# OPERATION MANUAL

**Mimaki®**

# *CFX* *Series*

# OPERATION MANUAL

# MIMAKI ENGINEERING CO., LTD.

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# CAUTION

## DISCLAIMERS

- MIMAKI ENGINEERING REJECTS ALL LIABILITY FOR DAMAGE ARISING DIRECTLY OR INDIRECTLY FROM THE USE OF THE CFX ("THIS MACHINE" HEREINAFTER), WHETHER OR NOT THE PRODUCT IS FAULTY.
- MIMAKI ENGINEERING REJECTS ALL LIABILITY FOR DAMAGE, DIRECT OR INDIRECT, TO MATERIALS CREATED WHILE USING THIS MACHINE.
- USING THIS MACHINE IN CONJUNCTION WITH DEVICES OTHER THAN THOSE RECOMMENDED BY MIMAKI ENGINEERING MAY RESULT IN FIRE OR ACCIDENTS. SUCH INCIDENTS ARE NOT COVERED BY THE PRODUCT WARRANTY. MIMAKI ENGINEERING REJECTS ALL LIABILITY FOR DAMAGE, DIRECT OR INDIRECT, ARISING FROM SUCH INCIDENTS.
- USE ONLY GENUINE MIMAKI ENGINEERING TOOLS AND PARTS. USE OF OTHER PRODUCTS MAY RESULT IN FAILURES OR REDUCE CUT QUALITY. SUCH INCIDENTS ARE NOT COVERED BY THE PRODUCT WARRANTY. MIMAKI ENGINEERING REJECTS ALL LIABILITY FOR DAMAGE, DIRECT OR INDIRECT, ARISING FROM SUCH INCIDENTS.

## TV and Radio Interference

In use, the machine emits high-frequency electromagnetic radiation. If installed or used incorrectly, this may result in TV or radio interference. Accordingly, there is no assurance that the machine will not affect special radio or TV equipment.
If you believe the machine is interfering with radio/TV reception, turn it off to investigate. If the interference disappears when the power is turned off, the machine is likely to be the cause of the interference.
Try any of the following solutions or combinations of these solutions:

- Change the orientation of the TV or radio antenna to find a position where interference does not occur.
- Place TVs or radios away from the product.
- Plug TVs or radios into outlets on a different power supply path than the product.

## Usage Restrictions

### Usage Restrictions

The machine can be dangerous due to parts that move at high speeds and parts with high temperature. This machine is to be used only by those having complete understanding of dangers associated with these parts.

### User Restrictions

Users of the machine must be properly trained. Restrict the operation of the machine to properly trained users.

### Area Restrictions

- Only adequately trained and versed individuals are allowed to come closer to the equipment. Set area restrictions within the range shown in the following figure. As for the method of area restriction, the machine should be installed in a dedicated room or enclosed for everyone to understand that it is a hazardous area.
- Follow EN ISO13857 standards when securing the area with safety fence.
- When installing the setup in a dedicated room, install locks and interlocks on the door of the room, and lastly conduct risk assessment at the installation site before use.

### Voluntary restraint of electromagnetic interference

Only adequately trained and versed individuals are allowed to come closer to the equipment. Set area restrictions within the range shown in the following figure.
This product is VCCI Class A information technology equipment. Use of the machine in a residential environment may cause interference.
Such incidents may require the user to take appropriate measures.                    VCCI-A

**CFX-2513**



**CFX-2531**

**CFX-2550**



1000 mm or more

7950 mm or more

1000 mm or more

1000 mm or more

1000 mm or more

6050 mm or more
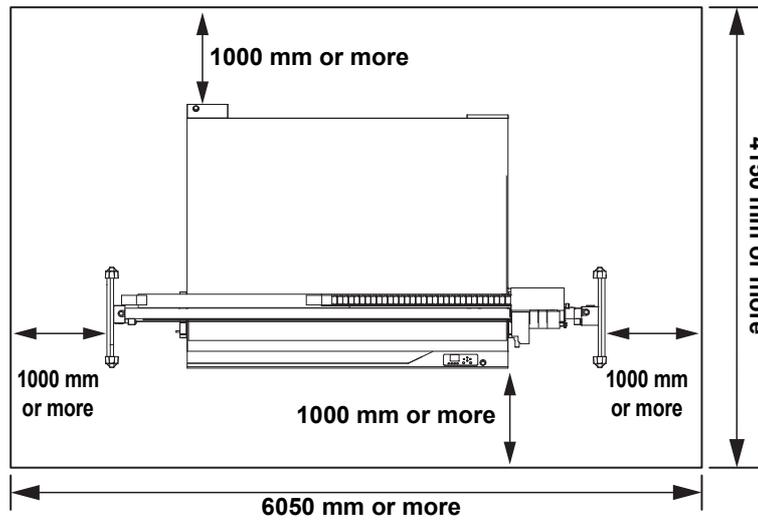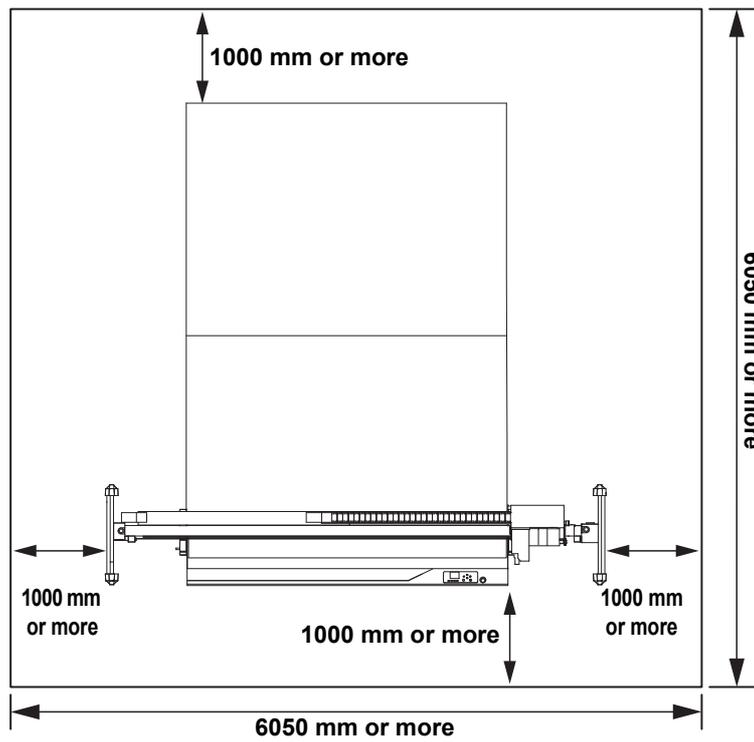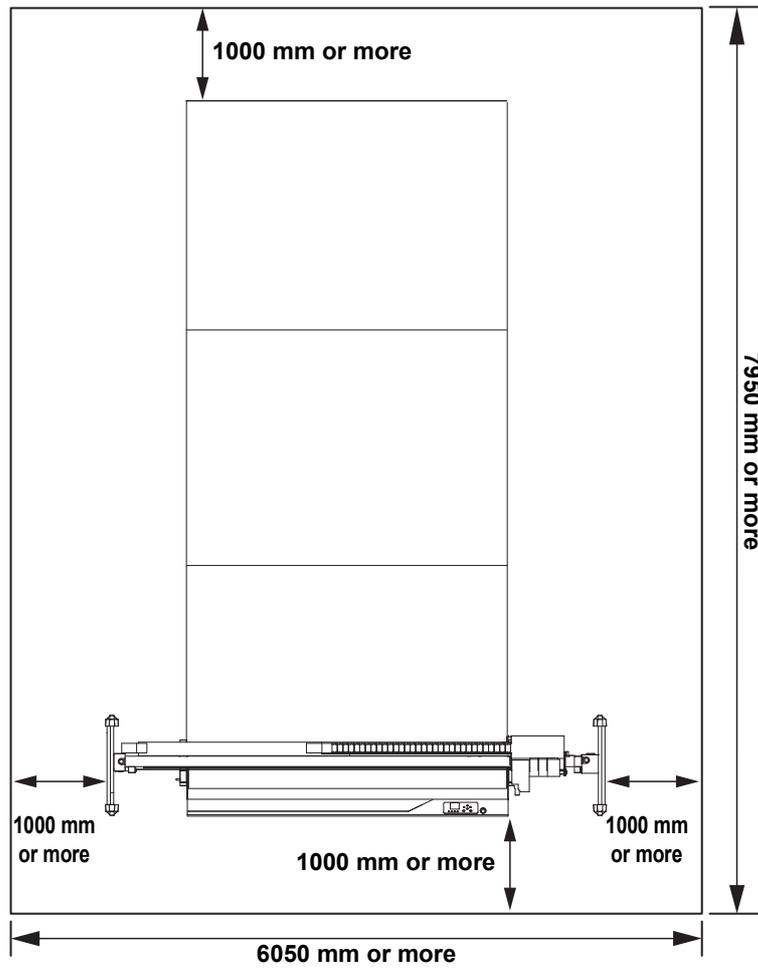
# Introduction

Thank you for purchasing a CFX Series flatbed cutting plotter.

This manual describes the CFX Series.

Read this manual carefully and make sure you understand it before use. Keep the manual in a convenient place for reference as needed.

## About This Operation Manual

- This manual describes the operation, maintenance, and other handling of CFX Series flatbed cutting plotters ("the machine").
- Read this manual carefully and make sure you understand it before use. Keep the manual in a convenient place for reference as needed.
- Ensure that the manual reaches the person using the machine.
- Although every effort has been made to ensure the accuracy of the information in this manual, if you find any issues, contact our service office.
- This manual is subject to change without notice for improvement.
- You can also download the latest manual from our website.



- The machine uses sharp blades. It can be very hazardous during operation. Never put your hands or head near the machine head. There is a risk of injury.

## Unit abbreviations

The following abbreviations may appear in titles and elsewhere in the manual.

| No. | Abbreviation | Name |
|-----|--------------|------|
| (1) | TUT-15 | Tangential unit |
| (2) | TUT-30 | High-pressure tangential unit |
| (3) | R10 | Router unit |

## Accessories

Confirm that all accessories have been included. (☞P.8-6)
If any accessories are missing or damaged, contact a dealer or our sales office.

# Safety Precautions

## Symbols

In this manual, symbols indicate and explain precautions. The indicated symbol varies depending on the nature of the precaution. Make sure you understand the meaning of each symbol and use the machine safely and correctly.

### Examples of symbols

| | Explanation |
|---|---|
| **Warning** | Failure to observe the instructions given with the [Warning] symbol may result in death or serious injuries to personnel. Be sure to read the precaution carefully and use the machine correctly. |
| **Caution** | Failure to observe the instructions given with the [Caution] symbol may result in injury to personnel or damage to property. |
| Important! | Important notes regarding use of the machine are given with the [Important] symbol. Use as reference information. |
| Hint! | Useful information is given with the [Tip] symbol. Use as reference information. |
| ☞ | Indicates the corresponding page for related information. |
| ⚡ | The △ symbol indicates precautions (including danger and warning items) that must be followed. Specific precautions are shown in the figure, as in the warning of electric shock shown at left. |
| 🚫 | The ◯ symbol indicates prohibited actions. Specifically prohibited actions are shown in or near the figure, as in the prohibition of disassembly shown at left. |
| | The ● symbol indicates actions that must be taken or instructions that must be followed. Specific instruction are shown in the figure, as in holding cords by the plug when unplugging them, shown at left. |

# ⚠ Warning

## Do not disassemble or modify

- Never disassemble or modify plotter main unit or vacuum unit. Disassembling or modifying will result either in electric shock or malfunction of this machine.

## Handling of cables

- Do not attempt to modify power or communication cables, and avoid damaging or breaking them. Placing heavy objects on, heating, or pulling the cable may damage it, which may result in fire or electric shock.

## Do not use in humid environments

- Do not use in humid environments, and do not splash water on the equipment.
  Failure to observe these instructions may result in fire, electric shock, or failure.

## Handling of tools

- Store cutter holders and blades out of the reach of children. Do not place cutter holders or blades on the tray by the operating panel.

## When a problem occurs

- Use of the machine under an abnormal condition, as when it is emitting smoke or fumes, may result in fire or electric shock. Turn off the power switch immediately, and then be sure to unplug the machine from the outlet. Once you have confirmed that smoke is no longer being emitted, request repair from your dealer or service office. Never attempt to repair the machine yourself, which is hazardous.

## Entrust maintenance to service engineers

- In the event of failure, entrust maintenance work to service engineers. Never perform maintenance work by yourself, which poses risks including electric shock.

## Handling of the power cable

- Use the power cable provided.
- Do not attempt to modify the cable, and avoid damaging or breaking it. Placing heavy objects on, heating, or pulling the cable may damage it, which may result in fire or electric shock.

## Power supply and voltage

- The machine contains parts that generate high voltage. Electrical work by individuals other than licensed electricians is prohibited.
- To prevent electric shocks during maintenance, always turn the main power switch off, and remove the power plug. Capacitors of some units may take one minute to discharge. Before maintenance, always wait 3 minutes after turning off the main power supply switch and disconnecting the power inlet.
- Always ground the machine to prevent electric shock, because there is significant leakage current.
- Use a power supply that meets the power supply specifications. Always plug the power cable into a grounded socket. Failure to observe these instructions may result in fire or electric shock.

- The task of turning on the main power supply switch of the machine should be performed only by personnel who are thoroughly familiarity with using the machine.

## Preventive measures against dust

- When handling dust-producing substance that pose health hazards, wear a mask or take other protective measures.

## Grounding work

- The machine must be grounded to protect against electric shock.
- Ground in accordance with Class C grounding work, formerly Type 3 grounding work.

## Handling of grease

- If grease enters a user's eyes, wash with clean water for 15 minutes and seek medical attention.
- If grease gets on skin or clothing, wipe it off well and wash thoroughly with water and soap.
- If you feel ill after inhaling a large amount of vapor, go to a place with fresh air, rest under a blanket or the like to stay warm, and seek medical attention.
- If grease is accidentally ingested, seek medical attention immediately without inducing vomiting.
- In case of fire involving grease, initially use extinguishing agents such as powder, carbon dioxide, or dry sand. For large fires, use foam extinguishers to block out air around the fire. Evacuate people not involved in firefighting to a safe place.
- Do not use water to extinguish grease fires, because this is hazardous and may cause the fire to spread.
- Wear protective equipment when fighting fires. Fight fires from upwind.

## Safety measures

Take the following safety measures when working with flammable materials.
- Before working with these materials, make sure that wood chips or other remains are removed.
- Do not leave the machine unattended while it is in use.
- Keep a fire extinguisher nearby.
- Keep flammable materials away from the machine.

| ⚠ Warning | |
|---|---|
| **Machine disposal** | |
| 🚫! | • Request an industrial waste disposal company to dispose of the machine.<br>• Dispose of in accordance with local regulations. |
| **Other usage precautions** | |
| 🚷 | • Keep children away from this machine. |

## For safe operation

| ⚠ Caution | | | |
|---|---|---|---|
| **Do not place heavy objects on cables** | | **Wait 30 seconds before restoring power** | |
| 🚫 | • Do not use force to bend the power or communication cable, and do not place heavy objects on them.<br>Failure to observe these instructions may break the cables, cause electric shock, generate heat, or cause fires. | ! | • Wait 30 seconds before turning the machine on again after it is turned off.<br>Failure to observe these instructions may result in malfunctioning. |
| **Do not sit on the main unit** | | **Keep your face away from the cutting panel during use** | |
| 🚫 | • Do not sit on the main unit. This may lead to failure. | 🚫 | • Keep your face and hands away from the cutting panel during cutting or drawing. Failure to observe this precaution poses a risk of injury from the cutter. |
| **Do not work while wearing baggy clothing or jewelry** | | **Contact Mimaki before moving the plotter to another location** | |
| 🚫 | • Do not wear baggy clothes or fashion accessories while working. Keep long hair bound. | ! | • Plotters are precision instruments. Contact Mimaki in advance if you will move the plotter to another location. |

## For safe installation

| ⚠ Caution | | | |
|---|---|---|---|
| **Exposed to direct sunlight** | | **Where vibration occurs** | |
| 🚫 | • Do not install where direct sunlight or the like will cause the cutting panel surface temperature to exceed 60°C. Failure to observe this precaution may result in deformation of the cutting panel or failure. | 🚫 | • Normal results cannot be obtained where vibration occurs. |
| **Exposed to significant changes in temperature or humidity** | | **Dusty, dirty, or smoky environments** | |
| ! | • Use the machine under the following environmental conditions:<br>• Operating environment: 10° to 35°C, 35% to 75% (RH) | ! | • Plotters are precision instruments. Do not use in areas filled with dust or dirt. |
| **Exposed to direct air flow from an air conditioner or similar location** | | **Near flammable materials** | |
| 🚫 | • Cutting quality may be adversely affected. | ! | • Do not place flammable materials near the vacuum or in front of the exhaust area, because exhaust air becomes very hot when the vacuum is used. |
| **Places with uneven surfaces** | | **Places with open flame** | |
| 🚫 | • Normal results cannot be obtained unless the plotter is level. Failure to observe these instructions may also result in failure. | ! | • Do not place vases, pot plants, cups, cosmetics, containers of chemicals or water, or small metal objects on top of this machine. There is a risk of failure, electric shock, or fire if liquids or items drop inside the machine. |

# Warning Labels

Warning labels have been applied to the machine. Make sure you fully understand the details indicated on the various warning labels.
If a warning label is illegible due to stains or has come off, purchase a new one from a dealer or our service office.
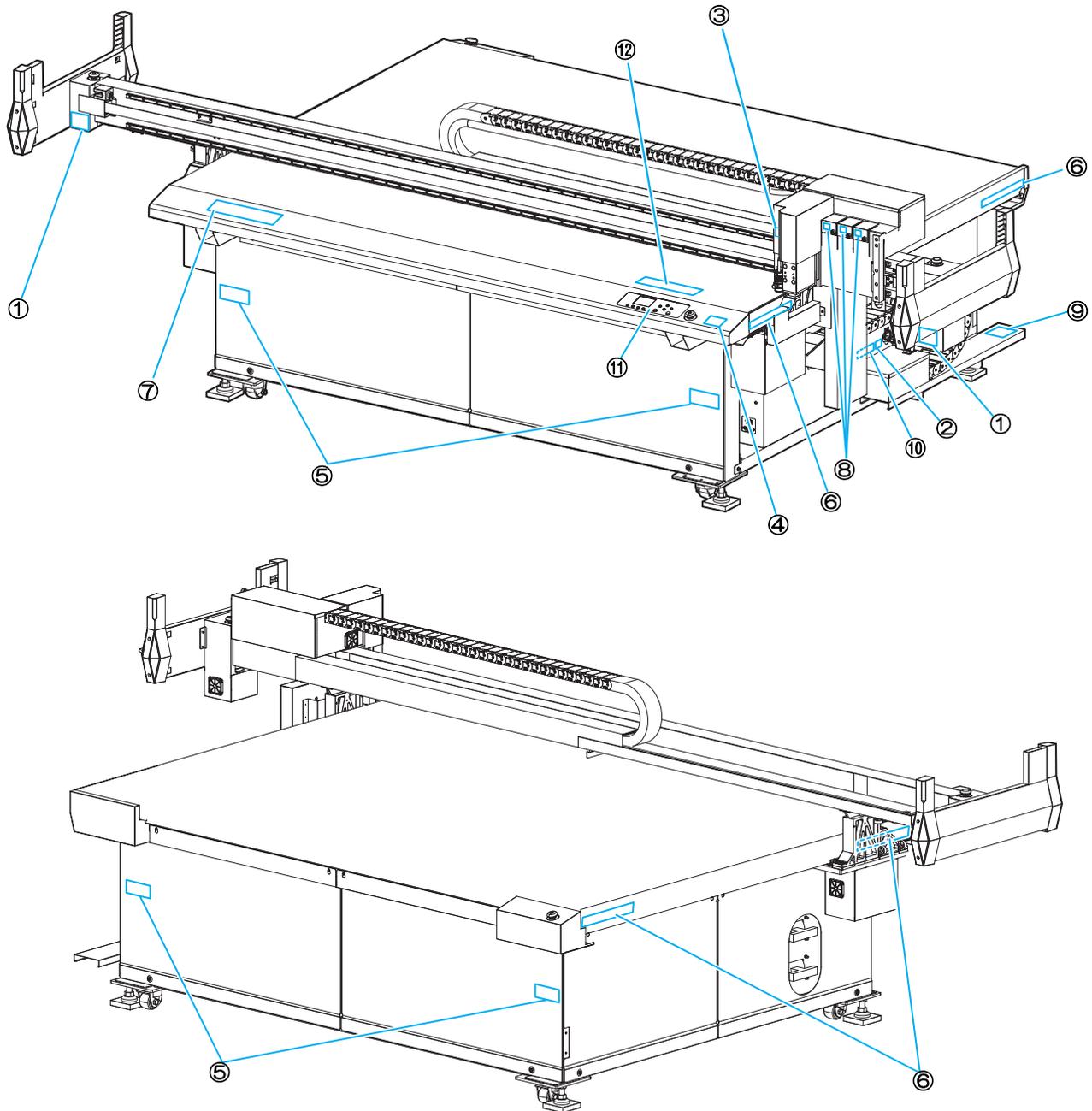
**Optional accessories**
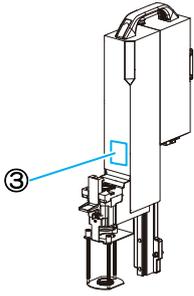


**Tangential
unit (TUT-15)**
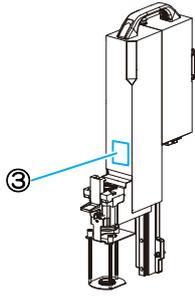
**High-pressure
tangential
unit (TUT-30)**
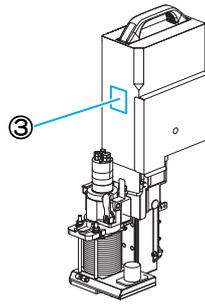
**Router unit
(R10)**
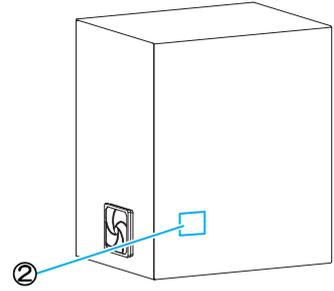
**Router unit
electrical box**

| No. | Order code | Label | Details |
|---|---|---|---|
| 1 | M902667 |  | PL label<br>Be careful around moving parts.<br>Failure to observe these instructions may result in injury. |
| 2 | M907935 |  | Hazardous high voltage inside. |
| 3 | M905694 |  | Be careful around the blade. |
| 4 | M915343 |  | Advises cautions regarding tool installation. |
| 5 | M909381 |  | Keep fingers and body away from moving parts to avoid injury. |
| 6 | M906115 |  | Keep fingers and body away from moving parts to avoid injury. |
| 7 | M902663 |  | Keep fingers and face away from the machine when the head is moving and when the machine is in remote mode, to avoid injury. |
| 8 | M918910 |  | Attach the cover if an optional unit is not used. |

| 9 | M909385 |  | Prohibits putting feet on the indicated place. |
|---|---------|---|---|
| 10 | M905624 |  | Be sure to ground the machine, in consideration of the high leakage current. |
| 11 | M918881 |  | Standby label |
| 12*1 | M915322 |  | Take safety measures when working with flammable materials. |

*1. Included with purchase of R10 option.

# Chapter 1
# Setup

💡 **About this chapter**

This chapter describes information essential before use, such as part names.

Install the machine in a location where the following installation space is available.

> ⚠️ **Caution**
>
> • Keep the installation space free of other objects. These may cause you to trip.

| Model | Width | Depth | Height | Gross weight | Vacuum units |
|-------|-------|-------|--------|--------------|--------------|
| CFX-2513 | 4050 mm | 2150 mm | 1500 mm | Approximately 440 kg | 1 |
| CFX-2531 | 4050 mm | 4050 mm | 1500 mm | Approximately 660 kg | 1 |
| CFX-2550 | 4050 mm | 5950 mm | 1500 mm | Approximately 880 kg | 2 |
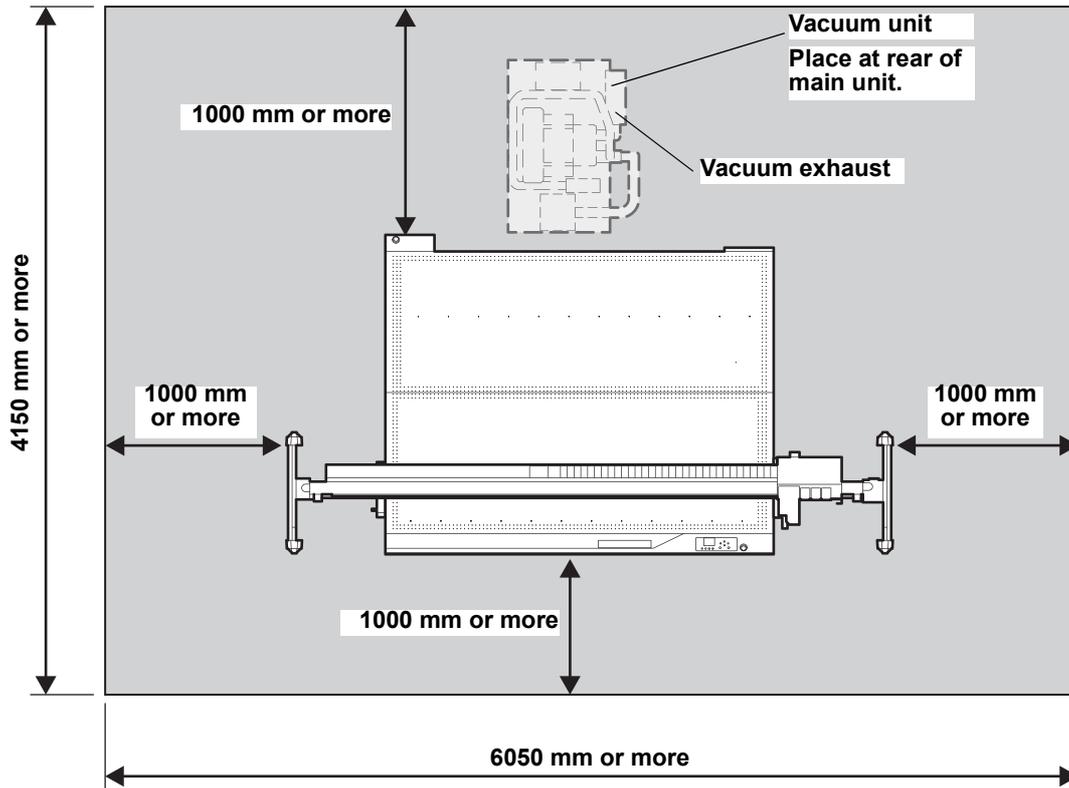


Note: Figure shows installation in the case of CFX-2513

## Vacuum (Optional) Installation Position

Vacuum units should be installed at the rear of the main unit as shown above.

