CE3000-120AP

CUTTING PLOTTER

USER'S MANUAL

GRAPHTEC

To Ensure Safe and Correct Use

- To ensure the safe and correct use of your cutting plotter, read this manual thoroughly prior to use.

- After reading this manual, keep it in a handy location for quick reference as necessary.

- Do not allow small children to touch the cutting plotter.

- The following describes important points for safe operation. Be sure to observe them strictly.

Conventions Used in This Manual

To ensure the safe and accurate use of the cutting plotter as well as to prevent human injury and property damage, the safety precautions provided in this manual are ranked in the three categories described below. Be sure to gain a full understanding of the difference between each of the categories before reading the Manual.

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 damage to the cutting plotter.

Description of Safety Symbols

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

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

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

Safety Precautions

⚠ WARNING

If the cutting plotter generates smoke, overheats, emits a strange odor, or otherwise functions abnormally, do not continue using it. Turn off the power and unplug the power cord from the electrical socket.

- Use of the cutting plotter in such a condition may result in a fire hazard or electric shock.
- After confirming that smoke is no longer being emitted, contact your sales representative or nearest Graphtec vendor for repairs.
- Never attempt to perform repairs yourself. Repair work by inexperienced personnel is extremely dangerous.

Prohibited
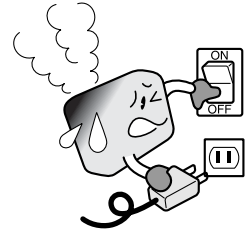
Do not disassemble, repair, or remodel the cutting plotter.

- Such action may cause electric shock or a fire hazard due to current leakage.
- Contact with the high-voltage parts within the cutting plotter may cause electric shock.
- If the cutting plotter requires repairs, contact your sales representative or nearest Graphtec vendor.

No disassembly

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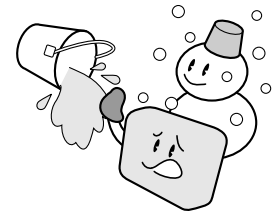
- Such locations may cause electric shock or a fire hazard due to current leakage.

Avoid water

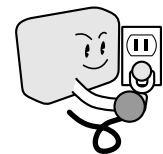Beware of electric shock

Be sure to ground the earth terminal.

- If the cutting plotter is not grounded, the operator could suffer an electric shock in the event of current leakage.

Ground the cutting plotter

Do not connect the cutting plotter to a non-rated power supply.

- Use of a different supply voltage may result in electric shock or a fire hazard due to current leakage.
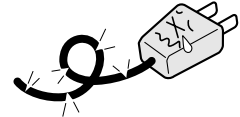
Prohibited

Safety Precautions

⚠ WARNING

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

Unplug the power cord from the socket

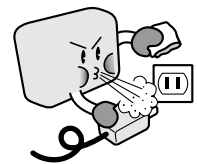### Do not allow dust or metal scraps to adhere to the power plug.
- A dirty power plug may result in electric shock or a fire hazard due to current leakage.

Prohibited

Beware of electric shock

Do not touch the rollers or moving parts such as the carriage while cutting or plotting is in progress.
- Such action may result in injury.

Do not touch
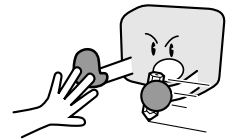
Keep your hands, hair, etc., away from the rollers or moving parts such as the carriage even if the cutting plotter is stopped, as it may suddenly start moving when data is received.
- Such action may result in injury.

Keep your distance
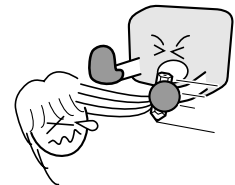
Be careful when handling the cutter blade.
- Touching the blade with your bare hand may cause injury.
- Do not touch the cutter blade while cutting is in progress.

Do not touch
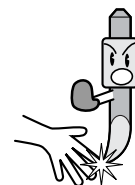
Safety Precautions

⚠ 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 locations may impair the performance of the cutting plotter.
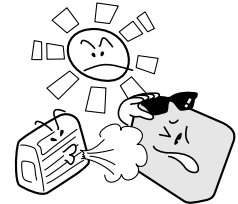
Prohibited

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

Prohibited

Beware of electric shock

Do not use the cutting plotter in a location subject to excessive mechanical vibration or electrical noise.
- Use in such locations may impair the performance of the cutting plotter.

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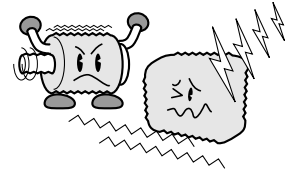
Do not place any receptacle containing water or other fluid on top of the cutting plotter.
- Fluid falling inside the cutting plotter may cause electric shock or a fire hazard due to current leakage.
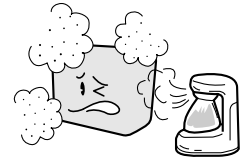
Avoid fluids

Beware of electric shock

If water or foreign matter enters the cutting plotter, discontinue use. Turn off the power and unplug the power cord from the electrical socket.
- Use of the cutting plotter in such a condition may result in electric shock or a fire hazard due to current leakage.
- Contact your sales representative or nearest Graphtec vendor for repairs.

Unplug the power cord from the socket
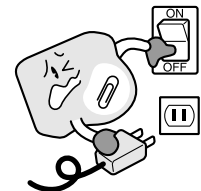
When disconnecting the power cord or interface cable, do not pull on the cord/cable.
- Such action will damage the cord/cable, resulting in a fire hazard or electric shock.

Prohibited
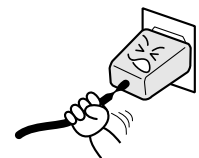
Safety Precautions

⚠ CAUTION

Do not attempt to lubricate the cutting-plotter mechanisms.

- Such action may cause it to break down.

🚫 Prohibited
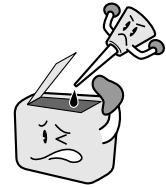
Do not clean the cutting plotter using volatile solvents such as thinner or benzene.

- Such action may impair its performance.

🚫 Prohibited
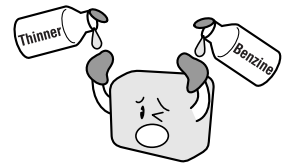
Provide sufficient space around the cutting plotter so that it does not strike any objects in its vicinity during cutting or plotting. Such contact may cause misalignment in cutting or plotting.

- Such contact may cause cutting or plotting to go out of alignment.

🚫 Do not touch
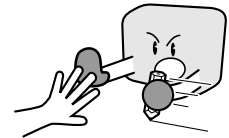
When using indoor lighting such as fluorescent or other electrical lamps, provide a distance of at least one meter between the cutting plotter and the light source.

- Close proximity of such a light source may cause the sensor to malfunction and prevent proper size detection of the media.

❗

When using the cutter, take care not to extend the blade more than necessary.

- An overly extended blade will damage the cutting mat and adversely affect the cutting quality.

❗
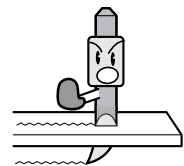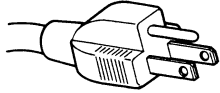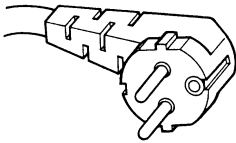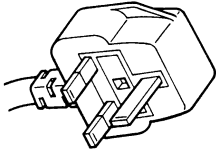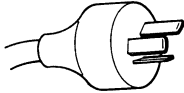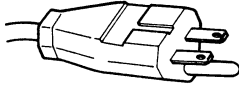
Move the pen carriage slowly when moving it manually in order to load the medium or for other reasons.

- Moving it quickly may damage the cutting plotter.

❗
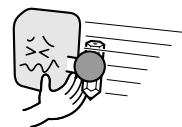
Selecting a Power Cable

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 x 3 300 V, 10 A
	Europe 250 V 10 A	CEE(7)VII IEC320 CEE13	TYPE: H05VV-F 3 x 1.0 mm^2
	UK 250 V 5 A	BS1363 BS4491 BS6500	TYPE: H05VV-F 3 x 1.0 mm^2
	Australia 250 V 10 A	AS3112 AS3109 AS3191	TYPE: OD3CFC 3 x 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 x 3 300 V, 10 A
	Switzerland 250 V 6 A	SEV1011 SEV1004 SEV1012	TYPE: H05VV-F 3 x 0.75 mm^2

Preface

Thank you for choosing a Graphtec CE3000-120AP cutting plotter. This cutting plotter employs a digital servo drive system to achieve high-speed and high-precision cutting operations. Besides cutting apparel paper 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.

(1) Specified rating

(2) Watch out for electrical shock

(3) Prevent dust or metallic matter from adhering to the power supply connector.

Notes on this Manual

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(2) The product specifications and other information in this manual are subject to change without notice.

(3) 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 erroneous information or wish to make other comments or suggestions.

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

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Contents

CHAPTER *1*

Introduction

1.1 Checking the Accessories

Check to confirm that all of the standard accessories listed below are present. If any item is missing, please contact your sales representative or nearest Graphtec vendor promptly.

AC power cord

1
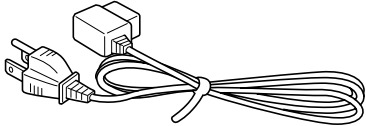
Quick Start Manual, Usage Precautions

1 each
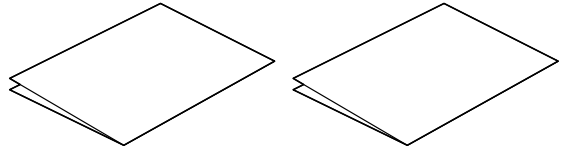
User Guide CD-ROM

1
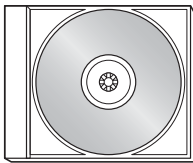
Cutter blade (CB09UA)

1
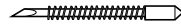
Cutter plunger

1
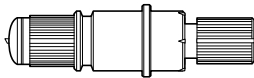
Water-based fiber-tip pen

1
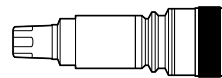
Media cutter

1
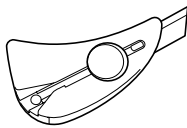
Stand

1
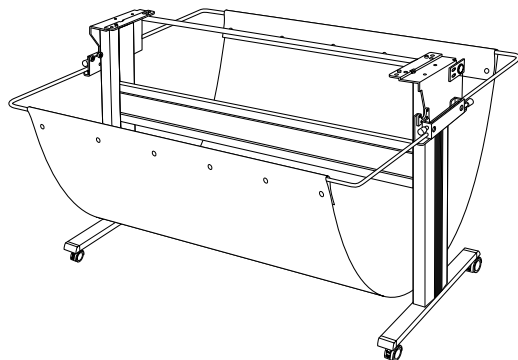
1.2 Parts Names and Functions

Front View
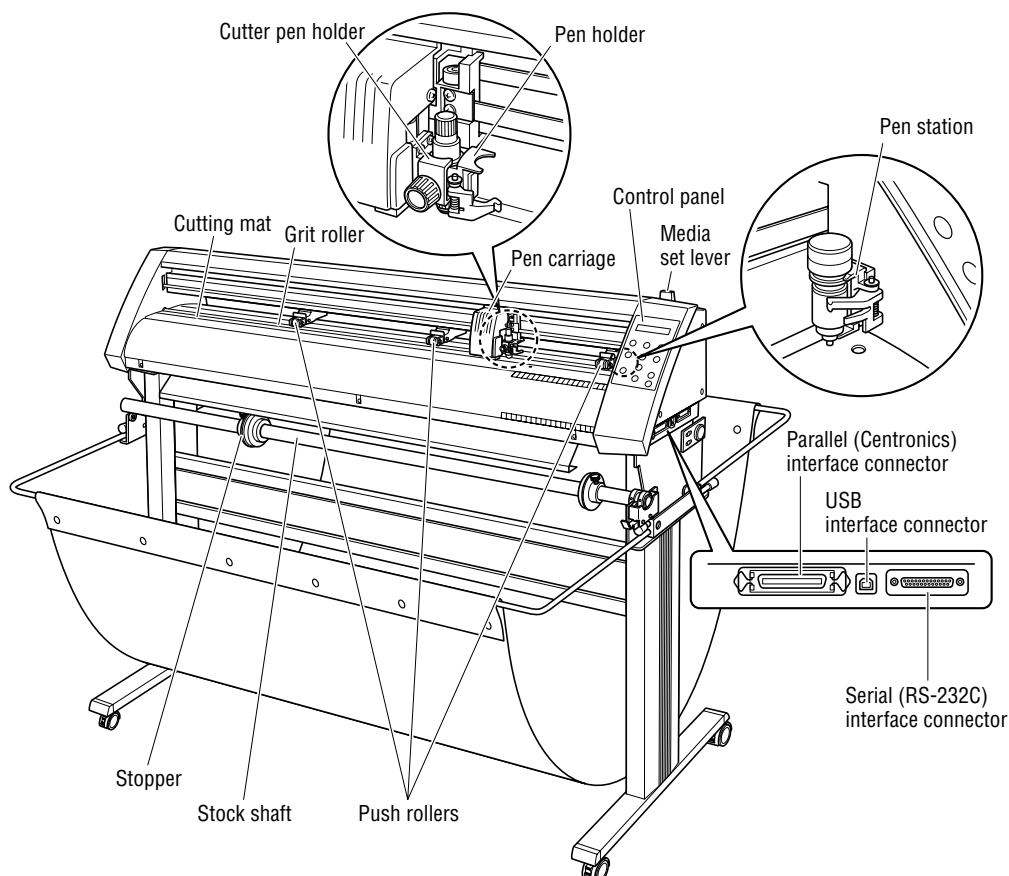
Cutting mat .... Cutting or plotting is performed on this mat.

Grit roller .... Feeds the medium backward or forward.

Push rollers .... Pushes the medium against the grit rollers.

Pen carriage .... Moves the cutter pen to the left and right.

Cutter pen holder .... Hold the cutter pen and moves it up and down.

Pen holder .... Holds the pen and moves it up and down.

Pen station .... Used to mount the pen before it is used.

Media set lever .... Raises or lowers the push rollers during loading of a medium.

Control panel .... Used to operate the cutting plotter and set functions.

Parallel (Centronics) interface connector
.... Used to connect a Centronics-compatible parallel interface cable.

USB interface connector
.... Used to connect a USB cable.

Serial (RS-232C) interface connector
.... Used to connect an RS-232C serial interface cable.

Stock shaft .... Used to load roll media.

Stoppers .... Used to hold a roll medium in place (left and right, one each).

Rear View
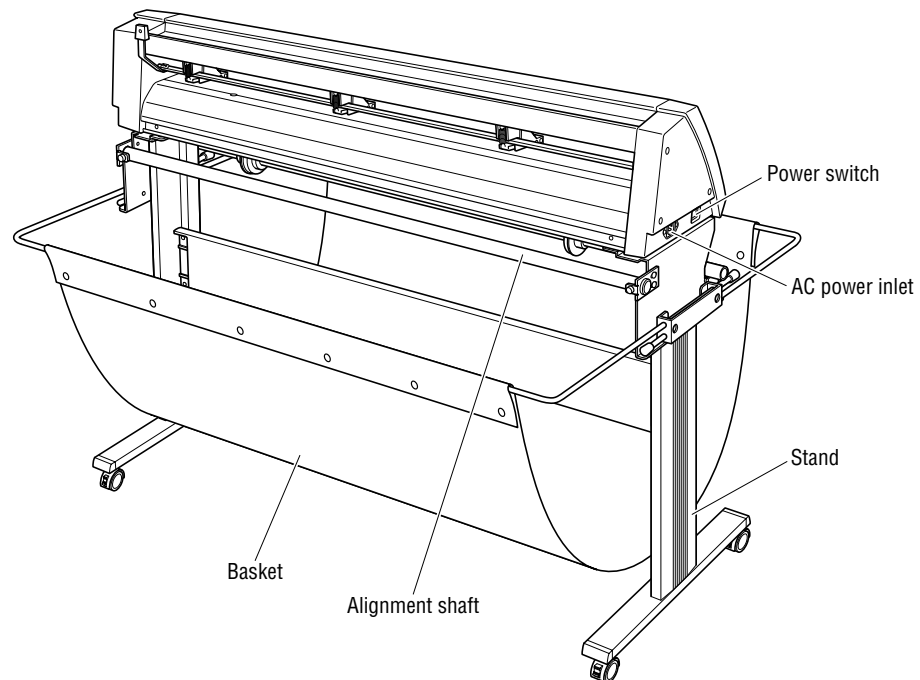
AC power inlet......... Connects the power cord to the cutting plotter.

Power switch .... Turns the power supply to the cutting plotter on or off.

Stand .... Supports the cutting-plotter unit.

Alignment shaft....... Used when loading roll media.

Basket .... Used to catch media after it has been cut.

Control Panel

```
    COND.No.    OFFSET    SPEED
        TOOL        FORCE      QUALITY
    ▼            ▼          ▼        ▼

    [||||||||||||||||||]

    ○ STATUS
```

```
    TEST        PREV.       NEXT
    [▲]         [📖]        [📖]

    COND.       PAUSE       ENTER
    [🖐]        [❚❚]        [↵]


              [△]
    [◀]    POSITION    [▶]
              [▽]

                     ORIGIN  [⊕]
```
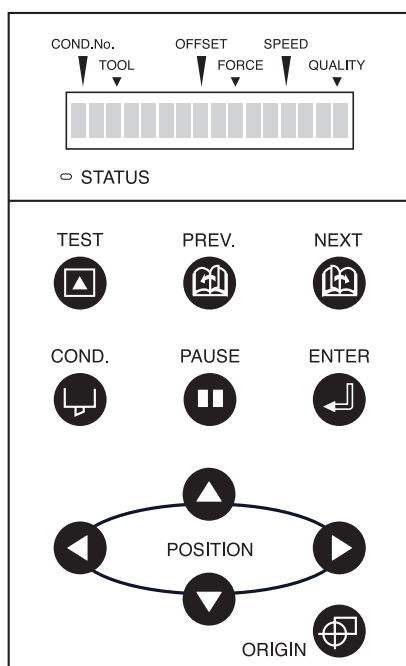
Indicator Lamp

STATUS .... Illuminates while the power to the cutting plotter is turned on, and goes out when the cutting plotter is in PAUSE status. This lamp flashes when data is being received from an interface, regardless of whether or not the cutting plotter is in PAUSE status.

Panel Keys

▣ **TEST** .... Press this function key to conduct a cutting test and check the cutting conditions.

▣ **PREV.** .... Press this function key to view the previous display on the LCD when in PAUSE status.

▣ **NEXT** .... Press this function key to view the next display on the LCD when in PAUSE status.

▣ **COND.** ...... Press this function key to view the cutter-pen condition settings.

▣ **PAUSE** ...... Press this function key once in READY status to switch to PAUSE status in order to change the various settings. Press it again to cancel the PAUSE status. Pressing this key while cutting or plotting is in progress stops the cutting or plotting.

▣ **ENTER** ...... Pressing this function key registers the cutting or plotting conditions set.

◀ ▶ ▲ ▼ **POSITION**
.... These keys are used to move the cursor or change the settings on the LCD display on the function setting screens. Press these keys when in PAUSE status to move the pen carriage or the medium.

⊕ **ORIGIN** ..... Press this function key to set the origin point. The pen position is set as the origin point when this key is pressed.

1.3   Assembling the Stand

Stand Construction

The stand is made up of the following parts.

Stand side bar (L/R)   Center bar   Hexagonal socket bolt (M6) x 8

Center bar   Allen wrench (M6)

Alignment shaft   Stock shaft
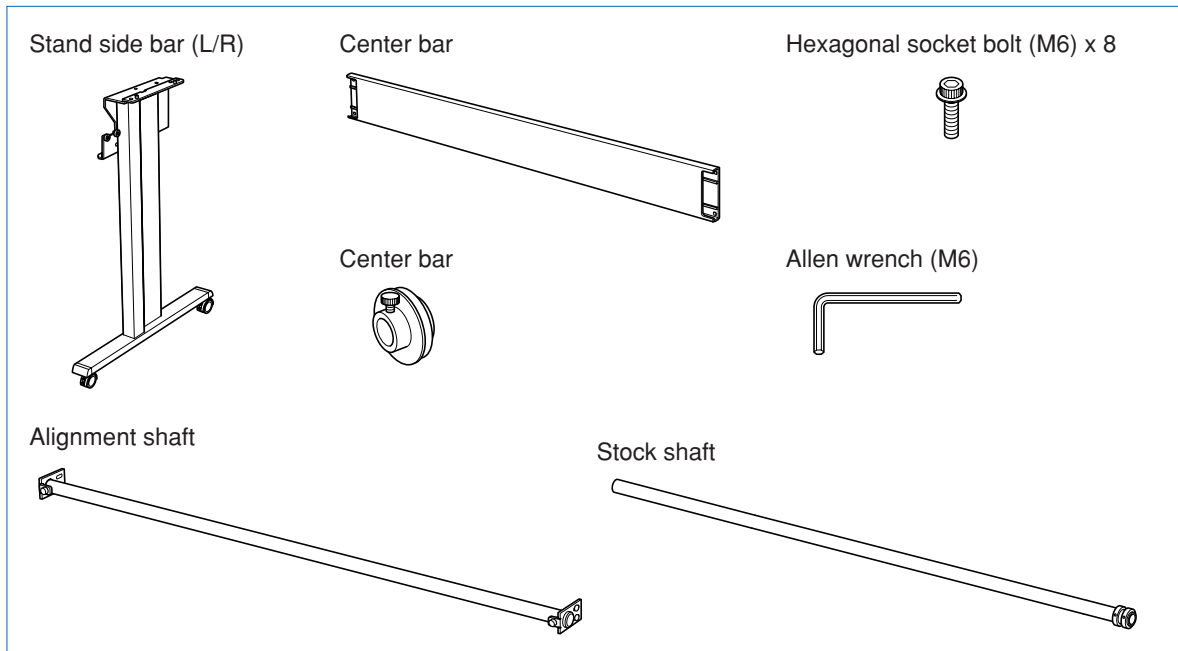
Basket Construction

The basket is made up of the following parts.

Sheet support pipe x 2   Sheet

Sheet support pipe bracket x 2   Rubber cap x 4   Hexagonal socket bolt (M6) x 4
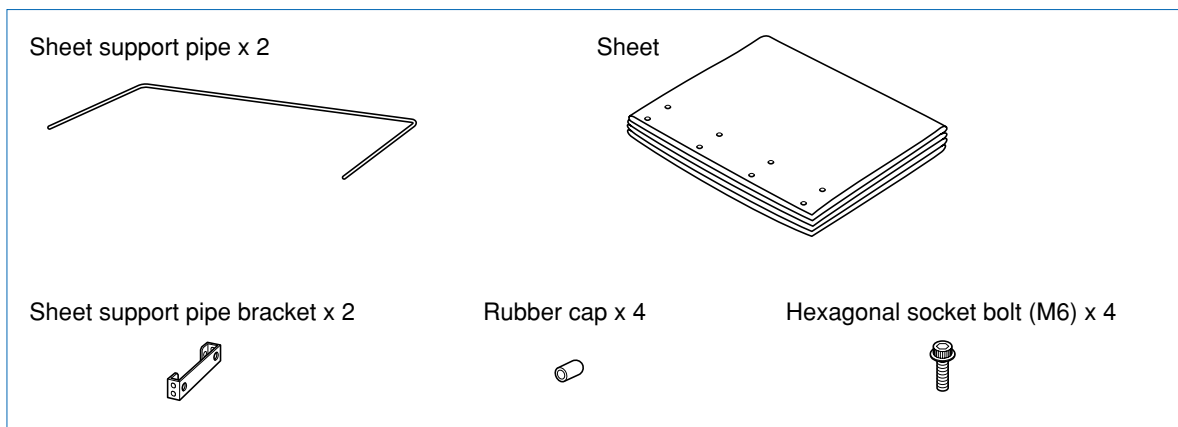
Assembling the Stand

(1) Fasten the center bar to the stand side bars (L/R) temporarily with the hexagonal socket bolts (M6), using the Allen wrench.

Front side

Center bar

Stand side bar

Hexagonal
socket bolt (M6)
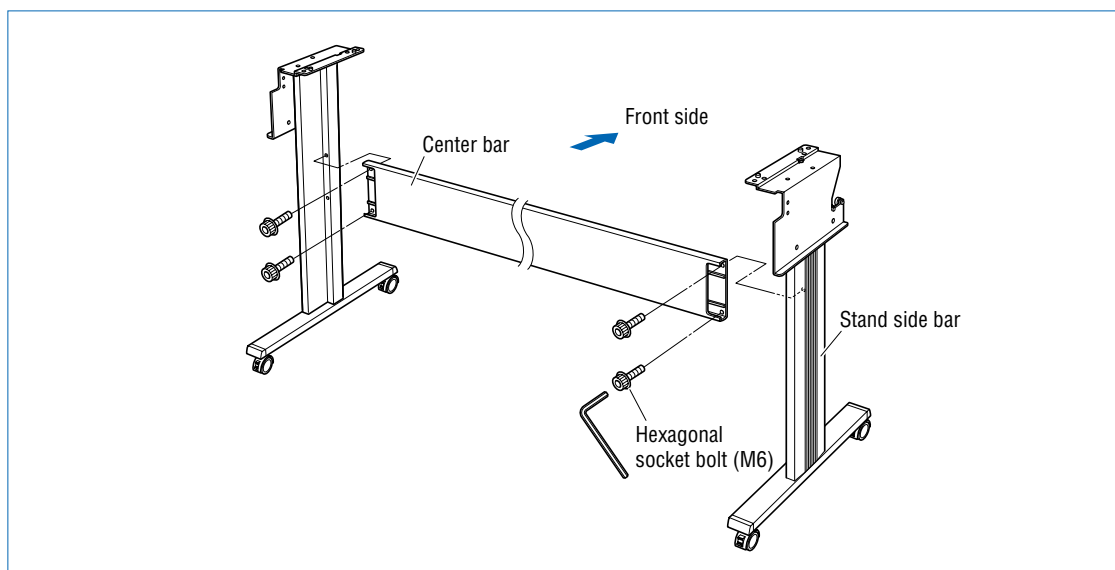
(2) Fasten the sheet support pipe brackets to the stand tops with the hexagonal socket bolts (M6).

