FCX4000 SERIES

CUTTING PLOTTER

USER'S MANUAL

MANUAL NO.FCX4000-UM-152

GRAPHTEC

TO ENSURE SAFE AND CORRECT USE

- To ensure the safe and correct use of your machine, 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 machine.
- 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 machine 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. Their display and meaning is as following. Be sure to gain a full understanding of the meaning of them 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 machine.

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 ⃠ symbol 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.

Preface

Thank you for choosing a Graphtec FCX4000 Series cutting plotter.
The FCX4000 Series cutting plotters employ a digital servo drive system to achieve high-speed and high-precision cutting.
To ensure high cutting quality and optimal productivity, be sure to read this User's Manual thoroughly prior to use.

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) Not with standing 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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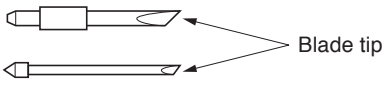
Special Precautions on Handling Blades

Sharp cutter blades are used with this plotter. Handle the cutter blades and plungers with care to prevent bodily injury.

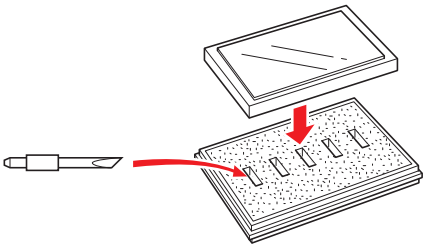
The cutter blade must be discarded correctly according to local regulations/laws.

Cutter Blades

Cutter blades are very sharp. While handling a cutter blade or cutter pen, be careful to avoid cutting your fingers or other parts of your body. Promptly return used blades to the cutter case provided.

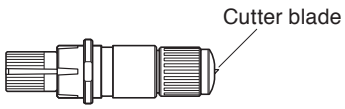


When the case is completely filled, discard the used blades together with the case.



Cutter Plungers

The tip consists of a sharp blade. Be sure not to extend it too far. Moreover, when you are not using the cutter plunger, make sure that the blade is fully retracted.



After Mounting the Cutter Pen

After the power has been turned on, and during operation, do not touch the pen tip. It is dangerous.

After Turning on the Cutting Plotter

During operations, immediately after completion of operations, and when setting the cutting plotter functions, the pen carriage, Y bar, and other parts which are not fixed, may move suddenly. Do not let your hands, hair, or clothing get too close to the moving parts or within their range of movement. Do not place any foreign objects in or near these areas either. If your hands, hair, clothing, or the like get caught in, or wrapped around moving parts, you may be injured and the machine may be damaged.

Machine Caution Label

The following Warning Label is located on this cutting plotter. Please observe all the warning on the label.

Precautions for electrostatic panel

If you accidentally cut the electrostatic panel surface, you may get an electric shock.

In this case, contact your sales representative or nearest Graphtec vendor.

Although you may feel rubber smell, it is not a malfunction of the product. As you use it, the smell gradually reduces.

There may be the bloom on the surface of the electrostatic panel. In this case, wipe the panel surface gently with a dry, soft cloth.

Be careful not to adhere the neutral detergent to the panel surface. If it adheres, electrostatic adsorption is decreased or lost.

About the words and phrases in this text

- In this instruction manual, the word "plot" refers to operating the machine and using either the plotting pen or the cutter plunger to cut.
- In this instruction manual, the word "media" refers to paper, roll media, sheet media, or marking film.

Prior to use

Be sure to read the attached TO ENSURE SAFE AND CORRECT USE prior to use. Otherwise, it may cause an unexpected accident or fire.

Precautions when using the curled media

If the media floats, secure the four corners using a drafting tape.

When the media is floating, if the plunger tip (cutter blade or ballpoint pen) has contact with it, it can affect the finish quality.

Or, the cutting plotter body might be damaged.

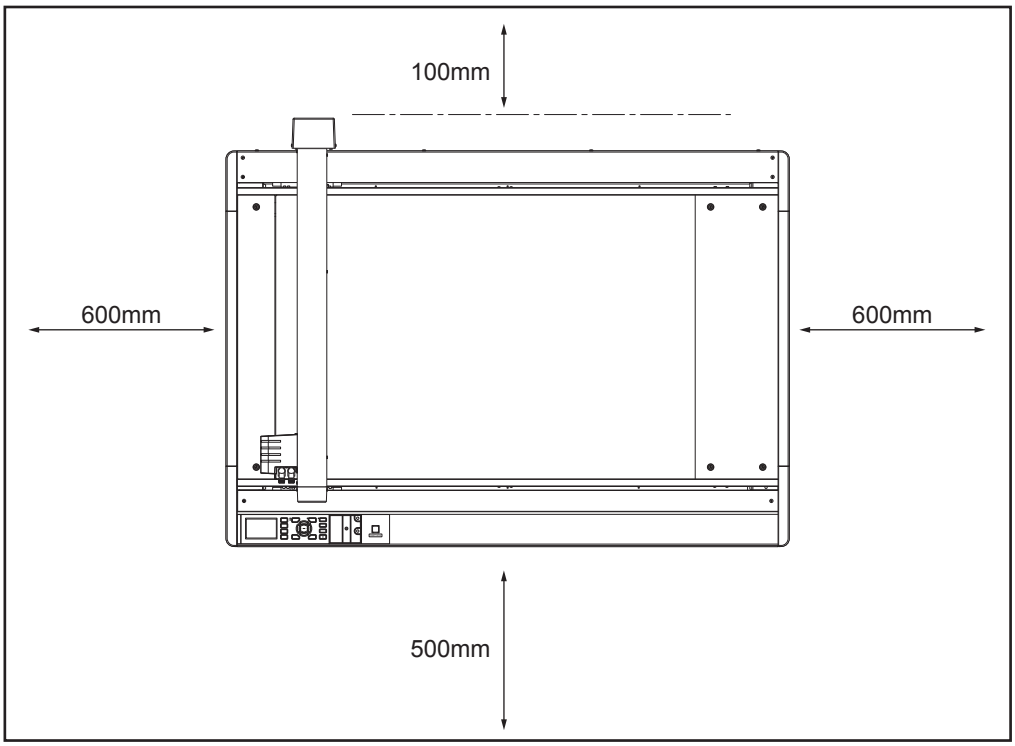
Please fix the warping of the media, or do not use the warped media.

Installation Space

Please secure a space for installation as according to the below illustration.

⚠ CAUTION

- **Leave sufficient space for operations in front of and behind the cutting plotter.**
- **When installing on a desk or the like, please use a desk with sufficient strength. Shake of the desk at the time of operation can affect the finish quality.**



WARNING

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

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

USE SHIELDED CABLES

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

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Chapter 1: Product Summary

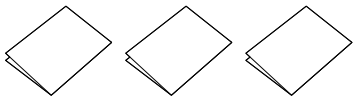
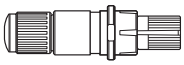
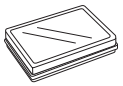
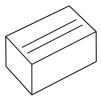
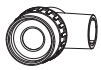
This chapter explains how to connect this device your computer.

PRODUCT SUMMARY

1.1 Checking the Accessories
1.2 Nomenclature
1.3 Connecting to the Computer

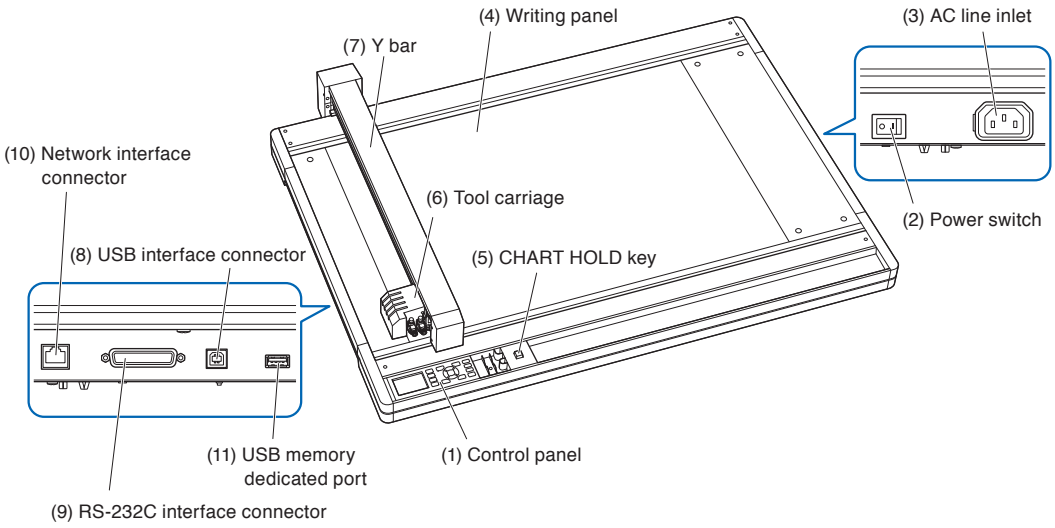
1.1 Checking the Accessories

Accessories

Item	Q'ty	Item	Q'ty
Power cable	1 pc.	USB cable	1 pc.
DVD • Various software • User's Manual (pdf)	1 pc.	TO ENSURE SAFE AND CORRECT USE SETUP MANUAL Cutter Blade Manual 	1 set
Cutter plunger (PHP33-CB15N-HS) 	1 pc.	Cutter blades (CB15U-1) 	1 pc.
Water-based fiber-tip pen adapter (PHP31-FIBER)  * Plunger/Height adjustment tool.	1 set	Water-based fiber-tip pen (KF700-BK [1P]))	1 pc.
Cutter blade adjustment magnifier (PM-CT-001) 	1 pc.		

* Other guide for the accessory may be attached.

1.2 Nomenclature



(1) Control panel ..... Used to access various cutting plotter functions.

(2) Power switch ..... Used to turn the cutting plotter on and off.

(3) AC line inlet ..... Inlet where the power cable is connected.

(4) Writing panel ..... Cutting/Plotting/Creasing work is performed on the panel.

(5) CHART HOLD key ..... Lamp lights up when the [CHART HOLD] key is pressed, you can see that the electrostatic adsorption is functioning. Lamp is turned off by pressing again, the electrostatic adsorption is released.

(6) Tool carriage ..... Part to drive the cutter/pen.

(7) Y bar ..... Holds the tool carriage; moves left/right.

(8) USB interface connector ..... Used to connect the cutting plotter to the computer with a USB interface cable.

(9) RS-232C interface connector ..... Used to connect the cutting plotter to the computer with a RS-232C interface cable.

(10) Network (LAN) interface connector .. The connector used when connecting this cutting plotter with the network (LAN)interface cable.

(11) USB memory dedicated port ..... The port that is used only for the USB memory.

1.3 Connecting to the Computer

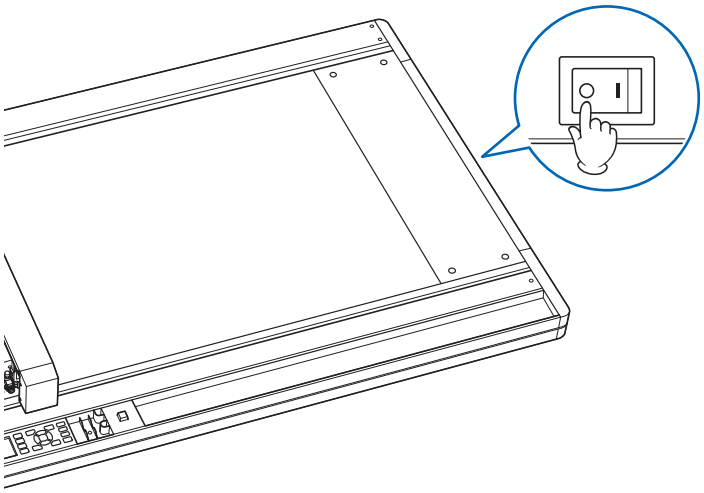
Connect the plotter to the computer using the communication cable. Use either the USB interface, the RS-232C interface or network (LAN) interface to connect the plotter to the computer. Select the port depending on the specification of the software to be used and the availability of the interface port on the computer.

Please install the drive software before connecting.

Depending on the port used, use either the USB cable (standard accessories), the RS-232C cable (sold separately) or network (LAN) cable (sold separately) to connect. Use the cables specified by Graphtec, matching the computer that is to be connected.

Connection

1 Make sure that the power switch is turned off ("◯" side).

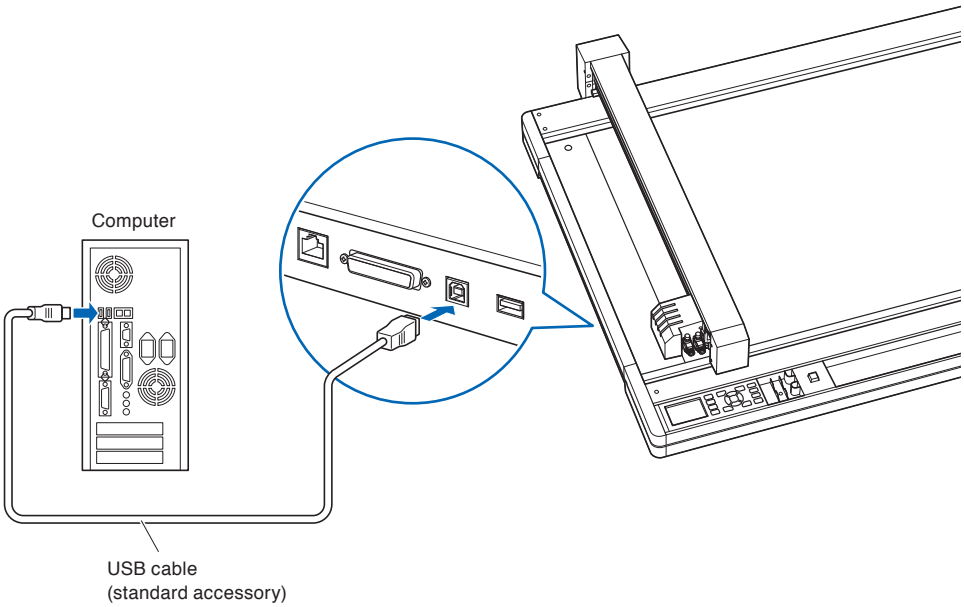


2 Connect the cutting plotter to the computer using the interface cable.

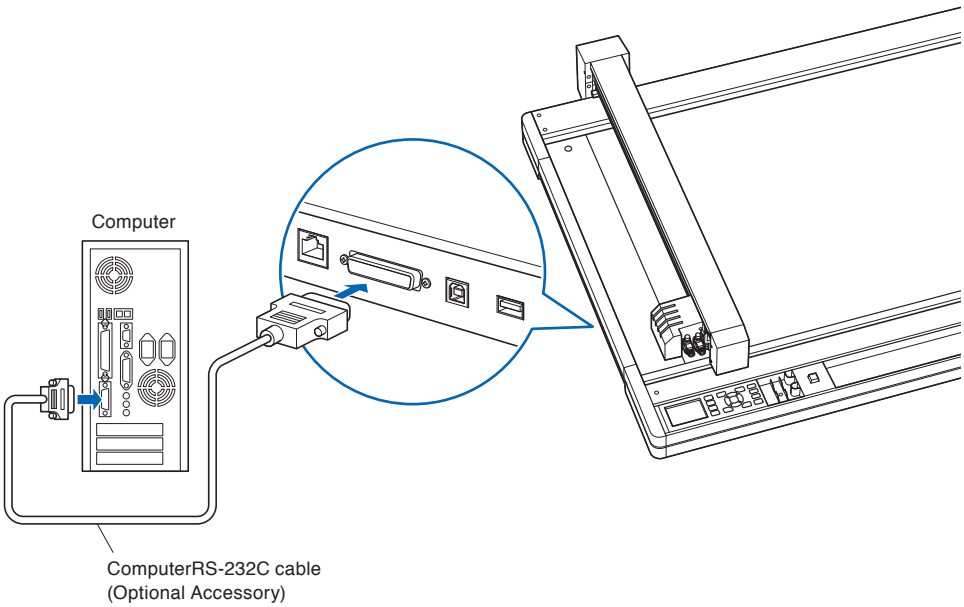
Supplement

See "9-1 Setting Interface" for the settings of the interface.

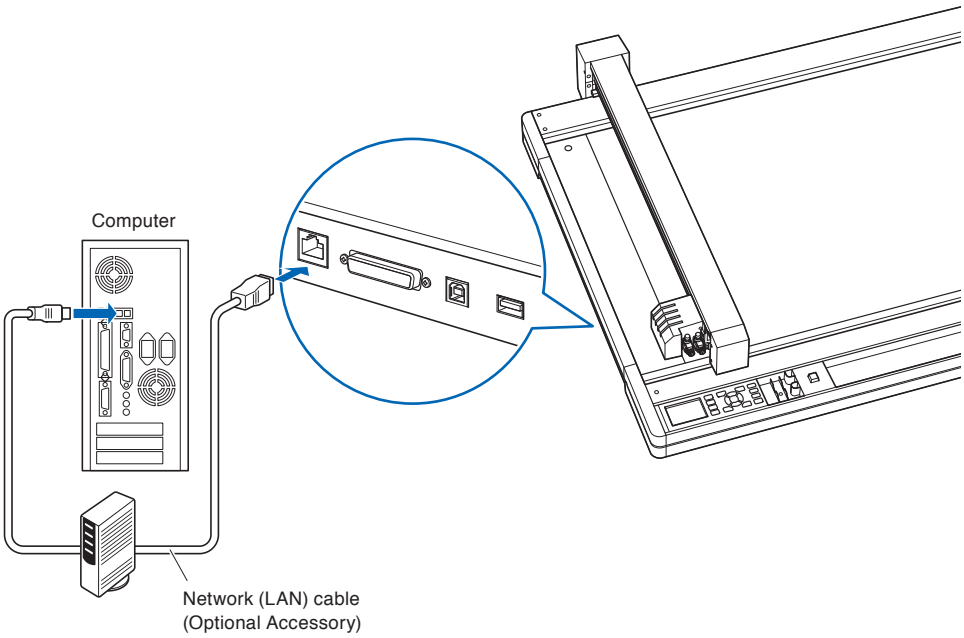
Connection via USB interface



Connection via RS-232C interface



Connection via Network (LAN) interface



Chapter 2: Preparing to Cut

This chapter describes how to prepare to start the cutting.

PRODUCT SUMMARY

2.1 Preparation of Cutter Plunger
2.2 Attaching a Tool
2.3 How to Use the Control Panel
2.4 Loading the Media
2.5 Connecting to the Power
2.6 About the Initial Setup Screen
2.7 Selecting Tool Condition
2.8 Running Cutting Tests
2.9 Display Cutting Area

2.1 Preparation of Cutter Plunger

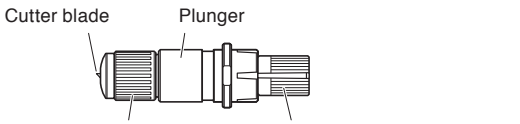
This chapter describes the structures and types of the cutter plungers (cutter pens).

Cutter Plunger Nomenclature

There are three different plungers to suit the diameter of the cutter blade to be mounted (the ϕ1.5 mm cutter plunger is provided as a standard accessory).

> ⚠ **CAUTION**
>
> **To avoid bodily injury, handle cutter blades with care.**

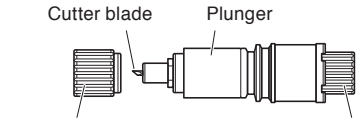
PHP33-CB09N-HS/PHP33-CB15N-HS



Plunger-cap
(Blue: For ϕ0.9 mm-diameter blades)
(Red: For ϕ1.5 mm-diameter blades)

Blade-length adjustment knob

PHP35-CB09-HS/PHP35-CB15-HS

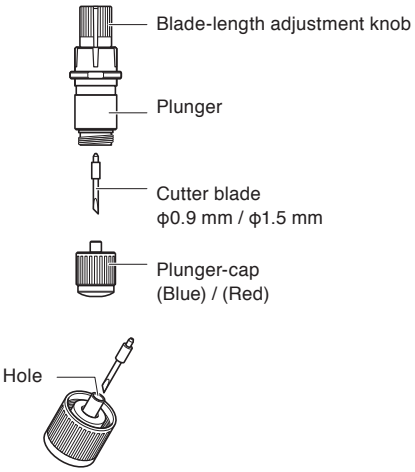


Plunger-cap

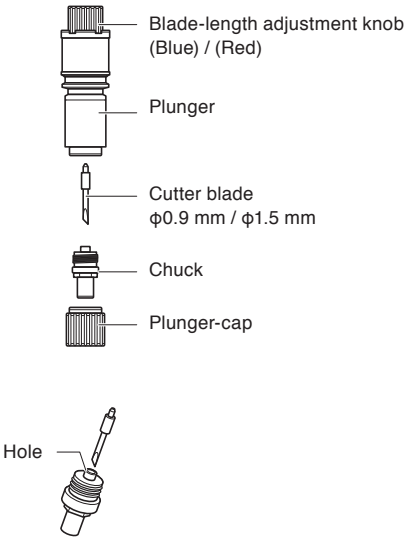
Blade-length adjustment knob
(Blue: For ϕ0.9 mm-diameter blades)
(Red: For ϕ1.5 mm-diameter blades)

Structure of Cutter Plunger

PHP33-CB09N-HS/
PHP33-CB15N-HS



PHP35-CB09-HS/
PHP35-CB15-HS

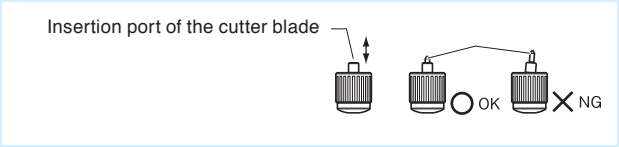


⚠ CAUTION

< PHP33-CB09N-HS/PHP33-CB15N-HS >

- **Please fully insert the cutter blade straight into the plunger cap.**

  If the cutter blade cannot be inserted straight, please insert the cutter blade after pressing the insertion port of the cutter blade several times.

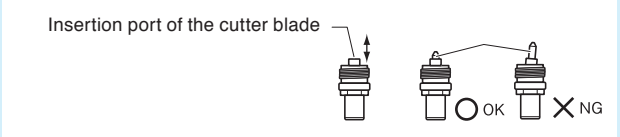


If not installed correctly, it may result in damage to the cutter blade or the plotter itself.

< PHP35-CB09-HS/PHP35-CB15-HS >

- **Please fully insert the cutter blade straight into the chuck.**

  If the cutter blade cannot be inserted straight, please insert the cutter blade after pressing the insertion port of the cutter blade several times.



If not installed correctly, it may result in damage to the cutter blade or the cutting plotter itself.

Adjusting the Blade Length

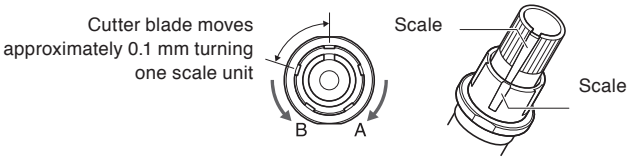
Blade length needs to be adjusted to perform optimal cut. Perform few test cuts and set the optimal blade length.

> ⚠ **CAUTION**
>
> - **To avoid bodily injury, handle cutter blades with care.**
> - **It may result in damaging the cutter blade or the writing panel if the blade is extended too much. Make sure the blade length is set less than the thickness of the media.**
>
> **Please always perform "test cut" to adjust the blade length.**
>
> **Supplement**
>
> - **See "Running Cutting Tests" for cutting tests.**
> - **See "Adjust the Blade Length Manually" for method to manually adjust the blade length.**
> - **If a thin media such as a film is used, use the supplied magnifier to adjust it.**

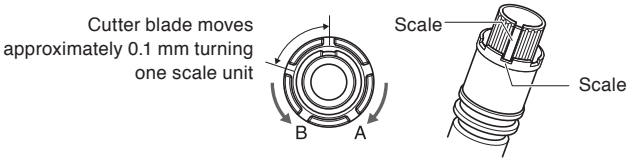
Adjust the blade length by turning the blade-length adjustment knob. Turn the knob in direction "A" to extend the blade, or in direction "B" to retract the blade.

For PHP35-CB09-HS/PHP35-CB15-HS, when the knob is turned the distance of one scale unit, the cutter blade moves approximately 0.1 mm. When the knob is given one full turn, the cutter blade moves 0.5 mm.

PHP33-CB09N-HS/PHP33-CB15N-HS



PHP35-CB09-HS/PHP35-CB15-HS



2.2 Attaching a Tool

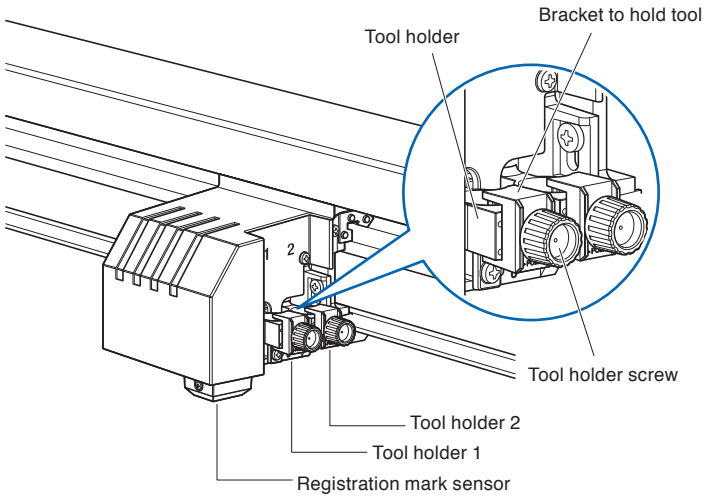
Attach a tool to the cutting plotter.

Attaching a Tool

When mounting the tool in the tool holder, please note the following.

- Push the tool all the way into the holder until its flange contacts the upper part of the holder and then tighten the screw firmly.
- To prevent injury, avoid absolutely touching the tool immediately after the cutting plotter is turned on or whenever the tool is moving.

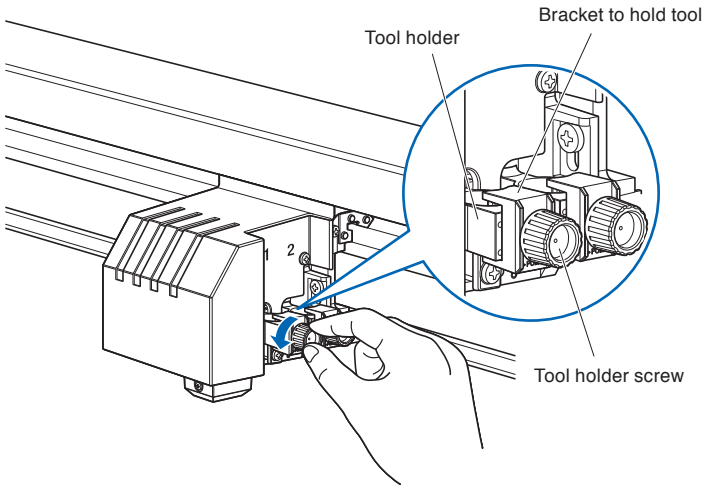
It is explained here using cutter plunger as an example.



> **⚠ CAUTION**
>
> **When pushing the tool holder with your fingers, the blade tip may be protruding. Take care not to cut your fingers.**

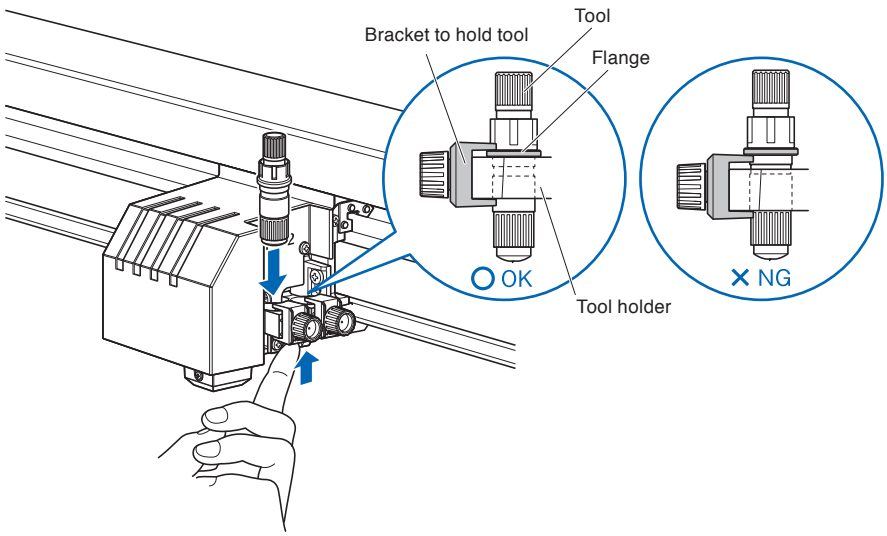
Mounting

1 Loosen the tool holder screw.

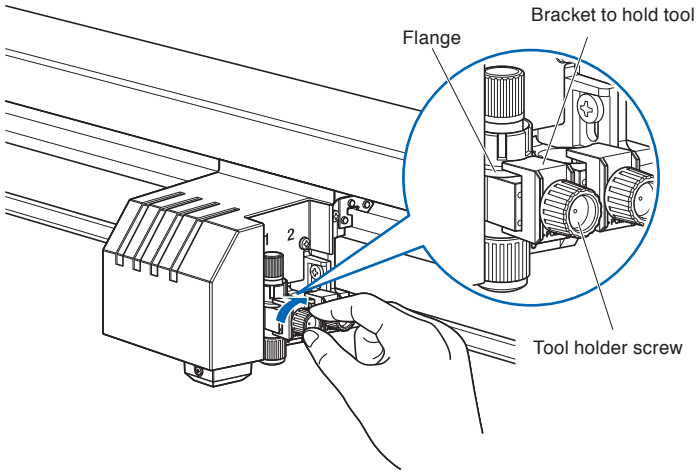


2 While pushing up the tool holder, push the tool into the holder until the flange of tool completely touches the upper part of the holder.

> **⚠ CAUTION**
>
> **When pushing the tool holder with your fingers, the blade tip may be protruding. Take care not to cut your fingers.**



3 Make sure that the tool bracket is engaged on the tool's flange, and then tighten the screw.

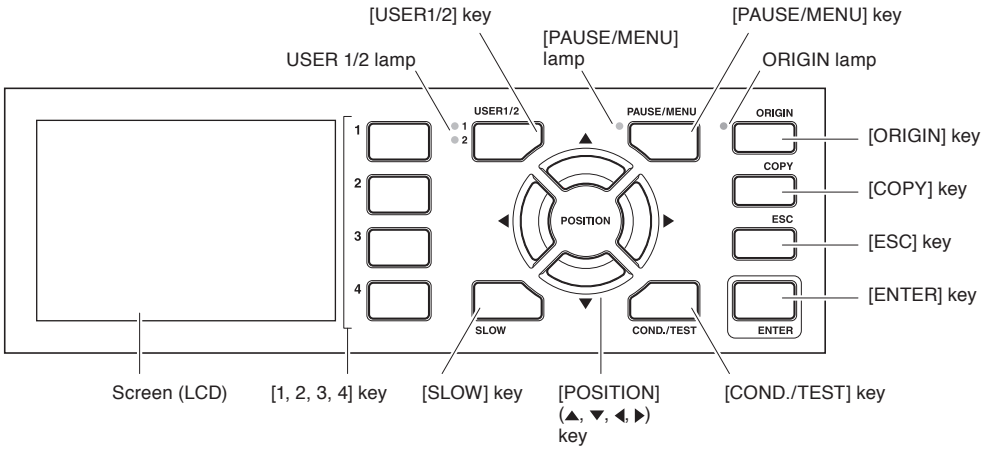


Removing the tool

When removing the tool, turn the tool holder screw counterclockwise to remove the tool.

2.3 How to Use the Control Panel

This section explains the function of lamps and keys on the control panel.



Indicator Lamp

USER 1/2 lamp ..... User lamp that has been selected lights.

PAUSE/MENU lamp
..... Lights at the time of the menu mode.

ORIGIN lamp ..... When the origin point has been saved, the lamp lights.

Control key

USER 1/2 ..... Switches the user selection.

PAUSE/MENU ..... Switches to the MENU mode.

It will go into MENU mode if the key is pressed once, and MENU mode will be turned off when the key is pressed again.

Various functions are set in the MENU mode.

When the PAUSE/MENU key is pressed during the operation, the cutting/plotting operation stops.

ORIGIN ..... Sets the current position as an origin point.

On the READY screen, pressing the [ENTER] and [ORIGIN] keys at the same time will allow you to reset the plotter.

COPY ..... Copy of data in the buffer memory is output.

ESC ..... Cancels the setting change and then returns to the previous screen in the setting screen. Returns to the previous screen in the menu screen.

ENTER ..... Saves the settings, and then returns to the setting screen in various functions and condition setting screen of the menu screen.

On the READY screen, pressing the [ENTER] and [ORIGIN] keys at the same time will allow you to reset the machine.

COND/TEST ..... Displays the screen to set the tool conditions.

Use this when checking tool conditions to activate a cutting test.

SLOW ..... When pressing the POSITION key at the same time, the tool carriage moves slowly.

When the "SLOW" icon is displayed on the screen, it works as a menu key.

When the [SLOW] key is pressed in the READY screen, the current cutting/plotting area and the position of tool carriage are displayed.

1, 2, 3, 4 ..... Selects the menu number displayed in the screen.

POSITION (▲, ▼, ◀, ▶) key

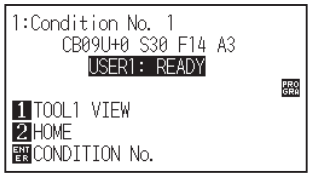
..... Adjusts various settings, selects numerical value changes, moves the cursor, and changes the positions in the menu screen.

Reading the Screen (LCD)

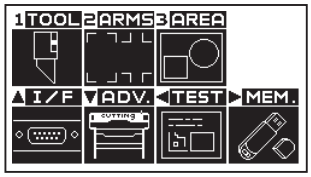
Information reflecting the status will be displayed in the screen of the control panel.

Name of the button and corresponding function are displayed on the screen when a function is allocated to the button on the control panel. Button name will be displayed in reverse when the button is enabled.

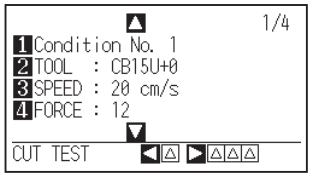
Ready Screen
(READY)



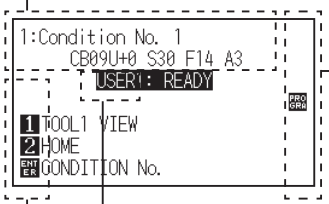
Menu Screen
(PAUSE/MENU)



Condition Screen
(COND/TEST)



Tool condition currently using



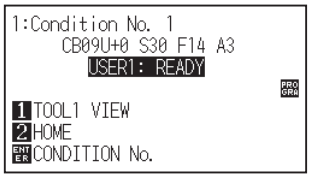
User number

Corresponding button name of control panel
(Valid button is displayed in reverse)

Display of setting condition

GP GL HP GL	Command	: GP-GL	: GP-GL Command
		HP-GL	: HP-GL Command
		(No Display)	Command Auto
0.1 0.05 0.025 0.01	Step size	: 0.1	: 0.1 mm
		0.05	: 50 µm
		0.025	: 25 µm
		0.01	: 10 µm
R90 Mir	Rotate/Mrror	: R90	: Rotate (rotate 90°)
		: Mir	: Mirror
		R90 Mir	: Mirror & Rotate
PRO GRA MA NUL	Priority	: MANUL	: Manual priority
		PROGRA	: Pogram priority
Sort ON	Sort	: Sort ON	: Display when sort is on

Default Screen (READY Screen)



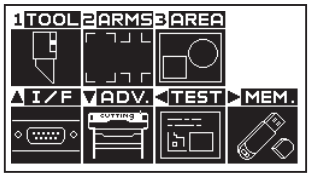
The condition number (Cut Condition) that has been set is displayed.

Supplement

- **In this manual, this screen is referred as READY screen or READY status.**
- **In this READY status, you can set the cutting and communication conditions by pressing [PAUSE/MENU] or [COND/TEST] key.**
- **When it is in the draft mode, the (D) is displayed after the READY.**

Screen to set the corresponding conditions is displayed when the [PAUSE/MENU] key or [COND/TEST] key is pressed.

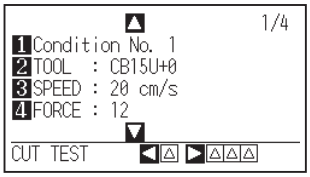
[PAUSE/MENU]



It will return to default screen when [PAUSE/MENU] key is pressed while displaying MENU screen.

Menu Screen

[COND/TEST]

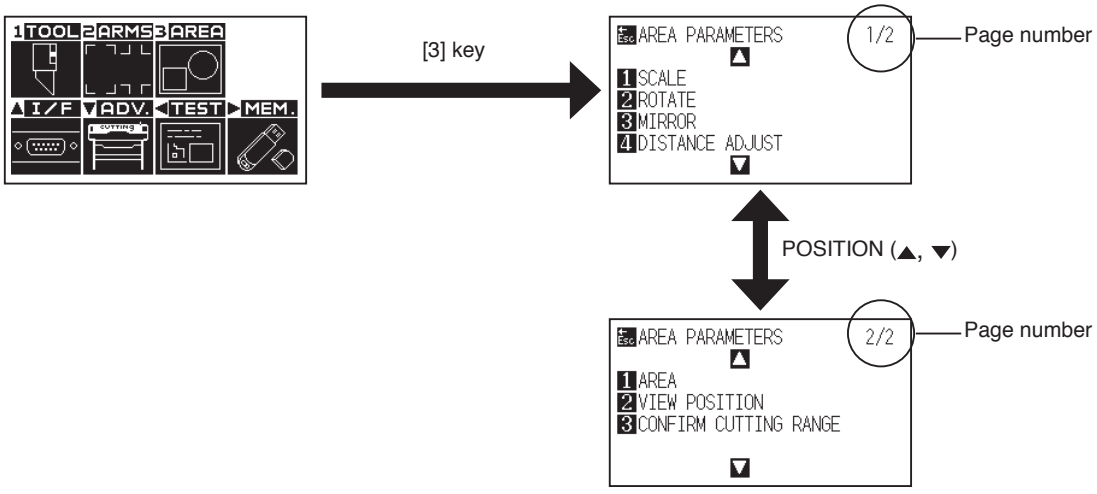


It will return to default screen when [COND/TEST] key is pressed while displaying CONDITION screen.

Condition Screen

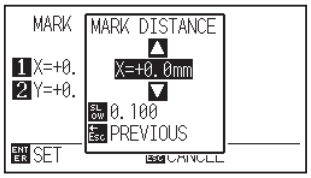
Page number is displayed in the upper right corner of the screen if there are many settings or selection that will need multiple pages to display.

Press the POSITION (▲ ▼ ◀ ▶) key to move to different page.

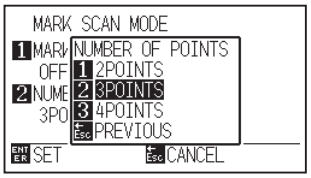


Example of moving page and operation button

Icon of the corresponding operation button is displayed in the screen to change the setting values.



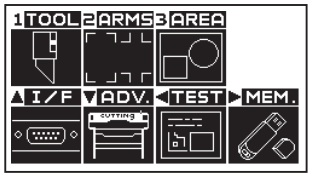
Increase or decrease the setting value using POSITION (▲▼) key. Select the change unit by [SLOW] key.



Select the setting by number keys (1, 2, 3, 4) or POSITION (▲, ▼, ◀, ▶) keys.

Example of screen to change the settings value

Contents of Operation from Menu Screen



Menu screen

Contents of the operation and settings that is displayed in MENU screen with [PAUSE/MENU] key is as following:

[1] (TOOL) : Sets the setting for the operation of the tool.

[2] (ARMS) : Sets the settings and operation to position the tool and media, such as automatic scanning of the registration marks by the ARMS.

[3] (AREA) : Sets the settings for area, magnification, rotate, mirror, etc., of the cutting.

[▲] (I/F) : Sets the settings of the condition for the interfacing with the control computer.

[▼] (ADV.) : Sets the settings of the conditions for the basic operation of the plotter, such as display language, unit of the measurements.

[◀] (TEST) : Performs the operation necessary for maintenance, such as self diagnostic test or printout of the condition settings list.

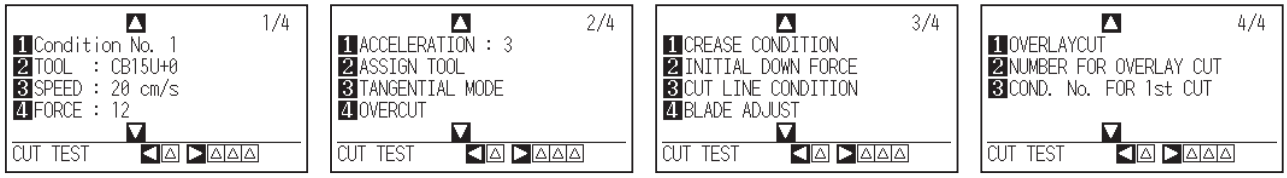
[▶] (MEM.) : Performs the operation necessary for the output such as off-line output.

[PAUSE/MENU] : It will close the MENU screen and return to default screen.

[SLOW] : Displays the position key screen. When media is set, the tool position can be moved.

See the "Menu Tree" for list of the descriptions about each settings.

Contents of Operation from [COND/TEST] Key



CONDITION screen (1-4):

The [COND/TEST] key brings up the SETTING screens, where you can change the tool conditions.

[COND/TEST]: This will clear the CONDITION screen and return to default screen.

See "2.7 Selecting Tool Condition" for the detailed tool condition.

2.4 Loading the Media

Supplement

- **This plotter is available with a electrostatic writing panel.**
- **There are media that cannot be held down by any method. Please test before use.**
- **Antistatic-treated media cannot be held down in electrostatic writing panel.**
- **If air gets in between the writing panel and the media during loading, force out the air and ensure that the media is securely attached to the writing panel before cutting.**
- **When cutting a media that doesn't come with a backing sheet on the electrostatic writing panel, spread a vinyl backing sheet or something similar on the panel before cutting. Replacement of damaged writing panel is available for a fee.**
- **When loading a media that cannot be securely attached on the electrostatic writing panel, reinforce adhesion by using tape on all four sides.**
- **When using the electrostatic writing panel, do not use a spray glue and a spray glue remover directly on the writing panel.**
- **When the media is changed to a different type, we recommend that you perform the registration mark sensor sensitivity adjustment. (Refer to "Adjusting the Sensor Level" section in Chapter 5.)**

How to Load the media

(1) Make sure that the [CHART HOLD] key is turned off.

(2) Place the media on the writing panel.

(3) Press the [CHART HOLD] key (to hold-down the media) next to the control panel.

(4) The green [CHART HOLD] key lamp (to hold-down the media) lights to indicate that the media is being held by electrostatic adhesion.

Supplement

Press the [CHART HOLD] key again to release the electrostatic adhesion. The green lamp will not be lit.

It may take some time to be able to hold-down the media by pressing the [CHART HOLD] key depending on operating environment.

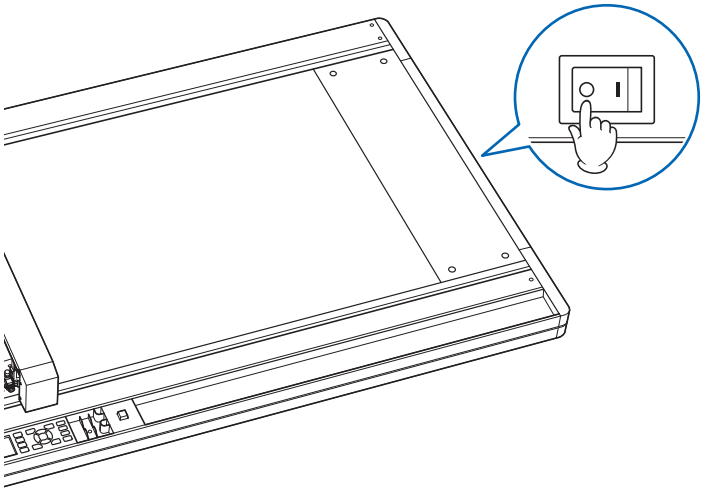
After the media has been held for a while by electrostatic adhesion, it may become charged with static electricity and therefore be harder to remove from the writing panel. There is nothing abnormal about this phenomenon.

2.5 Connecting to the Power

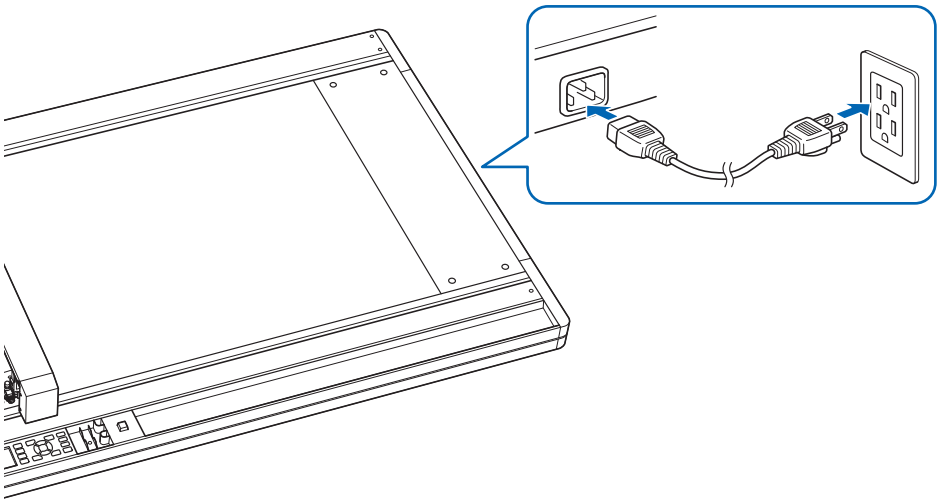
This section describes how to turn on the power of this plotter.

Operation

1 Check that the power switch is turned off. ("◯" side)

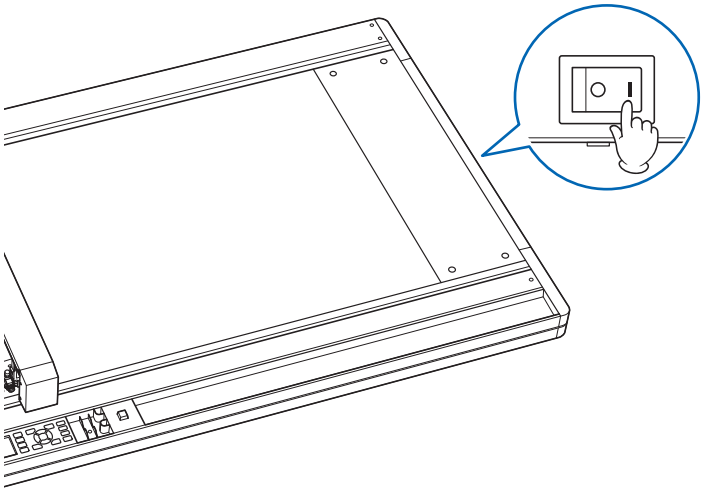


2 Connect one end of the provided power cord to the FCX4000 AC line inlet and the other end to an electrical socket of the rated supply voltage.



3 Turn on the FCX4000 ("I" side).

LCD on the control panel is lit and it becomes READY status.



Supplement

When turning off the power, wait over 10 seconds before turning on it again, otherwise problems may occur with the display.

2.6 About the Initial Setup Screen

The Initial Setup Screen appears only when powering up the machine for the first time after purchase. Here, you can set the display language and length unit.

You can also change the settings from the menu after a setup.

(Refer to “Display Language Settings (Language)” and “Display Length Unit Settings (Length Unit)” in Chapter 10.)

See "2.5 Connecting to the Power" for turning on the power.

Operation

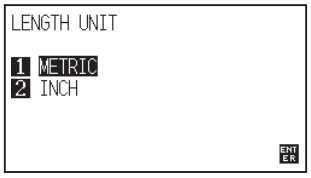
1 Once the machine is powered on (" I " side) a message will be displayed after the version is displayed.

2 Use the POSITION (▲▼◀▶) keys to select the language.

(You can also change the settings from the menu after a setup.)

3 Press the [ENTER] key.

After the DISPLAY LANGUAGE is selected, the LENGTH UNIT screen will appear.



4 Press the [1] key (METRIC) or the [2] key (INCH) to select the length unit setting.

5 Confirm the setting and press the [ENTER] key (SET).

Setting will be set, and it will return to default screen.

Supplement

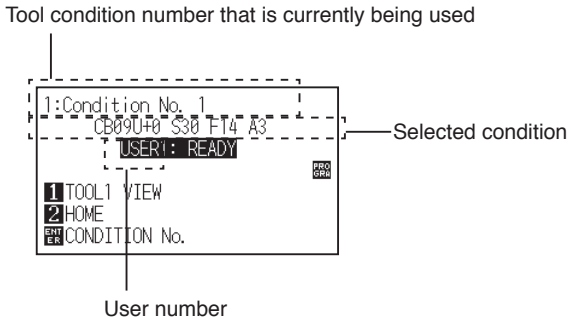
DISPLAY LANGUAGE setting screen is displayed.

You can choose from 10 languages: English, Japanese, German, French, Italian, Spanish, Portuguese, Russian, Chinese, and Korean.

2.7 Selecting Tool Condition

Set the “TOOL CONDITION (Cut Condition) No.”, “TOOL”, “OFFSET”, “FORCE”, “SPEED”, and “ACCEL (ACCELERATION)”.

LCD Display



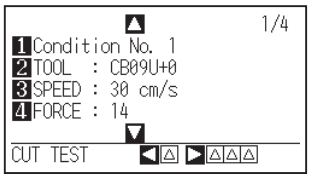
Selecting the tool condition number

Eight settings (1 to 8) as the tool condition can be stored. By switching this setting, it can be switched to 8 types of label material-specific settings that have been set previously.

Operation Method: Operation with the [COND/TEST] key

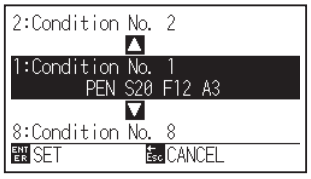
1 Press the [COND/TEST] key from READY status.

▷ CONDITION screen (1/4) is displayed.

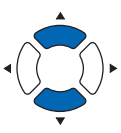


2 Press the [1] key.

▷ CONDITION No. selection screen is displayed.



3 Press the POSITION (▲▼) keys and select the setting.



4 Confirm the setting and press the [ENTER] key.

▶ Setting will be set, and it will return to CONDITION screen (1/4).

Supplement

Press the [ESC] before pressing the [ENTER] key to return to the default screen without changing any settings.

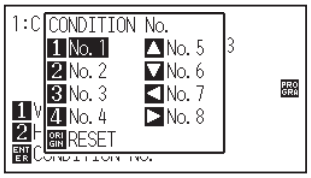
5 Press the [COND/TEST] key.

▶ It will return to default screen.

Operation Method: Operation with the [ENTER] key

1 Press the [ENTER] key from READY status.

▶ CONDITION No. selection screen is displayed.



2 Select the CUT CONDITION (Tool Condition) by pressing one of [1] to [4] key or using the POSITION (▲▼◀▶) keys while holding down the [ENTER] key. (The selected item is highlighted.)

3 Confirm the setting and release the [ENTER] key.

▶ It will return to default screen.

Setting the Tool Condition

This section describes how to make the tool, speed, force, acceleration, and tool number settings.

Before cutting media, the following four cutter pen conditions must be specified.

- OFFSET
- SPEED
- FORCE
- ACCELERATION

> **⚠ CAUTION**
>
> - **It may result to damaging the cutter blade or the writing panel if the blade is extended too much. Make sure the blade length is set less than the thickness of the media.**

Tool Conditions (Cutter Blade) for Each Media Type

Refer to the Cutter Blade Manual.

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

Refer to the Cutter Blade Manual.

> **Supplement**
>
> - **Finish quality will become coarser, but the cut time is decreased when the settings for the speed and acceleration is set higher. Especially, good cut quality might not be achieved because the media state becomes unstable during operation. Decrease the values for the speed and acceleration in that case.**
> - **Finish quality will become good, but the cut time will increase when the settings for the speed and acceleration is set smaller.**

Setting the Tool

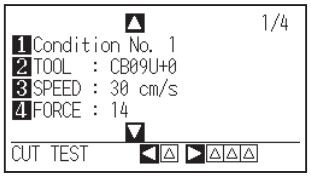
Set the tool type and offset to be used.

Set their values in accordance with tool condition of each label material and each tool type. (Refer to “Tool condition for each tool” described above).

Operation

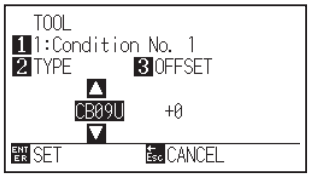
1 Press the [COND/TEST] key in the default screen.

▷ CONDITION screen (1/4) is displayed.

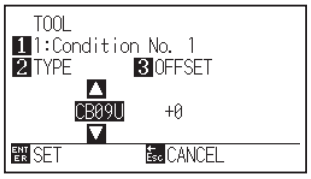


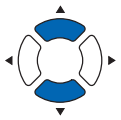
2 Press the [2] key (TOOL).

▷ TOOL setting screen is displayed.



3 Press the POSITION (▲▼) keys, and set the tool.



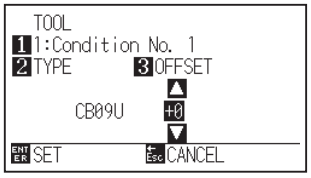


Supplement

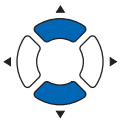
- **What is Offset**
  It will adjust the difference between the tip of the blade in the plunger and the center of the plunger. There are standard adjustment values for each cutter blades. Fine adjustment will be made to that standard values here. (Adjustment will be made with standard value as 0.)
- **Setting range is from -5 to +5**
  In the case of other setting range, it is +1 to +99.

4 Press the [3] key (OFFSET).

▷ OFFSET setting screen is displayed.



5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Press the [ESC] key (Return) to return to the CONDITION screen without changing any settings.

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to CONDITION screen (1/4).

7 Press the [COND/TEST] key.

▷ It will return to default screen.

Setting the Creasing Mode

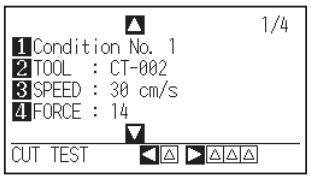
When selecting the creasing tool, you can set the spacing, the number of creasing operations and the start and end positions.

Creasing mode is enabled only when the tool type is set to the creasing tool (CP001, CT-002).

Operation

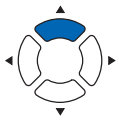
1 Press the [COND/TEST] key in the default screen.

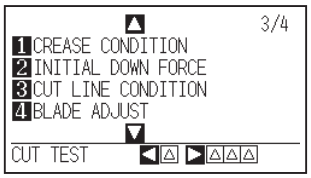
▷ CONDITION screen (1/4) is displayed.



2 Press POSITION (▲) key twice.

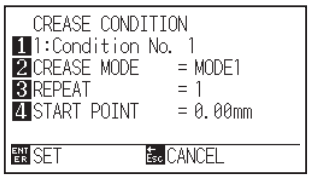
▷ CONDITION screen (3/4) is displayed.





3 Press the [1] key (CREASE CONDITION).

▷ CREASE CONDITION setting screen is displayed.



Supplement

Press the [ESC] key (Return) to return to the CONDITION screen without changing any settings.

<Setting the Creasing Mode>

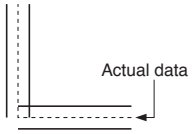
Modes 2 and 3 enable thick media to be bent easily.
Selectable parameters: MODE 1. MODE 2, MODE 3

Actual Data

Mode 1 (Crease one line)

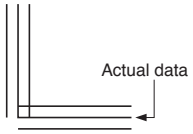
Crease lines at the same position as the actual data.

