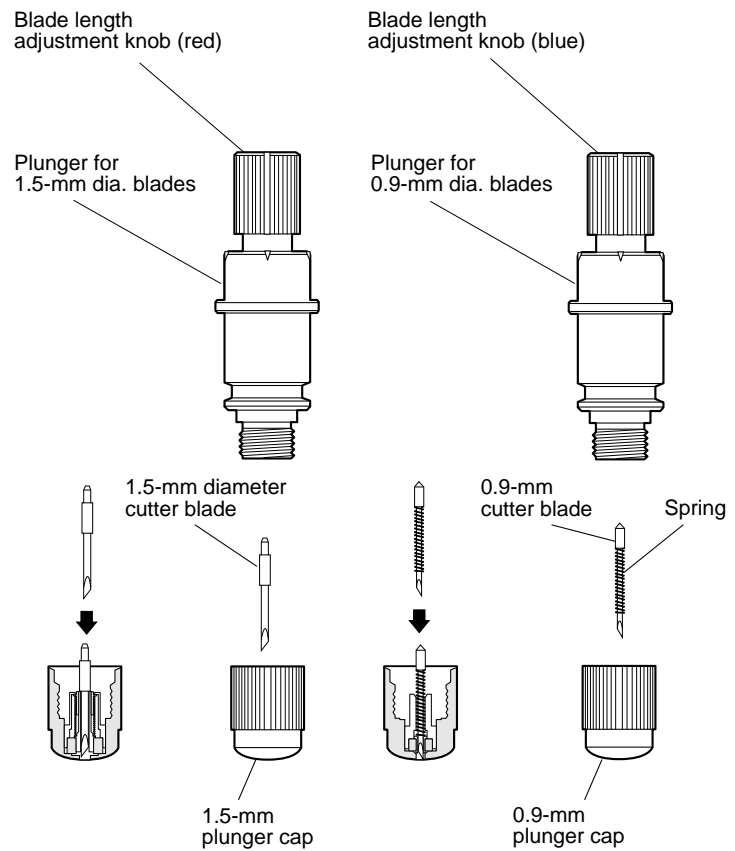
0.9-mm plunger cap

Step 2

Turn the plunger cap in the counter-clockwise direction to remove it from the plunger.

Step 3

Remove the blade from inside the plunger cap. In the case of the 0.9-mm blade, also remove the spring.

Step 4

Insert the new blade into the hole provided in the plunger cap. In the case of the 0.9-mm diameter blade, insert the blade its the spring attached into the plunger cap.

Step 5

With the blade inserted in the plunger cap, screw on the plunger from above.

Adjusting the Blade Length

Step 1

Adjust the blade length by turning the blade length adjustment knob as shown in the figure below. Turn the knob in the "A" direction to extend the blade, or in the "B" direction to extract the blade. Refer to the scale on the plunger mark to determine how far to move the blade. When the knob is turned the distance of one scale unit, the blade moves about 0.1 mm. A full turn of the knob moves the blade about 0.5 mm.

B   A
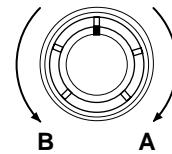
Step 2

First of all, align the blade's tip with the tip of the cutter pen. From that position, extend the blade to suit the thickness of film to be cut.

Step 3

Assuming that the film's thickness is "t", the blade length "ℓ" should be equal to or slightly greater than "t". Be sure that "ℓ" is never greater than the combined thickness of the film and its backing sheet.

If you cannot accurately determine the film's thickness, adjust the blade length by gradually increasing it until only traces of the blade appear on the backing sheet as a result of running a cutting test.

Film surface

ℓ t

Backing sheet
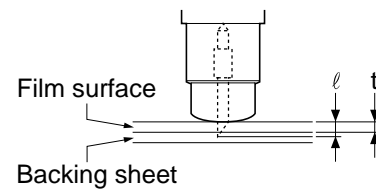
4.3 Mounting the Cutter Pen Plunger

After the blade length has been properly adjusted, mount the cutter pen plunger in the cutting plotter as described below.

Step 1

Loosen the pen holder's screw and then mount the cutter pen plunger into the pen holder.

Be sure to press the plunger in firmly so that it contacts this surface.
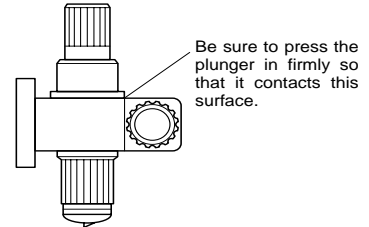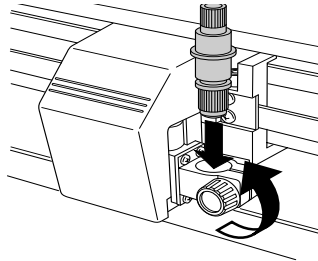
Step 2

When the cutter pen plunger is properly positioned, tighten the pen holder's screw.
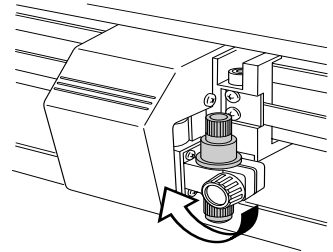
Step 3

After the cutter pen plunger has been mounted, proceed to set the cutting conditions.

4.4 Setting the Cutting Conditions

Before starting a cutting operation, set the BLADE TYPE, FORCE, SPEED, CUTTER OFFSET, and QUALITY settings to provide the optimum cutting conditions.
The compatibility of the selected cutting conditions with the film to be cut is determined by the five factors below.

(1) Cutter blade length : Adjust the blade length to suit the film's thickness while referring to the table below.
(2) FORCE : Selects the amount of pressure applied by the cutter blade while cutting the film. Set the FORCE while referring to the table below.
(3) SPEED : Selects the speed at which the film is cut. Set the SPEED while referring to the table below.
(4) QUALITY : Selects the acceleration rate of the cutter blade when cutting the film. Set the QUALITY while referring to the table below.
(5) CUTTER OFFSET : Set this parameter to suit the cutter blade being used.

Optimum Cutting Conditions According to Film Type

Film type	Thickness (mm)	Blade used	FORCE	SPEED	QUALITY
Film for outdoor signs	0.05 to 0.08	CB09UA	10 to 14	30 or less	2
Film for point-of-purchase signs	0.08 to 0.10	CB09UA	14 to 17	30 or less	2
Transparent or semi-transparent film	0.08 to 0.10	CB09UA	14 to 20	30 or less	2
Reflective film	0.08 to 0.10	CB09UA	14 to 20	30 or less	2
Fluorescent film	0.20 to 0.25	CB09UA or CB15U	20 to 24	10 to 20	1

Blade Part Nos., Displayed Blade Types, and Displayed CUTTER OFFSET Values

	Display indication				
Blade material	Part no.	Blade type	CUTTER OFFSET		
			Default	Specifiable range	Optimum setting
Supersteel blades	CB09UA	09U	0	±5	18
	CB15U	15U	0	±5	28
Other		OTHER	1	1 to 45	1
Pens		PEN	None	None	0

After a blade type has been selected, the CUTTER OFFSET is automatically adjusted by ±5 with respect to the default CUTTER OFFSET value for that blade type.
Select the OTHER setting when using a blade type that is not displayed or when cutting a film using the recommended cutting conditions results in poor finished quality.
Select the PEN setting for plotting with a pen. When the PEN setting is selected, no CUTTER OFFSET setting is required.

Reference Pen Conditions for Plotting Pens

Pen type	FORCE	SPEED	QUALITY
Water based fiber-tip pen	10 to 12	30	2

To preserve the pen's longevity, set the FORCE to the lowest possible setting that permits you to obtain the desired plotted results. Set the SPEED after checking the plotted results for the absence of faint lines and other problems.

NOTE : • If the SPEED and QUALITY are set to high values, the cut/plotted results have a coarser finish but the overall cutting/plotting time is shortened.
• If the SPEED and QUALITY settings are set to low values, the cut/plotted results have a finer finish but the overall cutting/plotting time is longer.

4.4.1 Selecting a Set of Cutting Conditions

Four different sets of user-defined cutting conditions can be registered in the plotter's memory as COND Nos. 1 through 4. To specify a set of cutting conditions, you must first select the destination COND No. By selecting a different COND No., you can easily switch between pre-defined cutting conditions for four types of media.

Step 1

Each time you press the ⊞ NEXT PAGE key at the menu below, the selected set of cutting conditions is sequentially changed from COND1 through COND4. Pressing the ⊞ NEXT PAGE key while COND4 is selected switches the setting back to COND1.

```
COND1   PEN   12
 ==  READY   ==
```

Step 2

The currently selected blade type, CUTTER OFFSET, and FORCE settings appear. When the blade type setting is PEN, the CUTTER OFFSET setting does not appear. When the blade type setting is OTHER, an asterisk symbol (∗) appears in place of the blade type.

The blade type setting appears here as 09U, 15U, PEN, or ∗ (the asterisk represents the OTHER setting).	The blade's CUTTER OFFSET setting appears here. No setting is displayed when the blade type setting is PEN.

```
COND1   PEN   12
 ==  READY   ==
```
The cutting FORCE setting appears here.
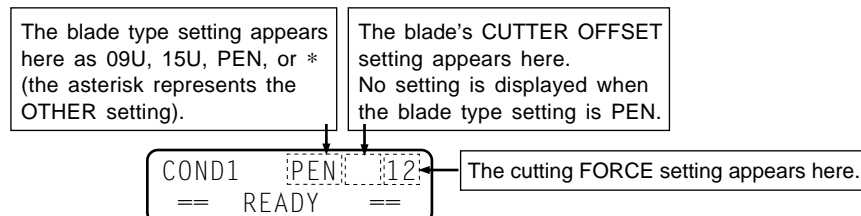
4.4.2 **Specifying the Cutting FORCE**

This setting determines the pressure to be applied by the cutter pen during cutting. Set the FORCE value to suit the medium you will be using, based on the guidelines in the table entitled "Optimum Cutting Conditions According to Film Type" on page 4-6.

Step **1**

After selecting the desired set of cutting conditions, check that the cutting plotter is in READY or PAUSE status and then press the (▲) F2/TEST key to display the menu below.

```
▲TEST CUT
▼PEN SETTINGS
```

Step **2**

Press the (▲) F2/TEST key (PEN SETTINGS) again to display the menu below.

```
▲SPEED
▼PEN FORCE
```

Step **3**

Press the (▲) F2/TEST key (PEN FORCE) to display the menu below.

```
  PEN FORCE
     12
```

At the above menu, use the (△) and (▽) keys to change the PEN FORCE value. (The PEN FORCE can be set in a range from 1 to 31 for the CE2000-60, and from 1 to 39 for the CE2000-120.) When the displayed PEN FORCE value is satisfactory, press the ENTER (↵) key to register your setting.

Step **4**

Consecutively press the NEXT PAGE key until the READY or PAUSE menu reappears.

4.4.3 Specifying the Cutting SPEED

This setting determines the speed with which cutting is performed. Set the SPEED value to suit the medium you will be using, based on the guidelines in the table entitled "Optimum Cutting Conditions According to Film Type" on page 4-6.