Support pipe bracket

Hexagonal socket bolt (M6)
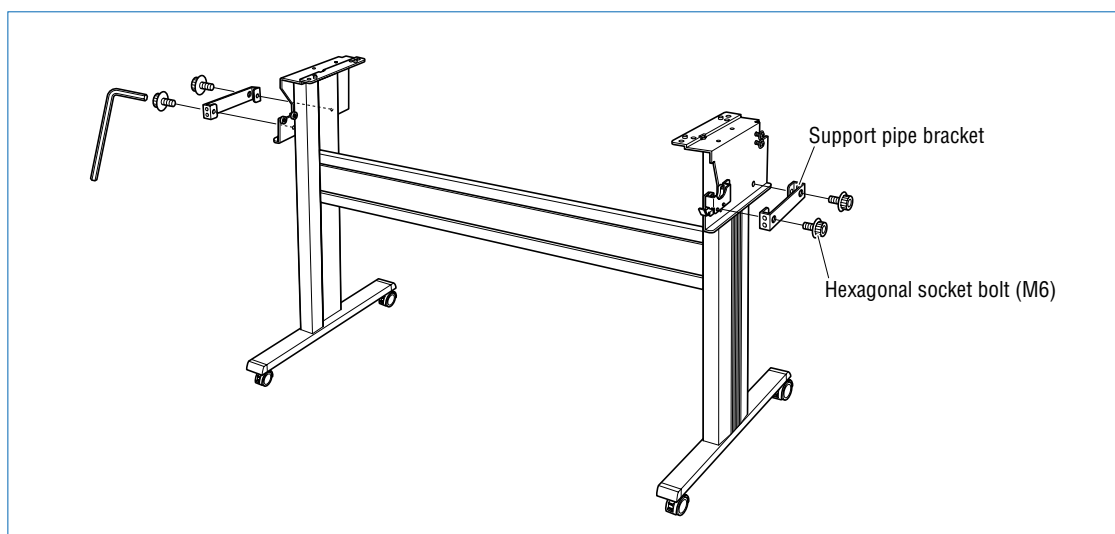
(3) Insert the sheet support pipes into the sheet support pipe brackets. Use the lower holes for the pipe that will be at the front of the cutting plotter, and the upper holes for the pipe that will be at the rear.
Remove the tape from the ends of the pipes to expose the adhesive, and then fit the rubber caps on firmly.
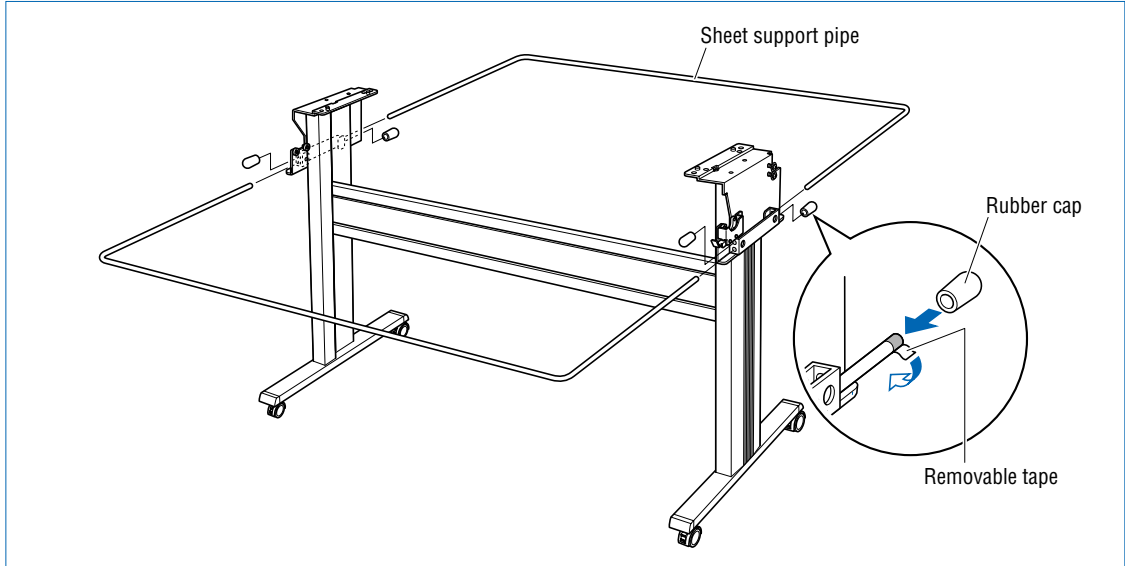
(4) Attach the alignment shaft to the top of the stand. Loosen the attached bindhead screws A (M4) two or three turns, and then insert the brackets on the end of the shaft using the elongated screw holes. Tighten the screws to hold the brackets in place. Push the shaft in until it contacts the curved area indicated by "a" in the figure below, and then tighten the A (M4) bindhead screws.
When the shaft has been attached, tighten the bindhead screws B (M4), and check that the shaft does not rotate. The bindhead screws B are screws to prevent the shaft from rotating. Position the shaft as desired (check both the rotation direction and the horizontal direction) and then tighten the screws.
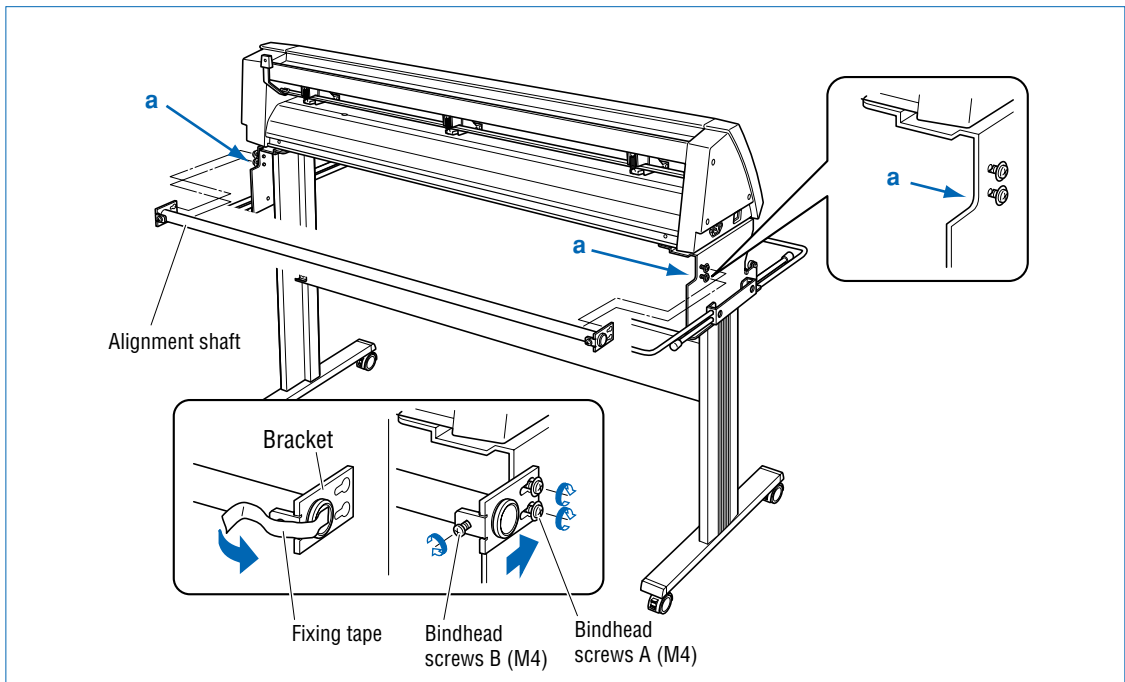
(5) Mount the CE3000-120AP on the stand by inserting the positioning pins on the stand into the positioning holes on the underside of the cutting plotter and then fasten with the four hexagonal bolts (M6).

Positioning pin

CE3000-120AP cutting plotter

Stand

Hexagonal socket bolt (M6)

CHECKPOINT
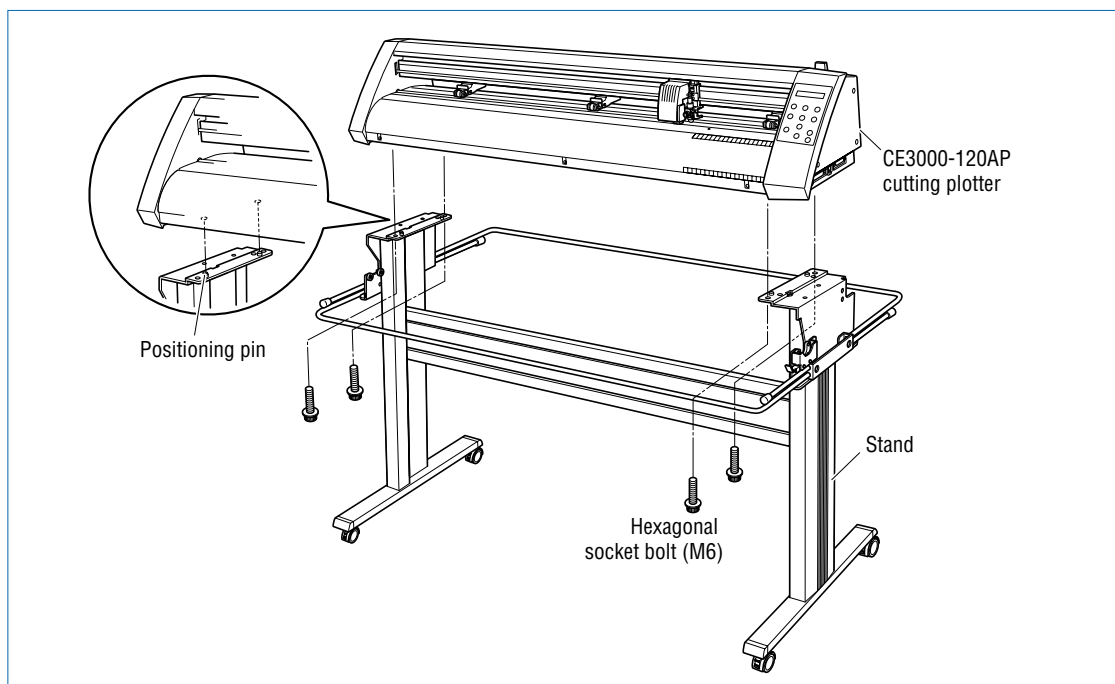
Make sure that the casters with the stoppers are at the front.

(6) Attach the media guide bracket to the underside of the front panel. Loosen the six bindhead screws (M3) two or three turns, and then slot the bracket in. Tighten the screws to hold the bracket in place.

Media guide bracket
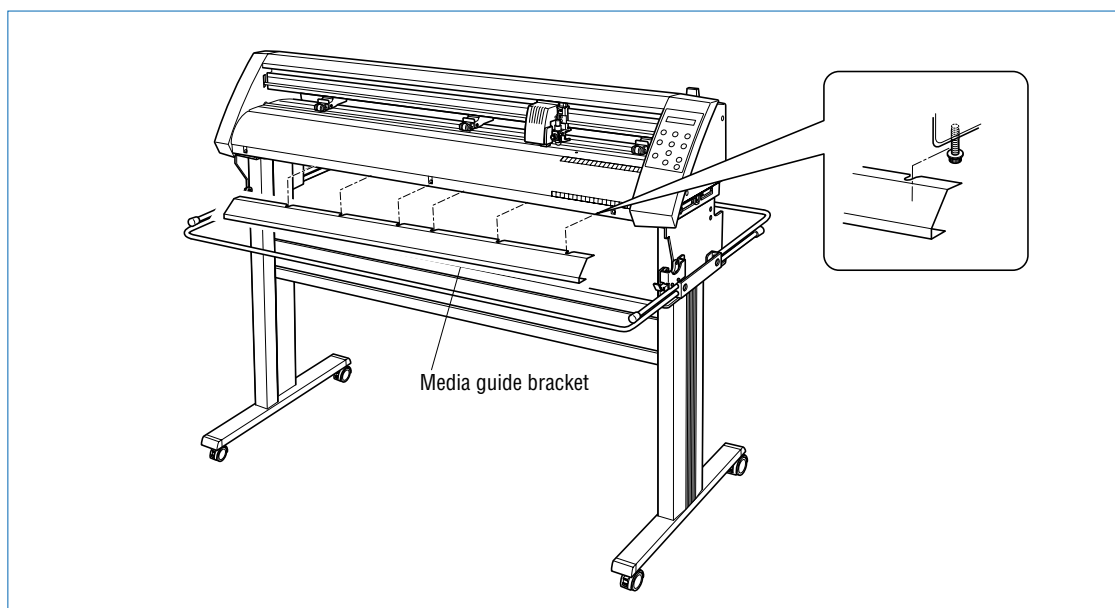
(7) Tighten all the hexagonal bolts that were temporarily fastened in step 1.

(8) Pull out the sheet support pipes, and attach the sheet to them. Pass the sheet under the center bar, and fasten the ends to the support pipes using the press-studs.
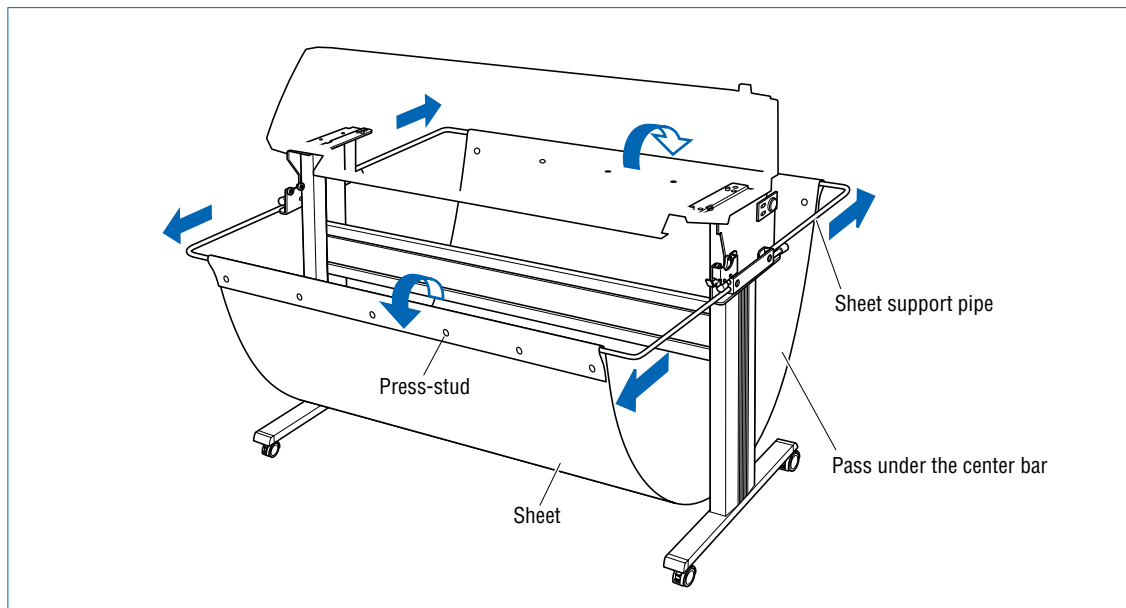
(9) Attach the stoppers (L/R) to the stock shaft and then attach the shaft to the top of the stand.
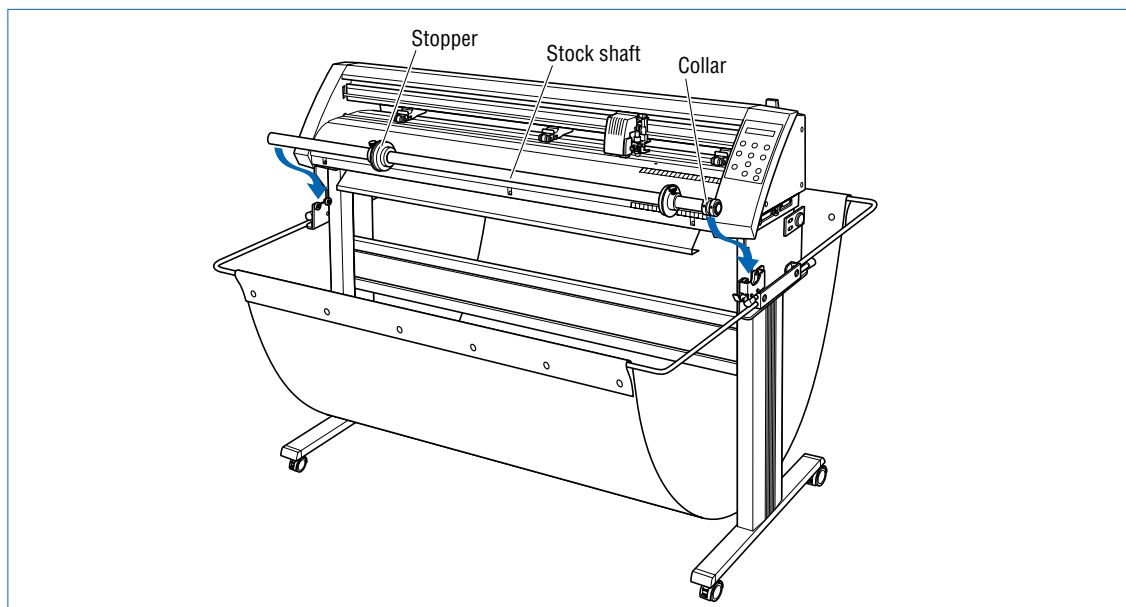
CHAPTER *2*

Setting up The Cutter Plotter

2.1   Connecting to Your Computer

The cutting plotter can be connected to a computer via the parallel (Centronics-compatible) port, serial (RS-232C) port, or USB port. Select which port to use according to the requirements of your application software and/or which of your computer's interface ports are available for use.

Use a Centronics-compatible parallel cable, serial cable, or USB cable in accordance with the connection method chosen. Obtain a Graphtec approved interface cable that is compatible with the interface ports (the interface cables are available separately).

(1) Check to confirm that the Power switch is turned off (the "O" side is down).
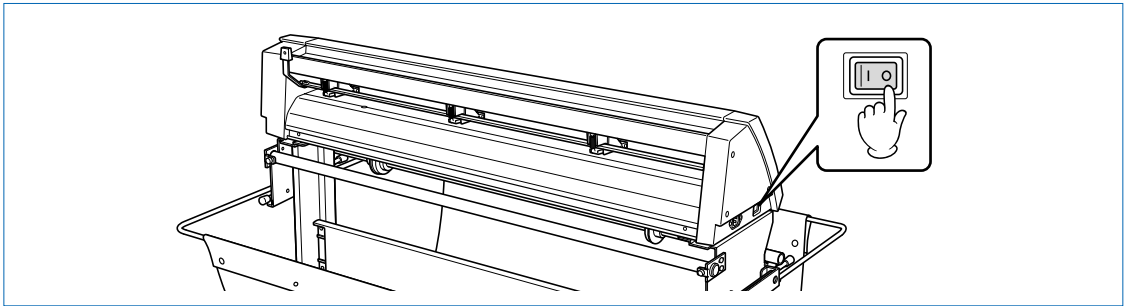
(2) Connect the cable between the cutting plotter and the computer. Make sure the connectors at the cutting plotter and computer ends are correctly oriented.
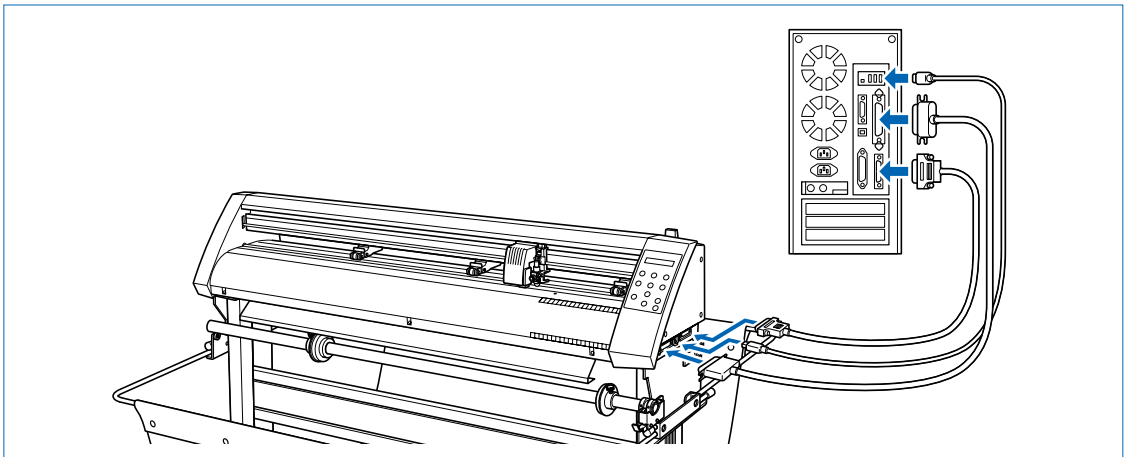
2.2   Turning on the Power

Connect the cutting plotter to the AC electrical socket using the power cord provided, and turn on the power.

(1)   Check to confirm that the Power switch is turned off (the "O" side is down).
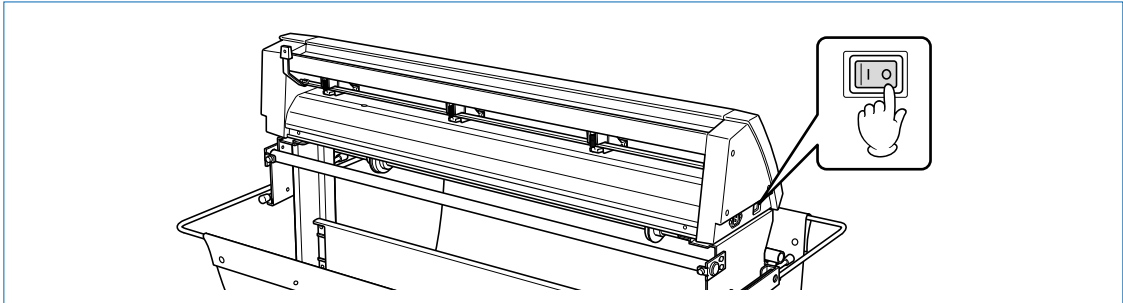
(2)   Connect the cutting-plotter AC power inlet to a correctly rated electrical socket using the power cord provided.
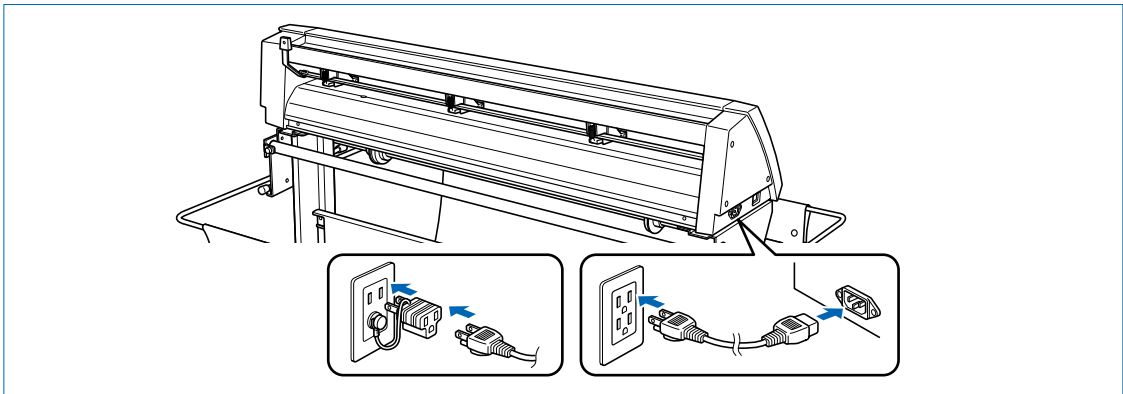
(3)   Turn on the cutting plotter by pressing the "|" side of the Power switch. The STATUS lamp on the control panel will light up.
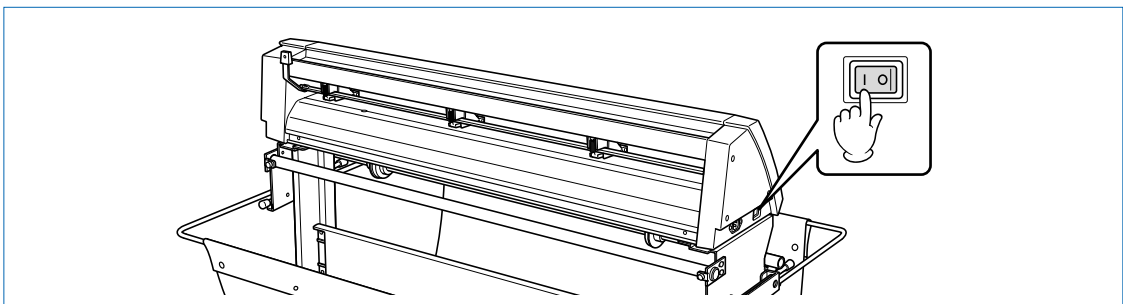
(4)   If no medium has been loaded, the message below appears on the display, prompting the loading of a medium.

```
LOAD MEDIA!!
```

If a medium has already been loaded, the current media setting is displayed as shown below.

```
ROLL1 PRESS ENTR
```

Select the media mode to suit the medium used. For instructions on loading media and selecting the media mode, see "2.3 Loading the Medium."

2.3 Loading the Medium

Load the medium, aligning it with the right-hand grit roller when viewed from the front so that it registers with the media sensor. Then, adjust the push-roller position to match the width of the medium. The cutting plotter can use media in roll or sheet form. Load the desired medium type by following the appropriate instructions.

Loading a Roll Medium

Load the roll medium onto the stock shaft on the stand.

Mounting the Stock Shaft on the Stand

(1) Confirm that the roll is correctly oriented, and then slide the stoppers onto the shaft.

Stopper
Stock shaft
Stopper
Stopper screw
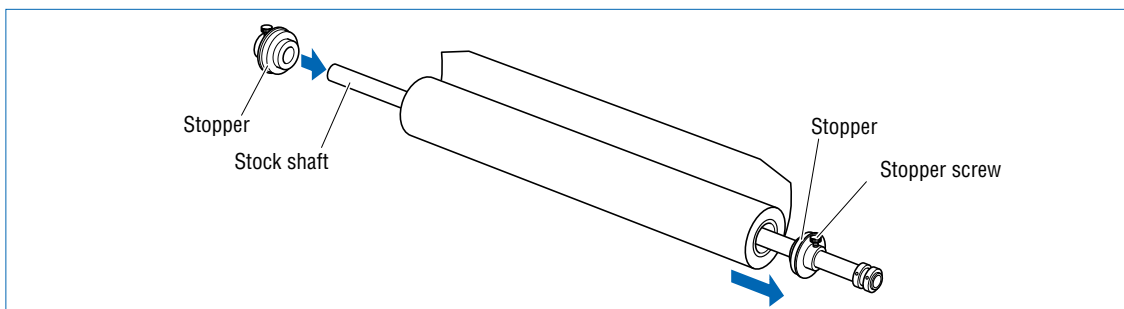
Position the stoppers at the appropriate locations and then tighten the screws. At this time, if you have loaded a 950-mm media roll, fix the stoppers at the positions shown in the following diagrams. If the media roll is of a different width, loosen the stopper screws, align the roll with the plotter's grit roller positions, and then tighten the stopper screws.

Medium   Stopper screw Collar
Stopper   Stock shaft

Approx. 43 mm

Mount the collar so that its side with the smaller diameter contacts the white plastic part of the shaft holder.

For 2-inch diameter cores

Medium   Stopper screw Collar
Stopper   Stock shaft

Approx. 55 mm

Mount the collar so that its side with the smaller diameter contacts the white plastic part of the shaft holder.

For 3-inch diameter cores

(2) Confirm that the roll is correctly oriented.

Correct

Incorrect
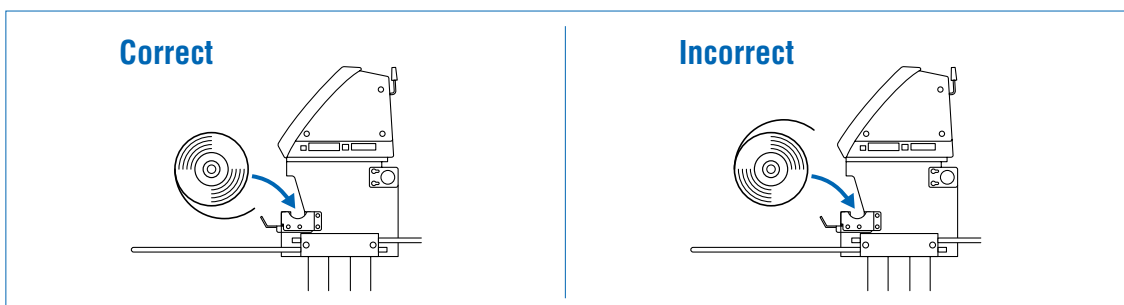
Align the collar with the shaft holder.