Mode 2 (Crease two lines)



Crease lines at positions on either side of the actual data. (Creasing is not performed at the actual data position)

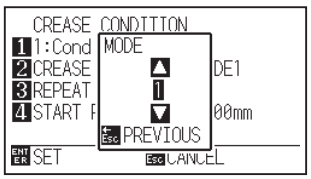
Mode 3 (Crease three lines)



Crease lines at the same position as and on either side of the actual data.

4 Press the [2] key (CREASE MODE).

▷ CREASE MODE setting screen is displayed.



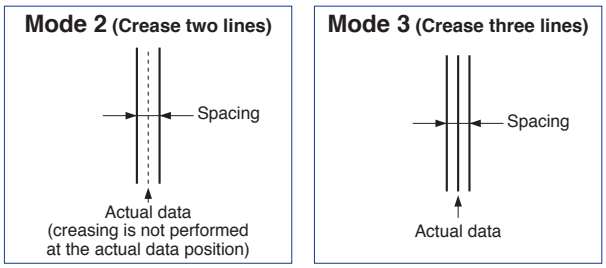
5 Select the mode using the POSITION (▲▼) keys and press [ESC] key.

▷ CREASE setting screen is displayed.

<Setting of Spacing>

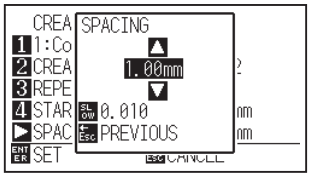
Set the spacing between the lines.

Setting range: 0 to 9.99 (mm)



6 Press [▼] key (SPACING)

▷ SPACING setting screen is displayed.



Supplement

The spacing parameter is only enabled for Modes 2 and 3.

7 Increase or decrease the setting value using the POSITION (▲▼) keys and press the [ESC] key.

▷ CREASE setting screen is displayed.

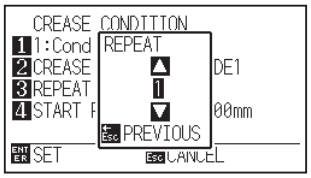
<Setting the number of creasing operations>

This setting determines how many times creasing should be repeated for each line segment.

Setting range: 1 to 9 (times)

8 Press the [3] key (REPEAT).

▷ SPACING setting screen is displayed.



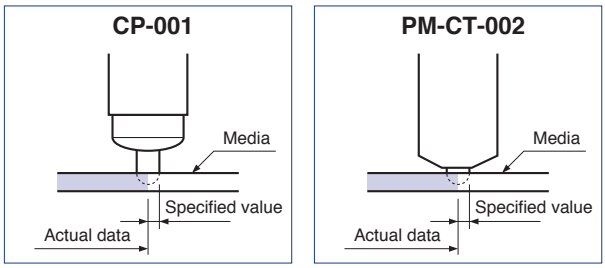
9 Increase or decrease the setting value using the POSITION (▲▼) keys and press the [ESC] key.

▷ CREASE setting screen is displayed.

<Setting the Start and End Positions>

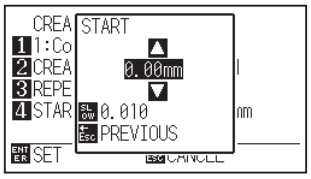
This setting determines by what margin each end of the creasing line falls short of the corresponding end of the actual data line.

Setting range: 0 to 9.99 (mm)



10 Press the [4] key (START).

▷ START setting screen is displayed.



Supplement

For short-line data such as circle command data, setting a large value for the START parameter (Start position) may result in cutting/plotting not being performed.

11 Increase or decrease the setting value using the POSITION (▲▼) keys and press the [ESC] key.

▷ CREASE setting screen is displayed.

12 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to CONDITION screen (3/4).

13 Press the [COND/TEST] key.

▷ It will return to default screen.

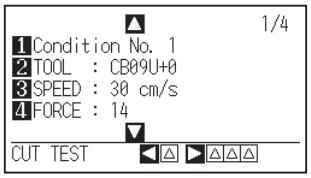
Setting the Speed

Set the speed of the tool that is used in each of the condition numbers.
Setting range : 1 to10 (in 1 cm/s increment), 10 to 75 (in 5 cm/s increment)

Operation

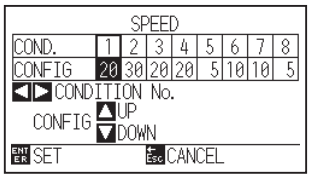
1 Press the [COND/TEST] key in the default screen.

▶ CONDITION screen (1/4) is displayed.

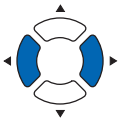


2 Press the [3] key (SPEED) .

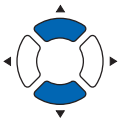
▶ SPEED setting screen is displayed.



3 Press the POSITION (◀▶) keys and select the tool condition number (CONDITION No.) .



4 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

You can set 1 to 10 (1-step) or 15 to 75 (5-step) (cm/s).

5 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to CONDITION screen (1/4).

6 Press the [COND/TEST] key.

▶ It will return to default screen.

Setting the Force

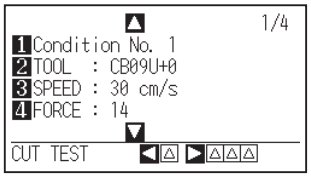
Set the cutting force that is used in each of the condition numbers.

Setting range : 1 to 48

Operation

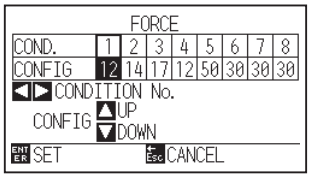
1 Press the [COND/TEST] key in the default screen.

▶ CONDITION screen (1/4) is displayed.

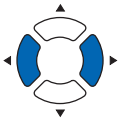


2 Press the [4] key (FORCE).

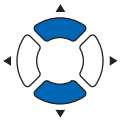
▶ FORCE setting screen is displayed.



3 Press the POSITION (◀▶) keys and select the condition number (CONDITION No.).



4 Press the POSITION (▲▼) keys and increase or decrease the setting value.



5 Confirm the setting and press the [ENTER] key (SET).

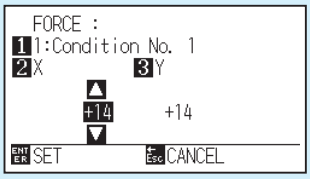
▶ Setting will be set, and it will return to CONDITION screen (1/4).

6 Press the [COND/TEST] key.

▶ It will return to default screen.

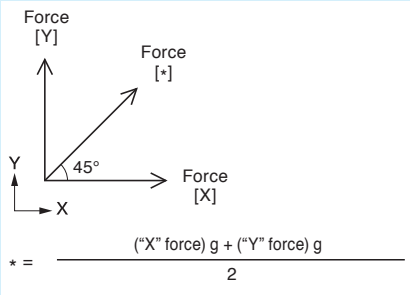
Supplement

When "XY FORCE SWITCH" is enabled, the following screen is displayed.



Using the [2] and [3] keys, move X and Y. Then, press the POSITION (▲▼) keys and increase or decrease the set value.

If different values have been set for X and Y, the cutting force in the diagonal direction will be an intermediate value of X and Y values, and will vary according to the angle.



Supplement

You can set between 1 and 48..

Setting the Acceleration

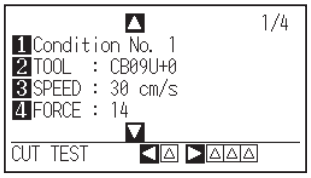
Set the acceleration of the tool that is used in each of the tool condition numbers.

Setting range : 1 to 10

Operation

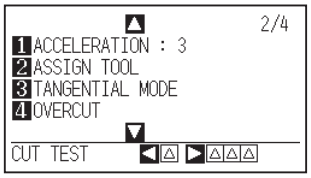
1 Press the [COND/TEST] key in the default screen.

▷ CONDITION screen (1/4) is displayed.



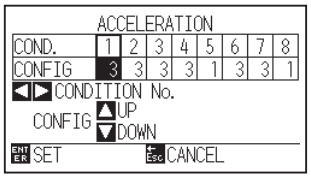
2 Press the POSITION (▲) key.

▷ CONDITION screen (2/4) is displayed.

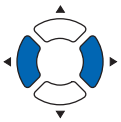


3 Press the [1] key (ACCELERATION).

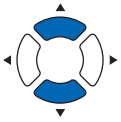
▷ ACCEL setting screen is displayed.



4 Press the POSITION (◀▶) keys and select the condition number (CONDITION No.).



5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

You can set between 1 and 10.

When the value is reduced, the acceleration is lower and the quality is better.

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to CONDITION screen (2/4).

7 Press the [COND/TEST] key.

▷ It will return to default screen.

Setting the Assign Tool

This function enables you to assign Tool Holder 1 and Tool Holder 2 to Condition No. 1 to 8.

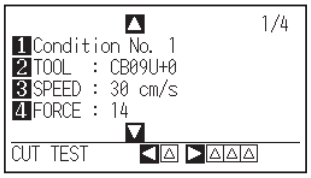
Supplement

To change the tool with application software, it is necessary to enable "Enabling/Disabling the Condition Select Command (TOOL SELECT COMMAND)". Refer to "Enabling/Disabling the Condition Select Command (TOOL SELECT COMMAND)" described later.

Operation

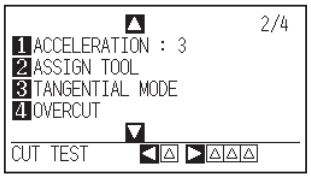
1 Press the [COND/TEST] key in the default screen.

▷ CONDITION screen (1/4) is displayed.



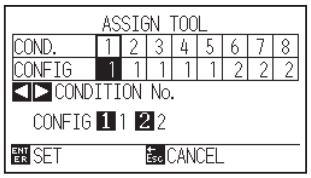
2 Press the POSITION (▲) key.

▷ CONDITION screen (2/4) is displayed.

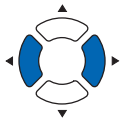


3 Press the [2] key (ASSIGN TOOL).

▷ ASSIGN TOOL setting screen is displayed.



4 Press the POSITION (◀▶) keys and select the condition number (CONDITION No.).



5 Press the [1] key (TOOL1) or [2] key (TOOL2).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to CONDITION screen (2/4).

7 Press the [COND/TEST] key.

▷ It will return to default screen.

Adjust the Blade Length

Optimal cut is not achieved unless the blade length is adjusted in accordance with the used label material and the cutter blade. Perform further adjustment by performing cutting test after adjusting the blade length manually.

⚠ CAUTION

- **To avoid bodily injury, handle cutter blades with care.**
- **It may result in damaging the cutter blade or the writing panel if the blade is extended too much.**

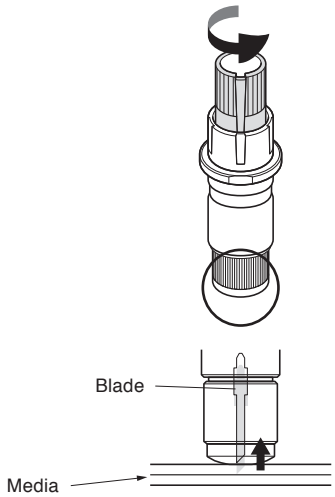
Supplement

For the test cut, please refer to the "Running Cutting Tests" below.

Please use the supplied magnifier to adjust the blade length. For information on how to use the magnifier, please refer to the instruction manual for the magnifier.

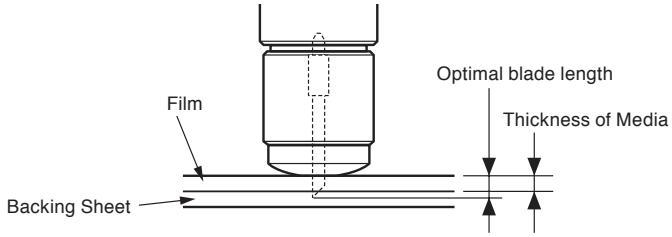
Operation

1 Align the blade tip to the tip of the cutter pen, and make it touch the surface of the media.



2 Extend the blade little by little to the thickness of the media. Optimal blade length is less than the thickness of film and backing sheet combined, but more than the thickness of the film.

Try cutting the film, and adjust so there is slight cutting on the backing sheet. If the backing sheet gets cut completely, reduce the blade length, and if the film does not get cut completely, increase the blade length.

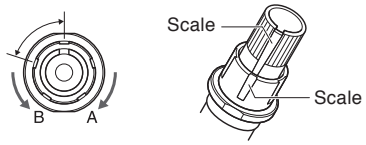


Supplement

- **In the case of PHP33-CB09N-HS/PHP33-CB15N-HS**

  Blade length can be changed by spinning the adjustor on the blade. Spinning it in the A direction pushes it out, while spinning it in the B direction pulls it in. One scale unit is equal to 0.1 mm.

Cutter blade moves approximately 0.1 mm turning one scale unit.



- **Guideline to Set the Blade Length**

  See "Setting the Tool Condition" for the thickness of the media.

2.8 Running Cutting Tests

Test cutting can be performed after making the tool, speed, force, and acceleration settings to ensure that the selected cutting conditions actually produce the desired cutting results. Check how far the blade cuts into the media and how the corners are being cut. If the cutting results are not satisfactory, adjust the various settings and repeat the test cutting until the optimal settings are achieved.

Cutting Test

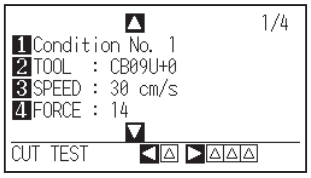
You can either cut one test pattern based on the current values, or do three tests with ±1 values added. Select the method depending on the situation.

To make 1 cut with set value

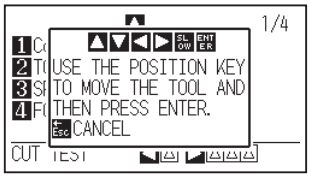
Operation

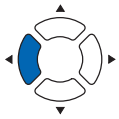
1. Load the media for test cutting in the plotter.
2. Press the [COND/TEST] key in the default screen.

   ▶ CONDITION screen (1/4) is displayed.



3. Press the POSITION (◀) key (CUT TEST).

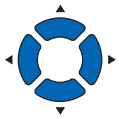




Supplement

It will return to CONDITION screen by pressing the [ESC] key (CANCEL).

4. Press the POSITION (▲▼◀▶) keys to move the tool carriage to the location you wish to perform the test cutting.



Supplement

Pushing simultaneously the [POSITION] and [SLOW] keys moves the tool carriage slowly.

5. Press the [ENTER] key.

   ▶ 1 cut test pattern is cut.

⚠ CAUTION

When the [ENTER] key is pressed, the tool carriage will start moving, so take care not to cut your fingers.

6. Press the [ESC] key after completion.

   ▶ CUT TEST screen is displayed.

7. Press the [COND/TEST] key.

   ▶ It will return to default screen.

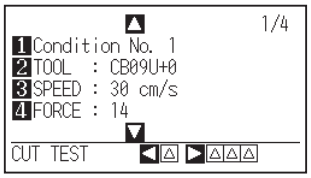
To make 3 cuts with set value and ±1 of set value

Operation

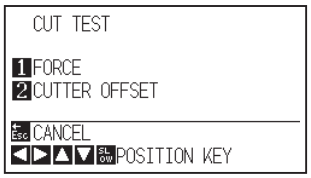
1 Load the media for test cutting in the plotter.

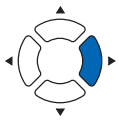
2 Press the [COND/TEST] key in the default screen.

▶ CONDITION screen (1/4) is displayed.



3 Press the POSITION (▶) key (CUT TEST).

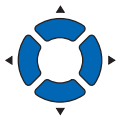




Supplement

It will return to CONDITION screen by pressing the [ESC] key (CANCEL).

4 Press the POSITION (▲▼◀▶) keys to move tool carriage to the location you wish to perform the test cutting.



Supplement

Pushing simultaneously the [POSITION] and [SLOW] keys moves the tool carriage slowly.

5 Press the [1] key (FORCE).

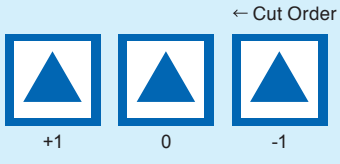
▶ 3 cutting test patterns are cut, with current FORCE in the center, and 1 each of FORCE increased and decreased for 1.

⚠ CAUTION

When the [1] key (FORCE) is pressed, the tool carriage will start moving, so take care not to cut your fingers.

Supplement

Test cut patterns can have their cut order and force changed as shown below.



6 Press the [ENTER] key after completion.

▶ It will return to CUT TEST menu screen.

7 Press the [2] key (CUTTER OFFSET).

▶ 3 cutting test patterns are cut, with current CUTTER OFFSET in the center, and 1 each of CUTTER OFFSET increased and decreased for 1.

Supplement

When the [2] key (CUTTER OFFSET) is pressed, the tool carriage will start moving, so take care not to cut your fingers.

8 Press the [ENTER] key after completion.

▶ It will return to CUT TEST menu screen.

9 Press the [COND/TEST] key.

▶ It will return to default screen.

Confirm the Results of the Cutting Test

Confirm the cutting test results, and adjust to optimal setting. Repeat cutting test and adjustment until optimal cut is achieved.

Adjustment of Offset

Check the corners of the triangles and rectangles. See "Setting the Tool Condition" and adjust the offset value if the corner is not cut or if it is cut too much.

Supplement

How to check offset

Check if the offset value is set correctly by following.

Not enough adjustment. Increase the offset value.

Optimal offset value.

Too much adjustment. Decrease the offset value.

Adjustment for Half Cutting

Peel off the triangle area, and adjust so it cuts slightly into the backing sheet.

If the backing sheet has been cut through, either the FORCE setting is too high or the cutter-blade tip is extended too far. If the backing sheet shows only a few traces of the cutter blade, either the FORCE setting is too low or the cutter blade tip is not sufficiently extended.

Supplement

See "Adjusting the Blade Length" and "Setting the Force" and adjust the settings.

Adjustment for Cutting Out

Adjust so the media is completely cut out.

If the media is not completely cut, either the FORCE setting is too low or the cutter blade tip is not sufficiently extended.

See "Adjusting the Blade Length" and "Setting the Force" and adjust the settings.

Adjustment When Using Plotting Pen

Adjust the FORCE so there will be no faint lines. To prolong the pen life, set the FORCE to the lowest setting without any faint lines. See "Setting the Force" or setting the FORCE.

Adjust the Blade Length (Blade Length Adjustment by the cutting plotter)

Test cutting must be performed several times in order to confirm the optimal blade length setting. However, if the blade length adjustment function is used, the optimal length can be easily set.

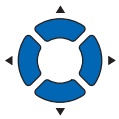
Supplement

- **In the case of the less than 1 mm adjustment , please use the supplied magnifier.**
- **The measured height is a guideline only. After attempting to cut the actual media, please adjust blade length accurately.**

Operation

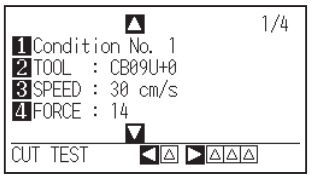
1 Load the media for test cutting in the cutting plotter.

2 Press the POSITION (▲▼◀▶) keys to move the tool carriage to the location you wish to perform the blade length adjustment.



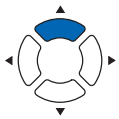
3 Press the [COND/TEST] key in the default screen.

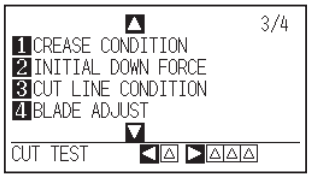
▷ CONDITION screen (1/4) is displayed.



4 Press the POSITION (▲) key twice.

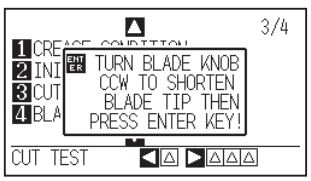
▷ CONDITION screen (3/4) is displayed.





5 Press the [4] key (BLADE ADJUST).

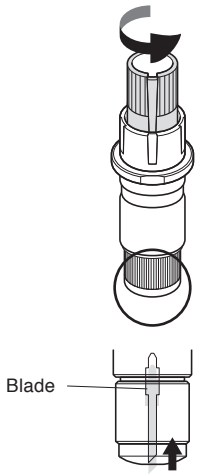
▷Message prompting to turn the blade length adjustment knob is displayed.



Supplement

It will return to CONDITION screen by pressing the [ESC] key (CANCEL).

6 As instructed, turn the blade length adjustment knob to the left to fully retract the blade.



Supplement

See "Structure of Cutter Plunger" for blade length adjustment knob.

7 Set the cutter pen in Tool Holder.

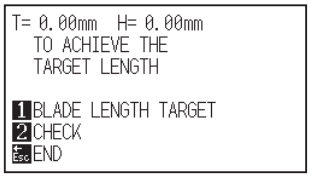
Supplement

See "Attaching a Tool" for instructions on setting.

8 Press the [ENTER] key.

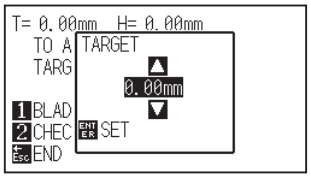
You can calculate the height by moving the tool up and down.

▶ TO ACHIEVE THE TARFET LENGTH screen is displayed.

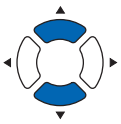


9 Press the [1] key (BLADE LENGTH TARGET).

▶ BLADE LENGTH TARGET screen (TARGET) is displayed.



10 Press the POSITION (▲▼) keys and increase or decrease the setting value.



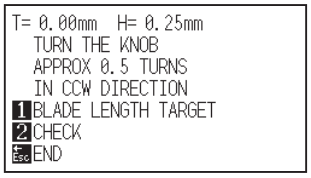
11 Confirm the settings and press the [ENTER] key.

▶ The Blade Length Target will be selected, and you will return to the TO ACHIEVE THE TARGET LENGTH screen.

12 Press the [2] key (CHECK).

You can calculate the height by moving the tool up and down.

▷ The amount and direction to turn the adjustment knob is displayed.



Supplement

"T" is the target value of the blade length, and "H" is the current blade height (amount) .

Turning the blade length adjustment knob displays the number of turns and direction.

13 Turn the blade length adjustment knob and adjust the cutter blade length.

Current blade length is displayed by pressing the [2] key (CHECK), so adjust the blade length until it matches the thickness of the media.

Supplement

Depending on the loaded media, the blade might sink in to the media, making accurate measurement impossible.

14 Press the [ESC] key (END).

▷ Adjustment is completed and it will return to CONDITION screen.

15 Press the [COND/TEST] key.

▷ It will return to default screen.

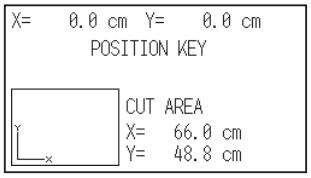
2.9 Display Cutting Area

You can check the width and height of cutting area.

Operation

1 Press the [SLOW] key in the default screen.

▶ The cutting area is displayed.



2 Release the [SLOW] key.

▶ It will return to default screen.

Chapter 3: Basic Operations

This chapter describes the basic methods to operate the plotter manually.

All the operations described in this chapter is to start from the READY status (media is set) as a general condition.

Perform the operation described in this chapter after making the plotter in READY status referring to previous chapter.

PRODUCT SUMMARY

3.1 Raise or Lower the Tool

3.2 Move the Tool Carriage

3.3 Setting the Origin Point

3.4 Setting the Cutting Direction

3.5 Stop Cutting

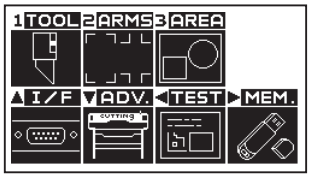
3.1 Raise or Lower the Tool

This is a function to raise or lower the tool (pen).

Operation

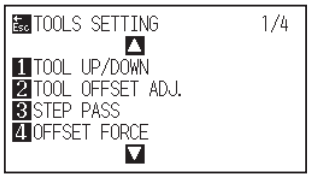
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



2 Press the [1] key (TOOL).

▷ TOOL SETTING (1/4) screen is displayed.



3 Tool is raised or lowered every time the [1] key (TOOL UP/DOWN) is pressed.

4 Press the [PAUSE/MENU] key.

▷ It will return to the default screen.

3.2 Move the Tool Carriage

Tool carriage can be moved manually using the POSITION key.

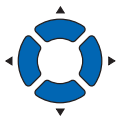
It also can move the tool carriage to the origin, or move it certain distance to keep it away.

Move in Steps Manually

It can manually move in steps when the screen is displaying "READY", or when the POSITION (▲▼◀▶) keys is displayed.

Operation

1 Press the POSITION (▲▼◀▶) keys once to move in the desired direction.



▷ Tool carriage will move toward the direction of the pressed POSITION key for 1 step.

Supplement

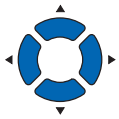
- **It will move in steps every time POSITION (▲▼◀▶) keys is pressed.**
- **Distance of step movement can be changed. See "Setting of Step Movement Distance".**

Continuously Move Manually

It can manually move continuously when the screen is displaying "READY", or when the POSITION (▲▼◀▶) keys is displayed.

Operation

1 Hold the POSITION (▲▼◀▶) keys down to keep moving in the desired direction.



▷ Tool carriage keeps on moving toward the direction of the pressed POSITION key.

2 Release the POSITION (▲▼◀▶) keys.

▷ Movement of the tool carriage stops.

Supplement

When pressing the [SLOW] key and the POSITION key at the same time, the tool carriage moves slowly.

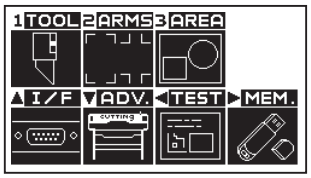
Setting of Step Movement Distance

The parameters when setting the cutting direction are determined by the distance of the cutting direction.

Operation

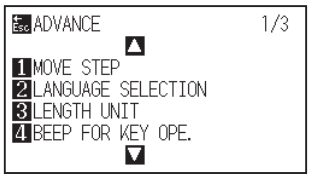
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



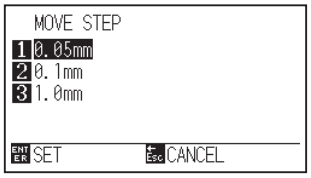
2 Press the POSITION (▼) key (ADV).

▷ ADVANCE setting screen (1/3) is displayed.



3 Press the [1] key (MOVE STEP).

▷ MOVE STEP screen is displayed.



4 Press the [1] key (0.05 mm), [2] key (0.1 mm) or [3] key (1.0 mm).

Supplement

Settable value is 0.05, 0.1, 1.0 (mm).

Value chosen here will be the movement distance for the step movement.

5 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to the ADVANCE setting screen (1/3).

Supplement

It will return to ADVANCE setting screen (1/3) without changing the settings when you press the ESC key (CANCEL).

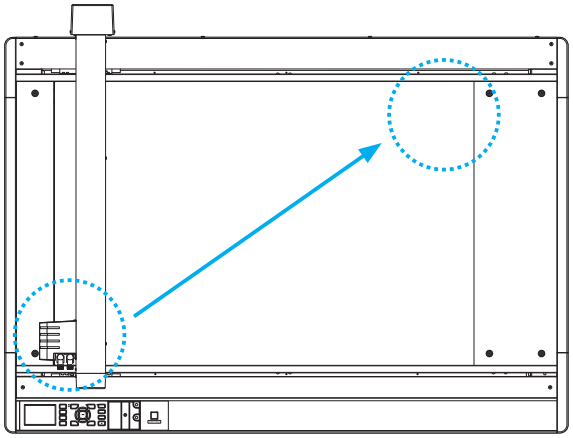
6 Press the [PAUSE/MENU] key.

▷ It will return to the default screen.

Move Away the Tool Carriage

It is possible to move away the tool carriage toward upper right. It makes it easier to confirm the cutting results if you perform this operation after the cutting is completed.

Moving away tool carriage



Operation

1 Press the [1] key (VIEW) in READY status.

▷ Tool carriage will move away.

To move the tool carriage to the origin point, do following:

Operation

1 Press the [2] key (HOME) in READY status.

▷ Tool carriage will move to the origin point.

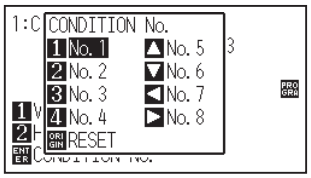
Change the Cutting Condition (Condition No.)

Go through the following steps to change the Cutting Condition (Condition No.).

Operation

1 Press the [ENTER] key in READY status.

▷ CONDITION No. selection screen is displayed.



2 Press the [1] to [4] key or the POSITION (▲▼◀▶) keys while holding down the [ENTER] key to select the cutting condition. (The item is highlighted.)

3 Confirm the setting and release the [ENTER] key.

▷ It will return to the default screen.

Supplement

When the [ORIGIN] key (RESET) is pressed, it will return to state when the power is turned on.

Please refer to for Reset (Revert to the initial state when the power was turned on.).

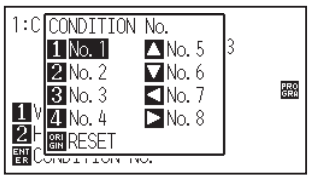
Reset (Revert to the initial state when the power was turned on.)

To move to the position as after the power was turned on, do following.

Operation

1 Press the [ENTER] key in READY status.

▷ CONDITION No. selection screen is displayed.

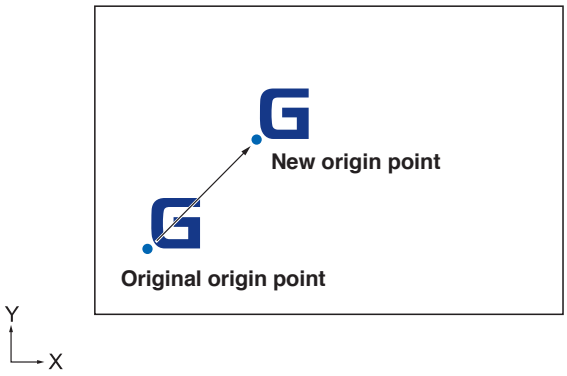


2 Press the [ORIGIN] key (RESET).

▷ Perform the initialization operation and then the READY screen is displayed.

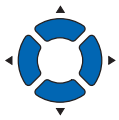
3.3 Setting the Origin Point

Point where the cutting starts is called origin point. The origin point can be set at any location.



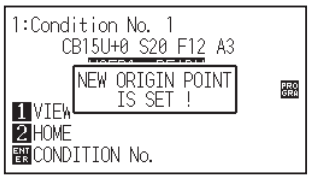
How to set the current position to the new origin

1 Press the POSITION (▲▼◀▶) keys to move the tool to the new origin point.



2 Press the [ORIGIN] key. The beeper sounds to indicate that the new origin has been set.

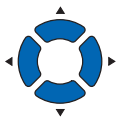
▷ New origin point is set, and "NEW ORIGIN POINT IS SET !" is displayed for few seconds in the screen.



▷ It will return to the default screen.

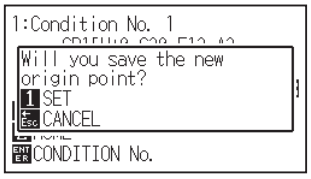
How to store the current position as a new origin

1 Press the POSITION (▲▼◀▶) keys to move the tool to the new origin point.



2 When the [ORIGIN] key is held down, the beeper sounds. When you remove your finger from the [ORIGIN] key, the beeper sounds again.

▷ The following screen is displayed.

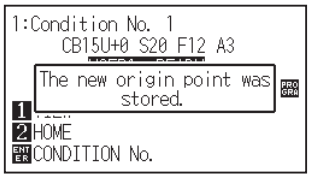


Press the [1] key to set the new origin. Then, the ORIGIN lamp lights.

In this case, even if turned ON/OFF the power, the set origin is not cleared.

▶ "The new origin was recorded" message is displayed on the screen for a few seconds.

[ORIGIN] lamp lights.



If the ROTATE (the coordinates are rotated) or MIRROR mode is selected or cancelled after the origin point has been moved, the origin point is reset to its default position.

However, if the [ORIGIN] key is held down, the origin point is not reset to its default position even when the ROTATE or MIRROR mode is cancelled.

To reset the newly registered origin point to its default position, move the cutter pen in the direction towards the lower left point until it stops, and then either hold down the [ORIGIN] key or turn on the power while pressing the [ORIGIN] key.

If you intend to use the ORIGIN function in combination with the ROTATE of the coordinates or the MIRROR mode, be sure to set the cutting origin point after setting the ROTATE of the coordinates or MIRROR mode.

Supplement

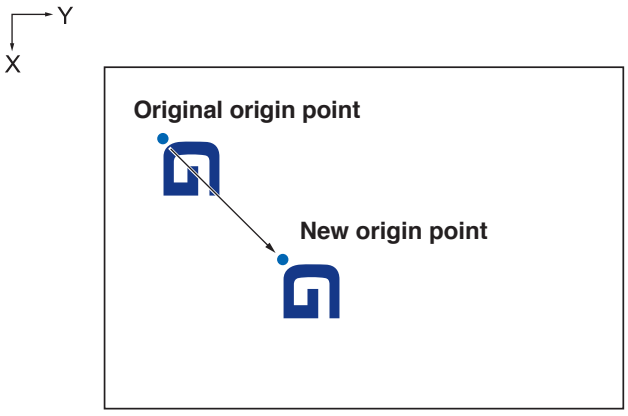
- **The ORIGIN setting becomes invalid when the Registration Mark mode is specified.**
- **After a new origin has been set, the coordinates being displayed on the LCD represent the distances along the X and Y axes from the new origin.**
- **Please refer to "Chapter 5 Registration Mark Settings and Detection" for the origin point after the automatic registration mark reading function has been used.**

When Coordinate Axes Rotation are Set

If the origin point is moved while the coordinate axes are rotated, the origin point will move as shown below.

Supplement

See "Setting the Cutting Direction" about the rotation of the coordinate axes.



Setting Origin Point When HP-GL is Set

When using the HP-GL command, the origin point is set to either the lower left of the cutting area or the center.

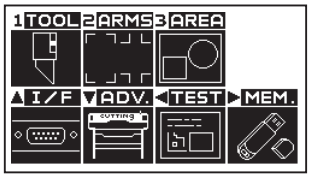
Supplement

- **When using the GP-GL command, this setting does not affect the operation.**
- **See "Settings of Controls from Computer" about setting the COMMAND.**

Operation

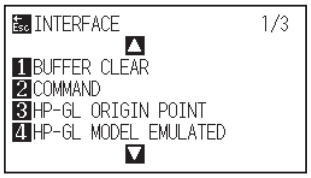
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



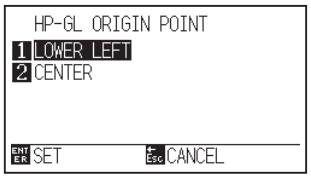
2 Press the POSITION (▲) key (I/F).

▷ INTERFACE screen (1/3) is displayed.



3 Press the [3] key (HP-GL ORIGIN POINT).

▷ HP-GL ORIGIN POINT setting screen is displayed.



4 Press the [1] key (LOWER LEFT) or the [2] key (CENTER).

5 Confirm the setting and press the [ENTER] key.

▷ Setting will be set, and it will return to INTERFACE screen (1/3).

Supplement

It will return to INTERFACE screen (1/3) without changing the settings when you press the [ESC] key (CANCEL).

6 Press the [PAUSE/MENU] key.

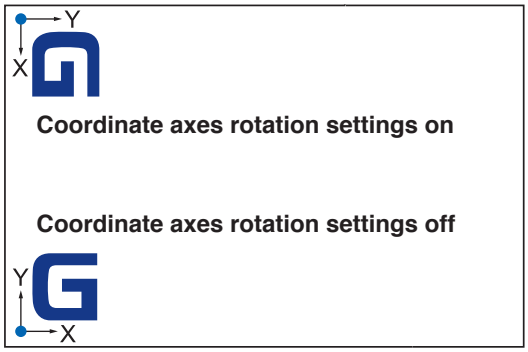
▷ It will return to the default screen.

3.4 Setting the Cutting Direction

Rotate the coordinate axes to change the cutting direction.

Supplement

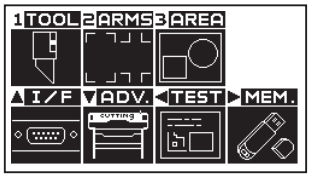
The rotation settings will be saved even if the power is shut off.



Operation

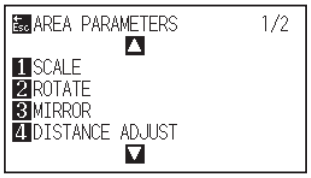
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



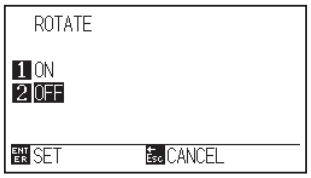
2 Press the [3] key (AREA).

▷ AREA PARAMETERS screen (1/2) is displayed.



3 Press the [2] key (ROTATE).

▷ ROTATE screen is displayed.



4 Press the [1] key (ON) or the [2] key (OFF).

5 Confirm the setting and press the [ENTER] key.

▷ Setting will be set, and it will return to AREA PARAMETERS screen (1/2).

6 Press the [PAUSE/MENU] key.

▷ It will return to the default screen.

Supplement

It will return to AREA PARAMETERS screen (1/2) without changing the settings when you press the (ESC) key (CANCEL).

3.5 Stop Cutting

It will stop cutting when the [PAUSE/MENU] key is pressed while cutting. Operation selection menu is displayed on the screen of the control panel while it is stopped. It is possible to choose either to continue or stop the operation.

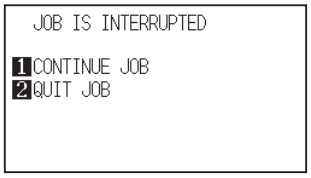
It is also possible to exchange or reset the media while it is stopped.

Pause and Resume Cutting

Operation

1 Press the [PAUSE/MENU] key.

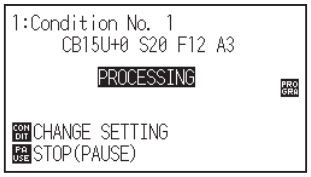
▷ Cutting will stop and following screen is displayed.



2 Perform necessary operation, such as exchanging the media.

3 Press the [1] key (CONTINUE JOB).

▷ Cutting will start and the screen will resume to operation.

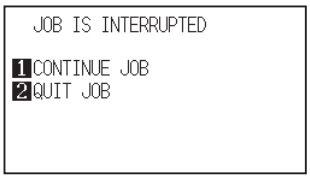


Stop Cutting

Operation

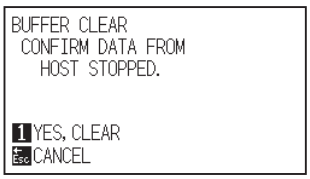
1 Press the [PAUSE/MENU] key.

▷ Operation will stop and following screen is displayed.



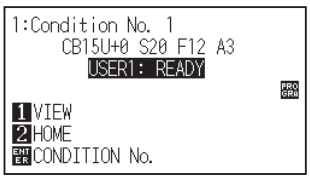
2 Press the [2] key (QUIT JOB).

▷ The following screen is displayed.



3 Confirm if the data transfer from the computer is stopped and press the [1] key (YES, CLEAR).

▷ The following screen is displayed, the buffer memory is cleared, and it will return to the default screen.



Supplement

- **It will return to operation stop screen without clearing buffer memory when [ESC] key (CANCEL) is pressed..**
- **In the case that the operation is interrupted and the buffer is cleared, make sure that the data transfer is stopped. If the data transfer continues, abnormal operations where data is processed from the middle may occur.**

Chapter 4: Convenient Functions

This chapter describes about the convenient functions of the plotter.

PRODUCT SUMMARY

4.1 Settings for Cutting
4.2 Copy (Duplicate Cutting)
4.3 Dual Configuration

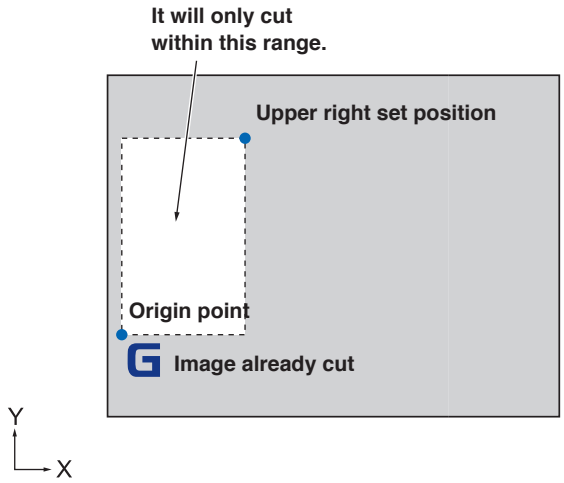
4.1 Settings for Cutting

Settings such as area and width of cutting, page length, mirrored, enlarged, shrunk, etc., can be set.

Setting Cutting Area

Origin point will be set at lower left of the AREA once the AREA is set. It is possible to set the origin point at the center when the HP-GL is selected.

Move the origin point to change the cutting position.



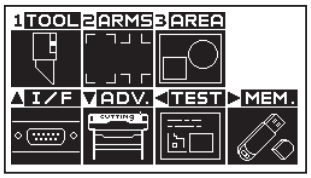
Supplement

- **See "Setting the Origin Point" about the moving the origin point.**
- **See "Setting Origin Point When HP-GL is Set" for setting the origin point with HPGL command.**

Operation

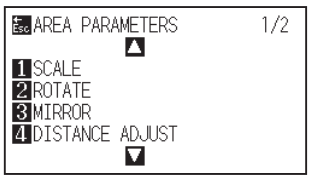
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



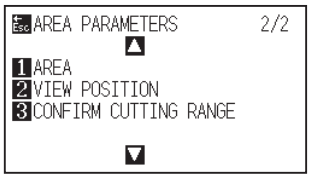
2 Press the [3] key (AREA).

▷ AREA PARAMETERS screen (1/2) is displayed.



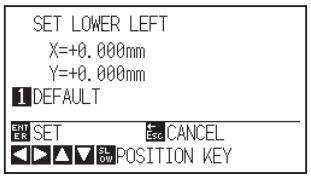
3 Press the POSITION (▲) key.

▶ AREA PARAMETERS screen (2/2) is displayed.



4 Press the [1] key (AREA).

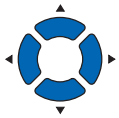
▶ SET LOWER LEFT screen is displayed.



Supplement

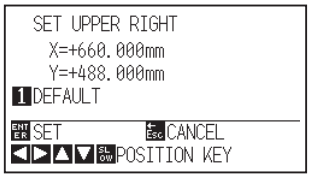
- **Coordinate value displayed here is the distance to the tool carriage from the origin point.**
- **Press [1] key (DEFAULT) if the cutting are is not to change.**

5 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the position to be the lower left of the AREA.



6 Press the [ENTER] key (SET) once the tool carriage is in correct position.

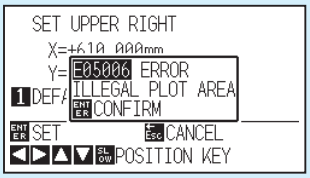
▶ SET UPPER RIGHT screen is displayed.



Supplement

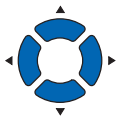
Please set the X and Y cut range for the areas on the upper right and lower left points to at least 10 mm.

An error message will appear for areas that are too small.



You will need to reset the settings for the upper right and lower left points.

7 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the upper right position of the AREA.



8 Press the [ENTER] key (SET) once the tool carriage is in correct position.

▶ Setting will be set, and it will return to AREA PARAMETER screen (2/2).

Supplement

It will return to AREA PARAMETERS screen (2/2) without changing the settings when you press the [ESC] key (CANCEL).

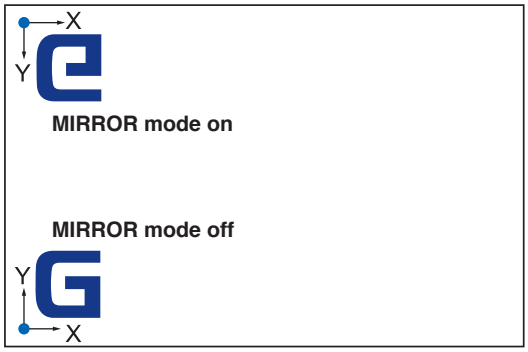
9 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Setting Mirror

There is a function to mirror the cutting by reversing the origin point and coordinate axes.

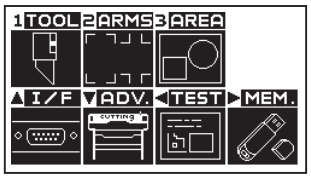
Set the MIRROR setting to on do mirroring.



Operation

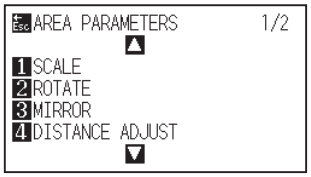
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



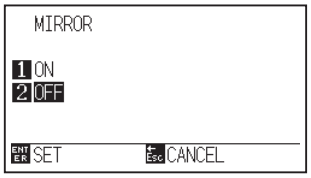
2 Press the [3] key (AREA).

▷ AREA PARAMETERS screen (1/2) is displayed.



3 Press the [3] key (MIRROR).

▷ MIRROR setting screen is displayed.



4 Press the [1] key (ON).

Supplement

Press the [2] key (OFF) to turn off the mirror.

5 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to AREA PARAMETERS screen (1/2).

Supplement

It will return to AREA PARAMETERS screen (1/2) without changing the settings when you press the [ESC] key (CANCEL).

6 Press the [PAUSE/MENU] key.

The tool carriage moves to the coordinate position you set.

▶ It will return to default screen.

Set the enlarge/shrink scale (Scale)

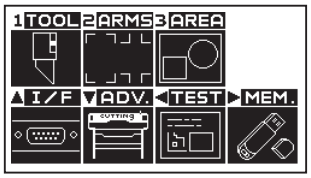
It can enlarge or shrink cutting.

The rate of enlargement or shrinkage of the cutting data can be changed by settings.

Operation

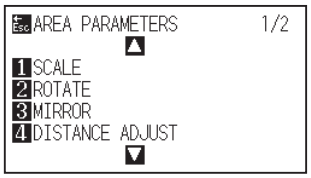
1 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed.



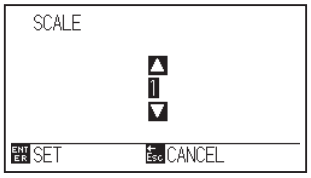
2 Press the [3] key (AREA).

▶ AREA PARAMETERS screen (1/2) is displayed.

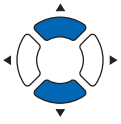


3 Press the [1] key (SCALE).

▶ SCALE setting screen is displayed.



4 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Values that can be set are 1/8, 1/4, 1/2, 1, 2, 3, 4, 5, 6, 7, and 8 (multiplications).

5 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to AREA PARAMETERS screen (1/2).

6 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to AREA PARAMETERS screen (1/2) without changing the settings when you press the [ESC] key (CANCEL).

4.2 Copy (Duplicate Cutting)

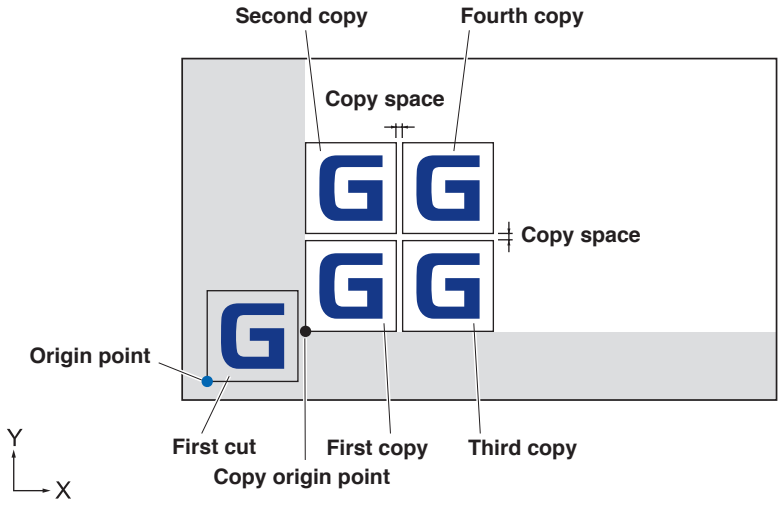
The function to cut specified numbers of cutting data stored in the buffer memory is called COPY.

Supplement

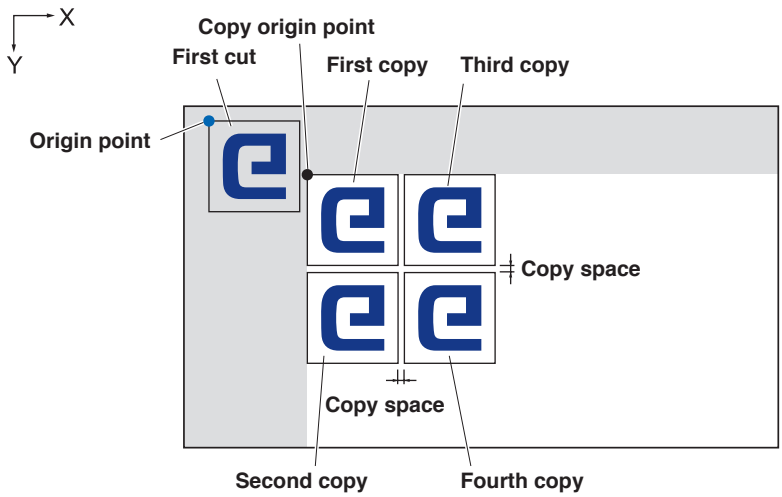
- **Do not send new data to plotter while copying. Cutting data in the buffer memory will be cleared.**
- **Previous cutting data will be cleared and newly sent data will be stored as cutting data if you send new data with 10 seconds or more interval from the time it finished cutting.**
- **It can not copy if data is more than 1.6 MB because it cannot be stored in the buffer memory of the plotter.**
- **Buffer memory that can be used for copy will decrease if you turn on the data sort. Turn off the data sort when you need to copy cutting with large data. See "Sorting the Cutting Data" for data sort.**
- **Watch out that it does not fall out of media when cutting with copy function.**
- **If the original cutting data to be copied starts away from the origin point, copied cutting will also start away from the origin point. To avoid wasted space, create the cutting data close to the origin point.**

When Cutting Data Has No Registration Mark

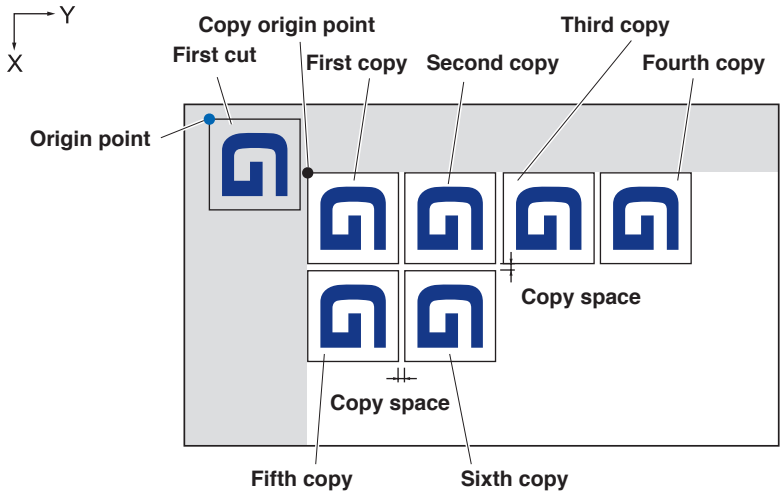
Copy is performed in following order.



It will copy in following order when MIRROR is set.



It will copy in following order when COORDINATE AXES ROTATION is set.

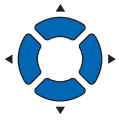


Operation

1 Create one cutting data you want to copy.

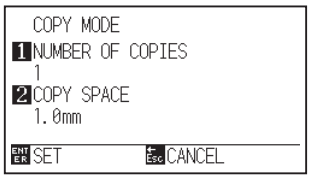
▶ Cutting data is stored in the buffer memory.

2 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the position to copy.



3 Press the [COPY] key.

▶ COPY MODE screen is displayed.

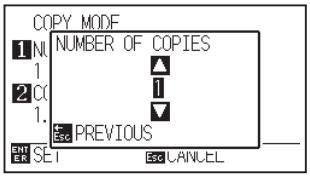


Supplement

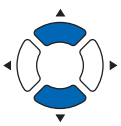
- **"NO DATA FOR COPY IN BUFFER!" is displayed if there is no data in the buffer memory. Send the cutting data.**
- **If too much data is sent from the buffer memory, "Copy mode buffer is full!" will be displayed.**
- **If the data to be copied is larger than the cutting area, "Cannot copy, the valid area is too small" will be displayed.**

4 Press the [1] key (NUMBER OF COPIES).

▶ NUMBER OF COPIES setting screen is displayed.



5 Press the POSITION (▲▼) key and increase or decrease the setting value.



Supplement

- **Number of copies can be set up to the number of loaded media.**
- **The initial value for the number of copies is always 1.**

6 Confirm the setting value and press the [ESC] key (PREVIOUS).

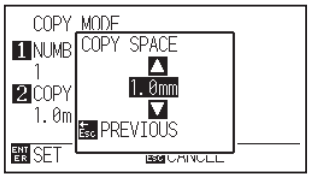
▷ Number of copies will be selected, and it will return to COPY MODE screen.

Supplement

"CANNOT COPY CUT AREA TOO SMALL!" is displayed if the cutting area is smaller than the copy data. Either expand the cutting area, or set the media that is big enough to copy.

7 Press the [2] key (COPY SPACE).

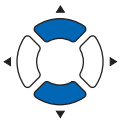
▷ COPY SPACE setting screen is displayed.



Supplement

- **Copy space can be set from 1.0 mm to 10.0 mm.**
- **This setting is maintained even if the power is turned off.**

8 Press the POSITION (▲▼) keys and increase or decrease the setting value.



9 Confirm the setting value, and press the [ESC] key (PREVIOUS).

▷ Copy space will be selected, and it will return to COPY MODE screen.

10 Confirm the setting and press the [ENTER] key (SET).

▷ "COPY" is displayed on the screen, and it will copy as much as specified.

Supplement

Cutting data is stored even if the media is exchanged. It can be copied as many times until the buffer memory is cleared. It can be copied again after exchanging the media by pressing [COPY] key.

When Cutting Data Has Registration Marks

Copy is performed in following order.

The CHANGE MEDIA message is displayed each time when ending a single cut.

Press the [ENTER] key after changing the media. The cutting area (cut) is copied.

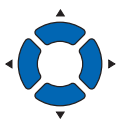
Media change copies can be made up to the set copy number (designated number).

Operation

1 Create one cutting data you want to copy.

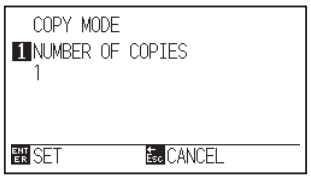
▷ Cutting data is stored in the buffer memory.

2 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the position to copy.



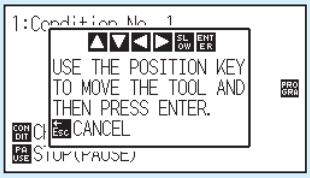
3 Press the [COPY] key.

▶ COPY MODE screen is displayed.



Supplement

- **The CHANGE MEDIA a message is displayed each time when ending a single cut.**

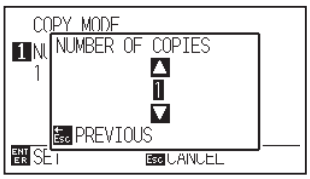


"If the [ESC] key (CANCEL) is pressed, copying will be suspended and it will return to the default screen.