> ⚠️ **Caution**
>
> • The vacuum unit body and exhaust air become hot. Do not place flammable objects or material near the vacuum unit or in the direction of exhaust.
> • Be careful to avoid burns, because the vacuum unit will remain hot for a while even after it is stopped.
> • Turn off the vacuum unit when pausing work.
> • Avoid blocking the vacuum exhaust port or placing objects near the exhaust port, which will increase the internal temperature and may lead to failure.

## Moving the Machine

If you must move the machine on the same floor (assuming that the floor is flat), do the following.

> **Important!**
>
> • Before moving the machine, contact our sales office or your dealer.
> Attempting to move the machine by yourself may lead to failure or damage.
> Entrust moving the machine to professionals.

> ⚠️ **Caution**
>
> • Avoid significant vibration when the machine is moved.
> • After the machine is moved, use the level foot to level the machine.

# Part Names and Functions

## Main Unit
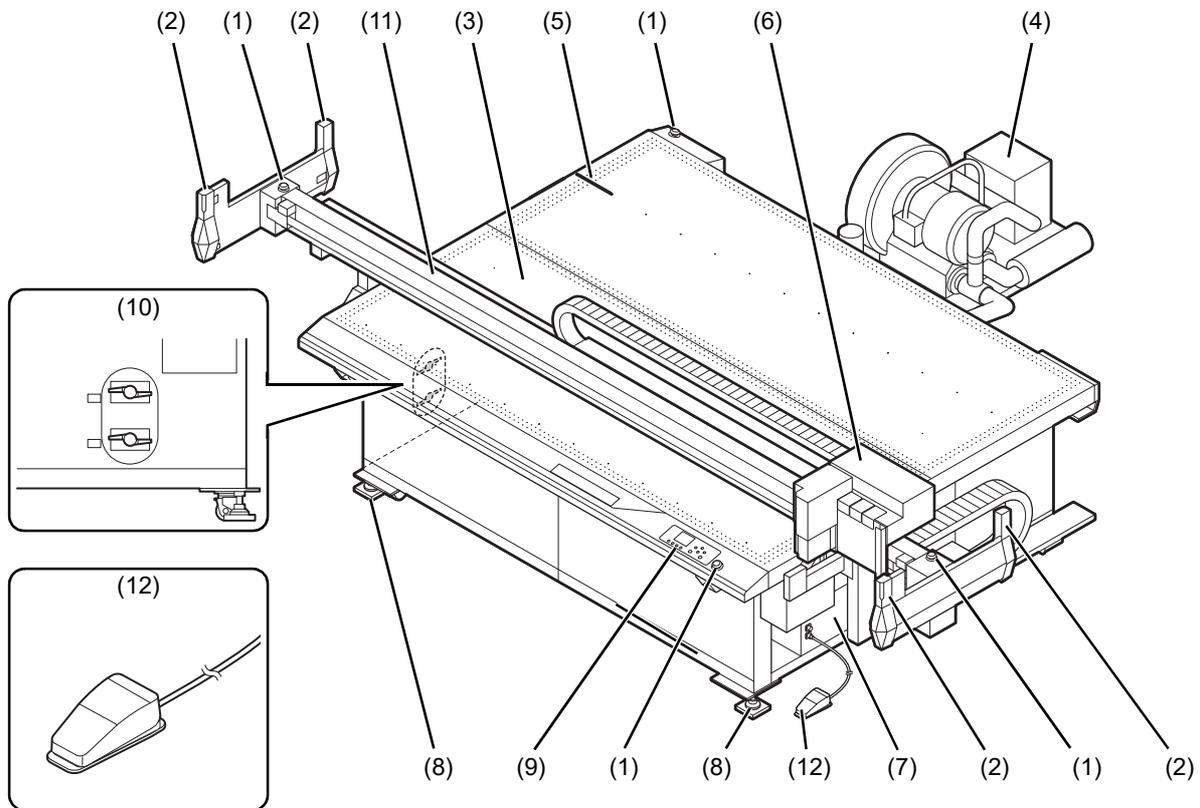


| No. | Name | Function |
|---|---|---|
| **(1)** | Emergency switch | Press in case of emergency. Forces the power off and stops operation. |
| **(2)** | Safety sensors | Detects operators or obstructions within the head range of motion. |
| **(3)** | Cutting panel (felt mat) | Holds the work. Features a regular array of small holes for vacuum adhesion. The felt mat is placed here. |
| **(4)** | Vacuum unit (optional) | The work is held by suction against the cutting panel. |
| **(5)** | Work guide | Place the work against the guide to set it up straight. |
| **(6)** | Head | Holds various tools. Tools you can install vary depending on the unit. |
| **(7)** | Electrical box | Contains PCBs and other components. |
| **(8)** | Adjuster foot | Used to adjust the height of the legs as needed to keep the cutting panel surface level. |
| **(9)** | Operating panel | Used to configure necessary settings for the machine. |
| **(10)** | Suction area range selection valve | Used to select the suction area, by opening or closing the valve. |
| **(11)** | Y-bar | Moves the head in the Y direction. |
| **(12)** | Foot switch[1] | Depressed with your foot to switch the vacuum suction on and off. |

*1: For CFX-2513, an optional part. Included with CFX-2531/2550.

# Head

## Front
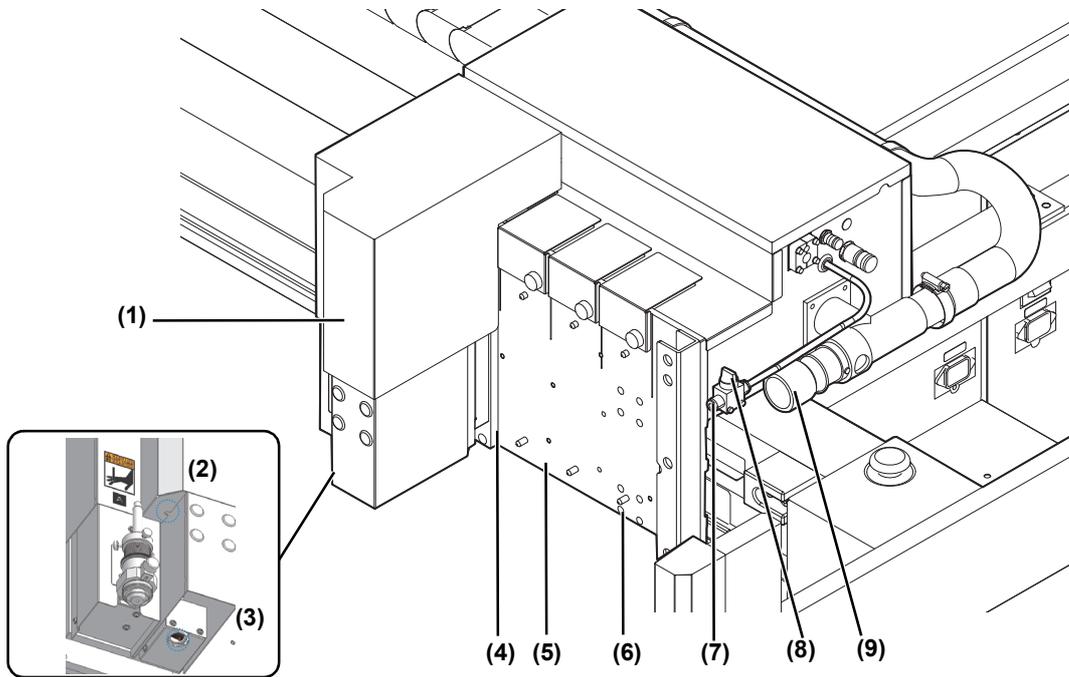


| | Name | Function |
|---|---|---|
| **(1)** | Station A | A pen or swivel cutter is mounted on the standard unit. |
| **(2)** | LED pointer | Used for alignment or setting the origin for reading register marks. |
| **(3)** | Mark sensor | Sensor for detecting register marks. |
| **(4)** | Station B | Used for mounting a tangential unit. |
| **(5)** | Station C | Used for mounting a tangential unit. |
| **(6)** | Station D | Used for mounting a tangential unit. |
| **(7)** | Auxiliary air connection port[*1] | For attaching a cleaning hose to supply auxiliary air. |
| **(8)** | Auxiliary air valve[*1] | Switches auxiliary air on/off (simple duster). |
| **(9)** | Router vacuum connection port[*1] | Vacuum connection port for router unit. |

[*1]. Only included with R10.

## Electrical Box Side

Interfaces
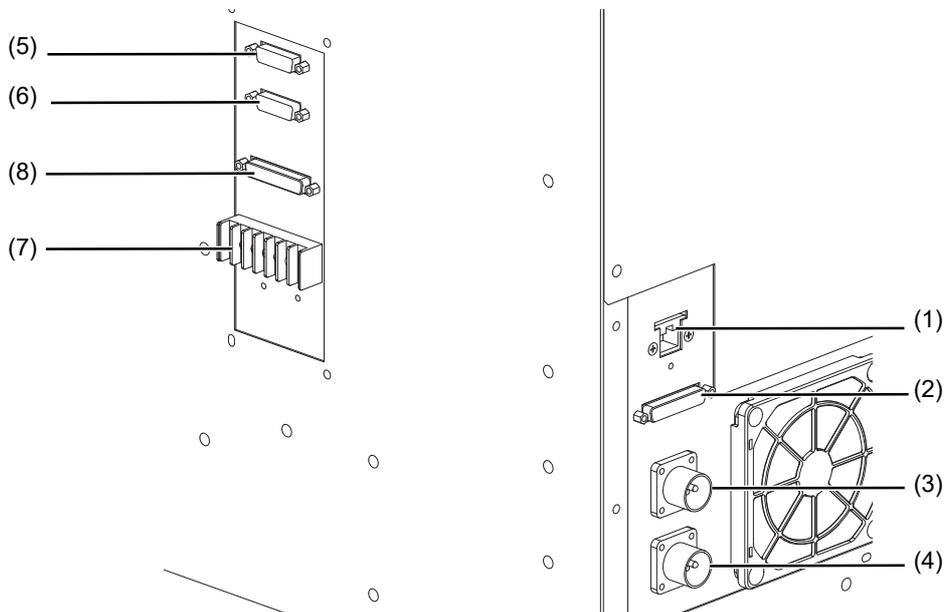


| | Name | Function |
|---|---|---|
| **(1)** | Ethernet connector | Connect a computer using a LAN cable. |
| **(2)** | RS-232C interface | Connect a computer using an RS-232C interface cable. |
| **(3)** | Foot switch 1 port | Connect a foot switch. |
| **(4)** | Foot switch 2 port | Connect a foot switch. |
| **(5)** | Signal line connector 1 for vacuum | Connect an optional vacuum unit. |
| **(6)** | Signal line connector 2 for vacuum | Connect an optional vacuum unit. |
| **(7)** | External I/O terminal block | This is not used. Do not change the wiring. |
| **(8)** | Connector for optional accessories | Connect other optional units. |

Main power supply
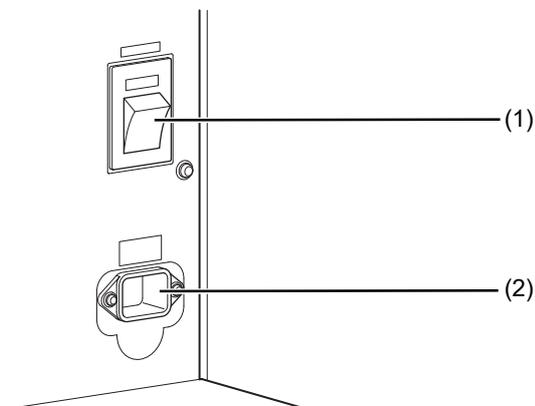


| | Name | Function |
|---|---|---|
| **(1)** | Main power supply switch | For turning the machine's main power supply on/off. Normally, leave in the on position. Switch to off for maintenance. |
| **(2)** | Power inlet | Connect the plotter power cable. |

**1-5**

## Vacuum Unit Electrical Box (Optional)
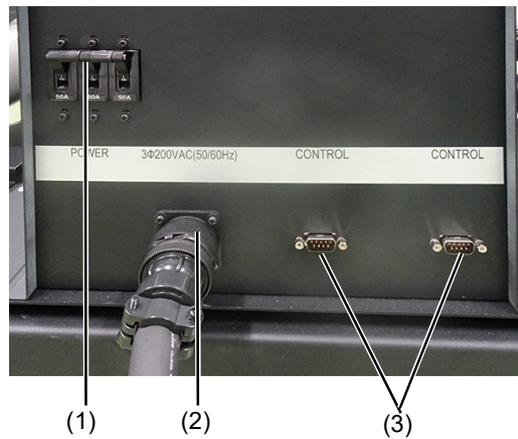


| | Name | Function |
|---|---|---|
| **(1)** | Power switch | For turning the vacuum unit on/off. Normally, leave in the on position. Switch to off for maintenance. |
| **(2)** | Power supply connector | Connect the vacuum power cable. |
| **(3)** | Connector for control | Connect to the vacuum connector on the electrical box. |

## Head Side (When Equipped with Option/R10)
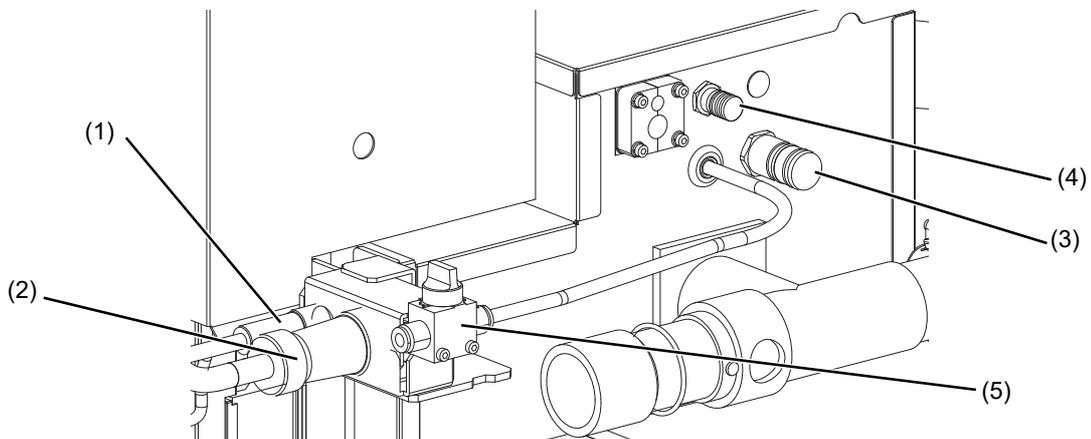


| | Name | Function |
|---|---|---|
| **(1)** | Power supply connector | Connects the motor cable for R10. |
| **(2)** | Control connector | Connects the control cable for R10. |
| **(3)** | Cooling air tube connector | Connects the R10 cooling air tube. |
| **(4)** | Dust collector nozzle tube connector | Blows air inside the R10 dust collector brush. |
| **(5)** | Service air tube connector | Allows an air gun or similar to be connected. |

## Operating Panel

This is used to control the product and make/change settings.
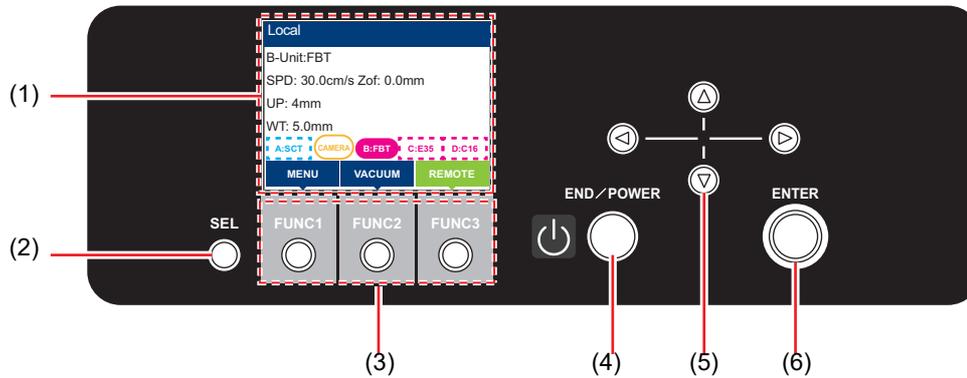


| No. | Name | Overview |
|-----|------|----------|
| (1) | Display | ☞ P.1-8 "Display" |
| (2) | [SEL] key | Selects the function for the corresponding [FUNCTION] key. |
| (3) | [FUNCTION] keys | Used for operations such as making test cuts, turning the vacuum on/off, or configuring various settings. ☞ P.1-10 "[FUNCTION] keys" |
| (4) | [END/POWER] key | Used to cancel the last setting entered, return to the previous level of the setting menu, or to turn power on/off.<br>• To turn off the power, hold down the key. ☞ P.3-49 "Turning the Power Off" |
| (5) | [JOG] key<br>▲ ▼ ◀ ▶ | Used to move the head, enter values, or select various setting items. |
| (6) | [ENTER] key | Used to move to the next level menu and to confirm settings.<br>• Lit in blue when the power is on. ☞ P.3-3 "Turning the Power On" |

# Display



MENU mode <setting type number*> — Remote

Selected station and tool — B-Unit:FBT — 256KB — Volume of data received
• Station A to D: Tool name
• Tangential unit name — SPD: 30.0cm/s    Zof: 0.0mm — Cut Condition

UP: 4mm

WT: 5.0mm — Ready — Data receiving status (Displayed in continuous mode only)

Tool status — A:SCT  CAMERA  B:FBT  C:E35  D:C16
• Dotted outline: Not selected
• Solid color: Selected — VACUUM  LOCAL — Function name assigned to [FUNCTION] key

\* Setting type number is displayed in local mode only.

## MENU mode

Four menu modes are available.

| Name | Overview |
|---|---|
| LOCAL mode | Used to make test cuts, copy elements, or set various functions. |
| REMOTE mode | Used to cut the cut data received from a computer. |
| MENU mode | Press the [MENU] on the LOCAL mode screen to switch to MENU mode. This is used to set various functions. |
| JOG mode | Jog keys are used for plot origin setting, mark origin detection, work thickness setting, 2-point line correction, cut area setting, and other operations. |

## Tool status

Station A

| Status | Tool | |
|---|---|---|
| | Eccentric Cutter | Pen |
| Not selected | A:SCT | A:PEN |
| Selected | A:SCT | A:PEN |

Station B

| Status | Tool | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Flat blade tool | Reciprocating cutter E12 | Reciprocating cutter E35 | Reciprocating cutter E60 | Crease roller C16 | Crease roller C26 | Crease roller C60 | V-cut V45 | V-cut VAS |
| Not selected | B:FBT | B:E12 | B:E35 | B:E60 | B:C16 | B:C26 | B:C60 | B:V45 | B:VAS |
| Selected | B:FBT | B:E12 | B:E35 | B:E60 | B:C16 | B:C26 | B:C60 | B:V45 | B:VAS |

Station C

| Status | Tool | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Flat blade tool | Reciprocat-ing cutter E12 | Reciprocat-ing cutter E35 | Reciprocat-ing cutter E60 | Crease roller C16 | Crease roller C26 | Crease roller C60 | V-cut V45 | V-cut VAS |
| Not selected | C:FBT | C:E12 | C:E35 | C:E60 | C:C16 | C:C26 | C:C60 | C:V45 | C:VAS |
| Selected | C:FBT | C:E12 | C:E35 | C:E60 | C:C16 | C:C26 | C:C60 | C:V45 | C:VAS |

Station D

| Status | Tool | | | | | | |
|---|---|---|---|---|---|---|---|
| | Flat blade tool | Crease roller C16 | Crease roller C26 | Crease roller C60 | V-cut V45 | V-cut VAS | Router |
| Not selected | D:FBT | D:C16 | D:C26 | D:C60 | D:V45 | D:VAS | D:R10 |
| Selected | D:FBT | D:C16 | D:C26 | D:C60 | D:V45 | D:VAS | D:R10 |

Mark detection selection tool

| Status | Mark Detect |
|---|---|
| Mark sensor | SENSOR |
| Camera | CAMERA |

Unit not installed

| Status | Unit | | |
|---|---|---|---|
| | B-Unit | C-Unit | D-Unit |
| Not installed | B-unit none | C-unit none | D-unit none |

## Data receiving status

This is displayed when using continuous mode.

| Name | Overview |
|---|---|
| Not Ready | Waiting for work or data. |
| Ready | Work and data is ready, and waiting for a cutting queue number. |
| ID Reading | Detecting the data ID code. The status changes to "DataWaiting" once it is correctly detected. An error occurs if detection fails. |
| Drawing | Drawing has started. This also includes work thickness measurement. |
| DataWaiting | Waiting to receive the cut data after the data ID code has been detected. Or waiting for subsequent data after receiving an inquiry command, such as OH;. An error occurs if no data is received within 30 seconds after the data ID code was detected. |
| Work Change | Waiting for the work to be replaced after cutting has ended. Turning off the vacuum changes the status to "Not Ready". |
| Error | The error status is displayed if any of the following errors have occurred. New drawing is not possible in that area until the data has been cleared.<br>•If a mark detection error or data ID code detection error occurs<br>•If data is not sent after the data ID code has been detected<br>•If the received data is too large |

## [FUNCTION] keys

This section describes the functions and roles assigned to the [FUNCTION] keys.

| Icon | Name |
|---|---|
| MENU | Displays the various menu screens. |
| VACUUM | Turns vacuum operation on/off. |
| REMOTE | Used to switch from LOCAL mode to REMOTE mode screen. |
| TEST CUT | Displays the test cut selection screen. |
| COPY | Displays the screen for copying elements. |
| DATA CLEAR | Clears received data. |
| LOCAL | Used to switch from REMOTE mode to LOCAL mode |
| JOG SPEED | Changes the speed of movement as activated by jog keys. (Auto / Low / Middle / High) |
| JOG UNIT | Changes the unit of movement as activated by jog keys. (1.0 mm / 0.1 mm) (1/16 inch / 1/160 inch) |
| << | Used to move to the previous menu screen |
| >> | Used to move to the next menu screen |
| POSITION SELECT | Sets the final head position. |
| PLOT ORIGIN | Moves to the drawing origin. |
| CUT AREA | Moves to the specified point at the edge of the cut area. |

# Cable Connections

⚠️ **Warning**
- Turn off the power ( ☞ P.3-49) before connecting the vacuum signal line cable, RS-232C interface cable, cable for optional accessories, or Ethernet cable. Otherwise, there is a risk of electric shock or damage to the machine.

## Connecting the Power Cable

After connecting interface cables, connect the power cable.
Plug the power cable into an outlet with the following power supply specifications.
- Voltage: 200–240V AC ±10%, single phase
- Frequency: 50/60 Hz
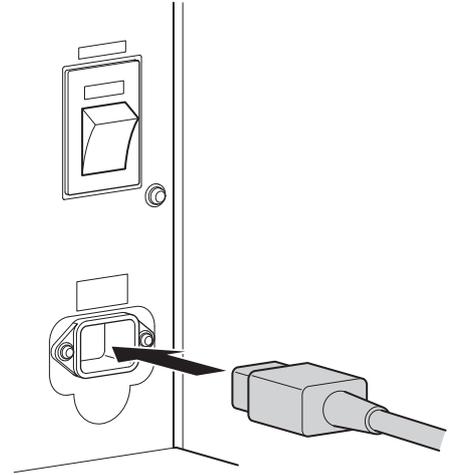
⚠️ **Caution**
- **Be sure to ground the machine**
- It is extremely dangerous to use the machine without grounding it, due to the risk of electric shock or machine damage.
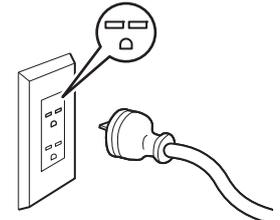
## Connecting Interface Cables

The unit is equipped with an RS-232C compliant interface and a LAN port. Use the RS-232C interface cable recommended by Mimaki or a suitable cable for your computer.
The communication conditions must be set to suit the interface used. For details, refer to "Setting Computer Connection Conditions" ( ☞ P.4-42).

● **Turn off the plotter and computer before connecting cables.**

**Connect the vacuum cable.**

**Connect the cable for optional accessories.**
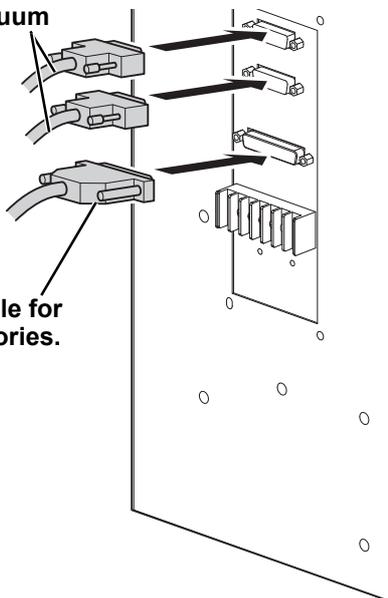
**Connect the LAN connector.**

**Connect the RS-232C interface cable.**

**Connect a foot switch.**
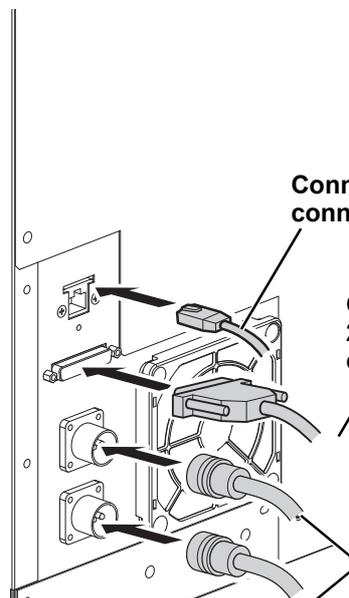
# Emergency Stop

In emergencies, the machine can be stopped on an emergency basis.
Emergency switches are located at four positions at the front and rear of the machine.
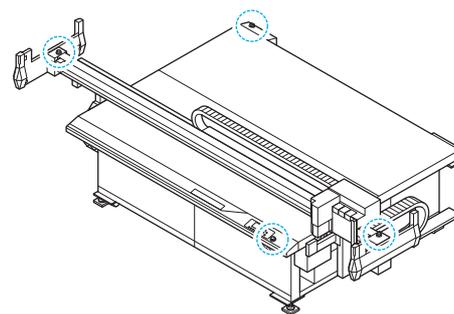
## Using Emergency Stop

**1**  **Press an emergency switch.**

  • The machine stops operating.
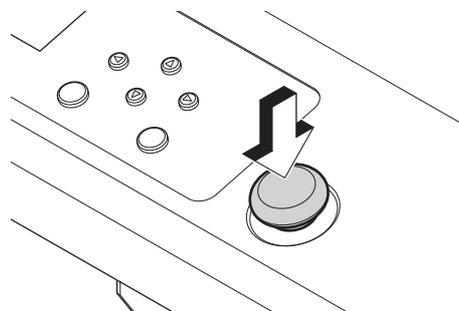
## Resetting an Emergency Stop

**1**  **Turn the emergency switch clockwise to unlock it.**
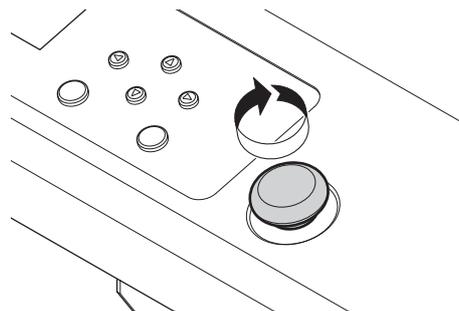
**2**  **Press the [ENTER] key.**

  • The machine starts up.
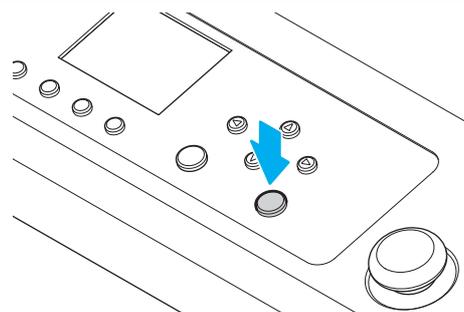
<table>
<tr><td>**Caution**</td><td>

- If any unit from B to D remains lowered after resetting, a confirmation message is displayed. Confirm that there will be no problem if the tool is raised, and then press the [ENTER] key.
- If a V-cut cutter is in a work, remove the V-cut holder.