Shaft holder   Collar

⚠ CAUTION

While cutting or plotting is in progress, please keep your hands, hair, etc., away from the shaft holder and the collar.
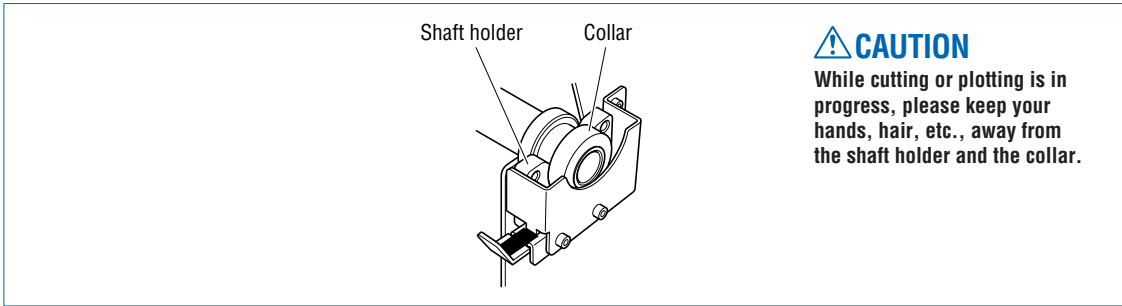
Mount the stock shaft at the front of the cutting plotter.
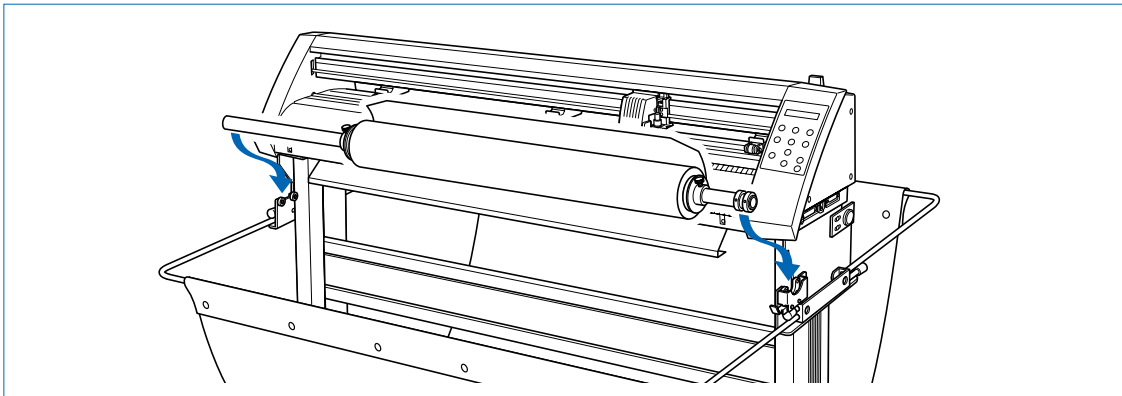
(3) If you have not already done so, align the stoppers with the left and right edges of the roll medium and then tighten the stopper screws.
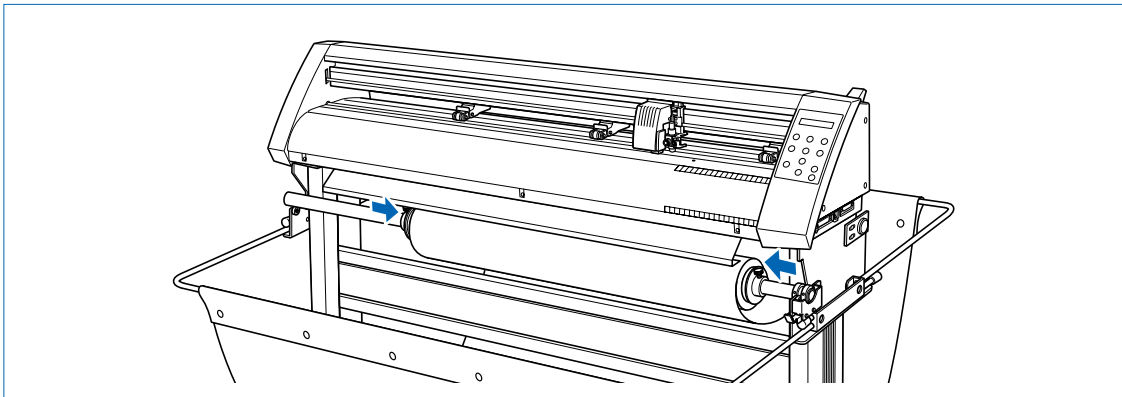
Loading the Roll Medium

(1) Lower the media set lever to raise the push rollers.
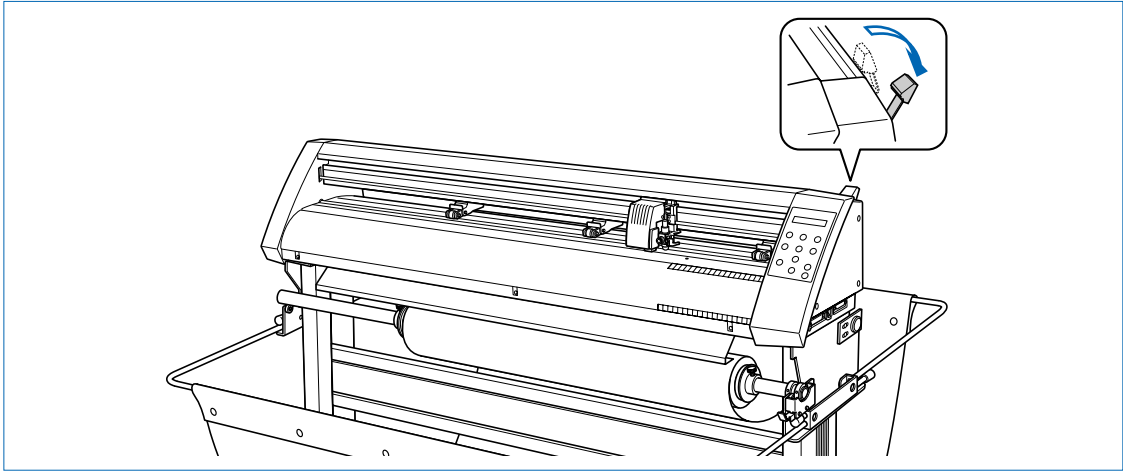
(2) Move the stock shaft stopper to the FREE position.

FREE position:
This is the status when the lever has been pushed down and engaged, and the silver-colored section is hidden. The stock shaft rotates in the FREE status.

LOCK	FREE	⚠ CAUTION
Silver-colored section	Black sticker	**While cutting or plotting is in progress, please keep your hands, hair, etc., away from the shaft holder and the collar.**
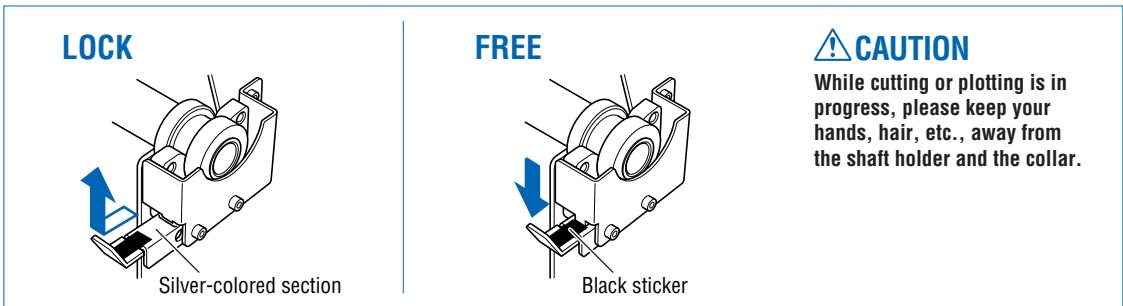
(3) Pass the medium's leading edge over the center bar and around the outside of the alignment shaft.

Incorrect	Incorrect	Correct
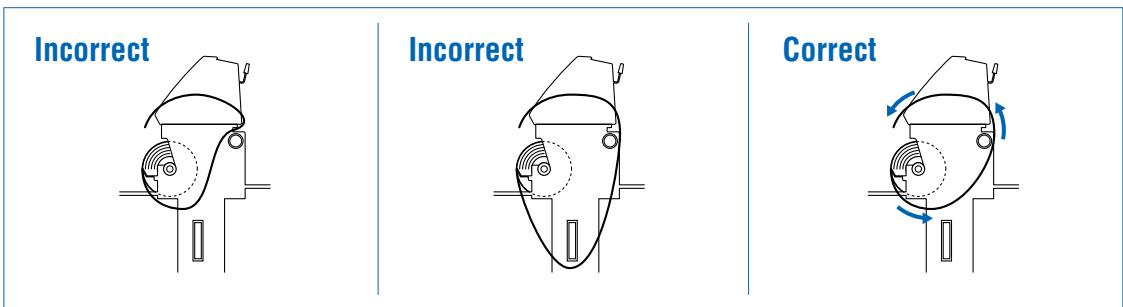
(4) Feed the leading edge from the back through to the front, making sure to remove any slack in the medium while pulling it towards you.
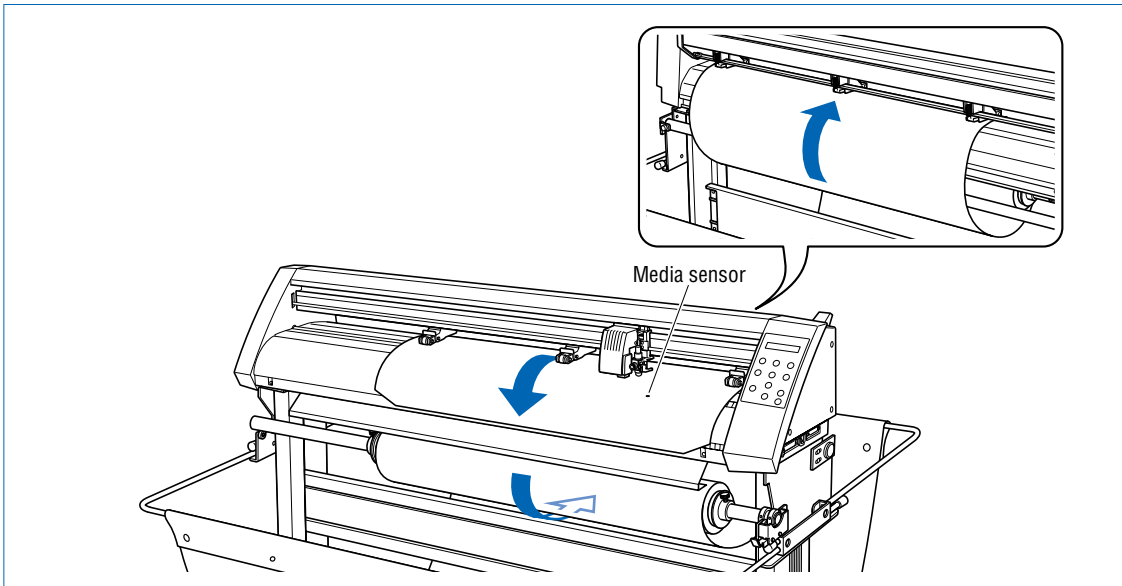
Media sensor

☝ CHECKPOINT
Load the medium so that it passes over the media sensor.

---

(5) Adjust the position of the left- and right-hand push rollers to suit the width of the medium.

(6) Move the stock shaft stopper to the LOCK position.

LOCK position:
This is the status when the lever has been pulled up and inserted into the groove, and the silver-colored section can be seen. The stock shaft does not rotate in the LOCK status.

LOCK

Silver-colored section

FREE

Black sticker

⚠ **CAUTION**

While cutting or plotting is in progress, please keep your hands, hair, etc., away from the shaft holder and the collar.
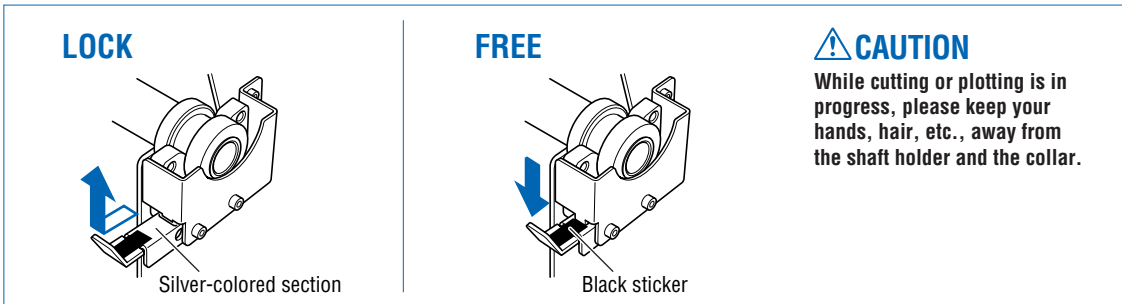
(7) When pulling the medium out of the cutting plotter, stand facing the front of the cutting plotter and pull the center point of the medium's width toward you.

Correct

Incorrect

Incorrect
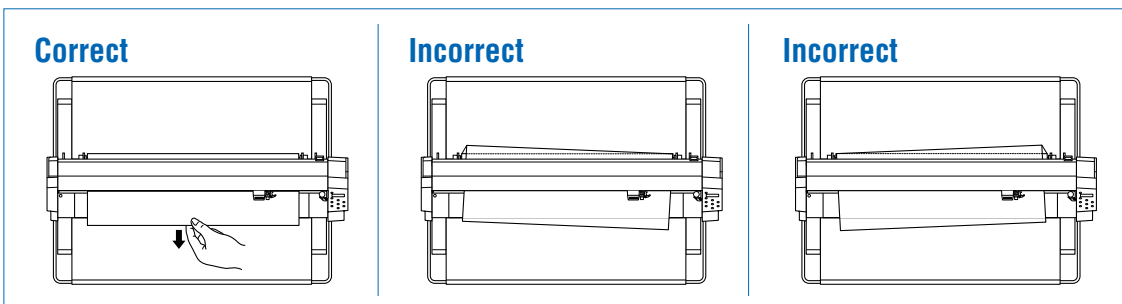
(8) As shown in the figure below, pull on the medium at the front of the cutting plotter, so that the medium's tension is equal at areas A and B.
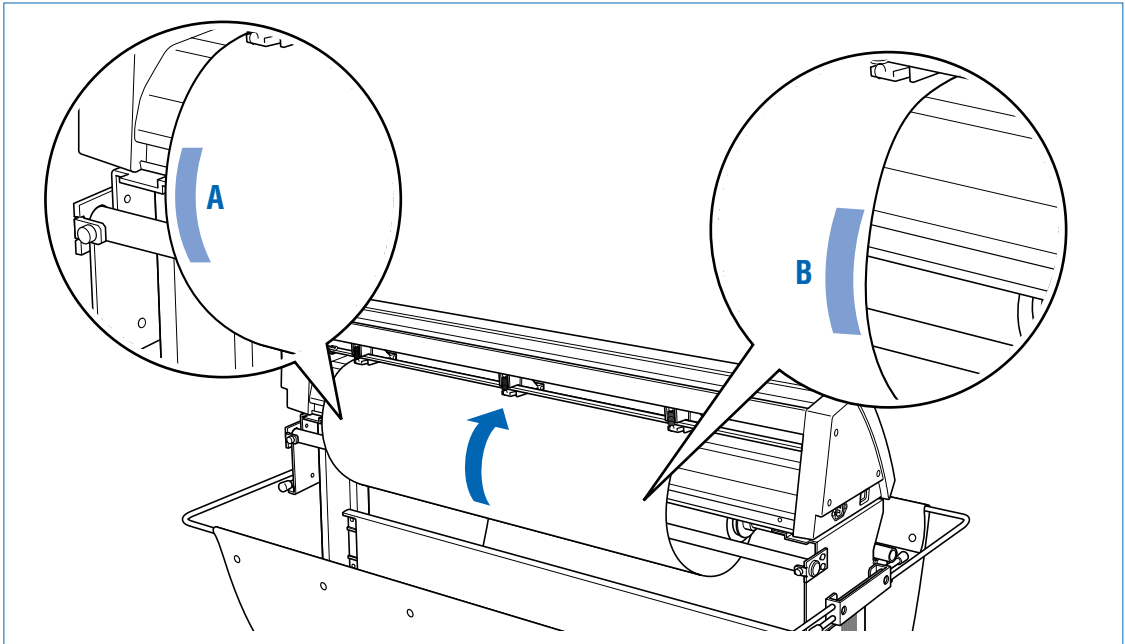
(9) After confirming that the tension is equal, raise the media set lever to lower the push rollers and hold the medium in place.

(10) Move the stock shaft stopper to the FREE position.

FREE position:
This is the status when the lever has been pushed down and engaged, and the silver-colored section is hidden. The stock shaft rotates in the FREE status.

LOCK — Silver-colored section

FREE — Black sticker

⚠ **CAUTION**
While cutting or plotting is in progress, please keep your hands, hair, etc., away from the shaft holder and the collar.
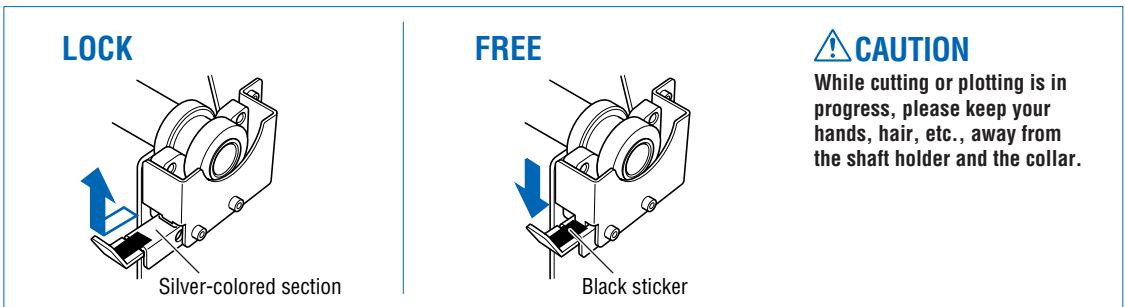
(11) Raising the media set lever displays a menu for selection of the media mode. Select the media mode.

```
ROLL1 PRESS ENTR
```

CHECKPOINT

If the **"REALIGN ROLLERS"** message is displayed when the medium is loaded and the media set lever is raised, either the right-hand push roller is not positioned over the right-hand wide grit roller or the left-hand or center push roller is not positioned over the grit roller. Check to confirm that they are positioned correctly.

(12) Pressing the ▲ or ▼ **key** displays **"ROLL1 PRESS ENTR"**, **"ROLL2 PRESS ENTR"**, and **"SHEET PRESS ENTR"**. Select **"ROLL1 PRESS ENTR"** or **"ROLL2 PRESS ENTR"** and then press the ⏎ **(ENTER) key** to confirm. When **"ROLL2 PRESS ENTR"** is selected, only the medium width is detected. Select this mode to begin cutting at a point beyond the leading edge. When **"ROLL1 PRESS ENTR"** is selected, the leading edge and width of the medium are detected. Select this mode to begin cutting from the leading edge.

(13) After the medium size has been detected, the pen carriage returns to the origin point and the cutting plotter awaits cutting data. If the INTERFACE conditions or COMMAND mode have not yet been set, they should be set. If they have already been set, adjust the cutter pen. Once the cutter pen has been adjusted, the cutting plotter is ready to perform cutting, so cutting data can be sent from the application software on the computer.

Loading Sheet Media

(1) Lower the media set lever to raise the push rollers.
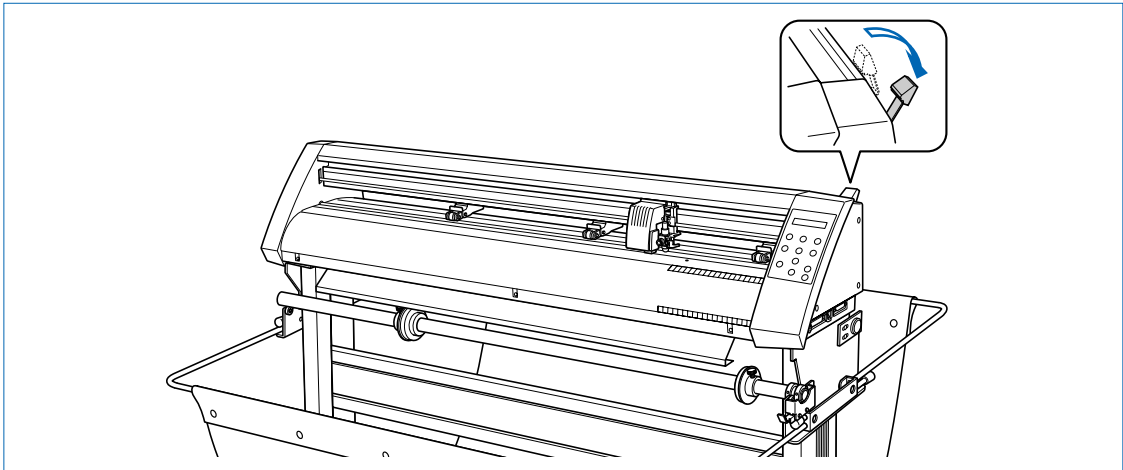
(2) Load the medium, aligning the edges with the upper and lower scales on the front guide.

Media sensor

Align with scale

CHECKPOINT
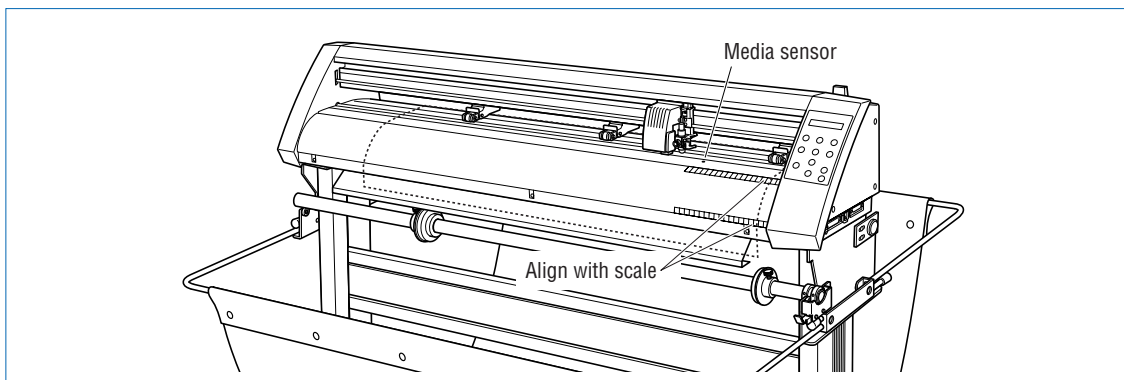
Load the medium so that it passes over the media sensor.

(3) Adjust the position of the left- and right-hand push rollers to suit the medium width.

(4) Raising the media set lever displays a menu for selecting the media mode. Select the media mode.

```
SHEET  PRESS  ENTR
```

CHECKPOINT

If the **"REALIGN ROLLERS"** message is displayed when the medium is loaded and the media set lever is raised, either the right-hand push roller is not positioned over the right-hand wide grit roller, or the left-hand or center push rollers are not positioned over the grit roller. Check to confirm that they are positioned correctly.

(5) Pressing the ⬤ or ⬤ **key** displays **"ROLL1 PRESS ENTR"**, **"ROLL2 PRESS ENTR"**, and **"SHEET PRESS ENTR"**. Select **"SHEET PRESS ENTR"** and then press the ⬤ **(ENTER) key** to confirm the selection. When **"SHEET PRESS ENTR"** is selected, the front and rear edges are detected.

(6) After the medium size has been detected, the pen carriage returns to the origin point and the cutting plotter awaits cutting data. If the INTERFACE conditions or COMMAND mode have not yet been set, they should be set. If they have already been set, adjust the cutter pen. Once the cutter pen has been adjusted, the cutting plotter is ready to perform cutting, so cutting data can be sent from the application software on the computer.

Aligning the Push Rollers

Adjust the position of the left- and right-hand push rollers to suit the medium width. Position the push rollers at either edge of the medium so that they are above the grit rollers. Adjust the push rollers so that they are positioned above both the medium and the grit rollers. Positioning the push rollers within the push-roller alignment marks ensures that they are above the grit rollers.

Push-roller alignment mark

✕ NG

✕ NG

⭘ OK

⭘ OK
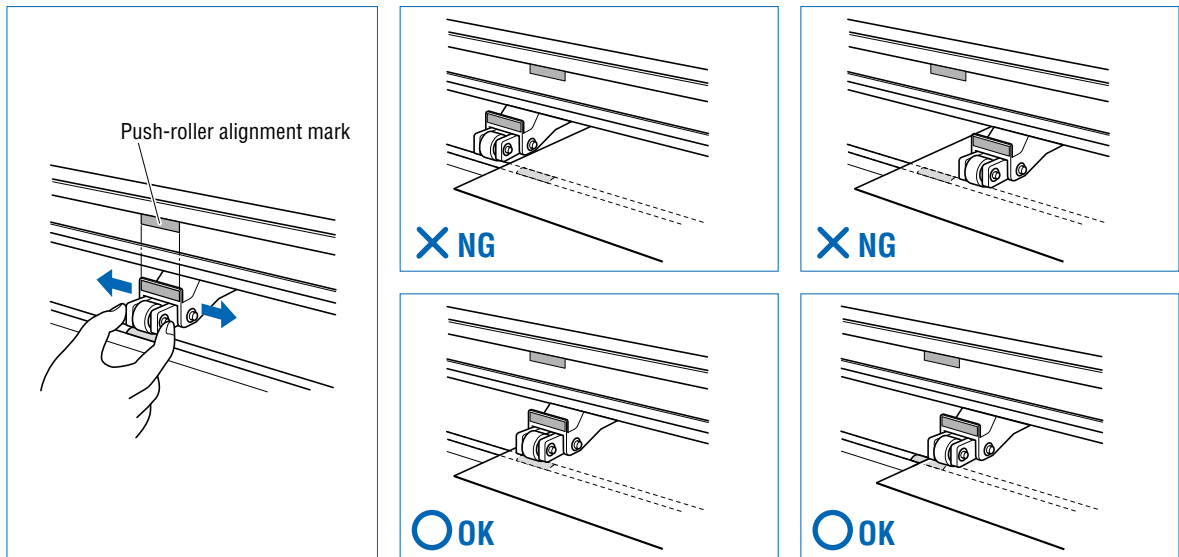
⚠ **CAUTION**

To move the push rollers, the media set lever must be in the lowered position.

The push roller on the right-hand edge when viewed from the front must always be moved over the right-hand wide grit roller.

Right-hand push roller

Right-hand grit roller

Media sensor
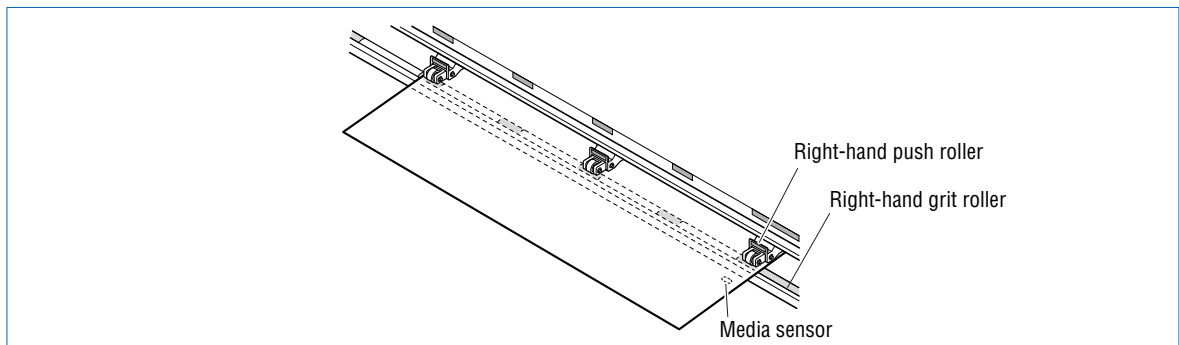
⚠ **CAUTION**

To move the push rollers, the media set lever must be in the lowered position.