Step 1

After selecting the desired set of cutting conditions, check that the cutting plotter is in READY or PAUSE status and then press the (▣) F2/TEST key to display the menu below.

```
▲TEST CUT
▼PEN SETTINGS
```

Step 2

Press the (▣) F2/TEST key (PEN SETTINGS) again to display the menu below.

```
▲SPEED
▼PEN FORCE
```

Step 3

Press the (⊕) F1/ORIGIN key (SPEED) to display the menu below.

```
      SPEED
      30 cm/s
```

At the above menu, use the (△) or (▽) key to change the SPEED setting. The SPEED setting can be set in a range of 1 to 60 (in 1 cm/s steps from 1 to 10 and in 5 cm/s steps from 10 to 60). For the CE2000-120 model only, the numeral 60 is followed by the display of "∗∗" which represents the maximum SPEED setting of 100 cm/s (in the diagonal direction only).

When the displayed SPEED value is satisfactory, press the (⏎) ENTER key to register your setting.

Step 4

Consecutively press the (▣) NEXT PAGE key until the READY or PAUSE menu reappears.

4.4.4 Specifying the CUTTER OFFSET

This setting adjusts the offset of the cutter blade according to the currently selected blade type. If the blade type is set to PEN, a plotting pen can be used. When a cutter blade designation or OTHER is selected, a cutter pen can be used. Because the tip of the blade mounted in the cutter pen plunger is not positioned at the center of the pen, the cutting position is adjusted by specifying the CUTTER OFFSET setting.

Since the cutting plotter has been preset with the optimum CUTTER OFFSET values for the CB09UA and CB15U supersteel blade types, the optimum CUTTER OFFSET value can be easily selected by simply selecting the corresponding blade number. Fine adjustment of these two settings is also possible within a ±5 range.

Step 1

After selecting the desired set of cutting conditions, check that the cutting plotter is in READY or PAUSE status and then press the (▲) F2/TEST key to display the menu below.

```
▲TEST CUT
▼PEN SETTINGS
```

Step 2

Press the (▲) F2/TEST key (PEN SETTINGS) again to display the menu below.

```
▲SPEED
▼PEN FORCE
```

Step 3

Press the (NEXT PAGE) key to display the menu below.

```
▲CUTTER OFFSET
▼QUALITY
```

Step 4

Press the (⊕) F1/ORIGIN key (CUTTER OFFSET) to display the menu below.

```
CUTTER OFFSET
    09U   0
```

At the above menu, use the (△) or (▽) key to change the CUTTER OFFSET setting.

Use the (◁) or (▷) key to select the blade type (09U, 15U, OTHER, or PEN).

When a blade number (09U or 15U) is displayed, the (△) and (▽) keys can be used to finely adjust the setting within a ±5 range.

When OTHER is displayed, the (△) and (▽) keys can be used to specify the CUTTER OFFSET value within a range of 1 to 45.

When PEN is displayed, no CUTTER OFFSET setting is required.

When the displayed CUTTER OFFSET value is satisfactory, press the (↵) ENTER key to register your setting.

Step 5

Consecutively press the (NEXT PAGE) key until the READY or PAUSE menu reappears.

4.4.5 Specifying the Cutting QUALITY

This setting determines the acceleration rate of cutting.

Step 1

After selecting the desired set of cutting conditions, check that the cutting plotter is in READY or PAUSE status and then press the (▣) F2/TEST key to display the menu below.

```
▲TEST CUT
▼PEN SETTINGS
```

Step 2

Press the (▣) F2/TEST key (PEN SETTINGS) again to display the menu below.

```
▲SPEED
▼PEN FORCE
```

Step 3

Press the (▥) NEXT PAGE key to display the menu below.

```
▲CUTTER OFFSET
▼QUALITY
```

Step 4

■ **CE2000-60**
Press the (▣) F2/TEST key (QUALITY) to display the menu below.

```
    QUALITY
       1
```

At the above menu, use the (△) or (▽) key to switch the QUALITY setting between 1 and 2.

■ **CE2000-120**

> **NOTE :** • The 2 setting can only be selected when the SPEED setting ranges from 1 through 30 cm/s. When the SPEED setting is 35 cm/s or higher, the QUALITY setting is fixed to 1 (0.5 G).
> • If you change the SPEED setting to 35 cm/s or higher while the QUALITY setting is 2, the QUALITY setting automatically switches to 1 even if you change the SPEED setting to 30 cm/s or lower.

When the displayed QUALITY value is satisfactory, press the (↵) ENTER key to register your setting.

When the SPEED setting is "∗∗" (the maximum speed), the QUALITY setting is also displayed as "**" and automatically assumes a fixed value.

Step 5

Consecutively press the (▥) NEXT PAGE key until the READY or PAUSE menu reappears.

4.5 Running a Cutting TEST

After selecting the blade type and specifying the FORCE, SPEED, CUTTER OFFSET, and QUALITY settings, run a cutting test to ensure that the selected cutting conditions actually produce the desired cutting results by checking how far the blade cuts into the film and how corners are being cut. If the cut results are not satisfactory, repeatedly specify the cutting conditions and then run the cutting test until you achieve the optimum settings.

Step 1

Load film to be used for the test in the cutting plotter.

Step 2

After selecting the desired set of cutting conditions, check that the cutting plotter is in READY or PAUSE status and then press the ⓐ F2/TEST key to display the menu below.

```
▲TEST CUT
▼PEN SETTINGS
```

Step 3

Use the POSITION keys to move the cutter pen to the position from which you wish to initiate the test.

```
▲TEST CUT
▼PEN SETTINGS
```

At the above menu, press the ⊕ F1/ORIGIN key to cut a triangle within a square.

Step 4

Perform fine adjustment of the CUTTER OFFSET value to suit the type of film you are using and its thickness. Specify the FORCE so that faint cutting lines remain on the base sheet when the blade length is properly adjusted.
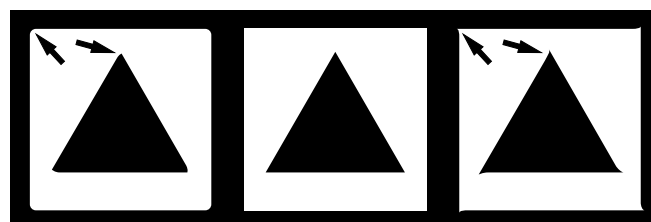
The CUTTER OFF-SET is too low.
Raise its value (by +1 to +5)

Proper CUTTER OFFSET setting.

The CUTTER OFF-SET is too high.
Lower its value (by -1 to -5)

When fine adjustment is satisfactorily completed, you are ready to start a cutting operation. You can now send actual cutting data to the cutting plotter for cutting.

5 USING THE BASIC FUNCTIONS

5.1 Moving the Initial Cutting Position (Origin Point)

This function allows you to move the starting position for cutting or plotting to the desired position.
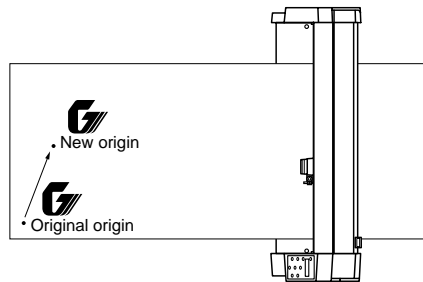
Step 1

Use the POSITION keys to move the cutter pen to the position of the new origin point.

Step 2

Press the ⊕ F1/ORIGIN key. After the message below is displayed for a few seconds, your new origin point takes effect.

```
ORIGIN PT SET
```

When the Origin is Moved After Rotating the Coordinate Axes

When the origin point is moved after the coordinate axes have been rotated, movement of the origin point conforms to the figure below.
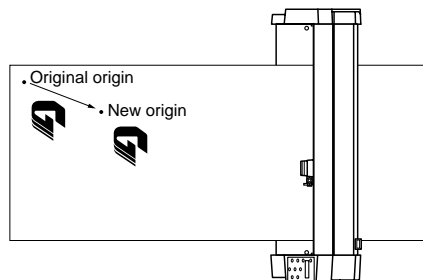
When the Coordinate Axes are Rotated After Moving the Origin Point

When the coordinate axes are rotated after moving the origin point, the origin point is initialized as shown in the figure below. That is, the "a" distance is retained, but the "b" distance is initialized.

Before rotation　　　　　　**After rotation**
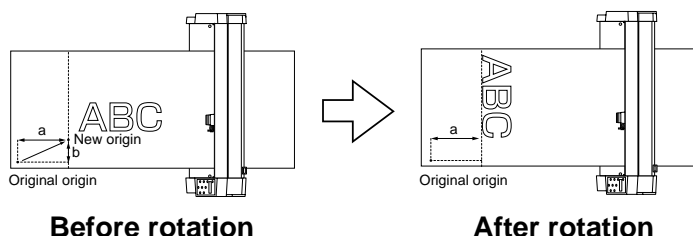
When you wish to both move the origin and rotate the coordinate axes, be sure to rotate the coordinate axes first.

NOTE : After a new origin point is set, the displayed coordinate values of X= and Y= represent the respective distances from the new origin.

5.2 Moving the Pen Carriage in +100-mm Steps

This function lets you move the pen carriage from its current position in +100-mm steps along the X and Y axes.

To Move the Pen Carriage

While the READY or PAUSE menu is being displayed, hold down the (↵) ENTER key while you press the (△) key. If you repeat this operation, the pen carriage is further moved in +100-mm steps each time.

To Return the Pen Carriage to its Initial Position

While the READY or PAUSE menu is being displayed, hold down the (↵) ENTER key while you press the (▽) key.

5.3 Clearing Data from the Internal Memory

This function clears the cutting plotter's internal memory of data that was sent from the computer. Use this function when you wish to discontinue a cutting operation that is in progress.

Step 1

Press the (⏸) PAUSE key to enter PAUSE status.

Step 2

If data is being sent to the cutting plotter from the computer, stop the data transmission.

Step 3

Press the (⌨) NEXT PAGE key until the menu below appears.

```
▲CLEAR BUFFER
▼FEED
```

Step 4

Press the (⊕) F1/ORIGIN key (CLEAR BUFFER) to display the prompt below.

```
▲CLEAR      CLEAR
▼CANCEL       OK?
```

Step 5

Press the (⊕) F1/ORIGIN key (CLEAR) to clear the buffer.
Press the (▣) F2/TEST key (CANCEL) to cancel the CLEAR BUFFER operation.

Step 6

Press the (⏸) PAUSE key to return to READY status.

5.4 Raising and Lowering the Pen

Use this function to raise or lower the pen.

Step 1

Press the ⊙(PAUSE) key to enter PAUSE status.

Step 2

Press the ⊡(NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

At this menu, press the ▣(F2/TEST) key once to lower the pen. To raise the pen, press the ▣(F2/TEST) key again.

5.5 Feeding the Medium

When using cutting film, the FEED function advances the film and leaves faint tracks of the grit rollers on the film to prevent the film from being dislocated while it is being fed during actual cutting.

Step 1

Press the ⊚ PAUSE key to enter the PAUSE mode.

Step 2

Press the 📖 NEXT PAGE key until the menu below appears.

```
▲CLEAR BUFFER
▼FEED
```

Step 3

Press the ⊚ F2/TEST key (FEED) to display the menu below.

```
SHEET FEED
FEED LENGTH   1 m
```

Use the △ and ▽ keys to specify the desired distance of the FEED operation. The distance can be specified in a range of 1 m to 50 m.

Step 4

When the desired value is displayed, press the ⊚ ENTER key to initiate the FEED operation (the film is advanced out of the front of the cutting plotter and then fed back to its original position).

NOTE : If you press the 📖 NEXT PAGE key while the FEED operation is in progress, the FEED operation is discontinued at that point and the film is returned to its original position.