</td><td>

B-Unit
After remove obstacle
Press Enter key.

</td></tr>
</table>
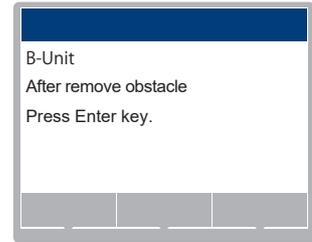
## Removing the V-cut holder following an emergency stop

Use the following procedure to restore operation in cases where an emergency stop was made with the cutter blade left inserted into the work.

**1** **Hold the V-cut holder still with your hand and turn the V-cut tool knob on the top of the bearing holder counterclockwise as viewed from above.**

• Turn to the position of the unlock mark.



V-cut tool knob

V-cut holder

● **When using the V45 tool TYPE-S or VAS tool TYPE-S**

• Pull out and turn the index plunger knob to unlock, then turn the V-cut tool knob.



（2）
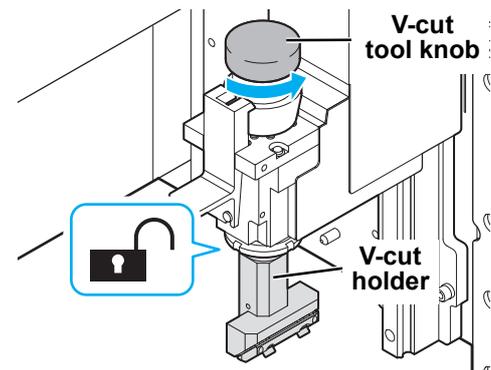
V-cut tool knob

（1）Index plunger knob
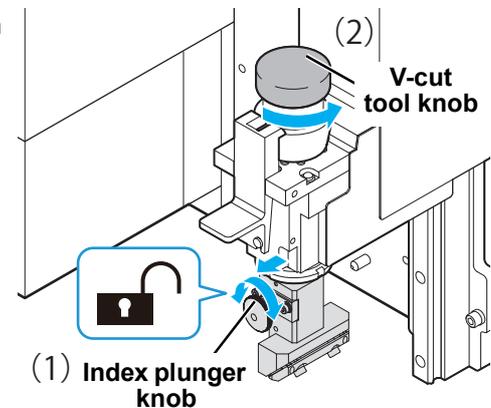
**2** **After turning until unlocked, press the [ENTER] key to start the resetting operation.**

• After the Z-axis rises and stops, remove the unlocked V-cut holder.
• Press the [ENTER] key again to move the head to the final position.

# Preparing the Cutting Panel

## Attaching the Work Guides

Attach the work guides as guides to keep works straight.
Attach guides to suit the work size, at the position desired.

**(Important!)**
- Make sure the work guides are securely attached in the holes on the cutting panel surface. The head may come into contact with loose work guides that are not attached securely when the machine is turned on, which may cause damage.
- These are only guides for setting up works straight. Perfect accuracy is not ensured.

**(Caution)**
- Be sure to check the orientation of the work guides when attaching them. (Attach so that the indented side faces the inside of the table.)
  Attaching the work guides incorrectly may damage the tool.

- Attach the work guides in the holes at the following positions on the cutting panel surface.
- Attach the work guides along the edges of the mat.
- Attach the work guides at two locations near the origin (fixed) and at the far end on the long side (for movement) to suit the media used. Guiding as much as possible toward the outer side will make it easier to minimize tilting.



**Out-side** ← → **Inside**

**Work guide**

**Cutting panel surface**

**Media (work)**

**Work guide attachment locations**
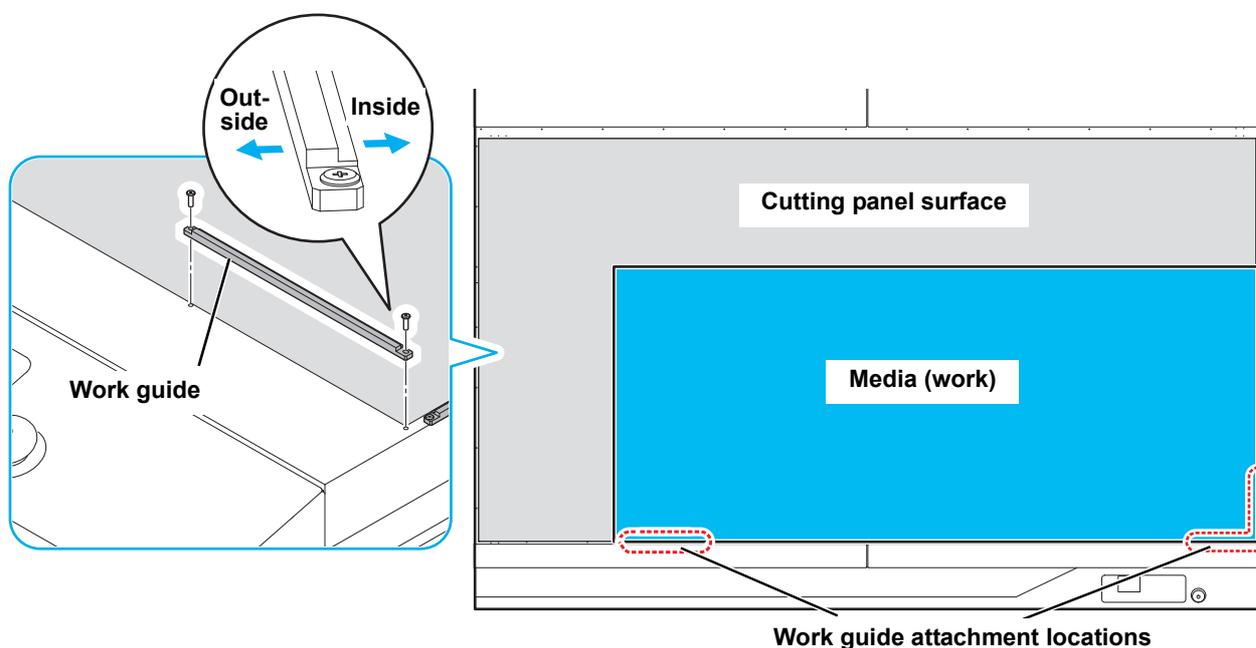
# Local/Remote Mode

Each press of [LOCAL] [REMOTE] on the operating panel switches between local and remote mode.

## Local Mode and Corresponding Display

In local mode, you can move the head, set various machine functions, and receive data from the computer. All keys are available in local mode.

```
Local <Setup1>

B-Unit:FBT
SPD: 30.0cm/s  Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
MENU      VACUUM      REMOTE
```
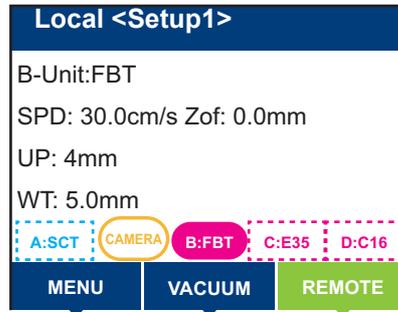
## Remote Mode and Corresponding Display

Remote mode enables cutting or drawing of the data received.
The display shows the cutting (or drawing) conditions and the amount of data received. The amount of data indicated decreases with each cut (or stroke).
The POWER key, [VACUUM], and [LOCAL] on the operating panel are enabled.
In remote mode, the following seven screens are displayed.

### Swivel cutter selected (standard unit)

This is the remote screen when A-Unit is selected in [Tool Select] on the local mode screen and the swivel cutter (SCT) is selected as the tool.

```
Remote
A-Unit:SCT            15KB
SPD: 30.0cm/s   PRS: 400g
Eofs: 0.30mm
WT: 5.0mm
A:SCT  CAMERA   B:FBT   C:E35   D:C16
              VACUUM      LOCAL
```
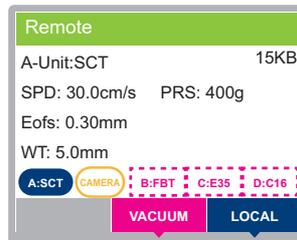
**SPD: Cutting speed**
**PRS: Cutting pressure**
**Eofs: Offset value**
**WT: Work thickness**

### Pen selected (standard unit)

This is the remote screen when A-Unit is selected in [Tool Select] on the local mode screen and the pen is selected as the tool.

```
Remote
A-Unit:PEN            15KB
SPD: 30.0cm/s   PRS: 60g

WT: 5.0mm
A:PEN  CAMERA   B:FBT   C:E35   D:C16
              VACUUM      LOCAL
```
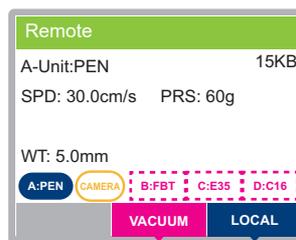
**SPD: Cutting speed**
**PRS: Cutting pressure**
**WT: Work thickness**

## Flat Blade Tool selected (TUT)

This is the remote screen when the unit selection is B, C, or D in [Tool Select] on the local mode screen and the Flat Blade Tool (FBT) is selected as the tool.

```
Remote
B-Unit:FBT                    15KB
SPD: 30.0cm/s       Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
            VACUUM      LOCAL
```
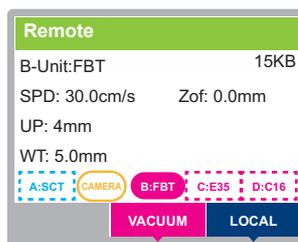
SPD: Cutting speed
Zof: Z origin offset value
UP: Up height
WT: Work thickness

## Electric reciprocating tool selected (TUT)

This is the remote screen when the unit selection is B or C in [Tool Select] on the local mode screen and the electric reciprocating tool (E12, E35, E60) is selected as the tool.

```
Remote
C-Unit:E35                    15KB
SPD: 30.0cm/s       Zof: 0.0mm
UP: 4mm             ROT: Middle
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
            VACUUM      LOCAL
```
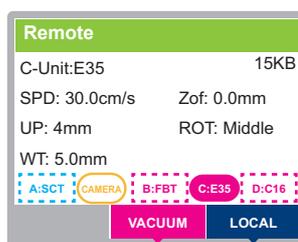
SPD: Cutting speed
Zof: Z origin offset value
UP: Up height
ROT: Reciprocating vibration level
WT: Work thickness

## Crease roller tool selected (TUT-15, TUT-30)

This is the remote screen when the unit selection is B, C, or D in [Tool Select] on the local mode screen and the crease roller roll tool (C16, C26, C60) is selected as the tool.

```
D-Unit:C60-30
Remote
D-Unit:C60-30                 15KB
SPD: 30.0cm/s       pressLV. 16

WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
            VACUUM      LOCAL
```
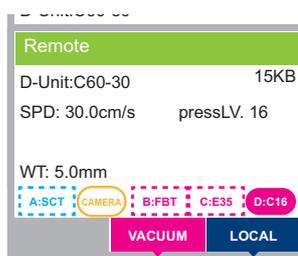
For pressure mode levels 1 to 31
Pressure level:
With TUT-15 mounted: OFF, LV. 1 to 16
Pressure level:
With TUT-30 mounted: OFF, LV. 16 to 31
WT: Work height

```
Remote
D-Unit:C60-30                 15KB
SPD: 30.0cm/s       Zof: 0.0mm

WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
            VACUUM      LOCAL
```
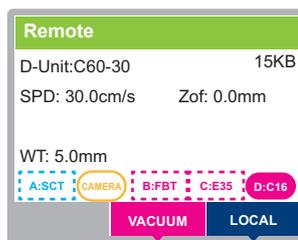
With pressure mode off
SPD: Cutting speed
Zof: Z origin offset value

## V-cut tool selected (TUT)

This is the remote screen when the unit selection is B, C, or D in [Tool Select] on the local mode screen and the V-cut tool (V45, VAS) is selected as the tool.

```
Remote
D-Unit:V45                    15KB
SPD: 30.0cm/s       Zof: 0.0mm
ANGL: 45°
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:V45
            VACUUM      LOCAL
```
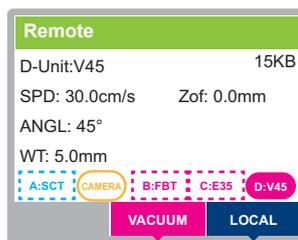
SPD: Cutting speed
Zof: Z origin offset value
ANGL: Edge angle
WT: Work thickness

Hint! · Because V-cut up height cannot be changed from 5 mm, this information is not shown.

## Router unit select (R10)

This is the remote screen when D-Unit is selected in [Tool Select] on the local mode screen and the router unit (R10) is selected as the tool.

| Remote | |
|--------|--------|
| D-Unit:R10 | 15KB |
| SPD: 30.0cm/s | Zof: 0.0mm |
| UP: 4mm | ROT: 18000rpm |
| WT: 5.0mm | |

A:SCT CAMERA B:FBT C:E35 D:R10

VACUUM    LOCAL
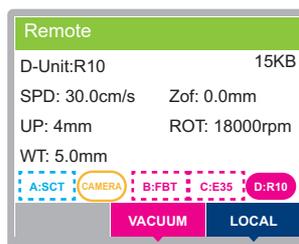
**SPD: Cutting speed**
**Zof: Z origin offset value**
**UP: Up height**
**ROT: Rpm**
**WT: Work thickness**

# Matching the Plotter Specifications

The machine uses MGL-3C commands.
Set the commands of the software that is connected to the machine to MGL-3C.

**Important!** • The machine only uses MGL-3C commands. Commands cannot be changed from the plotter.

# Setting Automatic Head Retraction

Set the final head position after cutting (or drawing) the data from the computer is finished.

| Item | Setting value |
|---|---|
| (1)  Off | No automatic retraction. |
| (2)  Lower right | Retract to the lower right. |
| (3)  Lower left | Retract to the lower left. |
| (4)  Upper right | Retract to the upper right. |
| (5)  Upper left | Retract to the upper left. |
| (6)  Middle right | Retract to the middle right (not applicable for CFX-2513). |
| (7)  Middle left | Retract to the middle left (not applicable for CFX-2513). |
| (8)  Drawing origin | Retract to the drawing origin. |

**Retraction position**

**1**

5   4

5   4

7   6

5   4      5   4      7   6

**2513**      **2531**      **2550**

3   2      3   2      3   2
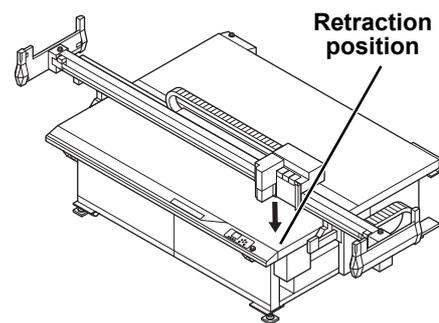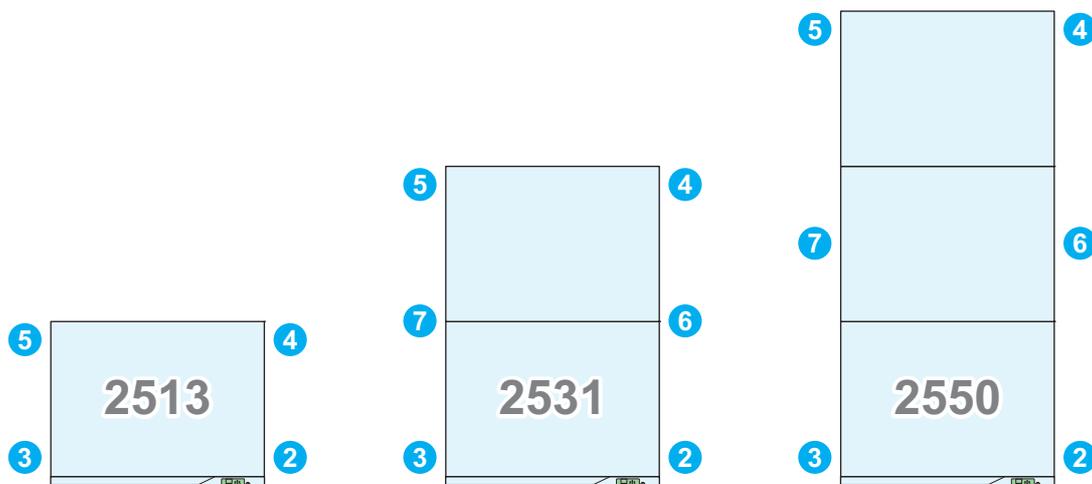
**Important!**
- Retract to the middle in toggle mode.
- Middle right and middle left are only available on CFX-2531 and CFX-2550 models (not on CFX-2513 models).

---

**1**   **On the local mode screen, press [MENU].**

> Local
> B-Unit:FBT
> SPD: 30.0cm/s  Zof: 0.0mm
> UP: 4mm
> WT: 5.0mm
> A:SCT  CAMERA  B:FBT  C:E35  D:C16
> MENU    VACUUM    REMOTE

---
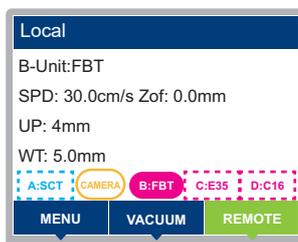
**2**   **Press ⊙⊙ to select [Setup] > [Draw] > [Auto View], then press the [ENTER] key.**

---

**3**   **Press ⊙⊙ to select the retraction position, then press the [ENTER] key.**

- Setting values: OFF, lower right, lower left, upper right, upper left, middle right, middle left, drawing origin

---

**4**   **To exit, press the [END/POWER] key several times to return to the local mode screen.**

---

# Setting the Vacuum

## Enabling/Disabling Auto Vacuum Off

Set vacuum auto-off operation.

| Item | Setting value |
|---|---|
| Enable[*1] | If the automatic head retraction setting is enabled, the vacuum automatically turns off after the head is retracted. |
| Disable | The vacuum remains on even after head retraction. |

*1. The vacuum is not automatically turned off when automatic head retraction is set to off.

**Hint!**
- When a work is replaced during continuous cutting of register marks, the vacuum is automatically turned off regardless of the automatic head retraction setting.

**1**

On the local mode screen, press [MENU].

Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU  VACUUM  REMOTE

**2**
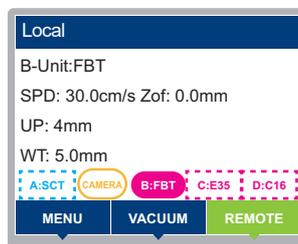
Press ⒶⓋ to select [Setup] > [Draw] > [Vacuum Auto-Off], then press the [ENTER] key.

**3**

Press ⒶⓋ to select a setting option, then press the [ENTER] key.

- Setting values: Disable, Enable
- To exit without saving, press the [END/POWER] key.

**4**

To exit, press the [END/POWER] key several times to return to the local mode screen.

## Interlock between Remote Key and Vacuum

The vacuum can be turned on/off automatically using the remote key.
Cutting without the vacuum on may cause works to rise and interfere with cutting.
This can be prevented by setting [Vacuum Auto-On] to [Enable].

| Item | Setting value |
|---|---|
| Enable | Vacuum is automatically turned on when remote mode is selected with the remote key.<br>Note that vacuum is turned off when the remote key is used to switch to offline mode. |
| Disable | The vacuum key on the operating panel turns the vacuum on/off. |

Hint! • Has no effect in continuous or toggle mode (remains on or off).