CHECKPOINT

If the **"REALIGN ROLLERS"** message is displayed when the medium is loaded and the media set lever is raised, either the right-hand push roller is not positioned over the right-hand wide grit roller, or the left-hand push roller is not positioned over the grit roller. Check to confirm that they are positioned correctly.

Position push rollers (1) and (3) over the grit rollers to grip each edge of the medium, and position push roller (2) over the grit roller nearest the center of the medium. The medium is gripped by the three push rollers (1), (2), and (3).
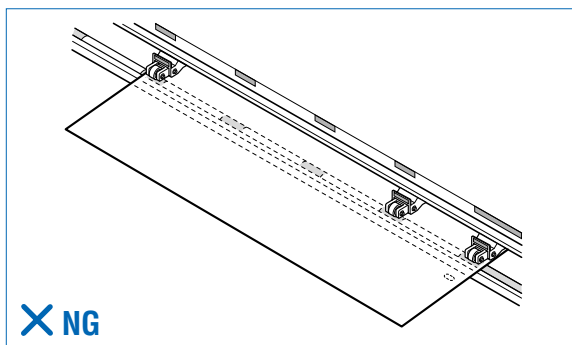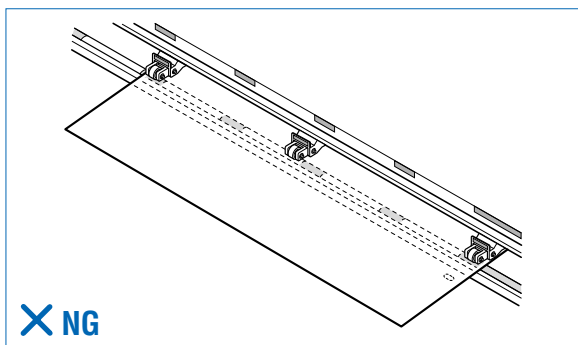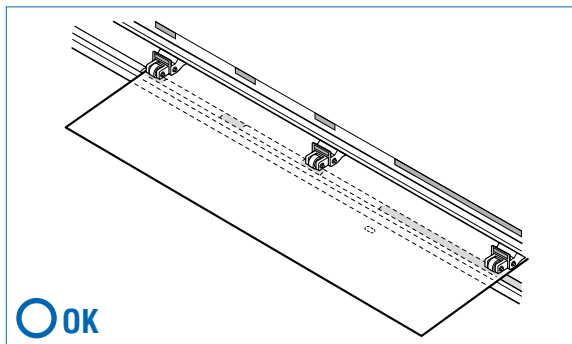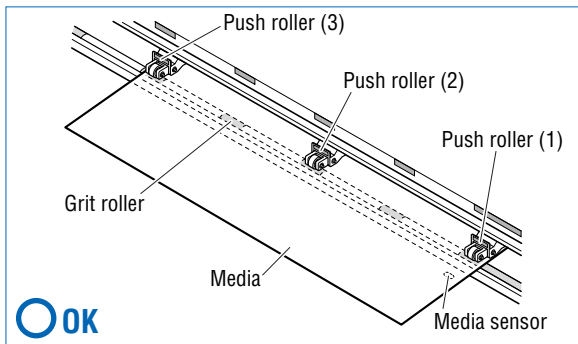
⚠ CAUTION
- Push roller (1) must be positioned over the right-hand wide grit roller.
- The medium must always be positioned over the media sensor.

For Minimum-Size Media

Position all of the rollers over the right-hand wide grit roller. Position the medium with the left-hand edge aligned with the left-hand edge of the grit roller, and position the push rollers over both edges. The minimum width of the medium that can be set is 85 mm.
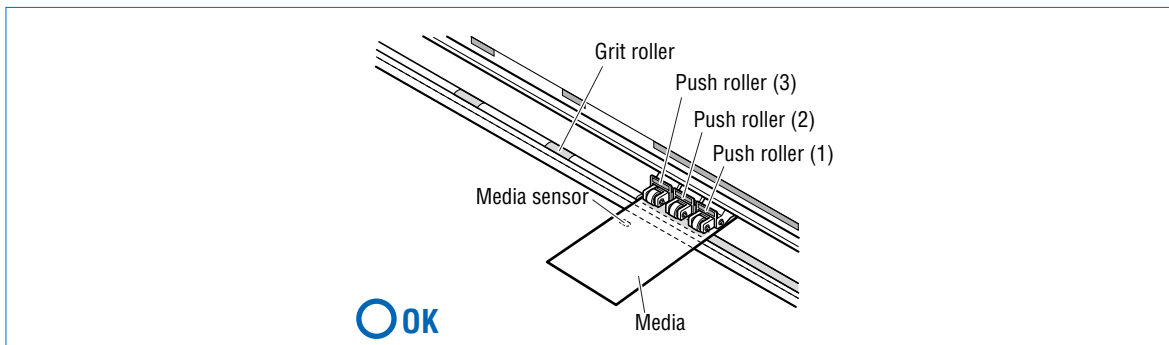
⚠ CAUTION
- The medium must be at least 125 mm in length.
- The medium must always be positioned over the media sensor.

2.4　Adjusting and Mounting the Cutter Pen
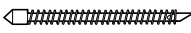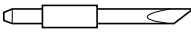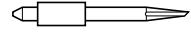
Individual cutter blades have a variety of features. Select the optimal cutter blade to suit the medium to be cut.

⚠ CAUTION

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

Types and Features of Cutter Blades

Part No. and profile	Blade diameter and offset	Compatible plunger	Use and features
CB 09UA	ø0.9 mm 0.45	PHP32-CB09N	The standard blade for cutting color adhesive-backed media. Suitable for cutting media up to 0.25 mm in thickness. Max. cutting distance: Approx. 4,000 m
CB 15U	ø1.5 mm ø0.75	PHP32-CB15N	Capable of cutting thicker media than possible with the CB09UA blade. Suitable for cutting media 0.25 mm to 0.5 mm in thickness.
CB 15UB	ø1.5 mm 0.15	PHP32-CB15N	Suitable for detailed cutting (e.g., letters less than 10 mm in size) of media up to 0.25 mm in thickness.

Cutter Pen Construction

The cutting plotter cuts using a cutter blade mounted in a cutter-pen plunger. There are two different cutter-pen plungers to suit the diameter of the cutter blade to be mounted (the 0.9-mm cutter-pen plunger is provided as standard equipment). Be sure to mount the cutter blade in the corresponding 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)
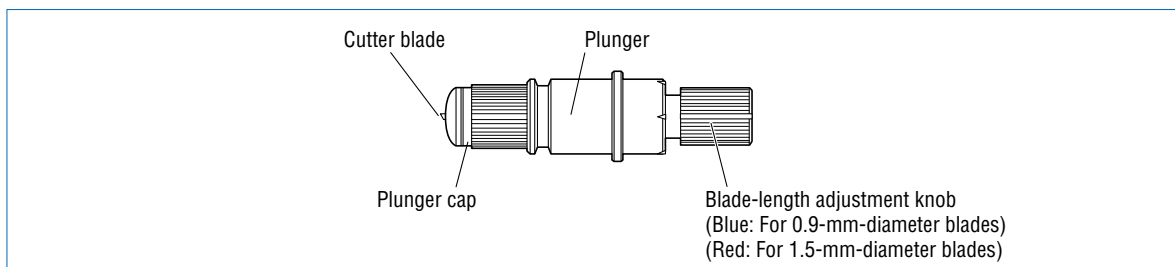
Replacing the Cutter Blade

⚠ **CAUTION**

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

1.5-mm-diameter cutter pen	0.9-mm-diameter cutter pen
adjustment knob (red) Plunger 1.5-mm-dia. blades Plunger-cap cross-section Plunger cap	adjustment knob (blue) Plunger 0.9-mm-dia. blades Spring Plunger-cap cross-section Plunger cap
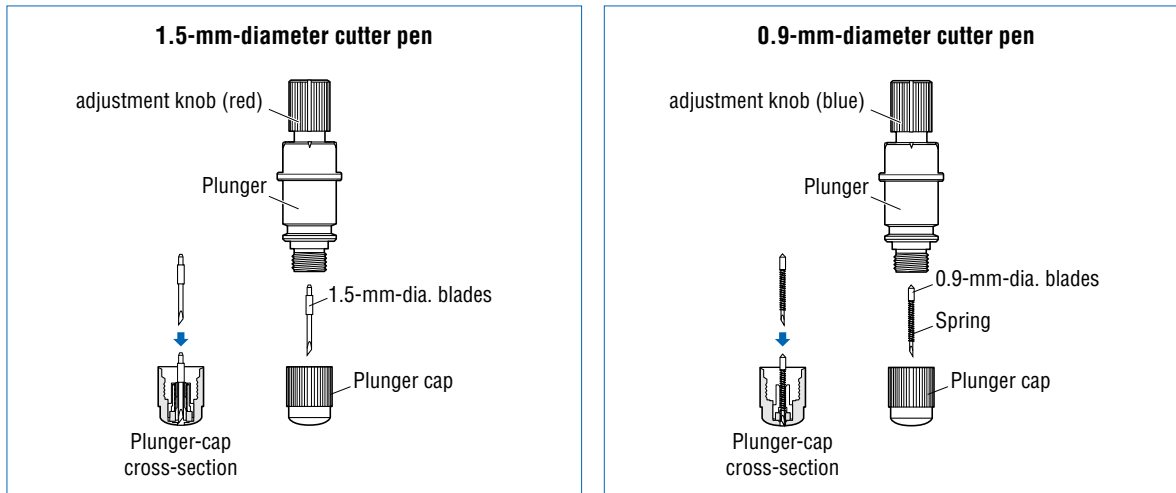
(1) Turn the blade-length adjustment knob to retract the blade into the plunger.
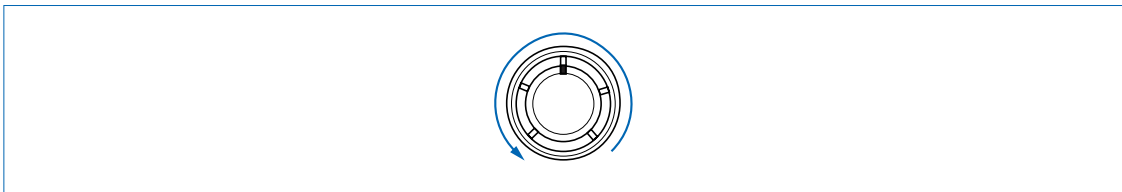
(2) Turn the plunger cap in the counter-clockwise direction to remove it from the plunger.

(3) Remove the blade from inside the plunger cap.

(4) Insert the new blade into the hole provided in the plunger cap.

(5) With the blade inserted into the plunger cap, screw on the plunger from above.

Adjusting the Blade Length

If the blade is extended too far in relation to the thickness of the medium being cut, it will damage the cutting mat. Be sure to adjust the blade length correctly.

⚠ **CAUTION**

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

(1) Adjust the blade length by turning the blade-length adjustment knob. Turn the knob in direction **"A"** to extend the blade, or in direction **"B"** to retract the blade. When the knob is turned by one scale unit, the blade moves approximately 0.1 mm. One full turn of the knob moves the blade approximately 0.5 mm.

B   A
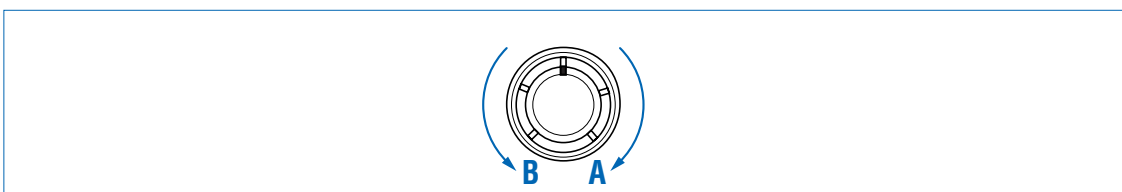
(2) First align the blade tip with the tip of the cutter pen, and then extend the blade from that position to suit the thickness of the media to be cut.

(3) As a guideline for determining the proper blade length, run a test cut (for instructions, see Section 3.7 **"Test Cutting"** and check that the medium is cut. In cases where the medium's thickness cannot be accurately determined, adjust the blade length by gradually increasing the blade length as you alternately run a test cut to check whether or not the medium can be cut.

Mounting the Cutter Pen

After the blade length has been adjusted, mount the cutter pen in the cutting plotter.

⚠ **CAUTION**

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

(1) Loosen the pen-holder screw and then mount the cutter pen. While pressing the pen holder upward, press the cutter pen plunger fully into the pen holder.
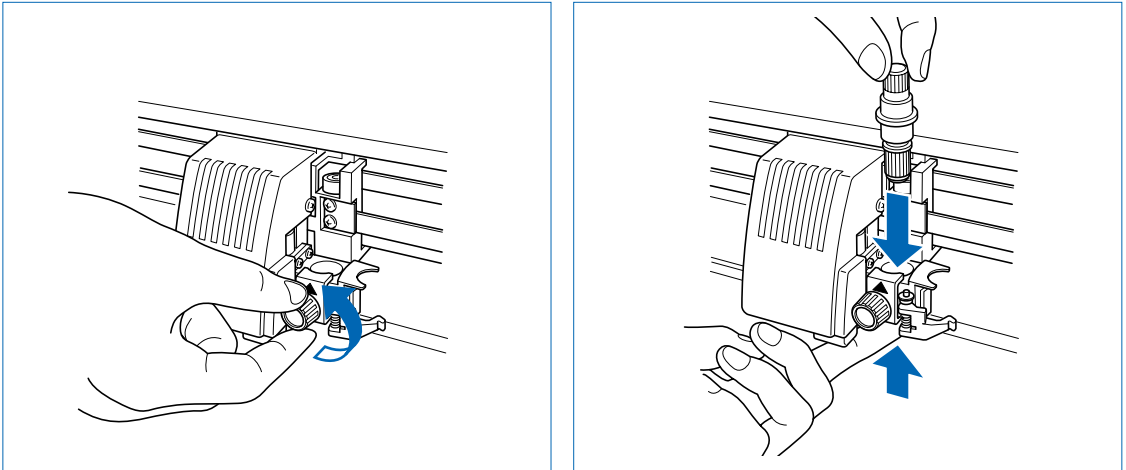
(2) Once the cutter pen is properly positioned, tighten the pen-holder screw.

Pen mounting bracket

Cutter pen's flange
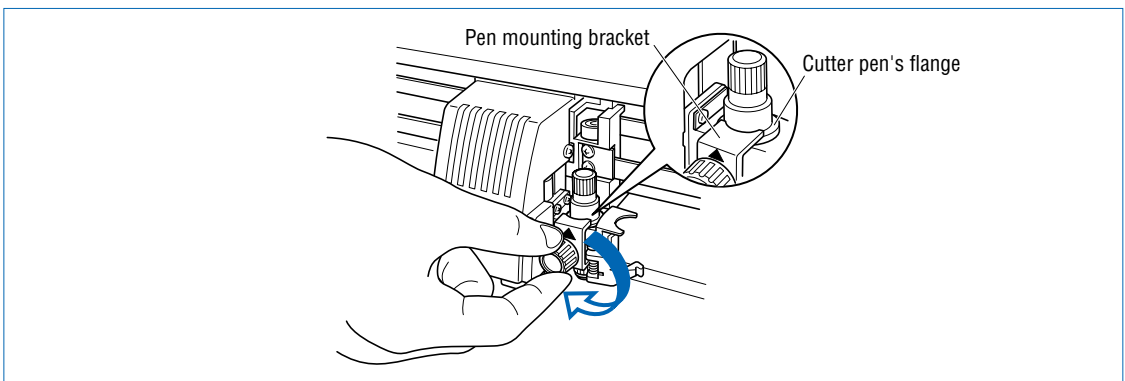
2.5　Mounting the Pen

Mount a pen in the pen station

CHECKPOINT

When mounting a pen for this cutting plotter, be sure to mount it at the pen station. To avoid injury, avoid touching the pen immediately after the cutting plotter is turned on or whenever the pen is moving.

Open the holder arm of the pen station with your finger, then mount the pen in the pen holder.After the pen is properly mounted, close the holder arm to secure the pen.

Holder arm

Be sure to fit into the pen's groove
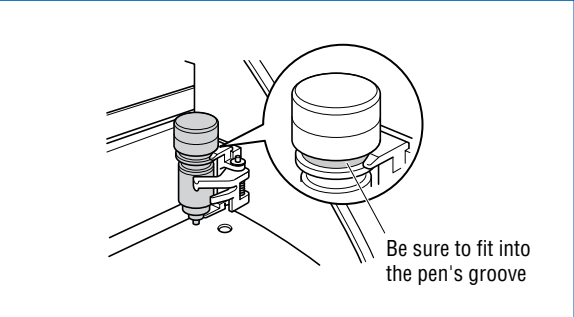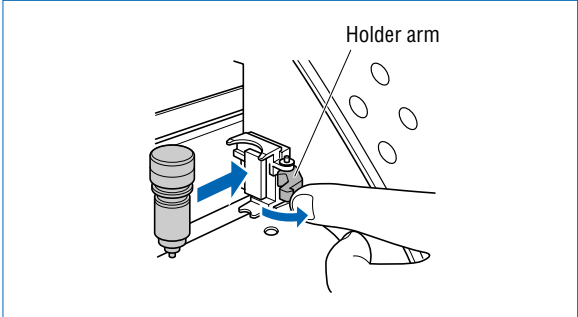
CHECKPOINT

Make sure that the pen's groove fits into the top section of the pen station's bracket.

CHAPTER 3

Basic Settings and Operations

3.1 Setting the Cutter-Pen Conditions

Before starting cutting, set the TOOL (cutter blade or pen), cutter-blade length, OFFSET, FORCE, SPEED, and QUALITY settings to ensure the optimal cutting conditions.

TOOL (cutter blade or pen)
.... Set to suit the material to be cut.

Cutter-blade length ... Adjust the blade length by referring to the media thickness table below. For details on adjusting the blade length, see "2.4 Adjusting and Mounting the Cutter Pen."

OFFSET .... Set to suit the cutter blade being used.

FORCE .... Set the FORCE by referring to the table below.

SPEED .... Set the SPEED by referring to the table below.

QUALITY .... Set the QUALITY by referring to the table below.

Optimal Cutting Conditions for Each Media Type

Medium thickness	Blade used	FORCE	SPEED	QUALITY
approx. 130 g/m^2	CB09UA	14 to 20	30 or less	2
approx. 80 g/m^2	CB09UA	10 to 14	30 or less	2
approx. 65 g/m^2	CB09UA	8 to 12	30 or less	2

Reference force values (FORCE = g)

Setting	FORCE	Setting	FORCE	Setting	FORCE	Setting	FORCE
1	20	9	40	17	96	25	200
2	21	10	43	18	104	26	218
3	22	11	48	19	112	27	234
4	24	12	56	20	120	28	250
5	27	13	64	21	136	29	267
6	30	14	72	22	153	30	284
7	33	15	80	23	170	31	300
8	37	16	88	24	185		

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

Blade material	Part No.	LCD display indication		Specifiable range	Initial CUTTER OFFSET
		Blade type	Default		
Supersteel blades	CB09UA	09U	0	±5	18
	CB15U	15U	0	±5	28
	CB15UB	15B	0	±5	5
Pens		PEN	–	–	0

When the TOOL (cutter blade or pen) has been selected from among **"09U," "15U,"** and **"15B,"** the OFFSET is automatically adjusted by ±5 with respect to the default cutter offset value for that blade type. Select the PEN setting for plotting using a pen. When the PEN setting is selected, no 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 life, set the FORCE to the lowest setting, and set the SPEED after checking to confirm that there are no faint lines or other problems during plotting.

> **CHECKPOINT**
> • If the SPEED and QUALITY settings are set to high values, the cut/plotted results will have a coarser finish, but the overall cutting/plotting time will be reduced.
> • If the SPEED and QUALITY settings are set to low values, the cut/plotted results will have a finer finish, but the overall cutting/plotting time will be longer.

Storing and Selecting Cutter Pen Condition Setting Areas

Eight different sets of user-defined cutting conditions can be registered in the plotter's memory as COND Nos. 1 through 8. 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 eight sets of media.

CHECKPOINT

The pen number settings for the CE3000-120AP are as follows:

Command-specified pen number	COND. No.	Physical pen number
1 · · · · · · · · · · ·	1 · · · · · · ·	1 (Pen holder)
2 · · · · · · · · · · ·	2 ⎤	
3 · · · · · · · · · · ·	3 ⎥	
4 · · · · · · · · · · ·	4 ⎬ · · · · · 2 (Cutter pen holder)	
⋮	⋮ ⎥	
8 · · · · · · · · · · ·	8 ⎦	

Storage method

Press the 🔲 **(COND.) key** in READY mode to display the cutter-pen conditions.

```
2◀09U +1 23 30 2
```

The current settings are displayed (from the left): condition number, PEN TYPE (cutter blade), CUTTER OFFSET, FORCE, SPEED, and QUALITY.
The item to be changed is indicated by the ◀ symbol. Press the ▶ **key** to change the symbol to ▶, and press again to move it to the right. Press the ◀ **key** to move it to the left. Use the ◀ or ▶ **key** to select the parameter to be changed, and use the ▲ or ▼ **key** to select the setting details. Press the 🔲 **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)**, 📖 **(PREV.)**, or 🔲 **(COND.) key.**

Selection method

To select condition settings that have previously been stored, use the ▲ or ▼ **key** to select the desired condition number stored on the cutter-pen-condition settings display (the number at the left of the display), and then press the 🔲 **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)**, 📖 **(PREV.)**, or 🔲 **(COND.) key.**

Setting TOOL (cutter blade or pen)

Set the type of pen (cutter blade) to be used.

(1) Press the 🔲 **(COND.) key** in READY mode to display the cutter-pen conditions.

(2) Select the setting area (condition number) to be set, and then press the ◀ or ▶ **key** to move the ▶ symbol to the position shown below.

```
2▶09U +1 23 30 2
```

(3) Press the ▲ or ▼ **key** to select **"09U," "15U," "15B,"** or **"PEN."** Press the 🔲 **(ENTER) key** to confirm the selection. If other conditions are to be set, press the ◀ or ▶ **key** to move the ▶ symbol to the parameter to be set.

Setting OFFSET

This setting adjusts the offset of the cutter blade to suit the blade type used. The tip of the blade mounted in the cutter-pen plunger is not positioned at the center of the pen, so correction is required. This correction is referred to as the OFFSET setting. The cutting plotter has been preset with OFFSET values for each cutter-blade type. Selecting **"09U," "15U,"** or **"15B"** for the PEN TYPE setting also sets the appropriate OFFSET, allowing fine adjustment within the range of ±5. When the **"PEN"** setting is selected, the OFFSET cannot be set.

(1) Press the 🖮 **(COND.) key** in READY mode to display the cutter-pen conditions.

(2) Select the setting area (condition number) to be set, and then use the ◀ or ▶ **key** to move the ▶ symbol to the position shown below.

```
2  09U▶+1  23  30  2
```

(3) Use the ▲ or ▼ **key** to select the value to be changed in the range of **"-5"** to **"+5."** Press the ↵ **(ENTER) key** to confirm the selection. If other conditions are to be set, press the ◀ or ▶ **key** to move the symbol to the parameter to be set.

Setting FORCE

Sets the pressure applied by the cutter pen during cutting. Set the FORCE value based on the guidelines in the table entitled "Optimal Cutting Conditions for Each Media Type" on page 3-2.

(1) Press the 🖮 **(COND.) key** in READY mode to display the cutter-pen conditions.

(2) Select the setting area (condition number) to be set, and then use the ◀ or ▶ **key** to move the ▶ symbol to the position shown below.

```
2  09U  +1▶23  30  2
```

(3) Press the ▲ or ▼ **key** to select the value to be changed in the range specified below.

"1" to **"31"**

Press the ↵ **(ENTER) key** to confirm the selection. If other conditions are to be set, press the ◀ or ▶ **key** to move the ▶ symbol to the parameter to be set.

Setting SPEED

Sets the speed used for cutting. Set the SPEED value based on the guidelines in the table entitled "Optimal Cutting Conditions for Each Media Type" on page 3-2.

(1) Press the 🖮 **(COND.) key** in READY mode to display the cutter-pen conditions.

(2) Select the setting area (condition number) to be set, and then use the ◀ or ▶ **key** to move the ▶ symbol to the position shown below.

```
2  09U  +1  23▶30  2
```

(3) Press the ▲ or ▼ **key** to select the value to be corrected in the range specified below.

"1" to **"60"**; **"*"**

"1" to **"10"** is in increments of 1, and **"10"** to **"60"** is in increments of 5.
Press the ↵ **(ENTER) key** to confirm the selection. If other conditions are to be set, press the ◀ or ▶ **key** to move the ▶ symbol to the parameter to be set.

✔ CHECKPOINT

Selecting **"*"** sets the maximum speed. QUALITY is also set to "*", and the acceleration is calculated automatically.

Setting QUALITY

Sets the acceleration used in cutting.

(1) Press the 🖮 **(COND.) key** in READY mode to display the cutter-pen conditions.

(2) Select the setting area (condition number) to be set, and then use the ◀ or ▶ **key** to move the ▶ symbol to the position shown below.

```
2  09U  +1  23  30▶2
```

(3) Press the 🔺 or 🔻 **key** to select the value to be changed in the range specified below

"1", **"2"**, **"*"**

Press the ↵ **(ENTER) key** to confirm the selection. If other conditions are to be set, press the ◀ or ▶ **key** to move the ▶ symbol to the parameter to be set.

✔ CHECKPOINT

If SPEED is set to **"*"**, QUALITY is also set to **"*"** and acceleration is calculated automatically.

3.2   Displaying the Effective Cutting Area

Press the ⏎ **(ENTER) key** in READY mode to display the current effective cutting area.

```
X  0000mm  Y  000mm
```

3.3   Moving the Pen

In READY mode, press the ◀ or ▶ **key** to move the pen carriage to the left or right, and the ▲ or ▼ **key** to feed the medium backward or forward.