CAUTION : When you press the ⊚ ENTER key in Step 4, the FEED operation is immediately initiated. Before executing the FEED operation, ensure that the front and back areas of the cutting plotter are free of any obstacles that could obstruct the FEED operation.

5.6 Selecting the LENGTH UNIT

Use this function to select either mm or inch as the LENGTH UNIT.

Step 1

Press the ⌒⌒ (PAUSE) key to enter PAUSE mode.

Step 2

Press the (NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 3

Simultaneously press the (ENTER) and (NEXT PAGE) keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 4

Press the (NEXT PAGE) key until the menu below appears.

```
▲TEST
▼LENGTH UNIT
```

Step 5

At this menu, press the ▲ F2/TEST key (LENGTH UNIT) to display the menu below.

```
■mm        LENGTH
 inch        UNIT
```

The blinking square cursor indicates the currently selected LENGTH UNIT.
To select mm, press the ⊕ F1/ORIGIN key.
To select inch, press the ▲ F2/TEST key.
When the blinking cursor is positioned in front of the desired setting, press the ↵ (ENTER) key.

6 USING APPLIED FUNCTIONS

6.1 Rotating the Coordinate Axes

The ROTATE function allows you to rotate the initial cutting point and the coordinate system as shown in the figure below. The ROTATE setting is retained in the cutting plotter's internal memory, even while the cutting plotter is turned off.

Step 1

Press the ⁰∥ (PAUSE) key to enter the PAUSE mode.

Step 2

Press the 📖 (NEXT PAGE) key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 3

Press the (▲) F2/TEST key (FUNCTIONS) to display the menu below.

```
▲ROTATE
▼COPY
```
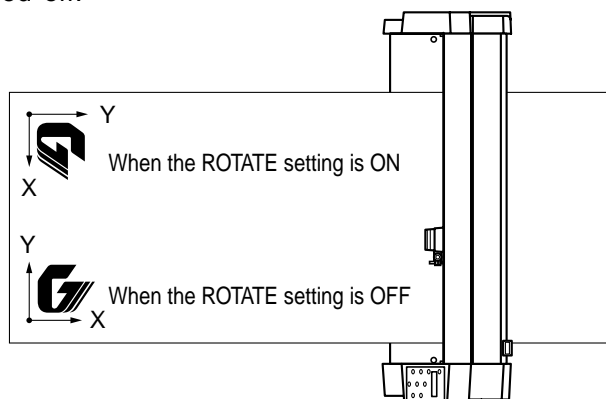
Step 4

Press the (⊕) F1/ORIGIN key (ROTATE) to display the menu below.

```
 ON    ROTATE
■OFF
```

The flashing cursor indicates the currently selected ROTATE setting.

Step 5

To switch the ROTATE setting to ON, press the (⊕) F1/ORIGIN key (ON) to move the cursor to the ON position.
To switch the ROTATE setting to OFF, press the (▲) F2/TEST key (OFF) to move the cursor to the OFF position.
After selecting the desired setting, press the (↵) ENTER key to register your setting.

Step 6

Press the ⁰∥ (PAUSE) key to cancel the PAUSE mode.

6.2 Using the COPY Function

Use the COPY function to make duplicate copies of cutting data that has been sent from the computer and retained in the cutting plotter's internal memory.
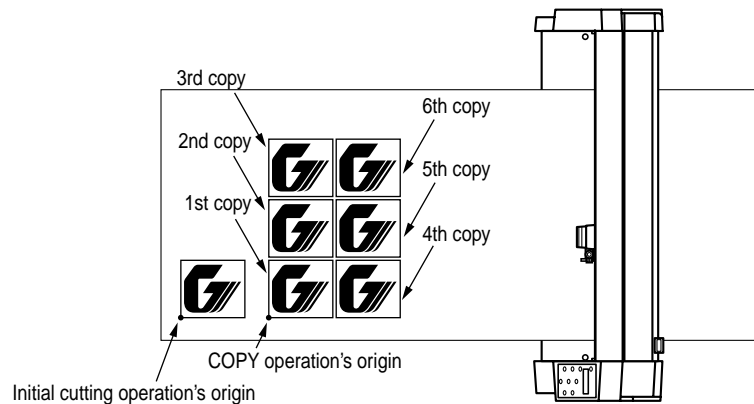
Step 1

Send the data to be copied to the cutting plotter and perform a single cutting operation with that data.

Step 2

Use the POSITION keys to move the cutter pen to the desired origin of (the starting position for cutting/plotting by) the COPY operation.

Step 3

Press the PAUSE ⏸ key to enter the PAUSE mode.

Step 4

Press the NEXT PAGE 📖 key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 5

Press the ▲ F2/TEST key (FUNCTIONS) to display the menu below.

```
▲ROTATE
▼COPY
```

Step 6

Press the ▲ F2/TEST key (COPY) to display the menu below.

```
COPY MODE
COUNT 1
```

If the data to be copied exceeds the effective cutting area, the warning message below appears.

```
CANNOT COPY
```

If this message appears, either use the POSITION keys to reposition the COPY operation's origin or load film with an area large enough to contain the target data.

Step 7

Use the ⬆ and ⬇ keys to specify the number of copies you wish to make.

Step 8

When the desired value is displayed, press the ENTER key to initiate the COPY operation to make the specified number of copies.

Step 9

If you wish to continue making copies, replace the film with new film and then repeat Steps 2 through 8.

> **NOTE :** • If the initial cutting position was moved to specify a new origin for the original cutting operation, the new origin will also apply during the COPY operation. To prevent wasteful use of the film, be sure to use cut data that specifies an initial cutting position as close as possible to the effective cutting area's origin.
> • If the cutting plotter receives another set of data during a COPY operation, the COPY operation cannot be properly completed because the cutting plotter's internal memory will be cleared of the initial data in mid-course. While a COPY operation is in progress, do not send another set of data to the cutting plotter.
> • After the initial cutting data is sent to the cutting plotter, even if another set of cutting data is sent after a period of 10 seconds or more, the previous data will be cleared from the cutting plotter's internal memory.
> • The cutting plotter cannot make a copy of a set of data consisting of 2 Mbytes or more of data, because the transmission of that amount of data will cause its internal memory to overflow.

6.3 Enabling the AUTO PRE FEED Mode

When the CE2000 first receives data while the AUTO PRE FEED setting is ON, it automatically feeds the medium forward and backward by the specified distance. This operation marks the cutting film with the tracks of the grit rollers and thus prevents the film from slipping out of place. When using roll film, moreover, the CE2000 automatically advances the leading edge of the medium.

Step 1

Press the `PAUSE` key to enter the PAUSE mode.

Step 2

Press the `NEXT PAGE` key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 3

After pressing the `F2/TEST` key (FUNCTIONS), press the `NEXT PAGE` key once to display the menu below.

```
▲AUTO PRE FEED
```

Step 4

Press the `F1/ORIGIN` key (AUTO PRE FEED) to display the menu below.

```
ON      PRE FEED
■OFF
```

Step 5

To enable the AUTO PRE FEED mode, press the `F1/ORIGIN` key to move the blinking cursor to the ON position.

To disable the AUTO PRE FEED mode, press the `F2/TEST` key to move the blinking cursor to the OFF position.

When the cursor appears in front of the desired setting, press the `ENTER` key to register your AUTO PRE FEED setting.

Step 6

If you selected the ON setting in Step 5, the message below appears.

```
AUTO PRE FEED
FEED LENGTH 1m
```

Use the △ and ▽ keys to specify the FEED LENGTH setting. When the displayed value is satisfactory, press the `ENTER` key to register your FEED LENGTH setting.

Step 7

Press the `PAUSE` key again to cancel the PAUSE mode.

6.4 Adjusting the Distance Precision

The DIST ADJ. function can be used to correct any deviation in the length of cut or plotted line segments which occurs as a result of the medium being used. The corrective value for any deviation in each coordinate axis is specified as a percentage of the total distance. For example, a setting of 0.05% adjusts a distance of 2 m (2,000 mm) by +1 mm (2000 × 0.05% = 1 mm) to become 2,001 mm.

Step 1

Press the PAUSE ⏸ key to enter the PAUSE mode.

Step 2

Press the 📖 NEXT PAGE key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 3

Press the ⊕ F1/ORIGIN key (FILM) to display the menu below.

```
▲AXIS ADJ.
▼DIST ADJ.
```

Step 4

Press the ▣ F2/TEST key (DIST ADJ.) to display the menu below.

```
■X= 0.00%   DIST
 Y= 0.00%   ADJ.
```

To correct the distance along the X axis, press the ⊕ F1/ORIGIN key to move the flashing cursor to X=.
To correct the distance along the Y axis, press the ▣ F2/TEST key to move the flashing cursor to Y=.

Step 5

Use the △ and ▽ keys to specify the corrective value for the selected coordinate axis.
When the displayed values for both coordinate axes are satisfactory, press the ENTER ↵ key to register your settings.

Step 6

Press the PAUSE ⏸ key to cancel the PAUSE mode.

NOTE : The DIST ADJ. settings are retained in the cutting plotter's internal memory, even while the cutting plotter is turned off.

6.5 Aligning the Coordinate Axes

When loading new film, the AXIS ADJ. function is used to reposition the coordinate axes to compensate for any deviation in the coordinate axes and origin between the cutting plotter and the medium which has previously been cut or plotted. This function lets you re-align the cutting plotter's coordinate axes to match those of a previously cut or plotted medium. To make it easier to specify the AXIS ADJ. settings, first plot a figure that clearly indicates the origin point and the orientation of the X axis. Be sure to perform plotting within the effective cutting area so that the AXIS ADJ. settings can be specified even if the origin and the line indicating the X axis are positioned at an angle. If the origin and the line indicating the X axis line are plotted near the boundaries of the effective cutting area, the resulting AXIS ADJ. settings may be outside of the effective cutting area such that the coordinate axes cannot be re-aligned.

Step 1

Press the ⊚ PAUSE key to enter the PAUSE mode.

Step 2

Press the ⊞ NEXT PAGE key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 3

Press the ⊕ F1/ORIGIN key (FILM) to display the menu below.

```
▲AXIS ADJ.
▼DIST ADJ.
```

Step 4

Press the ⊕ F1/ORIGIN key (AXIS ADJ.) to display the menu below.

```
    ADJ. PT 1
(     0,      0)
```

Use the POSITION keys to move the cutter pen to the desired ADJ. PT 1 position (the initial point from which you started plotting). The coordinate values displayed at such time represent the relative distances from the cutter pen's currently selected origin.

Step 5

After the cutter pen is at the desired position, press the ⏎ ENTER key to set this position as the center of rotation for the new origin and the X axis. The menu shown in Step 6 also appears.

```
    ADJ. PT 2
(      0,      0)
```

Use the POSITION keys to move the cutter pen to the desired ADJ. PT 2 position (any position along the X axis of the initially plotted figure). The coordinate values displayed at such time represent the relative distances from the ADJ. PT 1 position.

After the cutter pen is at the desired position, press the (↵) ENTER key to initiate calculation of the angle of the tilt of X axis and to re-align the coordinate axes.

Press the PAUSE (▯▯) key to cancel the PAUSE mode.