- **If there is no data in the buffer memory, "There is no data for copying in the buffer" will be displayed. Please send cutting data.**
- **If too much data is sent from the buffer memory, "Copy mode buffer is full!" will be displayed.**

4 Press the [1] key (NUMBER OF COPIES).

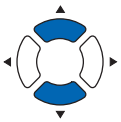
▶ NUMBER OF COPIES setting screen is displayed.



Supplement

The copy number can be set from 1 to 100.

5 Press the POSITION (▲▼) key and increase or decrease the setting value.



6 Confirm the setting value and press the [ESC] key (PREVIOUS).

▶ Number of copies will be selected, and it will return to COPY MODE screen.

Supplement

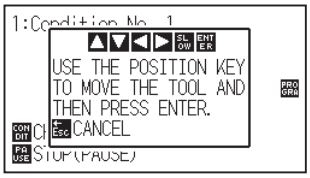
"CANNOT COPY CUT AREA TOO SMALL!" is displayed if the cutting area is smaller than the copy data. Either expand the cutting area, or set the media that is big enough to copy.

7 Confirm the setting and press the [ENTER] key (SET).

▶ The plotter starts a copy immediately.

8 Change the media.

▶ "USE THE POSITION KEY TO MOVE TOOL AND THEN PRESS ENTER." will be displayed on the screen.



9 The cutting plotter starts a copy immediately after changing the media.

This operation's specified number of copies will be repeated.

To suspend, press the [ESC] key (CANCEL).

Supplement

Cutting data is stored even if the media is exchanged. It can be copied as many times until the buffer memory is cleared. It can be copied again after exchanging the media by pressing [COPY] key.

4.3 Dual Configuration

This cutting plotter can save independently the two types of settings. This is called “dual configuration”.

Using the dual configuration, the setting can be quickly switched to other settings.

When worked with two operators, the settings for each operator can be saved separately, in addition, the two types of settings that conform to the media can be saved, the operator can switch quickly the condition settings at the time of the media replacement.

Dual configuration is done by selecting the user.

There are USER 1 (upper LED lights) and USER 2 (lower LED lights) as a user.

Supplement

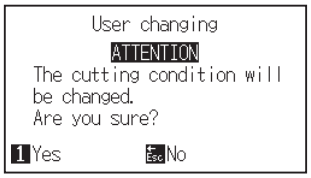
When the user is switched USER 1 to/from USER 2, the cutting data will disappear.

Selecting the user

Operation

1 Press the [USER1/2] key in the default screen.

▶ User changing screen is displayed.



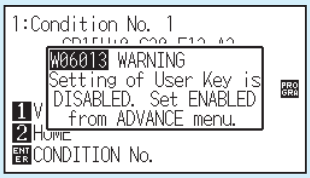
2 Press the [1] key (Yes).

The "USER 1/2 lamp" that is switched by the [USER1/2] key lights.

▶ The user is selected and then the plotter is reset.

Supplement

When the "User Key" is set to "DISABLED", the error message is displayed.



Please set the "User Key" to "ENABLED" in the ADV. setting screen.

Chapter 5: ARMS (Advanced Registration Mark Sensing System)

ARMS (Advanced Registration Mark Sensing System) is a function to scan the registration mark written on the media using sensors.

Tilt of the axes and distance can be adjusted with 2POINTS or 3POINTS. 2 axes warp adjustment can be adjusted in addition to axes adjustment (tilt) and distance adjustment with 4POINTS.

When cutting the outlines of the printed figure, and when re-cutting media, using ARMS to adjust for printing position discrepancies, high precision cutting can be done.

It is possible to perform a multiple registration mark adjustment or segment area adjustment by linking with the application software on the computer. See the operation guides of the application software about the registration mark adjustment function linked with the application software.

This chapter describes the outline of the ARMS (Advanced Registration Mark Sensing System) and how to set and use the ARMS on the control panel.

PRODUCT SUMMARY

5.1 Outline of ARMS

5.2 Setting and Adjustment of ARMS

5.3 Setting the Position Using ARMS

5.1 Outline of ARMS

ARMS (Advanced Registration Mark Sensing System) scans the registration mark (reference line) written on the media using sensors.

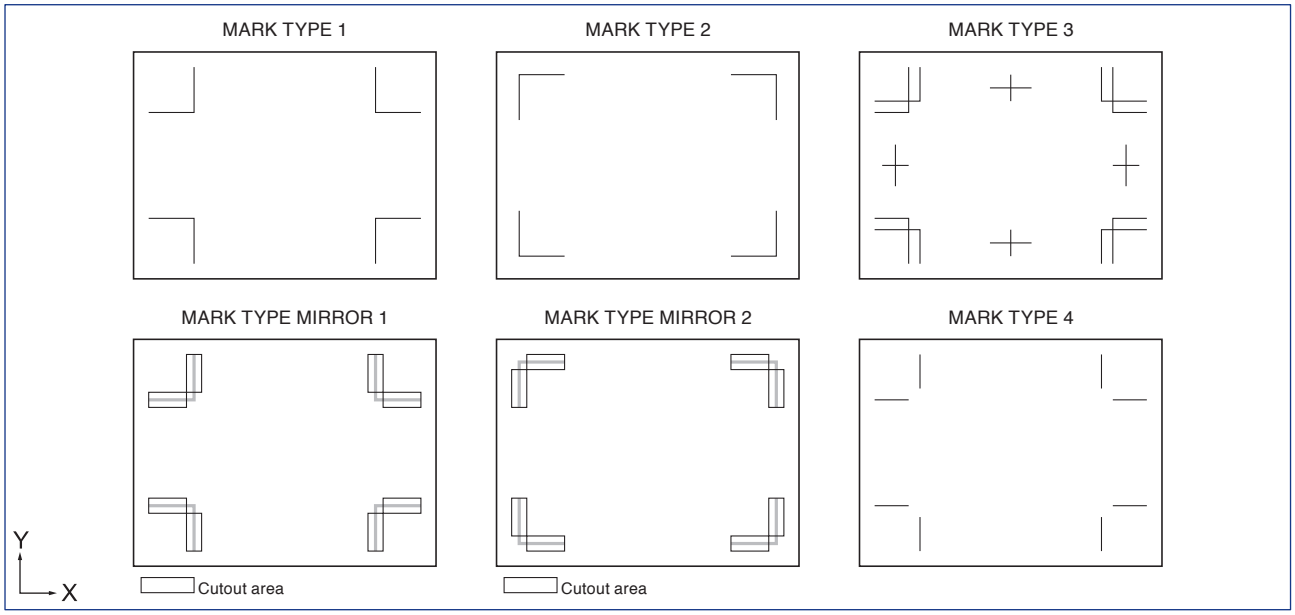
Registration mark scanning accuracy when a designated registration mark is being scanned by this machine is within 0.3 mm.

Please take note of the following when scanning a registration mark. Cutting area and width, page length, certificate, zooming in/out can all be set.

- Shape (Pattern) of the registration mark
- Scan range necessary to sense the registration mark
- Position of the origin point and the registration mark
- Cutting area when adjusting the regisitaration mark
- Automatic sensing of registration mark position
- Media that registration mark cannot be sensed

Shape (Pattern) of the Registration Mark

The shapes (patterns) of the registration mark that the plotter can scan are 6 types.



Supplement

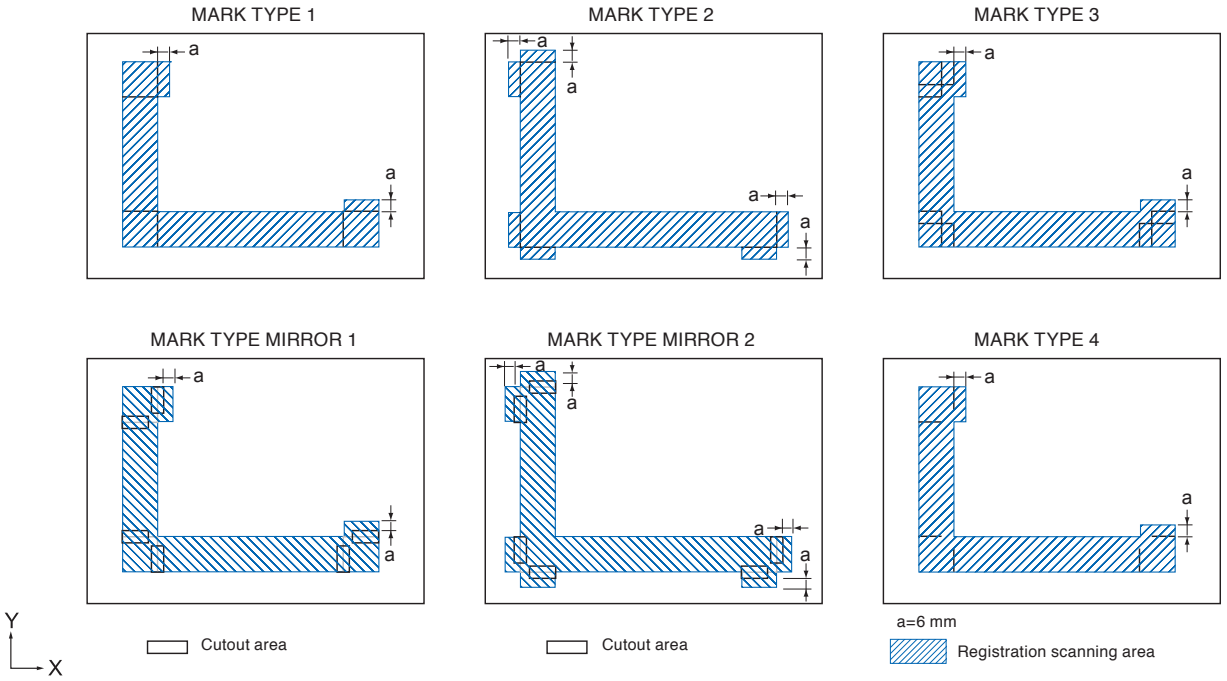
- **Create the registration mark as a plotting data with the application software. Using the Adobe Illustrator, create the registration marks 3 and 4.**
- **Create the registration mark in accordance with following conditions.**
  - **Thickness of the line is between 0.3 to 1.0 mm.**
  - **Size of the registration mark is between 5 to 20 mm.**
  - **Use one of Pattern 1 to Pattern 4 for the shape of registration mark.**
  - **Create the registration mark with single line, and specify the thickness of line to necessary thickness. Double line cannot be used.**

Scan Range Necessary to Sense the Registration Mark

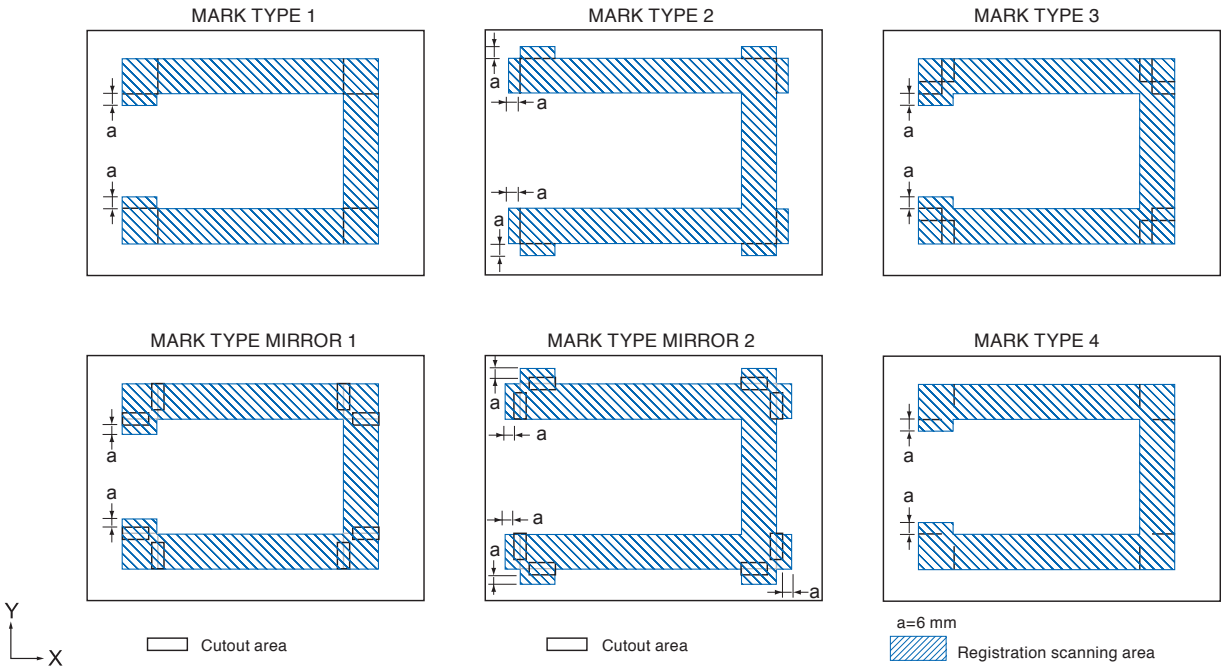
The range of tool carriage and media movement needed to scan the registration mark is as following.

Do not print in the shaded area shown in the Figure below.

For 3POINTS



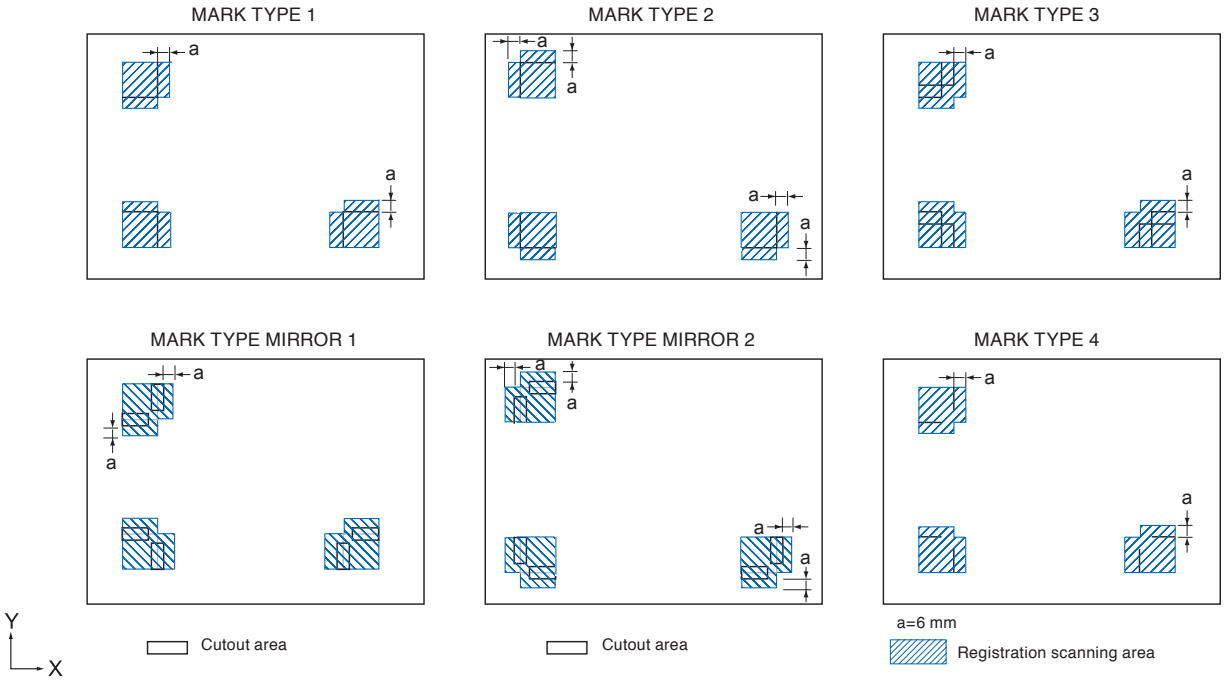
For 4POINTS



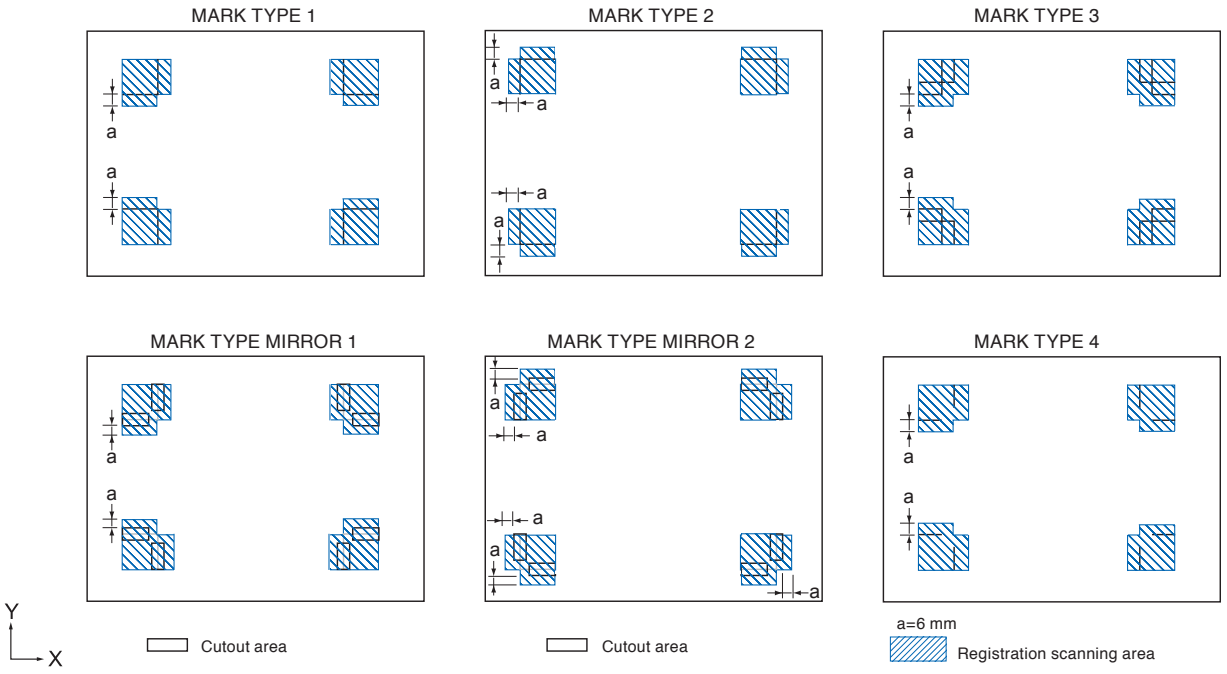
The area necessary to scan the registration mark when the Mark Distance is set is as following:

Do not print in the shaded area shown in the Figure below.

For 3POINTS



For 4POINTS

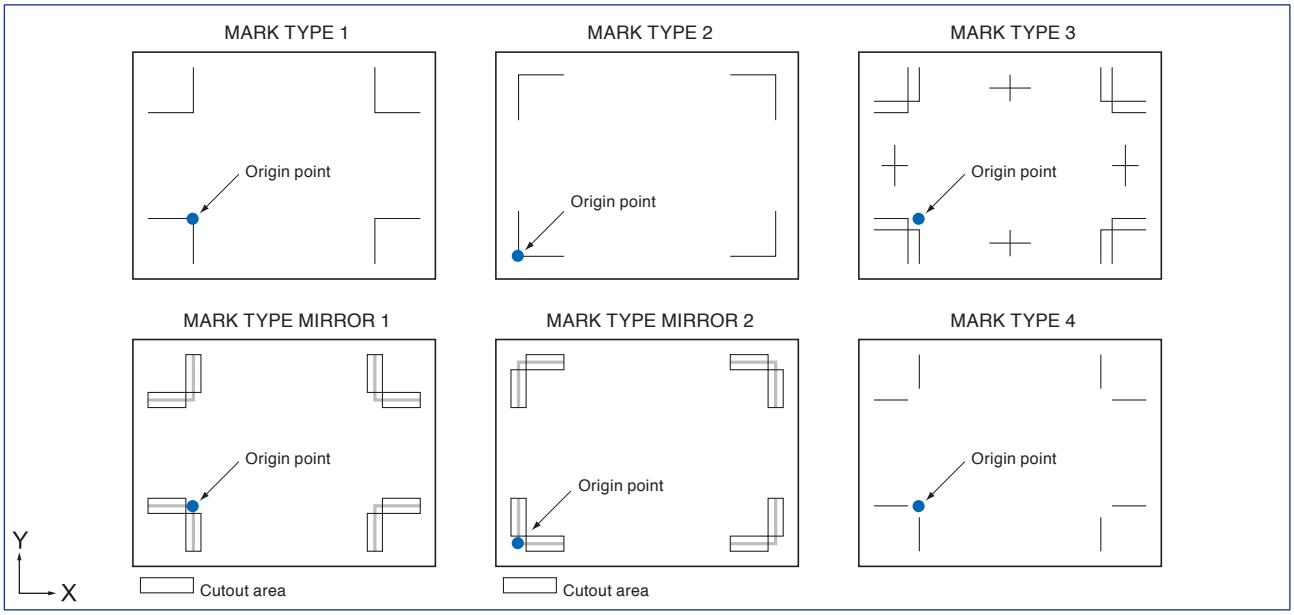


Supplement

- **See "Setting Shape (Pattern) of Registration Mark" to change the shape (pattern) of the registration mark.**
- **See "Setting Mark Distance" for setting Mark Distance.**
- **It may mistakenly sense as registration mark if there is anything else plotted within the registration mark scanning area. Adjust the "MARK DISTANCE" so it can scan the registration mark correctly. (See "Setting Mark Distance")**
- **Clean any dirt or foreign objects from the media. Any dirt or foreign object might be scanned mistakenly as registration mark.**
- **Plot the registration mark in contrast easy to scan, such as black lines on white background. Adjust the scanning level of the sensor if you need to use the colored or glossy media. (See "Adjusting the Sensor Level ")**

Position of the Origin Point and the Registration Mark

The origin point after scanning the registration mark will be as shown below.



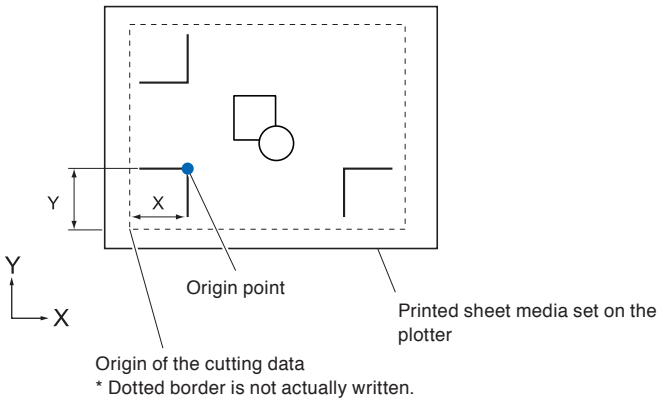
Supplement

Offset amount away from the registration mark will be the origin point for cutting if the registration mark offset is set. (See "Setting Offset Between the Registration Mark and Cutting Origin Point")

The condition offset is generated is explained with creating the registration mark and the cutting data using an application software on the computer as an example.

Print onto the sheet media using a printer, and set that sheet media on the cutting plotter. Send the cutting data from the computer to cutting plotter.

Also, scan the registration mark on the sheet media with the cutting plotter, determine the origin point of the plotter.



The origin point of the plotter will be set as the registration mark origin point as shown above, and it is different from the origin point of the cutting data. The difference between these two origin points are called as offset.

In case of the figure above, set x and y to the cutting plotter as a registration mark offset.

It can cut properly by setting the offset value to the cutting plotter.

There are following methods to measure the offset.

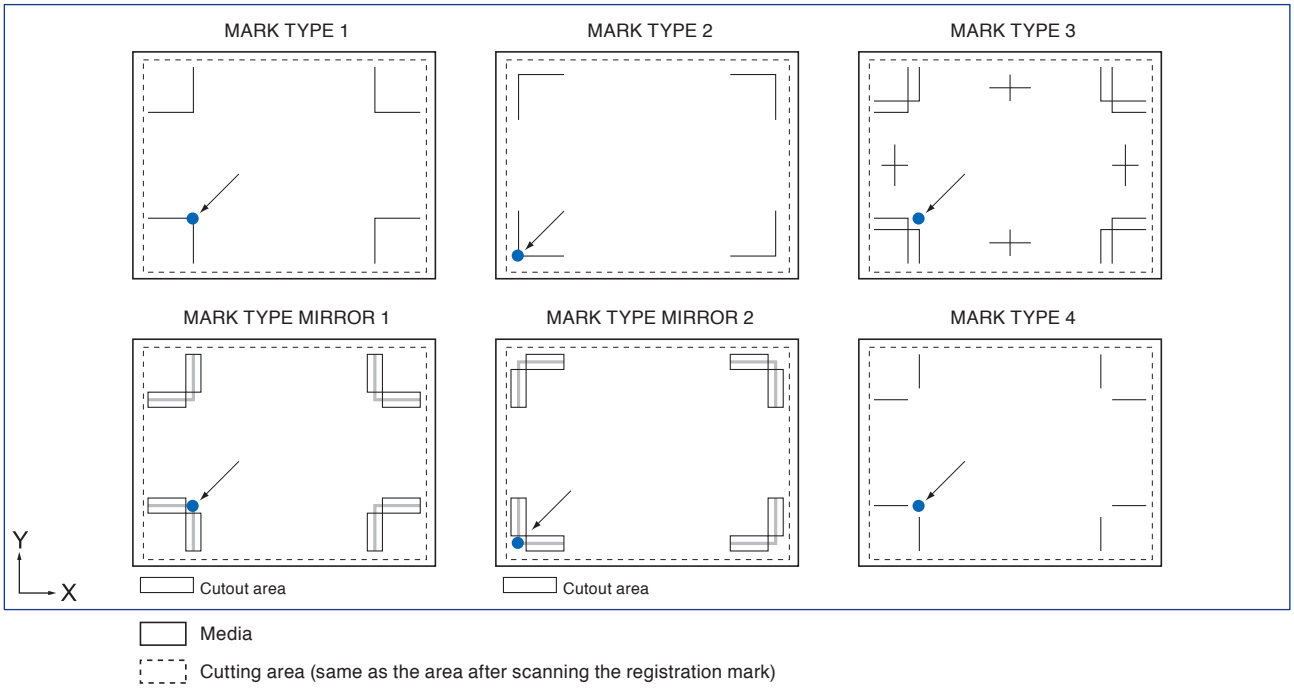
- Cutting data is checked on the computer, and the distance between the origin point of the cutting data and the registration mark origin point is measured.

Cutting area when adjusting the regisitaration mark

Even when adjusting the regisitaration mark, you can cut the outside of the registration mark (cutting area).

Supplement

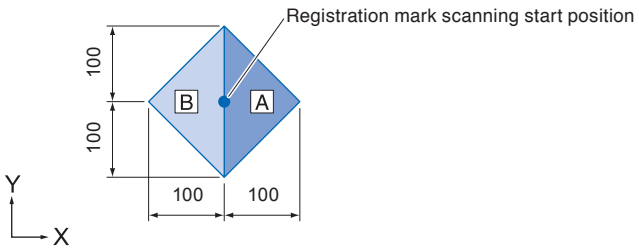
If the distortion due to the adjustment is large, there is a possibility that the cutting area is reduced.



Automatic sensed of registration mark position

The registration mark is sensed within area A from the registration mark scanning start position (tool position). When the registration mark is not sensed within the area A, then within area B is sensed. Only when the registration mark is present in area A or B, it is possible to recognize as the mark.

Unit: mm



Media That Registration Mark Cannot be Sensed

It may be hard to scan the registration mark as following, depending on the media conditions.

- Transparent media

  Registration mark cannot be scanned because the lighting panel surface is also scanned.

- Registration mark other than black line on white background

  Sensitivity of the sensor is based on the registration mark written in black on white background. It makes harder to scan the registration mark on colored background or written in colors other than black. Adjust the sensitivity level of the sensor. (See "Adjusting the Sensor Level")

- Sloppy plotting and media

  Registration mark may not be scanned if the surface is dirty, bent, or the lines are blurred.

> ⚠ **CAUTION**
>
> **The registration marks on the laminated media might not be scanned due to the gloss of the laminate. Please try to test preliminarily.**

> **Supplement**
>
> **Use the axes adjustment function if the automatic registration mark scan is not possible. (See "Manual Position Adjust")**

5.2 Setting and Adjustment of ARMS

This section describes the necessary adjustment and settings to correctly scan the registration mark with ARMS.

- Setting MARK SCAN MODE and Numbers
- Setting Shape (Pattern) of Registration Mark
- Setting Registration Mark Size
- Setting Mark Distance
- Distance Adjustment Between the Registration Mark
- Setting Offset Between the Registration Mark and Cutting Origin Point
- Adjusting the Sensor Level
- Manually Adjusting the Sensor Level (Threshold Value)
- Test the Registration Mark Sensor
- Setting Speed of the Registration Mark Scan
- Adjusting for the Registration Mark Scan Position

Setting MARK SCAN MODE and Numbers

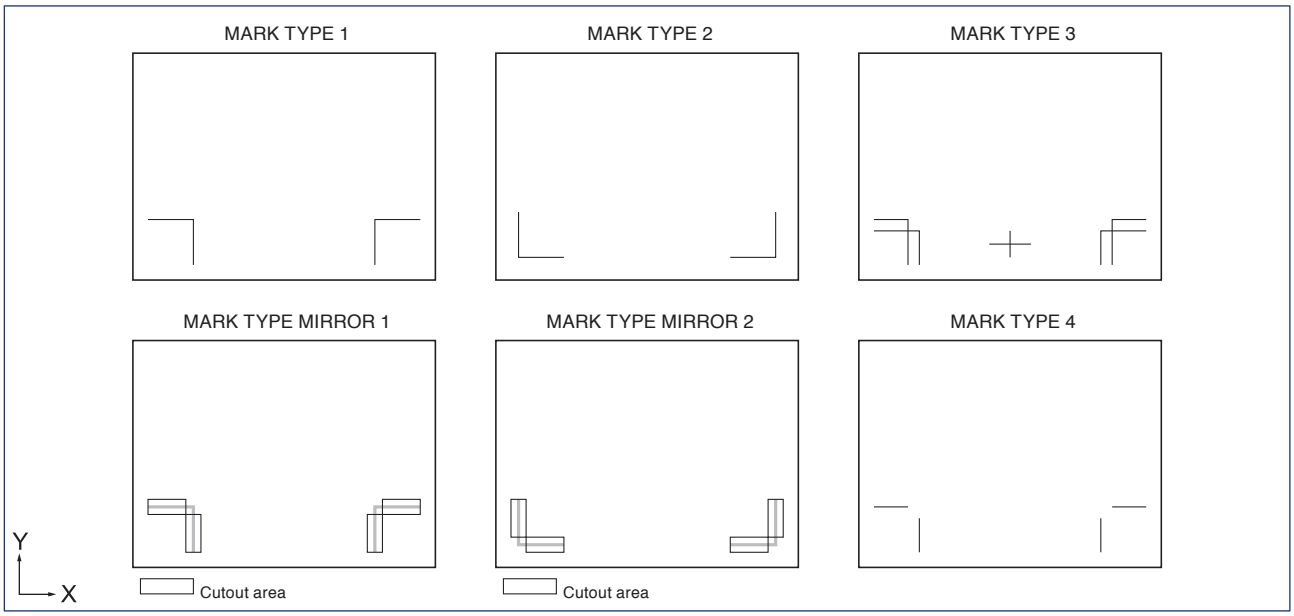
Set the MARK SCAN mode to ARMS to perform automatic registration mark scan.

Supplement

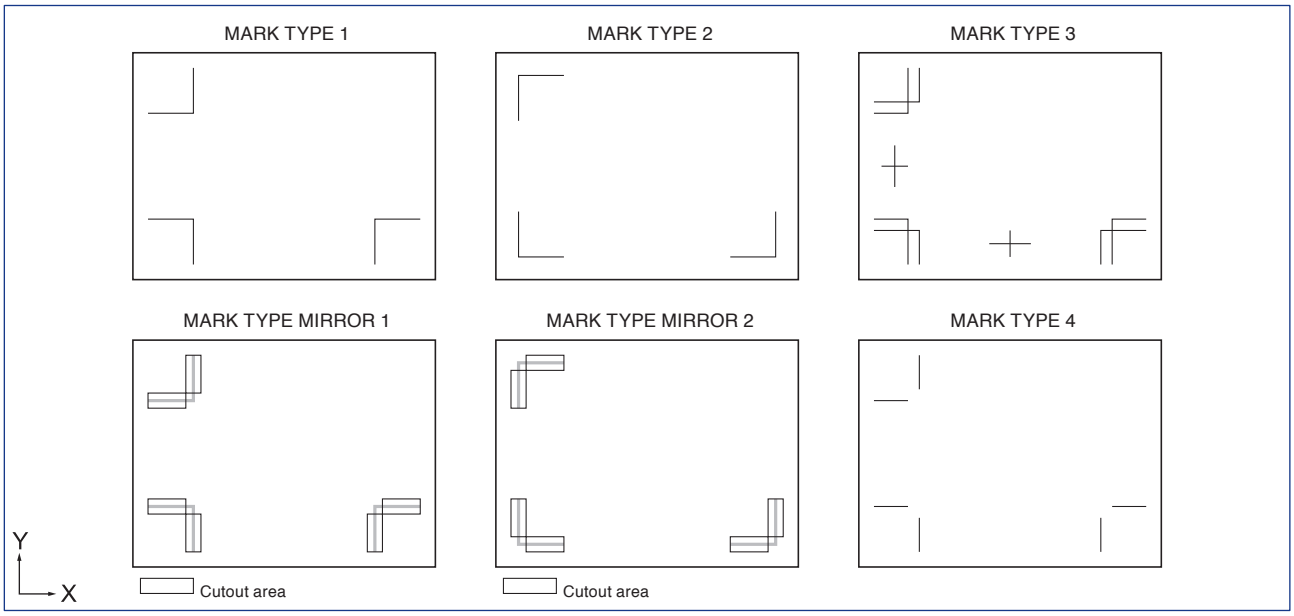
There are "AXIS ALIGNMENT" and "OFF" in addition to "ARMS" in the MARK SCAN MODEs. To turn "OFF", select "OFF" for the mode in following procedures. See "Manual Position Adjust" for AXIS ALIGNMENT".

Set the numbers of registration marks when the MARK SCAN MODE is set to ARMS. Select the POINTS from 2POINTS, 3POINTS, or 4POINTS. Position of the registration marks for each is as following.

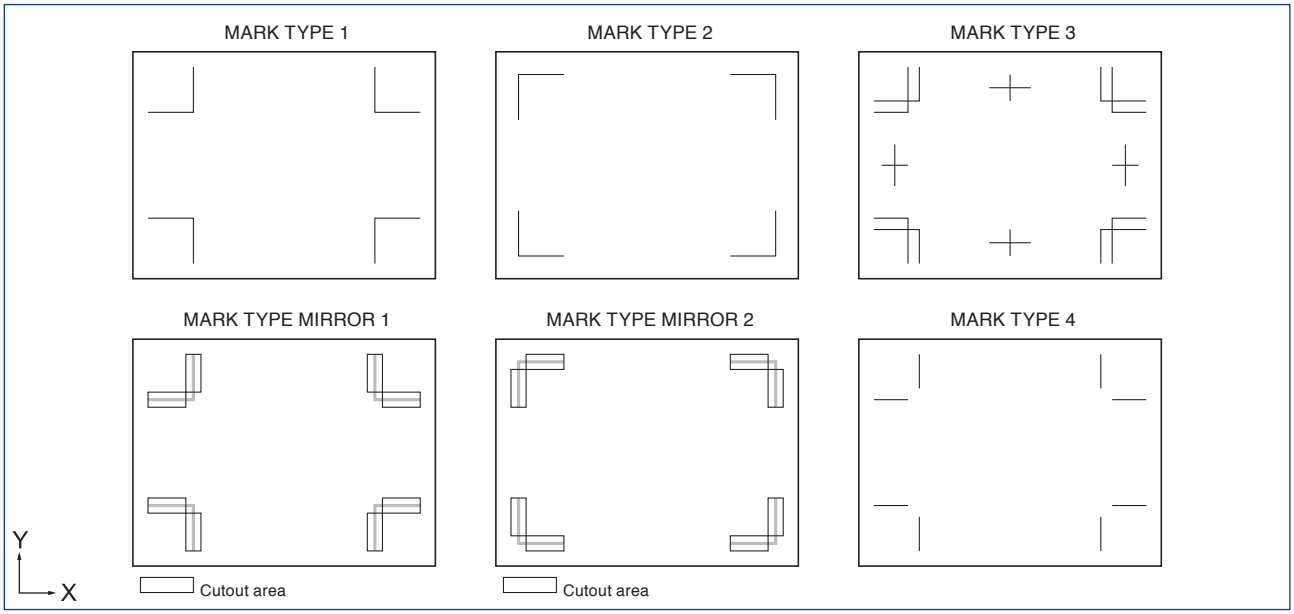
2POINTS



3POINTS



4POINTS



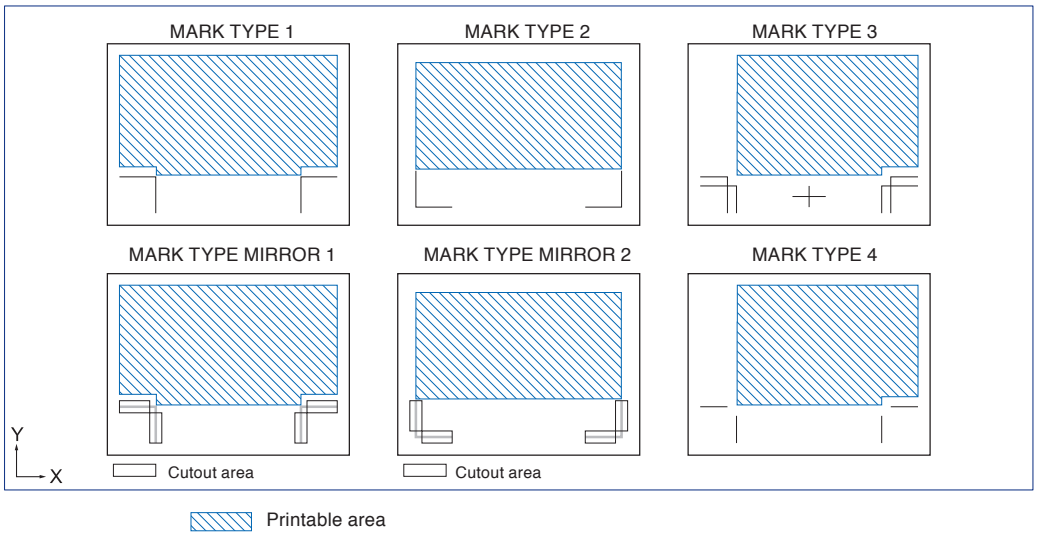
With more registration marks, precision of matching the printed image and the cutting will increase. But if there are many registration marks, it will take longer to sense, and the area that can be cut becomes smaller.

1 axis adjustment (2POINT sensing)

Supplement

- **Multiple registration marks (Alignment registration mark) is not available. (See the "Multiple registration marks [Alignment registration mark])**
- **The printable range on the figure below is for when the Mark Distance is not specified. The cutting area changes depending on the Mark Distance that is set.**

It will detect the tilt of the printing from 2 registration marks, and cut is performed matching the tilt of the print.



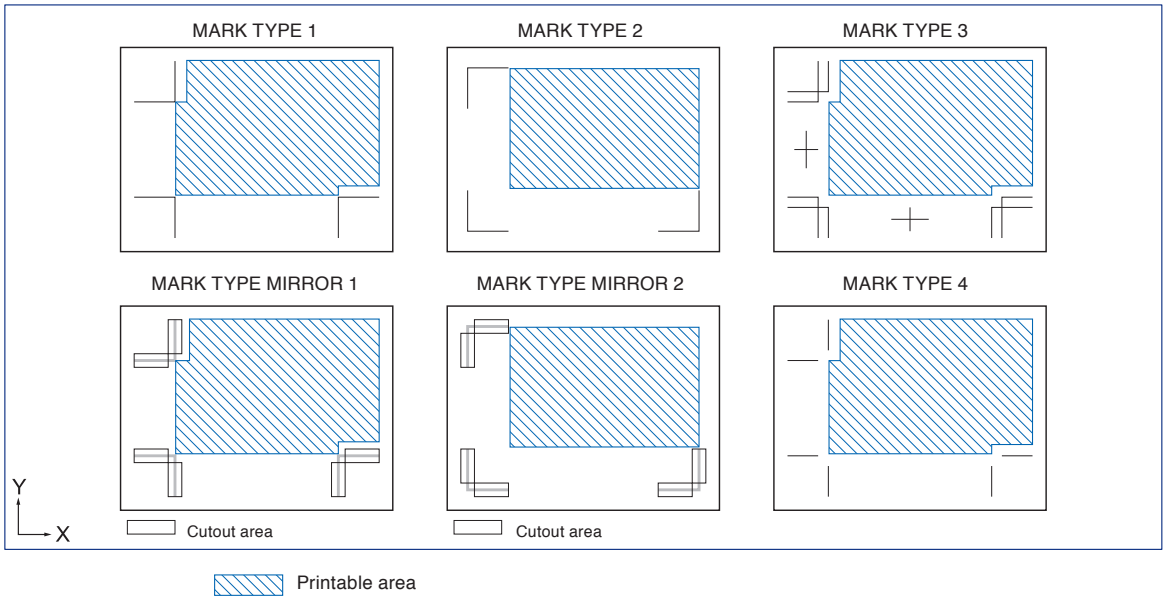
2 axes adjustment (3POINTS sensing)

Supplement

- **Distance between the registration marks can be adjusted.**
- **Multiple registration marks (Alignment registration mark) is available. (See the "Multiple registration marks [Alignment registration mark)**
- **The printable range on the figure below is for when the Mark Distance is not specified. The cutting area changes depending on the Mark Distance that is set.**

It will sense the vertical and horizontal tilts from 3 registration marks, and cut is performed matching the tilt of the print.

Precision of print and cut position will be higher than the 1 axis adjustment.



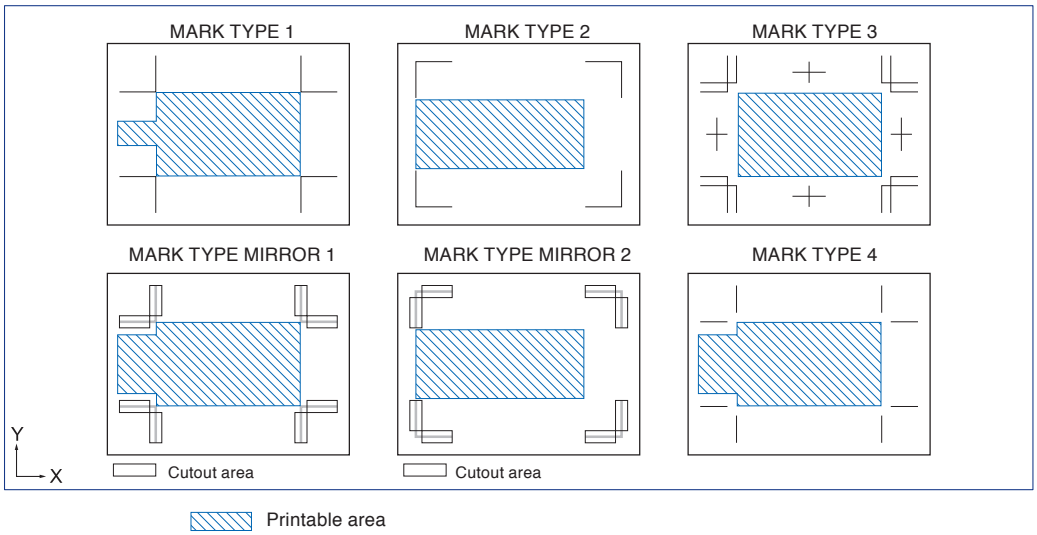
4 axes adjustment (4POINTS sensing)

Supplement

- **Distance between the registration marks can be adjusted.**
- **Multiple registration marks (Alignment registration mark) is available. (See the "Multiple registration marks [Alignment registration mark] ")**
- **The printable range on the figure below is for when the Mark Distance is not specified. The cutting area changes depending on the Mark Distance that is set.**

It will sense the left and right vertical tilts and upper and lower horizontal tilt from 4 registration marks, and cut is performed matching the tilt of the print.

Precision of print and cut position will be higher than the 2 axes adjustment.

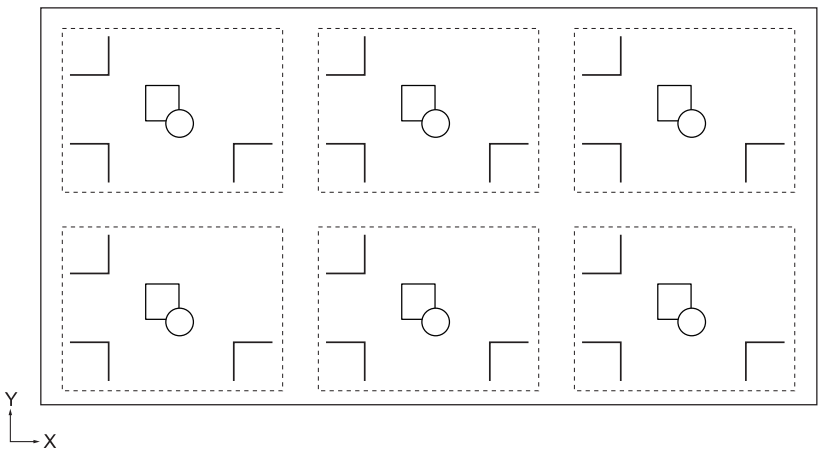


Multiple registration marks (Alignment registration mark)

Supplement

- **Setting is only possible from the Application software.**
- **It cannot be set on the plotter.**

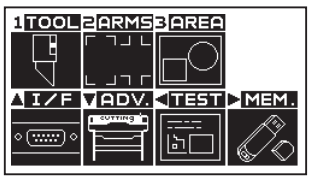
A function to continuously cut the print with same design aligned, using a plugin for the Illustrator. It is appropriate for cutting multiple numbers of stickers or similar.



Operation

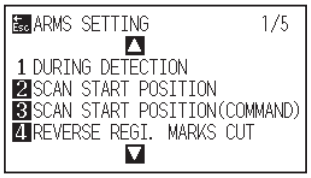
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



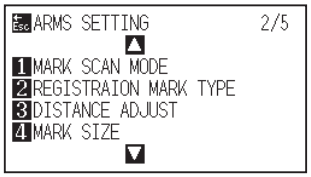
2 Press the [2] key (ARMS).

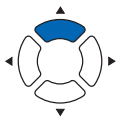
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key.

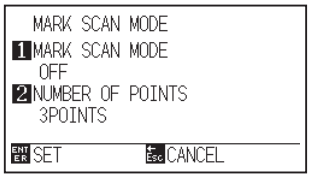
▷ ARMS SETTING screen (2/5) is displayed.





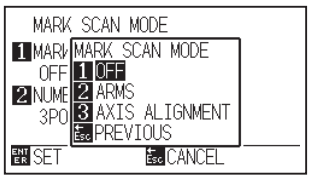
4 Press the [1] key (MARK SCAN MODE).

▷ MARK SCAN MODE screen is displayed



5 Press the [1] key (MARK SCAN MODE).

▷ MARK SCAN MODE setting screen is displayed.



6 Press the [2] key (ARMS).

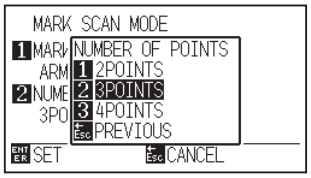
▷ MARK SCAN MODE is selected and it will return to MARK SCAN MODE setting screen.

Supplement

It will return to MARK SCAN MODE setting screen without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [2] key (NUMBER OF POINTS).

▷ NUMBER OF POINTS screen is displayed



8 Press the [1] key (2POINTS), the [2] key (3POINTS) or the [3] key (4POINTS).

▷ This will select the number of registration marks and return you to the REGISTRATION MARK MODE setting screen.

9 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ARMS SETTING screen (2/5).

10 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ARMS SETTING screen (2/5) without changing the settings when you press the [ESC] key (CANCEL).

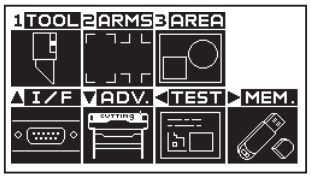
Setting Shape (Pattern) of Registration Mark

Preset the shape (pattern) of registration marks to scan.

Operation

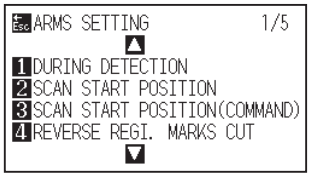
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



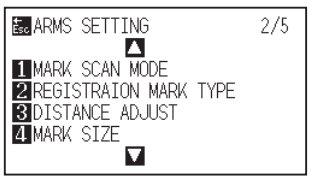
2 Press the [2] key (ARMS).

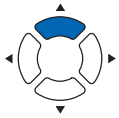
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key.

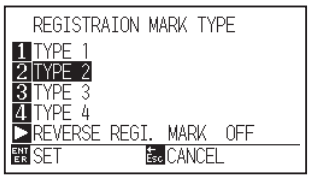
▷ ARMS SETTING screen (2/5) is displayed.





4 Press the [2] key (REGISTRAION MARK).

▶ REGISTRAION MARK TYPE setting screen is displayed.



Supplement

- **It will return to ARMS SETTING screen (2/5) without changing the settings when you press the [ESC] key (CANCEL).**
- **The REVERSE REGISTRATION MARK to ON setting is canceled when the power is turned off.**

5 Press the [1] key (TYPE 1), the [2] key (TYPE 2), the [3] key (TYPE 3), or the [4] key (TYPE 4)

When the TYPE 1 or 2 is selected, pressing the (▶) key can switch the REVERSE REGISTRATION MARK to ON/OFF.

When the TYPE 3 is selected, the pacing and center (center registration mark) are set.

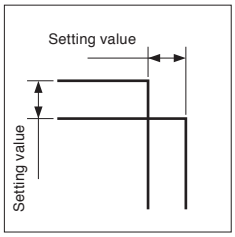
When the TYPE 4 is selected, the pacing is set.

Supplement

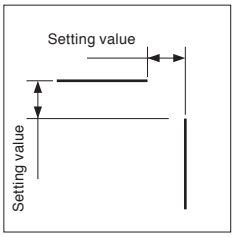
For the registration marl patterns, see "Outline of ARMS".

<Spacing>

MARK TYPE 3



MARK TYPE 4



Supplement

Spacing range is 0 to 9.9 (mm).

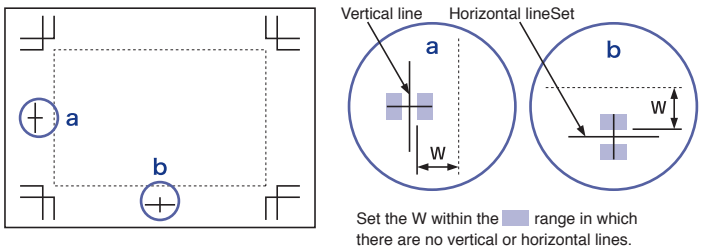
The W value range of the center registration mark (CENTER) is -99.9 to +99.9 (mm).

The center registration mark can only be scanned for registration mark pattern 3, when the number of registration marks is 2POINTS or 3POINS and only when "USER" has been selected.

Enter the distance from the registration mark scanning area in the W.

In the case shown in the figure below, the W is a negative value.

<Center registration mark (CENTER)>



6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (2/5).

Supplement

It will return to ARMS SETTING screen (2/5) without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [PAUSE/MENU] key

▶ It will return to the default screen.

Setting Distance Adjustment Between the Registration Marks

If the distance between the registration marks is shifted from the original value of the data, the shift is adjusted for the cutting to reflect the ratio, which is calculated from the amount of shift. This is called the distance adjustment between the registration marks.

There are three types of mode for the registration mark adjustment.

USER : Manually enter the original value of the data for the distance between the scanned registration marks to adjust it.

CUSTOM : When outputting the distance between the registration marks in any multiple of 5, 10 or 50 mm, the distance between the registration marks is automatically adjusted after the unit value is set to "CUSTOM UNIT". For example, when the "CUSTOM UNIT" is set to 5 mm and the distance between the scanned registration marks is 312 mm, the distance adjustment is performed, regarded as the ideal value of the distance between the registration marks is 310 mm after the distance of less than 5 mm is rounded off.

STANDARD : One value of 5, 10 or 50 mm is automatically selected as the unit value depending on the settings of the distance between the registration marks (see “Setting Mark Distance”.). The distance between the scanned registration marks is regarded as the original value of the data after the distance of less than reference value is rounded off and the distance adjustment is performed.

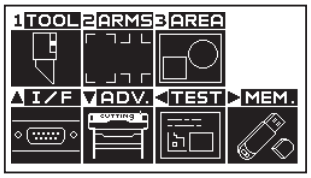
The following values are used depending on the mark distance.

Mark distance is more than 1 m	: 50 mm
Mark distance is more than 50 cm	: 10 mm
Mark distance is less than or equal to 50 cm	: 5 mm

Operation

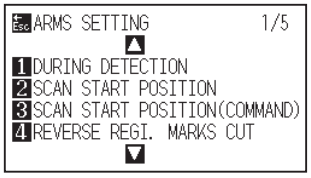
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



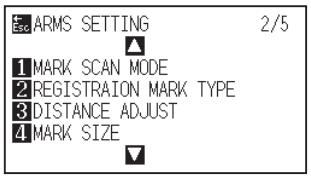
2 Press the [2] key (ARMS).

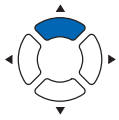
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key.

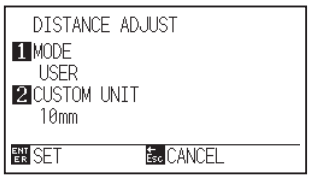
▷ ARMS SETTING screen (2/5) is displayed.





4 Press the [3] key (DISTANCE ADJUST).

▶ DISTANCE ADJUST setting screen is displayed.

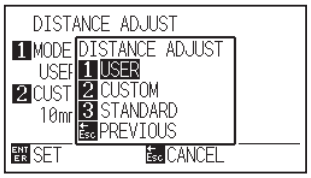


Supplement

It will return to ARMS SETTING screen (2/5) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the [1] key (MODE).

▶ DISTANCE ADJUST setting screen is displayed.



6 Press the [1] key (USER), the [2] key (CUSTOM), or the [3] key (STANDARD).

▶ Mode is selected and it will return to DISTANCE ADJUST screen.

Supplement

It will return to DISTANCE ADJUST setting screen without changing the settings when you pressthe [ESC])key (CANCEL).

7 **The procedures are different depending on the selected mode.**

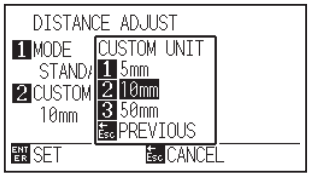
When USER or STANDARD modes are selected

Skip to step 9.

When CUSTOM mode is selected

Press the [2] key (CUSTOM UNIT).

▶ CUSTOM UNIT selection screen is displayed.



8 Press the [1] key (5mm), the [2] key (10mm), or the [3] key (50mm).

▶ CUSTOM UNIT is selected and it will return to DISTANCE ADJUSTscreen.

Supplement

It will return to DISTANCE ADJUST setting screen without changing the settings when you pressthe [ESC] key (CANCEL).

9 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (2/5).

10 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

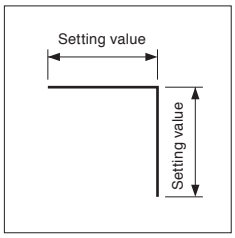
Setting Registration Mark Size

The size of registration mark that is scanned should be preset.