3.4   Setting the Initial Cutting Position (Origin Point)

This function allows the starting position for cutting or plotting to be moved to the desired position.
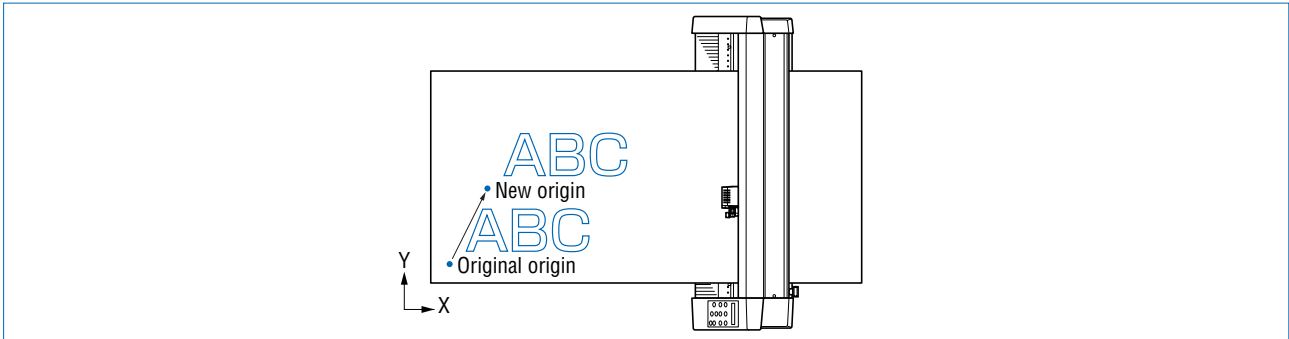
(1)   In READY mode, use the ◀, ▶, ▲ and ▼ **(POSITION) keys** to move the cutter pen to the new origin point.

(2)   Press the ⊕ **(ORIGIN) key.** The following menu is displayed and the new origin is set.

```
ORIGIN PT SET
```

When the Origin is Moved After Rotating the Coordinate Axes

Moving the origin when the coordinate axes have been rotated gives the following results.
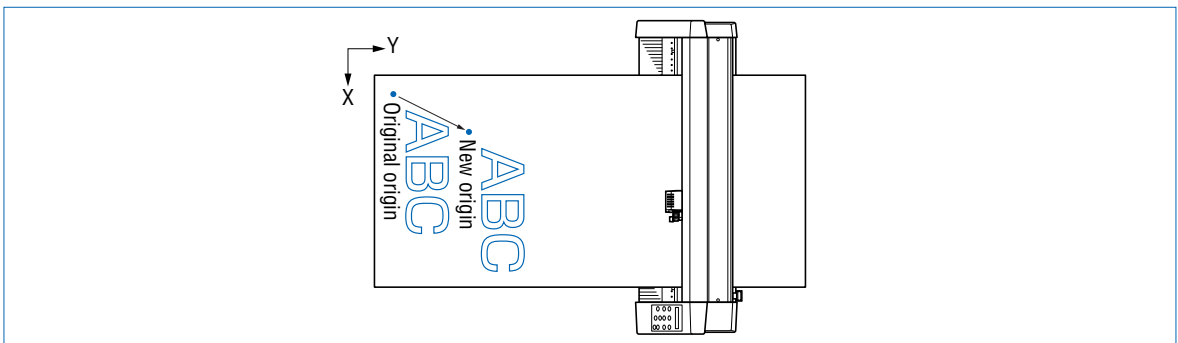
When the Coordinate Axes are Rotated After Moving the Origin Point

When the coordinate axes are rotated after the origin point is moved, the origin point is reset as shown in the figure below. The distance **"a"** is retained, but the distance **"b"** is reset.
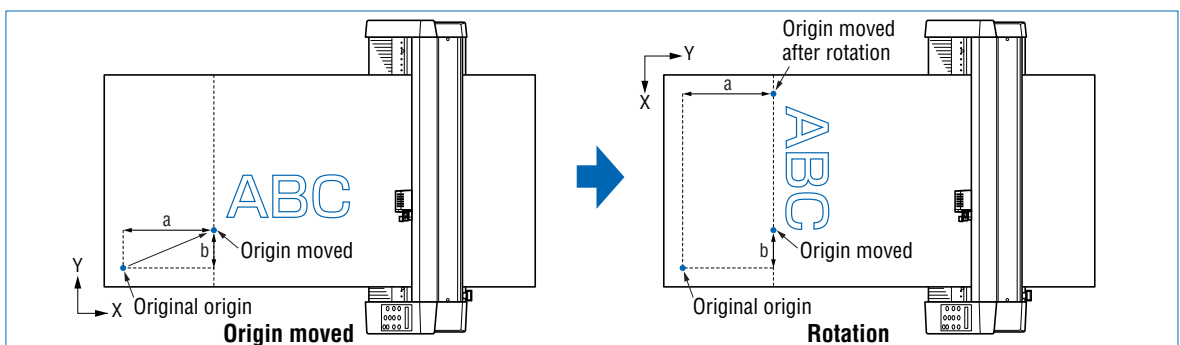
When it is necessary to both move the origin and rotate the coordinate axes, be sure to rotate the coordinate axes first.

⚡ CHECKPOINT

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

3.5   Stop Function

Cutting or plotting can be stopped by pressing the ⏸ **(PAUSE) key** while cutting or plotting is in progress. The operation selection menu is displayed on the control-panel screen while cutting or plotting is stopped, enabling operations to be resumed or aborted as required. Raising or lowering the media set lever while the cutting or plotting is stopped does not require the medium to be selected, so the medium can be replaced or reset.

(1)   Press the ⏸ **(PAUSE) key** while cutting or plotting is in progress to stop cutting or plotting and display the PAUSE menu.

```
CLEAR  BUFFER
```

(2)   Pressing the ⏸ **(PAUSE) key** while cutting or plotting is stopped cancels the pause function and restarts cutting or plotting. To completely abort cutting or plotting, stop sending data from the computer.

```
CLEAR  BUFFER
```

(3)   Press the ↵ **(ENTER) key** to display the buffer memory clear menu.

```
CLEAR        <YES>
```

(4)   Press the ▲ or ▼ **key** to select **"YES"** or **"NO."** To abort cutting or plotting, select **"YES"** and press the ↵ **(ENTER) key**. To cancel, select **"NO"** and either press the ↵ **(ENTER) key** or press the 🔖 **(NEXT)** or 🔖 **(PREV.) key**.

(5)   Press the ⏸ **(PAUSE) key** to reset PAUSE mode.

3.6 Moving the Pen Carriage in +100 mm Steps

This function allows the pen carriage to be moved from its current position in +100 mm steps along the X- and Y-axes.
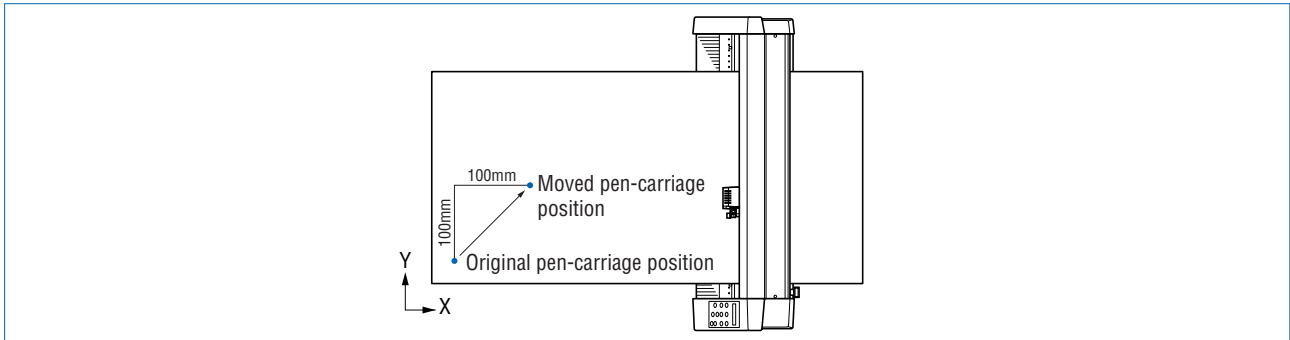
In READY mode, press the ⬆ **key** while holding down the ⏎ **(ENTER) key** to move the pen carriage in +100 mm steps along the X- and Y-axes.

Returning to the original position

In READY or PAUSE mode, press the ▶ **key** while holding down the ⏎ **(ENTER) key** to return the pen carriage to the origin.

3.7   Test Cutting

Test cutting can be performed after selecting the TOOL (cutter blade) and specifying the cutter-blade length, OFFSET, FORCE, SPEED, and QUALITY settings to ensure that the selected cutting conditions actually produce the desired cutting results. Check how far the blade cuts into the medium and how corners are being cut; if the cutting results are not satisfactory, reset the cutting conditions and repeat the test cutting until the optimal settings are achieved. If you perform test cutting while the cutter-pen conditions are being set, the test cutting will be performed under the conditions being set.

(1)   Load the medium for test cutting on the cutting plotter.

(2)   Use the ◀, ▶, ▲, and ▼ **(POSITION) keys** to move the pen carriage to the position for test cutting.

(3)   Switch to READY mode, and then press the ▣ **(TEST) key**.

(4)   Adjust the CUTTER OFFSET value to suit the type and thickness of the medium being used, and fine-adjust the finish of each corner. Adjust the FORCE setting so that the medium is cut through completely when the blade is extended to a suitable length.
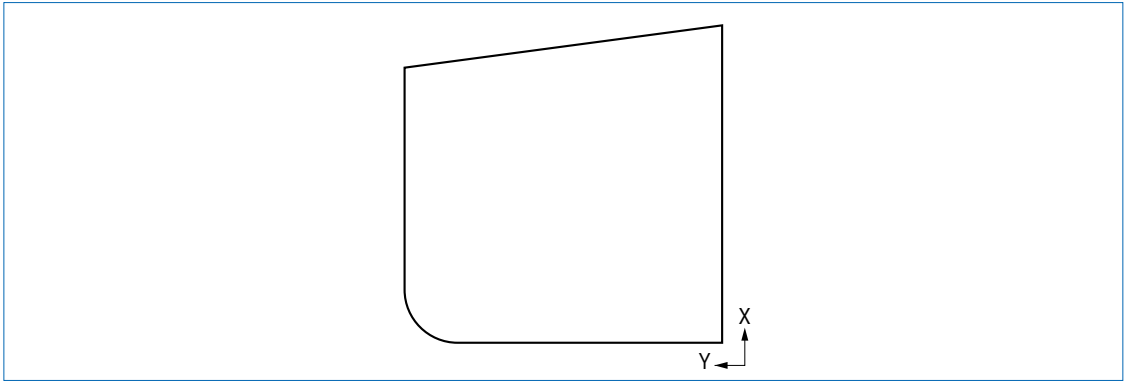
(5)   Upon completion of fine adjustment, actual cutting data can be sent to the cutting plotter.

CHAPTER *4*

Function Settings and Operations

4.1 PAUSE Menu List

Pressing the ⏸ **(PAUSE) key** in READY mode displays the PAUSE menu, enabling the various settings to be made. Select the required menu by scrolling through the list using the 📖 **(NEXT)** or 📖 **(PREV.) key**.

CLEAR BUFFER	**4.2 Clearing the Buffer Memory**
FEED&CUT	**4.3 Setting the FEED & CUT function**
BLADE WARE SETUP	**4.4 Blade Wear Detection (When Blade Wear Setup is On)**
PEN UP/DOWN	**4.5 Raising and Lowering the Pen**
CUT LINE PAT.	**4.6 Selecting the Type of Perforated Line.**
TANGENTIAL	**4.7 Setting TANGENTIAL Mode**
INIT. B	**4.8 Selecting the Blade Tip's Initial Position**
PEN UP SPEED	**4.9 Setting the PEN UP SPEED**
INITIAL FEED	**4.10 Specifying the INITIAL FEED Length**
AUTO PRE FEED	**4.11 Setting AUTO PRE-FEED**
ADVANCED FUNC.	⏎ **(ENTER) key**
SETUP MENU	
TEST	**4.33 TEST Mode**

⏎ **(ENTER) key**

SELECT USER	**4.27 User-specified Settings**
COMMAND	**4.28 Setting the Format of Data to be Received**
RS-232C	**4.29 Interface Settings**
PAGE LENGTH	**4.30 Setting the PAGE LENGTH**
SEPARATOR	**4.31 Setting the SEPARATOR Function**
TIMEOUT	**4.32 Setting the TIMEOUT Function**

DISTANCE ADJUST	**4.12 Distance Adjustment**
AXIS ALIGNMENT	**4.13 Aligning the Coordinate Axes**
PLOT AREA	**4.14 Setting the Cutting/Plotting Area**
EXPAND	**4.15 Expanding the Cutting/Plotting Area**
ROTATE	**4.16 Rotating the Coordinate Axes**
SORT	**4.17 Sorting Settings**
SPACE REAR	**4.18 Specifying the SPACE REAR Distance**
OFFSET FORCE	**4.19 Setting the OFFSET FORCE (Initial Cutting Force)**
INIT. DOWN FORCE	**4.20 Setting the Initial Down Force**
STEP PASS	**4.21 Setting the STEP PASS**
OFFSET ANGLE	**4.22 Setting the OFFSET ANGLE**
F_CUT	**4.23 Setting the F_CUT Function**
LENGTH UNIT	**4.24 Setting the LENGTH UNIT**
PEN 1/2 ADJ	**4.25 Setting the Distance Compensation Between the Pens**
COPY	**4.26 Cutting/Plotting Using the Buffer Memory (COPY Function)**

4.2 Clearing the Buffer Memory

This function deletes the data sent to the cutting plotter. It is used to abort cutting while it is in progress.

```
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
```
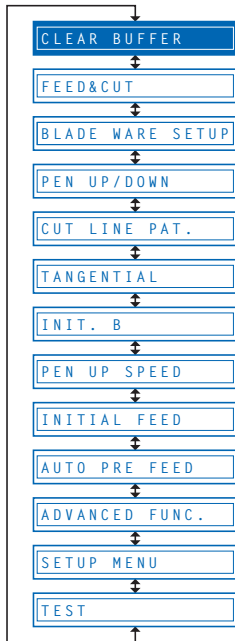
(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Stop the transmission of data from the computer if this is in progress.

(3) Press the **(NEXT)** or **(PREV.) key** until the following menu is displayed.

```
CLEAR  BUFFER
```

(4) Press the **(ENTER) key** to display the clear-buffer-memory menu.

```
CLEAR          <YES>
```

(5) Press the ▲ or ▼ **key** to select **"YES"** or **"NO,"** and then press the **(ENTER) key**. To cancel the selection, select **"NO"** and press the **(ENTER) key**, or press the **(NEXT)** or **(PREV.) key** .

4.3 Setting the FEED & CUT function

TThis function enables cross-cutting of the medium. Cutting is performed after one page has been fed. The page length is the length specified in Section 4.28 "Setting the Page Length.
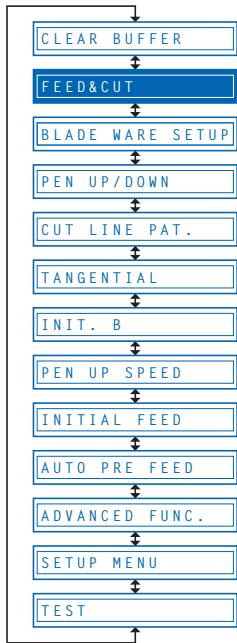
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the **(NEXT)** or **(PREV.) key** until the following menu is displayed.

> FEED&CUT

(3) Press the **(ENTER) key** to display the FEED & CUT selections.

> FEED&CUT   CUT

(4) Press the ▲ or ▼ **key** to select **"F&CUT"** or **"CUT"**, and then press the **(ENTER) key**. To cancel the selection, press the **(NEXT)** or **(PREV.) key**.

4.4 Blade Wear Detection (When Blade Wear Setup is On)

This function calculates the total cutting distance of the cutter blade to indicate when it requires replacement. This should be used purely as a guide, as the actual cutter-blade wear will vary depending on the material cut and the cutting conditions (e.g., force) used.

The pen setting areas are grouped together, and the total distances are calculated for each group. Eight groups can be managed, and they initially correspond to the pen setting areas, so that group 1 corresponds to setting area 1, group 2 corresponds to setting area 2, and so on. If two or more setting areas are combined in a single group, the total calculated distance for that group will be the sum of the individual area values.

It is also possible to include weighting factors for each setting area to correspond to the different wear rates for different materials and cutting conditions. For example, if setting areas 1, 2, and 3 are combined into one group with respective total distances of A, B, and C, and the respective factors are 0.7, 1.2, and 1.0, the total distance for this group will be A x 0.7 + B x 1.2 + C x 1.0.

Wear detection can be switched on or off using the special function settings (see "Enabling/Disabling Wear Detection" on page 5-3). When disabled, it is not displayed on the PAUSE menu.

If the power is turned off while cutting is in progress, the cutting distance for that operation is not included in wear-detection calculations.

```
CLEAR BUFFER
   ↕
FEED&CUT
   ↕
BLADE WARE SETUP
   ↕
PEN UP/DOWN
   ↕
CUT LINE PAT.
   ↕
TANGENTIAL
   ↕
INIT. B
   ↕
PEN UP SPEED
   ↕
INITIAL FEED
   ↕
AUTO PRE FEED
   ↕
ADVANCED FUNC.
   ↕
SETUP MENU
   ↕
TEST
```
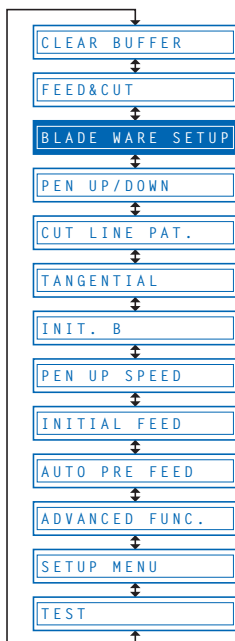
Checking the Wear Rate

(1) Check to confirm that the cutting plotter is in READY mode (displaying the current pen settings).

```
1  PEN      23  30  2
```

(2) Press the ▣ **(NEXT) key** to display the wear-rate menu for the group to which the above setting area belongs.

```
BLADE  WEAR     60%
```

The wear rate is shown as 0% for a new pen, and 100% when the total distance exceeds the maximum distance for the cutter blade. Press the ▣ **(PREV.) key** to return to READY mode.

(3) The following message is displayed in READY mode if the wear rate exceeds 100% for the group to which the current setting area belongs.

```
EXCEEDS       100%
```

This indication should be used as a guide for cutter-blade replacement.
This display reverts to the normal READY-mode display when the ▣ **(PREV.) key** is pressed, but it will reappear when the power is turned on again or if a setting area is selected again for a group with a wear rate exceeding 100%. Always zero the total distance display after replacing a cutter blade (see "Clearing the Total Distance (Wear Rate)"). The display above will disappear, and the distance calculation will restart from zero.

Setting Wear-Rate Groups

This registers setting areas in groups.

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the ▣ **(NEXT)** or ▣ **(PREV.) key** until the following menu is displayed.

```
BLADE  WEAR  SETUP
```

(3) Press the ⏎ **(ENTER) key** to display the wear-rate setting submenu.

```
SET BLADE GROUP
```

(4) Press the ⏎ **(ENTER) key** to display the wear-rate group setting.

```
GROUP     1 12 45
```

(5) The number on the left is the group number, and the numbers to the right of this indicate the setting areas belonging to it, separated by spaces. The display above indicates setting areas 1, 2, 4, and 5, belonging to group 1.

Use the ◀ or ▶ **key** to move the cursor to the group number or setting-area number to be set. Pressing the ▲ or ▼ **key** at the group-number position increases or decreases the number, and pressing the ▲ or ▼ **key** at the setting-area number position displays or doesn't display the number. Select the required group number, display the setting-area numbers to be registered, and then press the ⏎ **(ENTER) key** to confirm.

Each setting area can only be registered in one group. To register a setting area in another group, it must first be removed from the group in which it is registered. Initially, setting area 1 is set to group 1, setting area 2 to group 2, and so on, so setting areas must be removed from one group before being registered in another.

To cancel the selection(s), press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

Setting Wear-Rate Factors

This sets factors corresponding to the differences in wear rates due to different materials and cutting conditions.

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
BLADE WEAR SETUP
```

(3) Press the ⏎ **(ENTER) key** to display the wear-rate setting submenu, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
FACTOR
```

(4) Press the ⏎ **(ENTER) key** to display the wear-rate factor setting.

```
COND 1      1.00
```

(5) Use the ◀ or ▶ **key** to increase or decrease the setting-area number, and use the ▲ or ▼ **key** to increase or decrease the factor value. The factor can be set to between 0.10 and 1.00 in 0.10 intervals, and between 1.00 and 2.50 in 0.25 intervals. Once the wear-rate factor is set, press the ⏎ **(ENTER) key** to confirm. To cancel the selection(s), press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(6) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

Clearing the Total Distance (Wear Rate)

Always zero the total-distance display when a cutter blade has been replaced. This starts the total-distance calculation from zero.

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2)   Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
BLADE WEAR SETUP
```

(3)   Press the ⏎ **(ENTER) key** to display the wear-rate setting submenu, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
CLEAR GROUP
```

(4)   Press the ⏎ **(ENTER) key** to display the wear-rate clear menu.

```
CLR GROUP1 <YES>
```

(5)   The number to the right of **"CLEAR GROUP"** is the group number. Use the ◀ or ▶ **key** to increase or decrease the group number, and press the ▲ or ▼ **key** to select **"YES"** or **"NO."** Select **"YES"** for the group number to be cleared, and press the ⏎ **(ENTER) key** to clear the total distance. To cancel the selection(s), press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(6)   Press the �‖ **(PAUSE) key** to cancel PAUSE mode.

4.5   Raising and Lowering the Pen

This function raises and lowers the pen.
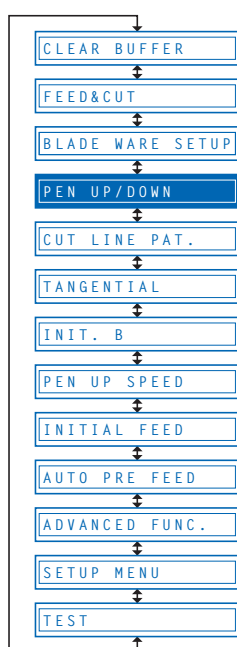
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

PEN UP/DOWN

(3) Press the ⏎ **(ENTER) key** to lower the pen, and press the ⏎ **(ENTER) key** again to raise it.

4.6 Selecting the Type of Perforated Line

The CUT LINE PAT. function lets you specify one of seven types of cut lines from 0 to 6. If you select OFF, a solid line is cut. The default setting is 6. Change this setting if the shapes being cut either separate too easily or are hard to separate.

Using this function, you can select the cut line pattern ratio (the ratio of cut segments to uncut segments in each line) by specifying the LINE TYPE NO. The smaller the value, the shorter the uncut segments and the easier it is for cut shapes to be separated. When the specified LINE TYPE NO. properly suits the medium you are using, cut shapes can be easily separated after cutting but will not come loose during cutting.

```
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
CUT LINE PAT.
```

(3) Press the ↵ **(ENTER) key** to display the PERF. LINE TYPE setting.

```
LINE TYPE NO OFF
```

(4) Press the ▲ or ▼ **key** to select **"OFF"** or a value within the range **"0" to" 6,"** and then press the ↵ **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

CHECKPOINT

The setting is retained in the internal memory even when the power is turned off.
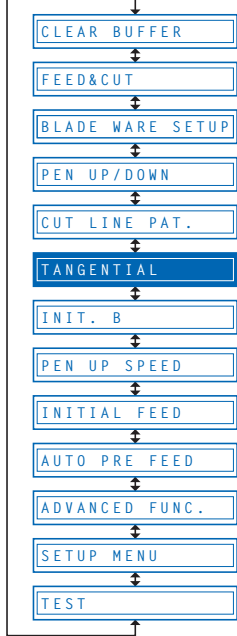
4.7   Setting TANGENTIAL Mode

This function should be used for the cutting of thick media (more than 0.3 mm in thickness) and when the cutter blade is not able to turn properly due to the cutting depth, resulting in discrepancies between the start and finish point and the inability to cut sharp corners. This function can be set on or off individually for each of the eight cutter-pen setting areas, and it should be set to suit the media used. The overcut-amount setting screen is displayed for cutter-pen setting areas for which the TANGENTIAL mode is **"ON."**
This setting has two modes: Mode 1 and Mode 2.

Mode 1:   Overcuts the start and finish cutting positions and acute-angle corner sections to avoid leaving uncut sections. In addition, the cutter blade is moved on the surface of the medium during cutting when it is rotated significantly, ensuring sharp cutting unaffected by the medium toughness or thickness.

Mode 2:   Overcuts the start and finish cutting positions only. In addition, the cutter is rotated on the medium surface for the start cutting position only. This uses simpler cutter control than Mode 1, and provides a shorter cutting time.

CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1)   Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2)   Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
TANGENTIAL
```

(3)   Press the ⏎ **(ENTER) key** to display the TANGENTIAL setting. The numbers **"1"** to **"8"** indicate the cutter setting areas, and those marked with a ▶ symbol have the TANGENTIAL mode set to "**ON.**"

```
▶1  2  3▶4▶5  6  7  8
```

Use the ◀ and ▶ **key** to move the cursor and select a setting area. Use the ▲ and ▼ **key** to display/not display the ▶ symbol, and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(4)   Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

(5)   Select the condition-setting area to be set to **"ON"** (refer to "Storing and Selecting Cutter Pen Condition Setting Areas" on page 3-3).

```
5◀15U    0  20  30  1
```

(6)   Press the ⏎ **(ENTER) key** or use the ▶ **key** to move the cursor to the right-hand side, and then press the ▶ **key** again to display the menu shown below. If the distance adjustment is set for the setting area selected, the distance adjustment will be displayed here. Either press the ⏎ **(ENTER) key** or move the cursor to the right-hand side and press the ▶ **key**.

```
TANGENTIAL  MODE1
```

(7)   Press the ▲ or ▼ **key** to select **"Mode 1"** or **"Mode 2,"** and then press the ⏎ **(ENTER) key**. The overcut setting is displayed.

```
STR=0.2  END=0.2
```

(8)   **"STR"** indicates the initial overcut amount, and **"END"** indicates the end overcut amount for the line section. Press the ◀ or ▶ **key** to select **"STR"** or **"END"**, use the ▲ or ▼ **key** key to increase or decrease the values, and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection(s), press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

4.8 Selecting the Blade Tip's Initial Position

Whenever the cutting plotter is turned on or any of its cutting condition settings 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 is called the "Initial Blade Position".
When 2mm 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.
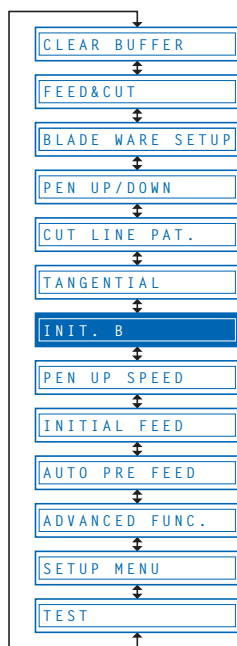
CLEAR BUFFER

FEED&CUT

BLADE WARE SETUP

PEN UP/DOWN

CUT LINE PAT.

TANGENTIAL

INIT. B

PEN UP SPEED

INITIAL FEED

AUTO PRE FEED

ADVANCED FUNC.

SETUP MENU

TEST

(1) Press the (PAUSE) key to switch to PAUSE mode.

(2) Press the (NEXT) or (PREV.) key until the following menu is displayed.

INIT. B

Press the (ENTER) key to display the INIT. BLADE POS. setting.

INIT. B   2mm

(3) Press the ▲ or ▼ key to select **"2mm"** or **"OUTSIDE"**, and then press the (ENTER) key. To cancel the selection, press the (NEXT) or (PREV.) key.

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

CHECKPOINT

The setting is retained in the internal memory even when the power is turned off.

4.9 Setting the PEN UP SPEED

This function sets the travel speed of the pen when it is raised. It can be specified independently of the cutting SPEED function. When the PEN UP SPEED is high, the pen travels faster when it is raised, thereby reducing 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 (pen lowered). Note that if long-axis cutting of a medium is performed with a high PEN UP SPEED setting, the medium is susceptible to jamming.
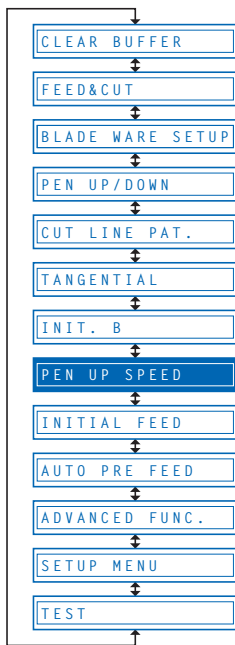
```
CLEAR BUFFER
    ↕
FEED&CUT
    ↕
BLADE WARE SETUP
    ↕
PEN UP/DOWN
    ↕
CUT LINE PAT.
    ↕
TANGENTIAL
    ↕
INIT. B
    ↕
PEN UP SPEED
    ↕
INITIAL FEED
    ↕
AUTO PRE FEED
    ↕
ADVANCED FUNC.
    ↕
SETUP MENU
    ↕
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
PEN UP SPEED
```

(3) Press the ⏎ **(ENTER) key** to display the pen-up-speed menu.