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU      VACUUM    REMOTE
```
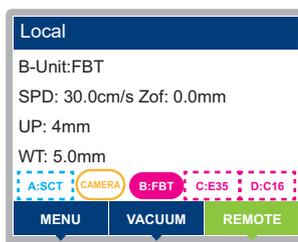
**2** **Press ⒶⓋ to select [Setup] > [Draw] > [Vacuum Auto-On], then press the [ENTER] key.**

**3** **Press ⒶⓋ to select [Setup], then press the [ENTER] key.**

• Setting values: Disable, Enable
• To exit without saving, press the [END/POWER] key.

**4** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

# Setting the Camera Unit

Setting instructions for a connected camera unit (optional) are as follows.

## Camera Unit Overview

This optional unit enables mounting of a camera on the head. The following operations are available when the unit is linked to the camera app (OBSCURAS). Also refer to the OBSCURAS instruction manual.
- Detection of freely placeable register marks
- Work edge detection
- Detection of register marks even for works that are significantly tilted

## Register mark limitations

Register marks with the following specifications can be detected by the camera unit.
- Length of each side: 10 mm
- Line width: 1 mm

## Camera Settings

Set up the camera in the optional settings of the machine.

**1** **On the local mode screen, select [MENU].**

| Local |
|---|
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |

A:SCT  CAMERA  B:FBT  C:E35  D:C16

MENU    VACUUM    REMOTE
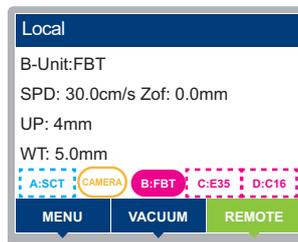
**2** **Select [Machine Setup] > [TP Detect Setup] > [Mark Detect], then press the [ENTER] key.**

**3** **Press ⊙⊙ to select [Camera], then press the [ENTER] key.**

## Adjusting Camera Image Quality

If peripheral brightness or work coloring prevent detection, the camera image quality must be adjusted.
For details of image quality adjustment, refer to the camera application (OBSCURAS) function guide.

# Chapter 2
# Tools

**About this chapter**

This chapter describes how to mount tools.

# Using a Combination of Units

This chapter describes the procedures for attaching units (standard and tangential) to each of the stations A to D, and for setting the tools.

## Combining Stations and Units

The tangential units can be mounted on stations B, C, or D only. However, if electric reciprocating tools E12, E35, or E60 are mounted on a tangential unit, the unit can be mounted only on station B or C.
The router unit can be mounted only on station D.

Hint!
- The standard unit cannot be removed. It can be started regardless of whether or not a holder is mounted.
- Stations B, C, and D can be started even when no unit is installed. (A cover should be fitted to stations that are not used.)

## Unit and Tool Combinations

The following tools can be used in combination with the machine's units.

| Unit | Mountable tools | |
|---|---|---|
| Standard unit **[1]** | Swivel cutter holder, ballpoint pen holder, commercially available pen holder ( ☞ P.2-4) | |
| Tangential unit **[3]** [TUT-15, TUT-30] (optional) | Flat Blade Tool FBT **[5]** | Flat cutter blade holder **[9]** T04, T06 ( ☞ P.2-14) |
| | Electric reciprocating tool E12, E35, E60 **[6]** | Reciprocating cutter blade holder **[10]** S06, M06, L06, S10 ( ☞ P.2-17) |
| | Creasing tool C16, C26, C60 **[7]** | Crease roller tool **[11]** C16, C26, C60 ( ☞ P.2-22) |
| | V-cut tool V45, VAS **[8]** | V-cut holder **[12]** V45, VAS ( ☞ P.2-24) |
| Router unit **[4]** (optional) | End mill **[13]** | R10 ( ☞ P.2-32) |

**Station**

A

B

C

D

**Standard unit (Cannot be removed)** [1]

**2**

**Units**

[2]

[3]

TUT-15, TUT-30

[4]

**Camera unit (optional) (Can be mounted on station A)**

**Tangential unit (optional) (Can be mounted on station B, C, or D)**

**Router unit (optional) (Can <u>only</u> be mounted on station D)**

**Tools**

[5]

[6]

[7]

[8]

[9]

[10]

[11]

[12]

[13]
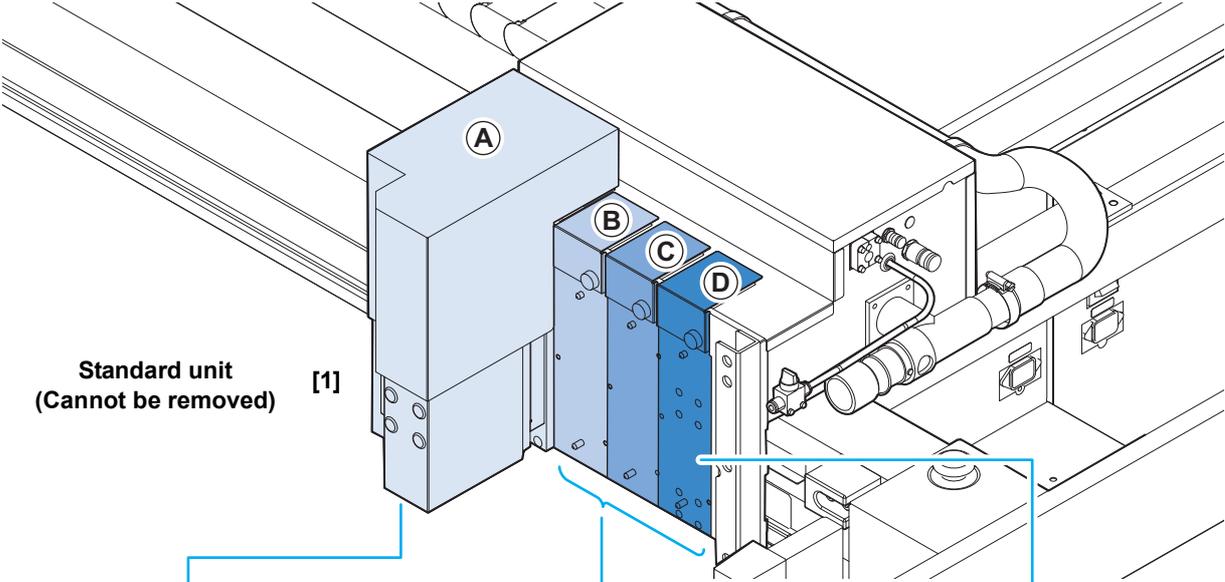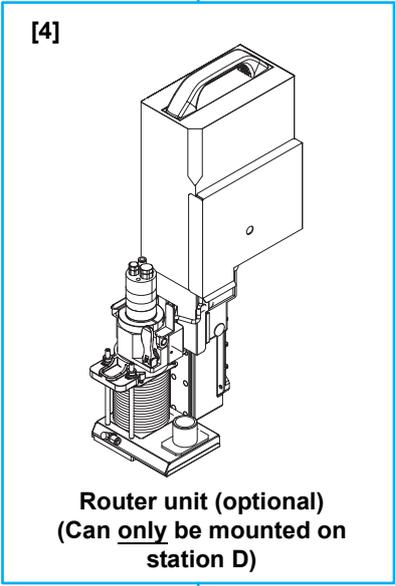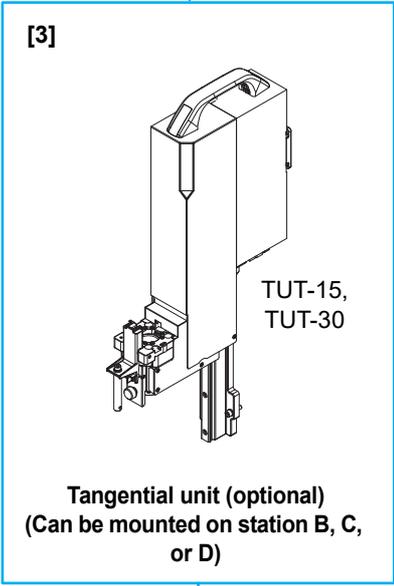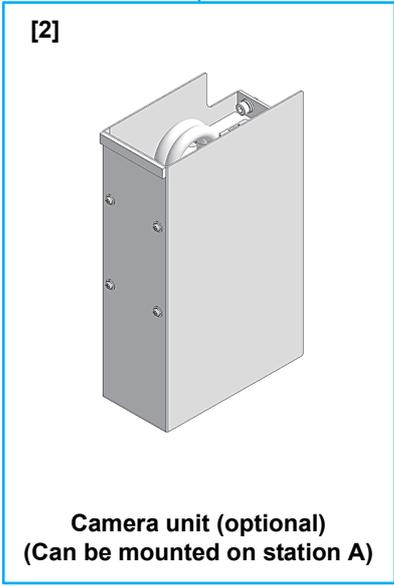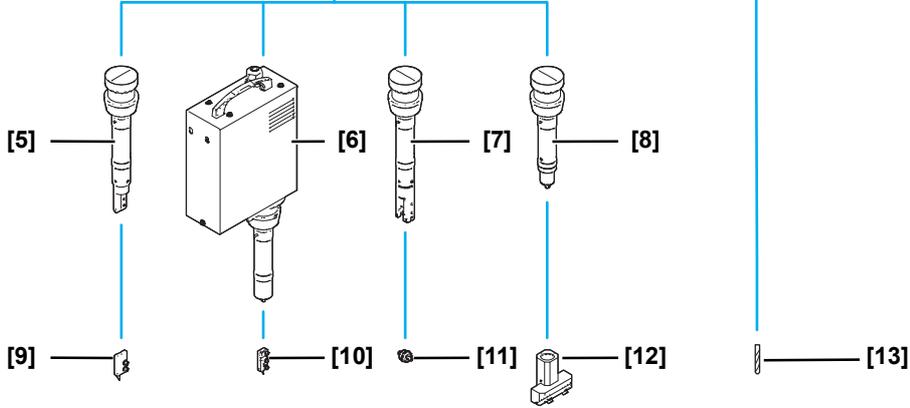
# Mounting Tools (Standard Unit)

The following tools can be mounted on the standard unit

- Pen
- Swivel cutter (supplied)

### Pen adapter

- This should always be left on.
- Adjustment must be repeated in the following sequence if the pen adapter has been removed or mounted. This is essential if positional and dimensional accuracy is required.
    - **(1)** ☞P.4-9 "Aligning the Pointer Position"
    - **(2)** ☞P.5-16 "Aligning the Register Mark Detection Position"
    - **(3)** ☞P.3-25 "Offset adjustment (tangential unit)"
        ☞P.3-28 "Performing offset adjustment (for R10)"

⚠ **Caution**
- Failure to perform offset adjustment may result in issues such as offset between the tool cutting positions and offset of the cutting position when using register marks.

## Pen

### Mounting a pen on the ballpoint pen holder

Mount the standard included pen as follows.

**1** **Fit the spring over the pen tip.**
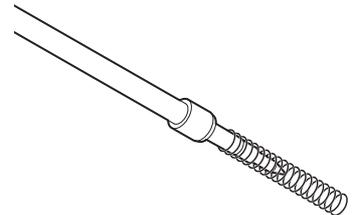
**2** **Mount on the pen holder while pressing the spring into the cap.**
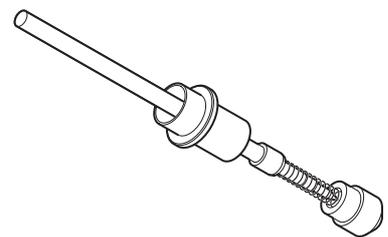
**3** **With the pen holder mounted on the pen adapter, mount on station A (☞P.2-5)**

## Mounting a Pen Adapter

**1** Insert the ballpoint pen holder or swivel cutter holder in pen adapter A.

**Pen adapter A**

**2** Attach pen adapter B.
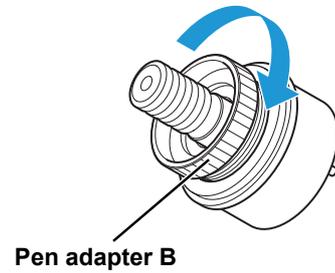
**Pen adapter B**

**3** Turn the station A screw to loosen the holder for the pen holder.
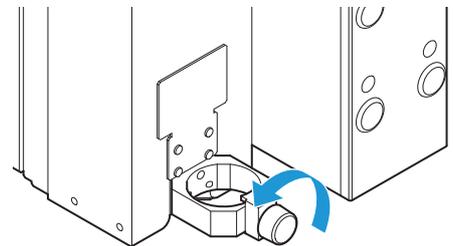
**4** Load the pen adapter and turn the screw to tighten.
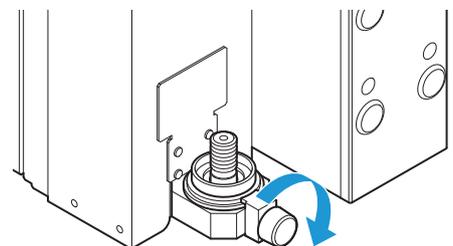
## Attaching caps

Caps are used to protect works and tables.
Remove caps in the following cases.

- When using pens
- When using swivel cutters
- During tool adjustment

(Important!) • Be sure to leave caps attached when thickness measurement is automatically detected.

**1** **Attach the cap from below.**

Cap
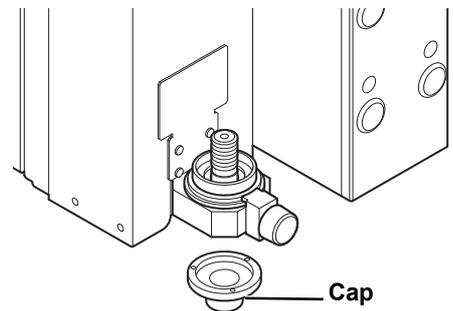
## Mounting a pen on the universal pen adapter (optional)

The universal pen adapter (optional) enables use of commercially available pens.

**1** **Remove the cap of the pen to mount.**

**2** **Loosen the lock nut (silver part),
then extend universal pen adapter.**

Lock nut
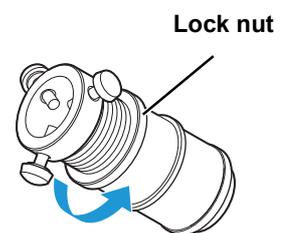
**3** **Loosen the set screws (3) and insert the pen.**
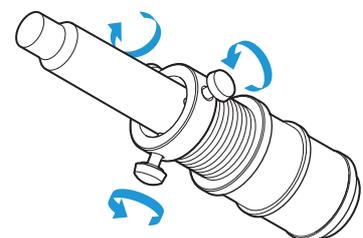
**4** Tighten each set screw the same amount, so that the pen is held in place with the tip centered.

• Adjust the pen as needed to center it, as viewed from directly above.

(Important!) • Use the guide inside the adapter for pens with a small diameter (12 mm or less).

**Guide**
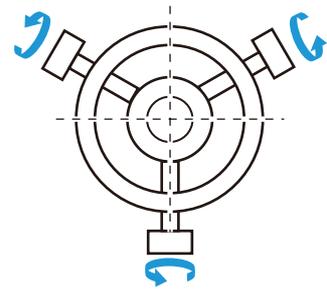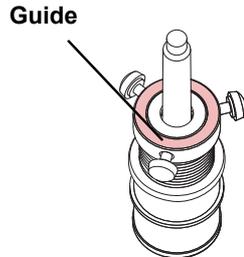
**5** Retract the universal pen adapter, so that the tip is extended until it comes into contact with the lid.
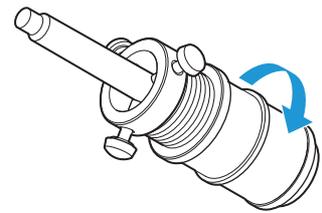
**6** Tighten the lock nut.

**Lock nut**
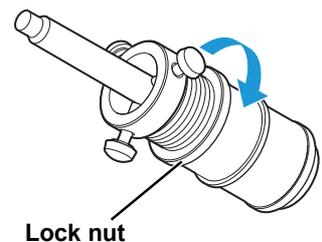
**7** Mount the universal pen adapter on station A.

• ☞See step 3 and later in P.2-5 "Mounting a Pen Adapter".

(Important!) • Remove the cap before use. Also refer to the following instructions. (☞P.2-6)

## Marker pens compatible with CFX series

For details, see "Marker Pens Compatible with the CFX Series" (☞ P.8-24).

# Swivel cutter (optional)

 **Caution**
- Handle with care to avoid injury from the blade. For safety, use the included tweezers.
- The swivel cutter is suited to cutting where the adhesive sheet or base paper needs to be left behind. If the cutter blade is inserted as far as the felt surface, there is a risk of it being left inside the felt, resulting in injury or damage.
- It is recommended that the flat blade tool (FBT) is used for cutting where the cutter blade is inserted as far as the felt surface.

## Attaching swivel cutter blades

Attach the swivel cutter blade to the swivel cutter holder.

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**1** **Remove the cap from the cutter holder.**

• Turn in the direction indicated by the arrow in the picture.



**Cap**

**Cutter holder**

---
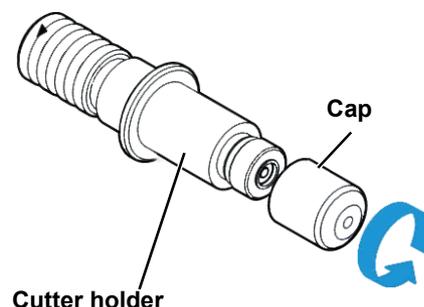
**2** **Insert the cutter into the cutter holder.**

• Use tweezers to insert the blade.

 **Important**
- Be sure to load the blade with the blade tip pointing up.

**Cuttin**



**Cutter**

---
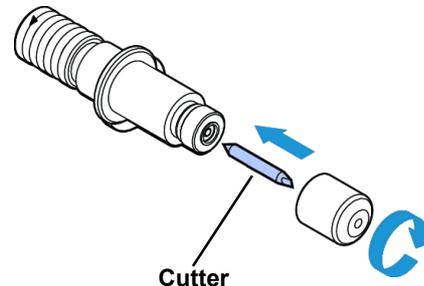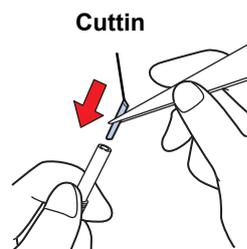
**3** **Fix the cap by turning in the direction indicated by the arrow in the picture.**

---

**4** **Turn the adjusting knob to adjust the amount of protrusion of the blade tip.**

• Turn the adjusting knob in the direction indicated by the arrow in the picture to have the blade protrude. (0.5 mm per turn)



**Cutter**

**Adjusting**
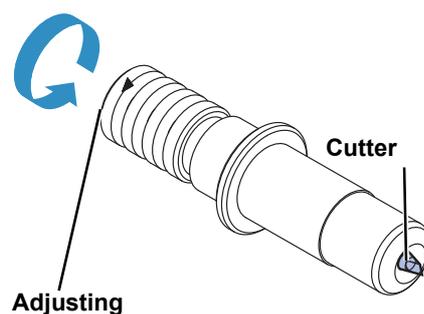
**5** Attach the swivel cutter holder to the pen adapter and mount it on the standard unit

( ☞ P.2-5 "Mounting a Pen Adapter").

**2**

## Tangential Unit (TUT) Structure

Any of the following tools can be mounted on the tangential unit.
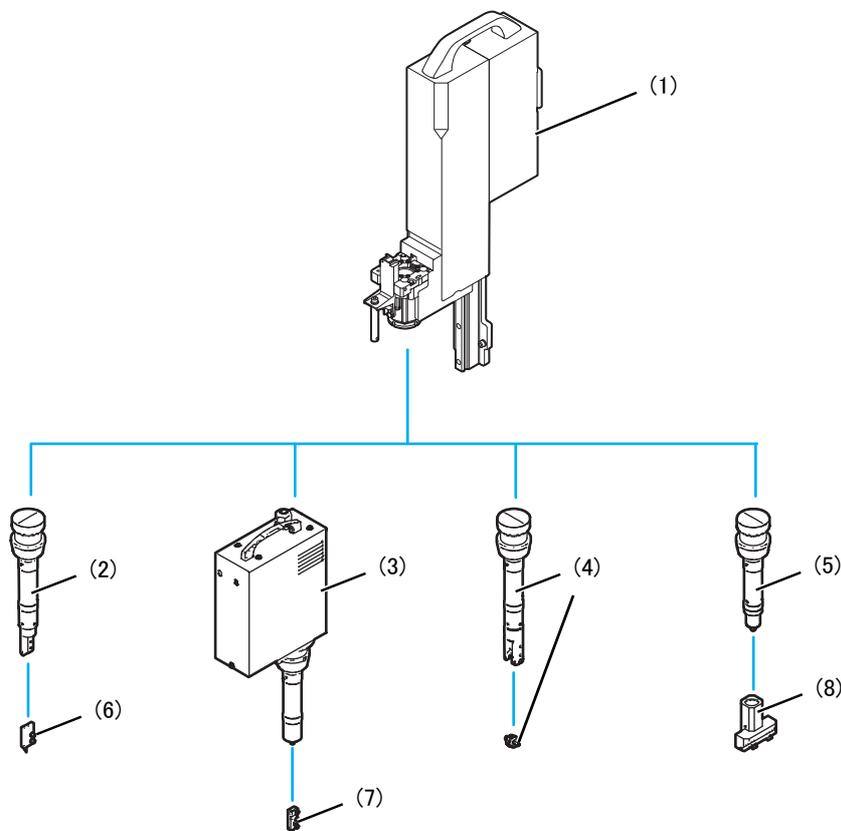


| No. | Name | Abbreviation or type | Reference page |
|-----|------|----------------------|----------------|
| (1) | Tangential unit | TUT-15, TUT-30 | P.2-11 |
| (2) | Flat Blade Tool | FBT | P.2-16 |
| (3) | Electric reciprocating tool | E12,  E35, E60 | P.2-19 |
| (4) | Creasing tool | C16,  C26, C60 | P.2-22 |
| (5) | V-cut tool | V45, VAS | P.2-25 |
| (6) | Flat cutter blade holder | T4, T6 | P.2-14 |
| (7) | Reciprocating cutter blade holder | S06, M06, L06, S10 | P.2-17 |
| (8) | V-cut cutter holder | V45, VAS | P.2-24 |

## Mounting the Tangential Unit

For blades to mount, use only genuine Mimaki tools. Use of other tools may result in inaccurate cutting edge detection.
Genuine tools are as follows.

| Tool | Corresponding blade length |
|------|----------------------------|
| FBT | 24.8 to 45 mm |
| E12 | 28 to 65.2 mm |
| E35 | 28 to 65.2 mm |
| E60 | 28 to 65.2 mm |
| C16 | 16 mm dia. |
| C26 | 26 mm dia. |
| C60 | 60 mm dia. |
| VAS | 47 ±0.1 mm |
| V45 | 47 ±0.1 mm |

**⚠ Caution**
- For safety, be sure to turn off the power to the main unit before this work. (Do not attempt mounting or removal when the power is on. Failure to observe these instructions may damage the equipment.)
- For safety, be sure to remove the tool before removing or attaching the unit. (There is a risk of injury if the blade is left on.)
- Wait at least 30 seconds before turning the machine on again after it has been turned off. Failure to observe these instructions may result in malfunctioning.

### Attaching the tangential unit

**1** **Turn the main unit off.**

**2** **Remove the station terminal cover mounting the tangential unit.**

- Remove the retaining screw.

Terminal cover

Retaining screw
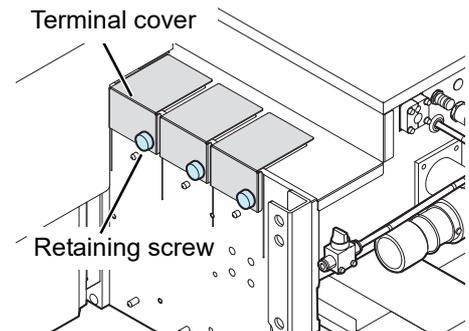
**3** **Using the head groove as a guide, insert the tangential unit into the station from above and slowly lower it.**

- Fit the positioning pin (1) on the rear of the tangential unit into the station.
- Fit the positioning pins (2) on the station into the grooves of the tangential unit.

**Important!**
- Make sure the mounting surface is free of dust and other debris.

**2-11**
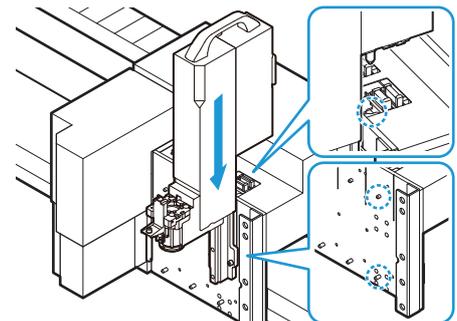
**4** Using the included hex wrench, turn the two screws on the unit to secure in place.
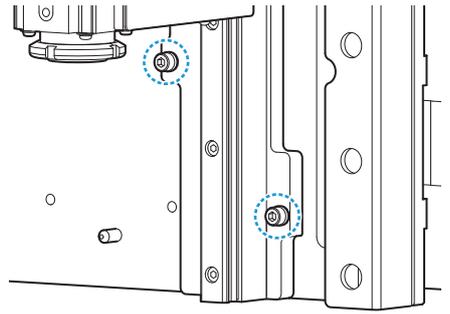
## Removing the tangential unit

**1**    **Turn the main unit off.**

**2**    **Using the included hex wrench, turn the two screws on the unit to remove it.**
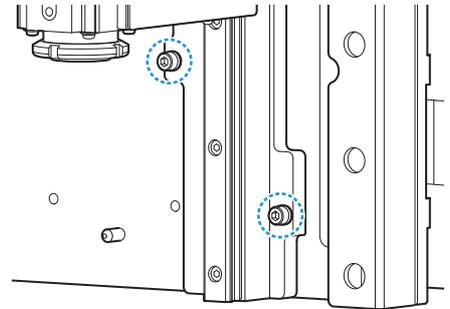
**3**    **Pull the tangential unit off the station while supporting with both hands, and slowly lift it up.**

- The tangential unit is heavy. Be sure to support it with both hands and lift it up slowly.

⚠ **Caution**
- Take great care when performing this task to ensure that the unit does not come into contact with the A unit or adjacent tangential units resulting in accidents.
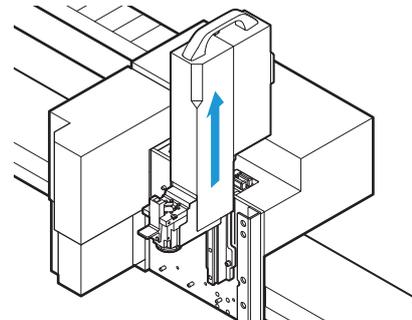
**4**    **Mount the terminal cover to the station from which the tangential unit has been removed.**

- Secure with the retaining screw.

Terminal cover

Retaining screw
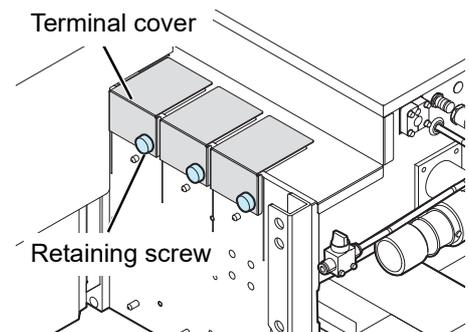
## Mounting the Flat Blade Tool

- Always wear safety gloves when handling tools and cutter blades.
  Failure to observe these instructions may result in injury from the blade.
- Be sure to repeat cutting edge detection (☞P.3-13) if the blade has been replaced.

**Important!**
- Mount the blade so that it faces in the direction shown in the figure below.

**Ridge**
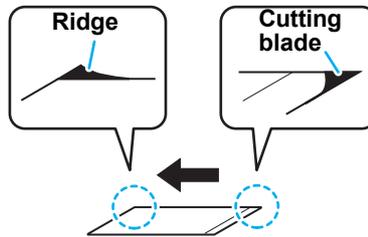
**Cutting blade**

- When mounting an NT high-speed steel blade, use the hand lapper provided to grind down the cutting edge and ridge.
  Grinding down the ridge allows it to be properly mounted in the holder. Grinding (rounding) the cutting edge increases durability.
  Grind down the cutting edge approximately 5 to 20 times, checking the amount ground.

**Hand lapper**
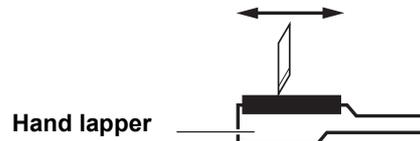
### Mounting the flat blade

**Hint!**
- A flat blade holder is required in order to mount a flat blade.
- Flat blade holders are available for T4 and T6 types. (For T4, the holder has a groove as viewed from the side. If the wrong holder is used, the blade will not stay in place and cutting will be unstable.)

**For T6**          **For T4**          **Groove**

| Form | | |
|---|---|---|
| holder | M215334<br>Blade holder T4 | M215335<br>Blade holder T6 |
| Blades used | SPB-0008 titanium-coated blade 45°/SPB-0030 blade for low-pressure PVC sheet/SPB-0047 titanium-coated blade 30/SPB-0050 titanium-coated blade 30°/SPB-0045 carbide blade 30/SPB-0043 high-speed steel blade 30/SPB-0080 carbide blade 30° DLC/SPB-0081 carbide blade 45° DLC/carbide blade 45° (25L) | Carbide design blade 30°/Joint sheet blade |

**1** Using the included hex wrench (2.5 mm), temporarily tighten the set screws to secure the flat blade holder to the Flat Blade Tool.

• Select a holder that suits the blade you will mount.

**Flat blade holder**
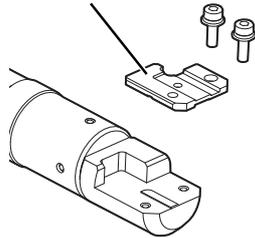


**2** Insert the flat cutter blade into the flat cutter blade holder until it rests firmly against it.

• For safety, use the included tweezers.

⚠️ **Caution**

• Note the direction of the blade.

**Retaining screw**
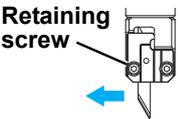
Insert so that the blade edge is facing the left when viewing the flat blade tool as shown in the figure.

**Tweezers**
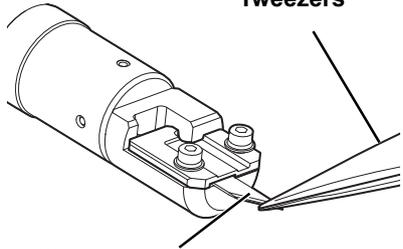
**Flat cutter blade**



**3** Make sure the blade does not ride over the groove.

(Important!) • Mistakenly tightening the set screws while the blade is riding over the groove may deform the blade.
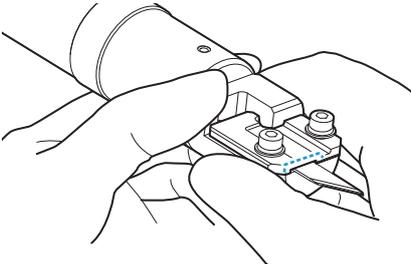


**4** Using the supplied hex wrench (2.5 mm), tighten the set screws to secure the blade.

(Hint!) • When replacing the blade, the blade can be removed by loosening only the right-hand screw. There is no need to loosen the left-hand screw.
Both screws only need to be removed when replacing the cutter blade retainer.

**For blade replacement**

**Do not loosen**          **Loosen**
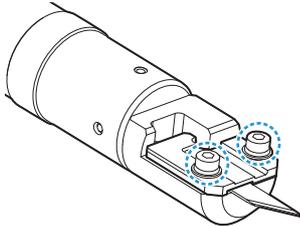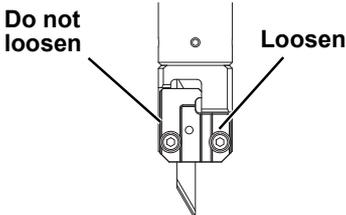


**2**

## Mounting the Flat Blade Tool

⚠️ **Caution**
- Even when only the cutting blade was replaced, be sure to use [Tool Exchange] to detect the cutting blade (☞ P.3-13). If the procedure is not followed, there is a risk of the cutting depth changing, possibly damaging the cutter blade or equipment, or causing injury.

**1** **Attach a flat blade to the flat blade holder (☞ P.2-14).**

**2** **Mount the tangential unit on the station (☞ P.2-11).**

**3** **Select [Menu] > [Tool] > [Tool Exchange].**
- [Move the head to the Right edge.] is displayed. (This screen does not appear if the head is already at the right end.)

**4** **Press the [ENTER] key.**
- The head moves to the right end.

**5** **Once the head has stopped, mount the flat blade tool on the tangential unit from above.**
- Fit the control pin of the Flat Blade Tool into the groove at the rear of the tangential unit.

Control pin
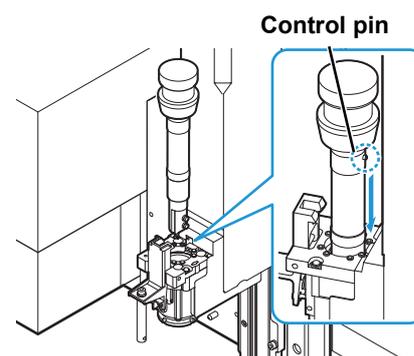
**6** **Lower the tangential unit tool lock lever and insert the Flat Blade Tool into the opening, all the way down.**
- Once it is inserted all the way down, raise the tool lock lever to secure the Flat Blade Tool.
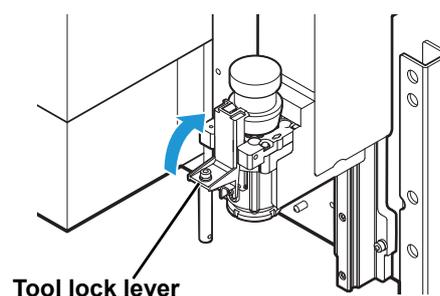
Tool lock lever

**7** **Once the tool has been mounted, press the [ENTER] key.**
- The resetting operation starts.

**8** **Perform cutting edge detection (☞ P.3-13).**

**Important!**
- Exiting the [Tool Exchange] menu changes all of the tools to cutting edge undetected.

## Mounting a Reciprocating Cutter

The reciprocating cutter can be mounted on the B or C station.
For details, see ""Combining Stations and Units" on page 2."

⚠ **Caution**
- Always wear safety gloves when handling tools and cutter blades.
  Failure to observe these instructions may result in injury from the blade.
- Be sure to repeat cutting edge detection (☞P.3-13) if the blade has been replaced.

### Attaching a reciprocating cutter blade

( Hint ! )
- A reciprocating cutter holder is required in order to mount a reciprocating cutter.
- The various types of reciprocating cutter holders are distinguished by their shape and the number of indentations on the side. Refer to the table below to select the appropriate holder for the blade used.

| Form | One indentation | One indentation | One indentation | Two indentations |
|---|---|---|---|---|
| holder | SPA-0343<br>Reciprocating cutter holder S06 | SPA-0344<br>Reciprocating cutter holder M06 | SPA-0345<br>Reciprocating cutter holder L06 | SPA-0346<br>Reciprocating cutter holder S10 |
| Blades used | SPB-0075 carbide blade 7 × 15<br>SPB-0064 carbide blade 2° | SPB-0055 20 mm blade<br>SPB-0065 carbide blade 17° | SPB-0077 carbide blade 25 × 5<br>SPB-0078 carbide blade 25 × 5_DLC | SPB-0094 S10 reciprocating cutter blade<br>carbide 2° × 50 mm |
| Notes | For 0.6 mm thick blade: One indentation | For 0.6 mm thick blade: One indentation | For 0.6 mm thick blade: One indentation | For 1.0 mm thick blade: Two indentations |

**1** **Using the included hex wrench (2.5 mm), loosen the cutter holder set screws.**

⚠ **Caution**
- Do not tighten the upper screws until attached to the reciprocating tool. Accidentally tightening may deform or damage the clamp.
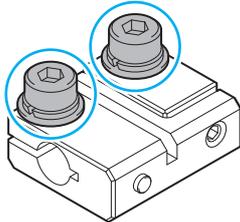
**2** **Insert the reciprocating cutter blade fully into the cutter holder.**

- For safety, use the included tweezers.

⚠ **Caution**
- Note the direction of the blade.

Insert the blade so that it is to the left of the screws.

**Reciprocating cutter blade**

**Tweezers**

2
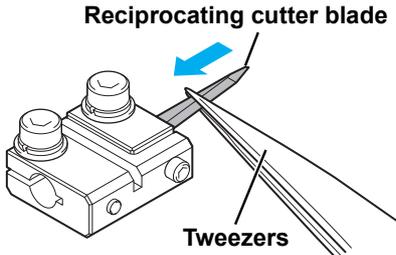
## 3
**Hold the cutter blade with tweezers as you temporarily tighten the screws.**

- Temporarily tighten the screws so that only a little pressure is applied to the spring washers of the screws.

⚠️ **Caution**
- Do not tighten the upper screws until attached to the reciprocating tool. Accidentally tightening may deform or damage the clamp.
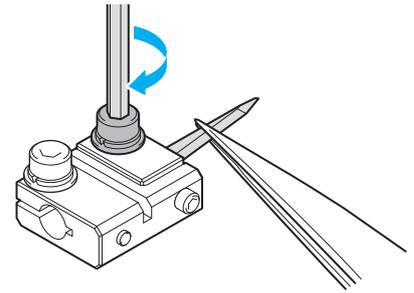
## 4
**Tighten the side hex socket set screws (1 mm).**

- The side set screw is not included on the M06/L06 holders. This step is performed only when using the S06/S10 holders.
- The cutter blade holder now holds down the blade.

(Important!)
- Use the hex head screwdriver provided. Using a hex wrench or other tools may damage the blade.
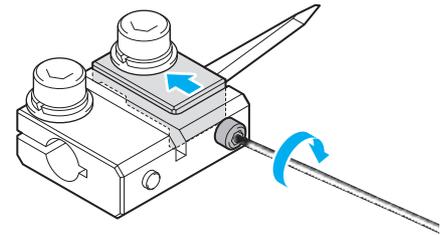
## 5
**Fully tighten the screws temporarily tightened in step 3.**

(Important!)
- Make sure the cutter blade holder is not rising up.
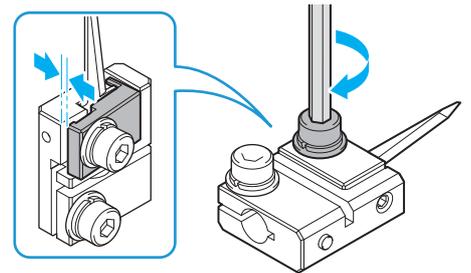
## 6
**If the cutter blade holder is rising up, temporarily loosen the side hex socket set screws.**

## 7
**Press down on the holder as you tighten the hex socket set screws again, then fully retighten the screws.**

- The side set screw is not included on the M06/L06 holders. This step is performed only when using the S06/S10 holders.
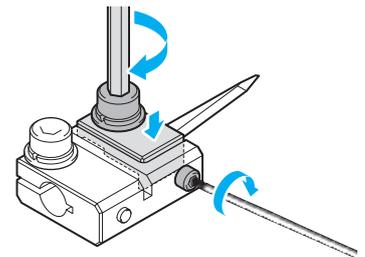
## Mounting the Electric Reciprocating Tool and Reciprocating Cutter Holder

**Important!**
• Lightly apply the grease provided before mounting the electric reciprocating tool. Apply approximately 0.05 g of grease each to the upper and lower parts.

10    20    30    40    50

**Apply around pin**

**Apply to steps**
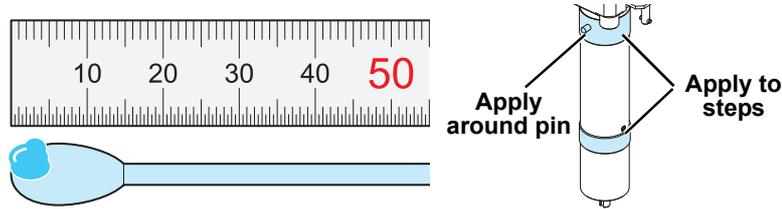
• Approximately once every two weeks, detach the electric reciprocating unit from the TUT, clean the greased areas, then reapply grease.

**Caution**
• Even when only the cutting blade was replaced, be sure to use [Tool Exchange] to detect the cutting blade (☞P.3-13). If the procedure is not followed, there is a risk of the cutting depth changing, possibly damaging the cutter blade or equipment, or causing injury.

**1** **Mount the tangential unit on the station (☞P.2-11).**

**2** **Select [Menu] > [Tool] > [Tool Exchange].**

• [Move the head to the Right edge.] is displayed. (This screen does not appear if the head is already at the right end.)

**3** **Press the [ENTER] key.**

• The head moves to the right end.

**4** **Once the head has stopped, mount the electric reciprocating tool on the tangential unit from above.**

• Fit the positioning pins of the electric reciprocating tool into the groove of the tangential unit.

**Positioning pins**
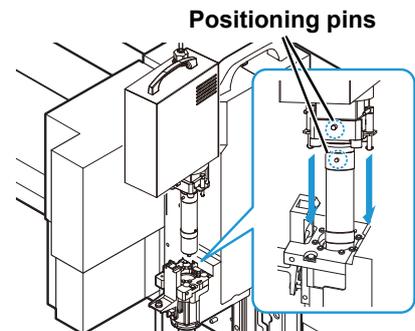
**2**

## 5

**Lower the tangential unit tool lock lever and insert the electric reciprocating tool into the opening, all the way down.**

- Once it is inserted all the way down, raise the tool lock lever to secure the electric reciprocating tool.
- Press down and turn the stopper pins on the side of both ends 90° to secure.
- If this procedure is difficult due to the closeness of the stopper pins to the other units, insert the hex head screwdriver into the upper holes on the stopper pins.

**Stopper pin**

**Tool lock lever**

**Upper holes**

**Stopper pin**
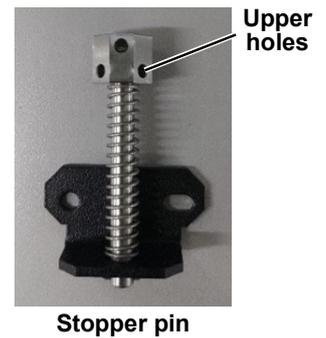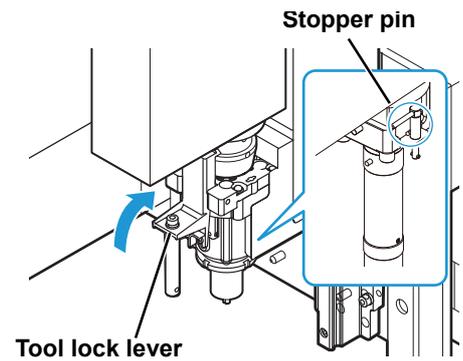
## 6

**Connect the electric reciprocating tool connector cable to the tangential unit.**

- Turn the connector cable lock to secure.
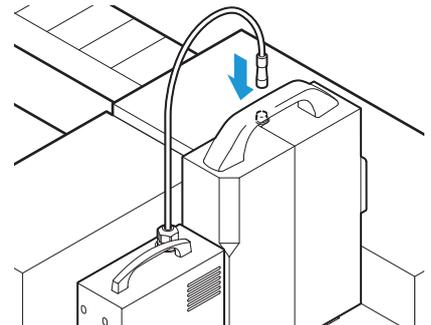
## 7

**Attach the reciprocating cutter blade to reciprocating cutter holder ( ☞ P.2-17).**

## 8

**Mount the reciprocating cutter holder, aligning it with the groove on the end of the electric reciprocating tool.**

- For safety, use the included tweezers.
- Note the direction of the blade.

⚠ **Caution**
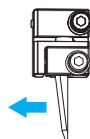
Insert the blade so that it is to the left of the screws.
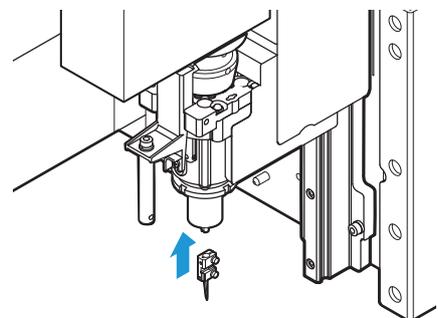
**9** Using the supplied hex wrench, tighten the set screw to secure the reciprocating cutter holder.
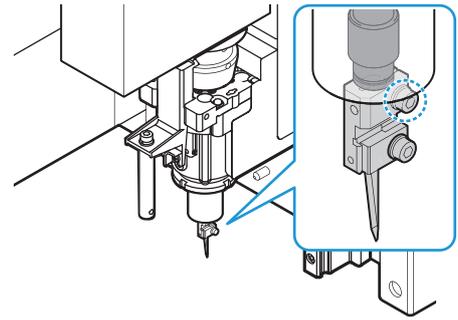
**10** Once the tool has been mounted, press the [ENTER] key.
  • The resetting operation starts.

**11** Perform cutting edge detection ( P.3-13).

(Important!) • Exiting the [Tool Exchange] menu changes all of the tools to cutting edge undetected.

2

## Mounting a Creasing Roller

Refer to the table below for the initial setting conditions when using the creasing tool.

**Caution**
- If creasing is performed with an entry depth from the work surface significantly exceeding the recommended value, the creasing roller may become embedded in the media, detach from the tool holder, and damage the equipment or result in injury.

**Hint!**
For information on how to set creasing for each flute direction, refer to the following details in "Chapter 5 Helpful Tips" in the "FineCut Reference Guide".
- Cut objects by color
- Cut objects by layer
- Specify the output sequence and tools by color/layer
- Set the output conditions by color/layer

| Work | Thickness | Recommended tool | Position control | | | | Pressure control | | |
|------|-----------|------------------|-----------------|--------|----------------|-------------------------------|-----------------|--------|----------------|