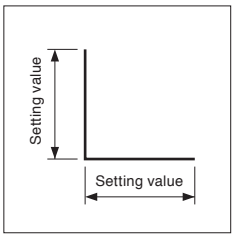
Size of the registration mark that can be set is from 5 mm to 20 mm.

If there is unbalance (skewing) or printing error present in the set media, it will be easier to sense registration marks with larger sizes. However, if the registration mark is large, then the cutting area will become tighter.

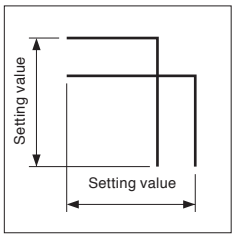
MARK TYPE 1, MIRROR 1



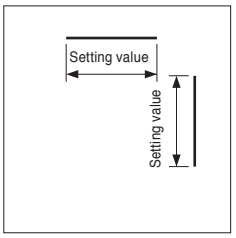
MARK TYPE 2, MIRROR 2



MARK TYPE 3



MARK TYPE 4



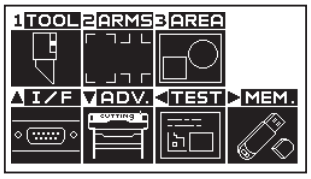
When the registration marks are sensed, it will start from the lower left registration mark on the document, and sense the next registration mark in the horizontal and vertical direction.

If the print is tilted, the short registration mark will be outside the sensing area.

Operation

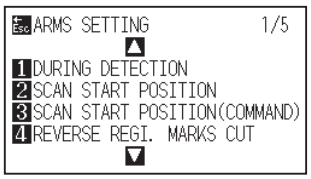
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



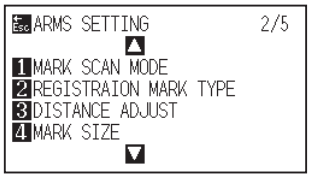
2 Press the [2] key (ARMS).

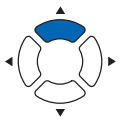
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key.

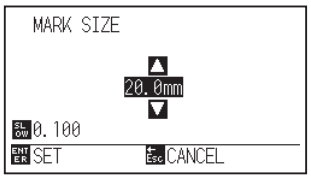
▷ ARMS SETTING screen (2/5) is displayed.





4 Press the [4] key (MARK SIZE).

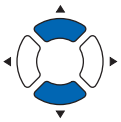
▷ MARK SIZE setting screen is displayed.



Supplement

It will return to ARMS SETTING screen (2/4) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



6 Confirm the settings and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ARMS SETTING screen (2/5).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Setting Mark Distance

Mark distance is set so it will not perform sensing of the location where the registration marks are not present. This allows to scan the registration marks faster, and also prevents malfunction by the dirty media.

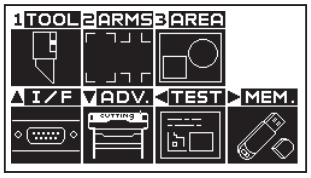
Supplement

- **For the Mark Distance, see "Outline of ARMS".**
- **Detection is started from the position of the registration mark size before the specified distance.**
- **Skipping of the distance between the registration marks will not be performed until next registration mark is found when the mark distance is set to 0 mm.**
- **Value of Y is ignored it is 2POINTS.**

Operation

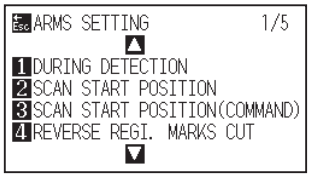
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



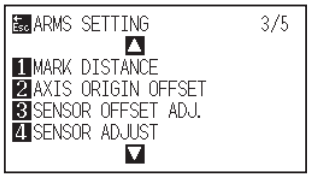
2 Press the [2] key (ARMS).

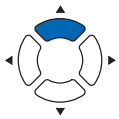
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key twice.

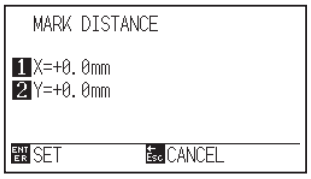
▶ ARMS SETTING screen (3/5) is displayed.





4 Press the [1] key (MARK DISTANCE).

▶ MARK DISTANCE setting screen is displayed.

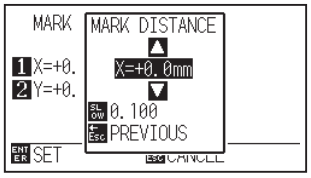


Supplement

It will return to ARMS SETTING screen (3/5) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the [1] key (X).

▶ X AXIS setting screen is displayed.



6 Press the [ESC] key and increase or decrease the setting value.

Supplement

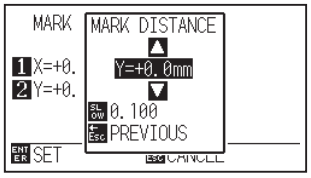
- **Digits of settings can be changed by pressing the [SLOW] key.**
- **Setting range is 0.0 mm up to the upper limit of the cutting area.**

7 Confirm the setting and press the [ESC] key (PREVIOUS).

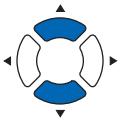
▶ MARK DISTANCE is selected and it will return to MARK DISTANCE screen.

8 Press the [2] key (Y).

▶ Y AXIS setting screen is displayed.



9 Press the POSITION (▲▼) keys and increase or decrease the setting value



Supplement

- **Digits of settings can be changed by pressing the [SLOW] key.**
- **Setting range is 0.0 mm up to the upper limit of the cutting area.**

10 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ MARK DISTANCE is selected and it will return to MARK DISTANCE screen.

11 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (3/5).

12 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

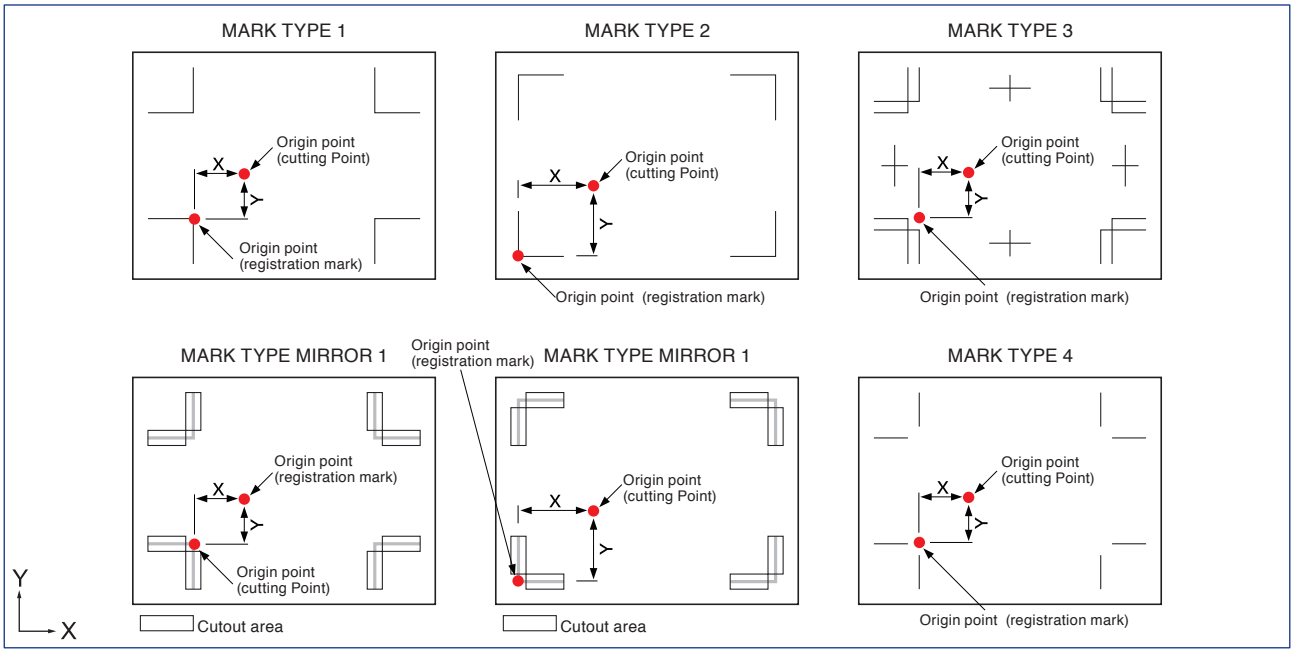
Supplement

It will return to ARMS SETTING screen without changing the settings when you pressthe [ESC] key (CANCEL).

Setting Offset Between the Registration Mark and Cutting Origin Point

The offset can be set when you want to move the cutting origin point after the registration mark is scanned.

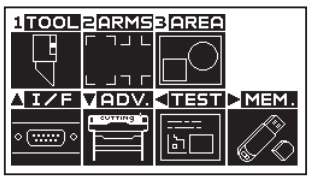
The default offset for the registration mark is 0.0 mm on X and Y. The X and Y can be set up to the upper limit (±) of the cutting area.



Operation

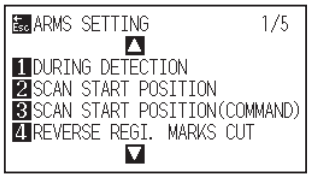
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



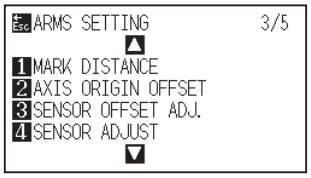
2 Press the [2] key (ARMS).

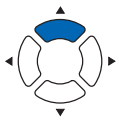
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key twice.

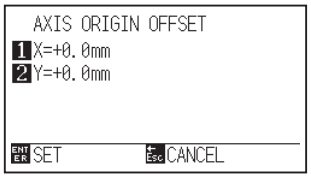
▷ ARMS SETTING screen (3/5) is displayed





4 Press the [2] key (AXIS ORIGIN OFFSET).

▷ AXIS ORIGIN OFFSET screen is displayed.

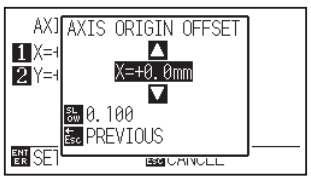


Supplement

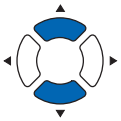
It will return to ARMS SETTING screen (3/5) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the [1] key (X).

▷ X AXIS setting screen is displayed.



6 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

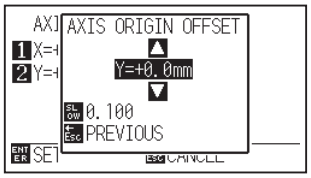
- **Digits of settings can be changed by pressing the [SLOW] key.**
- **Setting rage is up to the upper limit (±) of the cutting area.**

7 Confirm the setting and press the [ESC] key (PREVIOUS).

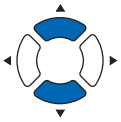
▶ Offset value will be selected, and it will return to AXIS ORIGIN OFFSET mode screen.

8 Press the [2] key (Y).

▶ Y AXIS setting screen is displayed.



9 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

- **Digits of settings can be changed by pressing the [SLOW] key.**
- **Setting rage is up to the upper limit (±) of the cutting area.**

10 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ Offset value will be selected, and it will return to AXIS ORIGIN OFFSET mode screen.

11 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (3/5).

Supplement

It will return to ARMS SETTING screen without changing the settings when you press the [ESC] key (CANCEL).

12 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Adjusting for the Registration Mark Scan Position

Sensor used to detect the registration mark is located in a position away from the blade tip of the tool (pen tip). Therefore, to match the coordinate values that are scanned the registration mark to the positions that are scanned, the adjustment may be required.

If the registration mark is already marked on the media, scan that registration mark, plot another registration mark in the same position, and measure the difference between them. This difference is entered as a adjustment value.

If there is no registration mark on the media, plot a registration mark first, scan that registration mark, plot another registration mark, and measure the difference of them. This difference is entered as a adjustment value.

When using media and tools for actual use, the adjustment accuracy will be higher.

Reference

There is a restriction on the shape (style) of the registration marks that can be scanned. See "Shape (Pattern) of Registration Mark".

Adjust After Plotting the Adjustment Registration Mark

This section describes the steps to plot the registration mark.

Registration mark is to be plotted if there is no registration mark on the media to adjust the registration mark scan position. Subsequently, it continues to "Adjusting the registration mark position".

Reference

Proceed to "Setting the Position Using ARMS" without plotting the registration mark if the registration mark is already drawn on the media.

Operation

1 Load white media.

Supplement

See "Loading Media " for loading white media.

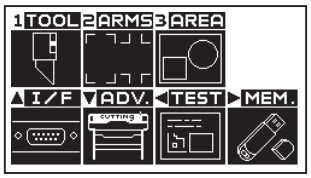
2 Set the pen (black) on the tool holder.

Supplement

See "Attaching a Tool" for setting the pen. If the pen has been scratched, then it may not scan.

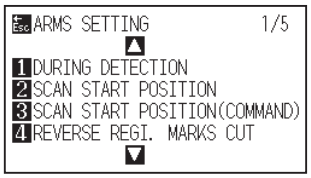
3 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



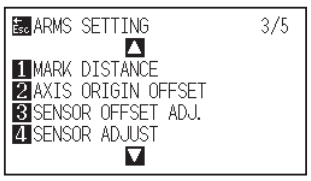
4 Press the [2] key (ARMS).

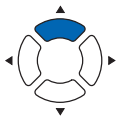
▶ ARMS SETTING screen (1/5) is displayed.



5 Press the POSITION (▲) key twice.

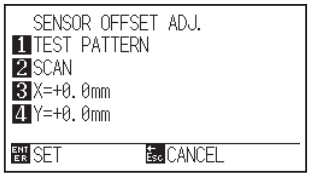
▶ ARMS SETTING screen (3/5) is displayed.





6 Press the [3] key (SENSOR OFFSET ADJ.).

▶ SENSOR OFFSET ADJ. screen is displayed.

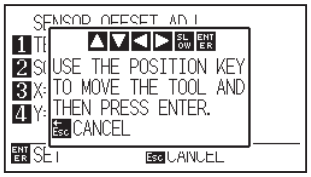


Supplement

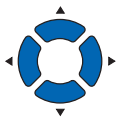
It will return to ARMS SETTING screen (3/5) without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [1] key (TEST PATTERN).

▶ Following message is displayed.



8 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the position to plot the registration mark (position nothing is printed).



9 Press the [ENTER] key.

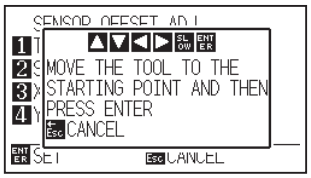
▶ A registration mark for adjustment is created, and then it will return to SENSOR OFFSET ADJ. screen.

Supplement

It will return to SENSOR OFFSET ADJ. screen without plotting by pressing the [ESC] key (CANCEL).

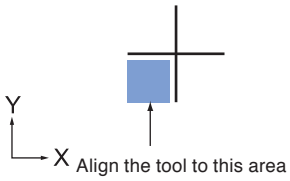
10 Press [2] key (SCAN). The following message is displayed.

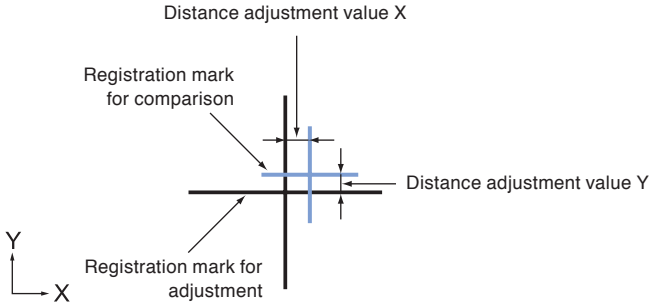
▶ Following message is displayed



11 Confirm that the tool is at the position shown in the left image (grey square area), and press the [ENTER] key.

▶ It will scan the registration mark, and then plot the registration mark for comparison. It will return to SENSOR OFFSET ADJ. screen once the plotting is completed





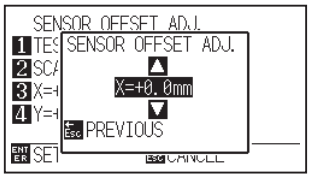
12 Using the registration mark for adjustment plotted in step 9, measure the distance of how much the registration mark for comparison needs to be moved so both will overlap, and record the value. As an example, in the figure above, it needs to move in negative directions for both X and Y directions, so both of the adjustment values will be negative values.

Supplement

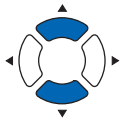
Position of the registration mark is measured at the center of the line.

13 Press the [3] key (X).

▶ SENSOR OFFSET ADJ. X screen is displayed.



14 Press the POSITION (▲▼) keys and increase or decrease the setting value. Set the X value measured in step 12.



Supplement

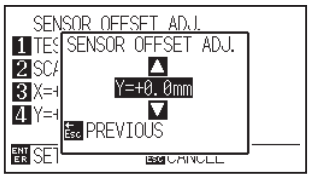
Setting range is -2.0 mm to +2.0 mm.

15 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ SENSOR OFFSET ADJ. is selected and it will return to SENSOR OFFSET ADJ. screen.

16 Press the [4] key (Y).

▶ SENSOR OFFSET ADJ. Y screen is displayed.



17 Press the [ESC] key key and increase or decrease the setting value. Set the Y value measured in step 12.

Supplement

Setting range is -2.0 mm to +2.0 mm.

18 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ SENSOR OFFSET is selected and it will return to SENSOR OFFSET ADJ. screen.

19 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (3/5).

20 Press the [PAUSE/MENU] key.

▶ It will return to the default screen.

Supplement

It will return to ARMS SETTING screen (3/5) without changing the settings when you press the [ESC] key (CANCEL).

Sense the Registration Mark for Adjustment on the Media and Enter the Value

Method to enter the adjustment value, which is the difference between the scanned registration mark on the media and the cutting position, is described here.

Supplement

Plot the registration mark before going to following steps if there is no registration mark printed on the media. See "Adjust After Plotting the Adjustment Registration Mark" to plot registration marks.

Operation

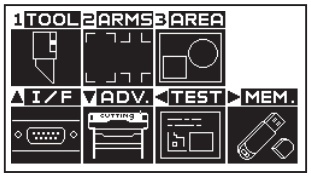
1 Load the media with registration mark for adjustment in the plotter.

Supplement

See "Loading Media" for loading the media.

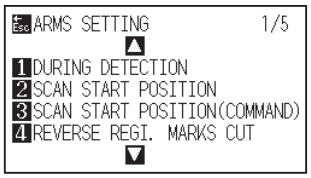
2 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed.



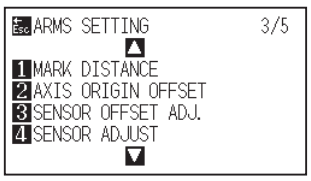
3 Press the [2] key (ARMS).

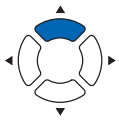
▶ ARMS SETTING screen (1/5) is displayed.



4 Press the POSITION (▲) key twice.

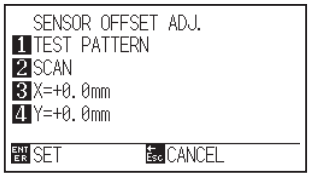
▶ ARMS SETTING screen (3/5) is displayed.





5 Press the [3] key (SENSOR OFFSET ADJ.).

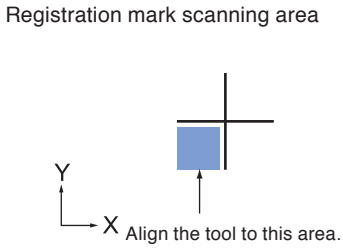
▶ SENSOR OFFSET ADJ. screen is displayed.



Supplement

It will return to ARMS SETTING screen (3/5) without changing the settings when you press the [ESC] key (CANCEL).

6 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the area to start scanning of the registration mark.

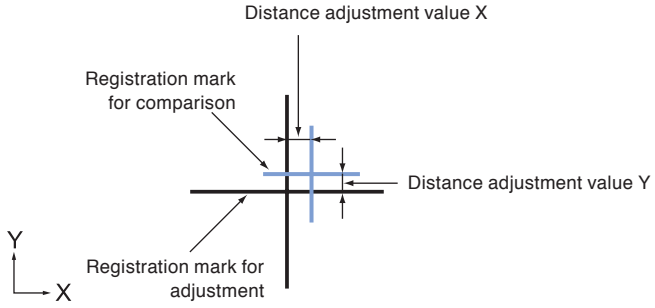


7 Confirm the position of the tool, and if it is OK, press the [ENTER] key.

▶ The registration mark for comparison is plotted after scanning the registration mark (see below). It will return to SENSOR OFFSET ADJ. screen once the plotting is completed.

Supplement

It will return to SENSOR OFFSET ADJ. screen without plotting when you press the [ESC] key (CANCEL).



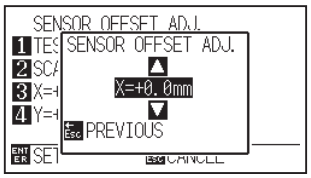
8 Using the scanned registration mark for adjusting, measure the distance of how much the registration mark for comparison needs to be moved so both will overlap, and record the value. As an example, in the figure above, it needs to move in negative directions for both X and Y directions, so both of the adjustment values will be a negative values.

Supplement

Position of the registration mark is measured at the center of the line.

9 Press the [3] key (X).

▶ SENSOR OFFSET ADJ. X screen is displayed.

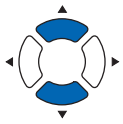


10 Press the POSITION (▲▼) keys and increase or decrease the setting value.

Set the X value measured in step 8.

Supplement

Setting range is -2.0 mm to +2.0 mm.

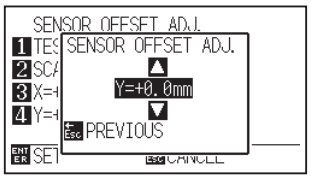


11 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ SENSOR OFFSET ADJ. is selected and it will return to SENSOR OFFSET ADJ. screen.

12 Press the [4] key (Y).

▶ SENSOR OFFSET ADJ. Y screen is displayed.

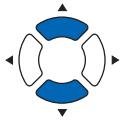


13 Press the POSITION (▲▼) keys and increase or decrease the setting value.

Set the Y value measured in step 8.

Supplement

Setting range is -2.0 mm to +2.0 mm.



14 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ SENSOR OFFSET is selected and it will return to SENSOR OFFSET ADJ. screen.

15 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (3/5).

16 Press the [PAUSE/MENU] key.

▶ It will return to the default screen.

Supplement

It will return to ARMS SETTING screen (3/5) without plotting when you press the [ESC] key (CANCEL).

Adjusting the Sensor Level

Scan level (threshold value between the media background color and registration mark lines) of the sensor scanning the registration mark is automatically adjusted.

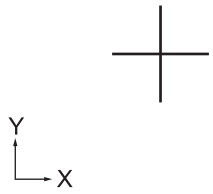
Sensor is adjusted to scan the registration mark written in black lines on white background. Readjust the scan level of the sensor depending on the color and gloss of the media.

If it is hard to adjust the level automatically due to media surface characteristics, adjust the scan level of the sensor manually.

Operation

1 Level adjustment patterns can be printed on media that uses the patterns included on the attached DVD, or set to media with level adjustment patterns.

Level adjustment pattern



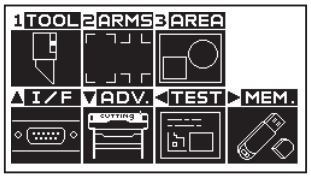
Supplement

- **See "Loading Media" for setting the media.**
- **Standard registration mark patterns are in the [ARMSTest Files] folder on the attached DVD.**

Registration Mark	File format	File name
MARK TYPE 1	pdf	ARMStest_type1.pdf
	eps	ARMStest_type1.eps
MARK TYPE 2	pdf	ARMStest_type2.pdf
	eps	ARMStest_type2.eps

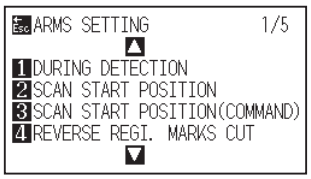
2 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed.



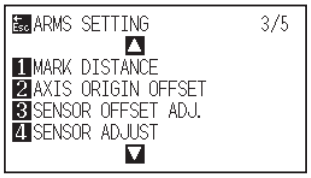
3 Press the [2] key (ARMS).

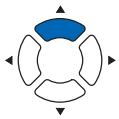
▶ ARMS SETTING screen (1/5) is displayed.



4 Press the POSITION (▲) key twice.

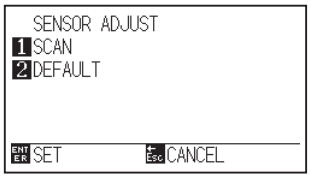
▶ ARMS SETTING screen (3/5) is displayed.





5 Press the [4] key (SENSOR ADJUST).

▶ SENSOR ADJUST screen is displayed.

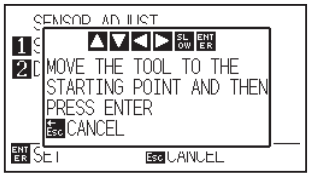


Supplement

It will return to ARMS SETTING screen (3/5) without changing the settings when you press the [ESC] key (CANCEL).

6 Press the [1] key (SCAN).

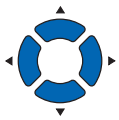
▶ The following message is displayed.



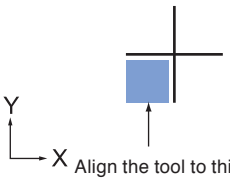
Supplement

It will return to ARMS SETTING screen (3/5) after setting the sensor level to default when you press the [2] key (DEFAULT).

7 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the area to start scanning of the registration mark.



Registration mark scan area



Align the tool to this area.

8 Confirm the position of the tool, and if it is OK, press the [ENTER] key.

▶ Registration mark is scanned, and sensor level is adjusted. It will return to ARMS SETTING screen (3/5) once the adjustment is completed.

9 Press the [PAUSE/MENU] key

▶ It will return to default screen.

Supplement

- **It will return to SENSOR ADJUST screen without changing the settings when you press the [ESC] key (CANCEL).**
- **It may not scan correctly even after the adjustment depending on the condition of the media. See "Manual Position Adjust" if the sensing does not complete properly.**

Setting the registration mark automatic sensing

When setting the registration mark automatic sensing to on, the following operations will be performed.

Set the registration mark mode to ARMS and during the start of the automatic reading when the current position of the tool is close to the first point (Point 1), by pressing the [ENTER] key* without moving to the sensing start position of tool, the registration mark position will be automatically retrieved.

* "Please move the tool and press ENTER" message will be displayed. Either press the [ENTER] key at that tool position, or move the tool to a position close to the registration mark sensing start position and press the [ENTER] key.

Supplement

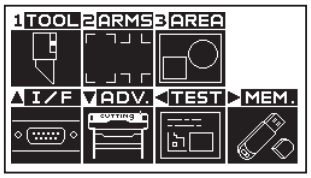
If the current position of the tool is distanced from the first registration mark, sensing may take a long time, and errors due to not finding anything may occur.

When setting to off, the operation above is not performed.

Operation

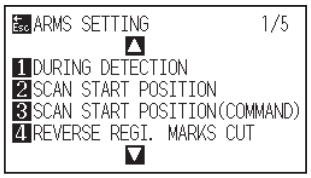
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



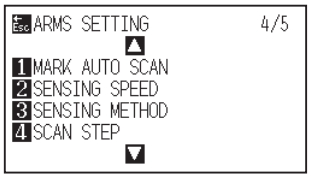
2 Press the [2] key (ARMS).

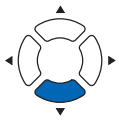
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▼) key twice.

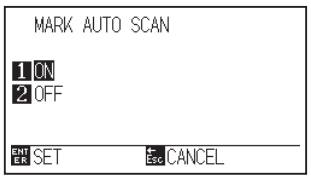
▷ ARMS SETTING screen (4/5) is displayed.





4 Press the [1] key (MARK AUTO SCAN).

▷ MARK AUTO SCAN setting screen is displayed.



Supplement

It will return to ARMS SETTING screen (4/5) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the [1] key (ON) or the [2] key (OFF).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ARMS SETTING screen (4/5).

7 Press the [PAUSE/MENU] key.

▷ It will return to the default screen.

Supplement

It will return to ARMS SETTING screen (4/5) without changing the settings when you press the [ESC] key (CANCEL).

Setting Speed of the Registration Mark Scan

Speed of the tool carriage and media to scan the registration mark is set.

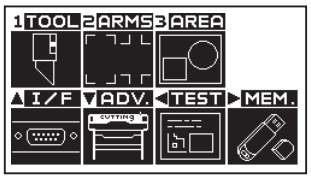
It may not scan the registration marks or the difference may become large when the speed is too high, but the cutting time becomes longer when the speed is too slow. Adjust the setting value considering the balance.

If the registration marks are not scanned or the error is large, it might be able to improve by setting to a slow value.

Operation

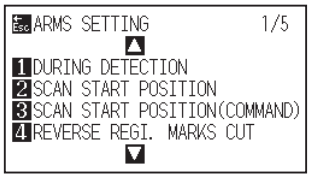
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



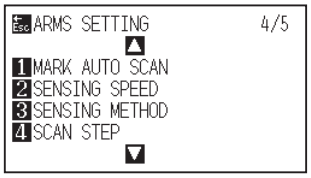
2 Press the [2] key (ARMS).

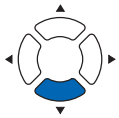
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key twice.

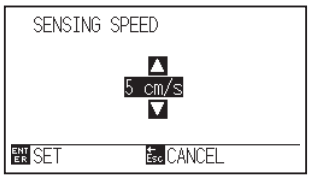
▷ ARMS SETTING screen (4/5) is displayed.





4 Press the [2] key (SENSING SPEED).

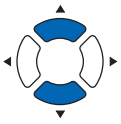
▶ SENSING SPEED screen is displayed.



Supplement

It will return to ARMS SETTING screen (4/5) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 1 to 10 (cm/s).

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (4/5).

Supplement

It will return to ARMS SETTING screen (4/5) without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [PAUSE/MENU] key.

▶ It will return to the default screen.

Setting the Scanning Method When Registration Marks are Scanned ("ISM"/"NORMAL")

You can set the scanning method when the registration marks are scanned.

It is normally set to "NORMAL", but the registration marks cannot be scanned when the following media are used. In that case, it will be improved by setting to "ISM".

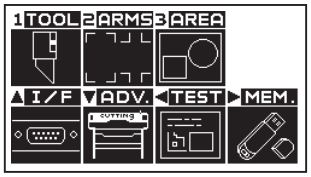
- Media that the surface is laminated
- Media with hairlines
- Media other than white, or glossy media

* ISM (Intelligent Scan Mode) is a function to increase the scanning accuracy of the registration mark.

Operation

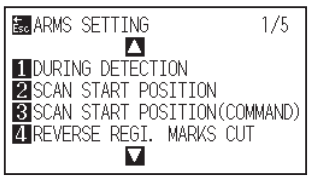
1 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed.



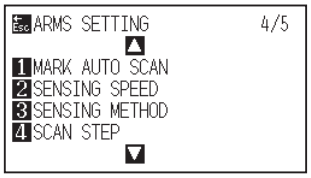
2 Press the [2] key (ARMS).

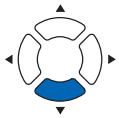
▶ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▲) key twice.

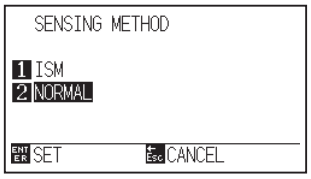
▶ ARMS SETTING screen (4/5) is displayed.





4 Press the [3] key (SENSING METHOD).

▶ SENSING METHOD screen is displayed.



Supplement

It will return to ARMS SETTING screen (4/5) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the [1] key (ISM) or the [2] key(NORMAL).

▶ The SENSING METHOD is selected.

Supplement

It will return to ARMS SETTING screen without changing the settings when you press the [ESC] key (PREVIOUS).

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (4/5).

7 Press the [PAUSE/MENU] key.

▶ It will return to the default screen.

Setting Scan Step When Registration Marks Are Scanned

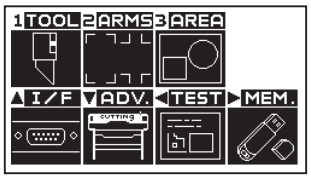
If the line segments are fine, the registration marks may not be sensed even when the slowest registration mark sensing speed has been set. If the interval has been set to 0-step, the registration marks are sensed through sampling during movement. If the interval is set to 5 to 15 µm, the registration marks are sensed at the specified interval.

It is valid only when the TYPE 3 or TYPE 4 of the registration mark is specified.

Operation

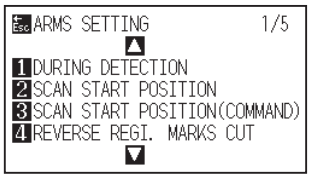
1 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed.



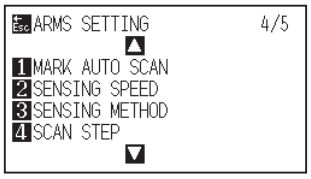
2 Press the [2] key (ARMS).

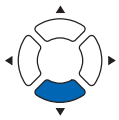
▶ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▼) key three.

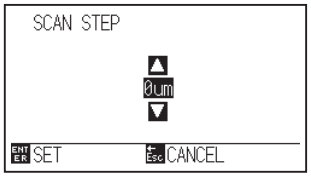
▶ ARMS SETTING screen (4/5) is displayed





4 Press the [4] key (SCAN STEP).

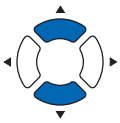
▶ SCAN STEP screen is displayed.



Supplement

It will return to ARMS SETTING screen (4/5) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 0 , 5, 10, 15 (µm).

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (4/5).

Supplement

It will return to ARMS SETTING screen without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [PAUSE/MENU] key.

▶ It will return to the default screen.

Manually Adjusting the Sensor Level (Threshold Value)

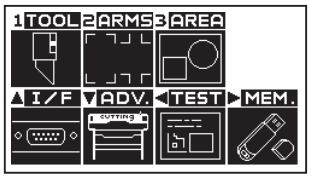
The sensing level (threshold value between the media background color and registration mark lines) of the sensor scanning the registration mark can also be manually set.

Sensor is adjusted to scan the registration mark written in black lines on white background as the default condition. The sensing level of the sensor may need to be adjusted for registration marks printed in color and the finish (gloss/matte) of the media.

Operation

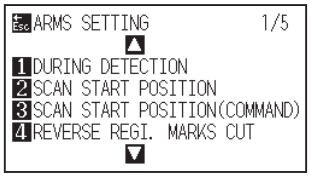
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



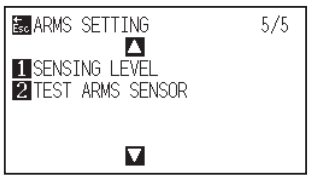
2 Press the [2] key (ARMS).

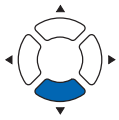
▷ ARMS SETTING screen (1/5) is displayed.



3 Press the POSITION (▼) key.

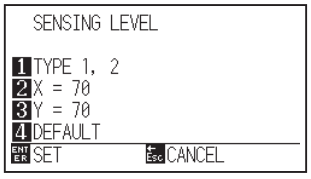
▷ ARMS SETTING screen (5/5) is displayed.





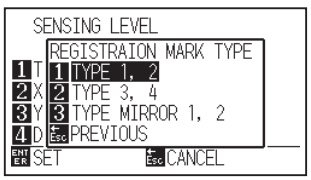
4 Press the [1] key (SENSING LEVEL).

▷ SENSING LEVEL screen is displayed.



5 Press the [1] key (TYPE 1, 2).

▷ REGISTRAION MARK TYPE screen is displayed.



Supplement

- **It will return to ARMS SETTING screen (5/5) without changing the settings when you press the [ESC] key (CANCEL).**
- **The SENSING LEVEL is used to specify what should be the percent threshold for the difference in each signal level when the media background color and registration marks are sensed. Setting range is 30 to 90 (%).**
- **The X is set to the SENSING LEVEL to sense the registration marks when moving in the X direction. The Y is set to the SENSING LEVEL to sense the registration marks when moving in the Y direction.**
- **Press the [4] key (DEFAULT) to return the SENSING LEVEL to the initial settings.**

6 Press the [1] key (TYPE 1, 2), the [2] key (TYPE 3, 4) or the [3] key (TYPE MIRROR 1, 2).

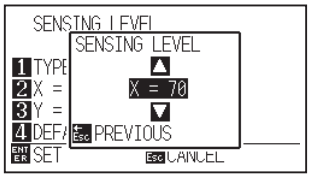
▶ The registration mark pattern is selected.

Supplement

It will return to ARMS SETTING screen without changing the settings when you press the [ESC] key (PREVIOUS).

7 Press the [1] key (X).

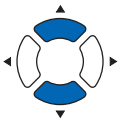
▶ SENSING LEVEL (SENSING LEVEL X) screen is displayed.



Supplement

- **Setting rage is 30 to 90.**
- **The level to scan the horizontal line of the registration mark is Y and the level to scan the vertical line is X.**
- **Raising the numerical value in the following situations will allow you to sense the registration marks.**
  - **When the media and registration mark colors are similar.**
  - **When you pass over the registration mark point.**
- **Lowering the numerical value in the following situations will allow you to sense the registration marks.**
  - **When you sense a point where there is no registration mark.**
  - **When folds or stains on the media surface are sensed.**

8 Press the POSITION (▲▼) keys and increase or decrease the setting value.

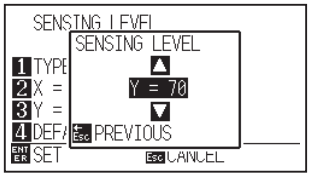


9 Confirm the settings and press the [ESC] key (PREVIOUS).

▶ The SENSING LEVEL is selected and it will return to the SENSING LEVE screen.

10 Press the [2] key (Y).

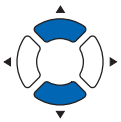
▶ SENSING LEVEL (SENSING LEVEL Y) screen is displayed.



11 Press the POSITION(▲▼) keys and increase or decrease the setting value.

Supplement

Setting range is 30 to 90.



12 Confirm the settings and press the [ESC] key (PREVIOUS).

▶ The SENSING LEVEL is selected and it will return to the SENSING LEVE screen.

13 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to ARMS SETTING screen (5/5).

Supplement

It will return to ARMS SETTING screen without changing the settings when you press the [ESC] key (PREVIOUS).

14 Press the [PAUSE/MENU] key.

▶ It will return to the default screen.

Test the Registration Mark Sensor

If there still is a difference in the cutting, even after performing an adjustment using the registration mark, it is possible to check if there is a problem with the registration mark itself or the application by evaluating the position of the registration mark plotted and sensed only using the plotter.

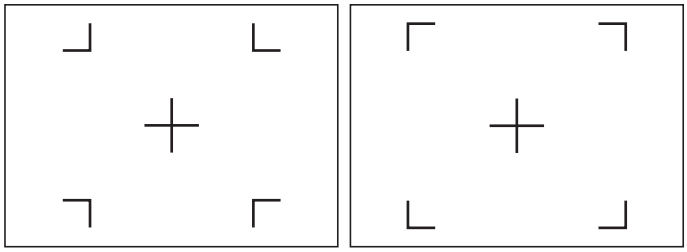
⚠ CAUTION

This function performs cutting after the registration mark is scanned. If a cutter is used as the tool, it may harm the plotter.

Operation

1 Print the standard registration mark in the attached DVD.

MARK TYPE 1 MARK TYPE 2



Supplement

- **Print the "Test Pattern 1" to test MARK TYPE 1, and "Test Pattern 2" to test MARK TYPE 2.**
- **Standard registration mark is inside the "ARMS Test Files" folder of the attached DVD.**

Registration Mark	File format	File name
MARK TYPE 1	pdf	ARMStest_type1.pdf
	eps	ARMStest_type1.eps
MARK TYPE 2	pdf	ARMStest_type2.pdf
	eps	ARMStest_type2.eps

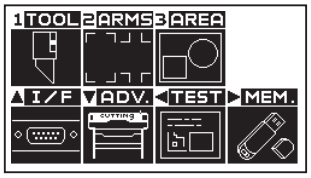
2 Load the printed media onto the plotter.

Supplement

See "Loading Media (Paper or Marking Film)" for loading the media.

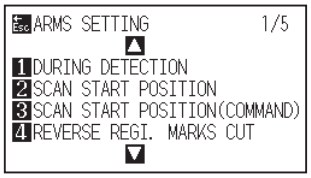
3 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



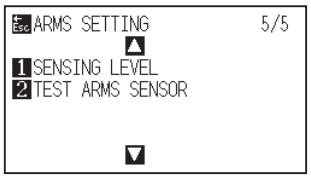
4 Press the [2] key (ARMS).

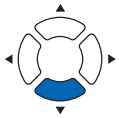
▷ ARMS SETTING screen (1/5) is displayed.



5 Press the POSITION (▼) key.

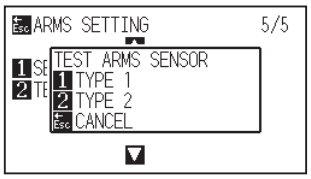
▷ ARMS SETTING screen (5/5) is displayed.





6 Press the [2] key (TEST ARMS SENSOR).

▶ TEST ARMS SENSOR screen is displayed.

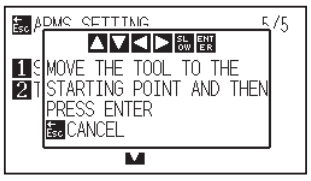


Supplement

It will return to ARMS SETTING screen (5/5) without changing the settings when you press the [ESC] key (CANCEL).

7 Press either the [1] key (TYPE 1) or the [2] key (TYPE 2) depending on the type of the registration mark to be used.

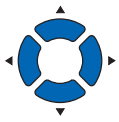
▶ The following message is displayed.



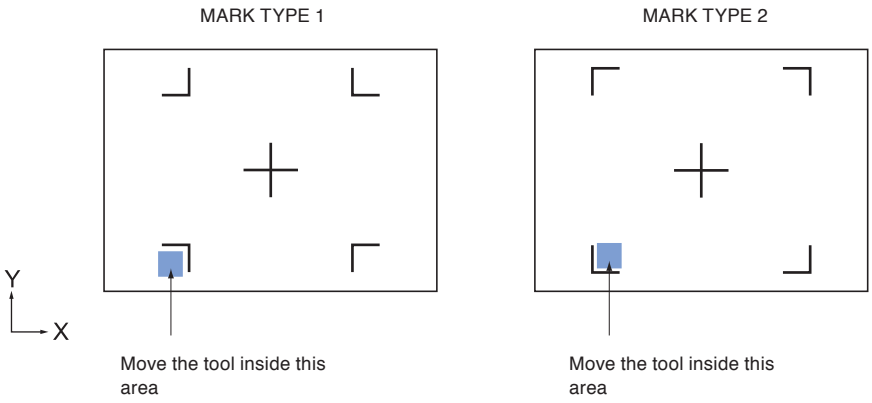
Supplement

It will return to ARMS SETTING screen (3 /5) without changing the settings when you press the [ESC] key (CANCEL).

8 Move the tool to the position to start scanning of the registration mark by pressing the POSITION (▲▼◀▶) keys.



Registration mark scanning area



9 Confirm the position of the tool and press the [ENTER] key.

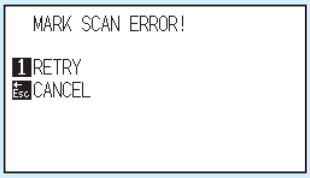
▶ The plotter will automatically sense the registration mark and cut the peak of each registration marks

10 Confirm the cutting result.

▶ See "Adjusting for the Registration Mark Scan Position" and adjust if the cutting position is shifted. See "Adjusting the Sensor Level" and adjust if the registration mark cannot be scanned.

Supplement

Following error is displayed when the registration mark was not scanned properly.



Press the [1] key (RETRY) to scan again, or the [ESC] key (CANCEL) to exit.

5.3 Setting the Position Using ARMS

This section describes the method to adjust the position with the operation from control panel using ARMS.

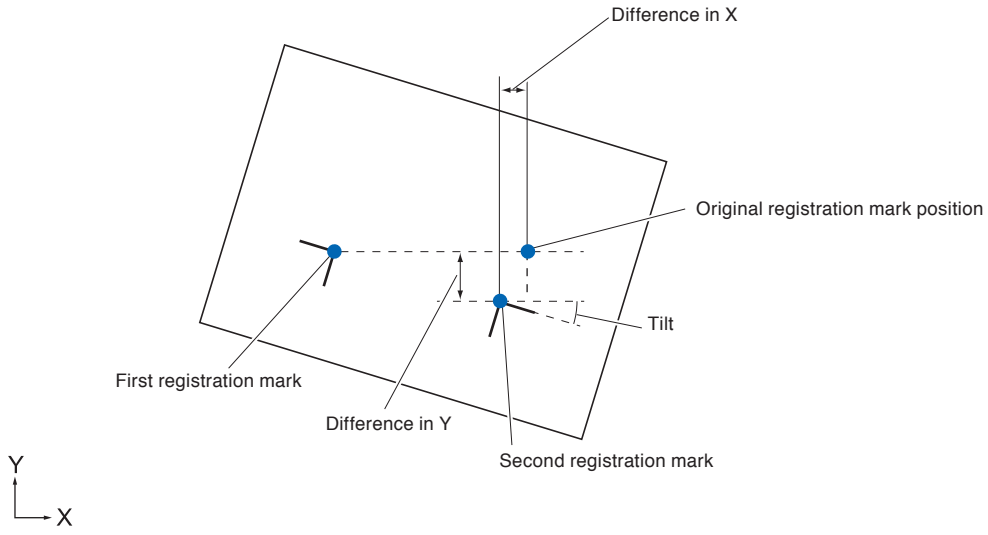
There are following 3 methods depending on the number of registration marks scanned. In general, the adjustment becomes more accurate with more registration marks scanned, but it will take longer to adjust.

- Adjust with 2POINTS
- Adjust with 3POINTS
- Adjust with 4POINTS
- Adjust Automatically
- Adjust Manually

Adjust with 2 POINTS

2POINTS adjustment scans 2 registration marks aligned in the media transportation direction, where the adjustment is done measuring the tilting of the axis and the distance between the registration marks. This adjustment is 1 axis adjustment (tilt adjustment).

When the set media is inclined with respect to the X-direction as shown in the following figure, the actually measured position of the registration mark is shifted from the original position. Comparing these coordinates, the inclination and the distance can be adjusted.



Operation

1 Load the media with registration marks (2POINTS) plotted.

Supplement

See "Loading Media (Paper or Marking Film)" for loading the media.

2 Set the MARK SCAN MODE to ARMS, and POINTS to 2POINTS.

(See “Setting MARK SCAN Mode and Numbers”.)

3 Set the shape and size of the registration mark, mark distance, distance adjust mode, offset, paper-weight, sensor level, scan position adjustment, etc., as needed.

(See “Setting Shape (Pattern) of Registration Mark”.)

Supplement

It is not necessary to set the MARK DISTANCE when it is adjusted manually.

(See “Setting Registration Mark Size”.)

(See “Setting Mark Distance”.)

(See “Setting Distance Adjustment Between the Registration Marks”.)

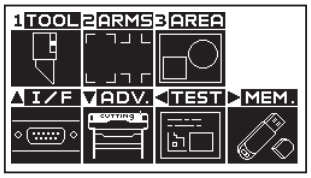
(See “Setting Offset Between the Registration Mark and Cutting Origin Points”.)

(See “Adjusting the Sensor Level”.)

(See “Manually Adjusting the Sensor Level (Threshold Value)”.)

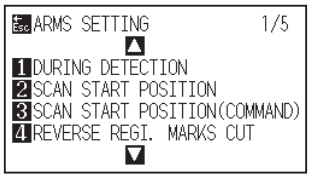
4 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



5 Press the [2] key (ARMS).

▷ ARMS SETTING screen (1/5) is displayed.



Steps are different from here depending if it is going to move to registration mark automatically to scan the registration mark, or if it is going to move manually to scan. See next section.

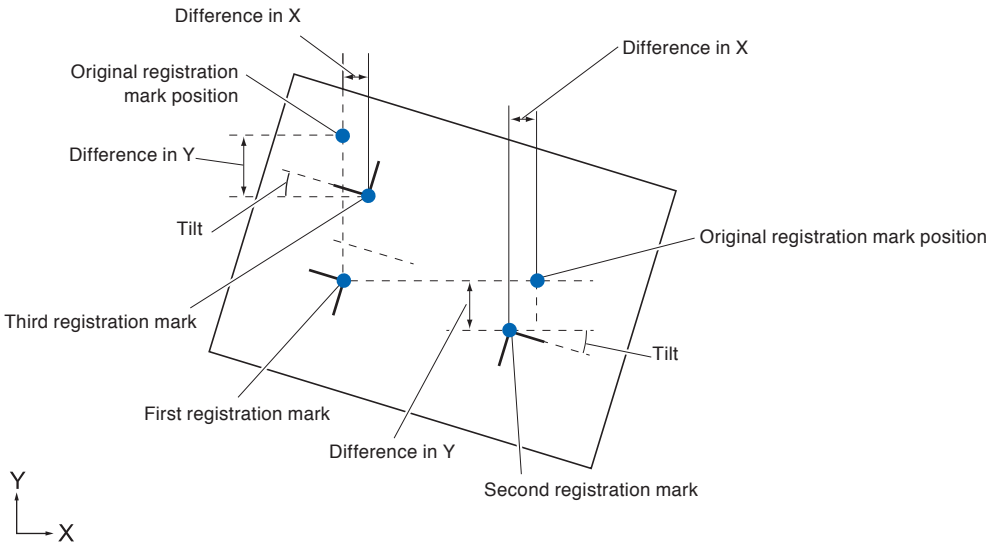
(See “Adjust Automatically”.)

(See “Adjust Manually”.)

Adjust with 3 POINTS

3 POINTS adjustment scans 3 registration marks as shown below, where the adjustment is done measuring the tilting of the X and Y axes and the distance between the registration marks (horizontal and vertical directions). This adjustment is called 2 axis adjustment (tilt adjustment).

When the set media is inclined with respect to the X-direction as shown in the following figure, the actually measured position of the registration mark is shifted from the original position. Comparing these coordinates, the inclination and the distance can be adjusted.



Operation

1 Load the media with registration marks (3 POINTS) plotted.

Supplement

See "Loading Media (Paper or Marking Film)" for loading the media.

2 Set the Registration Mark mode to ARMS, and the number of registration marks to 3 POINTS.

(See “Setting MARK SCAN Mode and Numbers”.)

3 Set the shape and size of the registration mark, mark distance, distance adjust mode, offset, paper-weight, sensor level, scan position adjustment, etc., as needed.

(See “Shape (Pattern) of the Registration Mark”.)

(See “Setting Registration Mark Size”.)

(See “Setting Mark Distance”.)

(See “Setting Distance Adjustment Between the Registration Marks”.)

(See “Setting Offset Between the Registration Mark and Cutting Origin Points”.)

(See “Adjusting the Sensor Level”.)

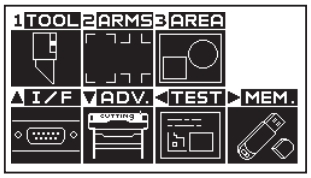
(See “Manually Adjusting the Sensor Level (Threshold Value)”.)

Supplement

It is not necessary to set the MARK DISTANCE when it is adjusted manually.

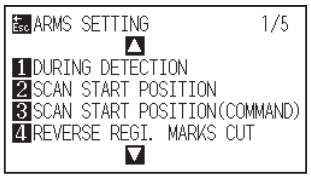
4 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed



5 Press the [2] key (ARMS).

▶ ARMS SETTING screen (1/5) is displayed.



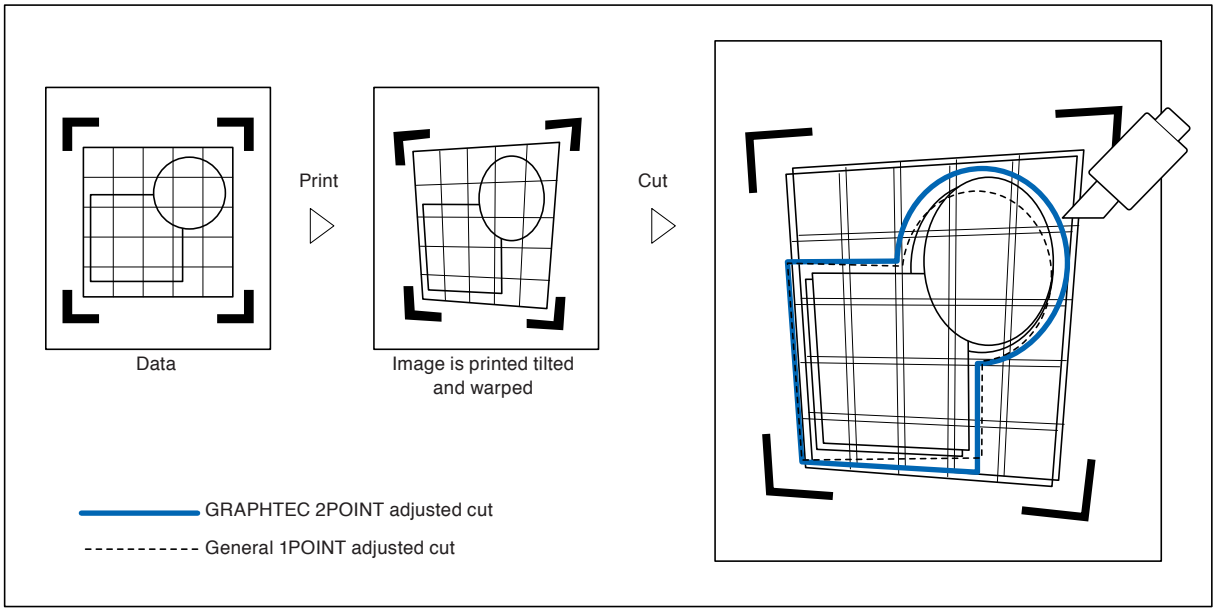
Steps are different from here depending if it is going to move to registration mark automatically to scan the registration mark, or if it is going to move manually to scan. See next section.

(See “Adjust Automatically”.)

(See “Adjust Manually”.)

Adjust with 4 POINTS

4 POINTS adjustment will scan 4 registration marks in the corners, where the adjustment is done measuring the tilting of the X and Y axes and the distance between each of the registration marks. It will perform 2 axes warp adjustment in addition to the 2 axes (tilt) adjustment and distance adjustment, so it can adjust more precisely than other methods.



Operation

1 Load the media with registration marks (4POINTS) plotted.

Supplement

See "Loading Media (Paper or Marking Film)" for loading the media.

2 Set the Registration Mark mode to ARMS, and the number of registration marks to 4 POINTS.

(See “Setting MARK SCAN Mode and Numbers”.)

3 Set the shape and size of the registration mark, mark distance, distance adjust mode, offset, paper-weight, sensor level, scan position adjustment, etc., as needed.

(See “Shape (Pattern) of the Registration Mark”.)

(See “Setting Registration Mark Size”.)

(See “Setting Mark Distance”.)

(See “Setting Distance Adjustment Between the Registration Marks”.)

(See “Setting Offset Between the Registration Mark and Cutting Origin Points”.)

(See “Adjusting the Sensor Level”.)

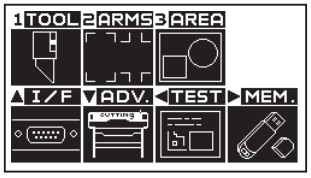
(See “Manually Adjusting the Sensor Level (Threshold Value)”.)

Supplement

It is not necessary to set the MARK DISTANCE when it is adjusted manually.