```
UP SPEED = AUTO
```

Use the ▲ or ▼ **key** to select the value to be set, and then press the ⏎ **(ENTER) key** to confirm.

"AUTO" "30" "40" "50" "60" cm/s

To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(4) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

✔ CHECKPOINT

This setting is retained in the internal memory even when the power is turned off.

4.10 Specifying the INITIAL FEED Length

This function lets you select whether or not to perform an initial feed operation when the cutting plotter is turned on, when the media set lever is raised and a medium reloaded, or when a new medium is loaded. During an INITIAL FEED operation, the medium is automatically advanced while the grit rollers make marks on the medium to prevent it from slipping. The distance the medium is fed is the distance specified in Section 4.30 "Setting the Page Length.
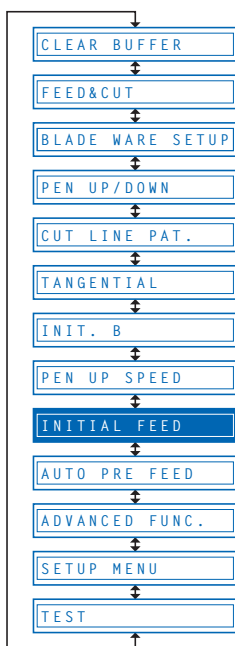
```
CLEAR BUFFER
   ↕
FEED&CUT
   ↕
BLADE WARE SETUP
   ↕
PEN UP/DOWN
   ↕
CUT LINE PAT.
   ↕
TANGENTIAL
   ↕
INIT. B
   ↕
PEN UP SPEED
   ↕
INITIAL FEED
   ↕
AUTO PRE FEED
   ↕
ADVANCED FUNC.
   ↕
SETUP MENU
   ↕
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
INITIAL FEED
```

(3) Press the ⏎ **(ENTER) key** to display the INITIAL FEED setting.

```
INITIAL FEED OFF
```

(4) Press the ▲ or ▼ **key** to select **"OFF"** or **"ON"**, and then press the ⏎ **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

🦅 CHECKPOINT

If the 📖 **(NEXT)** or 📖 **(PREV.) key** is pressed during a feed operation, the feed operation will be terminated immediately and the medium returned to its original position.

⚠ CAUTION

When the initial feed operation has been specified and the power is turned on; the media set lever raised and a medium loaded; or a new medium loaded; the feed operation will start immediately. Make sure that there are no obstacles in front of or behind the cutting plotter.

4.11 Setting AUTO PRE-FEED

When the AUTO PRE-FEED function is set to **"ON,"** the medium is automatically fed forward and backward by the preset length when data is received. This operation leaves traces of the grit rollers on the media and prevents it from slipping during a cutting or plotting operation. Similarly, if roll media is used, the medium is automatically pulled out by the cutting plotter.
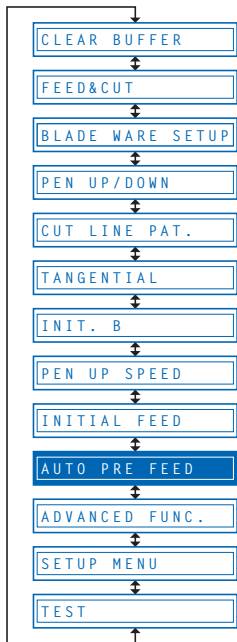
```
CLEAR BUFFER
    ↕
FEED&CUT
    ↕
BLADE WARE SETUP
    ↕
PEN UP/DOWN
    ↕
CUT LINE PAT.
    ↕
TANGENTIAL
    ↕
INIT. B
    ↕
PEN UP SPEED
    ↕
INITIAL FEED
    ↕
AUTO PRE FEED
    ↕
ADVANCED FUNC.
    ↕
SETUP MENU
    ↕
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
AUTO  PRE  FEED
```

(3) Press the ↵ **(ENTER) key** to display the AUTO PRE-FEED setting.

```
AUTO  PRE  FEED  ON
```

Press the △ or ▽ **key** to select **"ON"** or **"OFF,"** and then press the ↵ **(ENTER) key** to confirm.

(4) If **"ON"** is selected and the ↵ **(ENTER) key** pressed, the feed-length setting is displayed.

```
AUTO  PRE  FEED  1m
```

Use the △ or ▽ **key** to set a value within the range of 1 m to 50 m, and then press the ↵ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

4.12 Distance Adjustment

This function corrects any deviation in the length of cut or the plotted line segments, which occurs depending on the medium being used. The adjustment value for the deviation 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 x 0.05% = 1 mm), to become 2,001 mm. Eight different cutter-pen condition-setting areas can be set on or off separately, allowing different settings to be made in order to suit the medium used.
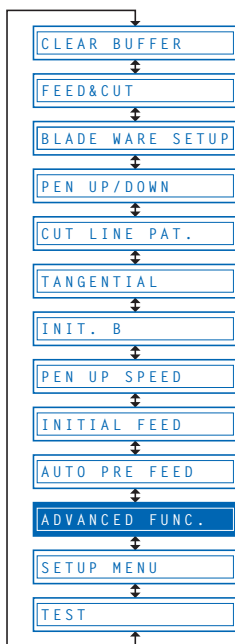
| CLEAR BUFFER |
| FEED&CUT |
| BLADE WARE SETUP |
| PEN UP/DOWN |
| CUT LINE PAT. |
| TANGENTIAL |
| INIT. B |
| PEN UP SPEED |
| INITIAL FEED |
| AUTO PRE FEED |
| ADVANCED FUNC. |
| SETUP MENU |
| TEST |

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
A D V A N C E D   F U N C .
```

(3) Press the ↵ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
D I S T A N C E   A D J U S T
```

(4) Press the ↵ **(ENTER) key** to display the distance adjustment menu. The numbers **"1"** to **"8"** indicate the cutter-pen condition-setting areas, and those that are set on are indicated with the ▶ symbol to the left.

```
▶1   2   3▶4▶5   6   7   8
```

Use the ◀ or ▶ **key** to move the cursor to select the required condition-setting area. Press the ▲ or ▼ **key** to display or not display the ▶ symbol, and then press the ↵ **(ENTER) key** to confirm. To cancel, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

(6) Select the condition-setting area to be set to **"ON"** (refer to "Selecting Cutter-Pen-Condition Setting Areas" on page 3-6).

```
5◀15U     0   20  30   1
```

(7) Either press the ↵ **(ENTER) key** or use the ▶ **key** to move the cursor to the far right, and then press the ▶ **key** to display the following menu.

```
X =   0 . 0 0 % Y =   0 . 0 0 %
```

(8) Select **"X"** or **"Y"** using the ◀ or ▶ **key**. Use the ▲ or ▼ **key** to increase or decrease the setting within the range of **"-2.00%"** to **"+2.00%,"** and then press the ↵ **(ENTER) key** to confirm. If the condition-setting area is set for TANGENTIAL mode, the TANGENTIAL-mode setting will be displayed. Press ↵ **(ENTER)** again. To cancel the selection(s), press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

CHECKPOINT

This setting is retained in the memory even when the power is turned off.

4.13 Aligning the Coordinate Axes

This function is used to compensate for any offset in the origin or angular deviation in the coordinate axes that occurs when a medium plotted in another plotter is loaded or when a previously plotted medium is reloaded. This function enables the cutting of outlines plotted using a different plotter, or drawings previously plotted to be recut. Plotting the origin and X-axis line before the coordinate axes are aligned makes it easier to adjust the axes. Plot the origin and X-axis line within the plotting area to enable settings to be specified even if the X-axis and origin are positioned at an angle. If the origin and X-axis line are plotted near the boundaries of the plotting area, the settings may lie outside the plotting area, making it impossible to align the axes.
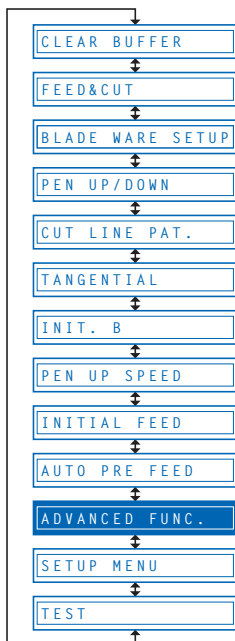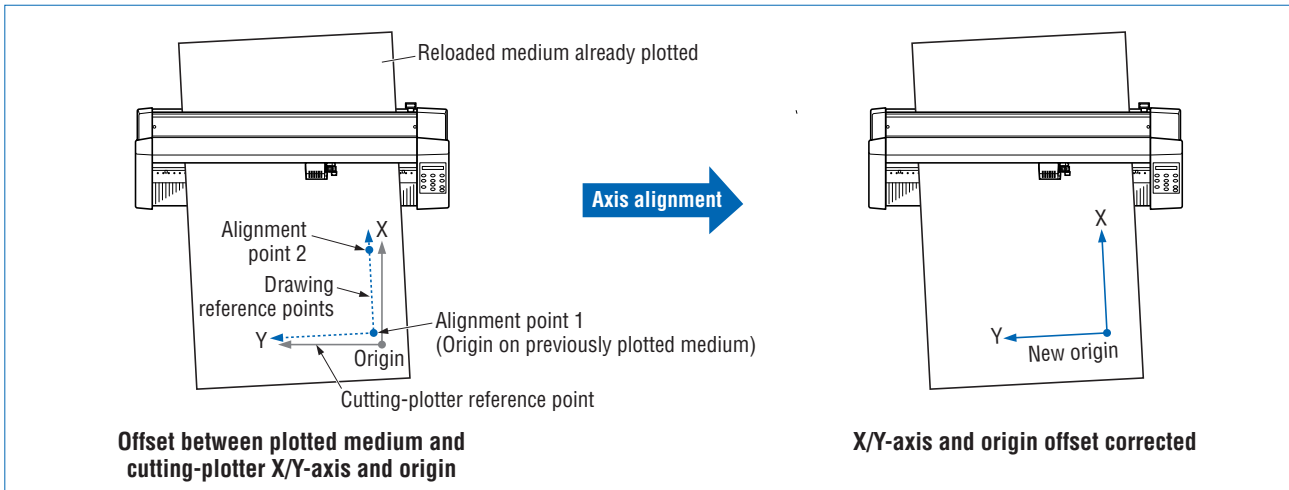
Reloaded medium already plotted

Axis alignment

Alignment point 2

Drawing reference points

Alignment point 1 (Origin on previously plotted medium)

Y   Origin

Cutting-plotter reference point

X

Y   New origin

Offset between plotted medium and cutting-plotter X/Y-axis and origin

X/Y-axis and origin offset corrected

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED FUNC.
```

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
AXIS ALIGNMENT
```

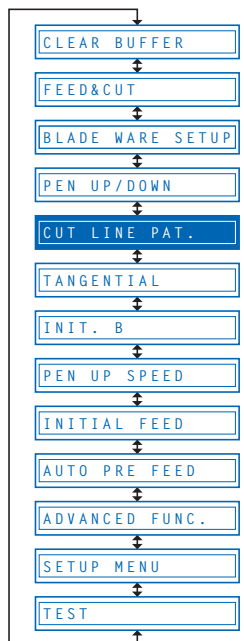(4) Press the ⏎ **(ENTER) key** to display the axis-alignment menu.

```
PT1    0,    0
```

Use the ◀, ▶, ▲, and ▼ **(POSITION) keys** to move the cutter pen to alignment point 1 (the origin on the previously plotted medium). The coordinates displayed here indicate the distance from the current origin point.

(5) Press the ⏎ **(ENTER) key** to set the new origin, and use this as the center of rotation for the X-axis.

(6) Use the ◀, ▶, ▲, and ▼ **(POSITION) keys** to move the cutter pen to alignment point 2 (any point on the X-axis for the previously plotted medium). The coordinates displayed here indicate the distance from alignment point 1.

```
PT2    0,    0
```

(7) Press the ⏎ **(ENTER) key** to calculate the X-axis angle of inclination and align the axes.

CLEAR BUFFER

FEED&CUT

BLADE WARE SETUP

PEN UP/DOWN

CUT LINE PAT.

TANGENTIAL

INIT. B

PEN UP SPEED

INITIAL FEED

AUTO PRE FEED

ADVANCED FUNC.

SETUP MENU

TEST

(8) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

CHECKPOINT

After the axes are aligned, the settings will be reset if any of the following are performed.
• Specification of a new origin
• Loading of a new medium
• Setting of the axis rotation

4.14 Setting the Cutting/Plotting Area

This function allows the area in which cutting/plotting will be performed to be specified, thereby preventing cutting/plotting outside the specified area. This function enables more efficient use of the medium through the specification of uncut portions of a medium that have already been cut, to avoid the previously cut areas. Note that setting of the cutting/plotting area also repositions the origin point in accordance with the movement of the cutting area.
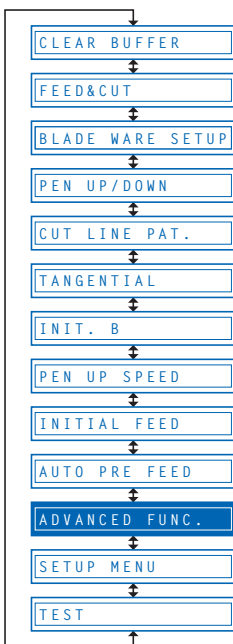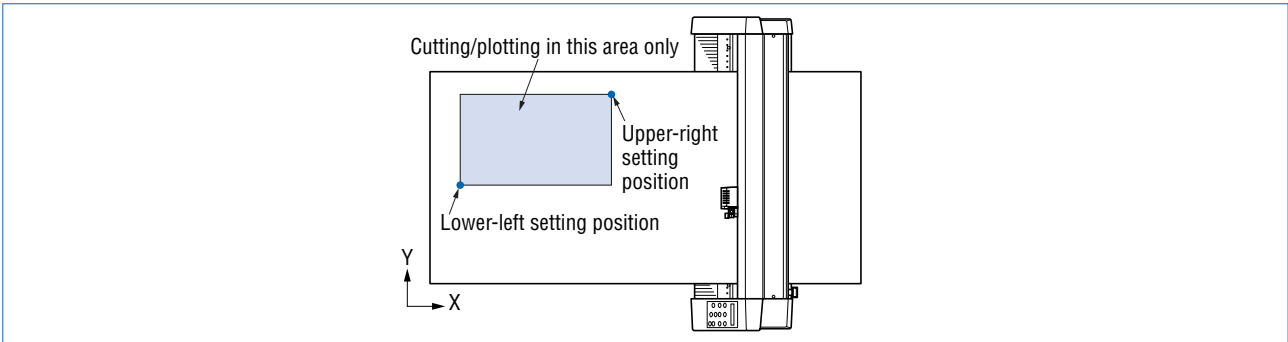
Cutting/plotting in this area only

Upper-right setting position

Lower-left setting position

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED FUNC.
```

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
PLOT AREA
```

(4) Press the ⏎ **(ENTER) key** to display the plotting-area menu.

```
LL      0,       0
```

(5) Use the ◀, ▶, ▲, and ▼ **(POSITION) keys** to move the pen to the lower-left setting position, and then press the ⏎ **(ENTER) key**. The coordinates of the lower-left position set are displayed. To make the default setting, press the ⊕ **(ORIGIN) key**.

(6) Once the lower-left position has been set, the coordinates for the upper-right position are displayed. Set these coordinates in the same way as for the lower-left position.

(7) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

Menu list (left side):

```
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
```

🔷 CHECKPOINT

The following message is displayed if the lower-left and upper-right settings are not separated by a distance of at least 5 mm. If this message appears, reset the lower-left and upper-right positions.

```
WRONG PLOT AREA
```

4.15 Expanding the Cutting/Plotting Area

This function allows the width of the cutting/plotting area to be extended by 9.5 mm on both sides, for a total increase of 19 mm, enabling cutting to be performed up to the area in which the pinch rollers are positioned.
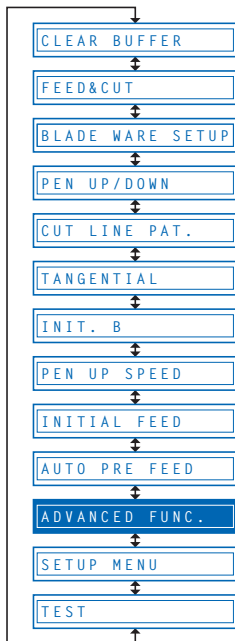
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

    ADVANCED FUNC.

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

    EXPAND

(4) Press the ⏎ **(ENTER) key** to display the plotting-area width-setting menu.

    EXPAND   OFF

Press the 🔼 or 🔽 **key** to select **"ON"** or **"OFF,"** and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) If the settings are not changed, press the ⏸ **(PAUSE) key** to cancel PAUSE mode. If the settings are changed, the media-type selection menu is displayed.

    ROLL2 PRESS ENTR

(6) For details on the media loading and selection procedures, refer to "2.3 Loading the Medium."

CHECKPOINT

This setting is retained in the memory even when the power is turned off.

4.16 Rotating the Coordinate Axes

This function allows the cutting/plotting origin and coordinate axes to be rotated as shown below.
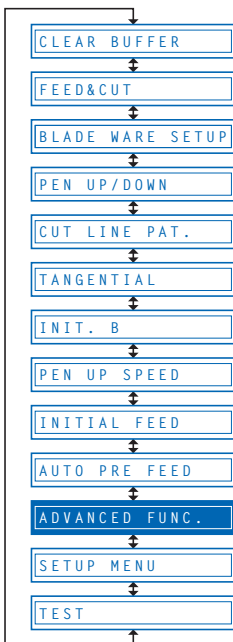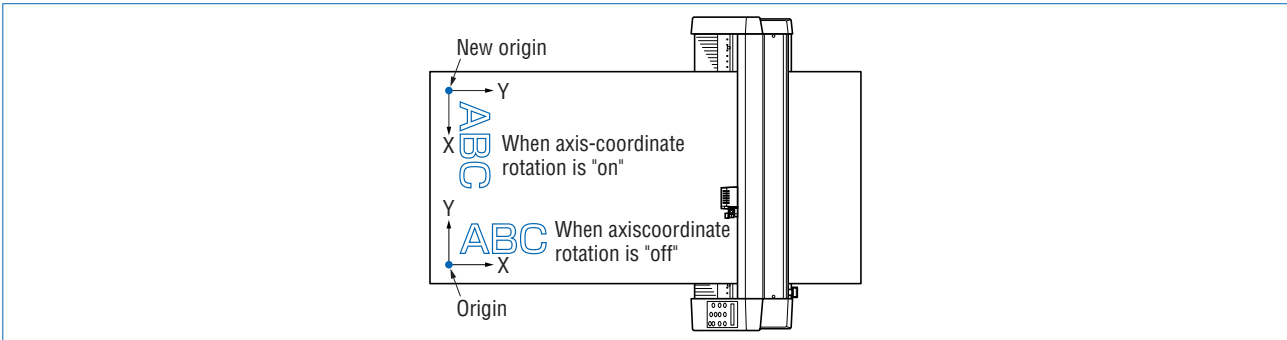
(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED  FUNC.
```

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ROTATE
```

(4) Press the ⏎ **(ENTER) key** to display the coordinate-axis rotation-setting menu.

```
ROTATE          OFF
```

Press the 🔼 or 🔽 **key** to select **"ON"** or **"OFF,"** and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

CHECKPOINT

This setting is retained in the memory even when the power is turned off.

Menu list (left side):

```
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
```

4.17 Sorting Settings

This function sorts and cuts or plots the cutting/plotting data stored in the buffer memory to minimize the amount of medium feed required. This is useful for data requiring a large number of movements on the drawing with the pen raised. If the data received has been sorted using the application software, sorting the data using the cutting plotter may require additional time. Turning this function off may speed up the process.

```
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED  FUNC.
```

(3) Press the ↵ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
SORT
```

(4) Press the ↵ **(ENTER) key** to display the sorting setting menu.

```
SORT            OFF
```

Press the ▲ or ▼ **key** to display the condition setting areas **"2"** through **"8"** or **"OFF"**. Select the condition setting area to be used for cutting, and then press the ↵ **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

⚡ CHECKPOINT

- This setting is retained in the memory even when the power is turned off.
- If data for which the cutting/plotting sequence has been set using the application software is received, the cutting/plotting sequence may be changed if this function is set to **"ON."** The function should be set to **"OFF"** in this case.

4.18 Specifying the SPACE REAR Distance

The SPACE REAR function specifies the trailing margin of the medium. When cross-cutting is performed on the basis of the TIMEOUT or SEPARATOR setting, cross-cutting is initiated at a coordinate position which is the maximum +X-axis position plotted plus the distance specified by the SPACE REAR setting.
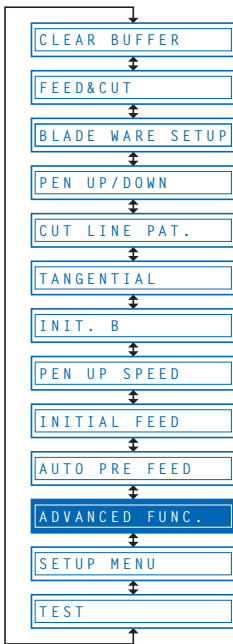
```
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED FUNC.
```

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
SPACE REAR
```

(4) Press the ⏎ **(ENTER) key** to display the SPACE REAR setting.

```
SPACE REAR= 12mm
```
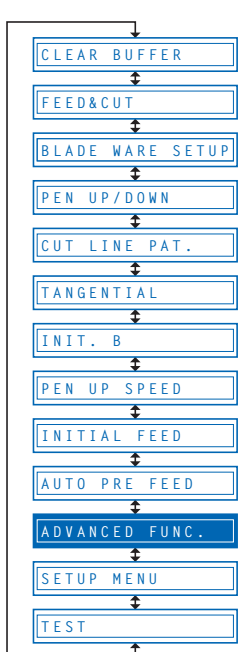
Press the ▲ or ▼ **key** to specify the distance of the trailing margin within the range of **"7 mm"** to **"30 mm"**, and then press the ⏎ **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

🔷 CHECKPOINT

The setting is retained in the internal memory even when the power is turned off.

4.19 Setting the OFFSET FORCE (Initial Cutting Force)

This function specifies the cutting force to be applied during initial blade control for checking the cutter-blade direction at the start of operation. This is used to control the rotation of the cutter-blade tip during initial blade control when thick media is cut, and is therefore not necessary to specify for media of regular thickness. The initial setting is "4." Increasing this setting increases the cutting force.

```
CLEAR BUFFER
    ↕
FEED&CUT
    ↕
BLADE WARE SETUP
    ↕
PEN UP/DOWN
    ↕
CUT LINE PAT.
    ↕
TANGENTIAL
    ↕
INIT. B
    ↕
PEN UP SPEED
    ↕
INITIAL FEED
    ↕
AUTO PRE FEED
    ↕
ADVANCED FUNC.
    ↕
SETUP MENU
    ↕
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED  FUNC.
```

(3) Press the ↵ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
OFFSET  FORCE
```

(4) Press the ↵ **(ENTER) key** to display the offset-force setting menu.

```
OFFSET  FORCE  4
```

Use the ▲ or ▼ **key** to select the required value within the range of **"1"** to **"31"**, and then press the ↵ **(ENTER) key** to confirm.

To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

⚓ CHECKPOINT

This setting is retained in the internal memory even when the power is turned off.

4.20 Setting the Initial Down Force

The initial down-force setting is useful when TANGENTIAL mode is selected (for the cutting of thick media). With a thick medium, additional time is required for the cutter blade to penetrate the medium fully, even when the necessary cutting force is applied. The cutting operation starts before the cutter blade has fully penetrated the medium, causing uncut sections to be left. When the initial down force is specified, this force is used as the cutting force immediately after lowering of the pen when TANGENTIAL mode is selected, enabling the cutter blade to penetrate the medium rapidly. (If the cutting force is 25 and the initial down force is 4, for example, the cutting force applied immediately after lowering of the pen will be 29.) Set the initial down force to suit the type of medium used by performing test cuts.

CLEAR BUFFER

FEED&CUT

BLADE WARE SETUP

PEN UP/DOWN

CUT LINE PAT.

TANGENTIAL

INIT. B

PEN UP SPEED

INITIAL FEED

AUTO PRE FEED

ADVANCED FUNC.

SETUP MENU

TEST

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

ADVANCED FUNC.

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

INIT.DOWN FORCE

(4) Press the ⏎ **(ENTER) key** to display the initial-cutting-force setting menu.

INIT.DOWN F.   0

Use the ▲ or ▼ **key** to select the required value within the range of **"0"** to **"20,"** and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

CHECKPOINT

The setting is retained in the internal memory even when the power is turned off.

4.21 Setting the STEP PASS

Reducing this setting increases image quality by enabling smooth cutter-blade tip control when arcs are cut. The STEP PASS setting specified is used as the unit for blade tip control, with blade tip control omitted for any data below the STEP PASS setting. If the STEP PASS setting is too high, the image cut may not be faithfully reproduced. Normally, the STEP PASS setting should be set to **"1."**
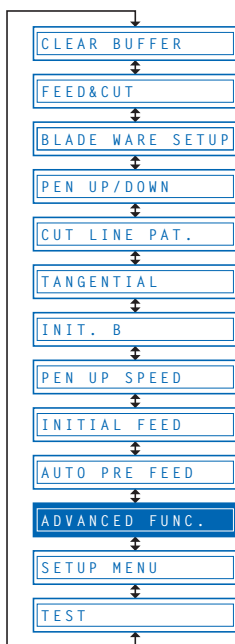
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1)   Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2)   Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED FUNC.
```

(3)   Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
STEP PASS
```

(4)   Press the ⏎ **(ENTER) key** to display the step-pass setting menu.

```
STEP PASS        1
```

Use the △ or ▽ **key** to select the required value within the range of **"0"** to **"20,"** and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5)   Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

☑ CHECKPOINT

This setting is retained in the internal memory even when the power is turned off.

4.22 Setting the OFFSET ANGLE

This function sets the reference value used to adjust the cutter-blade offset angle to correspond to the displacement of the traveling angle as defined by the coordinate movement data received. The cutter blade is controlled above the angle specified. Setting a high value will reduce the total cutting time, but the corners of drawings cut will become rounded and may not be cut precisely. The initial setting is **"30."**
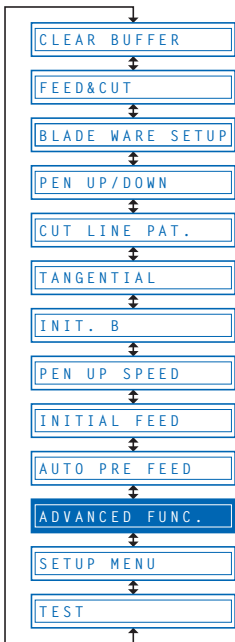
CLEAR BUFFER

FEED&CUT

BLADE WARE SETUP

PEN UP/DOWN

CUT LINE PAT.