| | | | Speed [cm/s] | Flutes | Height from mat [mm] | Insert depth from media surface [mm] | Speed [cm/s] | Flutes | Pressure [Lv] |
| E flute | 1.5 mm | C16 | 30 | Parallel | 0.8 | 0.7 | - | - | - |
| | | | 30 | Perpendicular | 0.5 | 1 | - | - | - |
| B flute | 3 mm | | 30 | Parallel | 2 | 1 | - | - | - |
| | | | 30 | Perpendicular | 1.4 | 1.6 | - | - | - |
| A flute | 5 mm | C26 | 30 | Parallel | 3.7 | 1.3 | - | - | - |
| | | | 30 | Perpendicular | 3 | 2 | - | - | - |
| AB flute | 8 mm | C60 | 30 | Parallel | 5 | 3 | - | - | - |
| | | | 30 | Perpendicular | 4.1 | 3.9 | - | - | - |
| AA flute | 10 mm | | 30 | Parallel | 6.5 | 3.5 | 30 | Parallel | 11 |
| | | | 30 | Perpendicular | 4.5 | 5.5 | 30 | Perpendicular | 13 |
| AAA flute | 15 mm | | 30 | Parallel | 11.7 | 3.7 | - | - | - |
| | | | 30 | Perpendicular | 10.1 | 4.9 | - | - | - |
| Corrugated plastic | 5 mm | C26 | 30 | Parallel | 2 | 3 | - | - | - |
| | | | 30 | Perpendicular | 0.5 | 4.5 | - | - | - |

The combinations for each roller and roller tool are fixed. Use the same size items.

| Roller |  |  |  |
|--------|-----------|-----------|-----------|
| | SPB-0098 creasing roller 16-CN<br>SPB-0099 creasing roller 16-DN | SPB-0100 creasing roller 26-T1<br>SPB-0101 creasing roller 26-CR | SPB-0102 creasing roller 60-UN |
| Roller tool | OPT-C0261 creasing tool:<br>16 mm dia. - C16 | OPT-C0262 creasing tool:<br>26 mm dia. - C26 | OPT-C0263 creasing tool:<br>60 mm dia. - C60 |

**1** Mount the tangential unit on the station ( P.2-11).

**2** Select [Menu] > [Tool] > [Tool Exchange].
- [Move the head to the Right edge.] is displayed. (This screen does not appear if the head is already at the right end.)

## 3 Press the [ENTER] key.

• The head moves to the right end.

## 4 Once the head has stopped, mount the crease roller tool on the tangential unit from above.

**Control pin**

• Fit the control pin of the crease roller tool into the groove at the rear of the tangential unit.

Important!  • Mount a crease roller tool for the diameter of roller to use.
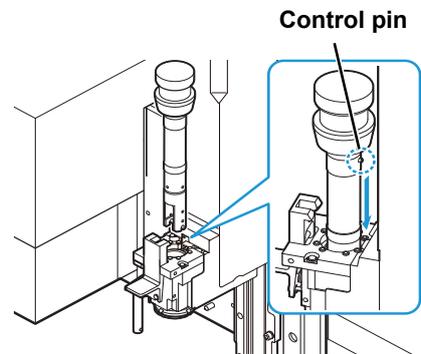
## 5 Lower the tangential unit tool lock lever and insert the crease roller tool into the opening, all the way down.

• Once it is inserted all the way down, raise the tool lock lever to secure the crease roller tool.

**Tool lock lever**
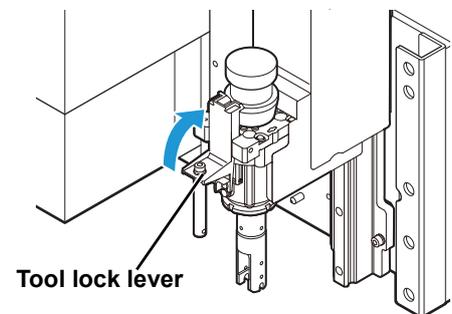
## 6 Attach a roller to the crease roller tool from below.

• Push the roller in until it clicks into place.
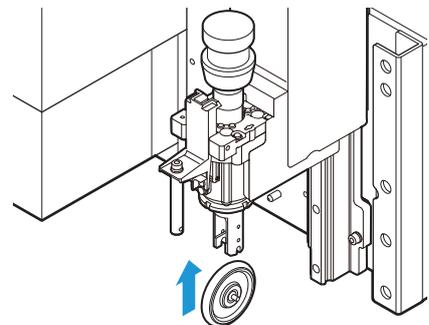
## 7 Once the tool has been mounted, press the [ENTER] key.

• The resetting operation starts.

## 8 Perform cutting edge detection ( ☞ P.3-13).

Important!  • Exiting the [Tool Exchange] menu changes all of the tools to cutting edge undetected.

**2**

## Mounting a V-cut Tool

⚠ **Caution**
- Always wear cut-proof safety gloves when handling tools and cutter blades.
  Failure to observe these instructions may result in injury from the blade.
- Be sure to repeat cutting edge detection (☞P.3-13) if the blade has been replaced.

### Attaching a V-cut blade

Hint!
- A V-cut holder is required in order to mount a V-cut blade.
- Two types of V-cut holders are available, one for V45 (45°) and one for VAS (variable angle).

**1** **Align the slots on the V-cut blade with the set screws on the V-cut holder and insert the blade.**

⚠ **Caution**
- Always wear safety gloves when handling tools and cutter blades.
  Failure to observe these instructions may result in injury from the blade.
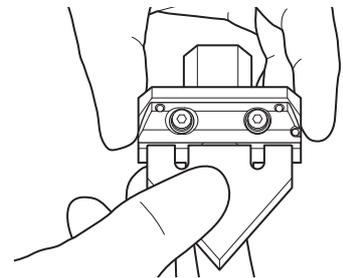
**2** **Fully insert the V-cut cutter blade.**

• Push up against the three locations shown in the figure.
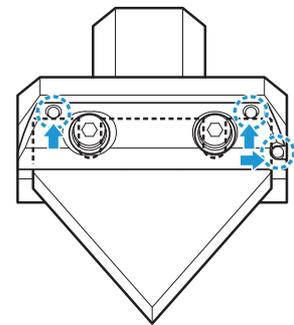
**3** **Using the supplied hex wrench (3 mm), tighten the set screws to secure the V-cut holder.**
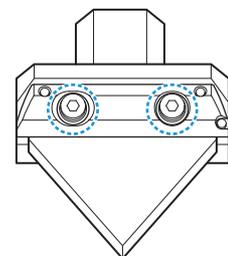
## Mounting a V-cut tool

| ⚠️ Caution | • Even when only the cutting blade was replaced or the VAS tool cutting edge angle was changed, be sure to use [Tool Exchange] to detect the cutting blade (☞P.3-13). If the procedure is not followed, there is a risk of the cutting depth changing, possibly damaging the cutter blade or equipment, or causing injury. |
| Hint! | • A V-cut cap is required in order to mount a V-cut holder. |

**1** **Mount the tangential unit on the station (☞P.2-11).**

**2** **Attach the V-cut blade to the V-cut blade holder (☞P.2-24).**

**3** **Attach the V-cut cap to the V-cut tool.**

• After attaching, turn the lever to secure the cap.

Lever to prevent dropping the cap

V-cut cap
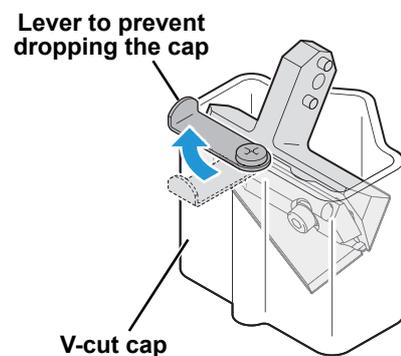
**4** **Select [Menu] > [Tool] > [Tool Exchange].**

• [Move the head to the Right edge.] is displayed. (This screen does not appear if the head is already at the right end.)

**5** **Press the [ENTER] key.**

• The head moves to the right end.

**6** **Once the head has stopped, mount the V-cut tool on the tangential unit from above.**

• Fit the control pin of the V-cut tool into the groove on the tangential unit.

| Important! | • Attach the V-cut tool for the V-cut holder used. |

Control pin
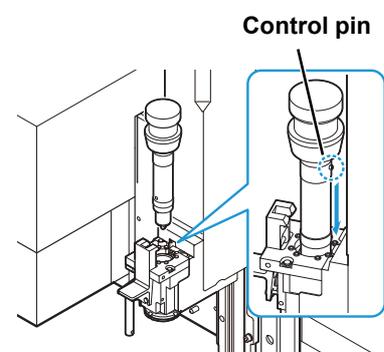
## 7

**Lower the tangential unit tool lock lever and insert the V-cut tool into the opening, all the way down.**

- Once it is inserted all the way down, raise the tool lock lever to secure the V-cut tool.



**Tool lock lever**
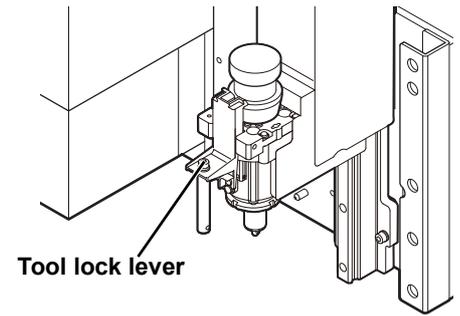
## 8

**Mount the V-cut holder on the V-cut tool from below.**

- Insert the V-cut holder into the V-cut tool, with the label aligned.

⚠️ **Caution**
- Always wear safety gloves when handling tools and cutter blades.
  Failure to observe these instructions may result in injury from the blade.
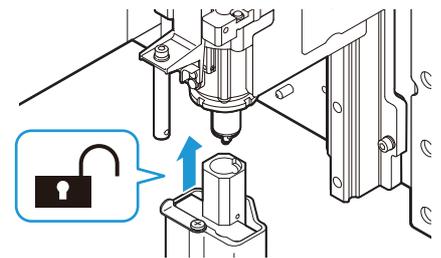


### ● When using the V45 tool TYPE-S or VAS tool TYPE-S

- Pull out and turn the index plunger knob to unlock, then insert the V-cut holder into the V-cut tool.



(1)
(2)
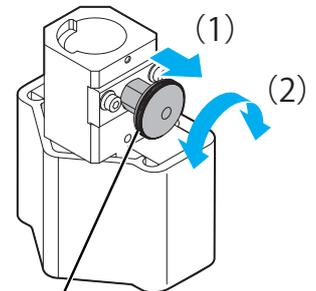
**Index plunger knob**

**9** **Hold the V-cut holder still with your hand and turn the V-cut tool knob on the top of the bearing holder clockwise as viewed from above.**

V-cut tool knob

V-cut holder

• Turn to the position of the lock mark.

• After attaching, turn the lever to remove the V-cut cap.
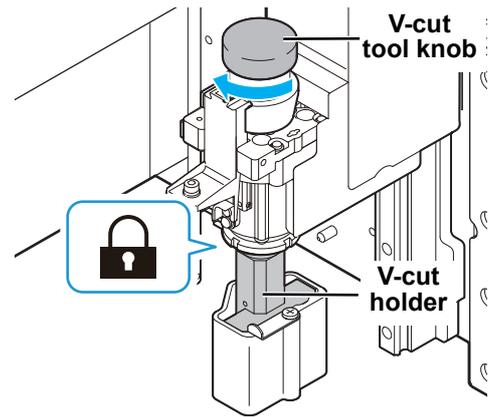
**Important!** • Check to confirm that the mark on the V-cut holder is aligned with the lock mark before use.
If they are not aligned, the cutter blade or cutting panel may be damaged, or cutting may not be performed correctly.
• Operating without removing the V-cut cap may damage the machine.

● **When using the V45 tool TYPE-S or VAS tool TYPE-S**

• After inserting the V-cut holder into the V-cut tool, turn the index plunger knob to lock in place.

(1)

**Caution** • When mounting the cutter holder on the tool, turn and press down the index plunger knob, and check to confirm that it is locked before use.
If used without locking, the tool may detach when the machine operates, damaging the equipment or causing injury.

OK                NG
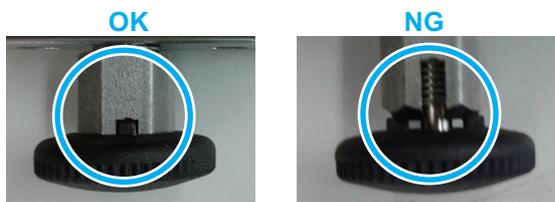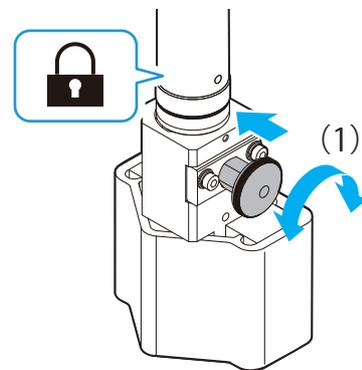
**10** **After attaching, turn the lever to remove the V-cut cap.**

**11** **Once the tool has been mounted, press the [ENTER] key.**

• The resetting operation starts.

**12** **If the VAS tool is mounted, press ⓐ ⓥ to select the blade angle, then press the [ENTER] key.**

• Settings: 0.0°, 15.0°, 22.5°, 30.0°, 45.0°

**13** **Perform cutting edge detection (☞ P.3-13).**

**Important!** • Exiting the [Tool Exchange] menu changes all of the tools to cutting edge undetected.

## Removing the V-Cut Holder

**1** Select [Menu] > [Tool] > [Tool Exchange].

- [Move the head to the Right edge.] is displayed. (This screen does not appear if the head is already at the right end.)

**2** Press the [ENTER] key.

- The head moves to the right end.

**3** Once the head has stopped, mount the V-cut cap in the V-cut holder, then turn the lever to secure the cap in place.
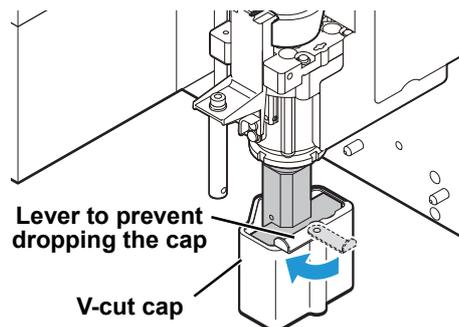


Lever to prevent dropping the cap

V-cut cap

**4** Hold the V-cut holder still with your hand and turn the V-cut tool knob on the top of the bearing holder counterclockwise as viewed from above.

- Turn to the position of the unlock mark.

⚠ **Caution**
- Always wear safety gloves when handling tools and cutter blades.
  Failure to observe these instructions may result in injury from the blade.



V-cut tool knob

V-cut holder

● **When using the V45 tool TYPE-S or VAS tool TYPE-S**
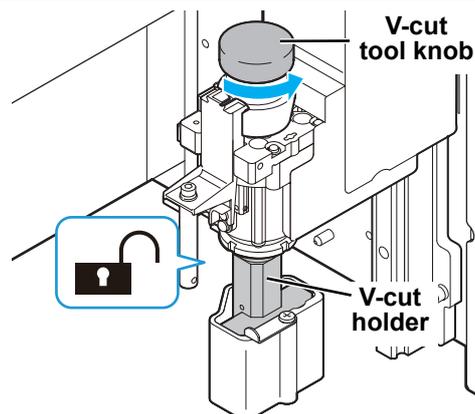
- Pull out and turn the index plunger knob to unlock, then turn the V-cut tool knob.



(2) V-cut tool knob

(1) Index plunger knob
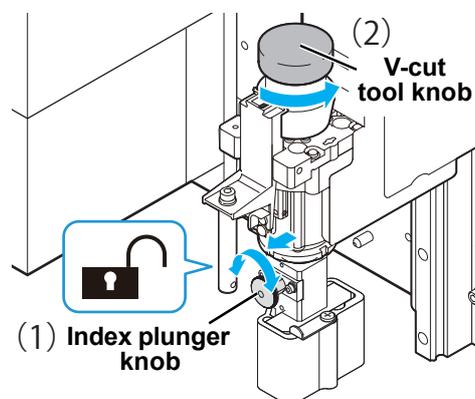
**5** Pull down the V-cut holder to remove it.
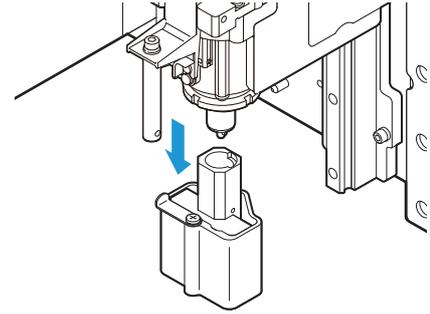


**6** Lower the tangential unit tool lock lever, and pull up the V-cut tool.



**Tool lock lever**
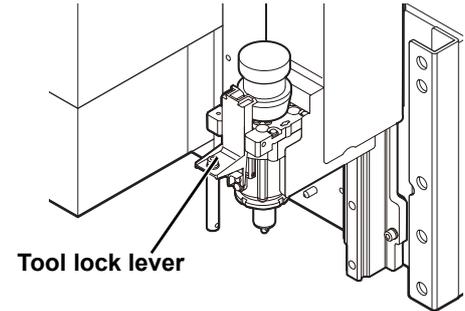
**7** Once it has been removed, press the [ENTER] key.

• The resetting operation starts.

2

## Changing the blade angle (VAS only)

On VAS (variable angle) V-cut holders, the angle can be changed.
Depending on the angle, the mounting position varies as follows.

| Angle | 0° | 15° | 22.5° | 30° | 45° |
|---|---|---|---|---|---|
|  |  |  |  |  |  |
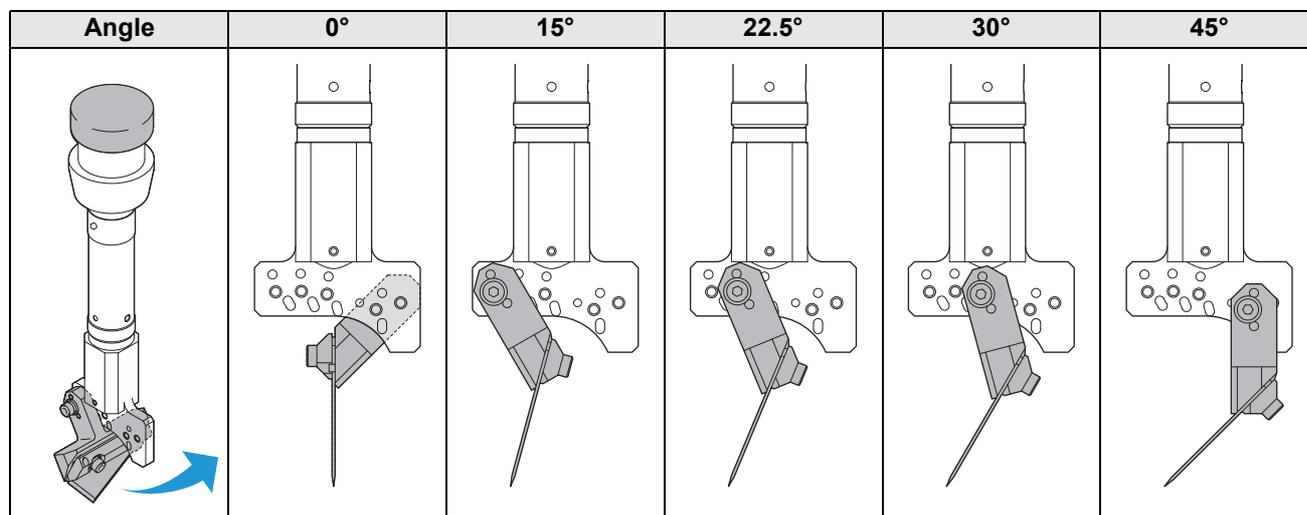
**Important!**
- When mounting the VAS or changing the blade angle, use the [Tool Exchange] menu as described in Mounting a V-cut Tool ( ☞ P.2-24), and be sure to set the blade angle and perform blade detection ( ☞ P.3-13).
- The cutter blade may become misaligned due to the cutting load, so secure it in the direction indicated by the arrow in the figure when clamping the V-cut angle adjustment holder.



**Caution**
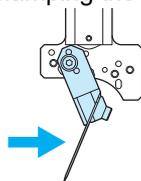
If the blade angle is changed, be sure to set the edge angle in the cutting conditions to the same value. If the blade angle differs from the edge angle in the cutting conditions, the following issues will occur:
- For VAS (0°) and (15°, 22.5°, 30°, 45°), the blade positions differ, so during automatic blade detection, detection may occur outside the ZS sensor, causing failure.
- The blade entry angle is different for V cutting, causing blade breakage or abnormal angles on the V-cut surface.

**1** **Using the supplied hex wrench (3mm), loosen the set screw and remove the blade holder.**
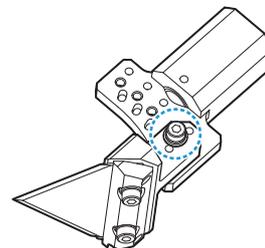


**2** **Change the blade holder mounting position as needed.**

- The angle can be changed by shifting the position left or right.
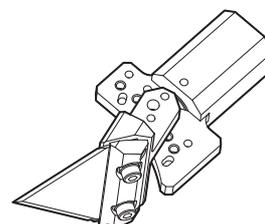
**3** Using the supplied hex wrench (3 mm), tighten the set screw.
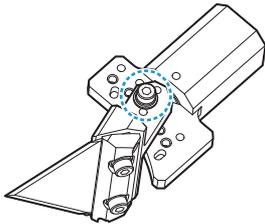
## Attaching the router unit R10

⚠ **Caution**

- Always wear safety gloves when handling tools and end mills.
  Failure to observe these instructions may result in injury from the blade.

### Attaching the router unit

⚠ **Caution**

- For safety, be sure to turn off the power to the main unit before this work. (Do not attempt mounting or removal when the power is on.)

**1** **Turn the main unit off.**

**2** **Remove the station D terminal cover mounting the router unit.**

- Remove the retaining screw.



Terminal cover

Retaining screw
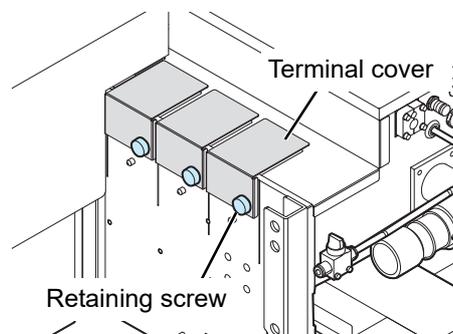
**3** **Using the head groove as a guide, insert the router unit into station D from above and slowly lower it.**

- Fit the positioning pin (1) on the router unit into the station.
- Fit the positioning pins (2) on the station into the grooves of the router unit.

**Important!**
- Make sure the mounting surface is free of dust and other debris.
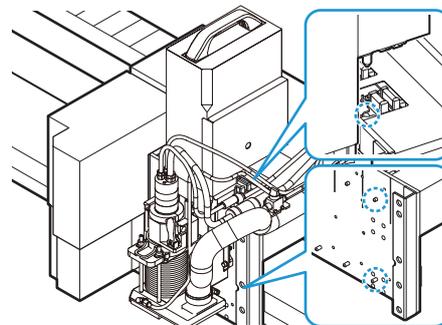


**4** **Using the included hex wrench, turn the two screws on the unit to secure in place.**
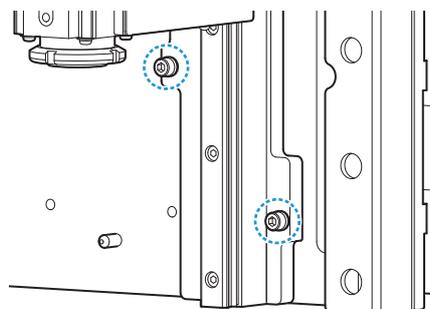
**5** Connect the two spindle cables, two air tubes, and dust collector hose on the router unit to the specified locations on the side of the head.

- To connect the spindle cables, turn the locks clockwise to tighten them.
- For details on the R10 electrical box, see the following page. ( ☞ P.1-6)

Spindle cables

Air tubes

Dust collector hose
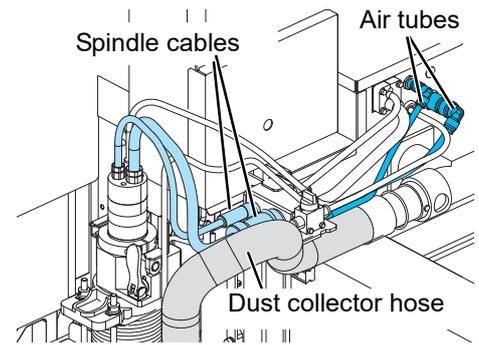
## Removing the router unit

**1** Turn the main unit off.

**2** Using the included hex wrench, turn the two screws on the unit to remove it.
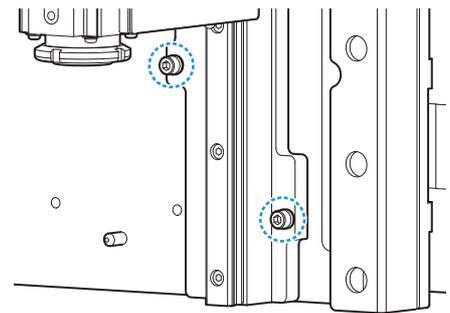
**3** Disconnect the two spindle cables, two air tubes, and dust collector hose on the router unit from the specified locations on the side of the head.

- To disconnect the spindle cables, turn the locks counterclockwise to tighten them.

Spindle cables

Air tubes

Dust collector hose
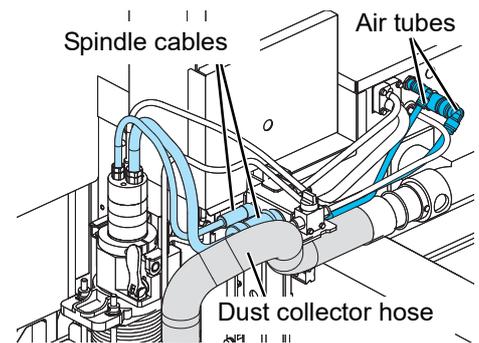
**4** Pull the router unit off the station while supporting with both hands, and slowly lift it up.

- The router unit is heavy. Be sure to support it with both hands and lift it up slowly.

⚠ **Caution**

- Take great care when performing this task to ensure that the unit does not come into contact with the A unit or adjacent tangential units resulting in accidents.
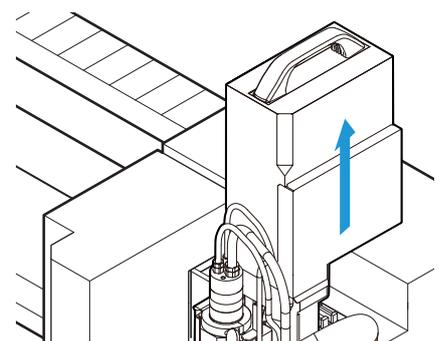
**5** **Mount the terminal cover to station D after the router unit has been removed.**

• Secure with the retaining screw.



Terminal cover

Retaining screw
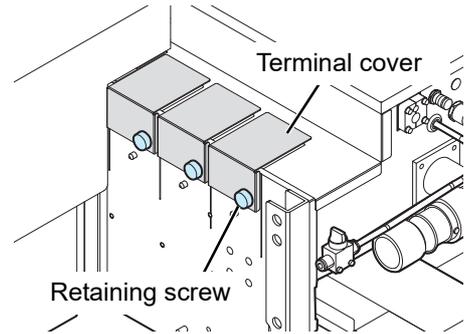
## Mounting an end mill on the spindle

**⚠ Caution**
- Even when an end mill was replaced, be sure to use [Tool Exchange] to detect the cutting blade (☞P.3-13). If the procedure is not followed, there is a risk of the cutting depth changing, possibly damaging the end mill or equipment, or causing injury.
- Prepare the end mill replacement stand in advance.

**1** **Select [Menu] > [Tool] > [Tool Exchange].**

• [Move the head to the Right edge.] is displayed. (This screen does not appear if the head is already at the right end.)

**2** **Press the [ENTER] key.**

• The head moves to the right end.

**3** **Remove the two spindle cables and air tube extending from the top of the spindle.**

• To disconnect the spindle cables, turn the locks counterclockwise to tighten them.

Spindle cables

Air tube
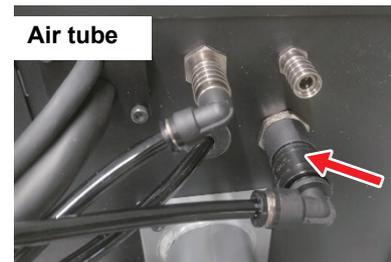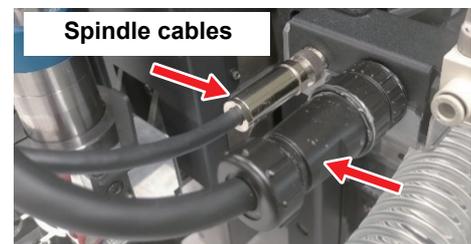
**4** **Pull down the red lever followed by the black lever to release the clamp.**

Black lever

Red lever
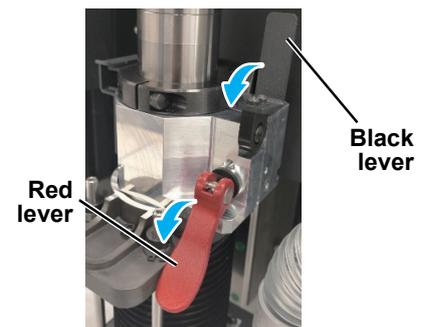
**5** **Turn the spindle counterclockwise to avoid the retainer, then pull it out upwards.**

Retainer

Spindle

**2-35**
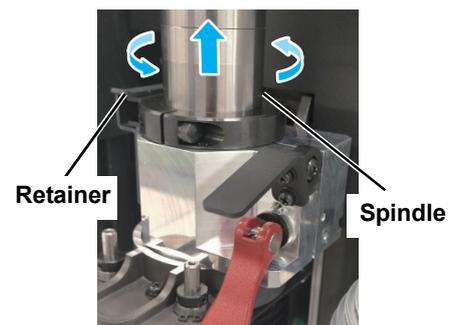
## 6
**Set the spindle on the end mill replacement stand.**

## 7
**Place the provided 22 mm wrench on the collet nut, then rotate counterclockwise to loosen it.**

**Important!**
- Only use tools included with the machine. Failure to observe these instructions may damage the nut.

**Hint!**
- Rotating the collet nut approximately one turn tightens it, and then rotating it further causes it to open.



**Tighten**
**Loosen**
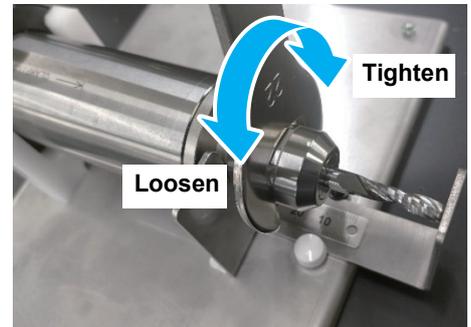
## 8
**Remove the collet, collet nut, and end mill.**

- Remove any swarf using a compressed air gun and cotton swabs, etc.
- Also clean the tapered section of the spindle.

**Caution**
- Do not use a compressed air gun to clean the spindle. This may blow dust inside the spindle, leading to failure.



**Collet**    **Collet nut**    **End mill**
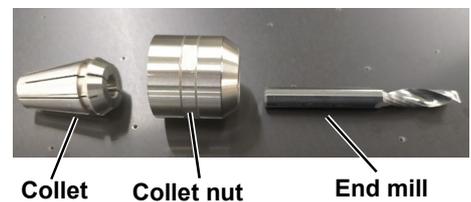
## 9
**Reassemble the collet and collet nut.**

**Hint!**
- Tilting the collet toward the wrench gripping location makes it easier to remove and reinstall.
- When correctly assembled, the front faces of the collet and the collet nut will be flush with each other.



**Wrench gripping location**
**Collet**
**Tilt**
**Collet nut**
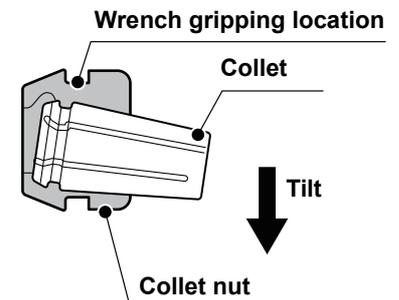
## 10
**Loosely tighten the collet chuck and collet nut on to the spindle, then insert the end mill.**

- Clean each part before assembling.



## 11
**Set the stopper position of the end mill replacement stand to suit the protruding length of the end mill attached.**

- Refer to the end mill list ( ☞P.8-16).
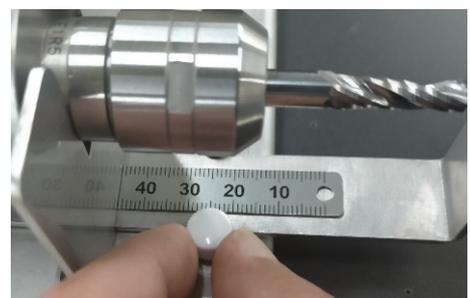
**12** Push the tip of the end mill up against the stopper and tighten the collet nut by hand. Finally use a wrench to tighten fully. (Tightening torque 8 N·m)

⚠ **Caution**
- Do not tighten without the end mill in place. This may deform the collet.
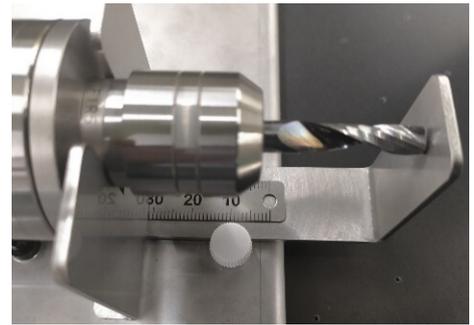


**13** Move the retainer to the front, insert the spindle downward.
Rotate the spindle in the clockwise direction, then move the retainer to the left.



Retainer
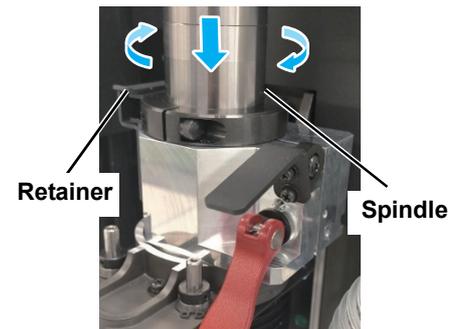
Spindle

**14** Push up the black lever followed by the red lever to clamp in place.



Black lever

Red lever
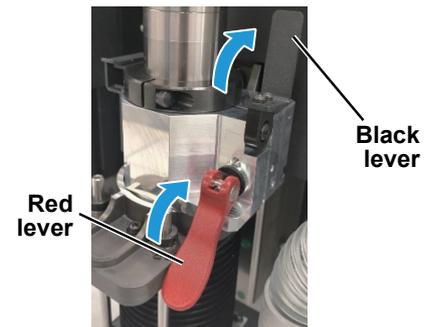
**15** Connect the two spindle cables and air tube on the router unit to the specified locations on the side of the head.

- To connect the spindle cables, turn the locks clockwise to tighten them.



Spindle cables

Air tube
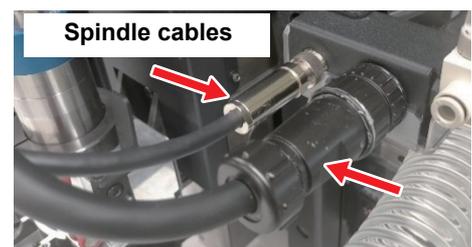
**2**

**16** **Once the tool has been mounted, press the [ENTER] key.**

• The resetting operation starts.

**17** **Perform cutting edge detection ( P.3-13).**

## Cleaning the collet

The collet should be cleaned each time it is removed and reattached, because it easily becomes clogged with cutting debris.

**1** **Referring to P.2-35 "Mounting an end mill on the spindle", remove the collet.**

**2** **Clean with a compressed air gun.**

**3** **Also clean the tapered mating sections on the spindle.**

⚠ **Caution**
- Do not use a compressed air gun to clean the spindle. This may blow dust inside the spindle, leading to failure.

**2**

# Mounting the Work Holder

The work holder prevents the work from rising up after it is cut.
Mount as needed when using the flat blade tool (FBT) or electric reciprocating tool (E12, E35, E60).

**⚠ Caution**

- Use the work holder for the following works.
  S (provided): FBT, E12, E35 (up to 30 mm)
  L (supply item): E60 (up to 54 mm)
  Do not use the work holder with soft works (such as sponges). The work holder is designed for use when cutting corrugated cardboard or similar material.
- Use the work holder with the holding surface (indicated by an arrow) fully in contact with the work.
  If the holding surface extends beyond the work, such as when you are cutting the edge of a work, the cutter may not be lowered, preventing correct cutting.
- When using work holder L, if there are cutouts or indentations on the work surface, failure to fully raise the tool may result in damage.
- The work holder should be used only when the work lifts up due to cutting, and should not be used in other cases.
- Using with thick work may cause catching on steps generated due to cutting, leading to damage.

Holder S        Holder L

Holding surface

---
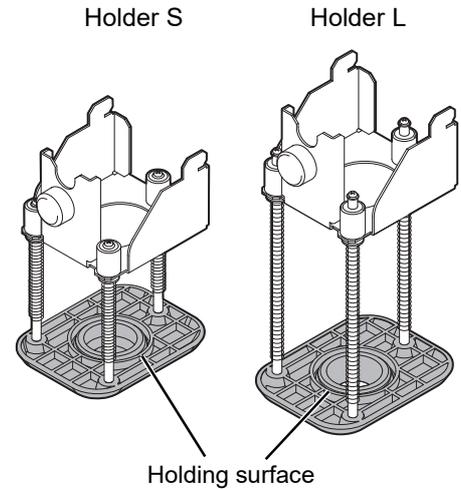
**1** **Insert the work holder hooks (x2) into the tangential unit slots**

---
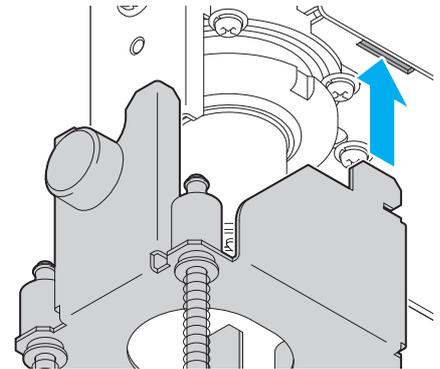
**2** **Confirm that the hooks are inserted, then tighten the screw.**

**Important!**
- When mounting the work holder, hold its mounting surface against the supporter base, so that the work holder is not mounted crooked.

Supporter base

Hook

---
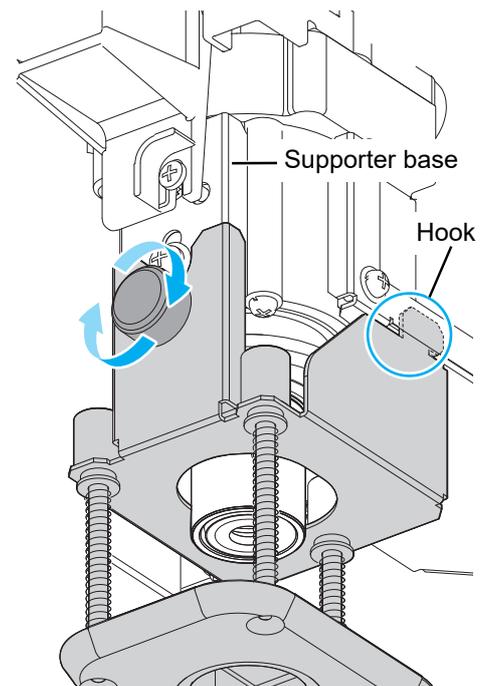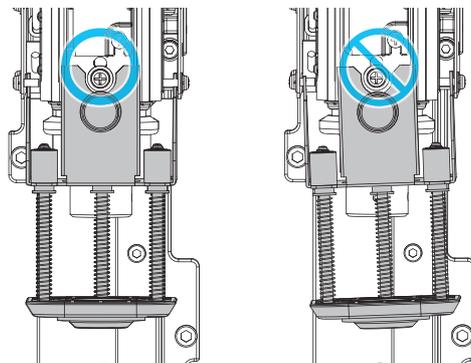
# Chapter 3
# Basic Operations

**About this chapter**

This chapter describes the basic operations normally used.

# Basic Operation Flow

The basic operation workflow is as follows.
For details, see the reference page for each step.

**1** Turning the Power On — See "Turning the Power On" (☞ P.3-3).

**2** Moving the Head — See "Moving the Head" (☞ P.3-4).

**3** Securing Works — See "Securing Works" (☞ P.3-8).

**4** Setting Work Thickness — See "Setting Work Thickness" (☞ P.3-11).

**5** Cutting Edge Detection — See "Cutting Edge Detection" (☞ P.3-13).

**6** Configuring Tool Settings — See "Configuring Tool Settings" (☞ P.3-15).

**7** Test Cutting — See "Test Cutting" (☞ P.3-36).

**8** Setting the Drawing Origin — See "Setting the Drawing Origin" (☞ P.3-43).

**9** Cutting or Drawing — See "Cutting or Drawing" (☞ P.3-45).

**10** Turning the Power Off — See "Turning the Power Off" (☞ P.3-49).

The machine is equipped with two power switches.

**Main power supply switch**: Located on the right side of the machine's electrical box.

[END/POWER] key (power switch): This switch is normally used to turn the machine on and off.

**Caution**
- Before turning the power on, make sure the cutting panel is free of objects other than the work. When you turn on the power, the head moves to the lower-right retraction point. Head failure may occur if the head strikes an object.
- Make sure the work guides are securely inserted in the holes on the cutting panel surface. The head may come into contact with work guides that are not fully in the holes when the machine is turned on, which may cause damage.
- Wait at least 30 seconds before turning the machine on again after it is turned off. Failure to observe these instructions may result in malfunctioning.

---

**1** **Make sure the cutting panel is free of objects.**

• Remove any objects from the cutting panel.

---

**2** **Turn the main power supply switch on.**

• Set the main power supply switch on the right side of the machine to the "I" side.

---
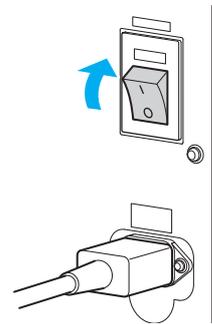
**3** **Press the [END/POWER] key to turn on power.**

• The [ENTER] key is lit (in blue).

---
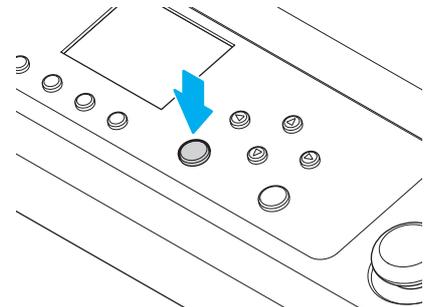
**4** **Turn on the connected computer.**

---

**5** **After the confirmation screen at right is displayed, press the [ENTER] key.**

• Origin detection begins.
• The head moves to the retraction point.
• After this, the local menu is displayed.

**Hint!**
• If [Startup Mode ( ☞ P.4-39)] is set to remote, the [Work Thickness] screen appears after the origin is detected. ( ☞ P.3-11)

**Caution**
• If any units from B to D remain lowered after resetting, a confirmation message is displayed. Confirm that there will be no problem if the tool is raised, and then press the [ENTER] key.
• If a V-cut cutter is in a work, remove the V-cut holder. ( ☞ P.1-13)

Start initial movement.
Press Enter key.

B-Unit
After remove obstacle
Press Enter key.
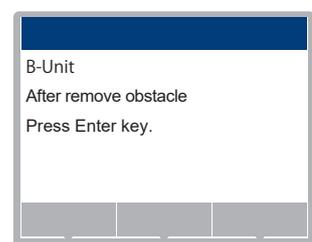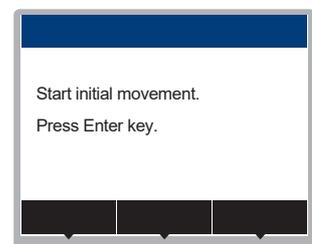
# Moving the Head

The head can be moved to a more convenient position when securing a work, making a test cut, mounting a tool, or in other situations.
There are two ways to move the head.

- Using the [Move to View Pos.] function
- Moving the Head with the Jog Keys

## Moving the Head with the [Move to View Pos.] Function

The head can be moved directly to any corner of the table or to the drawing origin.

Moving the head here is convenient when setting up works

Moving the head here is convenient when mounting tools
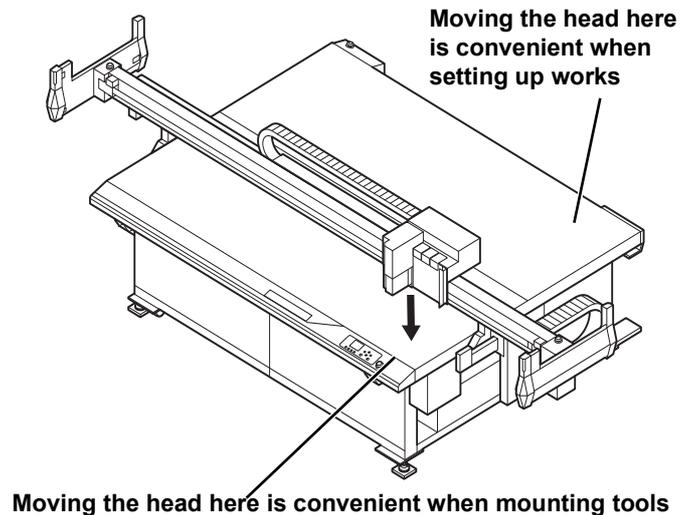
Hint! • Setting the [Auto View] function ( ☞ P.1-19) eliminates the need to execute the [Move to View Pos.] function. The head automatically moves to the retraction point after cutting (or drawing) is finished.

**1** **Press one of the ▲ ▼ ◄ ► jog keys once on the local mode screen.**

• The [JOG Function Selects] screen is displayed.

**2** **Press ▲ ▼ to select [Move to View Pos.], then press the [ENTER] key.**

**3** **Press [POSITION SELECT] and select the retraction position.**

• Setting values: Lower right, lower left, upper right, upper left, middle right, middle left, drawing origin ( ☞ P.1-19)

Important! • Middle right and middle left are only available on CFX-2531 and CFX-2550 models (not on CFX-2513 models).

**4** **Press the [ENTER] key.**

• The head moves to the specified position.

3-4

## Moving the Head with the Jog Keys

Use this method when mounting tools, making test cuts, sample cuts, and in other situations.
By pressing the jog keys, you can move the head to the exact position needed.

The coordinates indicated are relative to the command origin.