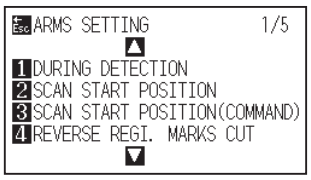
4 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



5 Press the [2] key (ARMS).

▷ ARMS SETTING screen (1/5) is displayed.



Steps are different from here depending if it is going to move to registration mark automatically to scan the registration mark, or if it is going to move manually to scan. See next section.

(See “Adjust Automatically”.)

(See “Adjust Manually”.)

Adjust Automatically

This section describes the operation to adjust with registration mark scan by moving to registration mark automatically after setting the ARMS mode and POINTS.

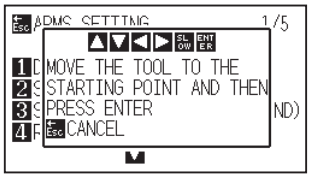
Supplement

See "Adjust Manually" if you are moving manually to registration mark for scanning.

Operation

1 Press the [1] key (DURING DETECTION) in the ARMS SETTING screen (1/5).

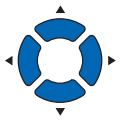
▶ (See “Adjust Automatically”.)



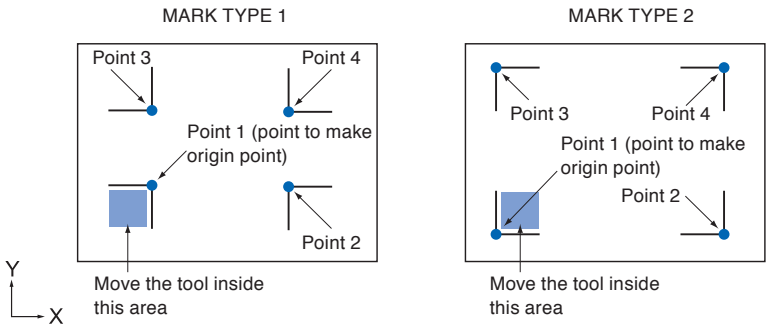
Supplement

- **Press the [2] key (ARMS) in the MENU screen if it is not ARMS SETTING screen.**
- **Set the “AUTO” of “SCAN START POSITION” to ON.**

2 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the area to start scanning of the registration mark.



Registration mark scan area



Supplement

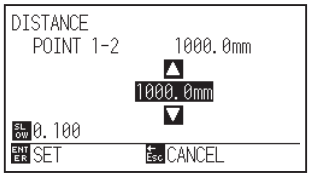
Left figure is for 4POINTS. Size and position of the registration scan start area is same for 2POINTS or 3POINTS.

Supplement

- **Scan the registration marks in accordance with the setting of the MARK DISTANCE (see "Setting Mark Distance").**
- **It will return to default screen without scanning when you press the [ESC] key (CANCEL).**

3 Confirm the position of the tool, and if it is OK, press the [ENTER] key (SET).

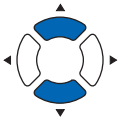
▶ Registration marks are scanned automatically. DISTANCE entry screen is displayed once the scanning is completed.



Supplement

- **Measured distance is displayed in the top line in the DISTANCE input screen. Input value (initially same as measured value) is displayed under that.**
- **If the input value is not changed, it will assume that there is no difference between the measured distance and the distance in the data.**
- **Digits of settings can be changed by pressing the [SLOW] key.**

4 Press the POSITION (▲▼) keys and increase or decrease the setting value.

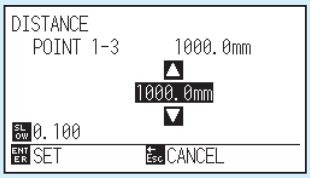


5 Confirm the setting and press the [ENTER] key (SET).

▶ Adjustment by scanning the registration mark is completed, and it will return to default screen.

Supplement

- **It will return to default screen without changing the settings when you press the [ESC] key (CANCEL).**
- **Distance input screen for point 3 is displayed if it is set to 3POINTS or more, so repeat steps 4 and 5 to set.**



Adjust Manually

This section describes the operation to adjust with registration mark scan by moving to registration mark manually after setting the ARMS mode and POINTS.

Supplement

See "Adjust Automatically" if you are moving automatically to registration mark for scanning.

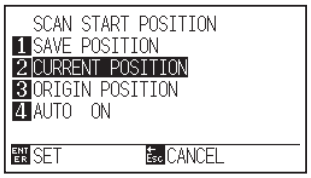
Operation

1 Press the [2] key (SCAN START POSITION) in the ARMS SETTING screen (1/5).

▶ SCAN START POSITION screen is displayed.

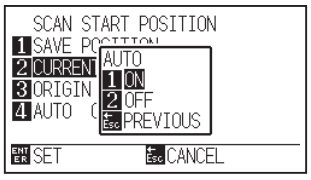
Supplement

Press the [2] key (ARMS) in the MENU screen if it is not ARMS SETTING screen.



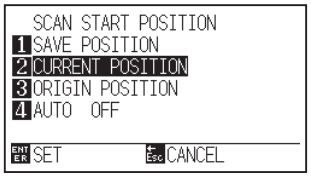
2 Press the [4] key (AUTO).

▶ AUTO SETING screen is displayed.



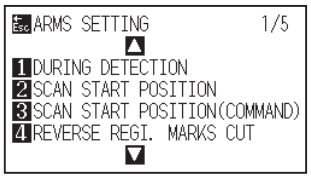
3 Press the [2] key (OFF).

▶ SCAN START POSITION screen is displayed.



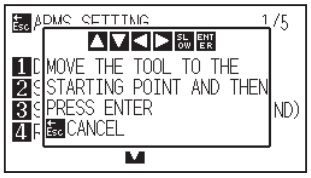
4 Press the [ENTER] key (SET)

▶ ARMS SETTING screen (1/5) is displayed.

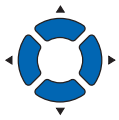


5 Press the [1] key (DURING DETECTION) in the ARMS SETTING screen (1/5).

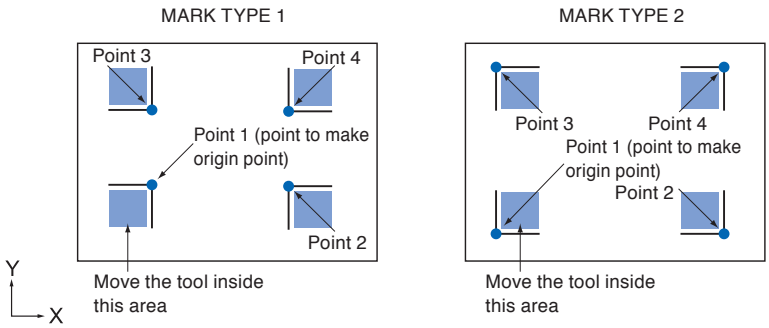
▶ The following message is displayed.



6 Press the POSITION (▲▼◀▶) keys and move the tool carriage to the area to start scanning of the registration mark.



Registration mark scan area



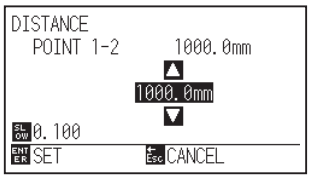
Supplement

Left figure is for 4 POINTS. Size and position of the registration scan start area is same for 2 POINTS or 3 POINTS.

7 Confirm the position of the tool, and if it is OK, press the [ENTER] key.

▶ Registration marks are scanned. A message to move to next registration mark position is displayed once the scanning is completed. Repeat steps 4 and 5 following the message in that case.

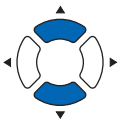
▶ DISTANCE entry screen is displayed once the registration mark is scanned.



Supplement

- **The registration marks are scanned in accordance with the settings of the Mark Distance.**
- **It will return to Default screen without scanning when you press the [ESC] key (CANCEL).**

8 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

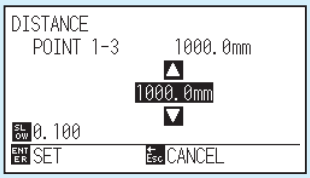
- **Measured distance is displayed in the top line in the DISTANCE input screen. Input value (initially same as measured value) is displayed under that.**
- **If the input value is not changed, it will assume that there is no difference betweenthe measured distance and the distance in the data.**
- **Digits of settings can be changed by pressing the [SLOW] key.**

9 Confirm the setting and press the [ENTER] key (SET).

▷ Adjustment by scanning the registration mark is completed, and it will return to default screen.

Supplement

- **It will return to default screen without changing the settings when you press the [ESC] key (CANCEL).**
- **Distance input screen for point 3 is displayed if it is set to 3POINTS or more, so repeat steps 8 and 9 to set.**



Chapter 6: Manual Position Adjust

Here, we will explain how to match up points while manually confirming the media and tool (cutter pen or plotting pen) points.
The ARMS function can be used for accurately matching up points.

PRODUCT SUMMARY

6.1 Outline of Manual Position Adjust
6.2 Manual Position Adjust

6.1 Outline of Manual Position Adjust

With manual position adjust, tilt of the axes are adjusted using the 2POINTS, 3POINTS, or 4POINTS adjustment marks (grits or registration marks) as a standard. The distance between each points can also be entered to adjust the distance.

Move the tip of each tool to the appropriate point.

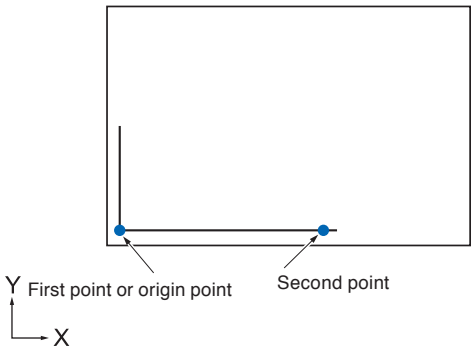
Use the media with prints (adjustment marks such as grits or registration marks) necessary to get XY axes and origin point.

Setting of MARK SCAN MODE and Number of Adjustment Marks

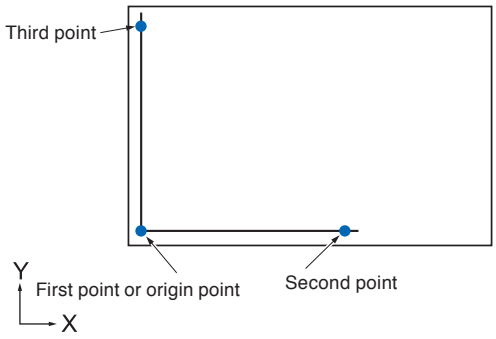
To perform the AXIS ALIGNMENT, set the MARK SCAN MODE to "AXIS ALIGNMENT".

Select the number of the registration marks (adjustment marks) from 2 POINTS, 3 POINTS, or 4 POINTS when the MARK SCAN MODE is set to "AXIS ALIGNMENT". Position of each adjustment marks are as following.

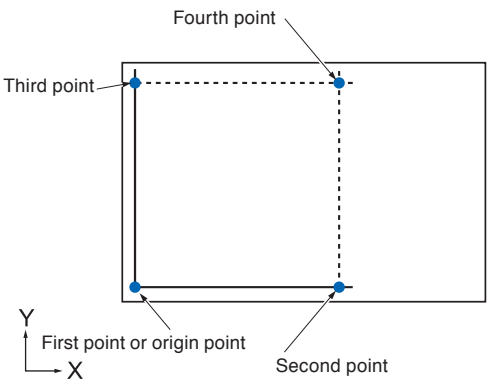
2 POINTS



3 POINTS



4 POINTS



6.2 Manual Position Adjust

Method of manual position adjust is described here.

Supplement

- **Adjustment will be cleared if the following is done after setting the adjustment.**
  - **Set new origin point.**
  - **Set rotation or mirror. (Set the rotate or mirror prior to the axis adjustment)**
- **When the inclination of the axis is too large when setting the first and second point, the first and third point, the third and fourth point, or the second and fourth point, "Angle adjustment error, please reset" will be displayed. After setting the media so as to make the inclination small, please perform adjustment operations.**
- **Axis adjustment will be cleared when point 1 and point 2 is set to same point.**

Operation

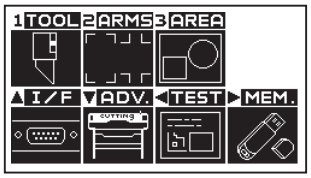
1 Load the media with adjustment mark in the plotter

(Refer to the "Loading the Media")

2 Set a cutter plunger or a pen in the tool holder.

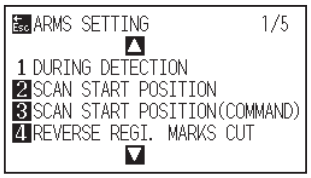
3 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



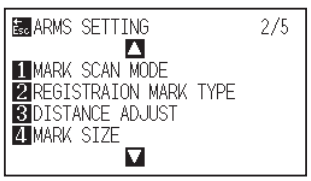
4 Press the [2] key (ARMS).

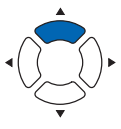
▷ ARMS SETTING screen (1/5) is displayed.



5 Press the POSITION (▲) key.

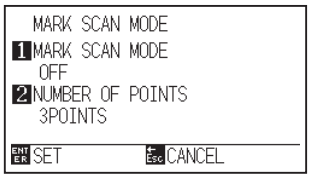
▷ ARMS SETTING screen (2/5) is displayed.





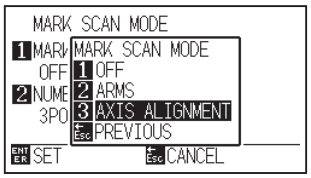
6 Press the [1] key (MARK SCAN MODE).

▶ MARK SCAN MODE setting screen is displayed.



7 Press the [1] key (MARK SCAN MODE).

▶ MARK SCAN MODE setting screen is displayed.



8 Press the [3] key (AXIS ALIGNMENT).

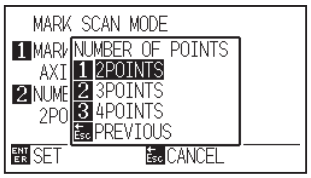
▶ MARK SCAN MODE will be selected and it will return to MARK SCAN MODE setting screen.

Supplement

It will return to MARK SCAN MODE setting screen without changing the setting when you press the [ESC] key (CANCEL).

9 Press the [2] key (NUMBER OF POINTS).

▶ NUMBER OF POINTS setting screen is displayed.



10 Press the [1] key (2POINTS), the [2] key (3POINTS), or the [3] key (4POINTS).

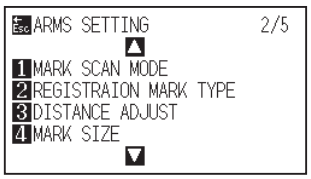
▶ NUMBER OF POINTS will be selected and it will return to MARK SCAN MODE setting screen.

Supplement

It will return to MARK SCAN MODE setting screen without changing the setting when you press the [ESC] key (CANCEL).

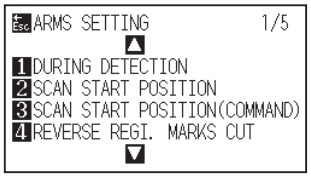
11 Confirm the setting and press the [ENTER] key (SET).

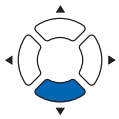
▶ Setting will be set, and it will return to ARMS SETTING screen (2/5).



12 Press the POSITION (▼) key.

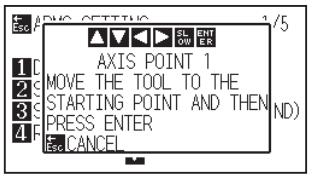
▶ ARMS SETTING screen (1/5) is displayed.



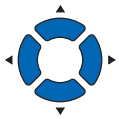


13 Press the [1] key (DURING DETECTION) in ARMS SETTING screen (1/5).

▶ Following message is displayed.

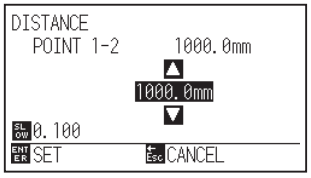


14 Press the POSITION (▲▼◀▶) key and match the tool tip to the adjustment point (adjustment registration mark).



15 Confirm the position of the tool, and if it is OK, press the [ENTER] key (SET).

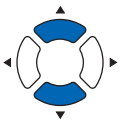
▶ Once all the adjustment marks are specified, DISTANCE entry screen is displayed.



Supplement

- **Repeat steps 14 and 15 if following message prompting to move to the adjustment mark is displayed.**
- **Number to repeat steps 14 and 15 differs depending on the specified number of the adjustment marks. Follow the message that is displayed.**
- **It will return to default screen without scanning when the [ESC] key (CANCEL) is pressed.**

16 Press the POSITION (▲▼) keys to set the original distance on the data.



Supplement

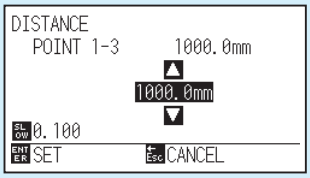
- **Measured distance is displayed in the top line in the DISTANCE input screen. Input value (initially same as measured value) is displayed under that.**
- **If the input value is not changed, it will assume that there is no difference between measured distance and the distance in the data.**
- **Digits of settings can be changed by pressing the [SLOW] key.**

17 Confirm the setting and press the [ENTER] key (SET).

▶ The adjustments based on the registration mark scanning will be completed, and it will return to default screen.

Supplement

- **It will return to default screen without changing the settings when you press the [ESC] key (CANCEL).**
- **DISTANCE input screen for point 3 is displayed if it is set to 3POINTS or more, so repeat steps 15 to 17 to set.**



Supplement

Please refer to the following for adjustments when matching the position manually.

- **2 point matching**
  ["Point 1" settings]→["Point 2" settings]→["Origin point of the axis adjustment" settings]→[Finish]
- **3 point matching**
  ["Point 1" settings]→["Point 2" settings]→["Point 3" settings]→["Distance between Point 1-2" settings]→["Distance between Point 1-3" settings]→["Origin point of the axis adjustment" settings]→[Finish]
- **4 point matching**
  ["Point 1" settings]→["Point 2" settings]→["Point 3" settings]→["Point 4" settings]→["Distance between point 1-2" settings]→["Distance between point 1-3" settings]→[Finish]

Chapter 7:
Setting Regarding Cutting Quality

There are times that ideal cutting may not be possible, such as the lines may shift, corners deform, or uncut sections occur, due to the characteristics of the media (thickness, how hard it is, etc.) or the shape of the blades, when the actual cutting is done. Adjust the moving speed and force of the tool, and the control method to prevent these problems.
This chapter describes the setting regarding the quality of the cutting.

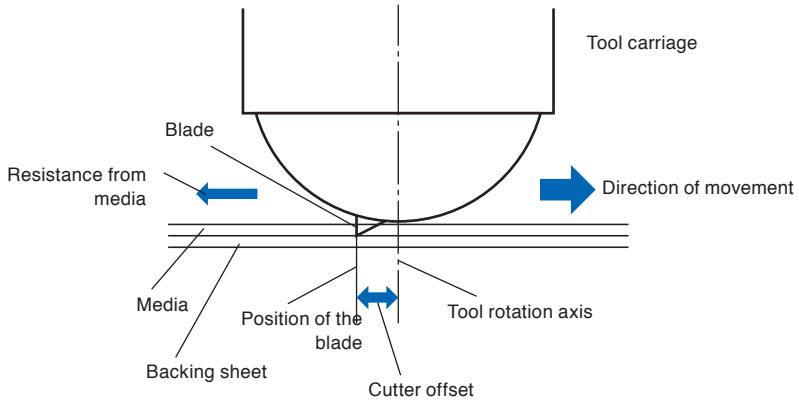
PRODUCT SUMMARY

7.1 To cut the corner of thick media sharply
7.2 Setting the Step Pass
7.3 Setting the Offset Angle
7.4 Setting the Distance Adjust
7.5 Setting Cut Line
7.6 Setting the Initial Blade Angle Position
7.7 Settings for OFFSET FORCE
7.8 Setting the Overlay Cut Function
7.9 Setting the Tool Offset Adjust

7.1 To cut the corner of thick media sharply

Outline of Tangential Mode

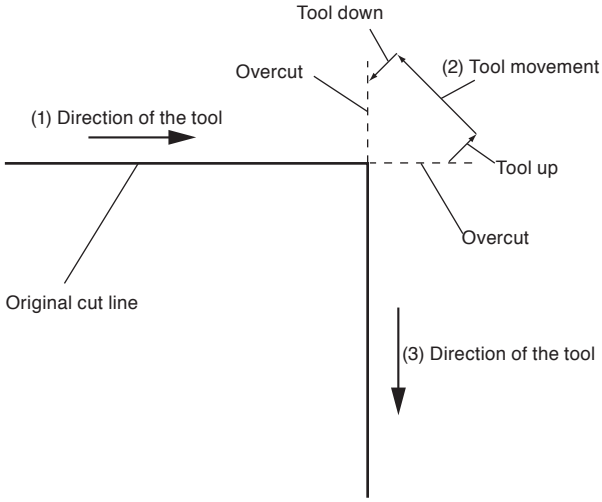
The blade needs to be facing toward the direction of cut when cutting the media. The tip of the blade is shaped as shown so the blade is facing the cutting direction even when it is cutting curved lines or corners. The tip of the blade is off from the rotation axis of the blade (CUTTER OFFSET). The blade will automatically turn and face the cutting direction when the tool carriage moves, because the blade is forced to move from the rotation center, and the blade tip gets resistance by the media.



The blade tip gets sunk into the media with 0.3 mm or thicker, making the blade hard to rotate. Especially for the corners where two straight lines meet, cutting becomes very hard because it cannot rotate smoothly.

Tangential mode is a control method to precisely cut corners where two straight lines meet. (See below) With the tangential mode, the blade is advanced so it will overcut at the corners before the tool is lifted up.

Then, it will be lowered at the position slightly before the next line, and start to cut with slight overcut.



There are 2 modes for tangential mode.

Mode 1 : Overcuts the start and end points and acute-angle corners to eliminate 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 hardness or thickness of the media.

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

The length of the overcuts by tangential mode can be set individually for start of the line and for end of the line.

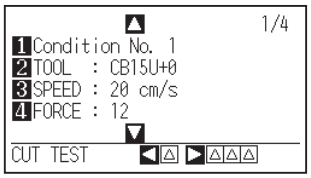
Setting the Tangential Mode

ON/OFF and the mode of the tangential mode can be set individually for each of tool condition No. 1 to 8.

Operation

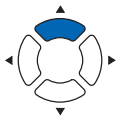
1 Press the [COND/TEST] key.

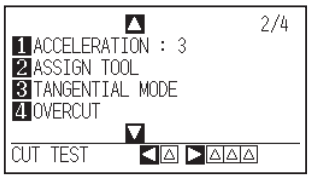
▷ CONDITION screen (1/4) is displayed.



2 Press the POSITION (▲) key.

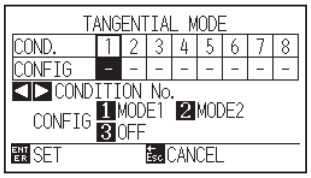
▷ CONDITION screen (2/4) is displayed.



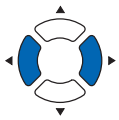


3 Press the [3] key (TANGENTIAL MODE).

▷ TANGENTIAL MODE setting screen is displayed.



4 Press the POSITION (◀▶) keys and select the tool condition number (CONDITION No.).



5 Press the [1] key (MODE1), the [2] key (MODE2), or the [3] key (OFF) to select the mode.

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to CONDITION screen (2/4).

7 Press the [COND/TEST] key.

▷ It will return to default screen.

Supplement

It will return to CONDITION screen (2/4) without changing the settings when you press the [ESC] key (CANCEL).

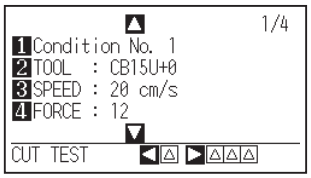
Setting the Length of Overcut

Set the length of overcut with tangential mode.

Operation

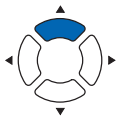
1 Press the [COND/TEST] key.

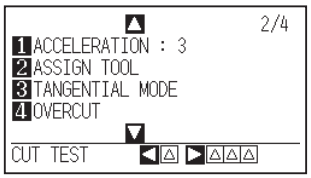
▶ CONDITION screen (1/4) is displayed.



2 Press the POSITION (▲) key.

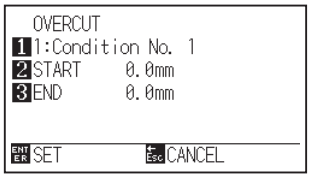
▶ CONDITION screen (2/4) is displayed





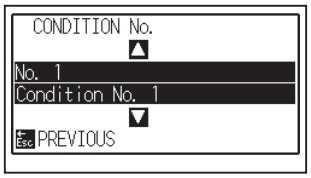
3 Press the [4] key (OVERCUT).

▶ OVERCUT setting screen is displayed.

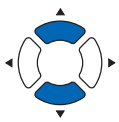


4 Press the [1] key (Condition No. 1)

▶ CONDITION No. selection screen is displayed.



5 Press the POSITION (▲▼) keys and select the CONDITION No.

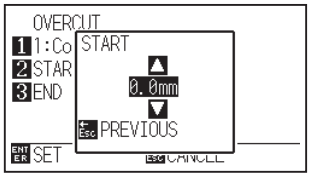


6 Confirm the setting, and press the [ESC] key (PREVIOUS).

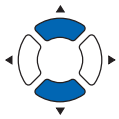
▶ Condition No. will be selected, and it will return to OVERCUT setting screen.

7 Press the [2] key (START).

▶ Overcut length for START setting screen is displayed



8 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

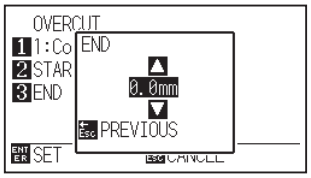
Setting range is 0.0 mm to 3.0 mm.

9 Confirm the setting value, and press the [ESC] key (PREVIOUS).

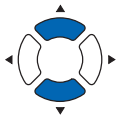
▶ Overcut length for START will be selected, and it will return to OVERCUT setting screen.

10 Press the [3] key (END).

▶ Overcut length for END setting screen is displayed.



11 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is from 0.0 mm to 3.0 mm.

12 Confirm the setting value, and press the [ESC] key (PREVIOUS).

▶ Length for overcut END will be selected, and it will return to OVERCUT setting screen.

13 Repeat steps 3 to 12 as necessary to set multiple tool CONDITION No.

14 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to CONDITION screen (2/4).

15 Press the [COND/TEST] key.

▶ It will return to default screen.

Supplement

It will return to CONDITION screen (2/4) without changing the settings when you press the [ESC] key (CANCEL).

Setting the Initial Down Force

The initial down force setting is effective when tangential mode is selected.

Tangential mode is generally used for the cutting of thick media. With thick film, additional time is required for the cutter blade to penetrate the media fully, even when the necessary cutting force is applied.

The cutting operation starts before the cutter blade has fully penetrated the media, causing uncut sections to be left.

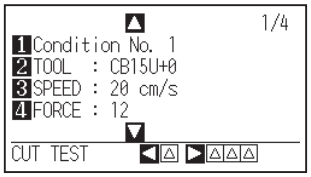
When the initial down force is specified, this force is used as the cutting force immediately after the lowering of the tool when tangential mode is selected, enabling the cutter blade to penetrate the media rapidly. (As an example, if the cutting force is 25 and the initial down force is 4, for example, the cutting force applied immediately after the pen is lowered will be 29.)

The upper limit for added value is 48.

Operation

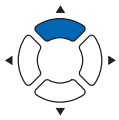
1 Press the [COND/TEST] key.

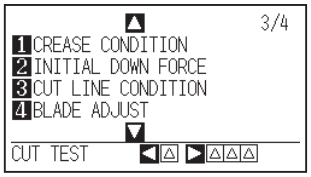
▷ CONDITION screen (1/4) is displayed.



2 Press the POSITION (▲) key twice.

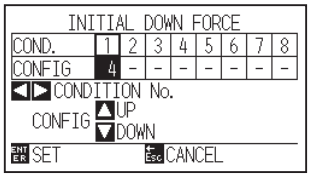
▷ CONDITION screen (3/4) is displayed.



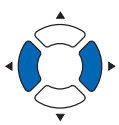


3 Press the [2] key (INITIAL DOWN FORCE).

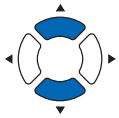
▷ INITIAL DOWN FORCE setting screen is displayed.



4 Press the POSITION (◀▶) keys and select the CONDITION No.



5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 0 to 20.

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to CONDITION screen (3/4).

7 Press the [COND/TEST] key.

▶ It will return to default screen.

Supplement

It will return to CONDITION screen (3/4) without changing the settings when you press the [ESC] key (CANCEL).

7.2 Setting the Step Pass

It may not cut the curved line smoothly if there is very short lines in the curve.

It will cut in the units of the specified value when the STEP PASS is used, which allows to control the short lines with certain length, resulting to stable rotation of the blade for higher cut quality.

Setting range of STEP PASS is from 0 to 20.

Actual length of the STEP PASS is the value of the STEP PASS multiplied by the distance set in the "STEP SIZE".

- (Refer to the "Setting the Step Size")

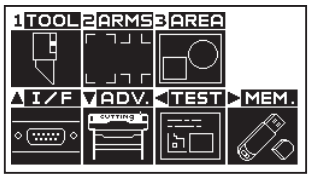
Supplement

- **This setting will be saved even if the power is turned off.**
- **The cut image may not be what you intended if the set value is too large. It is recommended to set to "1" for normal use.**

Operation

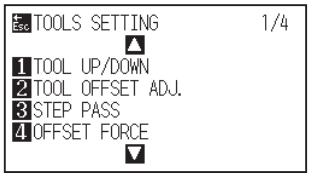
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



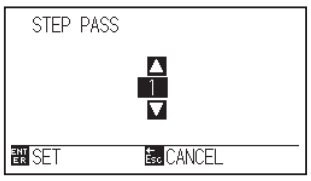
2 Press the [1] key (TOOL).

▷ TOOLS SETTING screen (1/4) is displayed.

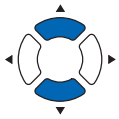


3 Press the [3] key (STEP PASS).

▷ STEP PASS setting screen is displayed.



4 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 0 to 20.

5 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to TOOLS setting screen (1/4).

6 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Supplement

It will return to TOOLS SETTING screen (1/4) without changing the settings when you press the [ESC] key (CANCEL).

7.3 Setting the Offset Angle

This plotter analyzes the cutting data, and controls the angle of the cutter blade tip if the change in the angles of the corner is large.

Angle control is applied if there is larger angle change than the angle specified as reference angle.

The time to cut is shortened by setting large value for the reference angle, since it will only apply blade control when there are angles with large angle change, hence reducing the time to make the blade control.

But, if it is set too large, there will be not enough angle control of the blade, and the cut result may differ from what was expected. Set the reference angle in good balance.

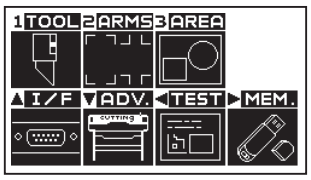
Supplement

This setting will be saved even if the power is turned off.

Operation

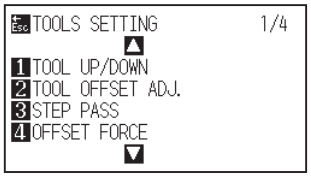
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



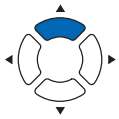
2 Press the [1] key (TOOL).

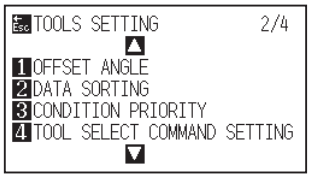
▷ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION (▲) key.

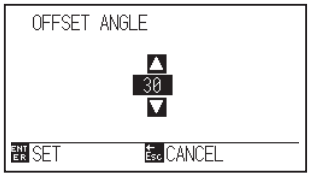
▷ TOOLS SETTING screen (2/4) is displayed.



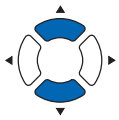


4 Press the [1] key (OFFSET ANGLE).

▷ OFFSET ANGLE setting screen is displayed



5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 0 to 60.

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to TOOLS setting screen (2/4).

Supplement

It will return to TOOLS SETTING screen (2/4) without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [PAUSE/MENU] key.

▶ It will return to default screen

7.4 Setting the Distance Adjust

DISTANCE ADJUST value corrects any deviation in the length of cut or plotted line segments, which occurs depending on the media being used. DISTANCE ADJUST value for the deviation is specified as a percentage of the total distance. For example, a setting of +0.05% adjusts a distance of 1000 mm by 1000 x 0.05% = 0.5 mm, making 1000.5 mm.

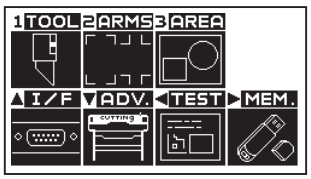
Supplement

This setting will be saved even if the power is turned off.

Operation

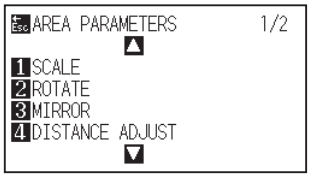
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



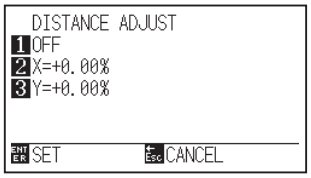
2 Press the [3] key (AREA).

▷ AREA PARAMETERS screen (1/2) is displayed



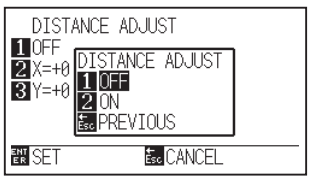
3 Press the [4] key (DISTANCE ADJUST).

▷ DISTANCE ADJUST setting screen is displayed.



4 Press the [1] key (OFF).

▷ DISTANCE ADJUST setting screen is displayed.

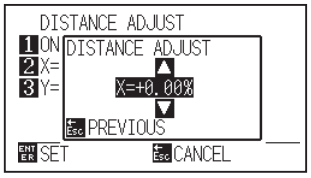


5 Press the [2] key (ON).

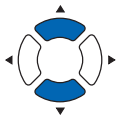
▷ DISTANCE ADJUST becomes on and [2] key (X) and [3] key (Y) becomes enabled.

6 Press the [2] key (X).

▶ X DISTANCE ADJUST setting screen is displayed.



7 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

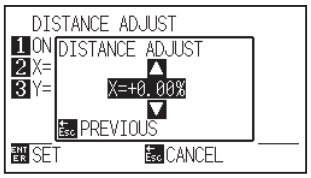
Setting range is -0.25% to +0.25%.

8 Confirm the setting value, and press the [ESC] key (PREVIOUS).

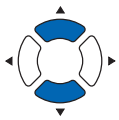
▶ X DISTANCE ADJUST will be set, and it will return to DISTANCE ADJUST screen.

9 Press the [3] key (Y).

▶ Y DISTANCE ADJUST setting screen is displayed.



10 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is -0.25% to +0.25%.

11 Confirm the setting and press the [ESC] key (REVIOUS).

▶ Y DISTANCE ADJUST will be set, and it will return to DISTANCE ADJUST setting screen.

12 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to AREA PARAMETERS screen (1/2).

13 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Supplement

It will return to AREA PARAMETERS screen (1/2) without changing the settings when you press the [ESC] key (CANCEL).

7.5 Setting Cut Line

After turning on the power or changing pen condition settings, touch the blade to the media and adjust the blade direction.

The processing in the part is not cut with perforation patter is adjusted in "UP MODE".

The perforation setting can be set for each condition number.

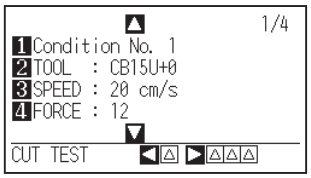
Supplement

- **Normally use it with default value OFF. It will cut with solid line.**
- **Doing a cut-out (cutting out) with a perforated setting instead of a normal film cut (half cutting) can damage the writing panel and the quality of a normal cut.**

Operation

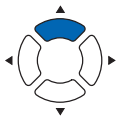
1 Press the [COND/TEST] key.

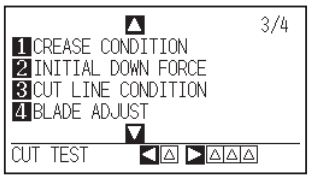
▷ CONDITION screen (1/4) is displayed.



2 Press the POSITION (▲) key twice.

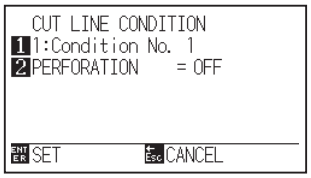
▷ CONDITION screen (3/4) is displayed.





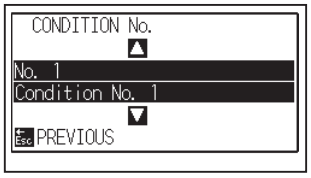
3 Press the [3] key (CUT LINE CONDITION).

▷ CUT LINE CONDITION setting screen is displayed.

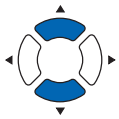


4 Press the [1] key (Condition No.).

▶ CONDITION No. selection screen is displayed.



5 Press the POSITION (▲▼) key and select the CONDITION No.

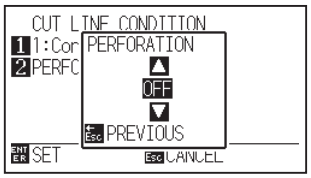


6 Confirm the setting and press the [ESC] key (PREVIOUS).

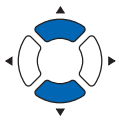
▶ CONDITION No. is selected and return to CUT LINE PATTERN setting screen.

7 Press the [2] key (PERFORATION).

▶ PERFORATION setting screen is displayed.

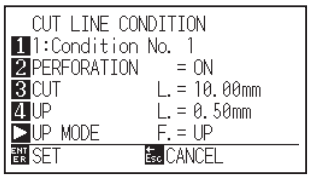


8 Press the POSITION (▲▼) keys and set the ON.



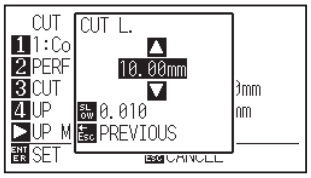
9 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ PERFORATION will be set and it will return to CUT LINE CONDITION screen.

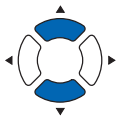


10 Press the [3] key (CUT).

▶ CUT L. setting screen is displayed.



11 Press the POSITION (▲▼) keys and increase or decrease the setting value.

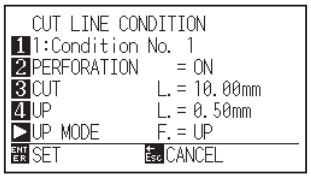


Supplement

- **Setting range is 0.01 mm to 100.00 mm.**
- **Digits of settings can be changed by pressing the [SLOW] key.**

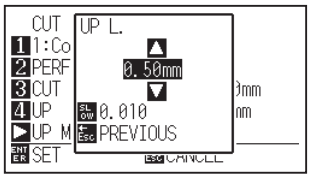
12 Confirm the setting and press the [ESC] key (PREVIOUS).

▷ CUT LENGTH will be set and it will return to CUT LINE CONDITION screen.

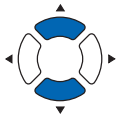


13 Press the [4] key (UP).

▷ UP L setting screen is displayed.



14 Press the POSITION (▲▼) keys and increase or decrease the setting value.

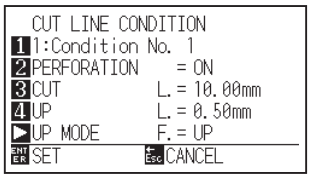


Supplement

- **Setting range is 0.01 mm to 10.00 mm.**
- **Digits of settings can be changed by pressing the [SLOW] key.**

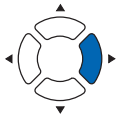
15 Confirm the setting and press the [ESC] key (PREVIOUS).

▷ UP LENGTH will be set and it will return to CUT LINE CONDITION screen.



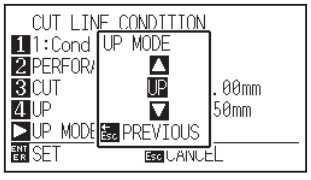
16 Press the POSITION (▶) key (UP MODE).

▷ UP MODE setting screen is displayed.

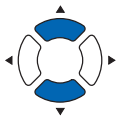


Supplement

Setting range is 1 to 40 or “UP”.



17 Press the POSITION (▲▼) keys and set the UP MODE.



18 Confirm the setting and press the [ESC] key (PREVIOUS).

▷ UP MODE will be set and it will return to CUT LINE CONDITION screen.

Supplement

- **The value set here is the FORCE at the part that is not cut. When "UP" is set, the tool up is started.**
- **By entering the smaller value than the FORCE at the time of the normal cut, the half cut is performed.**

19 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to CONDITION screen (3/4).

20 Press the [PAUSE/MENU] key.

▷ It will return to the default screen.

Supplement

It will return to CONDITION screen (3/4) without changing the settings when you press the ESC key (CANCEL).

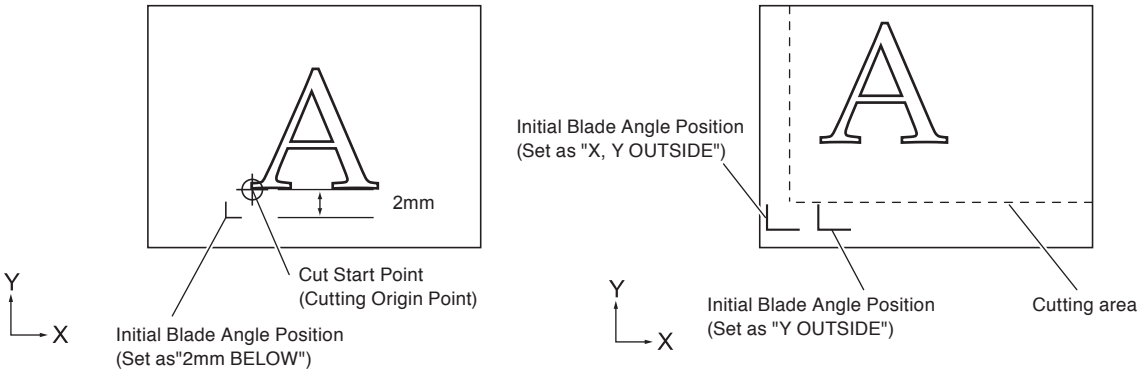
7.6 Setting the Initial Blade Angle Position

After turning on the power or changing pen condition settings, touch the blade to the media and adjust the blade direction. The INITIAL BLADE ANGLE POSITION will need to be set in order to make sure the area is not damaged and that the blade properly makes contact with the media.

Selecting [2mm BELOW] will change the INITIAL BLADE ANGLE POSITION to 2 mm below the cutting start point (2 mm from the edge of the point from which the media will be shifted.) .

When selecting [Y OUTSIDE], the INITIAL BLADE ANGLE POSITION is performed out of the Y-direction range of the cutting area. Selecting [XY OUTSIDE] is out of the X- and Y-direction range of the cutting area.

When selecting the [SPECIFIED POSITION], you can specify any location.



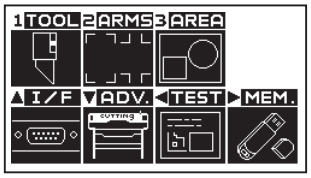
Supplement

This setting will be saved even if the power is turned off.

Operation

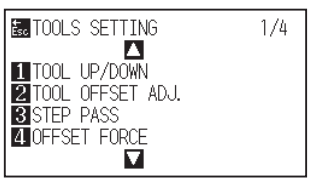
1 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed.



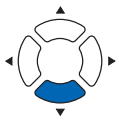
2 Press the [1] key (TOOL).

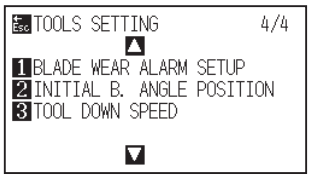
▶ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION (▼) key.

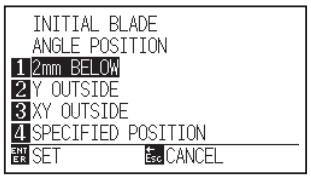
▷ TOOLS SETTING screen (4/4) is displayed.





4 Press the [2] key (INITIAL B. ANGLE POSITION).

▷ INITIAL BLADE ANGLE POSITION setting screen is displayed.



5 Press the [1] key (2mm BELOW), the [2] key (Y OUTSIDE), the [3] key (XY OUTSIDE) or the [4] key (SPECIFIED POSITION).

When pressing the [4] key (SPECIFIED POSITION), you need to specify the tool position by moving the tool.

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to TOOLS SETTING screen (4/4).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen

Supplement

It will return to TOOLS SETTING screen (4/4) without changing the setting when you press the [ESC] key (CANCEL).

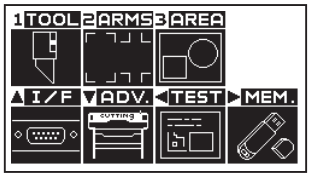
7.7 Settings for OFFSET FORCE

Slight cut operation is performed before the actual cut operation to align the blade toward the cutting direction. Lower FORCE is necessary compared with the normal cutting, so it is possible to set lower FORCE as an OFFSET FORCE.
OFFSET FORCE is used to control the rotation of the blade with the tangential mode in addition to control the blade direction at the beginning of the cut.

Operation

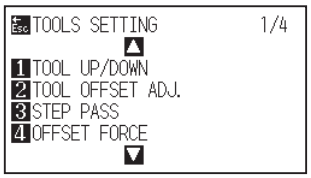
1 Press the [PAUSE/MENU] key.

▶ MENU screen is displayed.



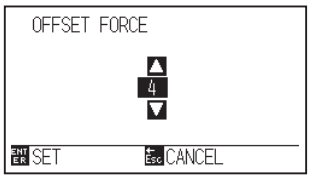
2 Press the [1] key (TOOL).

▶ TOOLS SETTING screen (1/4) is displayed.

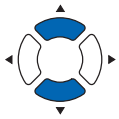


3 Press the [4] key (OFFSET FORCE).

▶ OFFSET FORCE setting screen is displayed.



4 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 1 to 40.

5 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to TOOLS SETTING screen (1/4).

6 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Supplement

It will return to TOOLS SETTING screen (1/4) without changing the settings when you press the [ESC] key (CANCEL).

7.8 Setting the Overlay Cut Function

The Overlay Cut function enables repeated cutting to be performed on a medium that cannot be cut with one cutting operation. In the first cutting operation, a cutting force that is lighter than the specified FORCE value is used to leave cutting trace marks on the medium. For the second and subsequent cutting operations, the specified FORCE value is used.

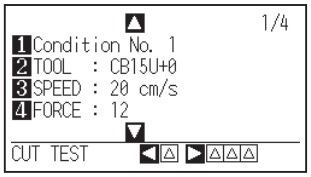
Supplement

- **This setting will be saved even if the power is turned off.**
- **If the tool is set to "Pen" or "Creasing", it does not work.**

Operation

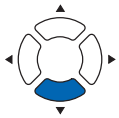
1 Press the [COND/TEST] key.

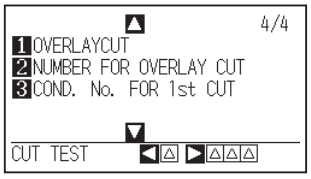
▷ CONDITION screen (1/4) is displayed.



2 Press the POSITION (▼) key.

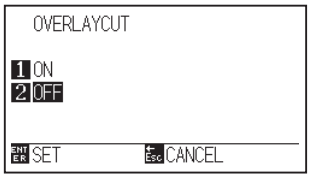
▷ CONDITION screen (4/4) is displayed.





3 Press the [1] key (OVERLAYCUT).

▷ OVERLAYCUT setting screen is displayed.



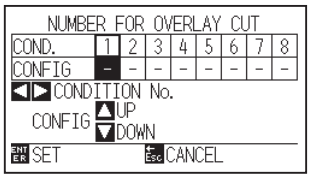
4 Press the [1] key (ON).

5 Confirm the setting and press the [ENTER] key (SET).

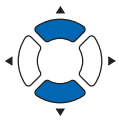
▷ Setting will be set, and it will return to CONDITION screen (4/4).

6 Press the [2] key (NUMBER FOR OVERRLAY CUT).

▷ NUMBER FOR OVERRLAY CUT screen is displayed.



7 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is (OFF) or 2 to 9 (time).

8 Confirm the setting and press the [ENTER] key (SET).

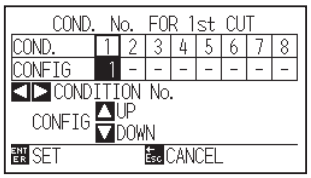
▷ Setting will be set, and it will return to CONDITION screen (4/4).

Supplement

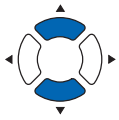
It will return to CONDITION screen (4/4) without changing the setting when you press the [ESC] key (CANCEL).

9 Press the [3] key (COND. No. FOR 1st CUT).

▷ COND. No. FOR 1st CUT screen is displayed



10 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 1 to 8.

11 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to CONDITION screen (4/4).

Supplement

It will return to CONDITION screen (4/4) without changing the setting when you press the [ESC] key (CANCEL).

12 Press the [PAUSE/MENU] key.

▷ It will return to default screen

7.9 Setting the Tool Offset Adjust

The Tool Offset Adjust is a function to correct displacement between the Tool Holder 1 and the Tool Holder 2.

First, plot (cut) a crosshair (the reference line) with the tool that set to the Tool Holder 2, then plot (cut) another crosshair with the tool that set to the Tool Holder 1. Perform the adjustment by inputting the gap value.

You can set the range between -2.0 and +2.0 mm in 0.1 mm increments.

Operation

1 Load the media.

2 Set the tool to the Tool Holder 1 and Tool Holder 2.

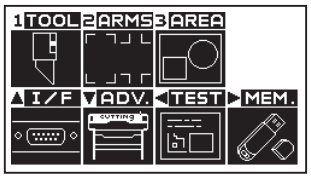
Set the tool condition according to the tool used.

Supplement

- **See "Attaching a Tool" for setting the tool.**
- **For changing the tool conditions please refer to "Selecting Tool Condition", and for tool settings please refer to "Setting the Tool".**

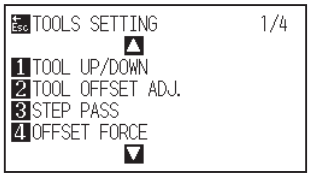
3 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



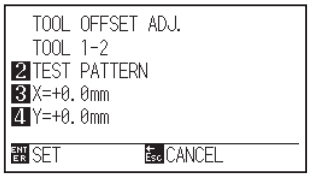
4 Press the [1] key (TOOL).

▷ TOOLS SETTING screen (1/4) is displayed.



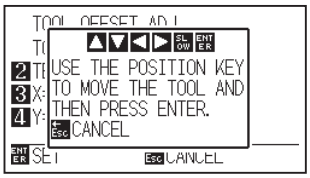
5 Press the [2] key (TOOL OFFSET ADJ).

▷ TOOL OFFSET ADJ.setting screen is displayed.



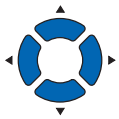
6 Press the [2] key (TEST PATTERN).

▶ The following message is displayed.



7 Press the POSITION (▲▼◀▶) keys to move the tool carriages to the position to plot a test pattern.

Be sure to move it inside of a plotting range greater than 50 mm on both the X and Y axes.



Supplement

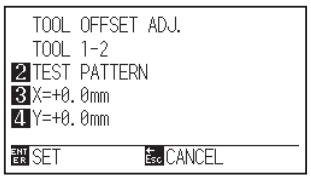
- **Press the [ESC] key (Return) to return to the TOOL OFFSET ADJ setting screen without changing any settings.**
- **Pressing simultaneously the [POSITION] and [SLOW] keys moves the tool carriage slowly.**

8 Confirm the tool position and press [ENTER] key.

▶ Plot a "+" sign with the Tool 1.

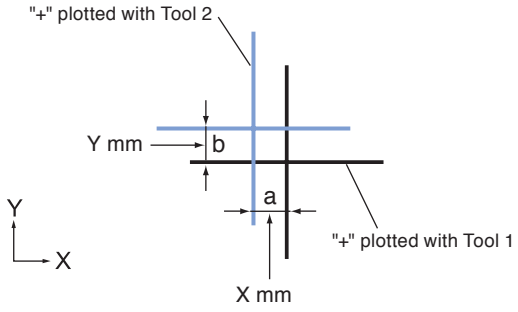
Next, plot a "+" sign with the Tool 2.

After the plotting is completed, the TOOL OFFSET ADJ setting screen is displayed.



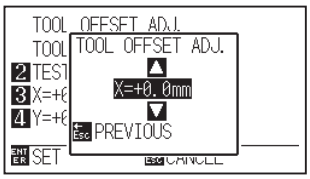
9 Measure how much the "+" plotted with the Tool 2 is out of alignment with the reference "+" plotted with the Tool 1.

(For example, in the following figure, input X = +a mm and Y = -b mm, since it's out of alignment in the negative X-axis and the positive Y-axis)

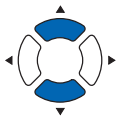


10 Press [3] key (X=+0.0 mm).

▶ TOOL OFFSET ADJ (X) setting screen is displayed.



11 Press the POSITION (▲▼) key and increase or decrease the setting value.

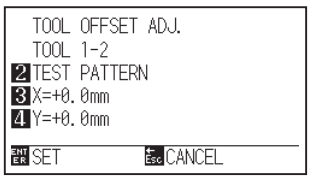


Supplement

Setting range is -2.0 mm to +2.0 mm.

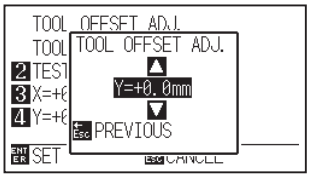
12 Confirm the setting value and press the [ESC] key (PREVIOUS).

▶ TOOL OFFSET ADJ setting screen is displayed.

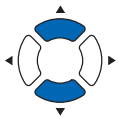


13 Press [4] key (Y=+0.0 mm).

▶ TOOL OFFSET ADJ (Y) setting screen is displayed.



14 Press the POSITION (▲▼) key and increase or decrease the setting value.



Supplement

Setting range is -2.0 mm to +2.0 mm.

15 Confirm the setting value and press the [ESC] key (PREVIOUS).

▶ TOOL OFFSET ADJ setting screen is displayed.

16 Repeat Steps 6 through 15 until there is no displacement between the two tools.

17 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to TOOLS SETTING screen (1/4).

Supplement

It will return to TOOLS SETTING screen (1/4) without changing the settings when you press the [ESC] key (CANCEL).

18 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Chapter 8:
Settings Regarding Cutting Time

Time necessary for cutting depends on the speed to move the tool and media, and efficiency of the operation.
It is best to cut slowly and carefully to cut precisely, but the speed is required to enhance the operational efficiency.
The setting needs to be in good balance considering the characteristics of the media and tools, and the contents of the cutting data.
This chapter describes the settings affecting the cutting time.
In addition to this chapter, there are settings affecting the cutting times in following places.

- Selecting Tool Condition
- Setting Mark Distance

PRODUCT SUMMARY

8.1 Sorting the Cutting Data
8.2 Setting the Tool Up Move
8.3 Setting the Moving Speed
8.4 Setting the Tool Up Height
8.5 Setting the Tool Down Speed

8.1 Sorting the Cutting Data

By sorting the cutting data, you can reduce the unnecessary movement of the tool exchange during the cutting and shorten the cutting time.

When performing the sorting process in this plotter, it may take some time. Receiving the data sorted by the application software, after setting the sorting process of the plotter to OFF, can be processed faster.

OFF : Sorting process is disabled.

1 : By grouping the data those are cut with the same tool in the received data, it can reduce the tool exchange number of times and shorten the time it takes to tool exchange.

2 : It is the same as the setting of "1", but the conditions that the cutter has been set is used for the last.