TANGENTIAL

INIT. B

PEN UP SPEED

INITIAL FEED

AUTO PRE FEED

ADVANCED FUNC.

SETUP MENU

TEST

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

ADVANCED FUNC.

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

OFFSET ANGLE

(4) Press the ⏎ **(ENTER) key** to display the offset-angle setting menu.

OFFSET ANGLE   30

Use the 🔼 or 🔽 **key** to select the required value within the range of **"0"** to **"60,"** and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

🔖 CHECKPOINT

This setting is retained in the internal memory even when the power is turned off.

4.23 Setting the F_CUT Function

When the COMMAND setting is GP-GL, the F_CUT function is used to enable or disable cross-cutting. When the F_CUT function is enabled, cross-cutting of the medium will be performed even if the cutting plotter is sent a feed command instructing it not to cut the medium.
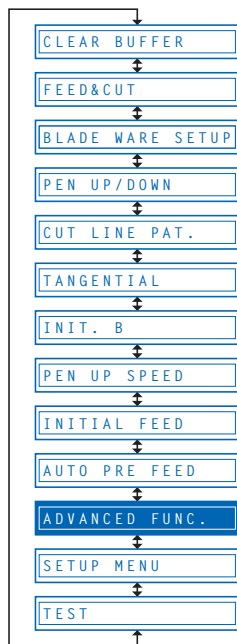
```
CLEAR BUFFER
    ↕
FEED&CUT
    ↕
BLADE WARE SETUP
    ↕
PEN UP/DOWN
    ↕
CUT LINE PAT.
    ↕
TANGENTIAL
    ↕
INIT. B
    ↕
PEN UP SPEED
    ↕
INITIAL FEED
    ↕
AUTO PRE FEED
    ↕
ADVANCED FUNC.
    ↕
SETUP MENU
    ↕
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
ADVANCED  FUNC.
```

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
F_CUT
```

(4) Press the ⏎ **(ENTER) key** to display the F_CUT setting.

```
F_CUT              ON
```

Press the ▲ or ▼ **key** to specify **"ON"** or **"OFF"**, and then press the ⏎ **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

🗸 CHECKPOINT

The setting is retained in the internal memory even when the power is turned off.

4.24 Setting the LENGTH UNIT

This function specifies the units for coordinates displayed in millimeters or inches.
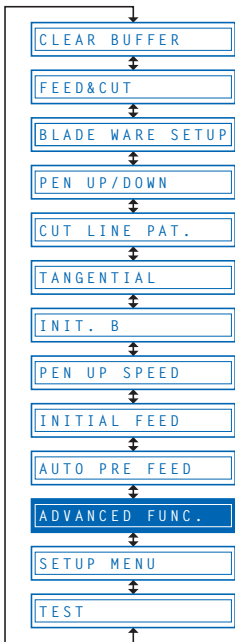
```
CLEAR BUFFER
   ↕
FEED&CUT
   ↕
BLADE WARE SETUP
   ↕
PEN UP/DOWN
   ↕
CUT LINE PAT.
   ↕
TANGENTIAL
   ↕
INIT. B
   ↕
PEN UP SPEED
   ↕
INITIAL FEED
   ↕
AUTO PRE FEED
   ↕
ADVANCED FUNC.
   ↕
SETUP MENU
   ↕
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the **(NEXT)** or **(PREV.) key** until the following menu is displayed.

    ADVANCED FUNC.

(3) Press the **(ENTER) key**, and then press the **(NEXT)** or **(PREV.) key** until the following menu is displayed.

    LENGTH UNIT

(4) Press the **(ENTER) key** to display the length-unit menu.

    LENGTH UNIT   mm

Press the ▲ or ▼ **key** to select **"mm"** or **"inch,"** and then press the **(ENTER) key** to confirm. To cancel the selection, press the **(NEXT)** or **(PREV.) key**.
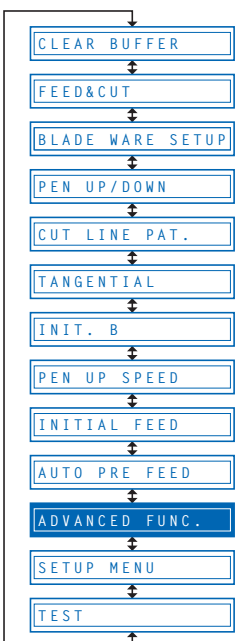
(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

CHECKPOINT
The setting is retained in the internal memory even when the power is turned off.

4.25 Adjusting the Distance Between the Pens

This function compensates for the difference in position between the cutter pen and the plotter pen. First of all, mount a plotter pen in the pen station and draw a cross. Next, mount a plotter pen in the cutter pen holder and draw a second cross (the reference cross). The difference between the two crosses can be adjusted by inputting corrective values. The setting range is within -3.0 mm to +3.0 mm, in 0.1 mm intervals.
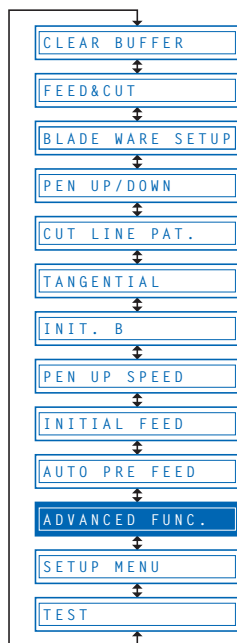
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1) Press the (PAUSE) key to switch to PAUSE mode.

(2) Press the (NEXT) or (PREV.) key until the following menu is displayed.

ADVANCED FUNC.

(3) Press the (ENTER) key, and then press the (NEXT)or (PREV.) key until the following menu is displayed.

PEN 1/2 ADJ.

(4) Press the (ENTER) key, and then wait for the Pen Compensation Pattern Prompt.

PLOT ADJ PAT.

(5) Press the ◀, ▶, ▲, and ▼ (POSITION) keys to move the pen to the pattern drawing start position, and then press the (ENTER) key to start drawing the pattern.

The cross drawn by the pen in Pen Holder 2 (the reference pattern)

Compensation value Y

The cross drawn by the pen in Pen Holder 1.

Compensation value X
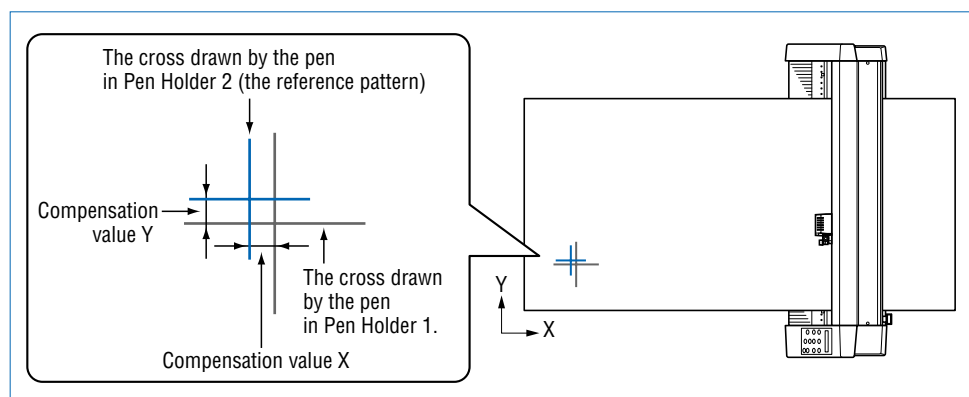
(6) After the crosses have been drawn, the display changes to the following.

X =   Y =

Measure the difference between the crosses, and then input the corrective values. Use the second cross as the reference, and input the values corresponding to the difference with the first cross drawn. (In the drawing above, for example, the difference is in the -X and +Y directions. In this case, input X = -**mm, and Y = +**mm.
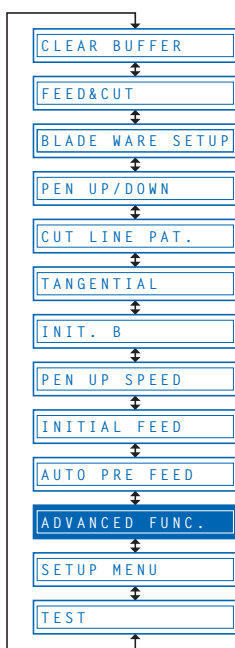Use the ◀ or ▶ keys to move the cursor to the items to be changed, and the ▲ or ▼ keys to select the select the values and then press the (ENTER) key. To cancel the selection, press the (NEXT) or (PREV.) key.

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

CHECKPOINT

The setting is retained in the internal memory even when the power is turned off.

4.26 Cutting/Plotting Using the Buffer Memory (COPY Function)

This function is used to make duplicate copies of cutting or plotting data that has been sent from the computer and is retained in the cutting plotter's internal memory.

CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
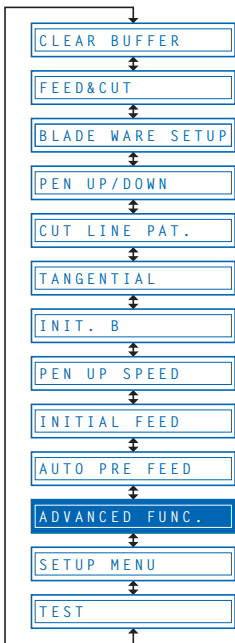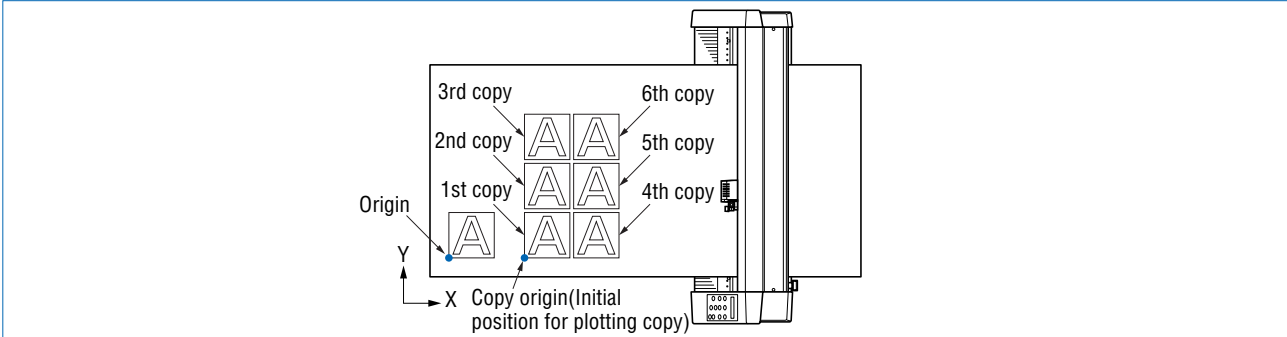
(1) Send the data to be copied to the cutting plotter, and cut or plot the data once.

(2) Use the ◀, ▶, ▲, and ▼ (POSITION) keys to move the pen to the starting position for cutting or plotting.

(3) Press the ❚❚ (PAUSE) key to switch to PAUSE mode.

(4) Press the 📖 (NEXT) or 📖 (PREV.) key until the following menu is displayed.

ADVANCED FUNC.

(5) Press the ↵ (ENTER) key, and then press the 📖 (NEXT) or 📖 (PREV.) key until the following menu is displayed.

COPY

(6) Press the ↵ (ENTER) key to display the copy-setting menu.

COPY COUNT   1

(7) Use the ▲ or ▼ keys to select the desired number of copies, and then press the ↵ (ENTER) key to confirm. To cancel the selection, press the 📖 (NEXT) or 📖 (PREV.) key.

(8) The cutting/plotting operation starts for the number of copies selected.

(9) To make further copies, replace the medium and repeat steps 2 to 6.

If the data to be copied does not fit within the cutting/plotting area, the following message is displayed in step 5.

CANNOT COPY

Use the ◀, ▶, ▲, and ▼ (POSITION) keys to change the initial copying position or load a medium with an area of sufficient size to fit the copied data.

⚡ CHECKPOINT

- If the initial cutting/plotting position was moved from the original origin, the new origin will also apply during the copying operation. To prevent wasteful use of the medium, the initial cutting/plotting position for the data should be as close as possible to the origin.

- If the cutting plotter receives another set of data during the copying operation, the operation will not be properly completed because the initial data is cleared during the operation. Do not send new data to the cutting plotter while copying is in progress.

- If new data is sent to the cutting plotter more than 10 seconds after the initial cutting data is sent, the original data will be cleared from the internal memory.

- Copying will not be possible if data exceeding 1.5 Mbytes is sent to the cutting plotter, as the data will cause the buffer memory to overflow.

4.27 User-specified Settings

This function loads the user-specified (CAD) settings. The COMMAND, ORIGIN POINT or STEP SIZE, RS-232C TRANSMISSION CONDITIONS, SEPARATOR, TIMEOUT and PAGE LENGTH settings are set here.
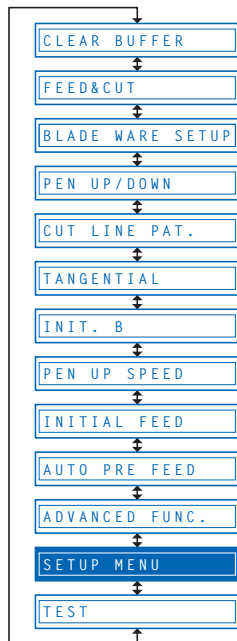
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

SETUP MENU

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

SELECT USER

(4) Press the ⏎ **(ENTER) key** to display the USER SETTINGS setting.

SELECT USER 1

Press the 🔼 or 🔽 **key** to specify a setting from **"1"** through **"8"**, and then press the ⏎ **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

CAD	1	2	3	4	5	6	7	8
COMMAND	HP-GL	HP-GL	GP-GL	HP-GL	HP-GL	HP-GL	HP-GL	HP-GL
STEP SIZE	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
ORIGIN POINT	L.L.	Center	L.L.	L.L.	L.L.	Center	Center	Center
SEPARATOR	PG	NR	J0	SP	PG	SP	None	None
TIMEOUT	0	0	120	120	120	10	0	0
PAGE LENGTH (mm)	1500	3000	1500	5000	5000	1500	5000	5000
TRANSMISSION CONDITIONS	9600, N81X	9600, N81X	9600, N81X	9600, N81X	9600, N81X	19200, N81X	9600, N81X	9600, N81X

4.28 Setting the Format of Data to be Received

Before data is sent from the computer, the format (command mode) of data sent by the application software must be checked. The cutting plotter accepts two data formats (command modes): GP-GL (Graphtec) and HP-GL commands. Set the command mode to suit the application used.

```
CLEAR BUFFER
   ↕
FEED&CUT
   ↕
BLADE WARE SETUP
   ↕
PEN UP/DOWN
   ↕
CUT LINE PAT.
   ↕
TANGENTIAL
   ↕
INIT. B
   ↕
PEN UP SPEED
   ↕
INITIAL FEED
   ↕
AUTO PRE FEED
   ↕
ADVANCED FUNC.
   ↕
SETUP MENU
   ↕
TEST
```
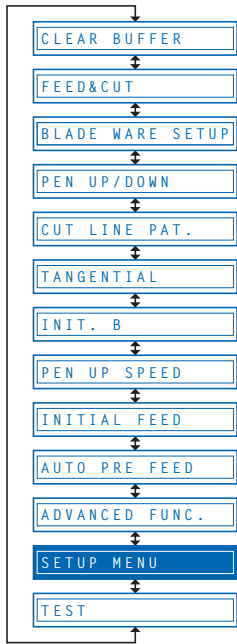
Setting the Command Mode

(1) Press the 𝗜𝗜 **(PAUSE) key** to switch to PAUSE mode.

(2) Press the **(NEXT)** or **(PREV.) key** until the following menu is displayed.

    ```
    SETUP  MENU
    ```

(3) Press the **(ENTER) key**, and then press the **(NEXT)** or **(PREV.) key** until the following menu is displayed.

    ```
    COMMAND
    ```

(4) Press the **(ENTER) key** to display the command-setting menu.

    ```
    COMMAND     GP-GL
    ```

(5) Press the ▲ or ▼ **key** to select **"GP-GL"** or **"HP-GL,"** and then press the **(ENTER) key** to confirm. To cancel the selection, press the **(NEXT)** or **(PREV.) key**.

(6) If **"GP-GL"** is selected, set the STEP SIZE. If **"HP-GL"** is selected, set the ORIGIN POINT. If a command different from that set previously is selected, the PAUSE mode is automatically canceled after STEP SIZE (GP-GL) or ORIGIN POINT (HP-GL) is set.

Setting the STEP SIZE

If the GP-GL command mode is set, the minimum unit of distance that the pen can travel can be changed to one of four settings: 0.01 mm, 0.025 mm, 0.05 mm, or 0.1 mm. The default setting is 0.1 mm, so change this setting if your application specifies a different step size.

(1) Set the command setting to **"GP-GL."**

    ```
    COMMAND     GP-GL
    ```

(2) Press the **(ENTER) key** to display the step-size setting menu.

    ```
    STEP SIZE 0.100mm
    ```

(3) Press the ▲ or ▼ **key** to select **"0.100 mm," "0.050 mm," "0.025 mm,"** or **"0.010 mm,"** and then press the **(ENTER) key** to confirm. To cancel the selection, press the **(NEXT)** or **(PREV.) key**.

(4) Press the 𝗜𝗜 **(PAUSE) key** to cancel PAUSE mode.

Setting the ORIGIN POINT

If the HP-GL command mode is set, the origin point can be set to the lower left or center. The default setting is the lower left, so change this setting if your application specifies a different origin position.

(1) Set the command setting to **"HP-GL."**

```
COMMAND      HP-GL
```

(2) Press the ⏎ **(ENTER) key** to display the origin-point setting.

```
ORIGIN PT    L.L.
```

(3) Press the 🔼 or 🔽 **key** to select **"L.L."** (LOWER LEFT) or **"CENTER,"** and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 🔲 **(NEXT)** or 🔲 **(PREV.) key**.

(4) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

4.29 Interface Settings

The interface conditions must be set if the RS-232C serial interface is used, to ensure that the data-transfer rate (baud rate), data length, and parity settings for the cutting plotter match those set in the application software or computer operating system. This section describes the interface conditions for the cutting plotter. For details on how to set the conditions for your application or computer operation system, refer to the manual provided with the application or operating system.
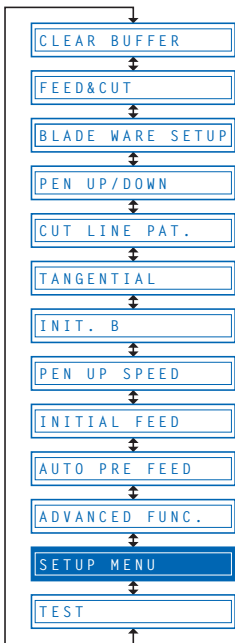
```
CLEAR BUFFER
  ↕
FEED&CUT
  ↕
BLADE WARE SETUP
  ↕
PEN UP/DOWN
  ↕
CUT LINE PAT.
  ↕
TANGENTIAL
  ↕
INIT. B
  ↕
PEN UP SPEED
  ↕
INITIAL FEED
  ↕
AUTO PRE FEED
  ↕
ADVANCED FUNC.
  ↕
SETUP MENU
  ↕
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
SETUP MENU
```

(3) Press the ↵ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
RS-232C
```

(4) Press the ↵ **(ENTER) key** to display the interface-condition setting menu.

```
▶9600 N 8 H
```

The current settings are displayed (from left): transfer rate (baud rate), parity, data length, and handshaking mode.
The baud rate can be set to **"19200," "9600," "4800," "2400," "1200," "600," or "300."**
The parity can be set to **"N"** (None), **"E"** (Even parity), or **"O"** (Odd parity).
The data length can be set to **"7"** or **"8"** bits.
The handshaking mode can be set to **"H"** (hard-wired handshaking) or **"X"** (Xon/Xoff handshaking). **"E"** (ENQ/ACK handshaking) can also be selected when the command mode is set to HP-GL.
All of these interface conditions must be set to match the corresponding settings in the application software and the computer operating system.
The parameter that can be changed is displayed immediately to the right of the ▶ mark. Use the ◀ or ▶ key to select the parameter to be changed, and use the ▲ or ▼ **key** to select the setting details. Press the ↵ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

4.30 Setting the PAGE LENGTH

This function sets the length of each page when long-axis cutting or plotting is performed using a roll medium. This should be set for long-axis cutting or plotting exceeding 5 m in length. The default setting is "5000 mm."
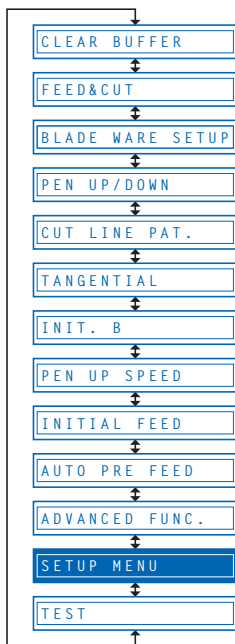
CLEAR BUFFER

FEED&CUT

BLADE WARE SETUP

PEN UP/DOWN

CUT LINE PAT.

TANGENTIAL

INIT. B

PEN UP SPEED

INITIAL FEED

AUTO PRE FEED

ADVANCED FUNC.

SETUP MENU

TEST

(1) Press the ▮▮ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

> SETUP MENU

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

> PAGE LENGTH

(4) Press the ⏎ **(ENTER) key** to display the page-length menu.

> L=05000mm

Use the ◀ or ▶ **key** to move the cursor to the digit to be changed. Use the ▲ and ▼ **keys** to increase or decrease the setting, and then press the ⏎ **(ENTER) key** to confirm. To cancel, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ▮▮ **(PAUSE) key** to cancel PAUSE mode.

🔖 CHECKPOINT

- This setting is retained in the memory even when the power is turned off.
- The cutting plotter's distance precision is guaranteed for page-feed lengths of up to 3 meters. Long-axis cutting over 5 meters is possible for lengths of up to 50 meters in the feeding direction.
- In the case of long-axis cutting, be particularly careful when loading the meduim. If the meduim is loaded at even a slight angle, it may come loose from the rollers that hold it in place.
- For long-axis cutting using roll media, pull out the length of the medium to be used, or use the pre-feed operation (see "4.10 Specifying the INITIAL FEED Length" and "4.11 Setting AUTO PRE-FEED").

4.31 Setting the SEPARATOR Function

The SEPARATOR function specifies a command for use as the separator. While receiving data from the computer, the cutting plotter considers the receipt of the command specified by the SEPARATOR setting as an indication that a complete set of data has been sent. After plotting all of the data received prior to receipt of such command, the cutting plotter performs cross-cutting of the medium.
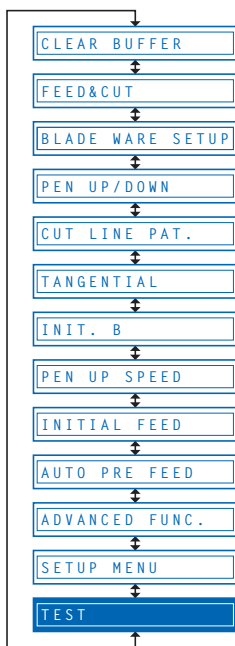
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
SETUP  MENU
```

(3) Press the ↵ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
SEPARATOR
```

(4) Press the ↵ **(ENTER) key** to display the SEPARATOR setting.

```
SEPARATOR  =
```

Press the ▲ or ▼ **key** to specify one of the available SEPARATOR settings for the currently selected COMMAND mode and then press the ↵ **(ENTER) key**. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

✔ CHECKPOINT

The setting is retained in the internal memory even when the power is turned off.

4.32 Setting the TIMEOUT Function

When data is being input to the cutting plotter via the interface, the cutting plotter considers any pause in data transmission that is equal to or longer than the specified TIMEOUT interval as a indication that a complete set of data has been sent and performs cross-cutting of the medium.
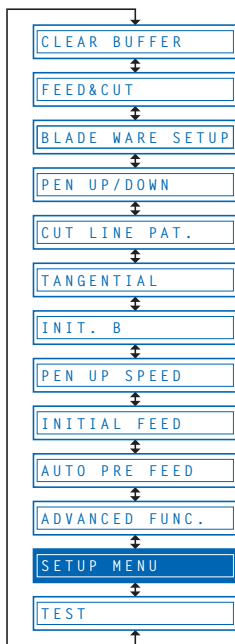
```
CLEAR BUFFER
FEED&CUT
BLADE WARE SETUP
PEN UP/DOWN
CUT LINE PAT.
TANGENTIAL
INIT. B
PEN UP SPEED
INITIAL FEED
AUTO PRE FEED
ADVANCED FUNC.
SETUP MENU
TEST
```

(1) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(2) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

> SETUP MENU

(3) Press the ⏎ **(ENTER) key**, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

> TIMEOUT

(4) Press the ⏎ **(ENTER) key** to display the TIMEOUT setting.

> TIMEOUT = 0

Press the 🔺 or 🔻 **key** to specify one of the available TIMEOUT settings and then press the ⏎ **(ENTER) key**.

"0", **"1"**, **"2"**, **"3"**, **"5"**, **"10"**, **"20"**, **"30"**, **"60"**, **"120"** (seconds)

To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(5) Press the ⏸ **(PAUSE) key** to cancel PAUSE mode.

✪ CHECKPOINT

- The setting is retained in the internal memory even when the power is turned off.
- If "0" has been selected, the TIMEOUT function is disabled.

4.33 TEST Mode

The cutting plotter has four test modes: **"Condition print"** (COND. PAT.) for the printing of setting details, **"Self-test"** for checking accuracy, **"Dump mode"** for checking data transfers from the computer, and **"Cutting demo"** (CUT. DEMO) for the cutting of a demo pattern. These should be used to check the various settings and to check for problems.

```
CLEAR BUFFER
    ↕
FEED&CUT
    ↕
BLADE WARE SETUP
    ↕
PEN UP/DOWN
    ↕
CUT LINE PAT.
    ↕
TANGENTIAL
    ↕
INIT. B
    ↕
PEN UP SPEED
    ↕
INITIAL FEED
    ↕
AUTO PRE FEED
    ↕
ADVANCED FUNC.
    ↕
SETUP MENU
    ↕
TEST
```
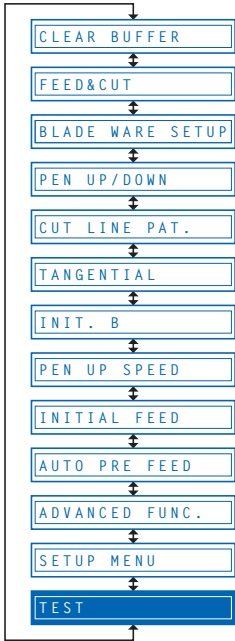
Condition-List Printing

This function prints out the setting details currently in use.

(1) Mount a plotting pen in the pen carriage, and set the conditions to suit the pen used (e.g., force, pen speed settings). Please see Section 3.1 "Setting the Cutter Pen Conditions".

(2) Load an A3-size or larger medium.

    If two A4 sheets are loaded side-by-side in portrait orientation, printing is performed across the width of both sheets.

(3) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(4) Press the 🖽 **(NEXT)** or 🖽 **(PREV.) key** until the following menu is displayed.