```
┌─────────────────────────────────┐
│ Plot Origin Setting             │
│                                 │
│        X=  0.0    Y=  0.0        │
│                                 │
│                                 │
│ Vacuum                   [SEL]  │
│ Auto                   1.0mm    │
├──────────┬──────────┬───────────┤
│JOG SPEED │PLOT ORIGIN│ JOG UNIT │
└──────────┴──────────┴───────────┘
```
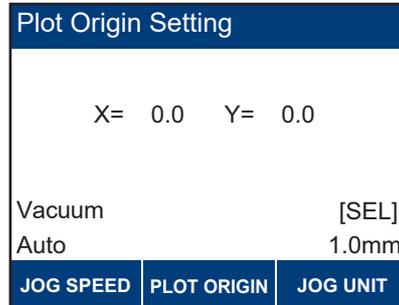
**1** **Access the local mode screen.**

• When in remote mode, press [LOCAL] to enter local mode.

**2** **Press one of the ▲ ▼ ◄ ► jog keys once.**

• The [JOG Function Selects] screen is displayed.

**3** **Press the [ENTER] key.**

• The head moves over the cutting panel, and the LED pointer is lit.

**4** **Move the head with the ▲ ▼ ◄ ► jog keys**

• The LED pointer XY coordinates are displayed.
• To move the head diagonally, press two keys at the same time.
  Example: To move to the upper-right corner, press ▲ ► at the same time.

**5** **To exit, press the [END/POWER] key several times.**

Hint! • If you adjust the jog speed or unit of jog movement, display in the area outlined in red below is updated accordingly. For adjustment instructions, see ( ☞ P.4-4).
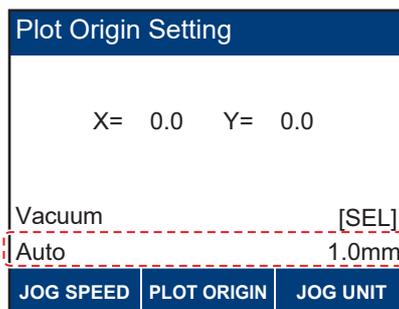
```
┌─────────────────────────────────┐
│ Plot Origin Setting             │
│                                 │
│        X=  0.0    Y=  0.0        │
│                                 │
│                                 │
│ Vacuum                   [SEL]  │
│ Auto                   1.0mm    │
├──────────┬──────────┬───────────┤
│JOG SPEED │PLOT ORIGIN│ JOG UNIT │
└──────────┴──────────┴───────────┘
```

Important! • Some areas cannot be specified in toggle mode (an error is displayed).
  The origin cannot be set in the Y-bar retraction area. ( ☞ P.4-16)
• Setting the origin in the area at the rear changes the rear area origin.

# Setting Underlay Thickness

The underlay is a sheet placed underneath the work (between the work and the felt mat) to prevent damage to the felt mat when milling or using other machining processes.
When using underlay, set the underlay thickness using the following procedure.

⚠ **Caution**  The set work thickness will be cleared in the following cases. The work thickness should be set again.
- When changing whether or not to use underlay
- When the underlay thickness is changed by manual input
- When the underlay thickness is measured automatically

## Selecting whether or not underlay is used

**1** **Press ⒶⒼ◀▶ on the local mode screen.**
- The [JOG Function Selects] screen is displayed.

**2** **Select [JOG Function Selects] > [Underlay], then press the [ENTER] key.**

**3** **Press ⒶⒼ to select whether or not underlay is used.**
- Setting values: Exist, None
- Default: None

**4** **Press the [ENTER] key.**
- The setting entered is saved.
- After selecting [Exist], pressing the [ENTER] key displays the underlay thickness setting menu.

## Setting underlay thickness

The underlay thickness can be set using either of the following methods.
- Enter the underlay thickness manually ☞ P.3-6 "Enter the underlay thickness manually"
- Measure the underlay thickness automatically ☞ P.3-7 "Measure the underlay thickness automatically"

⚠ **Caution**  When measuring the underlay thickness automatically, be sure to mount the cap on the pen adapter. There is a risk of the pen tip or blade damaging the underlay if the cap is not fitted.

### Enter the underlay thickness manually

**1** **Check (or measure) the underlay thickness.**

**2** **Press ⒶⒼ◀▶ on the local mode screen.**
- The [JOG Function Selects] screen is displayed.

**3** **Select [JOG Function Selects] > [Underlay], then press the [ENTER] key.**

3-6

**4** Press ⒜ⓥ to select [Exist], then press the [ENTER] key.

• The underlay thickness setting menu is displayed.

| Underlay Thickness | |
|---|---|
| Underlay Thickness | 0.4mm |
| Automatic detection | > |

**5** Select [Underlay Thickness], then press the [ENTER] key.

**6** Press ⒜ⓥ to enter the underlay thickness, then press the [ENTER] key.

• Pressing the ⒜ⓥ keys increments or decrements the value by 0.1 mm.

## Measure the underlay thickness automatically

**1** Make sure pen adapters are capped.

• If the cap is not attached, attach it. ☞ P.2-6

**2** Press ⒜ⓥ◀▶ on the local mode screen.

• The [JOG Function Selects] screen is displayed.

**3** Select [JOG Function Selects] > [Underlay], then press the [ENTER] key.

**4** Press ⒜ⓥ to select [Exist], then press the [ENTER] key.

• The underlay thickness setting menu is displayed.

**5** Press ⒜ⓥ to select [Automatic detection], then press the [ENTER] key.

**6** Press ⒜ⓥ◀▶ to align the LED pointer with the position to measure, then press the [ENTER] key.

• Automatic underlay thickness measurement starts.
• The measurement results are displayed once measurement is complete.

**7** Check the measurement results, then press the [ENTER] key.

Hint❗
• The underlay thickness measurement results will vary depending on wear and sinking of the felt.
  The settings can be altered using the ⒜ⓥ keys before pressing the [ENTER] key for the measurement results.
• The thickness of the felt mat can be altered. ( ☞ P.4-28) This should be reset if the thickness has changed due to wear.

There are two ways to secure works on the machine.
- Securing works with vacuum
- Securing works with adhesive tape

⚠ **Caution**

- Maximum thickness of works that can be set up or cut varies depending on the selected tool and blade.

| Tool | Thickness that can be set | Thickness that can be cut |
|---|---|---|
| Pen/swivel cutter | 54 mm | 0.8 mm |
| Flat Blade Tool | 54 mm | 10 mm |
| Reciprocating cutter | 54 mm | 50 mm |
| V-cut cutter | 20 mm | 20 mm |
| End mill | 54 mm | 54 mm |

- Load work of sufficient size in accordance with the cut data size. There is a risk of damage to the equipment if drawing is performed outside the work.
- Be sure to set the drawing origin and load the work to ensure that the cut data does not protrude outside the work mounted. There is a risk of damage to the equipment if drawing is performed outside the work.

## Securing Works with Adhesive Tape

If vacuum cannot secure works such as thin gaskets or industrial rubber in place when a swivel cutter or Flat Blade Tool is used, use adhesive tape to hold the work in place.

**Important!**

- Use adhesive tape that does not leave a residue of adhesive or tape itself on the cutting panel.

Tape down the work on four sides to secure it.
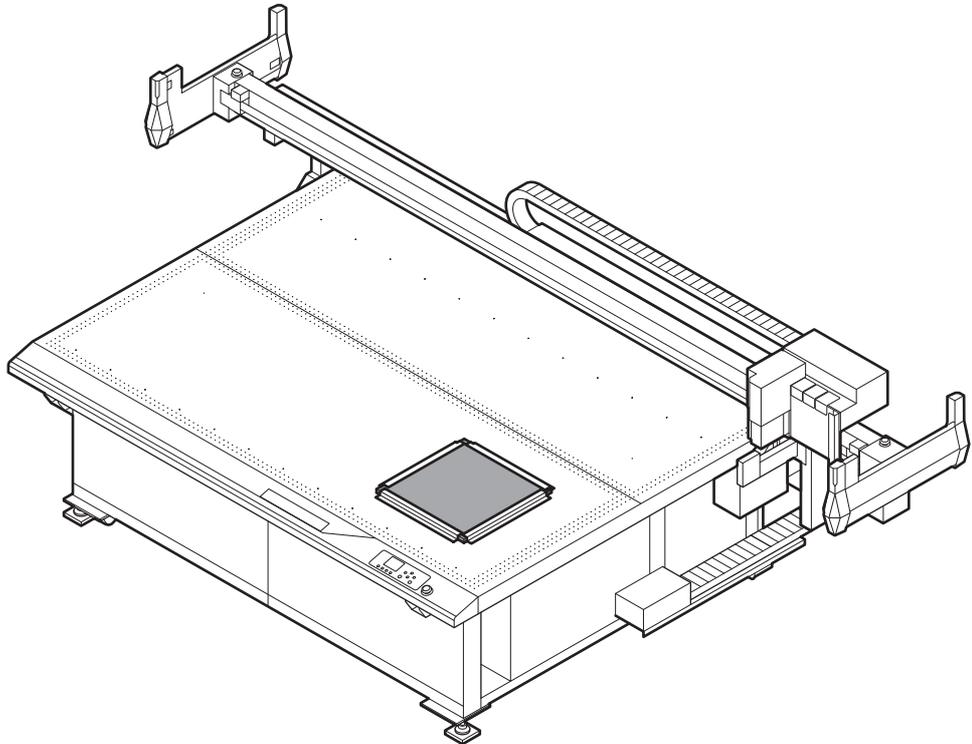
## Securing Works with Vacuum

Relatively light works such as thin coated board, corrugated cardboard, or sponge can be held in place by vacuum adhesion.

(Important!) • If all the suction holes on the cutting panel are not covered by the work, cover all the suction holes with film or other means as shown below. If some suction holes are not covered, adhesion will be weaker, and the work may not be held securely.

**When the work is too small to cover all the suction holes on the cutting panel**
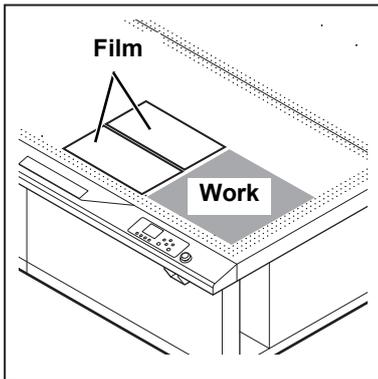
**When smaller works are arranged next to each other with a gap between them**
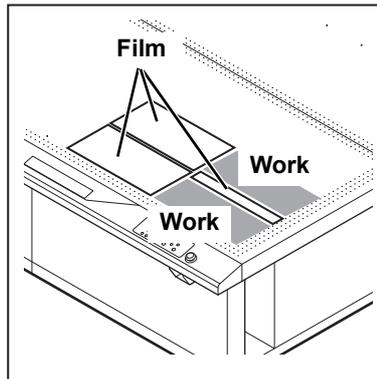
**When a work is positioned away from the work guide**
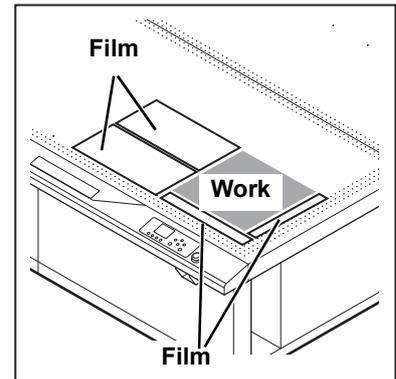


• If you will cut multiple small shapes, carefully cover the areas just cut, as follows.
Cutting (or drawing) without taking steps such as this will allow airflow through the openings that were cut, and the work will not be held securely. This will also cause the covering sheets placed over the cut areas to lift away from the work surface, leading to inferior results.

**(1)** Press [REMOTE] to pause cutting (or drafting).
**(2)** Start [VIEW] from jog function selection to retract the head.
**(3)** Using smaller portion of the covering sheet that you have cut, place the sheet over the area just cut.
**(4)** Press the [END/POWER] key to return to local mode
**(5)** Press [REMOTE] to resume cutting (or drafting).

(Hint!) • Vacuum on/off can be interlocked with the remote key. (☞P.1-21)

**3**

## 1 Place the work on the cutting panel.
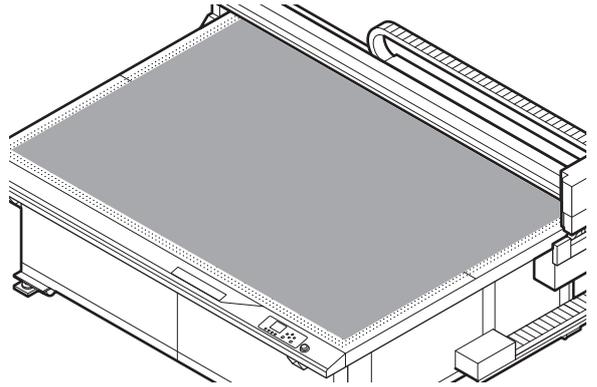
## 2 On the local mode screen, press [VACUUM].

## Switch the suction valves to suit the work.

Make sure that the area used for cutting does not extend beyond the effective cutting area.
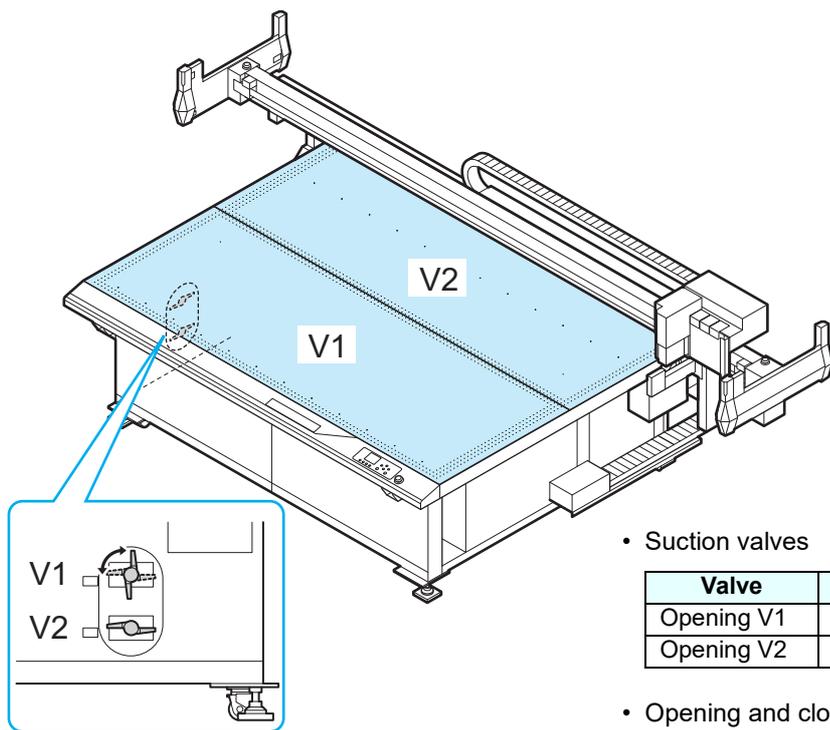
• Suction valves

| Valve | Table |
|-------|-------|
| Opening V1 | Applies suction to area V1 |
| Opening V2 | Applies suction to area V2 |

• Opening and closing suction valves
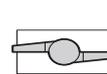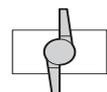
**Open**　　**Closed**

# Setting Work Thickness

Once the work is set up, set the work thickness based on the thickness of the work used.

## Setting work thickness

The following methods are available to set work thickness.

- Automatically set work thickness. "Measuring automatically" ( ☞ P.3-11)
- Manually enter work thickness. "Entering values manually" ( ☞ P.3-12)

| Caution | • When measuring the work thickness automatically, be sure to mount the pen cap on the pen adapter. There is a risk of the pen tip or blade damaging the work if the pen cap is not fitted. |
|---|---|

| Hint! | • In continuous or toggle mode, values entered in the continuous mode settings are valid. (Values entered/measured here are disregarded.) ( ☞ P.4-16) |
|---|---|

## Measuring automatically

| 1 | **Make sure the pen adapter is capped.**<br>• If the cap is not attached, attach it. ( ☞P.2-6) |
|---|---|
| 2 | **Press ▲ ▼ ◀ ▶ on the local mode screen.**<br>• The [JOG Function Selects] screen is displayed. |
| 3 | **Select [JOG Function Selects] > [Work Thickness].** |
| 4 | **Select [Automatic detection].** |
| 5 | **Press ▲ ▼ ◀ ▶ to align the LED pointer with the position to measure, then press the [ENTER] key.**<br>• Automatic work thickness measurement starts.<br>• The measurement results are displayed once measurement is complete. |
| 6 | **Check the measurement results, then press the [ENTER] key.**<br>• The measured thickness value is shown on the local mode screen. |

| Hint! | • The work thickness measurement results will vary depending on wear and sinking of the felt. The settings can be altered using the ▲ ▼ keys before pressing the [ENTER] key for the measurement results. |
|---|---|

| Hint! | • The thickness of the felt mat can be altered. ( ☞ P.4-28) This should be reset if the thickness has changed due to wear. |
|---|---|

3

## Entering values manually

**1**    **Check (or measure) the work thickness.**

**2**    **Press ⒶⓋ◁▷ on the local mode screen.**

• The [JOG Function Selects] screen is displayed.

**3**    **Select [JOG Function Selects] > [Work Thickness].**

**4**    **Select [Numerical input].**

**5**    **Press ⒶⓋ to enter the work thickness, then press the [ENTER] key.**

• The entered thickness value is shown on the local mode screen.
• Ⓐ Ⓥ Keys: Increment/decrement in 0.1 mm steps
• F1 key: Reduce in 5 mm steps (display - 5 mm)
• F3 key: Increase in 5 mm steps (display + 5 mm)

# Cutting Edge Detection

Detects the tip position of the mounted tool. Immediately after turning the machine on, or when the height of the tip position changes after a tool is changed or for other reasons, perform cutting edge detection as follows.

The following methods are available for cutting edge detection.
- Automatic detection: Automatically detects the tip position of the mounted tool.
- Manual detection: Specify the tool tip position using jog operations. Use only if automatic detection is not possible.

(Important!) • Cutting edge detection is not possible while cutting is suspended. If cut data remains, use [Data Clear] (☞ P.3-47).

(Hint!) • When [Startup Mode (☞ P.4-39)] is set to remote, cutting edge detection is automatically performed immediately after startup.

## Automatic detection for all tools

**1** **Make sure pen adapters are capped.**

• If the cap is not attached, attach it. (☞P.2-6)

**2** **On the local mode screen, select [MENU].**

| Local |
| --- |
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 |
| MENU    VACUUM    REMOTE |
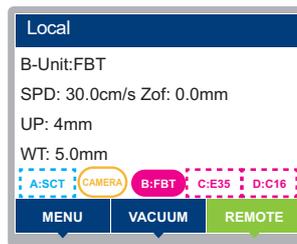
**3** **Press ⓐ ⓥ to select [Tool] > [Cutting Edge Detection].**

• The cutting edge detection menu is displayed.

**4** **Select [Auto detect All] and press the [ENTER] key.**

• Automatic detection only applies to units on which tools are mounted.
• The first time after startup, ZS sensor operation is checked with the pen adapter before cutting edge detection.

**5** **After all detection is complete, press the [END/POWER] key several times to return to the local mode screen.**

• [Not Det.] is displayed for tools that could not be detected. Make sure the tools are mounted correctly.
• If automatic detection is not possible even with tools mounted correctly, perform manual detection (☞P.3-14).

3

## Automatically detecting only specified tools

**1** Press ⒜ ⒱ in [Cutting Edge Detection] to select tools for detection.

**2** With [Automatic detection] selected, press the [ENTER] key.
  • Automatic detection only applies to your specified units.

**3** After detection is complete, press the [END/POWER] key several times to return to the local mode screen.

## Manually detecting only specified tools

**1** Press ⒜ ⒱ in [Cutting Edge Detection] to select tools for detection.

**2** Press ⒜ ⒱ to select [Manual detection], then press the [ENTER] key.
  • Specified units move over the ZS sensor.

**3** Press the surface of the ZS sensor lightly by hand to confirm that the sensor status display on the screen changes to [ON].

  • After the ZS sensor detects contact, the sensor status indicator on the screen changes to [ON] and a buzzer sounds.

(Important!) • If sensor status is not displayed correctly, contact your dealer or our sales office or call center.