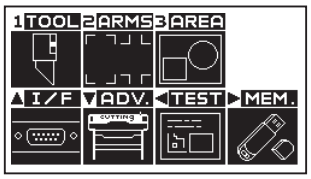
Supplement

- **The sorting process is performed after storing the data in the buffer memory, so it takes some time until the cutting is started.**
- **Please preliminarily register the tool to be used for sorting in the setting conditions No.1 to 8. (See "Setting the Cutting Conditions".)**

Operation

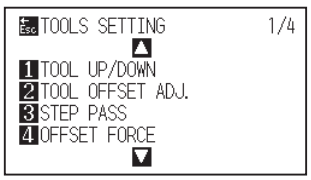
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



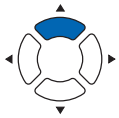
2 Press the [1] key (TOOL).

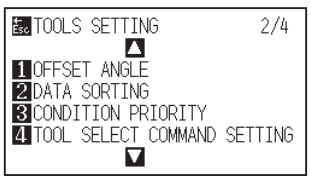
▷ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION (▲) key.

▷ TOOLS SETTING screen (2/4) is displayed.



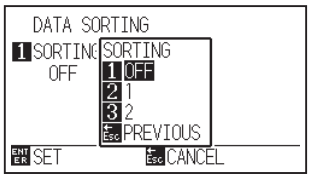


4 Press the [1] key (DATA SORTING).

▷ DATA SORTING setting screen is displayed

5 Press the [1] key (OFF).

▷ DATA SORTING setting screen is displayed



6 Press the [1] key (OFF), [2] key (1) or the [3] key (2).

7 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to TOOLS SETTING screen (2/4).

Supplement

It will return to TOOLS SETTING screen (2/4) without changing the settings when you press the [ESC] key (CANCEL).

8 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

[SORT ON] mark is displayed at the right of the screen when SORT MODE is set.

8.2 Setting the Tool Up Move

When the coordinate information to move in a state in which the tool is raised is received continuously from the computer connected to this plotter, "TOOL UP MOVE" is used to set whether to move to every coordinate in order or go directly to the last one .

There are two settings for "TOOL UP MOVE" as shown below.

ENABLED : If several coordinates are received continuously, it will move to each in order it is received.

DISABLED : If several coordinates are received continuously, it will directly move to the last coordinate received.

Cutting time can be reduced if it is set to "DISABLED", if the time to move the tool in raised status is wasteful.

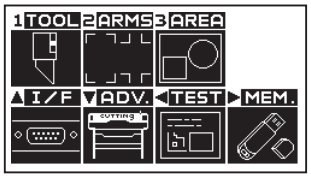
Supplement

This setting will be saved even if the power is furned OFF.

Operation

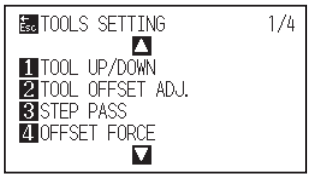
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



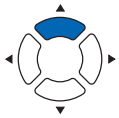
2 Press the [1] key (TOOL).

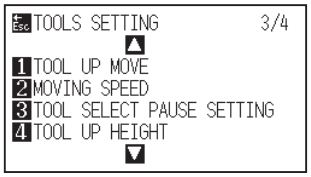
▷ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION (▲) key twice.

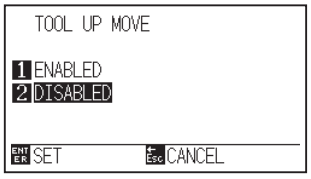
▷ TOOLS SETTING screen (3/4) is displayed.





4 Press the [1] key (TOOL UP MOVE).

▷ TOOL UP MOVE setting screen is displayed.



5 Press the [1] key (ENABLED) or the [2] key (DISABLED).

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to TOOLS SETTING screen (3/4).

7 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Supplement

It will return to TOOLS SETTING screen (3/4) without changing the settings when you press the [ESC] key (CANCEL).

8.3 Setting the Moving Speed

MOVING SPEED is the speed the tool moves when it is raised.

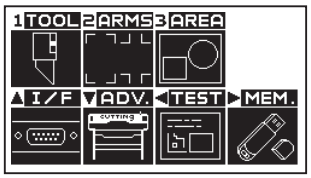
The cutting time in total becomes short if you set the MOVING SPEED to fast speed even though the speed of the tool when it is cutting (lowered) is set to slow speed for the hard to cut media (hard or sticky).

> **Supplement**
>
> **This setting will be saved even if the power is turned off.**

Operation

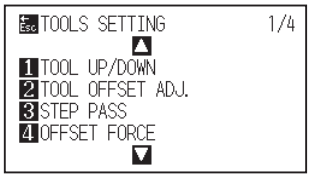
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



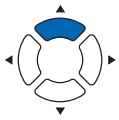
2 Press the [1] key (TOOL).

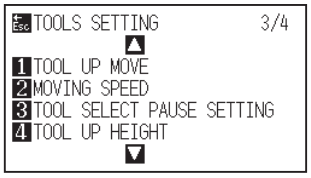
▷ TOOLS SETTING screen (1/4) is displayed



3 Press the POSITION (▲) key twice.

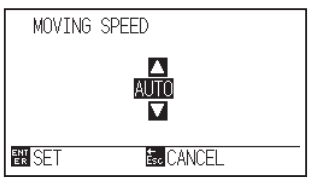
▷ TOOLS SETTING screen (3/4) is displayed.



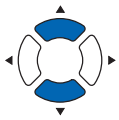


4 Press the [2] key (MOVING SPEED).

▷ MOVING SPEED setting screen is displayed.



5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

- **Values that can be set are AUTO, 10, 20, 30, 40, 50, 60, 70 and 75 cm/s.**
- **It will be same speed as tool is lowered (TOOL DOWN) when AUTO is selected.**

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to TOOLS SETTING screen (3/4).

Supplement

It will return to TOOLS SETTING screen (3/4) without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

8.4 Setting the Tool Up Height

The TOOL UP HEIGHT is the height of the tool position when the tool is raised.
Set to "HIGHER POSITION" if the media is thick. Usually, set to the "NORMAL POSITION".

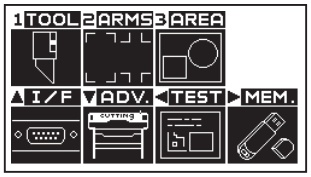
Supplement

This setting will be saved even if the power is turned off.

Operation

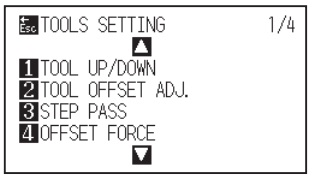
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



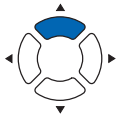
2 Press the [1] key (TOOL).

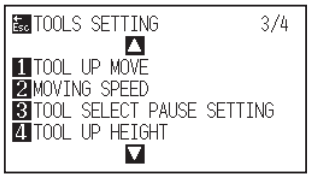
▷ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION (▲) key twice.

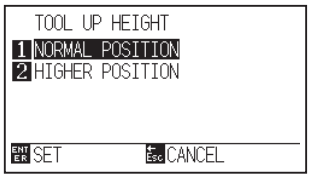
▷ TOOLS SETTING screen (3/4) is displayed.





4 Press the [4] key (TOOL UP HEIGHT).

▷ TOOL UP HEIGHT setting screen is displayed.



5 Press the [1] key (NORMAL POSITION) or the [2] key (HIGHER POSITION).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to TOOLS SETTING screen (3/4).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to TOOLS SETTING screen (3/4) without changing the settings when you press the [ESC] key (CANCEL).

8.5 Setting the Tool Down Speed

TOOL DOWN SPEED is the speed when moving from the tool up state (the tool has been raised) to the tool down state (The tool has been lowered).

Depending on the type of media, there may be an impression at where the tool was lowered.

If an impression occurs, you can reduce it by lowering the TOOL DOWN SPEED.

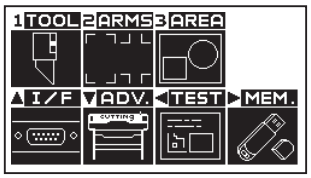
Supplement

This setting will be saved even if the power is turned off.

Operation

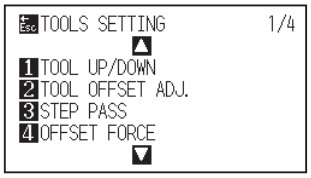
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



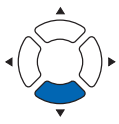
2 Press the [1] key (TOOL).

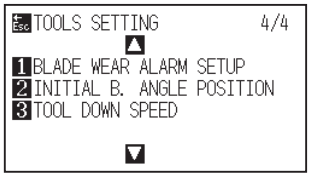
▷ TOOLS SETTING screen (1/4) is displayed



3 Press the POSITION (▼) key.

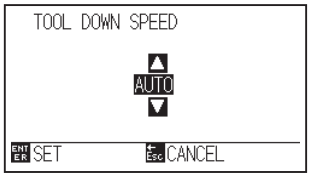
▷ TOOLS SETTING screen (4/4) is displayed.



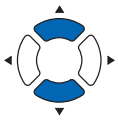


4 Press the [3] key (TOOL DOWN SPEED).

▷ TOOL DOWN SPEED setting screen is displayed.



5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

- **Values that can be set are AUTO, 1 to 96 .**
- **The smaller value, moving it slower to tool down.**

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to TOOLS SETTING screen (4/4).

Supplement

It will return to TOOLS SETTING screen (4/4) without changing the settings when you press the [ESC] key (CANCEL).

7 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Chapter 9:
Setting Regarding Interface

This chapter describes setting regarding interface.

PRODUCT SUMMARY

9.1 Setting the Interface
9.2 Clearing the Buffer Memory
9.3 I/F (LAN)
9.4 When Connecting the RS-232C Interface

9.1 Setting the Interface

This section describes how to set the interface.

This plotter has the USB, RS-232C and Network (LAN) interfaces, which switches each interface automatically.

To use one of the interfaces on this cutting plotter, you need to install the driver software on the PC. For the installation of the driver software, see “Setup Manual”.

USB Interface

To use the USB interface, the driver software must be installed on the computer.

For the cutting plotter side, please perform command settings*, step size settings (when using GP-GL commands), and

origin point settings for HP-GL (when using HP-GL commands).

> ⚠ **CAUTION**
>
> **Operation cannot be guaranteed in the following cases:**
>
> - **When the cutting plotter is connected to a USB hub or extension port.**
> - **When the cutting plotter is connected to a hand-built or modified computer.**
> - **When a driver other than the one provided as a standard accessory is used.**
>
> **Notes when using the USB 3.0 interface**
>
> - **Because that some computer equipped with a USB 3.0 interface is not compatible with USB 2.0 or later interface, you need to check it.**
>
> **Do not perform the followings:**
>
> - **Do not connect or disconnect the USB cable while installing the USB driver on the computer.**
> - **Do not disconnect the USB cable within 5-seconds period of connecting it.**
> - **Do not disconnect the cable during data transfer.**
> - **Do not connect multiple plotters to a single computer using the USB interface.**

Network (LAN) interface

To use the network (LAN) interface, the settings of the computer and the device such as a network hub have been completed and the environment that can connect the computer to the network must be established.

In addition, temporarily turn off the firewall function during the use, or change the settings. If you want to turn off the firewall function, disconnect the network from the Internet.

> ⚠ **CAUTION**
>
> - **To connect through a LAN, you need a network (LAN) cable and a network hub. Please purchase them separately.**
> - **Configuration of network equipment and the presence or absence of the router function depends on your environment. For details, please see the equipment manual, or consult the manufacturer or network administrator.**
> - **Ethernet is compliant with 10BASE-T/100BASE-TX. Please check your network environment.**

RS-232C Interface

When using the RS-232C interface, set the command settings, step size settings (when using GP-GL commands), origin point settings for HP-GL (when using HP-GL commands), and transfer conditions for the RS-232C interface. The transfer conditions for the RS-232C interface can be set from the operations panel. The transfer condition should be set to the same in the software used and in the FCX4000. If there is a mistake in the settings an error may displayed in the machine and lack of data can cause a malfunction. In such a case, please confirm the data transfer settings again.

(Refer to the "Setting Origin Point When HP-GL is set")
(Refer to the "Setting the Step Size")
(Refer to the "Setting the Command (COMMAND)")
(Refer to the "Setting the Step Size (GP-GL STEP SIZE)")

9.2 Clearing the Buffer Memory

This function allows you to clear all the output data in the cutting plotter's buffer memory.

⚠ CAUTION

- **Do not execute the BUFFER CLEAR function until the computer has completed data output.**
- **If you clear the buffer while the computer is still sending data to the plotter, the data received up to the time that PAUSE mode was selected is cleared but the computer resumes sending subsequent data which remains in the buffer. At such time, the pen carriage may suddenly start moving so please be careful.**

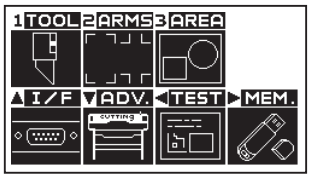
Supplement

If you selected [CANCEL] key on the BUFFER CLEAR screen, the plotting operation resumes as soon as the [PAUSE] key is pressed to cancel PAUSE mode.

Operation

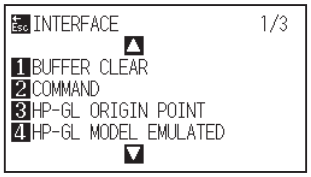
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



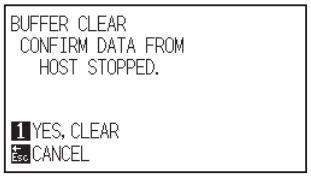
2 Press the [▲] key (I/F).

▷ INTERFACE screen (1/3) is displayed.



3 Press the [1] key (BUFFER CLEAR).

▷ BUFFER CLEAR screen is displayed.



4 Press the [1] key (YES, CLEAR).

▷ The buffer will be cleared and it will return to default screen.

Supplement

It will return to INTERFACE screen (1/3) without clearing the buffer when you press the [ESC] key (CANCEL).

9.3 I/F (LAN)

Set the network interface (LAN).

> **Supplement**
>
> **When you change the settings of the network, the cutting plotter is reset.**

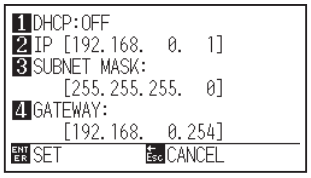
To connect through a network (LAN), it is necessary to set the following items.

- Set the DHCP
- Set the IP address
- Enter the subnet mask
- Enter the gateway
- Display the MAC addres

Set the DHCP

DHCP settings depend on the configuration of network equipment and the customer's environment. For details, please see the equipment manual, or consult the network administrator.

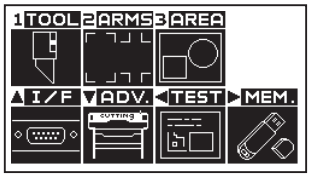
The default setting of DHCP is OFF.



Operation

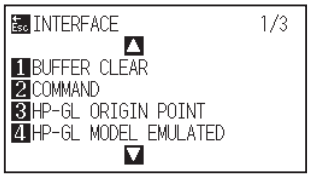
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



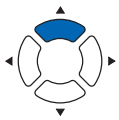
2 Press the [▲] key (I/F).

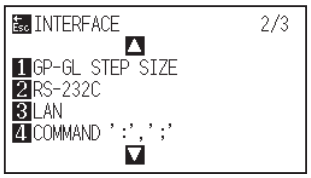
▷ INTERFACE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

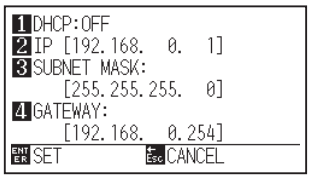
▷ INTERFACE screen (2/3) is displayed.





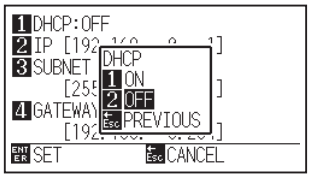
4 Press the [3] key (LAN).

▷ Network (LAN) setting screen is displayed.



5 Press the [1] key (DHCP:OFF).

▷ DHCP setting screen is displayed.



6 Press the [1] key (ON) or the [2] key (OFF).

7 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to INTERFACE screen (2/3).

8 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to INTERFACE screen (2/3) without changing the settings when you press the [ESC] key (CANCEL).

Set IP address, Subnet Mask and Gateway

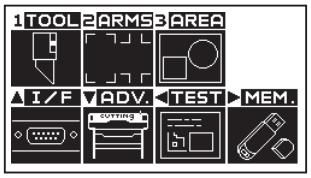
When the DHCP is set to [OFF], Set IP address, subnet mask and gateway.

When the DHCP is set to [ON], IP address, subnet mask and gateway obtained from the DHCP server are displayed.

Operation

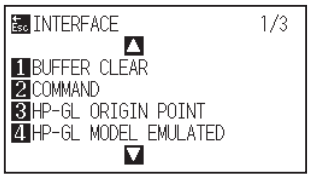
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



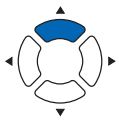
2 Press the [▲] key (I/F).

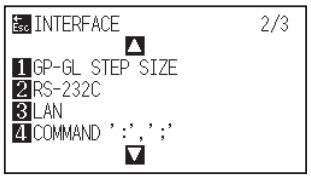
▷ INTERFACE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

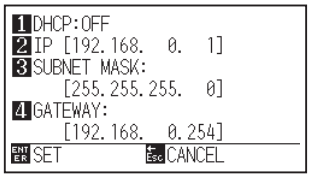
▷ INTERFACE screen (2/3) is displayed.





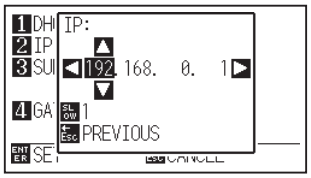
4 Press the [3] key (LAN).

▷ Network (LAN) setting screen is displayed.

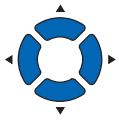


5 Press the [2] key (IP).

▷ IP setting screen is displayed.



6 Press the POSITION (▲▼◀▶) keys and set the IP address.

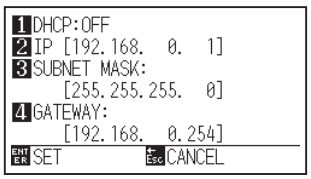


Supplement

By pressing the [SLOW] key, you can change the digit of the setting.

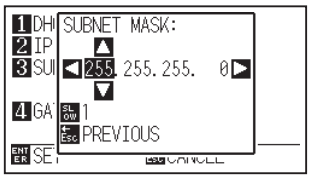
7 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ Network (LAN) setting screen is displayed.

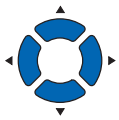


8 Press the [3] key (SUBNET MASK).

▶ SUBNET MASK setting screen is displayed.



9 Press the POSITION (▲▼◀▶) keys and set the subnet mask.

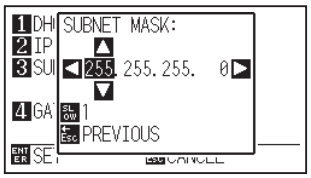


Supplement

By pressing the [SLOW] key, you can change the digit of the setting.

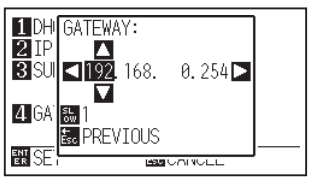
10 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ Network (LAN) setting screen is displayed.

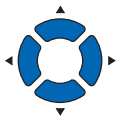


11 Press the [4] key (GATEWAY).

▶ GATEWAY setting screen is displayed.



12 Press the POSITION (▲▼◀▶) keys and set the gateway.

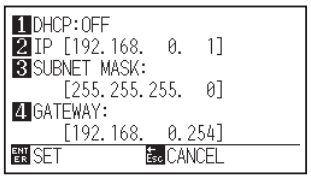


Supplement

By pressing the [SLOW] key, you can change the digit of the setting.

13 Confirm the setting and press the [ESC] key (PREVIOUS).

▶ Network (LAN) setting screen is displayed.



Supplement

When you press the [▶] key in the Network (LAN) setting screen, the Mac address is displayed.

14 Confirm the setting and press the [ENTER] key (SET).

▶ When the settings are changed, the cutting plotter is reset and default screen is displayed.

Supplement

It will return to INTERFACE screen (2/3) without changing the settings when you press the [ESC] key (CANCEL).

9.4 When Connecting the RS-232C Interface

For the RS-232C settings, it is possible to call any setting by storing the three different setting types of 1 to 3.

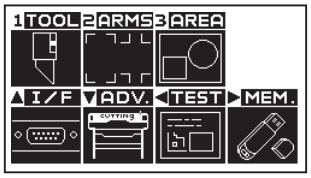
See "Switching Setting Numbers" to call out the settings to use, and see "Changing and Storing RS-232C Settings" to change and save the settings.

Switching Setting Numbers

Operation

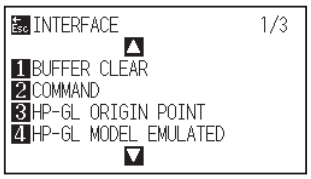
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



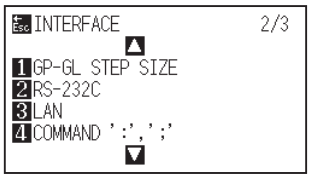
2 Press the [▲] key (I/F).

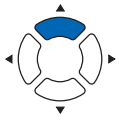
▷ INTERFACE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

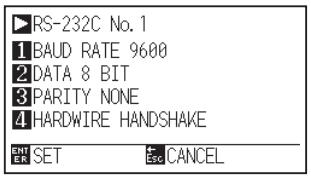
▷ INTERFACE screen (2/3) is displayed.





4 Press the [2] key (RS-232C).

▷ RS-232C setting screen is displayed.

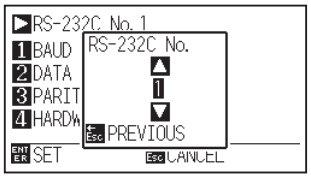


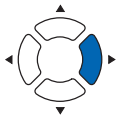
Supplement

It will return to INTERFACE screen (2/3) without changing the settings when you press the [ESC] key (CANCEL).

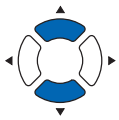
5 Press the POSITION (▶) key.

▷ RS-232C setting number select screen is displayed.





6 Press the POSITION (▲▼) keys, and select the settings number.



Supplement

Setting numbers is 1 to 3.

7 Confirm the setting and press the ESC key (PREVIOUS).

▷ It will return to RS-232C setting screen.

8 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to INTERFACE screen (2/3).

9 Press the [PAUSE/MENU] key.

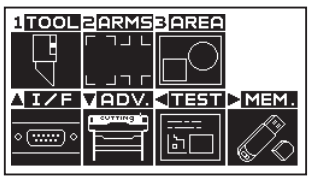
▷ It will return to default screen.

Changing and Storing RS-232C Settings

Operation

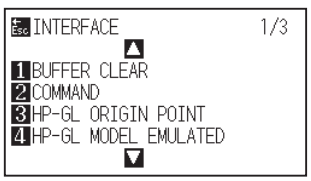
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



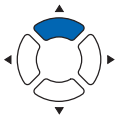
2 Press the [▲] key (I/F).

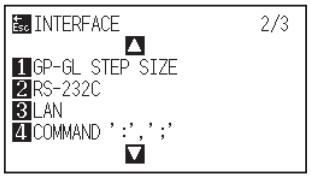
▷ INTERFACE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

▷ INTERFACE screen (2/3) is displayed.





4 Press the [2] key (RS-232C).

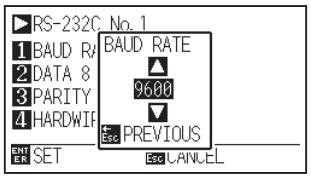
▷ RS-232C setting screen is displayed.

Supplement

It will return to INTERFACE screen (2/3) without changing the settings when you press the [ESC] key (CANCEL).

5 Press the [1] key (BAUD RATE).

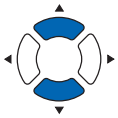
▷ BAUD RATE setting screen is displayed.



Supplement

Baud rate can be selected from 19200, 9600, 4800, 2400, 1200, 600 or 300.

6 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

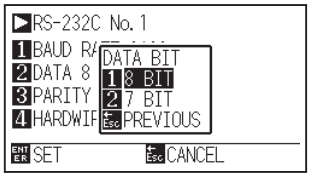
Match the setting value of the application being used currently.

7 Confirm the setting and press the ESC key (PREVIOUS).

▷ BAUD RATE will be set, and it will return to RS-232C setting screen.

8 Press the [2] key (DATA BIT).

▷ PARITY setting screen is displayed.



9 Press the [1] key (8 BIT) or the [2] key (7 BIT).

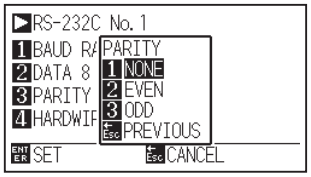
▶ DATA BIT will be set, and it will return to RS-232C setting screen.

Supplement

- **Match the setting value of the application being used currently.**
- **It will return to RS-232C setting screen without changing the settings when you press [ESC] key (CANCEL).**

10 Press the [3] key (PARITY).

▶ PARITY setting screen is displayed.



11 Press the [1] key (NONE), [2] key (EVEN), or the [3] key (ODD).

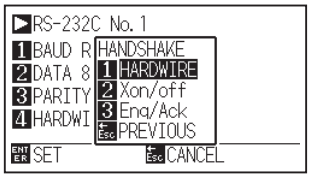
▶ PARITY will be set, and it will return to RS-232C setting screen.

Supplement

- **Match the setting value of the application being used currently.**
- **It will return to RS-232C setting screen without changing the settings when you press [ESC] key (CANCEL).**

12 Press the [4] key (HANDSHAKE).

▶ HANDSHAKE setting screen is displayed



13 Press the [1] key (HARDWIRE), the [2] key (Xon/off), or the [3] key (Enq/Ack).

▶ HANDSHAKE will be selected, and it will return to RS-232C setting screen.

Supplement

- **Match the setting value of the application being used currently.**
- **It will return to RS-232C setting screen without changing the settings when you press [ESC] key (CANCEL).**
- **Enq/Ack setting is valid only when it is set to HP-GL. It will be set to HARDWIRE even if Enq/Ack is selected when it is set to GP-GL.**

14 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to INTERFACE screen (2/3).

15 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Chapter 10:
Setting Regarding Operation Environment

This chapter describes setting regarding the operation environment

Related to Menu Display

Display Language Setting (LANGUAGE SELECTION)

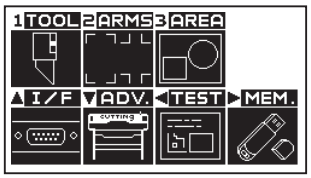
This function sets the language used on the display.

You can choose from 10 languages: English, Japanese, German, French, Italian, Spanish, Portuguese, Russian, Chinese, and Korean.

Operation

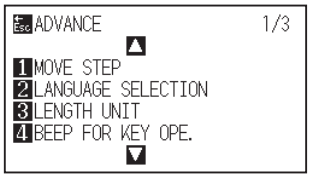
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



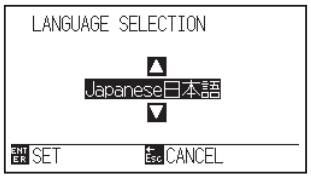
2 Press the POSITION [▼] key (ADV.).

▷ ADVANCE screen (1/3) is displayed.



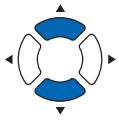
3 Press the [2] key (LANGUAGE SELECTION).

▷ LANGUAGE SELECTION screen is displayed.



4 Press the POSITION (▲▼) key and select the language.

(This manual assumes you chose the English language setting in the above step.)



5 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (1/3).

6 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (1/3) without changing the settings when you press the ESC key (CANCEL).

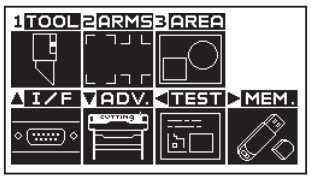
Setting the Display Length Unit (LENGTH UNIT)

The coordinate values that appear on the display and the other parameters for various settings can be changed to either meter or inch display.

Operation

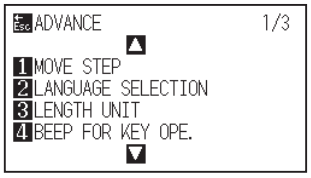
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



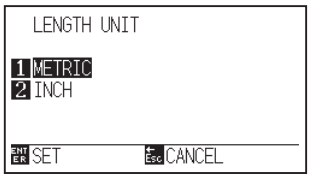
2 Press the POSITION [▼] key (ADV.).

▷ ADVANCE screen (1/3) is displayed.



3 Press the [3] key (LENGTH UNIT).

▷ LENGTH UNIT screen is displayed.



4 Press the [1] key (METRIC), or the[2] key (INCH).

5 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (1/3).

6 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (1/3) without changing the settings when you press the ESC key (CANCEL).

Related to Plotter Environment

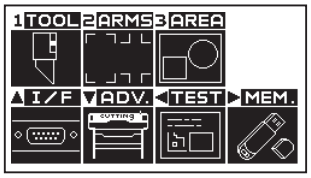
Enabling/Disabling the Beep Setting (BEEP FOR KEY OPERATION)

This function selects whether to enable or disable the beep that is emitted whenever a control panel key is pressed.

Operation

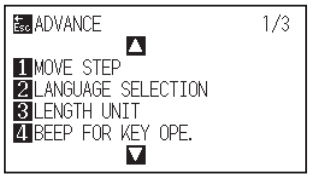
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



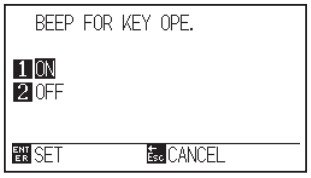
2 Press the POSITION [▼] key (ADV.).

▷ ADVANCE screen (1/3) is displayed.



3 Press the [4] key (BEEP FOR KEY OPE.).

▷ BEEP FOR KEY OPE. setting screen is displayed.



4 Press the [1] key (ON), or the[2] key (OFF).

5 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (1/3).

6 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (1/3) without changing the settings when you press the ESC key (CANCEL).

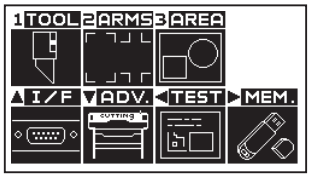
Setting the force (SWITCHING XY FORCE)

This is used to switch the FORCE for each X and Y directions. Set the FORCE to ENABLED or DISABLED.

Operation

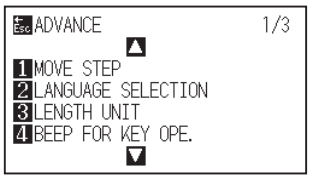
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



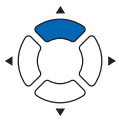
2 Press the POSITION [▼] key (ADV.).

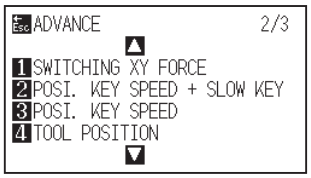
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

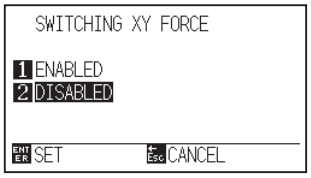
▷ ADVANCE screen (2/3) is displayed.





4 Press the [1] key (SWITCHING XY FORCE).

▷ SWITCHING XY FORCE. setting screen is displayed.



5 Press the [1] key (ENABLED), or the [2] key (DISABLED).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (2/3).

Supplement

It will return to ADVANCE screen (2/3) without changing the settings when you press the ESC key (CANCEL).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

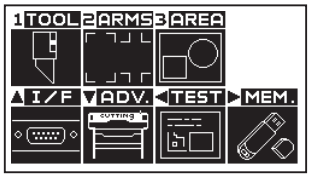
Setting the position key low speed (POSI. KEY SPEED + SLOW KEY)

Use the POSITION (▲▼◀▶) keys to set the speed in the case of slow-moving.

Operation

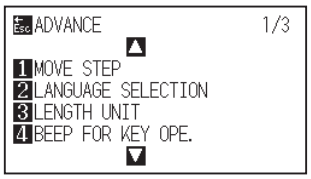
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



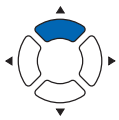
2 Press the POSITION [▼] key (ADV.).

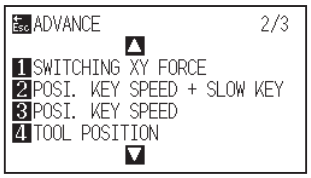
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

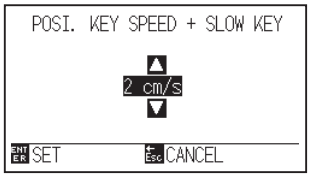
▷ ADVANCE screen (2/3) is displayed.



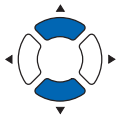


4 Press the [2] key (POSI. KEY SPEED + SLOW KEY).

▷ POSI. KEY SPEED + SLOW KEY setting screen is displayed.



5 Press the POSITION (▲▼) keys and increase or decrease the setting value.



Supplement

Setting range is 1 to 30 (cm/s).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (2/3).

Supplement

It will return to ADVANCE screen (2/3) without changing the settings when you press the ESC key (CANCEL).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

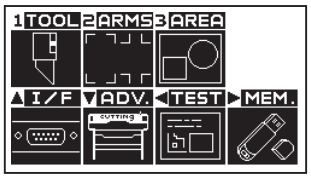
Setting the position key high speed (POSI. KEY SPEED)

Use the POSITION (▲▼◀▶) keys to set the speed in the case of fast-moving.

Operation

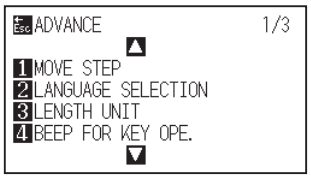
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



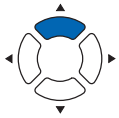
2 Press the POSITION [▼] key (ADV.).

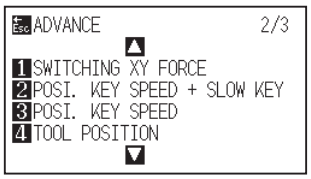
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

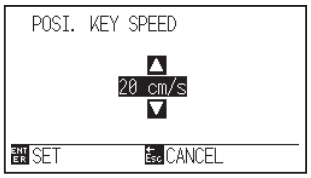
▷ ADVANCE screen (2/3) is displayed.



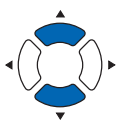


4 Press the [3] key (POSI. KEY SPEED).

▷ POSI. KEY SPEED setting screen is displayed.



5 Press the POSITION (▲▼) key and increase or decrease the setting value.



Supplement

Setting range is 1 to 30 (cm/s).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (2/3).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (2/3) without changing the settings when you press the ESC key (CANCEL).

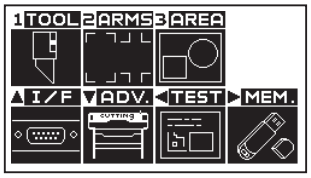
Setting the display of the position key (TOOL POSITION)

Set whether to display the tool position when the [SLOW] key is pressed.

Operation

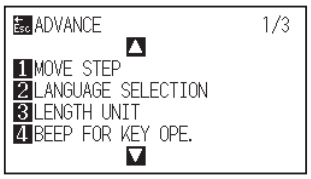
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



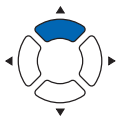
2 Press the POSITION [▼] key (ADV.).

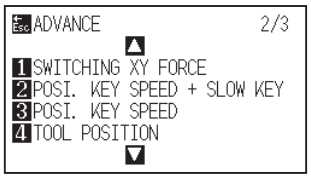
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

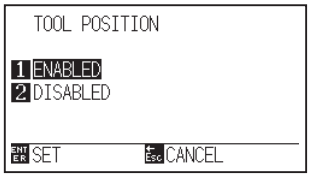
▷ ADVANCE screen (2/3) is displayed.





4 Press the [4] key (TOOL POSITION).

▷ TOOL POSITION setting screen is displayed.



5 Press the [1] key (ENABLED), or the[2] key (DISABLED).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (2/3).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (2/3) without changing the settings when you press the ESC key (CANCEL).

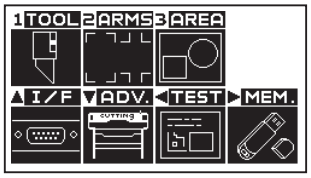
Setting the pause key (PAUSE/MENU KEY SETTING)

Set the screen to be displayed when the [PAUSE/MENU] key is pressed during data reception.

Operation

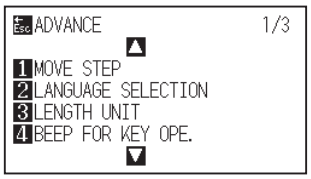
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



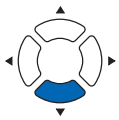
2 Press the POSITION [▼] key (ADV.).

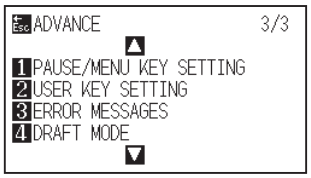
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▼) key.

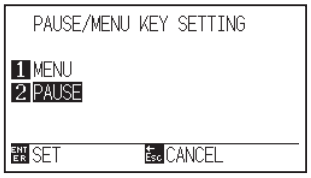
▷ ADVANCE screen (3/3) is displayed.





4 Press the [1] key (PAUSE/MENU KEY SETTING).

▷ PAUSE/MENU KEY SETTING screen is displayed.



5 Press the [1] key (MENU), or the[2] key (PAUSE).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (3/3).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (3/3) without changing the settings when you press the ESC key (CANCEL).

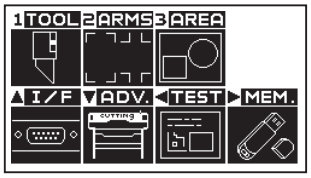
Setting the user key (USER KEY SETTING)

Set whether to use the switching of the [USER 1/2] key.

Operation

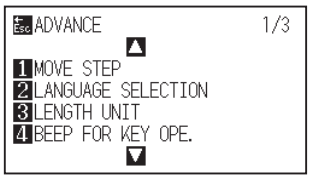
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



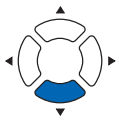
2 Press the POSITION [▼] key (ADV.).

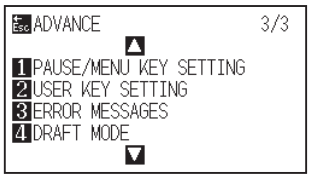
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▼) key.

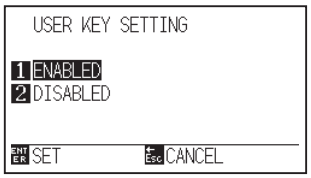
▷ ADVANCE screen (3/3) is displayed.





4 Press the [2] key (USER KEY SETTING).

▷ USER KEY SETTING setting screen is displayed.



5 Press the [1] key (ENABLED), or the[2] key (DISABLED).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (3/3).

7 Press the [PAUSE/MENU] key.

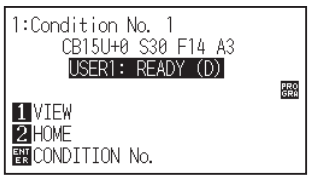
▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (3/3) without changing the settings when you press the ESC key (CANCEL).

Setting the draft mode (DRAFT MODE)

Set whether to use the draft mode. When the draft mode is enabled, the “D” is displayed in the READY screen and the screen during operation.

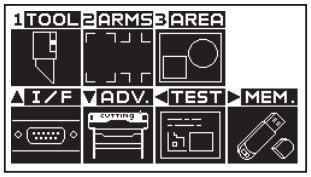


> **⚠ CAUTION**
>
> **When setting to ENABLED, the cutting operation is faster, but the cutting quality is not guaranteed.**

Operation

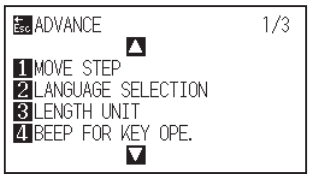
1 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed



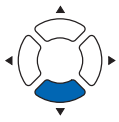
2 Press the POSITION [▼] key (ADV.).

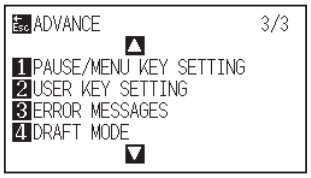
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▼) key.

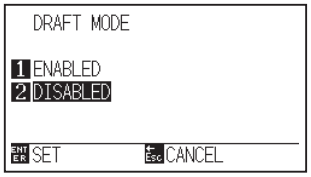
▷ ADVANCE screen (3/3) is displayed.





4 Press the [4] key (DRAFT MODE).

▷ DRAFT MODE setting screen is displayed.



5 Press the [1] key (ENABLED), or the [2] key (DISABLED).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to ADVANCE screen (3/3) .

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to ADVANCE screen (3/3) without changing the settings when you press the ESC key (CANCEL).

Chapter 11: Settings of Controls from Computer

This chapter describes setting regarding the controls from the computer.

Related to Command Processing

Setting the Command (COMMAND)

There are 2 types of commands, the GP-GL and the HP-GL, that the plotter can use.
Match the setting to the used software, or set it to AUTO.

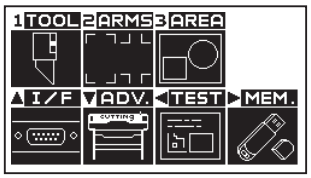
Supplement

- **Automatic detection of the command may make mistake depending on the data. It will give error or malfunction when it has made mistake. In that case, set the command before using.**
- **Always send the data when the plotter is in READY status during the automatic detection of the command.**
- **Once the data is cut with the automatic detection of the command, it will be ready to automatically detect next command 10 seconds after completing the cutting. Send next data after 10 seconds has past after previous cutting when sending data with different command.**

Operation

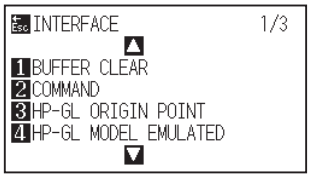
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



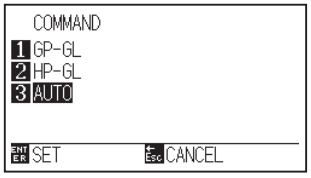
2 Press the POSITION [▲] key (I/F).

▷ INTERFACE screen (1/3) is displayed.



3 Press the [2] key (COMMAND).

▷ COMMAND setting screen is displayed



4 Select the [1] key (GP-GL), the [2] key (HP-GL), or the [3] key (AUTO).

5 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to INTERFACE screen (1/3).

6 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to INTERFACE screen (1/3) without clearing the buffer when you press the [ESC] key (CANCEL).

Priority of Tool Condition Selection (CONDITION PRIORITY)

Select the priority of the setting created by different method when the tool condition is set.

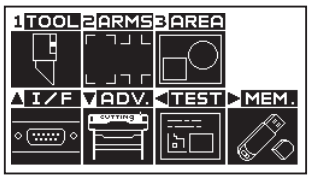
All the tool condition that is received from the computer will be ignored, and only the setting and change of the tool condition from the control panel is accepted when MANUAL is selected. This setting set here is maintained even if the power is turned off.

On the other hand, it will set the most current tool condition either from the control panel or from the software when PROGRAM is selected. The values set from the control panel is maintained, and the values set from the software is erased when the power is turned off.

Operation

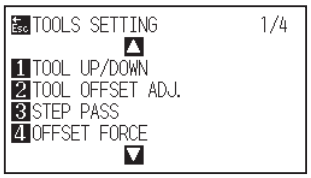
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



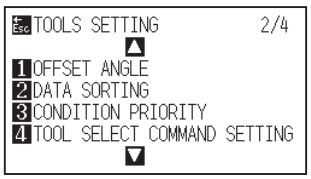
2 Press the [1] key (TOOL).

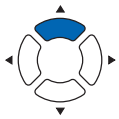
▷ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION [▲] key.

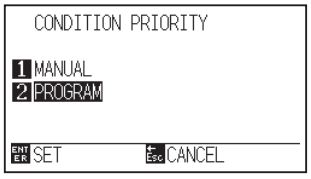
▷ TOOLS SETTING screen (2/4) is displayed.





4 Press the [3] key (CONDITION PRIORITY).

▷ CONDITION PRIORITY setting screen is displayed.



5 Press the [1] key (MANUAL) or the [2] key (PROGRAM).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to TOOLS SETTING screen (2/4).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to TOOLS SETTING screen (2/4) without clearing the buffer when you press the [ESC] key (CANCEL).

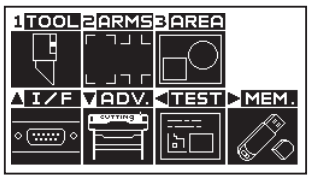
Enabling/Disabling the Condition Select Command (TOOL SELECT COMMAND)

Setting for what to do when the condition select command ("J" in GP-GL, and "SP" in HP-GL) is received. It will ignore the condition select command when set to DISABLED.

Operation

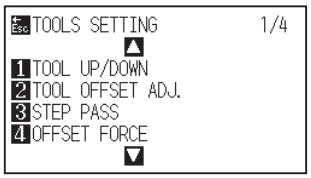
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



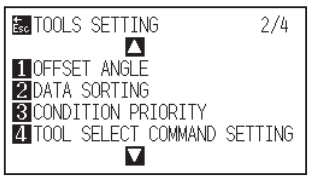
2 Press the [1] key (TOOL).

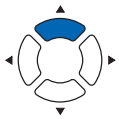
▷ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION [▲] key.

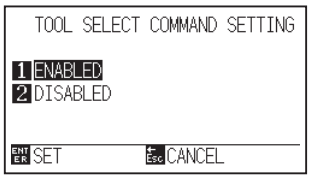
▷ TOOLS SETTING screen (2/4) is displayed.





4 Press the [4] key (TOOL SELECT COMMAND SETTING).

▷ TOOL SELECT COMMAND SETTING screen is displayed.



5 Press the [1] key (ENABLED) or the [2] key (DISABLED).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to TOOLS SETTING screen (2/4).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to TOOLS SETTING screen (2/4) without clearing the buffer when you press the [ESC] key (CANCEL).

Related to GP-GL Command

This section is useful when using the GP-GL command.

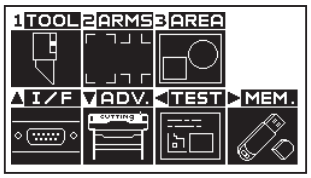
Setting the Step Size (GP-GL STEP SIZE)

The distance to travel with 1 step can be changed. Match the setting value of the application to be used.

Operation

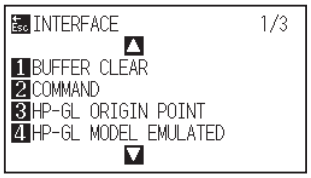
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



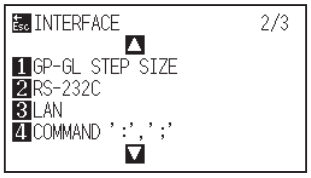
2 Press the POSITION [▲] key (I/F).

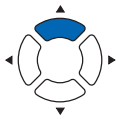
▷ INTERFACE screen (1/3) is displayed.



3 Press the POSITION [▲] key twice.

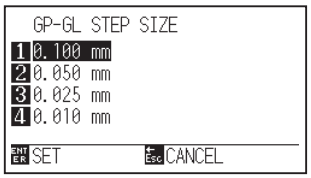
▷ INTERFACE screen (2/3) is displayed.





4 Press the [1] key (GP-GL STEP SIZE).

▷ GP-GL STEP SIZE setting screen is displayed



5 Press the [1] key (0.100 mm), the [2] key (0.050 mm), the [3] key (0.025 mm), or the [4] key (0.010 mm).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to INTERFACE screen (2/3).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to INTERFACE screen (2/3) without clearing the buffer when you press the [ESC] key (CANCEL).

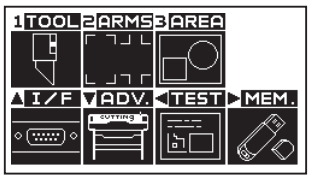
Enabling/Disabling the ' : ' and ' ; ' Commands (COMMAND ' : ', ' ; ')

If the first part of the data is lost when the GP-GL command is set, these commands may be having an adverse effect. In this case, set the ' : ' and ' ; ' commands to DISABLED.

Operation

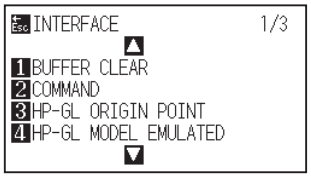
1 Press the [PAUSE/MENU] key in the default screen.

▶ MENU screen is displayed.



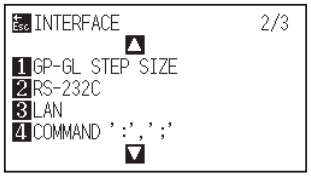
2 Press the POSITION [▲] key (I/F).

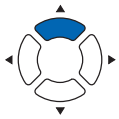
▶ INTERFACE screen (1/3) is displayed.



3 Press the POSITION [▲] key twice.

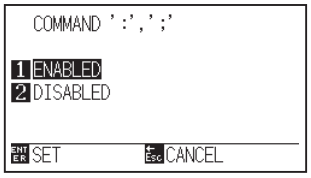
▶ INTERFACE screen (2/3) is displayed.





4 Press the [4] key (COMMAND ' : ', ' ; ').

▶ COMMAND ' : ', ' ; ' setting screen is displayed.



5 Press the [1] key (ENABLED) or the [2] key (DISABLED).

6 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to INTERFACE screen (2/3).

7 Press the [PAUSE/MENU] key.

▶ It will return to default screen.

Supplement

It will return to INTERFACE screen (2/3) without clearing the buffer when you press the [ESC] key (CANCEL).

Moving the Pen While Raised or Lowered in Response to the 'W' Command (COMMAND 'W')

You can set the pen operation when the 'W' command is received, which is a GP-GL arc cutting command.

This function sets the pen operation upon receipt of the 'W' command for the cutting of arcs.

The pen will move to the specified starting position in the raised status when it is set to TOOL UP, regardless of the pen's conditions. The pen will move without changing its condition, to the specified starting position in the lowered status when it is set to TOOL DOWN.

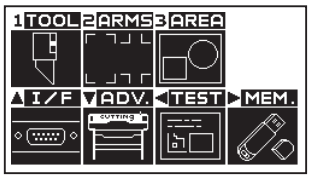
Supplement

This has an effect on the tool cutter only. For the pen setting, always the pen is raised (PEN UP).

Operation

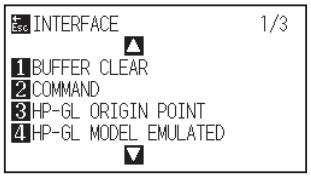
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



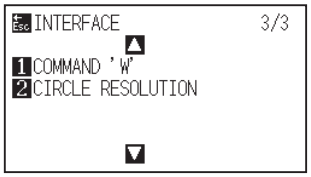
2 Press the POSITION [▲] key (I/F).

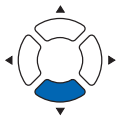
▷ INTERFACE screen (1/3) is displayed.



3 Press the POSITION [▲] key.

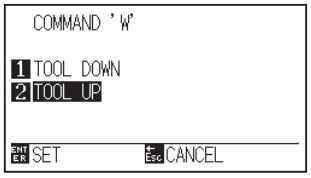
▷ INTERFACE screen (3/3) is displayed.





4 Press the [1] key (COMMAND 'W').

▷ COMMAND 'W' setting screen is displayed.



5 Press the [1] key (TOOL DOWN) or the [2] key (TOOL UP).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to INTERFACE screen (3/3).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to INTERFACE screen (3/3) without clearing the buffer when you press the [ESC] key (CANCEL).

Related to HP-GL Command

This section is useful when using the HP-GL command.

Model ID Response (HP-GL MODEL EMULATED)

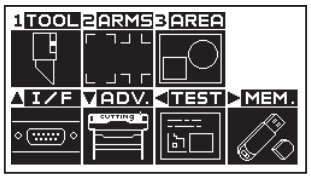
This function sets the operation upon receipt of the "OI" command requesting for the model ID.

The reply will be 7550 when set to 7550B, and 7595 when set to 7595A.

Operation

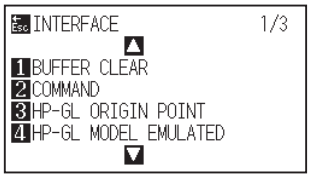
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



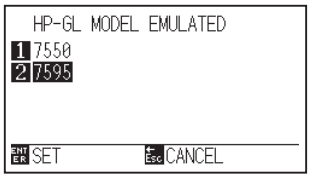
2 Press the POSITION [▲] key (I/F).

▷ INTERFACE screen (1/3) is displayed.



3 Press the [4] key (HP-GL MODEL EMULATED).

▷ HP-GL MODEL EMULATED setting screen is displayed.



4 Press the [1] key (7550) or the [2] key (7595).

5 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to INTERFACE screen (1/3).

6 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to INTERFACE screen (1/3) without clearing the buffer when you press the [ESC] key (CANCEL).

Setting the Circle-Command Resolution (CIRCLE RESOLUTION)

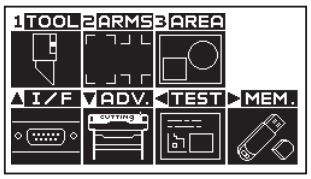
This function sets the resolution upon receipt of the circle-command for the HP-GL pen plotter arc cutting command.

Select either "AUTO" or "DEFAULT", which is 5 degrees.

Operation

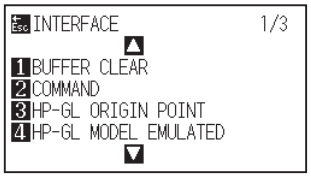
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



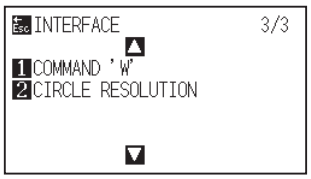
2 Press the POSITION [▲] key (I/F).

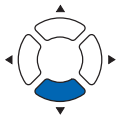
▷ INTERFACE screen (1/3) is displayed.



3 Press the POSITION [▼] key twice.

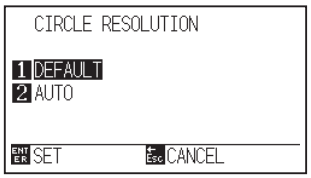
▷ INTERFACE screen (3/3) is displayed.





4 Press the [2] key (CIRCLE RESOLUTION).

▷ CIRCLE RESOLUTION setting screen is displayed.



5 Press the [1] key (DEFAULT) or the [2] key (AUTO).

6 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to INTERFACE screen (3/3).

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

It will return to INTERFACE screen (1/3) without clearing the buffer when you press the [ESC] key (CANCEL).

Chapter 12: Offline Output

This chapter describes setting regarding the offline output.

PRODUCT SUMMARY

12.1 Offline Output from USB Memory
12.2 Output with a Bar Code

12.1 Offline Output from USB Memory

Dedicated data that was preliminarily created by the application software can be saved in the USB memory and output from the cutting plotter.

Select the data from the menu of the plotter, and then output it in offline.