```
TEST
```

(5) Press the ↵ **(ENTER) key** to display the test-mode submenu.

```
COND. PAT.
```

(6) Press the ↵ **(ENTER) key** to start printing the condition list.

⚠ **CAUTION**

> The pen carriage begins moving as soon as this function is set. Keep your hands and other objects away from the cutting plotter's moving parts.

Self-Test-Pattern Printing

This function prints out a self-test pattern to check the accuracy of the cutting plotter.

(1) Mount a plotting pen in the pen carriage, and set the conditions to suit the pen used (e.g., force, pen speed settings).

(2) Load an A3-size or larger medium.

(3) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(4) Press the 🖽 **(NEXT)** or 🖽 **(PREV.) key** until the following menu is displayed.

```
TEST MODE
```

(5) Press the ↵ **(ENTER) key** to display the test-mode submenu, and then press the 🖽 **(NEXT)** or 🖽 **(PREV.) key** until the following menu is displayed.

```
SELF TEST
```

(6) Press the ↵ **(ENTER) key** to start printing the self-test pattern.

(7) When the self-test pattern has been printed, turn the power off and then on again.

⚠ **CAUTION**

> The pen carriage begins moving as soon as this function is set. Keep your hands and other objects away from the cutting plotter's moving parts.

Dump Mode

This function checks whether data is sent correctly from the computer. If the output data does not match the program after the dump list has been output, check the transfer conditions and connections.

(1) Mount a plotting pen in the pen carriage, and set the conditions to suit the pen used (e.g., force, pen speed settings).

(2) Load an A4-size or larger medium.

(3) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(4) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
TEST MODE
```

(5) Press the ⏎ **(ENTER) key** to display the test-mode submenu, and then press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
DUMP
```

(6) Press the ⏎ **(ENTER) key** to switch to dump mode.

```
CHAR DUMP MODE
```

(7) When data is sent to the cutting plotter in this mode, a dump list is printed out. To exit the dump mode, turn on the power again.

CHECKPOINT

The dump list is printed out as ASCII character codes. Characters without codes will be printed as small 2-digit figures. Output data for READ-type commands will be output as dummy data, except for cutting-plotter status output.

⚠ CAUTION

The pen carriage begins moving as soon as this function is set. Keep your hands and other objects away from the cutting plotter's moving parts.

Cutting Demo

This function cuts a cutting-demo pattern.

(1) Mount a plotting pen in the pen carriage, and set the conditions to suit the pen used (e.g., force, pen speed settings).

(2) Load a film for cutting.

(3) Press the ⏸ **(PAUSE) key** to switch to PAUSE mode.

(4) Press the 📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
TEST MODE
```

(5) Press the ⏎ **(ENTER) key** to display the test-mode submenu, and then press the (📖 **(NEXT)** or 📖 **(PREV.) key** until the following menu is displayed.

```
CUT DEMO
```

(6) Press the ⏎ **(ENTER) key** to start cutting the demo pattern.

⚠ CAUTION

The pen carriage begins moving as soon as this function is set. Keep your hands and other objects away from the cutting plotter's moving parts.

CHAPTER 5

Setting and Using the Special Functions

5.1 Description of Special Functions A

The cutting plotter is provided with the special functions described below. These functions are specified only in special situations, and are not normally used.

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

This function enables or disables the ":" and ";" commands when the COMMAND setting is GP-GL. If the first part of the data is lost, these commands may be having an adverse effect. In this case, set this function to DISABLED (the default setting is ENABLED).

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

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

Model ID Response (when the COMMAND setting is HP-GL)

This function sets the response to the "OI" command when the COMMAND setting is HP-GL.
When 7550 is set, the "OI" command response is 7550.
When 7586 is set, the "OI" command response is 7586.
(The default setting is 7586.)

SETTING PRIORITY

This function sets whether the cutting plotter places priority on the cutting conditions specified through command input from the computer or through manual settings (on the cutting-plotter control panel).
When MANUAL is selected, cutting is performed using the cutting conditions set at the control panel, and cutting conditions sent from the computer are ignored.
When COMD is selected, cutting is performed using the cutting conditions specified in a received cutting-condition command. If no commands are received, cutting is performed using the cutting conditions set at the control panel.
(The default setting is COMD.)

Enabling/Disabling PEN UP MOVE

This function sets whether the pen will travel to each point specified or only from the initially specified point to the last specified point when consecutive commands are received specifying pen movement while it is raised.
When ENABLED is selected, the pen travels consecutively to each coordinate specified by the data received.
When DISABLED is selected, the pen travels directly from the initially specified point to the last specified point.
(The default setting is DISABLED.)

Enabling/Disabling the Media Sensors

This function sets the media sensors that detect the size of the medium in the feed direction.
When ENABLED is selected, the feed-direction media sensors are enabled.
When DISABLED is selected, the feed-direction media sensors are disabled.
(The default setting is ENABLED.)

Enabling/Disabling the Home Sensors

This function sets the home sensors that detect the width of the medium.
When ENABLED is selected, the home sensors are enabled.
When DISABLED is selected, the home sensors are disabled.
(The default setting is ENABLED.)

Setting the PARALLEL I/F Mode

Parallel (Centronics-compatible) interfaces have various timing methods for their signal lines. If the signal timings do not match, data cannot be received accurately via the Centronics-compatible parallel interface.
This function allows the timing of the Centronics-compatible parallel interface to be changed by selecting Timing 1 or 2.
(The default setting is 1.)

Circle-Command Resolution Setting (when the COMMAND setting is HP-GL)

This function sets whether the resolution is automatically set or fixed at a constant 5 degrees when a cutting-plotter circle command is output while the COMMAND setting is HP-GL.
(The default setting is DEFAULT.)

Enabling/Disabling Blade Wear Detection

When ENABLED is selected, the blade wear-detection setting is enabled and the blade wear-detection setting menu is displayed in the PAUSE menu.
When DISABLED is selected, the blade wear-detection setting is disabled, and the blade wear-detection setting menu is removed from the PAUSE menu and is not displayed. For details on wear detection, refer to see "4.4 Blade Wear Detection."
(The default setting is DISABLED.)

Setting the Cross-Cut Force

The cross-cut force can be set in the range "1" to "31".
The default value is 20.

CHECKPOINT

If the media or home sensors have been disabled (set to OFF), be sure to specify the cutting/plotting area (see "4.11 Setting the Cutting/Plotting Area"). If the cutting/plotting area is not specified, the cutting mat may be damaged.

5.2   Setting Special Functions A

(1)   Turn on the cutting plotter while holding down the ▼ **key**. The menus for setting the special functions are displayed.

In GP-GL command mode

```
┌────────────────────────┐
│ ":", ":" ENABLED       │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ "W"         PEN UP     │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ PRIORITY      COMD     │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ UP MODE DISABLED       │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ MEDIA      ENABLED     │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ HOME       ENABLED     │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ PARALLEL I/F   1       │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ B.W.S.   DISABLED      │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ CROSSCUT FORCE20       │
└────────────────────────┘
```

In HP-GL command mode

```
┌────────────────────────┐
│ MODEL       7586       │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ PRIORITY      COMD     │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ UP MODE DISABLED       │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ MEDIA      ENABLED     │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ HOME       ENABLED     │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ PARALLEL I/F   1       │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ CIRCLE    DEFAULT      │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ B.W.S.   DISABLED      │
└────────────────────────┘
           ↕
┌────────────────────────┐
│ CROSSCUT FORCE20       │
└────────────────────────┘
```
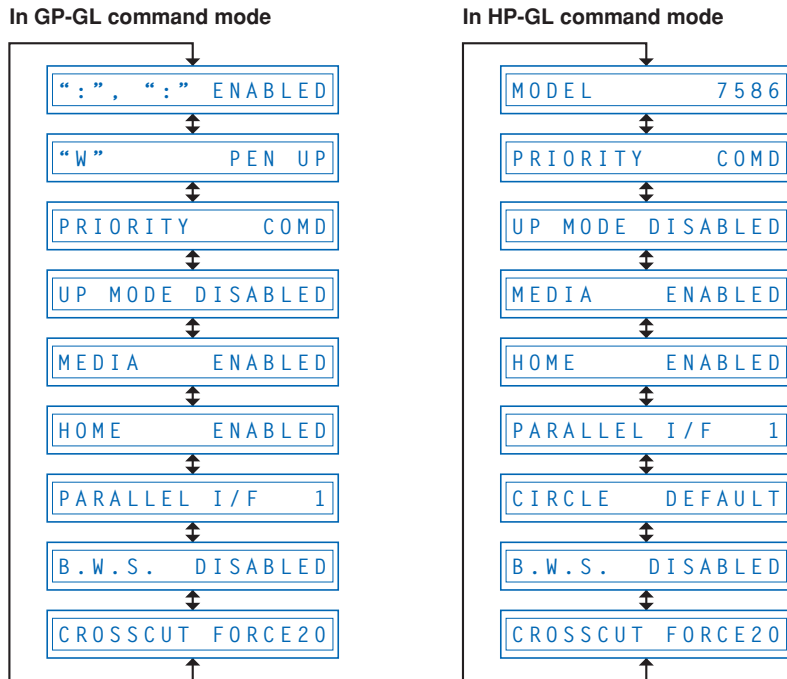
(2)   Scroll up or down to select the required menu using the 🔼 **(NEXT)** or 🔽 **(PREV.) key**.

(3)   Select the setting details using the ▲ or ▼ **key**, and press the ⏎ **(ENTER) key** to register the setting. To cancel the selection, press the **(NEXT)** or **(PREV.) key**. The next menu is displayed.

(4)   Once all the settings have been made, turn off the cutting plotter.

5.3   Description of Special Functions B

These functions are specified only in the special situations described below, and are not normally used.

Display Language Setting (MENU LANGUAGE SELECTION)

This function sets the language used on the display. One of six languages can be selected: English, French, German, Italian, Spanish, or Japanese.

5.4   Setting Special Functions B

(1)   Turn the cutting plotter on while holding down the ⏎ **(ENTER)** and ⊕ **(ORIGIN) keys** simultaneously. The special functions B setting menu is displayed.

```
DISPLAY    ENGLISH
```

(2)   Use the ▲ or ▼ **key** to select the desired display language, and then press the ⏎ **(ENTER) key** to confirm. To cancel the selection, press the 📖 **(NEXT)** or 📖 **(PREV.) key**.

(3)   Once all the settings have been made, turn off the cutting plotter.

CHAPTER 6

Troubleshooting

6.1 The Cutting Plotter Does Not Operate When Turned On

Symptom	Cause	Solution
The STATUS lamp on the control panel does not light up.	Power is not being fed to the cutting plotter.	Check to confirm that the power cord is securely connected to the cutting-plotter AC line inlet and the electrical outlet.
The STATUS lamp on the control panel lights up, but nothing appears on the display panel.	The cutting plotter is defective.	Contact your sales representative or nearest Graphtec dealer.

6.2 The Cutting Plotter Does Not Operate Correctly

Symptom	Cause	Solution
OFFSCALE is displayed when data is received. Some areas cannot be cut.	The data received lies outside the cutting/plotting area set.	Set the cutting/plotting area. Check the page-length setting.
	The data received is larger than the cutting/plotting area set.	Replace with a larger-size medium. Reduce the data size.
Cannot maintain the cutting conditions **Cannot change the cutting conditions**	The cutter-pen condition-setting priority is set to PROGRAM.	Set the condition setting priority to MANUAL.
	ENTER was not pressed after the settings were changed.	Check the operation and reset the cutter-pen conditions.
"LOAD MEDIA" is displayed even when the medium has been loaded.	The medium is semi-transparent and is not detected by the media sensors.	Set the media-sensor setting to DISABLE, and set the cutting/plotting area.
	The medium is not detected by the media sensors due to strong reflected light.	Change the lighting direction and avoid direct sunlight.
	The medium is not loaded so that it passes the media sensors.	Load so that the medium passes over the media sensors.
	The right-hand pinch roller is not positioned over the right-hand long grit roller.	Position the right-hand pinch roller over the right-hand long grit roller.
The medium is skewed.	The left-hand pinch roller is not positioned over the left-hand grit roller.	Position the left-hand pinch roller over the left-hand grit roller.
	The medium was loaded at an angle.	Reload the medium.
	The length of the medium to be cut was not drawn out first when the medium was loaded.	Draw out the required length of roll medium to be used.
The medium is suddenly fed forward.	The selections for medium loading are incorrect.	Check the medium selection (ROLL1 PRESS ENTR, ROLL2 PRESS ENTR, SHEET PRESS ENTR).
Abnormal noise is generated by the cutter during cutting.	The cutter plunger tip is in contact with the medium.	Adjust the cutter-blade extension. Reduce the cutting force.

6.3 The Cutting Results Are Unsatisfactory

Symptom	Cause	Solution
The cut corners are too rounded or too pointed.	The cutter offset does not match the blade type used.	Adjust the cutter offset value. Corners are rounded: Increase the value. Corners are pointed: Reduce the value.
The medium curls up at the corners.	The blade offset angle is too small.	Increase the offset angle.
	The blade is extended too far.	Adjust the blade extension length.
	The cutter offset does not match the blade type used.	Adjust the offset.
	The cutting speed is too high.	Reduce the cutting speed.
	The blade is dull.	Replace the cutter blade.
Only the initial section cut is satisfactory.	The cutter blade is not rotating smoothly in the holder.	Clean inside the holder.
	The offset force is insufficient.	Increase the offset force.
	The CB09UA spring is missing.	Replace the blade with a spring attached.
The cutter blade does not completely cut lines that should be solid (blade skips).	The blade is extended too far.	Adjust the blade extension length.
Solid lines are not cut at a constant depth (mild skipping).	The cutting speed is too high.	Reduce the cutting speed.
Curved lines have coarse resolution.	The cutting data is too coarse.	Correct so that the application data is output with greater detail.
	The blade offset angle is too small.	Increase the offset angle.
Characters or complex figures are deformed.	The step-pass setting is too large.	Reduce the step-pass setting.
The cutting start and end points for figures do not match.	The data is not connected.	Check by plotting using a pen, and correct the data.
	The offset force is too low.	Increase the offset force.
	The film is too flimsy.	Use a stiffer film.
	The cutter blade is not rotating smoothly in the holder.	Clean inside the holder.
Cannot cut to the specified size	The step size for the software and the cutting plotter do not match.	Adjust the step-size settings so that they match.
	Scaling has been specified in the software.	Check the scaling.
The length cut differs from that specified.	The medium is slipping.	Reduce the cutting speed. Reduce the pen-up speed.
	The distance correction is not correct.	Adjust the distance correction.
The medium is discolored where the blade cut.	The cutter plunger tip is in contact with the medium.	Adjust the blade extension length. Reduce the cutting force.
Characters and lines are deformed when plotted using the pen.	A blade has been selected in the cutter-pen settings.	Select PEN.

6.4   An Error Message Was Displayed

Symptom	Cause	Solution
CURRENT LIMIT or POSITION ERROR is displayed. **The POWER lamp flickers.**	The cutting conditions are not suitable for the medium being cut.	Reduce the cutting speed. Reduce the cutting force.
	Excessive load is causing the current to the motor to exceed the rated value.	Remove the obstruction and turn the cutting plotter back on.
	The pen carriage movement is being obstructed.	
	The pen carriage was subjected to external pressure during cutting.	
	Scraps of the medium in the moving parts are impeding operation.	
	The stock shaft stopper is set to the LOCK position.	Set the stock shaft stopper to the FREE position.
	If this problem occurs frequently, contact your sales representative or nearest Graphtec dealer.	
SPEED ERROR is displayed. **The POWER lamp flickers.**	The pen carriage was subjected to external pressure after the power was turned on.	Turn the cutting plotter off and then back on again.
	The internal speed control is faulty.	
	If this problem occurs frequently, contact your sales representative or nearest Graphtec dealer.	

If any of the following command error messages appear, they are nearly always caused by one of the following two reasons:

• The software or host-computer settings have been changed.

• The cutting-plotter interface settings have been changed.

Solutions

• Configure the settings in the software menu so that the menu can control the cutting plotter.

• Set the host-computer interface conditions correctly.

• Set the cutting-plotter interface conditions correctly.

Error messages in GP-GL command mode

Error message	Cause	Solution
GP-GL ERROR 1	An unrecognizable command was received.	
	Noise was received when the computer was turned on.	Press the ENTER key to cancel the error.
	The software command settings for controlling the cutting plotter have been changed.	Set the software command settings for controlling the cutting plotter.
	The data-transmission settings have been changed in the interface settings.	Set the correct data-transmission conditions.
GP-GL ERROR 2	The command terminator is incorrect.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
	The data-transmission settings have been changed in the interface settings.	Set the correct data-transmission conditions.
GP-GL ERROR 3	The command delimiter is incorrect.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
	The data-transmission settings have been changed in the interface settings.	Set the correct data-transmission conditions.
GP-GL ERROR 4	The command parameter exceeds the permissible range.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
	The data-transmission settings have been changed in the interface settings.	Set the correct data-transmission conditions.
GP-GL ERROR 5	An error occurred in the reception of data within the interface.	
	The software command settings for controlling the cutting plotter have been changed.	Set the software command settings for controlling the cutting plotter.
	The data-transmission settings have been changed in the interface settings.	Set the correct data-transmission conditions.

Error messages in HP-GL command mode

Error message	Cause	Solution
HP-GL ERROR 1	An unrecognizable command was received.	
	Noise was received when the computer was turned on.	Press the ENTER key to cancel the error.
	The software command settings for controlling the cutting plotter have been changed.	Set the software command settings for controlling the cutting plotter.
	The data-transmission settings have been changed in the interface settings.	Set the correct data-transmission conditions.
HP-GL ERROR 2	The command was executed with the wrong parameters.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
	The data-transmission settings have been changed in the interface settings.	Set the correct data-transmission conditions.
HP-GL ERROR 3	The command parameter is incorrect.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
HP-GL ERROR 5	An unrecognizable character set was specified.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
HP-GL ERROR 6	The command coordinates specified are outside the cutting/plotting area.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
HP-GL ERROR 7	The buffer overflowed when the downloadable-character buffer or polygon buffer was used.	
	The software settings for the output device have been changed.	Set the software command settings for controlling the cutting plotter.
HP-GL ERROR 10	Another output command was executed while a command was already being executed.	
	An invalid command was received following an ESC code.	Set the software command settings for controlling the cutting plotter.
	An invalid byte was received within a device control command.	
	A parameter outside the permissible range was speci-fied in an I/O command.	
	There were too many parameters in an I/O command.	
	A framing error, parity error, or overrun error occurred.	Set the correct data-transmission conditions.
	The interface buffer overflowed.	

Appendix

Appendix A Main Specifications

Item	CE3000-120AP
CPU	32-bit
Configuration	Grit-rolling
Drive system	Digital servo
Maximum cutting area	1164 x 50 m (when the 3-inch core is used)
Maximum guaranteed cutting area	1164 x 3 m (when the 3-inch core is used)[*1]
Compatible media widths	160 to 270, 300 to 400, 440 to 540, 580 to 680, 710 to 810, 850 to 950, 990 to 1090, 1120 to 1220 mm (the effective drawing area is the maximum obtainable area for the corresponding medium width)
Compatible maximum media width	3-inch core: 1220 mm
	2-inch core: 1180 mm
Maximum loadable media length	100 m/roll
Media types	Fine quality paper for apparel patterns (64 to 130 g/m^2)
	Roll media diameter: 2-inch, 3-inch
Maximum cutting speed	60 cm/s
Maximum acceleration	13.9 m/s^2 (45° direction)
Specifiable cutting speeds	1 to 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 cm/s
Cutting force	20 to 300 gf (31 levels)
Mechanical resolution	0.005 mm
Programmable resolution	GP-GL: 0.1/0.5/0.025/0.01 mm
	HP-GL™ [*2]: 0.025 mm
Repeatability precision	Within 0.1 mm/2m[*3]
No. of pens mountable	2
Compatible cutter blade type	Supersteel
Compatible pen type	Water-based fiber-tip pens
Interfaces	RS-232C/Centronics/USB
Buffer capacity	2 MB
Command modes	GL-GP, HP-GL™ (control-panel selectable)
Display panel	Liquid crystal (16 characters x 1 row)
Rated power supply	100 to 120 VAC, 200 to 240 VAC, 50/60 Hz
Power consumption	100 VA
Operating environment	10 to 35C, 35 to 75% RH
Conditions for guaranteed precision	16 to 32C, 35 to 70% RH
External dimensions (W x D x H)	Approx. 1487 x 1020 x 1189 mm[*4]
Weight	43 kg[*4]

*1 Depending on the shape of the roll stoppers, the width will be 1140 mm when a 2-inch core is used.

*2 HP-GL™ is a registered trademark of Hewlett-Packard Company

*3 When using Graphtec-specified media and cutting conditions.

*4 Includes the stand and basket
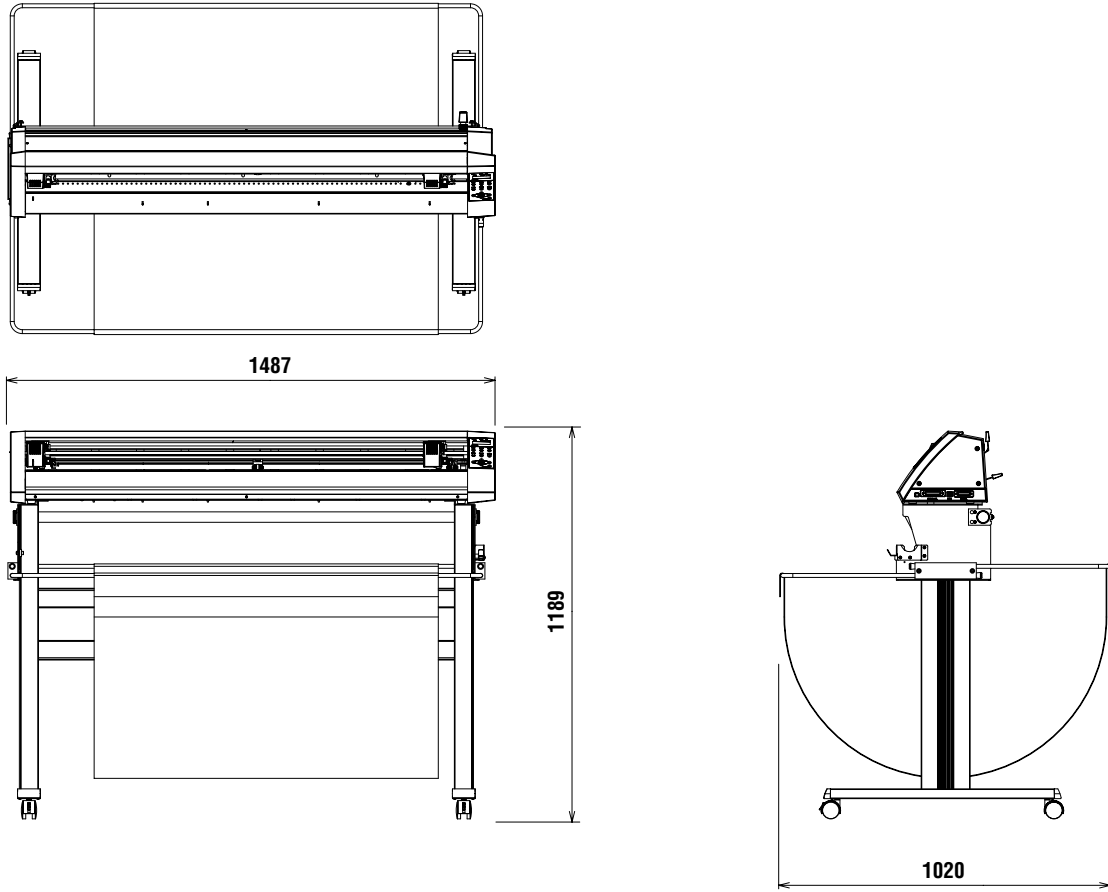
Appendix B Options and Supplies

Options

Designation	Part No.	Description
Loupe	PHP-61LOUPE	Loupe with 6x magnification

Supplies

Designation	Part No.	Description
Fine quality pattern paper	PR950-SQ-100	950 mm x 100m: Roll media
	PR594-SQ-50	594 mm x 50m: Roll media
Cutter holder	PHP32-CB09N	1 holder for the 0.9-mm-diameter supersteel blade
	PHP32-CB15N	1 holder for the 1.5-mm-diameter supersteel blade
Cutter blade	CB09UA-5	Set of 5 0.9-mm-diameter supersteel blades
	CB15U-5	Set of 5 1.5-mm-diameter supersteel blades
	CB15UB-5	Set of 5 1.5-mm-diameter supersteel blades for cutting detailed characters
Water-based fiber-tip pen	KF550-F8	1 pen each in red, black, violet, brown, blue, green, orange, and pink
	KF550-S1	2 black pens and 1 pen each in 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 fiber-tip pens are also available in single colors (violet, brown, orange, or pink) or intermediate shades.	

Appendix C External Dimensions

1487

1189

1020

Units: mm
Dimensional accuracy: 5 mm

Appendix D Menu Tree

CLEAR BUFFER	**4.2 Clearing the Buffer Memory**
FEED&CUT	**4.3 Setting the FEED & CUT function**
BLADE WARE SETUP	**4.4 Blade Wear Detection (When Blade Wear Setup is On)**
PEN UP/DOWN	**4.5 Raising and Lowering the Pen**
CUT LINE PAT.	**4.6 Selecting the Type of Perforated Line.**
TANGENTIAL	**4.7 Setting TANGENTIAL Mode**
INIT. B	**4.8 Selecting the Blade Tip's Initial Position**
PEN UP SPEED	**4.9 Setting the PEN UP SPEED**
INITIAL FEED	**4.10 Specifying the INITIAL FEED Length**
AUTO PRE FEED	**4.11 Setting AUTO PRE-FEED**

⏎ **(ENTER) key**

ADVANCED FUNC.	
SETUP MENU	
TEST	**4.33 TEST Mode**

⏎ **(ENTER) key**

SELECT USER	**4.27 User-specified Settings**
COMMAND	**4.28 Setting the Format of Data to be Received**
RS-232C	**4.29 Interface Settings**
PAGE LENGTH	**4.30 Setting the PAGE LENGTH**
SEPARATOR	**4.31 Setting the SEPARATOR Function**
TIMEOUT	**4.32 Setting the TIMEOUT Function**

DISTANCE ADJUST	**4.12 Distance Adjustment**
AXIS ALIGNMENT	**4.13 Aligning the Coordinate Axes**
PLOT AREA	**4.14 Setting the Cutting/Plotting Area**
EXPAND	**4.15 Expanding the Cutting/Plotting Area**
ROTATE	**4.16 Rotating the Coordinate Axes**
SORT	**4.17 Sorting Settings**
SPACE REAR	**4.18 Specifying the SPACE REAR Distance**
OFFSET FORCE	**4.19 Setting the OFFSET FORCE (Initial Cutting Force)**
INIT. DOWN FORCE	**4.20 Setting the Initial Down Force**
STEP PASS	**4.21 Setting the STEP PASS**
OFFSET ANGLE	**4.22 Setting the OFFSET ANGLE**
F_CUT	**4.23 Setting the F_CUT Function**
LENGTH UNIT	**4.24 Setting the LENGTH UNIT**
PEN 1/2 ADJ	**4.25 Setting the Distance Compensation Between the Pens**
COPY	**4.26 Cutting/Plotting Using the Buffer Memory (COPY Function)**

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