The AXIS ADJ. function

The effective area before axis re-alignment

ADJ. PT 2
(any point along
the plotted X axis)

ADJ. PT 1
(the origin of
the initial plot)

Y

X

The plotted X axis

The uncut area
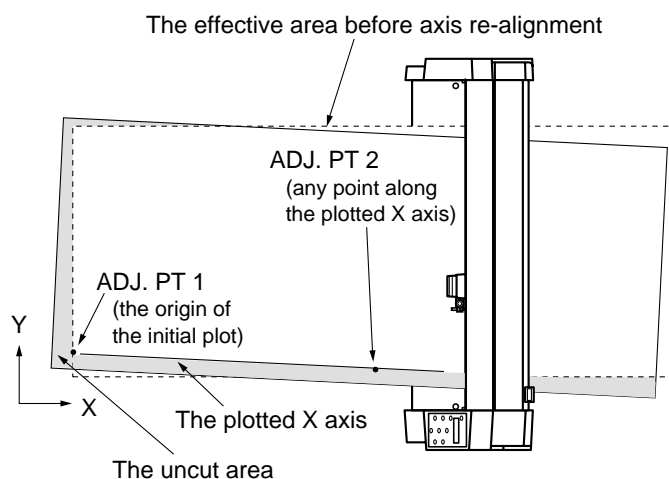
NOTE : After setting the AXIS ADJ. settings, the settings become invalid when you perform any of the following:

- Specify a new origin;
- Load new film; or
- Change the ROTATE setting to ON.

6.6 Specifying the Page Length

This function lets you specify the length of each page. When using a roll medium, the PAGE LENGTH setting corresponds to the length per page. Before performing long-axis cutting of an image longer than two meters, be sure to specify the PAGE LENGTH setting.

Step 1

Press the ⁀₀₀ PAUSE key to enter the PAUSE mode.

Step 2

Press the ⬚ NEXT PAGE key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 3

Press the ⊕ F1/ORIGIN key (FILM) to display the menu below.

```
▲AXIS ADJ.
▼DIST ADJ.
```

Step 4

Press the ⬚ NEXT PAGE key to display the menu below.

```
▲PAGE LENGTH
▼PLOT AREA
```

Step 5

Press the ⊕ F1/ORIGIN key (PAGE LENGTH) to display the menu below.

```
PAGE LENGTH
L= 020█0mm
```

Use the ◁ or ▷ key to shift the blinking cursor in the corresponding direction and select the desired digit. Use the △ and ▽ keys to change the numeric value of the digit selected by the cursor.

Step 6

When the displayed setting is satisfactory, press the ↵ ENTER key to register your setting.

Step 7

Press the ⁀₀₀ PAUSE key to cancel the PAUSE mode.

NOTE : • The PAGE LENGTH setting is retained in the cutting plotter's internal memory, even while the cutting plotter is turned off.
• The cutting plotter's distance precision is guaranteed for page feed operations up to two meters. In the case of an image longer than two meters, long-axis cutting can be performed for up to 50 meters in the feeding direction. (This maximum distance is based on the use of 3M plastic-backed film with the cutting conditions of: SPEED = 30 or less, QUALITY = 1.)
• In the case of long-axis cutting, be especially careful when loading color adhesive-backed film. If the film is loaded at even a slight angle, the film may come loose from the rollers which hold it in place.
• For long-axis cutting using roll film, pull out the length of film you intend to use before you load the film.

6.7 Specifying the PLOT AREA

This function allows you to specify the area in which cutting will be performed, thus preventing cutting outside of the specified area. This function lets you make more efficient use of film. When you wish to cut an uncut portion of film that has already been cut, specify the PLOT AREA to exclude the previously cut area. Note that when the PLOT AREA is set to specify the cutting area, the origin point is also repositioned in accordance with the movement of the cutting area.

Cutting will only be done in this area

Position of the U.R. setting

Position of the L.L. setting

The previously cut figure

Step 1

Press the ⬚(PAUSE) to enter the PAUSE mode.

Step 2

Press the ⬚(NEXT PAGE) key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 3

Press the ⊕ F1/ORIGIN key (FILM) to display the menu below.

```
▲AXIS ADJ.
▼DIST ADJ.
```

Step 4

Press the ⬚(NEXT PAGE) key to display the menu below.

```
▲PAGE LENGTH
▼PLOT AREA
```

Step 5

Press the ▲ F2/TEST key (PLOT AREA) to display the menu below.

```
▲DEFAULT L.L.
 (    0,      0)
```

Step 6

Use the POSITION keys to move the carriage to the lower left corner of the desired cutting area. When the carriage is satisfactorily positioned, press the ⟨↵⟩ ENTER key.

If you wish to use the default L.L. setting (0,0) instead of specifying a new L.L. position, however, press the ⟨⊕⟩ F1/ORIGIN key (DEFAULT) before pressing the ⟨↵⟩ ENTER key.

Step 7

After the L.L. setting is completed, the menu below appears.

```
▲DEFAULT U.R.
 (     0,      0)
```

Use the POSITION keys to move the carriage to the upper right corner of the desired cutting area. When the carriage is satisfactorily positioned, press the ⟨↵⟩ ENTER key.

If you wish to use the default U.R. setting (0,0) instead of specifying a new U.R. position, however, press the ⟨⊕⟩ F1/ORIGIN key (DEFAULT) before pressing the ⟨↵⟩ ENTER key.

Step 8

Press the ⟨❙❙⟩ PAUSE key to cancel the PAUSE mode.

NOTE : When the L.L. and U.R. settings are not separated by a distance of at least 5 mm or are otherwise incorrectly specified, the message below appears. If this happens, set the L.L. and U.R. settings once more.

```
 WRONG PLOT AREA
```

6.8 Expanding the Width of the Plot Area

The EXPAND function allows you to extend the width of the plot area by 9.5 mm on both sides for a total 19-mm increase, thereby enabling you to perform cutting up to the area where the pinch rollers are positioned.

Step 1

Press the ⌾ (PAUSE) key to enter PAUSE mode.

Step 2

Press the ⌸ (NEXT PAGE) key until the menu below appears.

```
▲FILM
▼FUNCTIONS
```

Step 3

After pressing the ⊕ F1/ORIGIN key (FILM), press the ⌸ (NEXT PAGE) key twice to display the menu below.

```
▲EXPAND
```

Step 4

Press the ⊕ F1/ORIGIN key (EXPAND) to display the menu below.

```
 ON      EXPAND
■OFF
```

The blinking square cursor indicates the currently selected EXPAND setting.

Step 5

To enable the EXPAND mode, press the ⊕ F1/ORIGIN key to move the blinking cursor to the ON position. To disable the EXPAND mode, press the ▲ F2/TEST key to move the blinking cursor to the OFF position. When the cursor appears in front of the desired setting, press the ↵ (ENTER) key to register your EXPAND setting.

Step 6

If you did not change the EXPAND setting in Step 5, press the ⌾ (PAUSE) key to cancel the PAUSE mode.

If you changed the EXPAND setting in Step 5, the menu below appears. This is the same menu for selecting the media mode that appears whenever the medium has been reloaded.

```
▲ROLL 1
▼ROLL 2
```

Press the ⊕ F1/ORIGIN key (ROLL 1) or ▲ F2/TEST key (ROLL 2) to select the media mode that suits the roll medium you have just loaded.

7 USING THE EXTENDED FUNCTIONS

7.1 Specifying the PEN UP SPEED

This function is used to specify the travelling speed of the cutter pen in raised status. It can be specified independently of the cutting SPEED function. When the PEN UP SPEED is high, the cutter pen travels faster while in raised status to shorten the overall cutting time. Your cutting plotter comes with its PEN UP SPEED set to AUTO, which selects the same speed as the cutting SPEED function (the cutter pen is in lowered status). Note that if you perform long-axis cutting of film with a high PEN UP SPEED setting, the film is likely to become jammed.

Step 1

Press the (PAUSE) key to enter PAUSE mode.

Step 2

Press the (NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 3

Simultaneously press the (ENTER) and (NEXT PAGE) keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 4

Press the (⊕)F1/ORIGIN key (PEN UP SPEED) to display the menu below.

```
PEN UP SPEED
    AUTO
```

Use the (△) and (▽) keys to select the desired PEN UP SPEED and then press the (ENTER) key to register your setting.
The PEN UP SPEED can be set to AUTO (the PEN UP SPEED setting becomes identical to the SPEED setting) or to 10, 20, 30, or 60 cm/s.
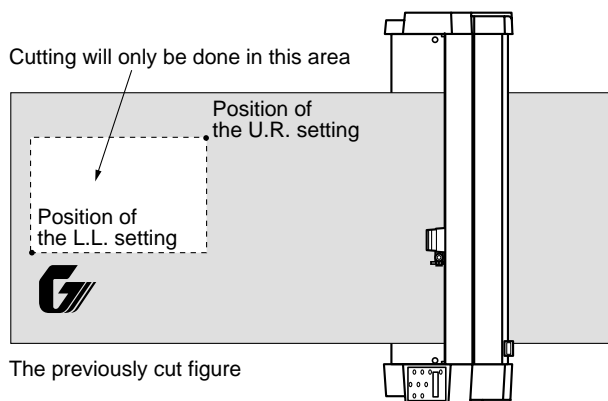
Step 5

Press the (PAUSE) key to cancel the PAUSE mode.

NOTE : The PEN UP SPEED setting is retained in the cutting plotter's internal memory, even while the cutting plotter is turned off.

7.2 Specifying the OFFSET FORCE

Because the direction which the cutter blade's tip is facing cannot be confirmed during the cutting plotter's initialization routine, "initial blade control" is required to properly orient the blade's tip. This function specifies the cutting force to be applied during initial blade control. Particularly when cutting thick film, the OFFSET FORCE setting is used to control the rotation of the blade's tip during initial blade control. The OFFSET FORCE need not be specified for film of regular thickness.

Step 1

Press the (PAUSE) key to enter PAUSE mode.

Step 2

Press the (NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 3

Simultaneously press the (ENTER) and (NEXT PAGE) keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 4

Press the (F2/TEST) key (OFFSET FORCE) to display the menu below.

```
OFFSET FORCE
      4
```

Use the (△) and (▽) keys to select the desired OFFSET FORCE and then press the (ENTER) key to register your setting.

The OFFSET FORCE can be set in a range of 1 to 31 for the CE2000-60, and 1 to 39 for the CE2000-120.

Step 5

Press the (PAUSE) key to cancel the PAUSE mode.

NOTE : The OFFSET FORCE setting is retained in the cutting plotter's internal memory, even while the cutting plotter is turned off.

7.3 Specifying the OFFSET ANGLE

Based on the coordinate data received, the cutting plotter controls the angle of the cutter blade's tip according to the displacement of the travelling angle as defined by the data which specifies the movement of the cutter pen between coordinate points. This function sets the reference value used for adjusting the cutter blade's offset angle. Although a high OFFSET ANGLE setting shortens the overall cutting time, the cut results may not precisely reproduce the image defined by the data in some cases.

Step 1

Press the (PAUSE) key to enter PAUSE mode.

Step 2

Press the (NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 3

Simultaneously press the (ENTER) and (NEXT PAGE) keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 4

Press the (NEXT PAGE) key until the menu below appears.

```
▲OFFSET ANGLE
▼STEP PASS
```

Step 5

Press the (⊕)F1/ORIGIN key (OFST ANGLE) to display the menu below.

```
OFFSET ANGLE
     30
```

Use the (△) and (▽) keys to select the desired OFFSET ANGLE and then press the (ENTER) key to register your setting.
The OFFSET ANGLE can be set in a range of 1 to 60.

Step 6

Press the (PAUSE) key to cancel the PAUSE mode.