```
Edge Detect : Manual
B-Unit: FBT          Sensor: ON
Move cut edge to sensor
Z UP                      [Λ]
Z DOWN                    [V]
Set                      [ENT]
```
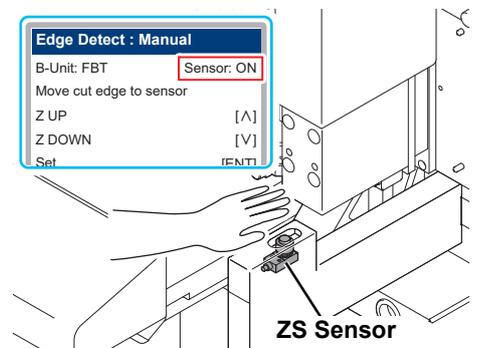
**ZS Sensor**

**4** Press ⒜ ⒱ and adjust the tool so that the tip of the tool is at a height to touch the surface of the ZS sensor.

  • ⒜ : Raise the tool.
  • ⒱ : Lower the tool.

⚠ Caution • Make sure that the tip of the tool is not lowered to a height where it presses hard against the ZS sensor. Failure to observe these instructions may damage the sensor.

**5** When the tool tip moves to a height where it touches the surface of the ZS sensor, press the [ENTER] key.

**6** To exit, press the [END/POWER] key several times to return to local mode.

# Configuring Tool Settings

## Selecting Tools

Set the tools to be used for cutting (or drawing).

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU      VACUUM      REMOTE
```
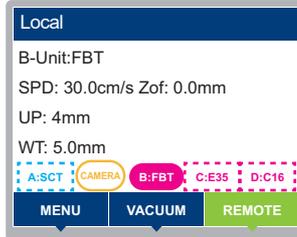
**2** **Press ⓐ ⓥ to select [Tool] > [Tool Select], then press the [ENTER] key.**