Supplement

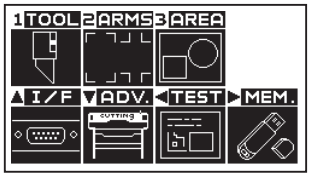
- **Only 1-byte alphanumeric characters (ASCII) are supported.**
- **The Windows prohibited characters (¥, \ , /, ;, *, ?, “, <, >, |, etc.) cannot be used.**
- **Limit of the number of display characters is 25 characters. More characters than 25 can be displayed by scrolling.**
- **Scroll is displayed after a few moments after selecting the item.**
- **Extension is "xpf" and "plt".**
- **The folder is surrounded by '<' and '>'.**
- **Name is sorted in ascending order.**
- **Files and folders can be obtained up to 64.**

Operation

1 Insert the USB memory that saved the dedicated data to the plotter.

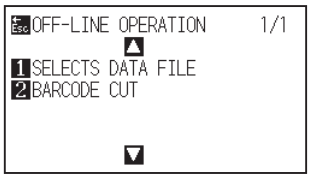
2 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



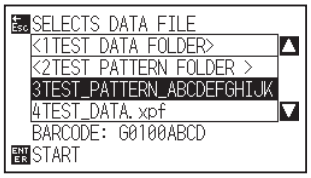
3 Press the (▶) key (MEM.).

▷ OFF-LINE OPERATION screen is displayed.



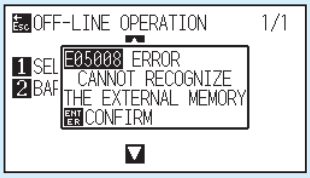
4 Press the [1] key (SELECTS DATA FILE).

▷ SELECTS DATA FILE screen is displayed.

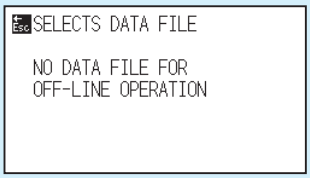


Supplement

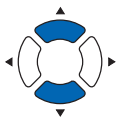
- **If the USB memory is not inserted, the following screen is displayed.**



- **If the output data is not saved in the USB memory, the following screen is displayed.**



5 Press the POSITION (▲▼) keys and select the file.



Supplement

Press the POSITION (◀ ▶) to select the folder.

6 Press the [ENTER] key (START).

▷ The selected file is cut off.

7 When the cut-off is finished, it will become READY status.

12.2 Output with a Bar Code

The information related to the output file is preliminarily bar-coded using the Cutting Master4 and Graphtec Pro Studio, etc. and it can be printed with the design and the registration marks.

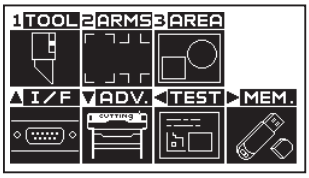
When cutting with the cutting plotter, the bar code is scanned and the cut data (xpf) that has been saved to a USB memory that matches the bar code is detected.

Operation

1 Insert the USB memory that saved the dedicated data to the cutting plotter.

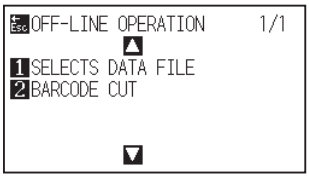
2 Press the [PAUSE/MENU] key.

▷ MENU screen is displayed.



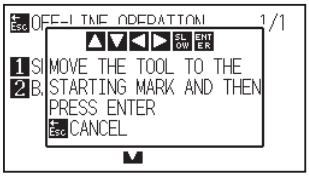
3 Press the (▶) key (MEM.).

▷ OFF-LINE OPERATION screen is displayed.



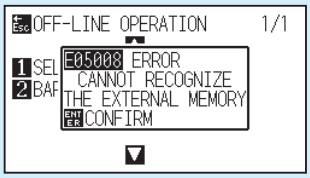
4 Press the [2] key (BARCODE CUT).

▷ The following message is displayed.

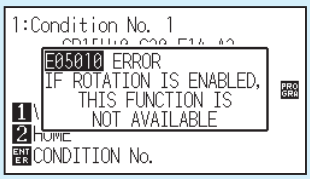


Supplement

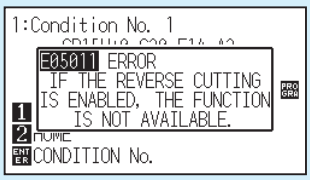
- **If the USB memory is not inserted, the following screen is displayed.**



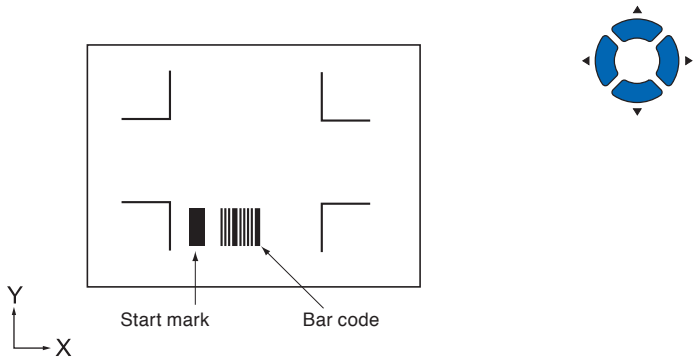
- **When the ROTATION is enabled, the following screen is displayed.**



- **When the REVERSE CUTTING is enabled, the following screen is displayed.**

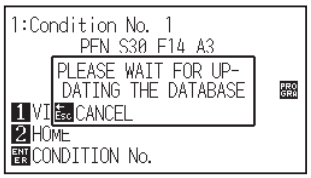


5 Press the POSITION (▲▼◀▶) keys and move the tool to the start mark position.



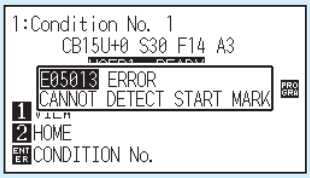
6 Confirm the tool position and press [ENTER] key.

▷ The bar code is scanned. When completed, the following screen is displayed.



Supplement

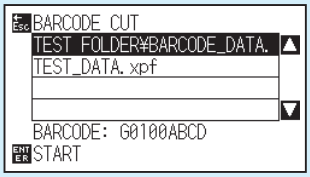
- **When the start mark is not detected, the following screen is displayed.**



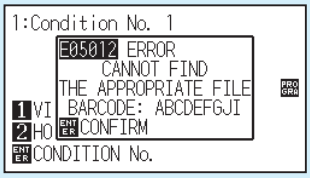
7 Find the file, and then start cutting.

Supplement

- **If the appropriate files are found, select the proper file.**



- **If the appropriate files is not found, the following screen is displayed.**



8 When completed, it will become READY status.

Chapter 13: Maintenance

This chapter describes the settings for the maintenance.

PRODUCT SUMMARY

13.1 Daily Maintenance
13.2 Replacing Cutter Blade
13.3 Cleaning the Cutter Pen
13.4 Replacing the Cutter Plunger
13.5 Setting the Alarm for Degree of Wear (BLADE WEAR ALARM)

13.1 Daily Maintenance

Daily Maintenance

During the course of daily maintenance be sure to observe the following precautions:

(1) Never lubricate the mechanisms of the plotter.

(2) Clean the plotter's casing using a dry cloth that has been moistened in a neutral detergent diluted with water. Never use thinner, benzene, alcohol, or similar solvents to clean the casings; they will damage the casing's finish.

* Please be careful so that the neutral detergent does not adhere to the writing panel. If the neutral detergent adheres, electrostatic adsorption decreases or disappears.

(3) If the writing panel is dirty, please clean using a dry cloth.

* Do not use benzine, thinners, or similar solvents to clean the writing panel.

(4) When the Y rail sliding surface gets dirty, gently wipe the dirt away with a clean, dry towel.

* The sliding surface has lubricant on it, so be sure not to wipe all the lubricant off as well.

Storing the Cutting Plotter

When your cutting plotter is not in use, be sure to observe the following points:

(1) Remove the tool attached to the tool holder.

(2) Cover the cutting plotter with a cloth to protect it from dust and dirt.

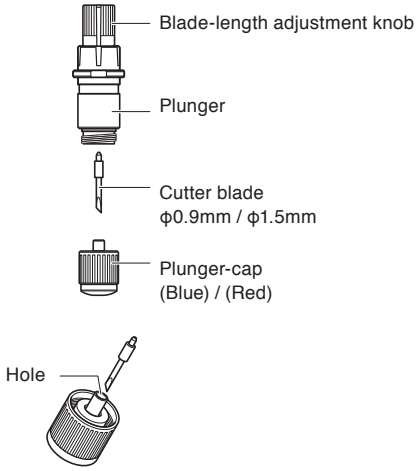
(3) Do not store the cutting plotter in direct sunlight or in high temperatures.

13.2 Replacing Cutter Blade

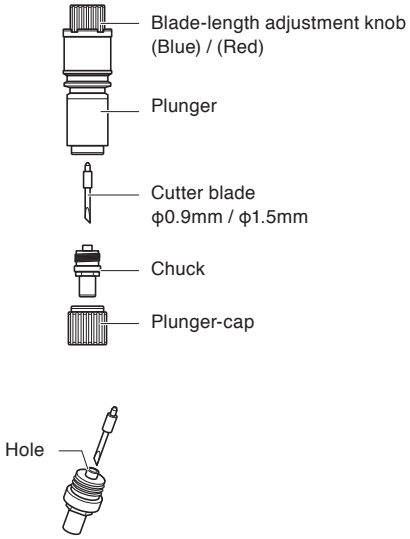
Replace the cutter blade by referring to the structure diagram of the cutter pen.

> ⚠ **CAUTION**
>
> **To avoid bodily injury, handle cutter blades with care.**
>
> **Supplement**
>
> **For more information about the structure of the Cutter Plunger, see "Cutter Plunger Structure".**

PHP33-CB09N-HS/
PHP33-CB15N-HS



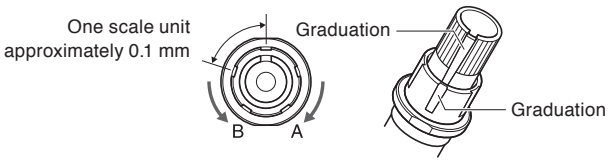
PHP35-CB09-HS/
PHP35-CB15-HS



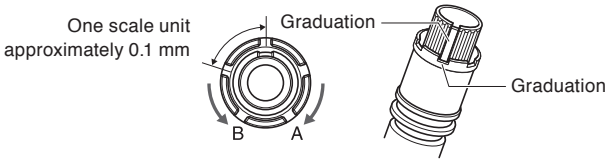
Operation

1 Turn the blade-length adjustment knob in the direction of the B arrow and pull the blade into the plunger.

PHP33-CB09N-HS/PHP33-CB15N-HS



PHP35-CB09-HS/PHP35-CB15-HS



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 Remove a new blade from its pack. 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.

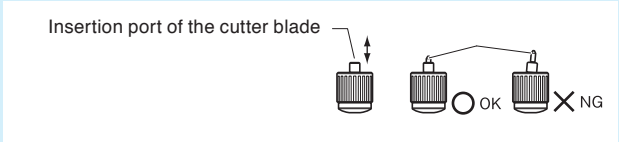
6 Fix the plunger cap by turning it clockwise.

⚠ CAUTION

< PHP33-CB09N-HS/PHP33-CB15N-HS >

- **Please fully insert the cutter blade straight into the plunger cap.**

  If the cutter blade cannot be inserted straight, please insert the cutter blade after pressing the insertion port of the cutter blade several times.

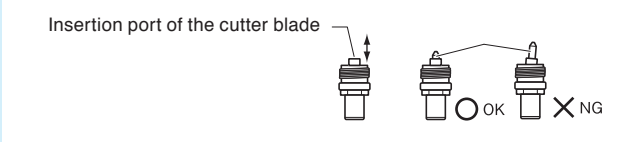


If not installed correctly, it may result in damage to the cutter blade or the plotter itself.

< PHP35-CB09-HS/PHP35-CB15-HS >

- **Please fully insert the cutter blade straight into the chuck.**

  If the cutter blade cannot be inserted straight, please insert the cutter blade after pressing the insertion port of the cutter blade several times.



If not installed correctly, it may result in damage to the cutter blade or the plotter itself.

13.3 Cleaning the Cutter Pen

Letting leftover media and paper dust build up on blades can dull them and cause them to deteriorate. Be sure to clean the cutter pen regularly and remove build up.

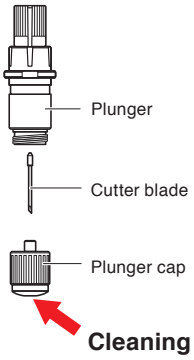
> ⚠ **CAUTION**
>
> **To avoid bodily injury, handle cutter blades with care.**

Operation

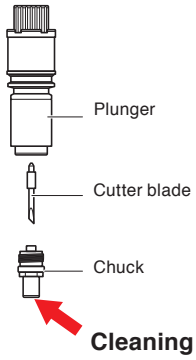
1 Clean off paper dust and media build up from the blade. After cleaning it, return it to its proper place.

Spin the plunger cap, remove it, and then clean the blade entrance area.

PHP33-CB09N-HS/ PHP33-CB15N-HS



PHP35-CB09-HS/ PHP35-CB15-HS



2 Attach the plunger cap after the cleaning is finished.

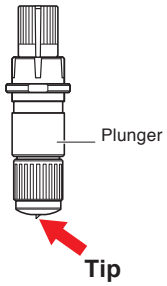
13.4 Replacing the Cutter Plunger

The tip of the cutter plunger gets worn down due to friction with the media.

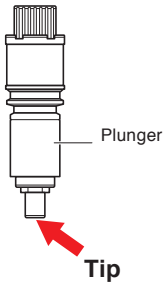
When the tip of the cutter plunger gets worn down, cut quality suffers.

When the tip of the plunger cap gets worn down, it is recommended that you replace it with the new cutter plunger.

PHP33-CB09N-HS/
PHP33-CB15N-HS



PHP35-CB09-HS/
PHP35-CB15-HS



⚠ CAUTION

To avoid bodily injury, handle cutter blades with care.

13.5 Setting the Alarm for Degree of Wear (BLADE WEAR ALARM)

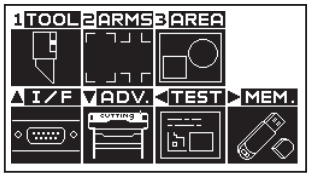
This function measures the distance of cuts made by the plotter to determine when the cutter blade should be replaced.

BLADE WEAR DETECT ON/OFF, SET BLADE GROUP, ALARM DISTANCE and BLADE WEAR DETECT settings are required.

Operation

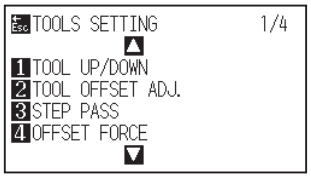
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



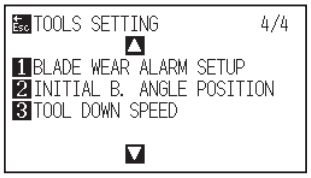
2 Press the [1] key (TOOL).

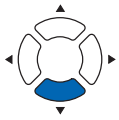
▷ TOOLS SETTING screen (1/4) is displayed.



3 Press the POSITION (▼) key.

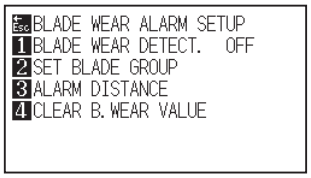
▷ TOOLS SETTING screen (4/4) is displayed.





4 Press the [1] key (BLADE WEAR ALARM SETUP).

▷ BLADE WEAR ALARM SETUP setting screen is displayed.

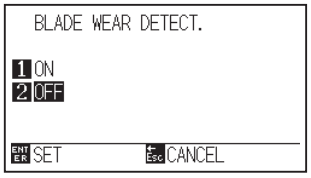


Supplement

It will return to TOOLS SETTING screen (4/4) without changing the settings when you press the [ESC] key (BLADE WEAR ALARM SETUP).

5 Press the [1] key (BLADE WEAR DETECT.).

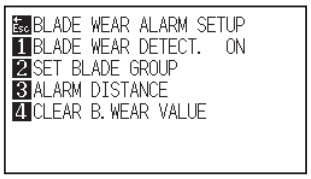
▷ BLADE WEAR DETECT setting screen is displayed.



6 Press the [1] key (ON) or the [2] key (OFF).

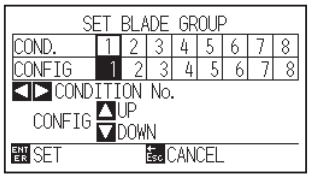
7 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to BLADE WEAR ALARM SETUP screen.

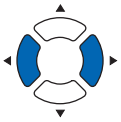


8 Press the [2] key (SET BLADE GROUP).

▶ SET BLADE GROUP setting screen is displayed.



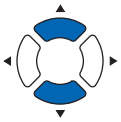
9 Press the POSITION (◀▶) keys and select the tool condition No. (CONDITION NO.).



Supplement

Setting range is 1 to 8.

10 Press the POSITION (▲▼) key and increase or decrease the setting value.



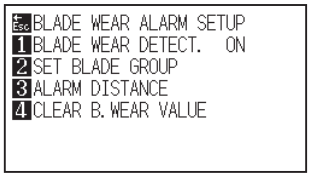
Supplement

Setting range is 0 to 8.

When set to 0, the alarm will not belong to any group.

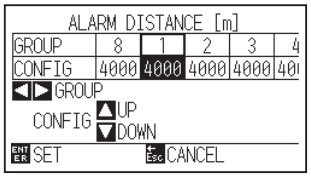
11 Confirm the setting and press the [ENTER] key (SET).

▶ Setting will be set, and it will return to BLADE WEAR ALARM SETUP screen.

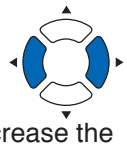


12 Press the [3] key (ALARM DISTANCE).

▶ ALARM DISTANCE setting screen is displayed.



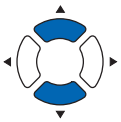
13 Press the POSITION (◀▶) keys and select the group No. (GROUP NO.).



Supplement

Setting range is 1 to 8..

14 Press the POSITION (▲▼) key and increase or decrease the setting value.

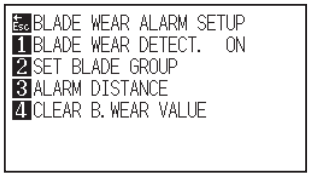


Supplement

Setting range is 500 m to 5000 m (100 m step)

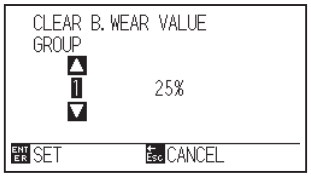
15 Confirm the setting and press the [ENTER] key (SET).

▷ Setting will be set, and it will return to BLADE WEAR ALARM SETUP screen.

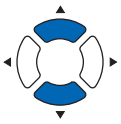


16 Press the [4] key (CLEAR B. WEAR VALUE).

▷ CLEAR B. WEAR VALUE setting screen is displayed.

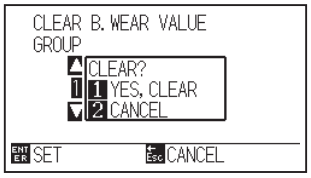


17 Press the POSITION (▲▼) keys and select the group No. (GROUP NO.).



18 Confirm the setting and press the [ENTER] key (SET).

▷ CLEAR? screen is displayed.

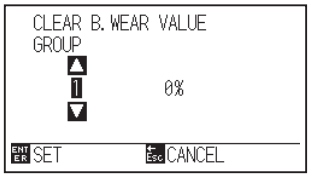


Supplement

It will return to CLEAR B. WEAR VALUE setting screen without clearing the blade wear value when you press the [2] key (CANCEL).

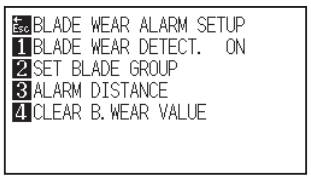
19 Press the [1] key (Yes, CLEAR).

▷ Blade wear value will be cleared and it will return to CLEAR B. WEAR VALUE setting screen.



20 Press the [ESC] key (CANCEL).

▷ Setting will be set, and it will return to BLADE WEAR ALARM SETUP setting screen.



21 Press the [PAUSE/MENU] key

▷ It will return to default screen.

Chapter 14: Troubleshooting

Refer to this chapter if you feel something is wrong, or it does not work right.
It also describes the settings of the plotter, confirming the cutting data, and method to create test patterns.

PRODUCT SUMMARY

14.1 Troubleshooting
14.2 Printing the Setting of the Cutting Plotter
14.3 Plotting the Test Pattern
14.4 Plotting the CUTTING PRO
14.5 Confirming the Cutting Data
14.6 Plotting the Sample Cut Pattern
14.7 Self Diagnostic Test

14.1 Troubleshooting

When the Plotter Does Not Operate After Turning the Power On

Symptom	Possible Cause	Solution
• Nothing is displayed on the LCD panel.	There is no power supplied. Or, the plotter is defective.	Check that the power cord is securely connected to the plotter's AC line inlet and the electrical outlet. Check that the power is supplied to the electrical outlet. Contact your sales representative or nearest Graphtec dealer if the problem still exists.
• Nothing is displayed on the LCD panel.	The plotter is defective.	Contact your sales representative or nearest Graphtec dealer if the problem still exists.
• "Sum-Ck ROM RAM ERR!!" is displayed on the LCD panel.	The ROM or RAM is defective.	Contact your sales representative or nearest Graphtec dealer if the problem still exists.

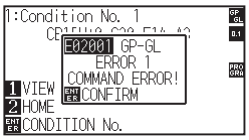
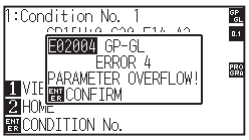
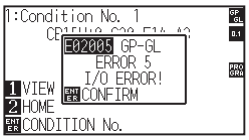
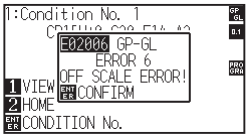
When It Does Not Work Right

Symptom	Possible Cause	Solution	Reference
• The plotter stops with "POSITION ALARM" displayed during initialization or cutting.	CONDITION setting for the media is invalid.	Slow down the speed or lower the FORCE.	Setting the Tool Condition
	The pen carriage does not move by hitting something.	Move the object disturbing the operation, and turn on the plotter after turning it off once	
	External force is applied to the pen carriage while cutting.	Move the object disturbing the operation, and turn on the plotter after turning it off once.	
	Movement is disturbed by the media chaff in the operation area.	Move the object disturbing the operation, and turn on the plotter after turning it off once.	
	The plotter is defective.	Contact your sales representative or the Graphtec call center.	
• It is cutting with origin point shifting to center of the media.	Data created with lower left origin point is received when the plotter is set with center origin point. (With HP-GL command)	Reset the origin point to center on the application software, or reset the origin point of the plotter to lower left.	Setting Origin Point When HPGL is Set
• Displays command error.	Data sent to the plotter is not correct.	Check the data.	Error Message in GP-GL Command Mode Error Message in HP-GL Command Mode
• There are too many tool up and down.	Setting for the tangential mode is set to ON.	Turn OFF the setting for the tangential mode unless you are cutting thick media.	Setting the TANGENTIAL MODE
• Cannot change the tool condition.	Setting for the sorting is set to ON.	Normally, use the plotter with setting for the sorting OFF.	Sorting the Cutting Data
• Tool condition changes.	Setting of the priority is set to PROGRAM.	Change the setting of the priority to MANUAL.	Priority of Tool Condition Selection (CONDITION PRIORITY)
	The [ENTER] key is not pressed after changing the TOOL CONDITION.	Check the TOOL CONDITION again.	Setting the Tool Condition
• It does not become specified length. (Slight distance error)	Distance adjust value is not correct.	Perform distance adjust.	Setting the Distance Adjust

When the Cutting Result is Not Good

Symptom	Possible Cause	Solution
• Corners are rounded. • Corners are too sharp.	Blade and OFFSET does not match.	Change the OFFSET. ➞ It is rounded: Increase the OFFSET ➞ It is too sharp: Decrease the OFFSET
• The cut line starts out crooked.	The blade inside the plunger doesn't turn smoothly.	Remove dirt from inside the plunger.
• The blade skips and does not completely cut lines that should be solid. • Straight cut lines seems to wobble.	The blade is extended too far.	Adjust the blade length.
	The cutting speed is too high.	Lower the speed setting.
• Coarse resolution of curved lines.	The software's resolution setting is too low.	Adjust the software's resolution setting.
	The blade offset angle is too low.	Increase the value for the blade offset angle.
• The media curls up at the corners. • Fine cut characters peels off.	The blade is extended too far.	Adjust the blade length.
	Blade and OFFSET does not match.	Change the OFFSET.
	The cutting speed is too high.	Lower the speed setting.
	The blade is dull.	Replace the blade.
	The ACCELERATION setting is too high.	Lower the ACCELERATION setting.
• The blade is cutting into the backing sheet.	The blade is extended too far.	Adjust the blade length.
	The cutting FORCE is too high.	Lower the FORCE setting.
• The blade falls out of the plunger.	The blade is too small for the plunger.	Use a blade that fits securely in the plunger.
• Media can be cut but it is hard to weed afterwards. • Cut media cannot be pulled up using retack sheet.	The retack sheet is not sticky enough.	Switch to a stickier retack sheet.
	Media gets entangled during cutting.	Reduce the blade length.
		Lower the FORCE setting.
	Cleaning of cut media was postponed too long.	Promptly weed cut media.
• Abnormal noise generated from the tool carriage during cutting. • The media is discolored where the blade has passed.	Media is rubbed by the tip of the plunger.	Adjust the blade length and the cutting FORCE settings.
• The cutting results differ from the specified size.	The STEP SIZE has been set differently at the computer and the plotter.	Set the STEP SIZE to same value.
	Scaling has been specified on the computer.	Check whether scaling has been specified in the plotter.
• Currently selected cutting conditions are disregarded or cannot be changed.	The parameter priority setting is set to PROGRAM.	Change the setting of the priority to MANUAL.
	The [ENTER] key was not pressed after changing the settings.	Check the operation.
• Characters or lines are deformed during pen plotting.	The plotter is in cutting mode.	Select PEN as the tool in the CONDITION setting.
• It does not become specified length. (Slight distance error)	Distance adjust value is not correct.	Perform distance adjust.
• Characters are deformed. • Complex drawings are deformed.	The STEP PASS setting is set too high.	Lower the STEP PASS setting.
• The starting and end points of cutting do not match.	Coordinate points are incorrectly specified.	Check the coordinate data by plotting it with a pen.
	The media backing is too flimsy.	Switch to a media with a stronger backing.
	Blade rotation is not smooth.	Check that there is no dirt in the blade.

Error Messages in GP-GL Command Mode

Error Displayed	LCD Display	Cause	Solution
E02001		• The plotter received an unrecognizable command.	Press the [ENTER] key.
		• Noise came in when the computer was turned on.	Configure to drive the plotter from the menu of the software.
		• The software configuration regarding the output device has been changed.	Reset the interface settings of the software.
		• The plotter's interface conditions have changed.	Reset the interface settings of the plotter.
E02004		• A command was received containing numeric parameters that exceed that command's permissible range.	Configure to drive the plotter from the menu of the software.
		• The software configuration regarding the output device has been changed.	Reset the interface settings of the software.
		• The plotter's interface conditions have changed.	Reset the interface settings of the plotter.
E02005		• An error occurred in the receipt of data within the interface.	Configure to drive the plotter from the menu of the software.
		• The software configuration regarding the output device has been changed.	Reset the interface settings of the software.
		• The plotter's interface conditions have changed.	Reset the interface settings of the plotter.
E02006		• The data out of cutting range has been received.	Check the data.
			Check the size of media and the cutting range.
			Check the magnification setting.
			Check the step size settings.

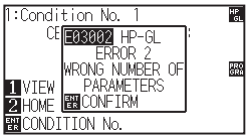
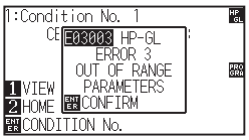
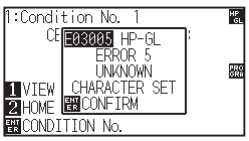
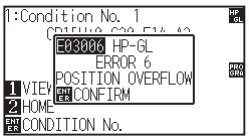
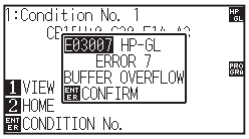
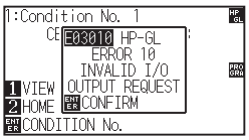
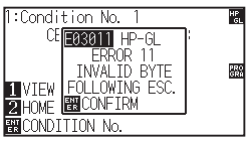
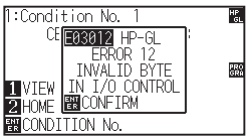
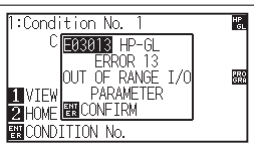
Error Messages in HP-GL Command Mode

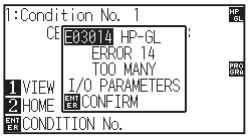
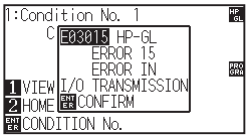
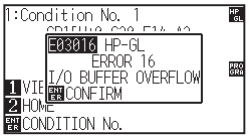
If any of the following command errors occur, they are nearly always caused by following 2 reasons.

1. The configuration regarding the output device in the application software has changed.
2. The plotter's interface conditions have changed.

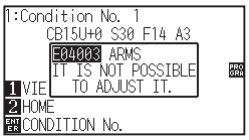
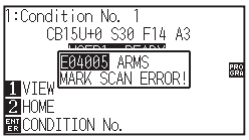
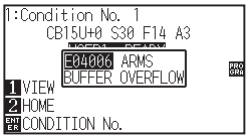
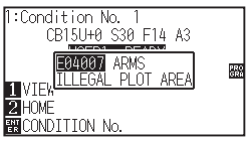
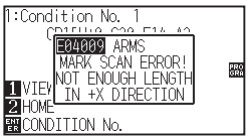
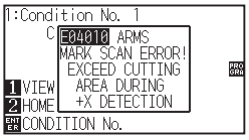
Perform following if these are the cause of the problem.

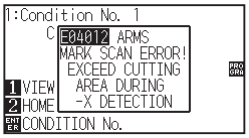
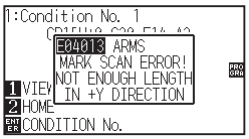
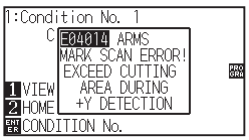
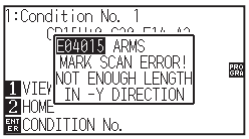
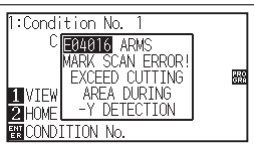
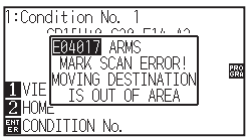
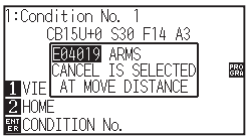
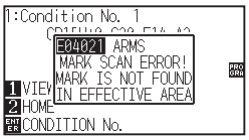
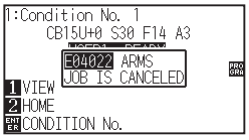
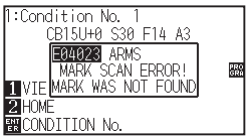
1. Reconfigure the output device of the application software to the plotter.
2. Reset the plotter's interface conditions.

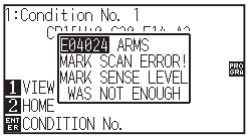
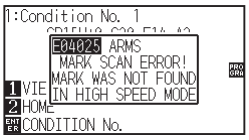
Error Displayed	LCD Display	Cause	Solution
E03001		An unrecognizable instruction was executed.	Execute a recognizable command.
E03002		Wrong number of parameters were specified.	Execute the command with the correct number of parameters.
E03003		An unusable parameter was executed.	Execute a recognizable parameter.
E03005		An unusable character set was specified.	Specify usable character set.
E03006		Coordinates of command specified out of cutting area.	Execute coordinates within the cutting area.
E03007		The data being input exceeds the capacity of the plotter's downloadable character buffer, polygon buffer, etc.	Adjust the buffer size.
E03010		Other output command was executed while executing an output command.	Check the program.
E03011		An invalid byte was received after ESC code.	Check the program.
E03012		Invalid byte was received within device control command.	Check the program.
E03013		A parameter outside of the permissible range was specified in the I/O related command.	Check the program.

Error Displayed	LCD Display	Cause	Solution
E03014		Too many parameters in the I/O related command.	Check the program.
E03015		Framing error, parity error, or overrun error has occurred.	Set the RS-232C transmission condition.
E03016		Interface buffer memory has overflowed.	Set the RS-232C transmission condition.

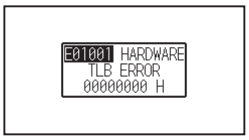
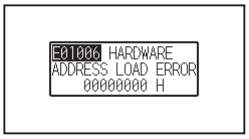
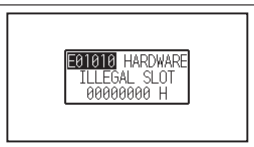
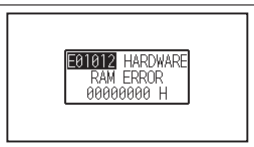
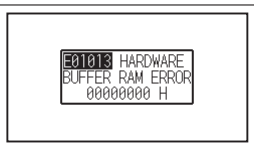
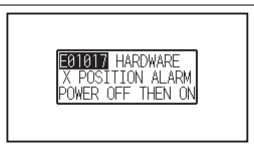
ARMS Error Messages

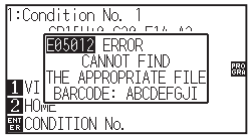
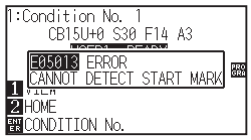
Error Displayed	LCD Display	Cause	Solution
E04001		Tilt to adjust with AXIS ALIGNMENT is too large.	Reload the media.
E04002		It is over the setting range of the distance adjust.	Reset to smaller value.
E04003		Failed to adjust the sensor level.	This media cannot be used.
E04004		It is over the setting range of the distance adjust.	Reset to smaller value.
E04005		Could not scan the registration marks.	Check the registration scan position.
E04006		Amount of data has exceeded the I/O buffer size for the segment area registration mark.	Decrease the data.
E04007		Test pattern plotting position is not within the plotting area for sensor position adjustment.	Move the media toward center and plot the test pattern.
E04009		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04010		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04011		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.

Error Displayed	LCD Display	Cause	Solution
E04012		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04013		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04014		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04015		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04016		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04017		It has exceeded detection area while detecting the registration mark.	Check the media. Check the print position of the registration mark.
E04019		There was cancel operation by the user.	Redo the process.
E04020		There is a defect in the detection settings value.	Check the settings value.
E04021		Registration mark was not detected in the auto detection area.	Check the media. Check the print position of the registration mark.
E04022		There was cancel operation by the user.	Redo the process.
E04023		Registration mark was not detected.	Redo the sensor level adjustment. Change the color of the registration mark. Check the media. Check the print position of the registration mark.

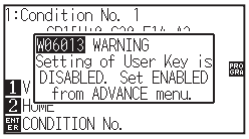
Error Displayed	LCD Display	Cause	Solution
E04024		Registration mark was not detected.	Redo the sensor level adjustment. Change the color of the registration mark. Check the media. Check the print position of the registration mark.
E04025		Registration mark was not detected.	Redo the sensor level adjustment. Change the color of the registration mark. Check the media. Check the print position of the registration mark.

Other Error Messages

Error Displayed	LCD Display	Cause	Solution
E01001 to E01005		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01006		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01007		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01008		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01009		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01010		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01011		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01012		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01013		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01014		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01015		The plotter is defective.	Contact your sales representative or nearest Graphtec dealer.
E01017		The plotter is defective. Load on the motor was too large.	Move the object disturbing the operation, and turn on the plotter after turning it off once.

Error Displayed	LCD Display	Cause	Solution
E05012		The appropriate file cannot be found in the external memory (USB memory).	Save the appropriate file in the external memory (USB memory).
E05013		The START MARK is not recognized.	Change the printing state of bar code. Move the tool carriage above the START MARK.

Caution Message

Error Displayed	LCD Display	Description
W06008		When command is set to auto, the DUMP mode is not available.
W06013		The USER KEY is enabled.

14.2 Printing the Setting of the Cutting Plotter

Condition setting list can be printed when you need to check the current setting of the cutting plotter.

> **⚠ CAUTION**
>
> - **Do not place you hand around the moving areas. The tool carriage will start moving, so there is a chance of injury. Tool carriage will start to move immediately after selecting to print the CONDITION list**
> - **Once you start printing, pause/cancel can not be performed in the middle.**

Operation

1 Set a media larger than A3 size.

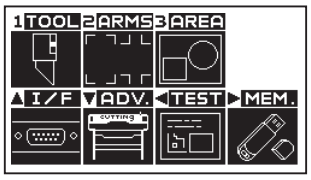
> **Supplement**
>
> **See "Loading Media " for loading the media.**

2 Set the pen tool to the tool holder and select the condition where the pen tool is set.

> **Supplement**
>
> - **See "Attaching a Tool" for setting the pen tool.**
> - **For changing the tool conditions please refer to "Selecting Tool Condition", and for tool settings please refer to "Setting the Tool"..**

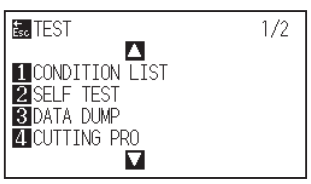
3 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



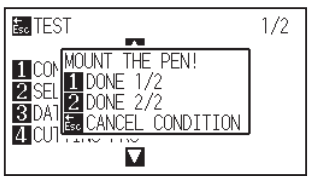
4 Press the POSITION (◀) key (TEST).

▷ TEST menu screen (1/2) is displayed.



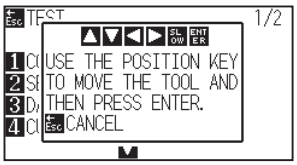
5 Press the [1] key (CONDITION LIST).

▷ CONDITION LIST print screen is displayed.



6 Press the [1] key (DONE 1/2) or the [2] key (DONE 2/2).

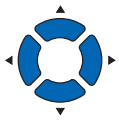
▶ Message to confirm tool position is displayed.



Supplement

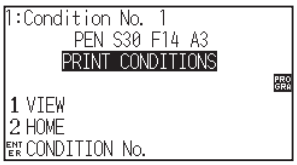
Press the [ESC] key (CANCEL CONDITION) to return to the TEST menu screen without printing the list.

7 Press the POSITION (▲▼◀▶)keys and move the tool carriage to print start position.



8 Confirm that moving parts of the tool and media can safely operate and press the [ENTER] key.

▶ Selected page of the CONDITION LIST is printed.



⚠ CAUTION

Do not place you hand around the moving areas. The tool carriage will start moving, so there is a chance of injury.

9 When the printing is finished, it will return to READY status.

Supplement

Set the media and repeat steps 6 to 8 to print different page at this point.

14.3 Plotting the Test Pattern

To check the operation of the cutting plotter, plot a self-test pattern.

> **⚠ CAUTION**
>
> **Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury. Tool carriage will start to move immediately after selecting to plot the test pattern.**

Operation

1 Set a media larger than A3 size.

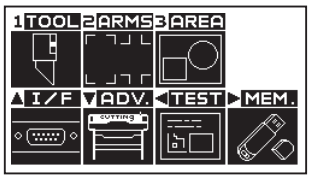
> **Supplement**
>
> **See "Loading Media " for loading the media.**

2 Set the pen tool to the tool holder and select the condition where the pen tool is set.

> **Supplement**
>
> - **See "Attaching a Tool" for setting the pen tool.**
> - **For changing the tool conditions please refer to "Selecting Tool Condition", and for tool settings please refer to "Setting the Tool"..**

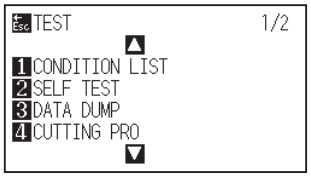
3 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



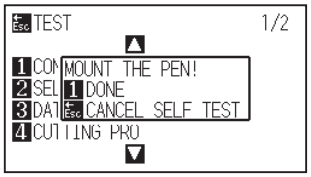
4 Press the POSITION (◀) key (TEST).

▷ TEST menu screen (1/2) is displayed.



5 Press the [2] key (SELF TEST).

▷ SELF TEST start screen is displayed.



6 Confirm that the pen tool is set.

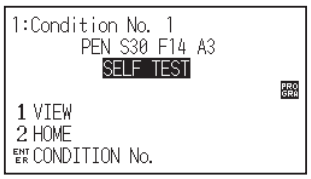
7 Confirm that moving parts of tool and media are safely operated.

⚠ CAUTION

Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury.

8 Press the [1] key (DONE).

▶ Plotting of the test pattern starts.



Supplement

It will return to TEST menu screen without printing when you press the [2] key (CANCEL SELF TEST).

9 Turn the power off to stop the printing.

Supplement

It will keep on printing until the power is turned off once the printing is started by pressing the [1] key (DONE).

14.4 Plotting the CUTTING PRO

To check the operation of the cutting plotter, plot a test pattern.

> **⚠ CAUTION**
>
> **Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury. Tool carriage will start to move immediately after selecting to plot the test pattern.**

Operation

1 Set a media larger than A3 size.

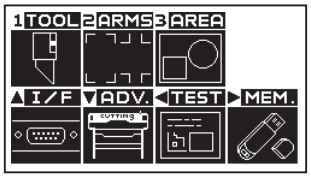
> **Supplement**
>
> **See "Loading Media " for loading the media.**

2 Set the tool to the tool holder and select the condition where the tool is set.

> **Supplement**
>
> - **See "Attaching a Tool" for setting the tool.**
> - **For changing the tool conditions please refer to "Selecting Tool Condition", and for tool settings please refer to "Setting the Tool"..**

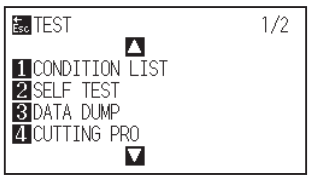
3 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



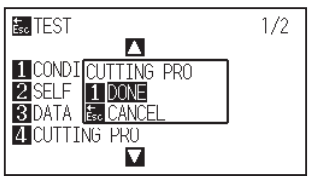
4 Press the POSITION (◀) key (TEST).

▷ TEST menu screen (1/2) is displayed.



5 Press the [4] key (CUTTING PRO).

▷ CUTTING PRO start screen is displayed.



6 Confirm that the tool is set.

7 Confirm that moving parts of tool and media are safely operated.

⚠ CAUTION

Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury.

8 Press the [1] key (DONE).

▷ Plotting of the CUTTING PRO starts.

Supplement

It will return to TEST menu screen without printing when you press the [ESC] key (CANCEL SELF TEST).

9 After the completion of print, the TEST menu screen (1/2) is displayed.

10 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

14.5 Confirming the Cutting Data

Output of the dump list of the cutting data received by the plotter is possible. It is used to check if the transmission of cutting data is performed correctly.

⚠ CAUTION

Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury. Tool carriage will start to move immediately after selecting to print the dump list.

Supplement

- **There may be a difference in the RS-232C transmission condition or the command setting when the printed output and the display of transmission data does not match. Check the transmission condition and the command.**
- **If the command setting is "Auto", the dump list of the cutting data is not output. Please set the command to "GP-GL" or "HP-GL".**

Operation

1 Set a media larger than A4 size.

Supplement

See "Loading Media " for loading the media.

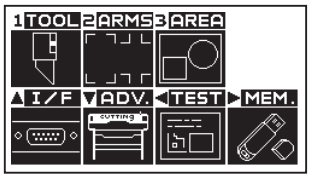
2 Set the pen tool to the tool holder and select the condition where the pen tool is set.

Supplement

- **See "Attaching a Tool" for setting the pen tool.**
- **For changing the tool conditions please refer to "Selecting Tool Condition", and for tool settings please refer to "Setting the Tool".**

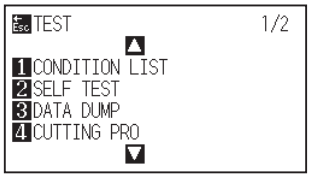
3 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



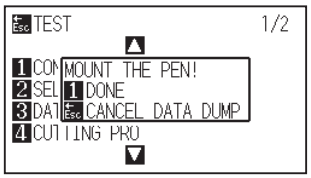
4 Press the POSITION (◀) key (TEST).

▷ TEST menu screen (1/2) is displayed.



5 Press the [3] key (DATA DUMP).

▶ DATA DUMP start screen is displayed.



6 Confirm that the pen tool is set.

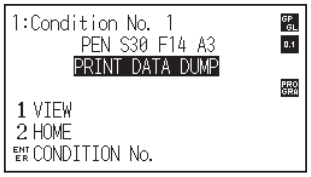
7 Confirm that moving parts of tool and media are safely operated.

⚠ CAUTION

Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury.

8 Press the [1] key (DONE).

▶ Transmit the data from the computer. A character dump list is printed.
Plot a Dump List.



Supplement

It will return to TEST menu screen without printing when you press the [ESC] key (CANCEL DATA DUMP).

9 Turn the power off to stop the printing.

Supplement

It will keep on printing until the power is turned off once the printing is started by pressing the [1] key (DONE).

14.6 Plotting the Sample Cut Pattern

To check the operation of the plotter, plot a sample cut pattern.

> **⚠ CAUTION**
>
> **Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury. Tool carriage will start to move immediately after selecting to print the dump list.**

Operation

1 Set the media to cut a sample pattern.

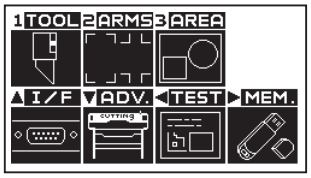
> **Supplement**
>
> **See "Loading Media " for loading the media.**

2 Set the tool to the tool holder and select the condition where the tool is set.

> **Supplement**
>
> - **See "Attaching a Tool" for setting the pen tool.**
> - **For changing the tool conditions please refer to "Selecting Tool Condition", and for tool settings please refer to "Setting the Tool".**

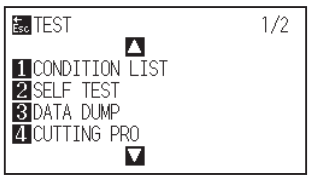
3 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



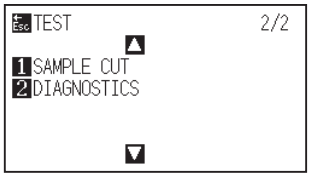
4 Press the POSITION (◀) key (TEST).

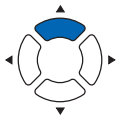
▷ TEST menu screen (1/2) is displayed.



5 Press the POSITION (▲) key (TEST).

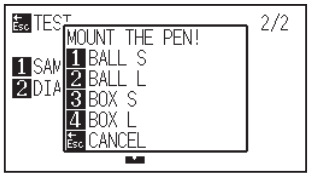
▷ TEST menu screen (2/2) is displayed.





6 Press the [1] key (SAMPLE CUT).

▷ SAMPLE CUT screen is displayed.



Supplement

The contents of the sample cut screen depend on the command setting.

7 Confirm that the tool is set.

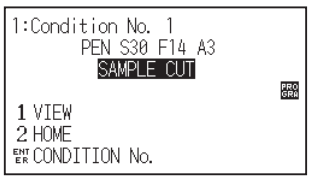
8 Confirm that moving parts of tool and media are safely operated.

⚠ CAUTION

Do not place your hand around the moving areas. The tool carriage will start moving, so there is a chance of injury.

9 Press any of [1] to [4] keys to perform the sample cut.

▷ Plotting of the sample cut starts.



Supplement

It will return to TEST menu screen without plotting when you press the [ESC] key (CANCEL).

10 When the printing is finished, it will return to READY status.

14.7 Self Diagnostic Test

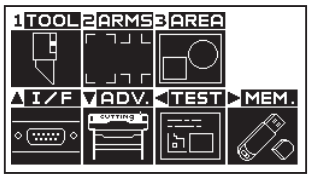
Operation status can be tested by self diagnostic test by operating the sensors and switches following the instruction on the screen.

Operation

1 Turn the power on.

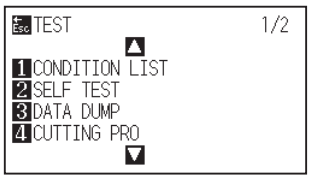
2 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



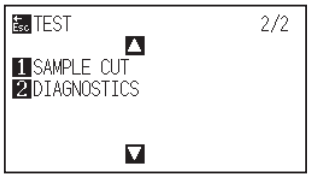
3 Press the POSITION (◀) key (TEST).

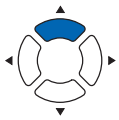
▷ TEST menu screen (1/2) is displayed.



4 Press the POSITION (▲) key.

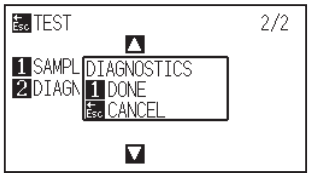
▷ TEST menu screen (2/2) is displayed.





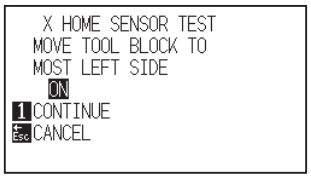
5 Press the [2] key (DIAGNOSTICS).

▷ DIAGNOSTICS start screen is displayed.



6 Press the [1] key (DONE).

▷ Message for testing is displayed on the screen.



7 Operate switches and sensors following the instructions on the screen.

▷ "OK" will be displayed if the operation is detected correctly, and next test will start.

▷ It will return to TEST menu screen once all the test items are completed.

Test items are as following.

1	X Home sensor	2	Y motor signal	3	X motor signal	4	Y motor signal
5	Tool 1 height signal	6	Tool 2 height signal	7	[1] key	8	[2] key
9	[3] key	10	[4] key	11	[USER 1/2] key	12	[SLOW] key
13	POSITION [▲] key	14	POSITION [◀] key	15	POSITION [▼] key	16	POSITION [▶] key
17	[PAUSE/MENU] key	18	[COND/TEST] key	19	[ORIGIN] key	20	[COPY] key
21	[ESC] key	22	[ENTER] key				

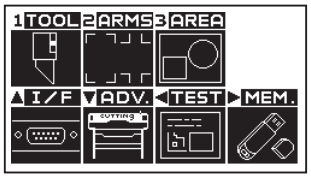
Reading the Error Message

Contents of most current 32 errors can be checked. Errors before that are not recorded.

Operation

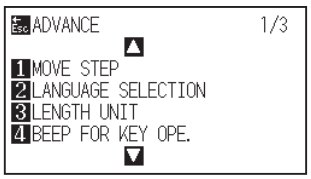
1 Press the [PAUSE/MENU] key in the default screen.

▷ MENU screen is displayed.



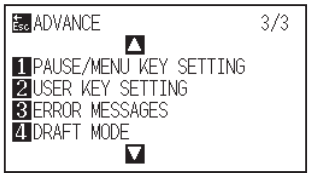
2 Press the POSITION (▼) key (ADV.).

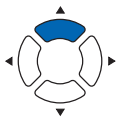
▷ ADVANCE screen (1/3) is displayed.



3 Press the POSITION (▲) key.

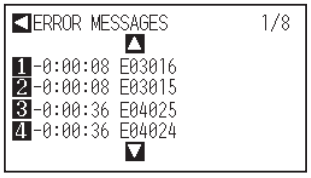
▷ ADVANCE screen (3/3) is displayed.





4 Press the [3] key (ERROR MESSAGES).

▷ ERROR MESSAGES list screen is displayed. Left column is time the error occurred, and right column is the type of the error. 4 error messages are displayed at once. If there are more error messages, next 4 messages will be displayed by pressing the POSITION (▲▼) keys.



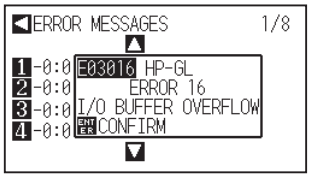
Supplement

- **"NO ERROR" will be displayed if there is no error.**

- **Up to 4 error messages will be displayed on the screen. Up to 32 error messages can be displayed by pressing the POSITION (▲▼) keys.**
- **When displayed, while the power is on it indicates how long ago an error occurred. The lower the value, the more recently the error occurred.**

5 Press the [1] to [4] keys to see the contents of the error.

▷ Error message corresponding to the pressed key is displayed.



6 Press the [ENTER] key (CONFIRM) when the error message is confirmed.

▷ It will return to ERROR MESSAGES list screen.

7 Press the [PAUSE/MENU] key.

▷ It will return to default screen.

Supplement

Press the POSITION (▲▼) keys in the screen of step 4 as necessary and repeat steps 5 and 6 if there are multiple error messages you would like to see.

Appendix

This chapter describes the specification of the cutting plotter.

PRODUCT SUMMARY

A.1 Main Specifications
A.2 Supplies
A.3 External Dimensions
A.4 Menu Tree
A.5 Default menu setting

A.1 Main Specifications

	FCX4000-50ES	FCX4000-60ES
Configuration	Flatbed	
Drive system	Digital servo	
Media hold-down method	Electrostatic adhesion	
Cutting area	660 mm × 488 mm	976 mm × 660 mm
Mountable media width	536 mm	708 mm
Specifiable speeds	75 cm/s (Omnidirection)	
Max. acceleration	9.8 m/s^2 (Omnidirection)	
Specifiable speeds	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75 cm/s 23 steps	
Max. force	Max. 5.88 N (600gf)	
Settable force	48 steps	
Min. character size	About 10mm^2 alphanumeric characters (depending on the materials and font) Our specified conditions	
Mechanical resolution	0.005 mm	
Programmable resolution	GP-GL : 0.1/0.05/0.025/0.01 mm HP-GL*1 : 0.025 mm	
Distance accuracy	Distance moved within ±0.2% or less or within ±0.1 mm or less, whichever is larger (Plotter mode)	
Right angle accuracy	0.3 mm/430 mm or less (Plotter mode)	0.4 mm/610 mm or less (Plotter mode)
Repeatable accuracy	0.1 mm or less: Expansion and contraction of the media are excluded (plotter/cutting mode)	
Interface	USB2.0 (full speed) , RS-232C, Ethernet 10BASE-T / 100BASE-TX	
Buffer memory	2 MB	
Resident command sets	GP-GL/HP-GL *1 (Control panel switching, Auto switching)	
Number of cutters/pens	2	
Tool type	Cutter Plunger, Water based fiber-tip pen, Creasing tool	
Compatible media	VC models • Marking film (PVC/fluorescence/reflection) • Thickness less than 0.5 mm paper *2 • Thickness less than 0.8 mm compressed foam sheet *3 • Thickness less than 1 mm Sandblasting rubber *3 • F, G flute • Clear package sheet • High-intensity reflective film *4	
Offline output function	USB memory - 64 files	
Bar code data management function	Yes	
LCD display	Graphic type (240 × 128 dot)	
Power supply	100 to 240V AC 50/60Hz	
Power consumption	120 VA or less	
Operating environment	10 to 35°C, 35 to 75 % R.H. (non-condensing)	
Guaranteed accuracy environment	16 to 32°C, 35 to 70 % R.H. (non-condensing)	
External dimensions (W × D × H)	1089 mm × 897 mm × 204 mm	1405 mm × 1069 mm × 204 mm 1405 mm × 1097 mm × 896 mm (with optional stand)
Weigh (Approx.)	29 kg	37 kg 55 kg (with optional stand)

*1 : HP-GL is a registered trademark of the US Hewlett Packard Company.
*2 : Please use cutter blade CB15U or CB15U-K30
*3 : Use cutter blade CB15U-K30
*4 : Use Cutter blade CB15UA
*5 : It depends on our specified paper and conditions
*6 : The accuracy read with the pattern prepared for this plotter, using the attached pen and coated (glossy) paper

A.2 Supplies

Supplies

Item	Model	Contents
Cutter plunger	PHP33-CB09N-HS	1 pc: ϕ0.9 cutter plunger (for CB09UB))
	PHP33-CB15N-HS	1 pc: ϕ1.5 cutter plunger
	PHP35-CB09-HS	1 pc: ϕ0.9 cutter plunger (for CB09UB)
	PHP35-CB15-HS	1 pc: ϕ1.5 cutter plunger
Water-based fiber-tip pen plunger	PHP31-FIBER	Water based fiber-tip pen plunger (1 set)
Water-based fiber-tip pen	KF700-BK	1 pair (Black 10 pcs.)
	KF700-RD	1 pair (Red 10 pcs.)
Blade adjustment magnifier	PM-CT-001	1 pc.
Creasing tool	CP-001	1 pc. (Pen type)
	PM-CT-002	1 pc. (Pen type tip ball Φ1.5)
Cling Mat	CM-0004	Film-based mat Adhesive area 435 mm x 610 mm: 2 shts
	CM-0005	Paper-based mat Adhesive area 435 mm x 610 mm: 2 shts.
	PM-CM-001	Film-based mat Adhesive area 488 mm x 660 mm: 2 shts
	PM-CM-002	Paper-based mat Adhesive area 488 mm x 660 mm: 2 shts.
Cling Mat	CM-0003-R1A	Double-sided adhesive 545 mm x 20 m: 1 roll

For detailed information about the cutter blade, refer to the Cutter Blade Manual.