NOTE : The OFFSET ANGLE setting is retained in the cutting plotter's internal memory, even while the cutting plotter is turned off.

7.4 Selecting the STEP PASS

Use this function when the coordinate data received specifies extremely short line segments. The cutting plotter uses the specified STEP PASS setting as the unit for blade tip control, omitting blade tip control for any data that is below the STEP PASS setting. This results in higher image quality by permitting smooth blade tip control when cutting circles, arcs, and other curved lines. If the STEP PASS setting is too high, the image defined by the data may not be faithfully reproduced. Normally, set the STEP PASS setting to 0.

Step 1

Press the ⌁(PAUSE) key to enter PAUSE mode.

Step 2

Press the (NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 3

Simultaneously press the (ENTER ↵) and (NEXT PAGE) keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 4

Press the (NEXT PAGE) key until the menu below appears.

```
▲OFFSET ANGLE
▼STEP PASS
```

Step 5

Press the (▲) F2/TEST key (STEP PASS) to display the menu below.

```
STEP PASS
    0
```

Use the (△) and (▽) keys to select the desired STEP PASS and then press the (ENTER ↵) key to register your setting.
The STEP PASS can be set in a range of 0 to 20.

Step 6

Press the ⌁(PAUSE) key to cancel the PAUSE mode.

NOTE : The STEP PASS setting is retained in the cutting plotter's internal memory, even while the cutting plotter is turned off.

---

8 USING THE SPECIAL FUNCTIONS

8.1 Description of the Special Functions

The cutting plotter is also provided with the special functions described below. These functions are specified only for special situations and are not used for normal cutting operations.

(1) Enabling/Disabling the ":", ",", and ";" Commands (When the COMMAND setting is GP-GL)

When the COMMAND setting is GP-GL, this function is set to determine whether the cutting plotter will recognize or ignore the receipt of ":", ",", and ";" commands. In the case where the leading part of data is lost during data transfer, these commands may adversely affect the cutting operation. In such case, set this function to DISABLE. (The default setting is DISABLE.)

(2) Moving the Pen in Raised or Lowered Status in Response to the "W" Command (When the COMMAND setting is GP-GL)

This function determines whether, upon receipt of the "W" command for drawing a circle or arc segment, the cutting plotter moves the pen to the specified starting position in either raised status or the pen status (raised or lowered) that was in effect just prior to receipt of the "W" command.
When PEN DOWN is selected, the pen is moved to the starting position for drawing in the pen status (raised or lowered) that was in effect just prior to receipt of the "W" command.
When PEN UP is selected, the pen is moved to the starting position for drawing in raised status.
This setting is only effective if the cutter pen has been selected.
(The default setting is PEN DOWN.)

(3) Returning the MODEL EMULATED ID in Response to the "OI" Command (When the COMMAND setting is HP-GL)

When the COMMAND setting is HP-GL, this function determines how the cutting plotter responds to the receipt of the "OI" command for requesting the model ID.
When 7550 is selected, the cutting plotter's response is 7550.
When 7586 is selected, the cutting plotter's response is 7586.
(The default setting is 7550.)

(4) Selecting the SETTING PRIORITY

This function determines whether the cutting plotter places priority on the cutting conditions specified by command input from the computer or by manual settings at the cutting plotter's control panel.
When MANUAL is selected, the cutting plotter performs cutting based on the cutting conditions specified at its control panel, ignoring command input specifying cutting conditions.
When PROGRAM is selected, the cutting plotter performs cutting based on the receipt of command input specifying cutting conditions. If it does not receive such commands, it performs cutting according to the cutting conditions specified at its control panel.
(The default setting is MANUAL.)

(5) Selecting the Blade Tip's Initial Position (INIT BLADE)

Whenever the cutting plotter is turned on or any setting of its cutting conditions is changed, initial blade control is performed to position the cutter pen's blade on the medium so that the blade's tip is properly oriented. This function selects the "initial blade position," which is the position where initial blade control is performed.
When 2mmBELOW is selected, initial blade control is performed at a position 2 mm below the starting position for cutting.
When OUTSIDE is selected, initial blade control is performed outside of the effective cutting area.
(The default setting is 2mmBELOW.)

(6) Enabling/Disabling Consecutive Pen Travel in Raised Status (PEN UP MOVE)

In response to the receipt of consecutive commands specifying pen movement in raised status, this function determines whether the pen will travel to each point specified or only from the initially specified point to the last specified point.
When ENABLE is selected, the pen consecutively travels in raised status to each coordinate specified by the data received.
When DISABLE is selected, the pen travels in raised status from the initially specified point to the last specified point, omitting intermediate points.
(The default setting is DISABLE.)

(7) Enabling/Disabling the MEDIA SENSORs

This function enables or disables the operation of the media sensors for detecting the size of the loaded medium in the direction that film is fed.
When ON is selected, the operation of the media sensors is enabled.
When OFF is selected, the operation of the media sensors is disabled.
(The default setting is ON.)

(8) Enabling/Disabling the HOME SENSORs

This function enables or disables the operation of the home sensors for detecting the width of the loaded medium.
When ON is selected, the operation of the home sensors is enabled.
When OFF is selected, the operation of the home sensors is disabled.
(The default setting is ON.)

(9) Selecting the PARALLEL I/F Mode

Centronics-compatible parallel interfaces do not all employ the same timing for their signal lines. If the signal timing does not match, the receiving device cannot accurately receive data via the Centronics-compatible parallel interface. This function allows you to change the timing of the Centronics-compatible parallel interface by choosing among four different modes (1 through 4).

NOTE : If the media or HOME sensors have been disabled (the setting is OFF), be sure to specify the plot area (see section 6.7). If the plot area is not specified, the cutting mat may be damaged.

8.2 Specifying the Special Functions

Step 1

While holding down the ▽ key, turn on the cutting plotter. The menus for setting the special functions will appear at the display panel.

Step 2

Depending on the current COMMAND setting (GP-GL or HP-GL), press the ▣ NEXT PAGE key to cycle through the special function menus in the sequence shown below.

In GP-GL command mode

```
■ENABLE  ":",";"
 DISABLE    COMD
```
↓
```
 PEN UP      "W"
■PEN DOWN
```
↓
```
■MANUAL   SETTING
 COMD   PRIORITY
```
↓
```
■2mm BELOW   INIT
 OUTSIDE   BLADE
```
↓
```
 ENABLE   PEN UP
■DISABLE    MOVE
```
↓
```
 OFF    MEDIA
■ON    SENSOR
```
↓
```
 OFF    HOME
■ON    SENSOR
```
↓
```
 PARALLEL   I/F
              1
```

In HP-GL command mode

```
■7550    MODEL
 7586  EMULATED
```
↓
```
■MANUAL   SETTING
 COMD   PRIORITY
```
↓
```
■2mm BELOW   INIT
 OUTSIDE   BLADE
```
↓
```
 ENABLE   PEN UP
■DISABLE    MOVE
```
↓
```
 OFF    MEDIA
■ON    SENSOR
```
↓
```
 OFF    HOME
■ON    SENSOR
```
↓
```
 PARALLEL   I/F
              1
```
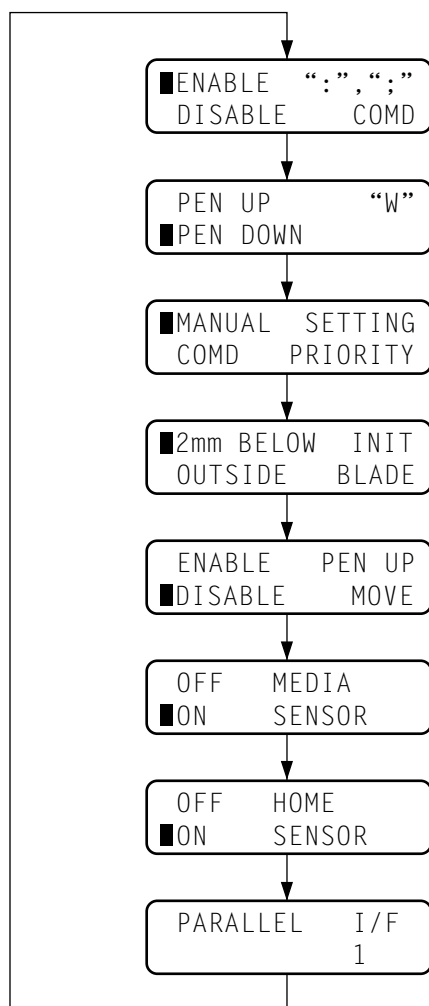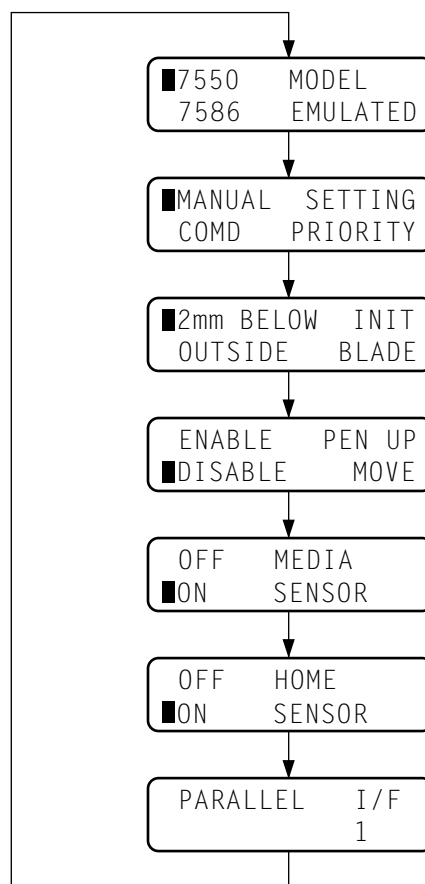
Step 3

Press the ⊕ F1/ORIGIN or ▣ F2/TEST key to move the flashing cursor to the desired setting.

At the PARALLEL I/F menu, use the △ or ▽ key to raise or lower the value.

When the desired setting is selected, press the ↵ ENTER key to register your setting.

At this time, if you press the ▣ NEXT PAGE key without pressing the ↵ ENTER key, the cutting plotter displays the next special function menu without registering the setting you selected at the current menu.

Step 4

When all of the special functions have been satisfactorily set, turn off the cutting plotter.

9 **TROUBLESHOOTING PROCEDURES**

9.1 Printing a List of the Currently Selected Conditions

Use this function to print out a list of the cutting plotter's currently selected conditions. A sample printout is shown on the next page.

Step 1

Mount a plotting pen (not a cutter pen) at the cutting plotter's pen holder and then set the pen type, FORCE, SPEED, and QUALITY to suit the pen mounted.

Step 2

Load paper of at least A4 size in the cutting plotter.

Step 3

Press the PAUSE key to enter the PAUSE mode.

Step 4

Press the NEXT PAGE key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 5

Simultaneously press the ENTER and NEXT PAGE keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 6

Press the NEXT PAGE key until the menu below appears.

```
▲TEST
▼LENGTH UNIT
```

Step 7

Press the F1/ORIGIN key (TEST) to display the menu below.

```
▲CONDITION
▼SELF TEST
```

Press the F1/ORIGIN key (CONDITION) to initiate printing of a list of the cutting plotter's currently selected conditions.

CAUTION : The pen carriage begins moving as soon as the F1/ORIGIN key is pressed to select CONDITION in Step 7, so be sure to keep your hands and other objects away from the cutting plotter's moving parts.

CE2000-120 CONDITIONS

CONDITION	FORCE	SPEED	PEN TYPE	OFFSET	ACCEL
*1	12	50	PEN	0	1
2	14	25	09U	0	2
3	17	20	OTHER	+17	2
4	25	10	15U	0	2

RS-232C	BAUD RATE	PARITY	DATA BIT	HANDSHAKE
	9600	N	8	H

COMMAND	HP-GL	STEP SIZE	0.025
HP-GL ORIGIN	L.L.	PAGE LENGTH	2000
PEN UP SPEED	AUTO	STEP PASS	0
OFFSET FORCE	4	OFFSET ANGLE	30
ROTATE	OFF	DISPLAY UNIT	mm
EXPAND	ON		
PRE FEED	OFF	PRE FEED LENGTH	1
DISTANCE ADJUST	0 0		

;,; COMMAND	ENABLED	MODEL EMULATED	7550
W COMMAND	PEN DOWN	PEN UP MOVE	DISABLED
COND. PRIORITY	PROGRAM	HOME SENSOR	ON
INIT. BLADE CTRL	2mm BELOW	PAPER SENSOR	ON
PARALLEL I/F	1		

ROM VERSION *.**

9.2 Running a SELF TEST

The SELF TEST function prints out a test pattern for checking the precision of the operation of the cutting plotter itself (but not the status of its connection to a computer).

Step 1

Mount a plotting pen (not a cutter pen) at the cutting plotter's pen holder and then set the pen type, FORCE, SPEED, and QUALITY to suit the pen mounted.

Step 2

Load paper of at least A3 size in the cutting plotter.

Step 3

Press the (PAUSE) key to enter the PAUSE mode.

Step 4

Press the (NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 5

Simultaneously press the (ENTER) and (NEXT PAGE) keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 6

Press the (NEXT PAGE) key until the menu below appears.

```
▲TEST
▼LENGTH UNIT
```

Step 7

Press the ⊕ F1/ORIGIN key (TEST) to display the menu below.

```
▲CONDITION
▼SELF TEST
```

Step 8

Press the ▲ F2/TEST key (SELF TEST) to display the menu below.

```
▲YES      TEST
▼NO     PATTERN
```

To initiate printing of the self test pattern, press the ⊕ F1/ORIGIN key (YES).

To return to the menu in Step 7, press the ▲ F2/TEST key (NO).

CAUTION : The pen carriage begins moving as soon as the ⊕ F1/ORIGIN key is pressed to select YES in Step 8, so be sure to keep your hands and other objects away from the cutting plotter's moving parts.

9.3 Using the DUMP Mode

In contrast with the SELF TEST mode which checks the operation of the cutting plotter itself, this function prints the data received by the cutting plotter from the computer as codes so you can check whether data transfer is being properly conducted. If the data printed is not identical to the data sent from the computer, check that you are using the correct interface cable and that the cable is properly connected. If you are using the RS-232C serial interface, also check that the proper interface conditions have been set at both the cutting plotter and the computer.

Step 1

Mount a plotting pen (not a cutter pen) at the cutting plotter's pen holder and then set the pen type, FORCE, SPEED, and QUALITY to suit the pen mounted.

Step 2

Load paper of at least A4 size in the cutting plotter.

Step 3

Press the (PAUSE) key to enter the PAUSE mode.

Step 4

Press the (NEXT PAGE) key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 5

Simultaneously press the (ENTER) and (NEXT PAGE) keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 6

Press the (NEXT PAGE) key until the menu below appears.

```
▲TEST
▼LENGTH UNIT
```

Step 7

Press the (F1/ORIGIN) key (TEST) to display the menu below.

```
▲CONDITION
▼SELF TEST
```

Step 8

Press the NEXT PAGE to display the menu below.

```
▲DUMP
▼CUT DEMO
```

Step 9

Press the (F1/ORIGIN) key (DUMP) to display the menu below.

```
 ON    DUMP
■OFF
```

The blinking square cursor indicates the currently selected DUMP mode setting.

To enable the DUMP mode, press the (F1/ORIGIN) key to move the blinking cursor to the ON position. To disable the DUMP mode, press the (F2/TEST) key to move the blinking cursor to the OFF position. When the cursor appears in front of the desired setting, press the (ENTER) key to register your DUMP mode setting.

Step 10

When the ⊕ F1/ORIGIN key (ON) is pressed, the "DUMP MODE" message is displayed, so send data to the cutting plotter from the computer in this status.
Upon receiving the data, the cutting plotter will begin printing it as codes.

Step 11

To cancel DUMP mode, turn the cutting plotter off then back on again.

NOTE : In DUMP mode, all of the data received by the cutting plotter from the computer is printed out as ASCII character codes or as two-digit hexadecimal control codes. Upon receipt of a READ-type command (excluding a request for the cutting plotter's status), the cutting plotter outputs dummy data.

CAUTION : The pen carriage begins moving as soon as the ⊕ F1/ORIGIN key is pressed to select ON in Step 9, so be sure to keep your hands and other objects away from the cutting plotter's moving parts.

9.4 Cutting the Demo Pattern

Use this function to cut a demonstration pattern.

Step 1

Mount a cutter pen at the cutting plotter's pen holder and then set the blade type, FORCE, SPEED, QUALITY, and CUTTER OFFSET to suit the cutter blade mounted.

Step 2

Load film in the cutting plotter.

Step 3

Press the ⎋ PAUSE key to enter the PAUSE mode.

Step 4

Press the NEXT PAGE key until the menu below appears.

```
▲INTERFACE
▼PEN UP/DOWN
```

Step 5

Simultaneously press the ↵ ENTER and NEXT PAGE keys to display the menu below.

```
▲PEN UP SPEED
▼OFFSET FORCE
```

Step 6

Press the NEXT PAGE key until the menu below appears.

```
▲TEST
▼LENGTH UNIT
```

Step 7

Press the ⊕ F1/ORIGIN key (TEST) to display the menu below.

```
▲CONDITION
▼SELF TEST
```

Step 8

Press the NEXT PAGE to display the menu below.

```
▲DUMP
▼CUT DEMO
```

Press the ▲ F2/TEST key (CUT DEMO) to cut the demonstration pattern.

> **CAUTION :** The pen carriage begins moving as soon as the ▲ F2/TEST key is pressed to select CUT DEMO in Step 8, so be sure to keep your hands and other objects away from the cutting plotter's moving parts.

9.5 The Plotter is Turned On But Doesn't Operate

Symptom	Cause	Solution
The control panel's POWER lamp does not light.	The plotter is not being supplied with power.	Check that the power cord is securely connected to the plotter's AC line inlet and the electrical output.
The POWER lamp lights but nothing appears on the display panel.	The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.

9.6 Mechanical Error Messages and Their Causes

Error message	Cause	Solution
CURRENT LIMIT	Excessive load is causing the current to the motor to exceed the rated value.	Turn off the plotter, remove the obstacle, them turn the plotter back on.
POSITION ERROR	Cutting conditions do not suit the cutting medium.	Lower the cutting SPEED and/or the cutting FORCE
The POWER lamp flickers.	Movement of the pen carriage is being obstructed.	Turn off the plotter, remove the obstacle, then turn the plotter back on.
	The pen carriage was subjected to external pressure during cutting.	Turn off the plotter, remove the obstacle, then turn the plotter back on.
	Film scraps stuck in the film's moving parts are impeding plotter operation.	Turn off the plotter, remove the film scraps, then turn the plotter back on.
	If either error occurs frequently, contact your sales representative or nearest Graphtec dealer.	
SPEED ERROR	Immediately after turning on the plotter, excessive force was used to manually move the pen carriage.	Turn the plotter off then back on again.
The POWER lamp flickers.	The internal speed control is faulty.	Turn the plotter off then back on again.
	If the error occurs frequently, contact your sales representative or nearest Graphtec dealer.	

9.7 Command Error Messages and Their Causes

If any of the following command errors occur, they are nearly always caused by one of the reasons below:

(1) The software configuration regarding the output device has been changed: or
(2) The plotter's interface conditions have been changed.

When a command error occurs, therefore, first check the three corresponding points below:

(1) Configure the application software so that it can control the cutting plotter.
(2) Specify the application software's interface conditions to the correct settings.
(3) Specify the cutting plotter   interface conditions to the correct settings.

Error messages in GP-GL command mode

(1/2)

Error message	Cause	Solution
ERROR 1 COMMAND ERROR	The plotter received an unrecogniz-able command. • Noise was input to the plotter upon execution of the software applica-tion. • The software configuration regard-ing the output device has been changed. • The plotter's interface conditions have been changed.	→ Press the ENTER key. → Configure the software to drive your plotter. Ensure that the software's interface conditions are cor-rectly set. → Ensure that the plotter's in-terface conditions are set to match those of the soft-ware.
ERROR 2 TERMINATOR ERROR	A command was received with an incorrectly specified terminator. • The software configuration regard-ing the output device has been changed. • The plotter's interface conditions have been changed.	→ Configure the software to drive your plotter. Ensure that the software's interface conditions are cor-rectly set. → Ensure that the plotter's in-terface conditions are set to match those of the soft-ware.

Error messages in GP-GL command mode

Error message	Cause	Solution
ERROR 3 DELIMITER ERROR	A command was received with an incorrectly specified delimiter. • The software configuration regarding the output device has been changed. • The plotter's interface conditions have been changed.	 → Configure the software to drive your plotter. Ensure that the software's interface conditions are correctly set. → Ensure that the plotter's interface conditions are set to match those of the software.
ERROR 4 PARAMETER OVERFLOW	A command was received containing a numeric parameter that exceeds that command's permissible range. • The software configuration regarding the output device has been changed. • The plotter's interface conditions have been changed.	 → Configure the software to drive your plotter. Ensure that the software's interface conditions are correctly set. → Ensure that the plotter's interface conditions are set to match those of the software.
ERROR 5 I/O ERROR	An error occurred during data transfer. • The software configuration regarding the output device has been changed. • The plotter's interface conditions have been changed.	 → Configure the software to drive your plotter. Ensure that the software's interface conditions are correctly set. → Ensure that the plotter's interface conditions are set to match those of the software.

Error messages in HP-GL emulation mode

Error message	Cause	Solution
ERROR 1 INSTRUCTION ERR	An unrecognizable instruction was executed.	Execute a recognizable command.
ERROR 2 PARAM NO. ERROR	A command was executed with the wrong number of parameters.	Execute the command with the correct number of parameters.
ERROR 3 PARAMETER ERROR	A command containing an unusable parameter was specified.	Execute the command with its parameters specified within their permissible ranges.
ERROR 5 CHAR SET ERROR	An unrecognizable character set was specified.	Specify a recognizable character set.
ERROR 6 POSITION O/FLOW	A command was executed with co-ordinate data that exceeds the effective cutting/plotting area.	Execute the command with its coordinate data specified within the effective cutting/plotting area.
ERROR 7 BUFFER OVERFLOW	The data being input exceeded the capacity of the plotter's download-able character buffer, polygon buffer, etc.	Increase the buffer size.
ERROR 10 I/O OUTPUT COMD ERR	During execution of an output command, another output command was executed.	Check the flow of your programmed data.
ERROR 11 ESC INVLD BYTE ERR	The ESC character was followed by an invalid byte.	Check the ESC commands in your program.
ERROR 12 I/O CONTROL BYTE ERR	A device control command containing an invalid byte was received.	Check the device control commands in your program.
ERROR 13 I/O PARAM RANGE ERR	A parameter outside of the permissible numeric range was specified.	Check the program.
ERROR 14 I/O PARAM NO. ERROR	Too many parameters were received.	Check the number of command parameters.
ERROR 15 I/O TRANSM ERR	During data transfer, a framing error, parity error, or overrun error occurred.	Check the settings of the interface conditions.
ERROR 16 I/O BUFFER OVERFLOW	The I/O buffer received data at a faster pace than it could process, indicating that handshaking is not successful.	Check the settings of the hand-shaking mode and other interface conditions.