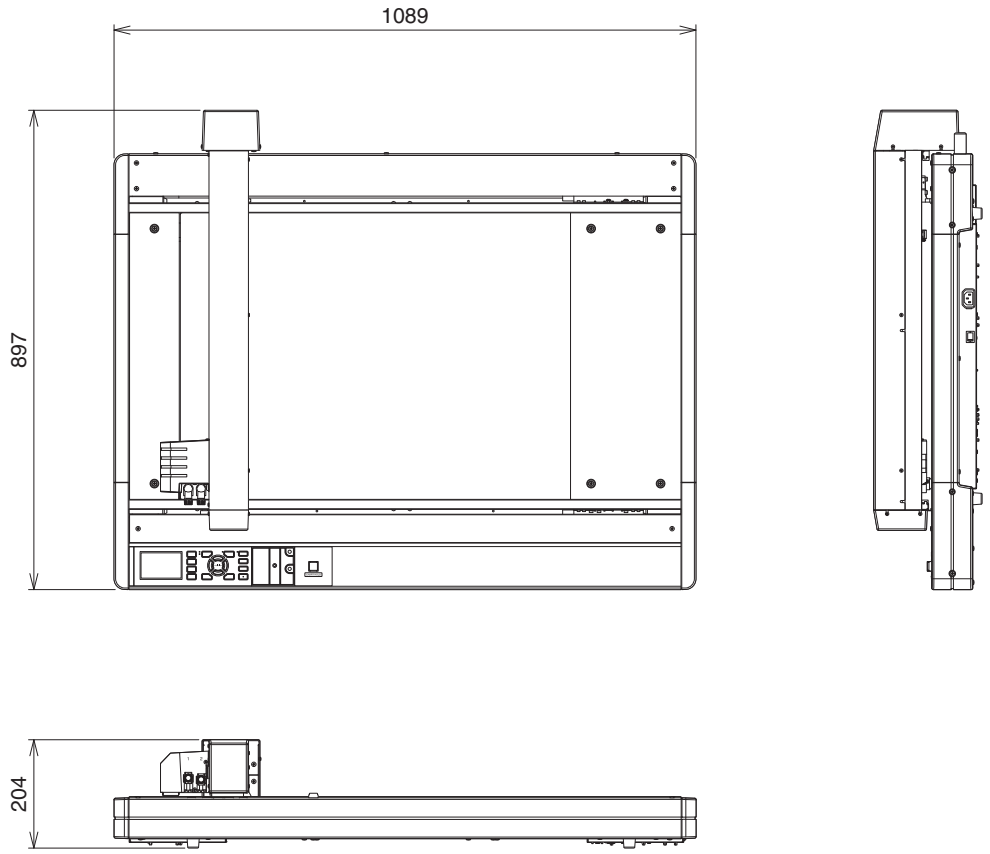
Please check our company's home page for the latest information on supplies.

Option

Item	Model	Contents
Stand	ST0113	FCX4000-60ES Dedicated stand

A.3 External Dimensions

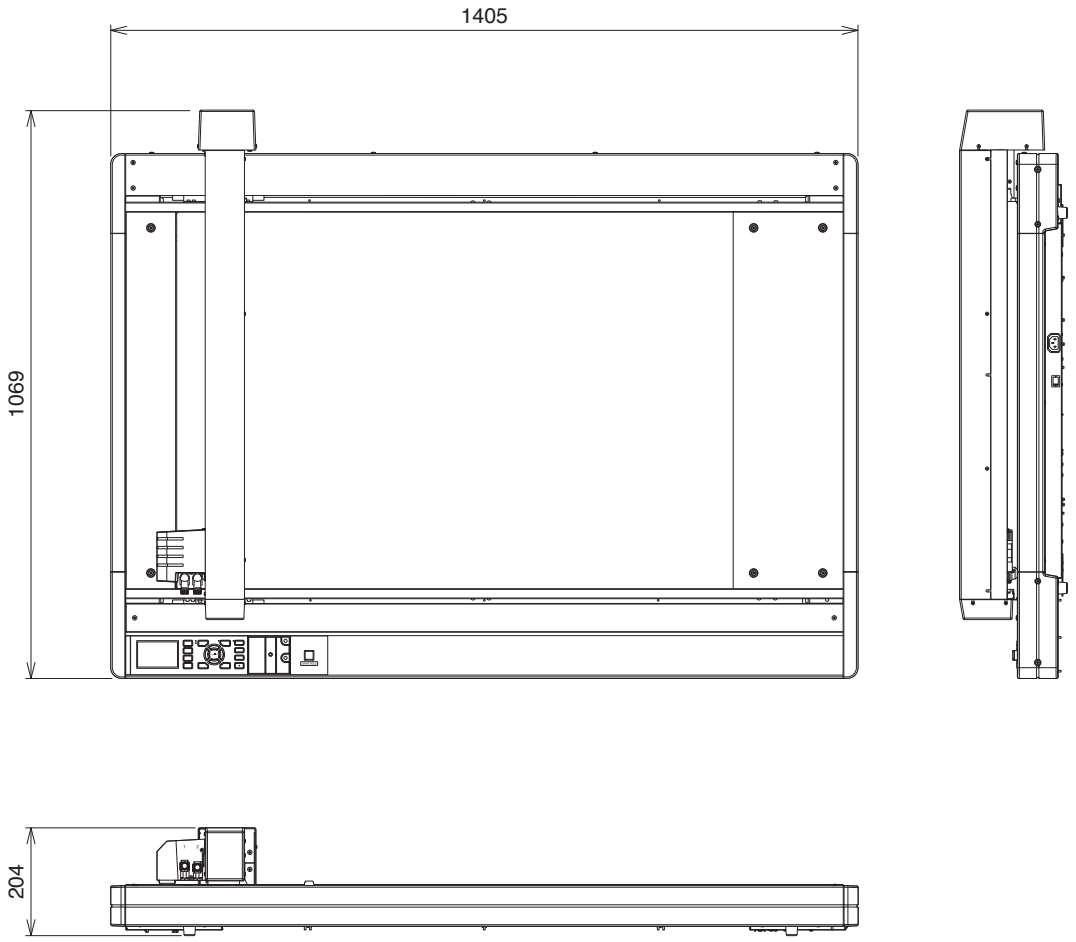
FCX4000-50ES



Unit: mm

Dimensional accuracy: ±5mm

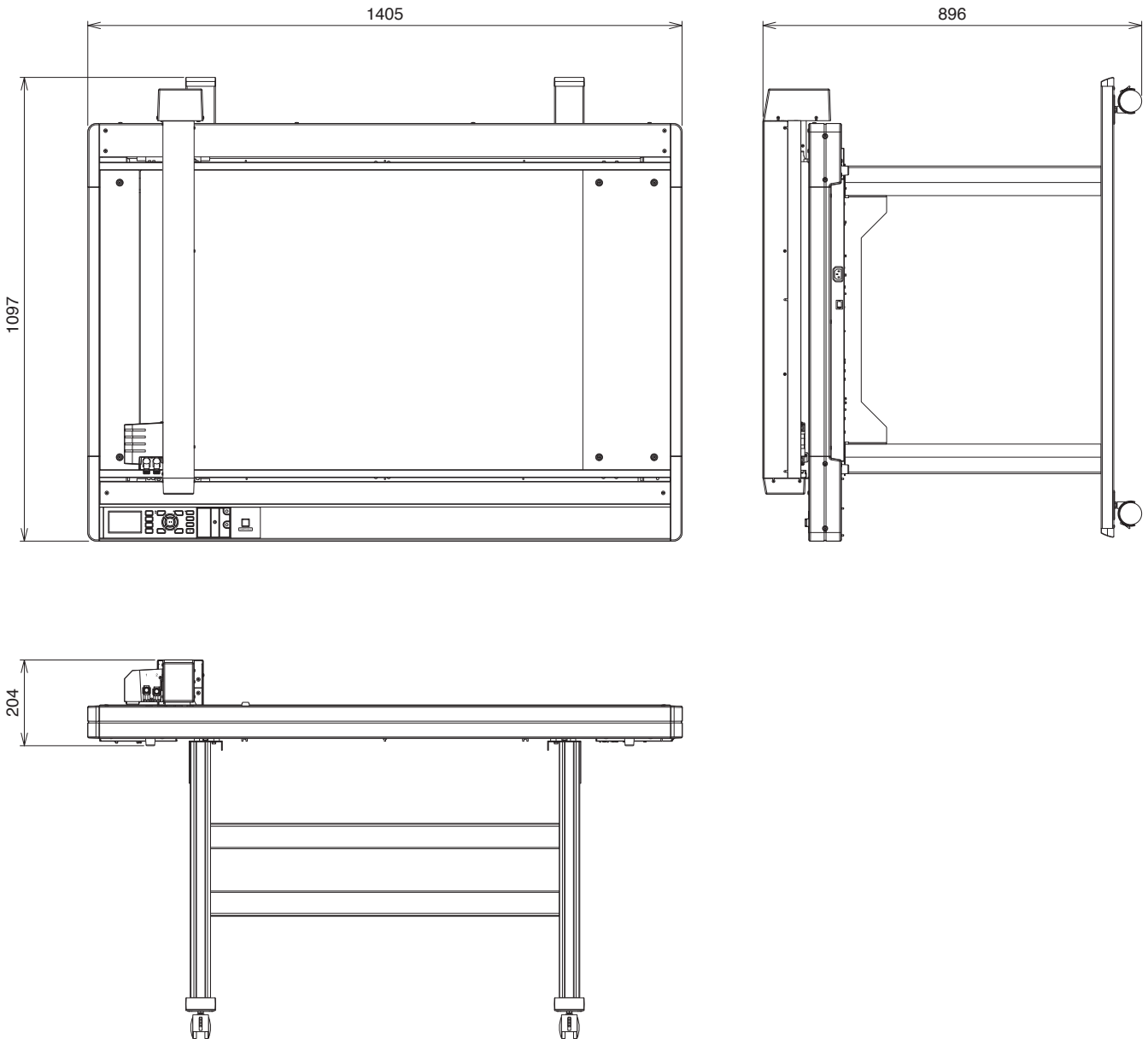
FCX4000-60ES



Unit: mm

Dimensional accuracy: ±5mm

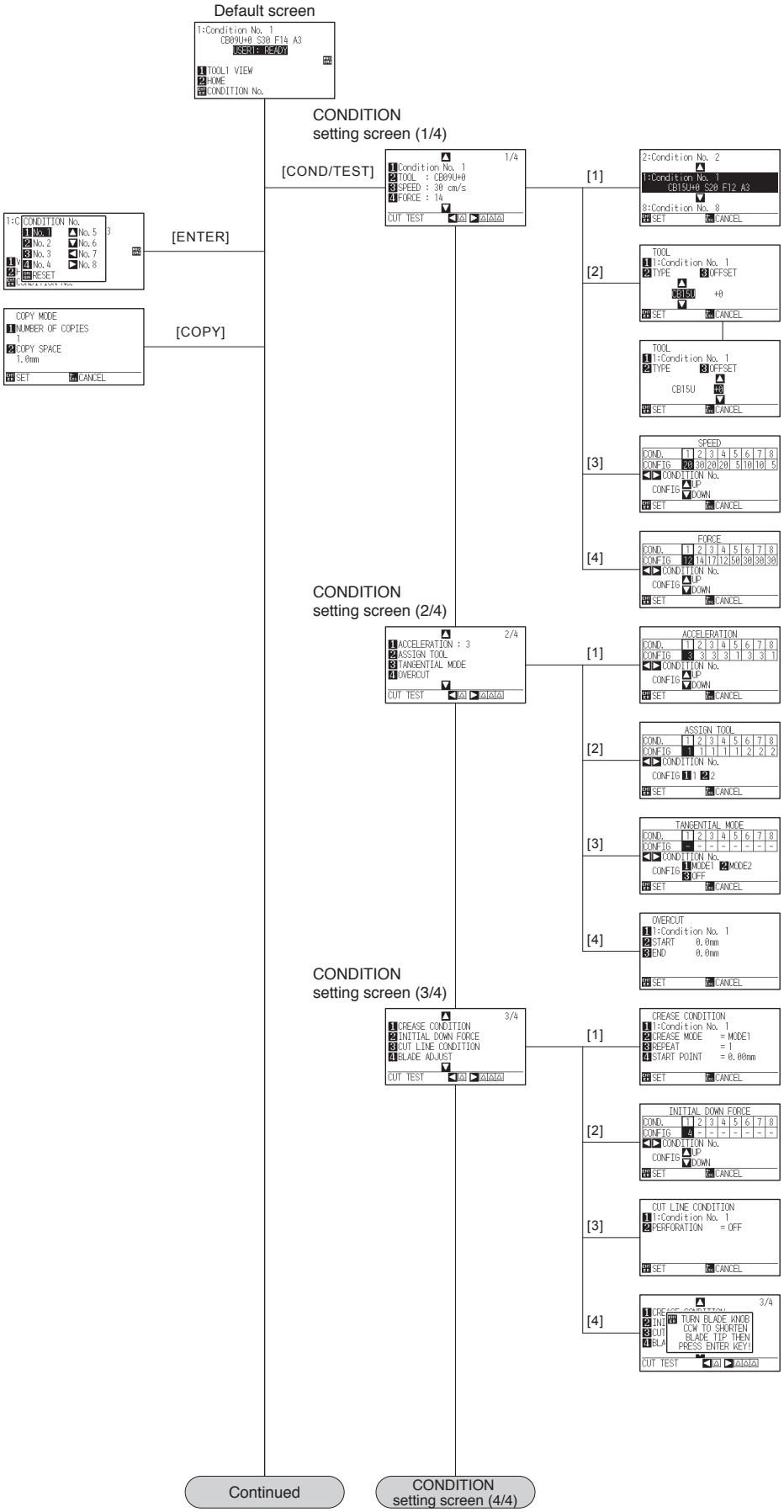
FCX4000-60ES (With option stand)

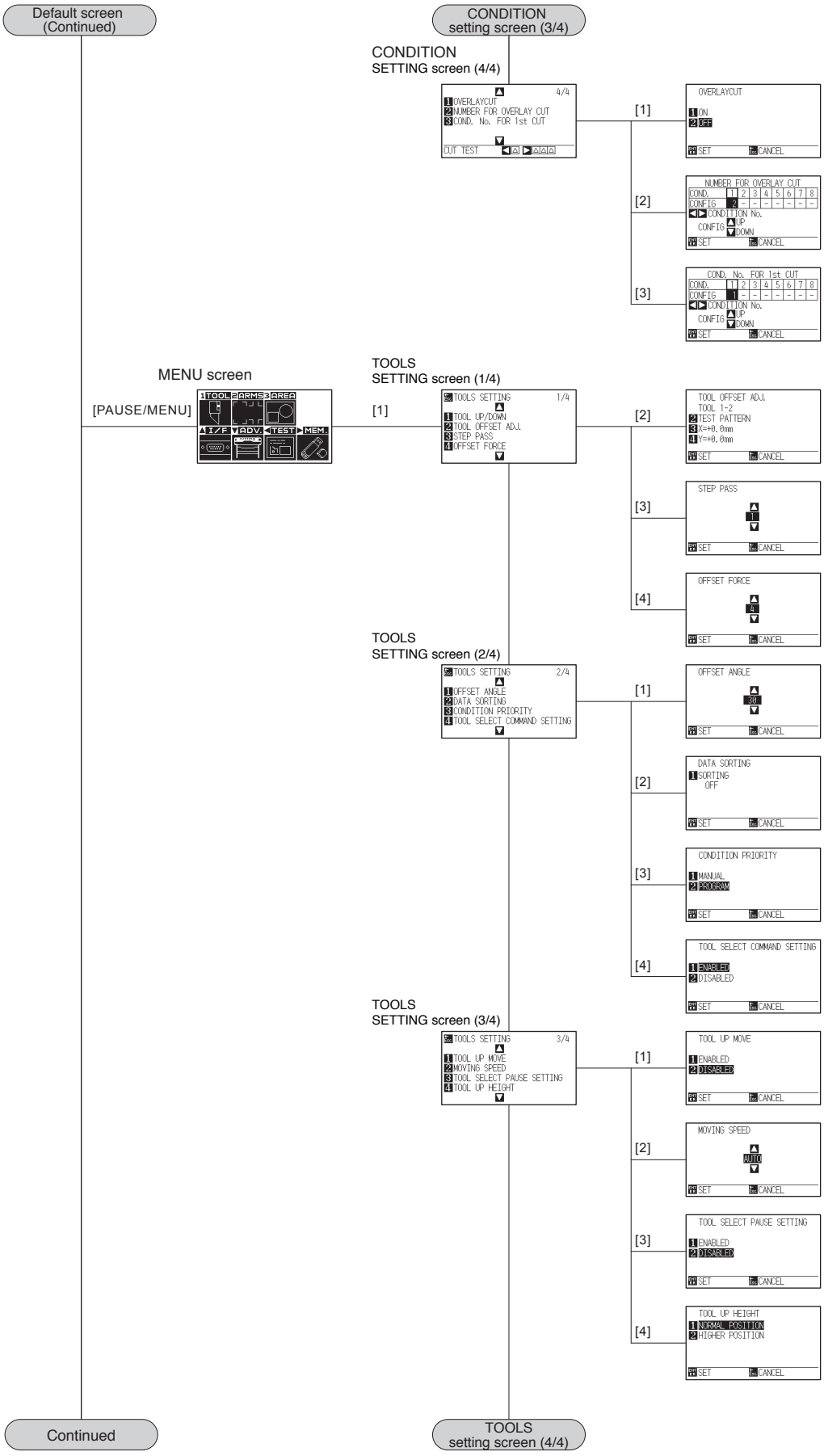


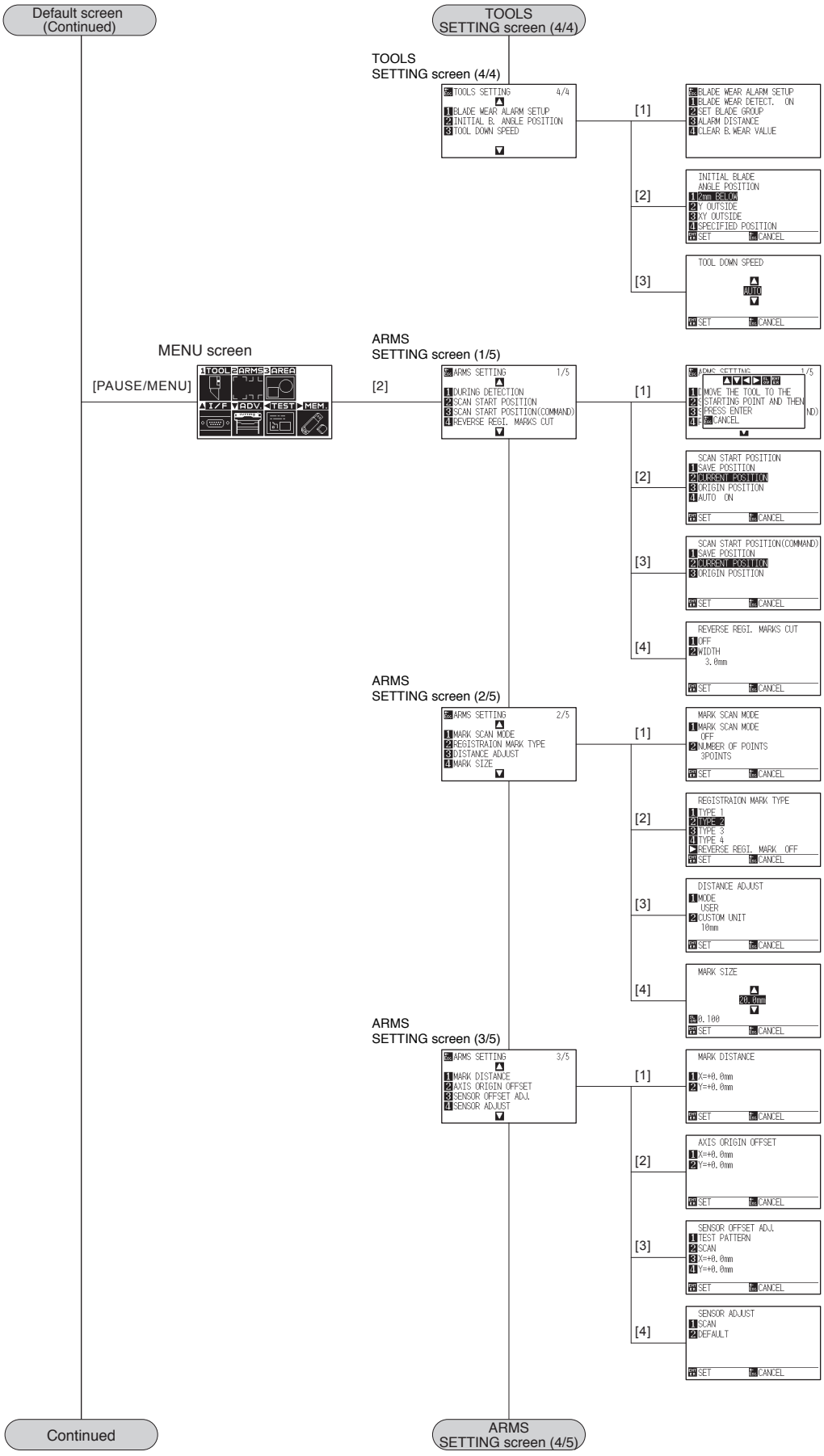
Unit: mm

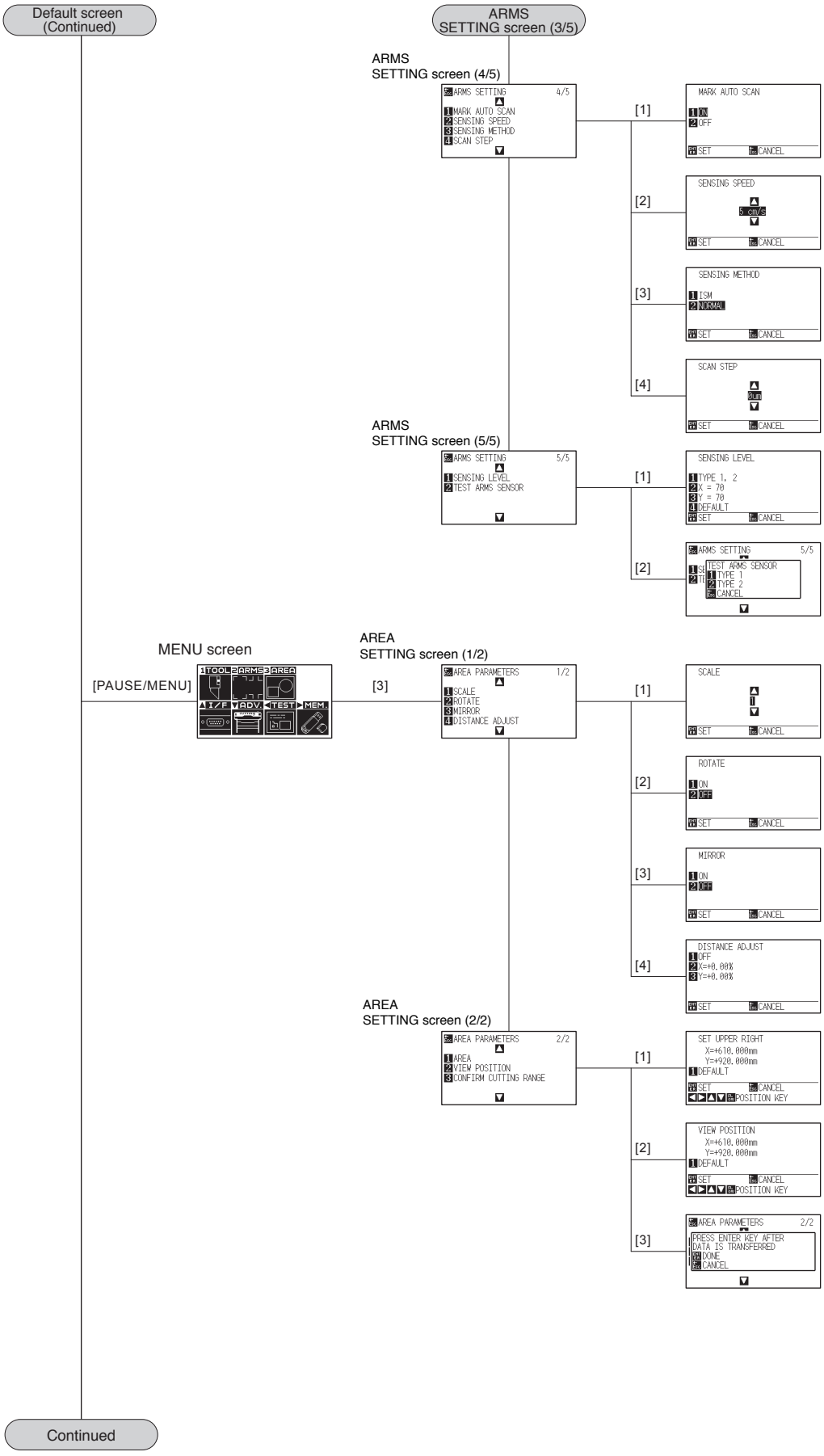
Dimensional accuracy: ±5mm

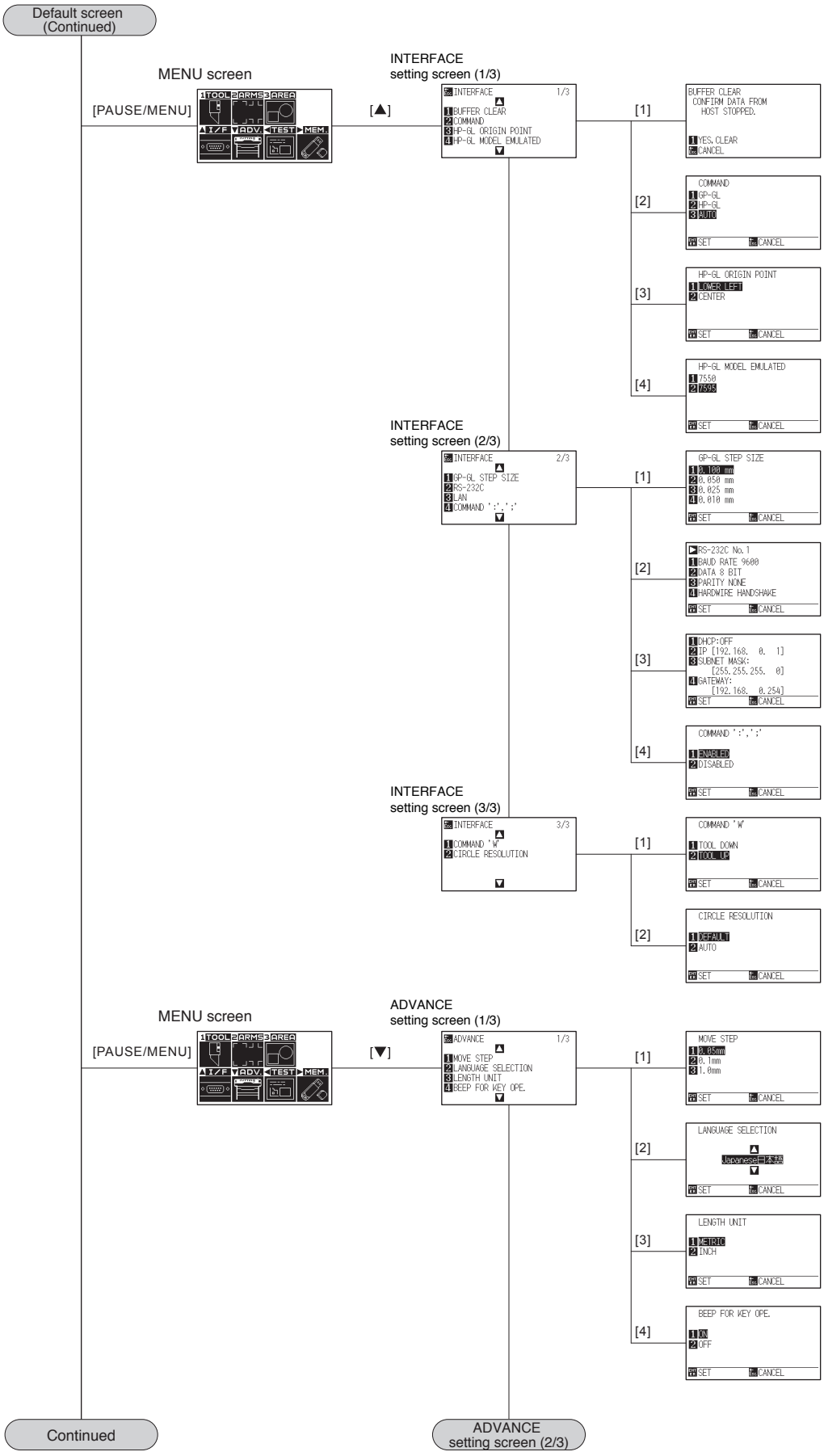
A.4 Menu Tree


Default screen
1:Condition No. 1
CB09U+0 S30 F14 A3
USER1: READY
1 TOOL1 VIEW
2 HOME
F4 CONDITION No.
CONDITION
setting screen (1/4)
[COND/TEST]
1/4
1 Condition No. 1
2 TOOL : CB09U+0
3 SPEED : 30 cm/s
4 FORCE : 14
CUT TEST
[1]
2:Condition No. 2
1:Condition No. 1
CB15U+0 S20 F12 A3
8:Condition No. 8
F1 SET
F5 CANCEL
[2]
TOOL
1 1:Condition No. 1
2 TYPE
3 OFFSET
CB15U +0
[3]
SPEED
COND. 1 2 3 4 5 6 7 8
CONFIG 20 30 20 20 5 10 10 5
CONDITION No.
CONFIG UP DOWN
[4]
FORCE
COND. 1 2 3 4 5 6 7 8
CONFIG 12 14 17 12 50 30 30 30
CONDITION No.
CONFIG UP DOWN
1:C CONDITION No.
1 No. 1
2 No. 2
3 No. 3
4 No. 4
No. 5
No. 6
No. 7
No. 8
RESET
[ENTER]
COPY MODE
1 NUMBER OF COPIES
1
2 COPY SPACE
1.0mm
[COPY]
CONDITION
setting screen (2/4)
2/4
1 ACCELERATION : 3
2 ASSIGN TOOL
3 TANGENTIAL MODE
4 OVERCUT
[1]
ACCELERATION
COND. 1 2 3 4 5 6 7 8
CONFIG 3 3 3 3 1 3 3 1
CONDITION No.
CONFIG UP DOWN
[2]
ASSIGN TOOL
COND. 1 2 3 4 5 6 7 8
CONFIG 1 1 1 1 1 2 2 2
CONDITION No.
CONFIG 1 1 2 2
[3]
TANGENTIAL MODE
COND. 1 2 3 4 5 6 7 8
CONFIG - - - - - - - -
CONDITION No.
CONFIG 1 MODE1 2 MODE2
3 OFF
[4]
OVERCUT
1 1:Condition No. 1
2 START 0.0mm
3 END 0.0mm
CONDITION
setting screen (3/4)
3/4
1 CREASE CONDITION
2 INITIAL DOWN FORCE
3 CUT LINE CONDITION
4 BLADE ADJUST
[1]
CREASE CONDITION
1 1:Condition No. 1
2 CREASE MODE = MODE1
3 REPEAT = 1
4 START POINT = 0.00mm
[2]
INITIAL DOWN FORCE
COND. 1 2 3 4 5 6 7 8
CONFIG 4 - - - - - - -
CONDITION No.
CONFIG UP DOWN
[3]
CUT LINE CONDITION
1 1:Condition No. 1
2 PERFORATION = OFF
[4]
TURN BLADE KNOB
CCW TO SHORTEN
BLADE TIP THEN
PRESS ENTER KEY!
Continued
CONDITION
setting screen (4/4)


Default screen
(Continued)
CONDITION
setting screen (3/4)
CONDITION
SETTING screen (4/4)
4/4
1 OVERLAYCUT
2 NUMBER FOR OVERLAY CUT
3 COND. No. FOR 1st CUT
CUT TEST
[1]
OVERLAYCUT
1 ON
2 OFF
SET
CANCEL
[2]
NUMBER FOR OVERLAY CUT
COND.
CONFIG
CONDITION No.
CONFIG
UP
DOWN
SET
CANCEL
[3]
COND. No. FOR 1st CUT
COND.
CONFIG
CONDITION No.
CONFIG
UP
DOWN
SET
CANCEL
MENU screen
[PAUSE/MENU]
1TOOL
2ARMS
3AREA
I/F
ADV.
TEST
MEM
TOOLS
SETTING screen (1/4)
[1]
TOOLS SETTING 1/4
1 TOOL UP/DOWN
2 TOOL OFFSET ADJ.
3 STEP PASS
4 OFFSET FORCE
[2]
TOOL OFFSET ADJ.
TOOL 1-2
2 TEST PATTERN
3 X=+0.0mm
4 Y=+0.0mm
SET
CANCEL
[3]
STEP PASS
1
SET
CANCEL
[4]
OFFSET FORCE
4
SET
CANCEL
TOOLS
SETTING screen (2/4)
TOOLS SETTING 2/4
1 OFFSET ANGLE
2 DATA SORTING
3 CONDITION PRIORITY
4 TOOL SELECT COMMAND SETTING
[1]
OFFSET ANGLE
30
SET
CANCEL
[2]
DATA SORTING
1 SORTING
OFF
SET
CANCEL
[3]
CONDITION PRIORITY
1 MANUAL
2 PROGRAM
SET
CANCEL
[4]
TOOL SELECT COMMAND SETTING
1 ENABLED
2 DISABLED
SET
CANCEL
TOOLS
SETTING screen (3/4)
TOOLS SETTING 3/4
1 TOOL UP MOVE
2 MOVING SPEED
3 TOOL SELECT PAUSE SETTING
4 TOOL UP HEIGHT
[1]
TOOL UP MOVE
1 ENABLED
2 DISABLED
SET
CANCEL
[2]
MOVING SPEED
AUTO
SET
CANCEL
[3]
TOOL SELECT PAUSE SETTING
1 ENABLED
2 DISABLED
SET
CANCEL
[4]
TOOL UP HEIGHT
1 NORMAL POSITION
2 HIGHER POSITION
SET
CANCEL
Continued
TOOLS
setting screen (4/4)


Default screen
(Continued)
TOOLS
SETTING screen (4/4)
TOOLS
SETTING screen (4/4)
TOOLS SETTING 4/4
1 BLADE WEAR ALARM SETUP
2 INITIAL B. ANGLE POSITION
3 TOOL DOWN SPEED
[1]
BLADE WEAR ALARM SETUP
1 BLADE WEAR DETECT. ON
2 SET BLADE GROUP
3 ALARM DISTANCE
4 CLEAR B.WEAR VALUE
[2]
INITIAL BLADE
ANGLE POSITION
1 2mm BELOW
2 Y OUTSIDE
3 XY OUTSIDE
4 SPECIFIED POSITION
SET CANCEL
[3]
TOOL DOWN SPEED
AUTO
SET CANCEL
MENU screen
[PAUSE/MENU]
1 TOOL 2 ARMS 3 AREA
I/F ADV. TEST MEM
ARMS
SETTING screen (1/5)
[2]
ARMS SETTING 1/5
1 DURING DETECTION
2 SCAN START POSITION
3 SCAN START POSITION(COMMAND)
4 REVERSE REGI. MARKS CUT
[1]
MOVE THE TOOL TO THE
STARTING POINT AND THEN
PRESS ENTER
CANCEL
[2]
SCAN START POSITION
1 SAVE POSITION
2 CURRENT POSITION
3 ORIGIN POSITION
4 AUTO ON
SET CANCEL
[3]
SCAN START POSITION(COMMAND)
1 SAVE POSITION
2 CURRENT POSITION
3 ORIGIN POSITION
SET CANCEL
[4]
REVERSE REGI. MARKS CUT
1 OFF
2 WIDTH
3.0mm
SET CANCEL
ARMS
SETTING screen (2/5)
ARMS SETTING 2/5
1 MARK SCAN MODE
2 REGISTRAION MARK TYPE
3 DISTANCE ADJUST
4 MARK SIZE
[1]
MARK SCAN MODE
1 MARK SCAN MODE
OFF
2 NUMBER OF POINTS
3POINTS
SET CANCEL
[2]
REGISTRAION MARK TYPE
1 TYPE 1
2 TYPE 2
3 TYPE 3
4 TYPE 4
REVERSE REGI. MARK OFF
SET CANCEL
[3]
DISTANCE ADJUST
1 MODE
USER
2 CUSTOM UNIT
10mm
SET CANCEL
[4]
MARK SIZE
20.0mm
0.100
SET CANCEL
ARMS
SETTING screen (3/5)
ARMS SETTING 3/5
1 MARK DISTANCE
2 AXIS ORIGIN OFFSET
3 SENSOR OFFSET ADJ.
4 SENSOR ADJUST
[1]
MARK DISTANCE
1 X=+0.0mm
2 Y=+0.0mm
SET CANCEL
[2]
AXIS ORIGIN OFFSET
1 X=+0.0mm
2 Y=+0.0mm
SET CANCEL
[3]
SENSOR OFFSET ADJ.
1 TEST PATTERN
2 SCAN
3 X=+0.0mm
4 Y=+0.0mm
SET CANCEL
[4]
SENSOR ADJUST
1 SCAN
2 DEFAULT
SET CANCEL
Continued
ARMS
SETTING screen (4/5)


Default screen
(Continued)
ARMS
SETTING screen (3/5)
ARMS
SETTING screen (4/5)
ARMS SETTING 4/5
1 MARK AUTO SCAN
2 SENSING SPEED
3 SENSING METHOD
4 SCAN STEP
[1]
MARK AUTO SCAN
1 ON
2 OFF
SET CANCEL
[2]
SENSING SPEED
5 cm/s
SET CANCEL
[3]
SENSING METHOD
1 ISM
2 NORMAL
SET CANCEL
[4]
SCAN STEP
2cm
SET CANCEL
ARMS
SETTING screen (5/5)
ARMS SETTING 5/5
1 SENSING LEVEL
2 TEST ARMS SENSOR
[1]
SENSING LEVEL
1 TYPE 1, 2
2 X = 70
3 Y = 70
4 DEFAULT
SET CANCEL
[2]
ARMS SETTING 5/5
TEST ARMS SENSOR
1 TYPE 1
2 TYPE 2
CANCEL
MENU screen
[PAUSE/MENU]
1 TOOL 2 ARMS 3 AREA
I/F ADV. TEST MEM
AREA
SETTING screen (1/2)
[3]
AREA PARAMETERS 1/2
1 SCALE
2 ROTATE
3 MIRROR
4 DISTANCE ADJUST
[1]
SCALE
1
SET CANCEL
[2]
ROTATE
1 ON
2 OFF
SET CANCEL
[3]
MIRROR
1 ON
2 OFF
SET CANCEL
[4]
DISTANCE ADJUST
1 OFF
2 X=+0.00%
3 Y=+0.00%
SET CANCEL
AREA
SETTING screen (2/2)
AREA PARAMETERS 2/2
1 AREA
2 VIEW POSITION
3 CONFIRM CUTTING RANGE
[1]
SET UPPER RIGHT
X=+610.000mm
Y=+920.000mm
1 DEFAULT
SET CANCEL
POSITION KEY
[2]
VIEW POSITION
X=+610.000mm
Y=+920.000mm
1 DEFAULT
SET CANCEL
POSITION KEY
[3]
AREA PARAMETERS 2/2
PRESS ENTER KEY AFTER
DATA IS TRANSFERRED
DONE
CANCEL
Continued


Default screen
(Continued)
MENU screen
[PAUSE/MENU]
1 TOOL 2 ARMS 3 AREA
I/F ADV. TEST MEM
[▲]
INTERFACE
setting screen (1/3)
INTERFACE 1/3
1 BUFFER CLEAR
2 COMMAND
3 HP-GL ORIGIN POINT
4 HP-GL MODEL EMULATED
[1]
BUFFER CLEAR
CONFIRM DATA FROM
HOST STOPPED.
1 YES, CLEAR
2 CANCEL
[2]
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2 HP-GL
3 AUTO
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[3]
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1 LOWER LEFT
2 CENTER
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1 7550
2 7595
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1 0.100 mm
2 0.050 mm
3 0.025 mm
4 0.010 mm
SET CANCEL
[2]
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1 BAUD RATE 9600
2 DATA 8 BIT
3 PARITY NONE
4 HARDWIRE HANDSHAKE
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[3]
1 DHCP:OFF
2 IP [192.168. 0. 1]
3 SUBNET MASK:
[255.255.255. 0]
4 GATEWAY:
[192.168. 0.254]
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2 DISABLED
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2 AUTO
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[▼]
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1 0.05mm
2 0.1mm
3 1.0mm
SET CANCEL
[2]
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[3]
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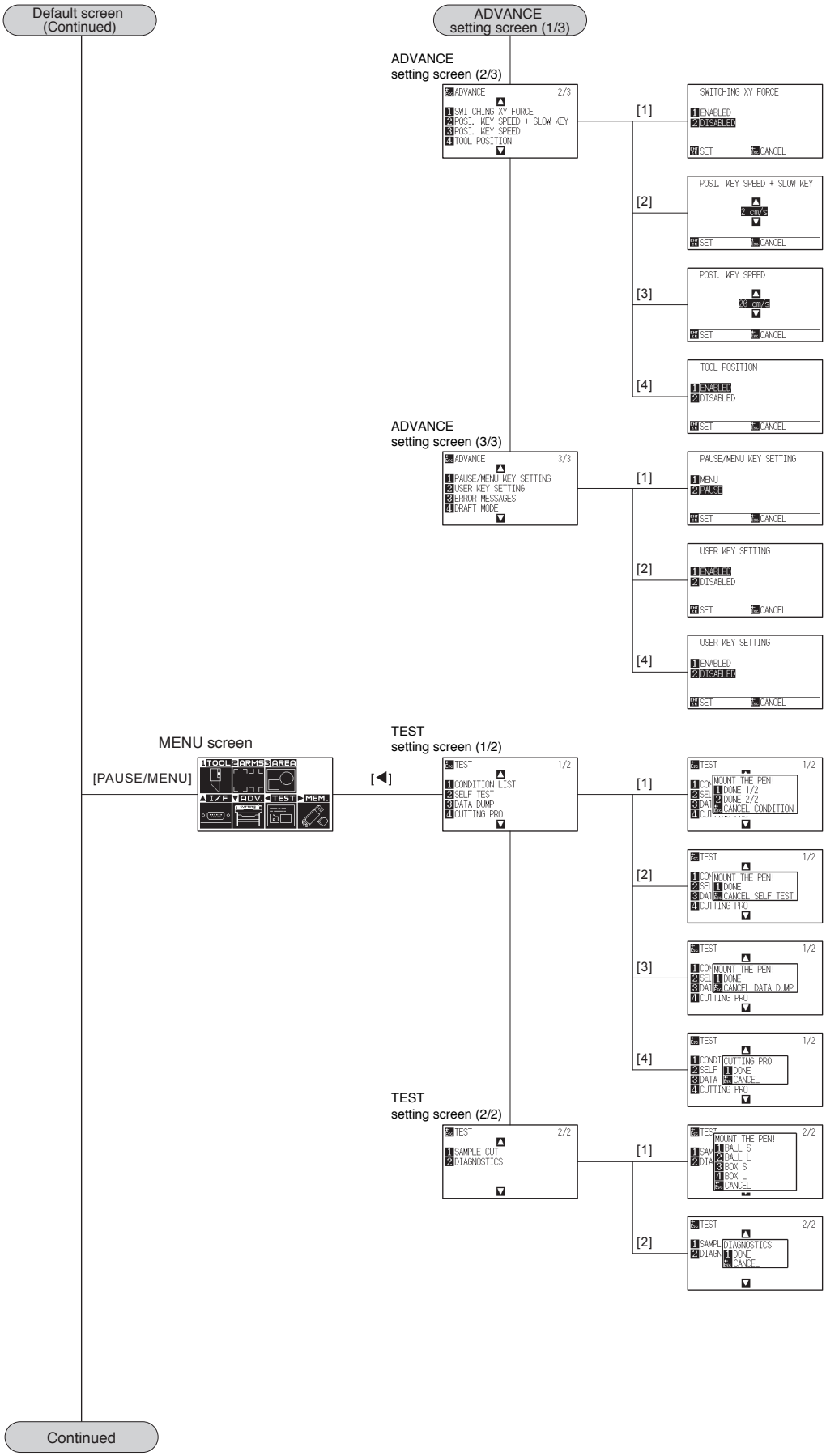
1 METRIC
2 INCH
SET CANCEL
[4]
BEEP FOR KEY OPE.
1 ON
2 OFF
SET CANCEL
Continued
ADVANCE
setting screen (2/3)


Default screen
(Continued)
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ADVANCE
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2 POSI. KEY SPEED + SLOW KEY
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[1]
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1 ENABLED
2 DISABLED
SET
CANCEL
[2]
POSI. KEY SPEED + SLOW KEY
2 cm/s
SET
CANCEL
[3]
POSI. KEY SPEED
20 cm/s
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[4]
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1 ENABLED
2 DISABLED
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2 DISABLED
SET
CANCEL
[4]
USER KEY SETTING
1 ENABLED
2 DISABLED
SET
CANCEL
MENU screen
[PAUSE/MENU]
1 TOOL 2 ARMS 3 AREA
I/F ADV. TEST MEM
[◀]
TEST
setting screen (1/2)
TEST 1/2
1 CONDITION LIST
2 SELF TEST
3 DATA DUMP
4 CUTTING PRO
[1]
MOUNT THE PEN!
1 DONE 1/2
2 DONE 2/2
CANCEL CONDITION
[2]
MOUNT THE PEN!
1 DONE
CANCEL SELF TEST
[3]
MOUNT THE PEN!
1 DONE
CANCEL DATA DUMP
[4]
CUTTING PRO
1 DONE
CANCEL
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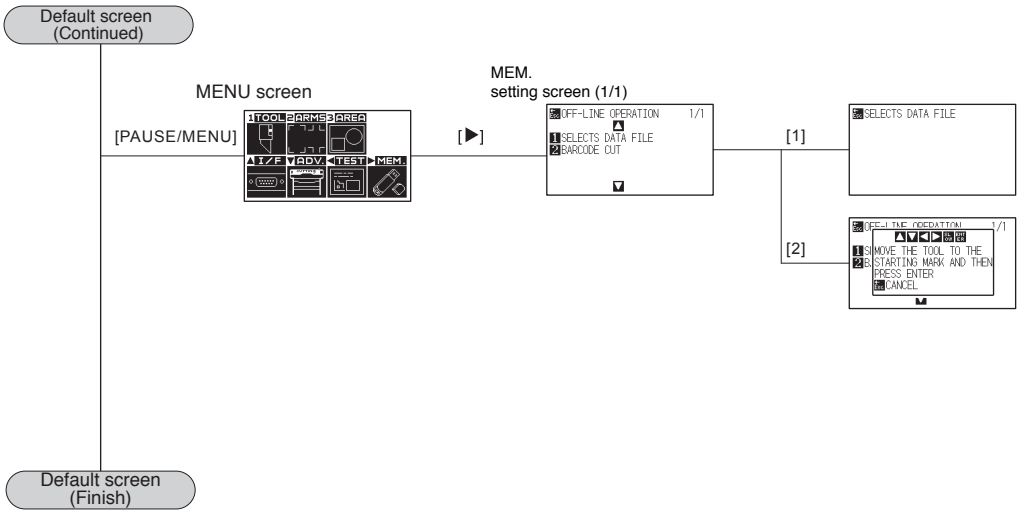
TEST 2/2
1 SAMPLE CUT
2 DIAGNOSTICS
[1]
MOUNT THE PEN!
1 BALL S
2 BALL L
3 BOX S
4 BOX L
CANCEL
[2]
DIAGNOSTICS
1 DONE
CANCEL
Continued


Default screen
(Continued)
MENU screen
[PAUSE/MENU]
1TOOL 2ARMS 3AREA
I/F ADV. TEST MEM
[▶]
MEM.
setting screen (1/1)
OFF-LINE OPERATION 1/1
1 SELECTS DATA FILE
2 BARCODE CUT
[1]
SELECTS DATA FILE
[2]
OFF-LINE OPERATION 1/1
1 2 3 4 5 6
1 2 MOVE THE TOOL TO THE STARTING MARK AND THEN PRESS ENTER
CANCEL
Default screen
(Finish)

A.5 Default menu setting

Menu items	Setting items	Initial value
TOOLS SETTING	TOOL INTERVAL ADJUSTMENT	0.0mm/0.0mm
	STEP PASS	1
	OFFSET FORCE	4
	OFFSET ANGLE	30
	DATA SORTING	OFF
	TOOL SELECT COMMAND SETTING	ENABLED
	TOOL UP MOVE	DISABLED
	MOVING SPEED	30 cm/s
	TOOL SELECT PAUSE SETTING	DISABLED
	CONDITION PRIORITY	PROGRAM
	TOOL UP HEIGHT	NORMAL
	BLADE WEAR ALARM SETUP	OFF
	INITIAL BLADE ANGLE POSITION	2 mm BELOW
	TOOL DOWN SPEED	AUTO
ARMS SETTING	SCAN START POSITION	CURRENT POSITION
	SCAN START POSITION (COMMAND)	CURRENT POSITION
	REVERSE REGISTRATION MARK CUTTING	OFF
	REVERSE REGISTRATION MARK WIDTH	3.0mm
	MARK SCAN MODE	OFF
	NUMBER OF POINTS	3 POINTS
	MARK TYPE	TYPE 2
	MODE	USER
	CUSTOM UNIT	10mm
	MARK SIZE	20mm
	MARK DISTANCE (X)	0.0
	MARK DISTANCE (Y)	0.0
	AXIS ORIGIN OFFSET (X)	0.0
	AXIS ORIGIN OFFSET (Y)	0.0
	SENSOR OFFSET ADJ. (X)	0.0
	SENSOR OFFSET ADJ. (Y)	0.0
	MARK AUTO SCAN	ON
	SENSING SPEED	5cm/s
	SENSING METHOD	NORMAL
	SCAN STEP	0µm
	SENSING LEVEL	TYPE 1, TYPE 2
	SENSING LEVEL (X)	TYPE 1, 2: 70 TYPE 3, 4: 85 REVERSE TYPE 1, 2: 70
	SENSING LEVEL (Y)	TYPE 1, 2: 70 TYPE 3, 4: 85 REVERSE TYPE 1, 2: 70
AREA PARAMETER SETTING	SCALE	1
	ROTATE	OFF
	MIRROR	OFF
	DISTANCE ADJUST	OFF, X = +0.00%, Y=+0.00%
	VIEW POSITION	DEFAULT
	AREA (LOWER LEFT)	DEFAULT
	AREA (UPPER RIGHT)	DEFAULT

Menu items	Setting items	Initial value
INTERFACE SETTING	COMMAND	AUTO
	HP-GL ORIGIN POINT	LOWER LEFT
	HP-GL MODEL EMULATED	7595
	GP-GL STEP SIZE	0.100mm
	RS232C (FORWARDING CONDITION NUMBER)	No.1
	RS232C: FORWARDING CONDITION BAUD RATE/BIT LENGTH/PARITY/ HANDSHAKE	RS232C NO.1: 9600/8/NONE/HARD RS232C NO.2: 9600/7/EVEN/HARD RS232C NO.3: 9600/8/EVEN/XONXOFF
	LAN DHCP	OFF
	LAN IP	192.168.0.1
	LAN SUBNET MASK	255.255.255.0
	LAN GATEWAY	192.168.0.254
	":", ":" COMMAND	ENABLED
	"W" COMMAND	TOOL UP
	CIRCLE COMMAND RESOLUTION	DEFAULT
ADVANCE SETTING	MOVE STEP	0.05 mm
	LANGUAGE SELECTION	Select when initially turning on power
	LENGTH UNIT	Select when initially turning on power
	OPERATION KEY BUZZER	ON
	X & Y FORCE SWITCH	DISABLED
	POSITION KEY LOW MOVEMENT SPEED	1cm/s
	POSITION KEY HIGH MOVEMENT SPEED	10cm/s
	TOOL POSITION DISPLAY	ENABLED
	PAUSE KEY SELECT	PAUSE
	DRAFT MODE	DISABLED
	USER KEY	ENABLED
TEST	NO SETTINGS	—
OFFLINE OUTPUT (MEM.)	NO SETTINGS	—

Menu items		Setting items	Initial value
TOOL SETTING	CONDITION NO. 1	Condition No.	Condition No. 1
		TOOL	PEN
		SPEED	30
		FORCE	14
		ACCELERATION	3
		OFFLINE NUMBER SET	1
		TANGENTIAL MODE	OFF
		OVERCUT (START / END)	0.0/0.0
		CREASING SET	Condition No. -/ Mode 1/ the number of creasing 1/0.00mm
		INITIAL DOWN FORCE	4
		PERFORATION PATTERN	OFF
		BLADE LENGTH ADJUSTMENT	–
		OVERLAY	OFF
	CONDITION NO. 2	Condition No.	Condition No. 2
		TOOL	CB15U
		SPEED/FORCE/ACCELERATION/ TOOL NO.	30/16/3/1
		Same as Condition No. 1 from TANGENTIAL MODE to Overlay.	Same as Condition No. 1
	CONDITION NO. 3	Condition No.	Condition No. 3
		TOOL	CB15U-K30
		SPEED/FORCE/ACCELERATION/ TOOL NO.	30/16/3/1
		Same as Condition No. 1 from TANGENTIAL MODE to Overlay.	Same as Condition No. 1
	CONDITION NO. 4	Condition No.	Condition No. 4
		TOOL	CB09U
		SPEED/FORCE/ACCELERATION/ TOOL NO.	30/14/3/1
		Same as Condition No. 1 from TANGENTIAL MODE to Overlay.	Same as Condition No. 1
	CONDITION NO. 5	Condition No.	Condition No. 5
		TOOL	Other
		SPEED/FORCE/ACCELERATION/ TOOL NO.	30/16/3/1
		Same as Condition No. 1 from TANGENTIAL MODE to Overlay.	Same as Condition No. 1
	CONDITION NO. 6	Condition No.	Condition No. 6
		TOOL	CT-002
		SPEED/FORCE/ACCELERATION/ TOOL NO.	30/16/3/2
		Same as Condition No. 1 from TANGENTIAL MODE to Overlay.	Same as Condition No. 1
	CONDITION NO. 7	Condition No.	Condition No. 7
		TOOL	CP001
		SPEED/FORCE/ACCELERATION/ TOOL NO.	30/16/3/2
		Same as Condition No. 1 from TANGENTIAL MODE to Overlay.	Same as Condition No. 1
	CONDITION NO. 8	Condition No.	Condition No. 8
		TOOL	Other
		SPEED/FORCE/ACCELERATION/ TOOL NO.	30/16/3/2
		Same as Condition No. 1 from TANGENTIAL MODE to Overlay.	Same as Condition No. 1

* The initial values of setting items is subject to change.

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