9.8 The Cutting Results are Unsatisfactory

Problem	Cause	Solution

• The cut corners are rounded or too pointed.	• The CUTTER OFFSET is incompatible with the blade type being used.	• Adjust the CUTTER OFFSET value:
		  - If too low, corners become rounded.
		  - If too high, corners are too pointed.

• The cut line starts out crooked.	• The blade mounted in the holder does not rotate smoothly.	• Grease the blade and holder.
		• Remove any foreign matter inside the pen holder.
	• The Offset Cut Pressure is too low.	• Raise the Offset Cut Pressure setting (the Offset Cut Pressure is separate from the cutting FORCE).
	• With the 0.9 mm cutter pen (blue blade adjustment knob), the spring has come loose from the blade.	• Replace the blade with a new one that has a spring.
• The blade skips and does not completely cut lines that should be solid. • Solid lines are not cut at a constant depth.	• The blade is extended too far.	• Adjust the blade length.
	• The cutting SPEED is too high.	• Lower the SPEED setting.
• Coarse resolution of curved lines.	• The software's resolution setting is too low.	• Adjust the software's resolution setting.
	• The blade offset angle is too low.	• Raise the blade offset angle.
• The film curis up at the corners.	• The blade is extended too far.	• Adjust the blade length.

	• The CUTTER OFFSET is incompatible with the blade type being used.	• Adjust the CUTTER OFFSET value:
		  - If too low, corners become rounded.
		  - If too high, corners are too pointed.

	• The cutting SPEED is too high.	• Lower the SPEED setting.
	• The blade is dull.	• Replace the blade.
	• The QUALITY setting is too high.	• Lower the QUALITY setting.
• The blade is cutting into the backing sheet.	• The blade is extended too far.	• Adjust the blade length.
	• The cutting FORCE is too high.	• Lower the FORCE setting.
• Film can be cut but is hard to weed afterward. • Cut film cannot be picked up using a retack sheet.	• The retack sheet is not sticky enough.	• Switch to a retack sheet that is more sticky.
	• Film gets entangled during cutting.	• Reduce the blade length and/or lower the cutting FORCE.
	• Weeding of cut film was postponed too long.	• Promptly weed cut film.

Problem	Cause	Solution
• Abnormal noise generate by the cutter pen during cutting. • The film is discolored where the blade has passed.	• Film is stuck in the tip of the cutter plunger.	• Adjust the blade length and cutting FORCE setting.
• The cutting results differ from the specified size.	• The programmable resolution (STEP SIZE) has been set differently at the plotter and the software application.	• Set both the plotter and software to the same resolution.
	• Scaling has been specified at the software application.	• Check whether scaling has been specified.
• When the plotter is receiving data, the PROMPT lamp lights (an offscale error occurs.) • Some parts of the film cannot be cut.	• The computer sent coordinate data that exceeds the specified effective cutting area.	• Set the effective cutting area to a larger area. • Check the PAGE LENGTH setting.
	• The computer sent coordinate data that exceeds the maximum effective cutting area.	• Switch to larger film or change the coordinate data.
• The currently selected cutting conditions are disregarded or cannot be changed.	• The Parameter Priority setting is set to program mode.	• Change the Parameter Priority setting to manual mode.
	• The ENTER key was not pressed after changing the settings.	• Make sure you are setting the conditions correctly.
• Characters or lines are deformed during pen plotting.	• The plotter is in Cutting mode.	• Set the blade type of the CUTTER OFFSET function to PEN.
• Film is fed at an angle.	• Film has been loaded at an angle.	• Correctly reload the film.
	• The total amount of roll film to be cut was not pulled out in advance.	• Pull out the required amount of film in advance.
• Film is abruptly fed forward.	• Incorrectly selected film type.	• Correctly set the film type to match your film.
• The length of cutting results differ from the program (slight distance error).	• The film is slipping.	• Lower the cutting SPEED or the PEN UP SPEED setting.
	• The distance correction requires adjustment.	• Adjust the distance correction.

9 – 13

Problem	Cause	Solution
• Film is loaded but the RELOAD PAPER ! prompt appears.	• Film that is nearly transparent cannot be detected by the paper sensors.	• Disable the paper sensors by turning off the Maintenance 1 function, then set the effective cutting area at the control panel.
	• Strong reflected light is preventing the paper sensors from detecting the film.	• Change the position of the light source.
	• The loaded film has not been positioned over the paper sensors.	• Properly reload the film.
	• The right pinch roller is not positioned over the wider grit roller on the right.	Position the right pinch roller over the wider grit roller on the right.
	• The left pinch roller is not positioned over a grit roller or is positioned over the wider grit roller on the right.	Position the left pinch roller over a grit roller other than the wider one on the right.
• Cut characters are deformed. • The cutting results of a detailed figure are deformed.	• The Step Pass is too high.	• Lower the Step Pass setting.
• The staring and end points of cutting do not match.	• Coordinate points are incorrectly specified.	• Check the coordinate data by plotting it with a pen.
	• The Offset Cut Pressure is too low.	• Raise the Offset Cut Pressure setting.
	• The film is too flimsy.	• Switch to a stronger film.
	• Blade rotation is not smooth.	• Grease the cutter blade and holder.

APPENDIX

A.1 Main Specifications

Item		Specifications	
Model number		CE2000-60	CE2000-120
Configuration		Grit-rolling cutting plotter	
Drive system		Digital servo drive system	
Maximum cutting area		584 mm × 50 m	1220 mm × 50 m
Range of guaranteed precision		584 mm × 5 m*1	1220 mm × 5 m*1
Compatible media widths		Minimum: 50 mm, maximum: 712 mm (28 inches)	Minimum: 85 mm, maximum: 1346 mm (53 inches)
Maximum media thickness		10 mil (0.25 mm)	
Maximum cutting speed		60 cm/s	100 cm/s*3
Specifiable cutting speeds		1 to 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 (cm/s) The CE2000-120 has an additional setting of ∗∗ (100 cm/s).	
Cutting force		20 to 300 g/f (31 levels)	20 to 450 g/f (39 levels)
Minimum character matrix		About 5 mm for an alphanumeric character (varies with the medium, font, etc.)	
Mechanical step size		0.005 mm	
Programmable step size		GP-GL: 0.1, 0.05, 0.025, 0.01 mm; HP-GL*2: 0.025 mm	
Repeatability precision		0.1 mm or less/2 m*1	
No. of mountable pens		1 pen	
Compatible cutter type		Supersteel blades	
Compatible pen type		Water-based fiber-tip pens	
Compatible cutting media		Marking film (polyvinyl, fluorescent, or reflective film) with a maximum thickness of 0.25 mm (excluding high-luminosity reflective film)	
Standard interfaces		RS-232C serial or Centronics-compatible parallel (automatically selected)	
Internal memory capacity		2 Mbytes	
Command modes		GP-GL and HP-GL (selected at the control panel)	
Display panel		Liquid crystal display, 16 characters × 2 rows	
Power supply	Supply voltage	115 to 230 VAC 50/60 Hz (UL, CSA) 100 to 240 VAC 50/60 Hz (CE)	
	Power consumption	80 VA	120 VA
Environmental conditions	Operating environment	10° to 35°C, 35% to 75% R.H. (non-condensing)	
	Guaranteed precision	16° to 32°C, 35% to 70% R.H. (non-condensing)	
External dimensions		840 (W) × 278 (D) × 250 (H) mm	1489 (W) × 656 (D) × 1189 (H) mm (including stand)
Weight		13 kg	46 kg (including stand)

*1 Varies with the type of Graphtec-authorized film and the cutting conditions.
*2 HP-GL is a registered trademark of Hewlett-Packard Company.
*3 Only in the diagonal (45° angle) direction.

A.2 Options and Supplies

To place orders or request more information about the options and supplies available for your cutting plotter, please contact your sales representative or nearest Graphtec vendor.

Options

Designation	Part no.	Description
Stand	ST0033	Dedicated stand for the CE2000-60
Basket-60	PG0006	For CE2000-60
Basket-120	PG0007	For CE2000-120
Loupe	PHP-61LOUPE	Loupe with 6× magnification

Supplies

Designation	Part no.	Description
Cutter holder	PHP32-CB09N	1 holder for the supersteel blade of 0.9-mm diameter
	PHP32-CB15N	1 holder for the supersteel blade of 1.5-mm diameter
Cutter blade	CB09UA-5	Set of 5 supersteel blades of 0.9-mm diameter
	CB15U-5	Set of 5 supersteel blades of 1.5-mm diameter
Water-based fibertip pen	KF550-F8	1 pen each of red, black, violet, brown, blue, green, orange, and pink
	KF550-S1	2 black pens and 1 pen each of red, blue, and green
	KF551-RD	5 red pens
	KF552-BK	5 black pens
	KF555-BL	5 blue pens
	KF556-GR	5 green pens

* Other sets of water-based fibertip pens are also available that consist of single colors (violet, brown, orange, or pink) or of intermediate shades.

A.3 External Dimensions

■ CE2000-60

851mm

(280mm)

227mm

(226.5mm)

278mm
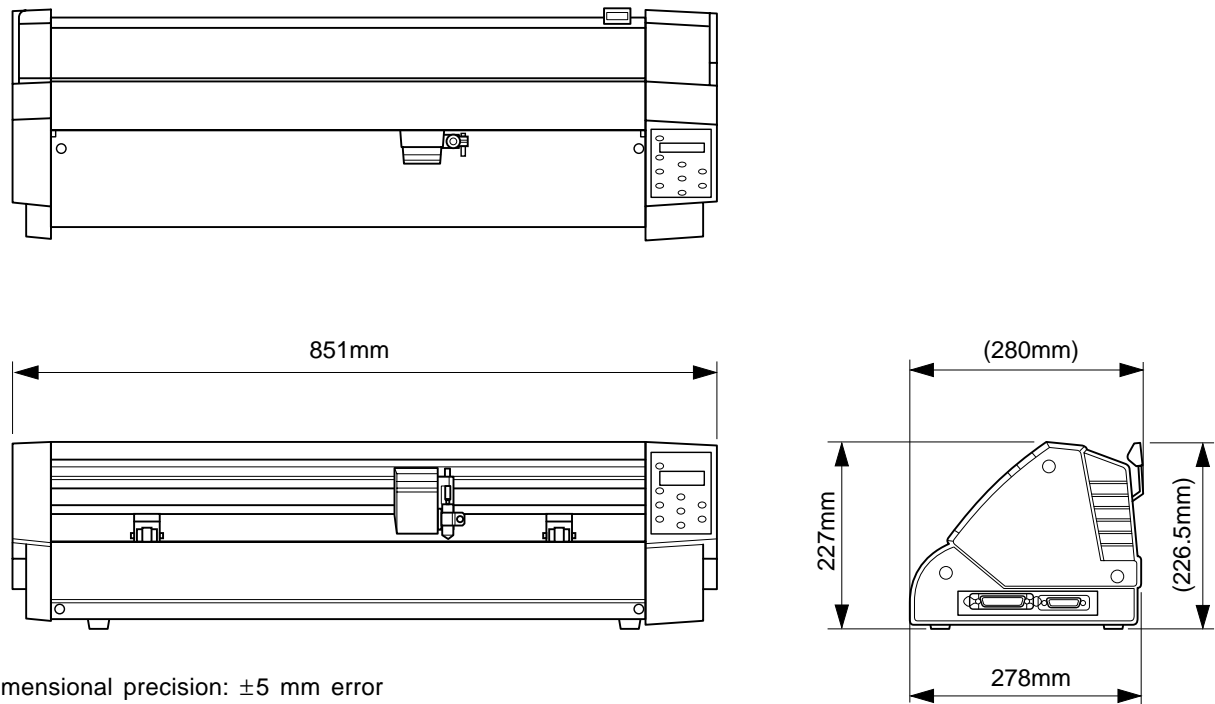
Dimensional precision: ±5 mm error

■ CE2000-120

656

1489

1189

1333

■ CE2000-120 with optional basket

820

1494

1189

1333

A.4 Menu Tree

```
┌─────────────────────┐        ┌─────────────────────┐
│ COND1  09U O 14     │─ F2 ──│ ▲TEST CUT           │
│    --PAUSE--        │        │ ▼PEN SETTINGS       │
└─────────────────────┘        └─────────────────────┘
           │                             │
                                   F2 ──┐
        NEXT                            │
                              ┌─────────────────────┐   ┌─────────────────────┐
                              │ ▲SPEED              │─F1│ SPEED               │
                              │ ▼PEN FORCE          │   │ 30 cm/s             │
                              └─────────────────────┘   ┌─────────────────────┐
                                       │           F2 ──│ PEN FORCE           │
                                     NEXT              │ 14                  │
                              ┌─────────────────────┐   ┌─────────────────────┐
                              │ ▲CUTTER OFFSET      │─F1│ CUTTER OFFSET       │
                              │ ▼QUALITY            │   │ 09U  O              │
                              └─────────────────────┘   ┌─────────────────────┐
                                                    F2 ─│ QUALITY             │
┌─────────────────────┐                                 │ 2                   │
│ ▲CLEAR BUFFER       │
│ ▼FEED               │
└─────────────────────┘
           │
        NEXT      F2 ──┐
                       ┌─────────────────────┐
                       │ SHEET FEED          │
                       │ FEED LENGTH  1 m    │
                       └─────────────────────┘
┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│ ▲FILM              │─F1│ ▲AXIS ADJ.          │─F1│ ADJ   PT 1          │
│ ▼FUNCTIONS          │   │ ▼DIST ADJ.          │   │ (******, ******)    │
└─────────────────────┘   └─────────────────────┘   ┌─────────────────────┐
                                   │           F2 ──│ ▪X= 0.00%   DIST    │
                                 NEXT              │ Y= 0.00%   ADJ.     │
                          ┌─────────────────────┐   ┌─────────────────────┐
                          │ ▲PAGE LENGTH        │─F1│ PAGE LENGTH         │
                          │ ▼PLOT AREA          │   │ L= 02000mm          │
                          └─────────────────────┘   ┌─────────────────────┐
                                   │           F2 ──│ ▲DEFAULT L.L.       │
                                 NEXT              │ (******, ******)    │
                          ┌─────────────────────┐   ┌─────────────────────┐
                          │ ▲EXPAND            │─F1│ ON      EXPAND      │
                          └─────────────────────┘   │ ▪OFF                │
                                                    ┌─────────────────────┐
                          ┌─────────────────────┐─F1│ ON      ROTATE      │
                     F2 ──│ ▲ROTATE            │   │ ▪OFF                │
                          │ ▼COPY               │   ┌─────────────────────┐
                          └─────────────────────┘   │ COPY MODE           │
                                   │           F2 ──│ COUNT 1             │
                                 NEXT              
                          ┌─────────────────────┐   ┌─────────────────────┐
                          │ ▲AUTO PRE FEED      │─F1│ ON      PRE FEED    │
                          └─────────────────────┘   │ ▪OFF                │
┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│ ▲INTERFACE         │─F1│ ▲RS-232C            │─F1│ RS-232C             │
│ ▼PEN UP/DOWN        │   │ ▼COMMAND            │   │ 9600  N  8  H       │
└─────────────────────┘   └─────────────────────┘   ┌─────────────────────┐
                                   │           F2 ──│ ▪GP-GL              │
                                 NEXT              │ HP-GL   COMMAND     │
              When GP-GL ─┌─────────────────────┐   ┌─────────────────────┐
                          │ ▲STEP SIZE          │─F1│ STEP SIZE           │
                          └─────────────────────┘   │ 0.100 mm            │
              When HP-GL ─┌─────────────────────┐   ┌─────────────────────┐
                          │ ▲ORIGIN POINT       │─F1│ LOWER LEFT          │
                          └─────────────────────┘   │ ▪CENTER   ORIG PT   │

       ENTER + NEXT
┌─────────────────────┐   ┌─────────────────────┐
│ ▲PEN UP SPEED      │─F1│ PEN UP SPEED         │
│ ▼OFFSET FORCE       │   │ AUTO                 │
└─────────────────────┘   ┌─────────────────────┐
           │          F2 ─│ OFFSET FORCE         │
         NEXT            │ 4                    │
┌─────────────────────┐   ┌─────────────────────┐
│ ▲OFFSET ANGLE      │─F1│ OFFSET ANGLE         │
│ ▼STEP PASS          │   │ 30                   │
└─────────────────────┘   ┌─────────────────────┐
           │          F2 ─│ STEP PASS            │
         NEXT            │ 0                    │
┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│ ▲TEST              │─F1│ ▲CONDITIONS         │─F2│ ▲YES      TEST      │
│ ▼LENGTH UNIT        │   │ ▼SELF TEST          │   │ ▼NO       PATTERN   │
└─────────────────────┘   └─────────────────────┘
  F2                               │
                                 NEXT
┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│ ▪mm      LENGTH    │   │ ▲DUMP              │─F1│ ON      DUMP        │
│ inch     UNIT       │   │ ▼CUT DEMO           │   │ ▪OFF                │
└─────────────────────┘   └─────────────────────┘
```
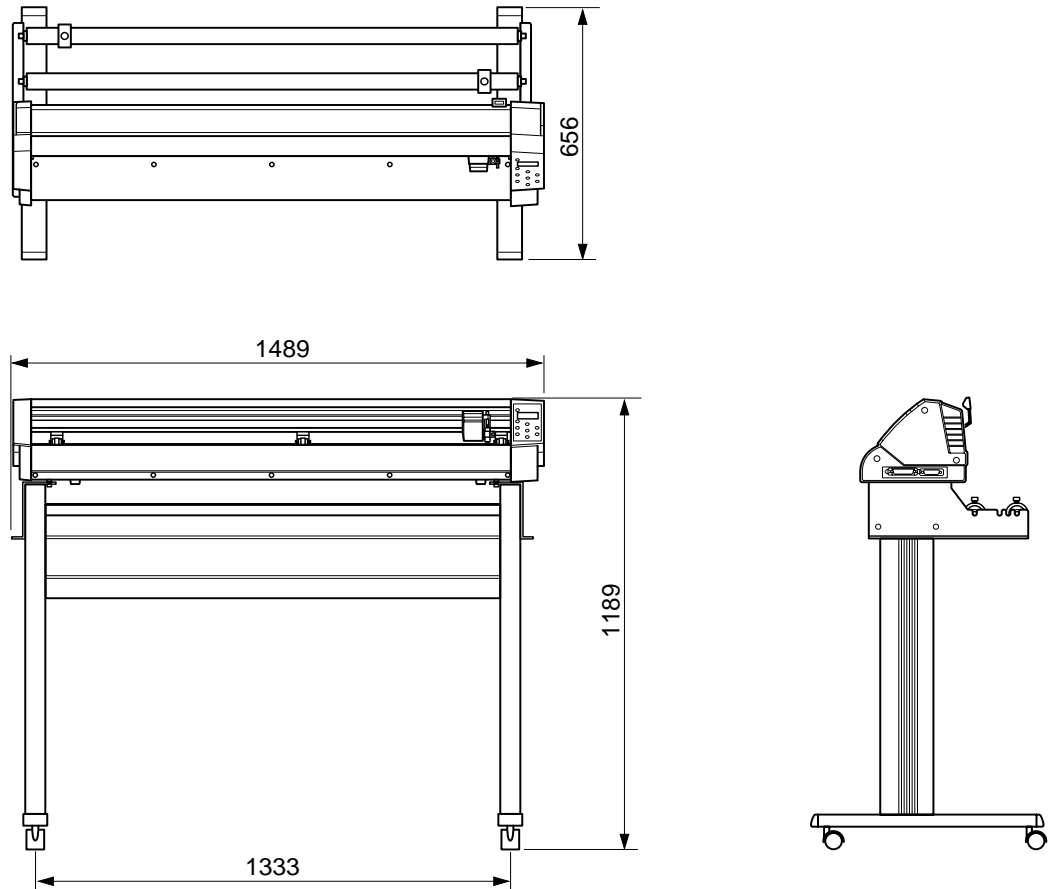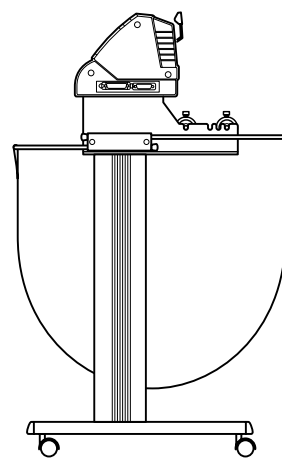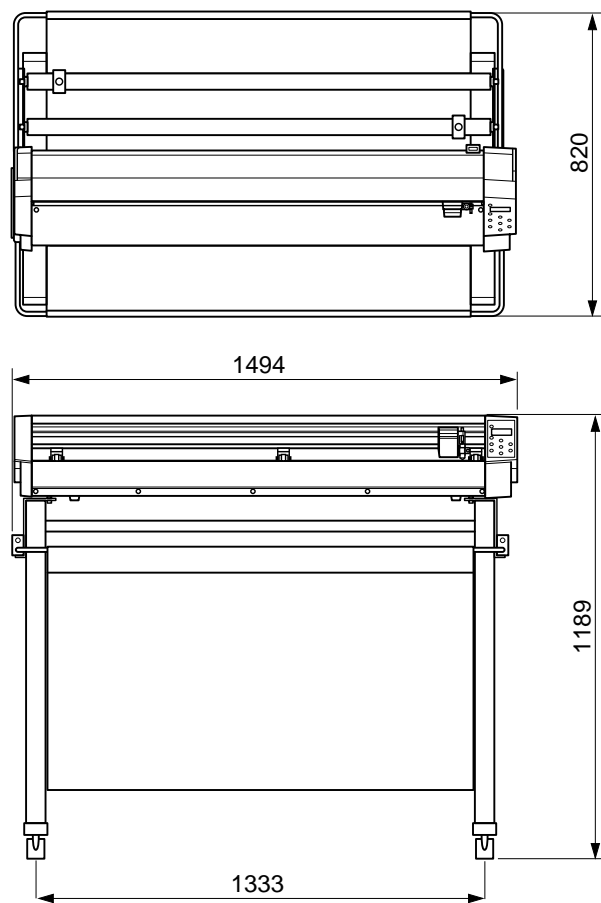
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