**3** **Press ⓐ ⓥ to select the station.**

• Setting values:
  • Unit A: SCT
  • Unit A: PEN
  • Unit B: Tool mounted
  • Unit C: Tool mounted
  • Unit D: Tool mounted

(Important!) • If a unit is not mounted, this is indicated in the display. In this case, it cannot be selected.

**4** **Press the [ENTER] key.**

• Tool settings are updated accordingly.

## Changing Cutting Conditions

Before starting cutting (or drawing), select the cutting conditions to suit the work and tool used.

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
   MENU      VACUUM      REMOTE
```
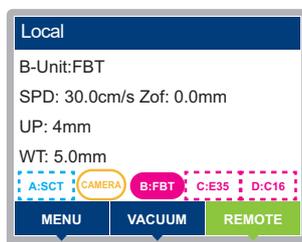
**2** **Press ⒶⓋ to select [Tool] > [Tool Setting], then press the [ENTER] key.**

**3** **Press ⒶⓋ to select a station, then press the [ENTER] key.**

• Setting values: Attached Tool, A-Unit, B-Unit, C-Unit, D-Unit

Hint! • Selecting "Attached Tool" allows the tool to be set to be selected from among the currently mounted tools.

**4** **Press ⒶⓋ to select the tool.**

• For units with many available tools, use 〔 << 〕 〔 >> 〕 to switch screens.
• Configurable tools vary by unit. (☞ Unit and Tool Combinations)

Important! • Regardless of the tools actually mounted, tool settings for each unit can be configured.
• Tool settings are saved on a per-unit basis. They are not applied to other units.

**5** **Press the [ENTER] key.**

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

**6** **Press ⒶⓋ to display the cutting condition to set, then press the [ENTER] key.**

• Items displayed vary by tool. (☞ Setting items)

**7** **Press ⒶⓋ to set a setting value, then press the [ENTER] key.**

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

**8** **To set other items, repeat steps 3 to 7.**

• For details on setting items, see "Setting items".

**9** **Press the [END/POWER] key after all settings are complete.**

## Setting items

Setting items for cutting conditions vary by tool.

| Setting item | Tool type | | | | | | | | Setting value | Details |
|---|---|---|---|---|---|---|---|---|---|---|
| | Swivel cutter | Pen | Reciprocating cutter | Flat Blade Tool | Crease roller | V-cut 45° | V-cut angle selection | Router unit | | |
| Cut (draw) speed | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 0.1 to 100 (cm/s) | Speed of tool movement in the X or Y direction. Varies by tool, work, and the size of shapes. |
| Cut (draw) press | | ○ | | | | | | | 20 to 150 g (Up to 100: 5 g, 100 to 150: 10 g increments) | Pressure at which the tool cuts workpieces. |
| | ○ | | | | | | | | 20 to 1000 g (Up to 100: 5 g, 100 to 400: 10 g increments, 400 or more: 50 g increments) | |
| Cutting blade Offset | ○ | | | | | | | | 0.00 to 2.50 (in 0.05 mm increments) | Amount by which the tip of the swivel cutter is offset. Varies depending on blade wear. |
| Adj-prs Offset | ○ | | | | | | | | -9 to 9 (in 1-unit increments) | Set when there are uncut portions at the beginning and end of cuts, and in other situations. |
| Dummy cut | ○ | | | | | | | | On, Off | When the power is turned on with the swivel cutter set as the tool, or when the swivel cutter is selected, cuts are made outside the effective cutting area, so that the swivel cutter blade is directed in the direction of travel. |
| Up speed | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | AUTO (same value as cutting speed), 5 cm/s, 10 to 100 cm/s (in 10cm/s increments) | Sets the speed of head movement when the tool is raised. With [AUTO] selected, the up speed corresponds to the cutting speed setting value in the cutting conditions. |
| Up height | | | ○ | ○ | ○ | | | ○ | Full up, 2 to 40 mm | Sets the height to which tools on stations B to D are raised. |
| Over Cut | ○ | | | | | | | | OFF, 0.1 to 1.0 mm (in 0.1 mm increments) | Intentionally overlapping the start and end points prevents the work from being left uncut. |
| Z origin Offset | | | ○ | ○ | | ○ | ○ | ○ | -10.0 mm to 4.2 mm | Amount by which cutting is offset relative to the Z-axis origin. To ensure that works are fully cut, we recommend setting a positive value. (To the extent of slightly scraping the felt mat.) |
| | | | | | ○ | | | | -20.0 mm to 4.2 mm | |
| Smooth Control | | | ○ | ○ | ○ | | | | On, Off | If there are continuous minute line segments, these are controlled to ensure smooth drawing results. It also reduces the degree to which the work is picked by the tool. Disabling will result in rough edges appearing in the drawing results. |

**3**

| Setting item | Tool type | | | | | | | | Setting value | Details |
|---|---|---|---|---|---|---|---|---|---|---|
| | Swivel cutter | Pen | Reciprocating cutter | Flat Blade Tool | Crease roller | V-cut 45° | V-cut angle selection | Router unit | | |
| Vibration level | | | ○ | | | | | | Low, Mid, High | Select the reciprocating cutter vibration frequency in a range of three levels. |
| Start correct | | | ○ | ○ | | | | | 0.00 to 2.50 (in 0.01 mm increments) | Amount of cutting start position offset when the tool is lowered. Setting a larger offset for thick works makes separation easier by cutting from the front. Check the finish and adjust as needed. |
| | | | | | | ○ | ○ | | 0.00 to 5.00 (in 0.01 mm increments) | |
| End correct | | | ○ | ○ | | | | | 0.00 to 2.50 (in 0.01 mm increments) | Amount of cutting end position offset when the tool is raised. Setting a larger offset for thick works makes separation easier by cutting extra at the end. Check the finish and adjust as needed. |
| | | | | | | ○ | ○ | | 0.00 to 5.00 (in 0.01 mm increments) | |
| Up angle | | | ○ | ○ | ○ | | | | 0 to 180° (in 1° increments) | Sets the minimum angle to raise the tool and change the direction, when changing the cutting (creasing) direction. This reduces work prying by tools. Operation may not match the setting value exactly due to the margin of error in converting to units used for control. |
| Double roller | | | | | ○ | | | | OFF, 0.1 to 3.0 mm (in 0.1 mm increments) | Draws two ruled lines, centered on the original data and offset by the setting value. |
| Pressure level | | | | | ○ | | | | OFF, press LV. 1 to 31 | Sets the roller unit pressure. |
| Press correction | | | | | ○ | | | | 0 to 10 (in 1-unit increments) | Corrects downward pressure when cutting (creasing) thick works. Adding the pressure compensation value to a previously set pressure value ensures that the work is cut when the tool is lowered. |
| Y press correction | | | | | ○ | | | | -20 to 20 (in 1-unit increments) | Pressure values in the Y direction can be corrected to crease with a different pressure than in the X direction. When corrugated cardboard is creased, works are set up with flutes in the Y direction and can be creased with less pressure than in the X direction. |
| Edge angle | | | | | | | ○ | | VAS: 0°, 15°, 22.5°, 30°, 45° | Sets the blade angle for V-cut cutting. |
| Pen No. assignment | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | No. 1 to No. 8[*1] | Sets the tool on the machine to which the pen number in data will be assigned. |

*1: Pen no. assignment options as follows.

| Station | Tool | Max. no. of groups saved |
|---|---|---|
| A | SCT | 1 |
| A | PEN | 1 |
| B, C, D | FBT | 3 |
| B, C | E12 / E35 / E60 | 2 |
| B, C, D | C16/C26/C60 | 3 |
| B, C, D | V45/VAS | 3 |
| D | R10 | 1 |

| Setting item | Tool type | | | | | | | | Setting value | Details |
|---|---|---|---|---|---|---|---|---|---|---|
| | Swivel cutter | Pen | Reciprocating cutter | Flat Blade Tool | Crease roller | V-cut 45° | V-cut angle selection | Router unit | | |
| Rotation speed | | | | | | | | ○ | 18000 to 40000 rpm (in 1000-unit increments) | The number of revolutions per minute for router unit rotation. |
| Brush offset | | | | | | | | ○ | 0.0 to 10.0 mm (in 0.1 increments) | Setting to raise and operate brush on the end of the router unit dust collector nozzle above the work surface. |
| R5 arc speed | | ○ | | | | | | | OFF, 10, 20 (mm/s) | Speed for cutting arcs with a radius of less than 5 mm. When set to [Off], the previously set speed is used for cutting. |
| | | | ○ | ○ | | | | | OFF, 0.5 to 20.0 (mm/s) | |
| R10 arc speed | | ○ | | | | | | | OFF, 10 to 50 (mm/s) | Speed for cutting arcs with a radius of 5 mm or more but less than 10 mm. When set to [Off], the previously set speed is used for cutting. |
| | | | ○ | ○ | | | | | OFF, 0.5 to 20.0 (mm/s) | |
| R15 arc speed | | ○ | | | | | | | OFF, 10 to 100 (mm/s) | Speed for cutting arcs with a radius of 10 mm or more but less than 15 mm. When set to [Off], the previously set speed is used for cutting. |
| | | | ○ | ○ | | | | | OFF, 0.5 to 20.0 (mm/s) | |
| R20 arc speed | | ○ | | | | | | | OFF, 10 to 150 (mm/s) | Speed for drawing arcs with a radius of 15 mm or more but less than 20 mm. When set to [Off], the previously set speed is used for drawing. |
| R30 arc speed | | ○ | | | | | | | OFF, 10 to 200 (mm/s) | Speed for drawing arcs with a radius of 20 mm or more but less than 30 mm. When set to [Off], the previously set speed is used for drawing. |
| R40 arc speed | | ○ | | | | | | | OFF, 10 to 250 (mm/s) | Speed for drawing arcs with a radius of 30 mm or more but less than 40 mm. When set to [Off], the previously set speed is used for drawing. |
| R50 arc speed | | ○ | | | | | | | OFF, 10 to 300 (mm/s) | Speed for drawing arcs with a radius of 40 mm or more but less than 50 mm. When set to [Off], the previously set speed is used for drawing. |
| R100 arc speed | | ○ | | | | | | | OFF, 10 to 300 (mm/s) | Speed for drawing arcs with a radius of 50 mm or more but less than 100 mm. When set to [Off], the previously set speed is used for drawing. |

**Caution**

- With sorting enabled, the [R** arc speed] setting specifying arc cutting speed is not applied, because shapes are not recognized as arcs.
  For this reason, when setting [R** arc speed], disable [Sorting]. (☞ P.4-12)

3

## ● Recommended cutting conditions when using the router unit

| Work type | Thickness (mm) | End mill type | Blade diameter (mm) | Cutting direction | Count cut (cycles) | Rotation speed (1000rpm) | Speed (cm/s) | Cutting depth (mm) | Z speed (mm/s) |
|---|---|---|---|---|---|---|---|---|---|
| Resin sheet | 5 or less | SPB-0067 | 3 | Up cut | 1 | 30 | 3 | 5 | 10 |
| Aluminum composite sheet | 5 or less | SPB-0068 | 3 | Up cut | 1 | 30 | 2 | 5 | 10 |
| Channel material | 15 or less | SPB-0069 | 4 | Up cut | 2 | 30 | 1 | 10 | 10 |
| Channel material | 15 to 30 | SPB-0070 | 6 | Up cut | 2 to 3 | 30 | 1 | 10 | 10 |
| Channel material | 30 to 54 | SPB-0071 | 6 | Up cut | 3 to 6 | 30 | 1 | 10 | 10 |
| Acrylic | 3 or less | SPB-0074 | 3 | Up cut | 1 | 30 | 3 | 3 | 10 |
| Acrylic | 5 or less | SPB-0072 | 4 | Up cut | 1 | 30 | 3 | 5 | 10 |
| Acrylic | 5 to 10 | SPB-0103 | 6 | Up cut | 2 to 5 | 40 | 10 | 2 | 10 |
| Acrylic | 10 to 20 | SPB-0104 | 6 | Up cut | 5 to 10 | 30 | 10 | 2 | 10 |
| MDF | 10 or less | SPB-0103 | 6 | Up cut | 1 to 2 | 30 | 5 | 5 | 10 |
| MDF | 10 to 20 | SPB-0104 | 6 | Up cut | 2 to 4 | 30 | 5 | 5 | 10 |
| MDF | 20 to 30 | SPB-0105 | 6 | Up cut | 4 to 6 | 30 | 5 | 5 | 10 |

# Adjusting Tools

Tool adjustment is required in cases such as when the start and end points do not match when drawing (or cutting) with the machine.

Hint! • In toggle mode, tool adjustment drawing is only possible in the front area.

## The following three tool adjustments are available

**(1)** Cutter adjustment: Adjusts cutters.
**(2)** Roller adjustment: Adjusts rollers.
**(3)** Circle Θ correction: Adjustment if start and end points do not match when drawing circles.

## Adjusting Cutters

Adjusts cutters.
For cutter adjustment, make each of the following adjustments.

Hint! • Rollers can be adjusted the same way.
• Tool adjustment for the router unit (R10) consists of offset adjustment only.

| B-Unit:FBT | |
|---|---|
| CENTER A | 0.00mm |
| CENTER B | 0.00mm |
| OFFSET X | 0.0mm |
| OFFSET Y | 0.0mm |
| THETA ANGLE | 0.0° |
| << | TEST | >> |

| ❶ Center Adjust P.3-22 | Perform this adjustment after blade or tool replacement. |
|---|---|
| ❷ Offset Adjust P.3-25 | Adjusts in case of cutter or tool misalignment. |
| ❸ Theta Angle Adjust P.3-29 | Adjusts the angle of rotation for cutters or rollers. |

● **For more efficient cutter adjustment, follow this sequence.**

❸ ⇨ ❶ ⇨ ❷ ⇨ ❸ ⇨ ❶ ⇨ ❷

This sequence is one recommended example. Adjust in a sequence that is most convenient for you.

3

## Center adjustment (tangential unit)

Check test patterns drawn by a cutter or roller to correct misalignment due to eccentricity.

( Hint ! )  • When adjusting the roller, the pen should be mounted on unit A in advance.
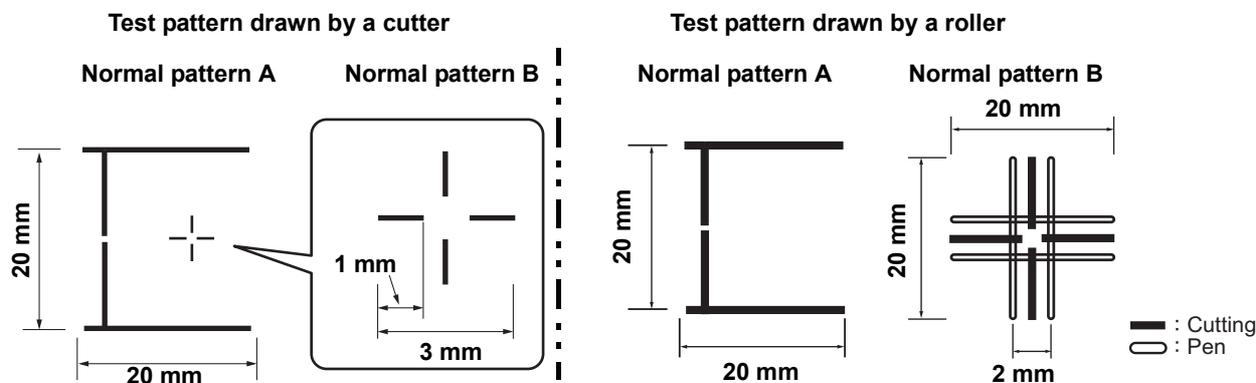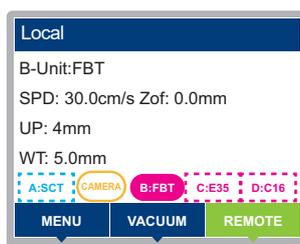
**Test pattern drawn by a cutter**

Normal pattern A    Normal pattern B

20 mm

20 mm

1 mm

3 mm

**Test pattern drawn by a roller**

Normal pattern A    Normal pattern B

20 mm

20 mm

20 mm

20 mm

20 mm

2 mm

▬ : Cutting
◯ : Pen

---

**1**  **On the local mode screen, press [MENU].**

Local

B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm

A:SCT   CAMERA   B:FBT   C:E35   D:C16

MENU   VACUUM   REMOTE

---

**2**  **Press ⊕⊖ to select [Tool] > [Tool Adjust], then press the [ENTER] key.**

---

**3**  **Press ⊕⊖ to select a unit, then press the [ENTER] key.**

• Setting values: B, C, D
• Tools currently mounted in the units are indicated.

---

**4**  **Press [TEST].**

---

**5**  **Press ⊕⊖ to select [Center Adjust], then press the [ENTER] key.**

• To change the drawing position from the current position, perform the procedures described in steps 6 to 7 below.

---

**6**  **Press the [SEL] key.**

---

**7**  **Press ⊕⊖◁▷ to move the head into position for drawing, then press the [ENTER] key.**

**8** When the confirmation screen is displayed, press the [ENTER] key.

• Cutting is executed.

**9** Press ⒜ ⒥ to select [Center A] or B, then press the [ENTER] key.

**10** Press ⒜ ⒥ , then enter a correction value.

CENTER A: -5.00 mm to +5.00 mm
CENTER B: -5.00 mm to +5.00 mm
• For details, see "How to adjust using center adjustment" on the next page.

**11** Press the [ENTER] key.

• To exit without saving, press [END/POWER].
• To enter other correction values, press ⒜ or ⒥ to select the correction value to be entered, then repeat the procedure from step 10 onward.
• To exit, press [END/POWER] several times.

**3**

## How to adjust using center adjustment

Eccentricity can be adjusted with the following screen displayed.

**B-Unit:FBT**

| | |
|---|---|
| CENTER A | 0.00mm |
| CENTER B | 0.00mm |
| OFFSET X | 0.0mm |
| OFFSET Y | 0.0mm |
| THETA ANGLE | 0.0° |

| << | TEST | >> |
|---|---|---|

**CENTER A adjustment**
Adjustment to align the center of the cutter (or roller) with the center of the holder.
Press ▲ ▼ to adjust. (0.01 mm pitch)

**CENTER B adjustment**
Adjustment to check whether the tool is mounted askew. Press ▲ or ▼ to adjust. (0.01 mm pitch)

**(1)** Use CENTER A to check the position of the horizontal line with respect to the vertical line (whether the horizontal line is protruding or separated from the vertical line).
**(2)** Use CENTER B to confirm that lines in the X and Y directions are aligned.
**(3)** Adjust as needed.

| Adjustment using pattern A | Adjustment using pattern B |
|---|---|
| A mm — **Measure the amount of protrusion (A)** (Setting value: -A) **Press ▼ to adjust in the negative direction.** / A mm — **Measure the amount of separation (A)** (Setting value: +A) **Press ▲ to adjust in the positive direction.** | B mm — **If the upper line is misaligned to the right** **Press ▼ to adjust in the negative direction so that the setting value = [length of B in figure] ÷ 2.** / B mm — **If the upper line is misaligned to the left** **Press ▲ to adjust in the positive direction so that the setting value = [length of B in figure] ÷ 2.** |
| •When a 2°x10 carbide blade is mounted on the reciprocating cutter, adjust the horizontal line so that it protrudes about 2 mm. | |

## V cutter center adjustment procedure

The V cutter adjustment is performed on the work surface, so move the Z-axis origin by a distance corresponding to the work thickness before cutting. However, if the blade is positioned in relation to the work surface as follows, fine adjust the work thickness value (or Z origin offset).
• If the blade does not reach the work surface, reduce the work thickness value.
• If the blade cuts into the work surface, increase the work thickness value.

**Important!** • Adjusting the work surface position will vary how the pattern appears, so the value entered should ideally be as close to the actual work thickness as possible.

**Hint!** • The positive and negative signs for the V cutter correction values will be opposite to those for other tools.

| Adjustment using pattern A | Adjustment using pattern B |
|---|---|
| A mm — **Measure the amount of protrusion (A)** (Setting value: +A) **Press ▲ to adjust in the positive direction.** / A mm — **Measure the amount of separation (A)** (Setting value: -A) **Press ▼ to adjust in the negative direction.** | B mm — **If the upper line is misaligned to the right** **Press ▲ to adjust in the positive direction so that the setting value = [length of B in figure] ÷ 2.** / B mm — **If the upper line is misaligned to the left** **Press ▼ to adjust in the negative direction so that the setting value = [length of B in figure] ÷ 2.** |

**3-24**

## Offset adjustment (tangential unit)

Compensate for misalignment by comparing a test pattern drawn with a pen to a test pattern drawn by a cutter or other tool.

( Hint ! )   • Mount the pen on unit A in advance.
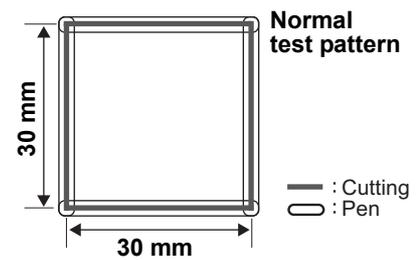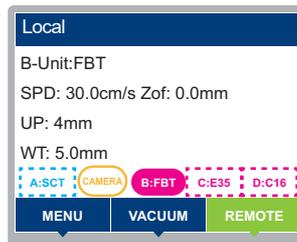
**Normal test pattern**

30 mm

30 mm

▬ : Cutting
▭ : Pen

---

**1** On the local mode screen, press [MENU].

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
MENU      VACUUM      REMOTE
```

---

**2** Press ⓐ ⓥ to select [Tool] > [Tool Adjust], then press the [ENTER] key.

---

**3** Press ⓐ ⓥ to select a unit, then press the [ENTER] key.

• Setting values: B, C, D
• Tools currently mounted in the units are indicated.

---

**4** Press [TEST].

---

**5** Press ⓐ ⓥ to select [Offset Adjust], then press the [ENTER] key.

• To change the drawing position from the current position, perform the procedures described in steps 6 to 7 below.

---

**6** Press the [SEL] key.

---

**7** Press ⓐ ⓥ ◄ ► to move the head into position for drawing, then press the [ENTER] key.

---

**8** When the confirmation screen is displayed, press the [ENTER] key.

• Cutting is executed.

---

**9** Press ⓐ ⓥ to select [Offset X] or [Offset Y], then press the [ENTER] key.

---

**3**

**10** **Press ⒶⓋ , then enter a correction value.**

   OFFSET X:   -20.0 mm to +20.0 mm
   OFFSET Y:   -20.0 mm to +20.0 mm
   • For details, see "How to adjust using offset adjustment" on the next page.
   • For R10, the input screen is different. See "Performing offset adjustment (for R10)" (☞ P.3-28).

**11** **Press the [ENTER] key.**

   • To exit without saving, press [END/POWER].
   • To enter other correction values, press Ⓐ or Ⓥ to select the correction value to be entered, then
     repeat the procedure from step 10 onward.
   • To exit, press [END/POWER] several times.

## How to adjust using offset adjustment

Offset adjustment is possible with the following screen displayed.

| B-Unit:FBT | |
|---|---|
| CENTER A | 0.00mm |
| CENTER B | 0.00mm |
| OFFSET X | 0.0mm |
| OFFSET Y | 0.0mm |
| THETA ANGLE | 0.0° |
| << | TEST | >> |

**Offset X adjustment**
Distance from pen to cutter or other tool in the X direction.
Press ▲ ▼ to adjust. (0.1 mm pitch)

**Offset Y adjustment**
Distance from pen to cutter or other tool in the Y direction.
Press ▲ ▼ to adjust. (0.1 mm pitch)

**(1)** Measure the misalignment between the shapes drawn by the pen and the cutter (roller).
**(2)** Enter the adjustment value.

| Horizontal misalignment relative to the operating panel | Vertical misalignment relative to the operating panel |
|---|---|
|  |  |
| : Pen drawing<br>: Cutter, etc.<br>Y ' mm  Y mm<br>X-axis direction<br>Y-axis direction | : Pen drawing<br>: Cutter, etc.<br>X' mm<br>X mm<br>X-axis direction<br>Y-axis direction |
| **If the drawing from a cutter or other tool is misaligned to the right (dotted line labeled 1) Press ▲ to adjust so that the setting value = [value displayed] + [Y mm].** <br>**If the drawing from a cutter or other tool is misaligned to the left (dotted line labeled 2) Press ▼ to adjust so that the setting value = [value displayed] - [Y' mm].** | **If the drawing from a cutter or other tool is misaligned downward (dotted line labeled 1) Press ▲ to adjust so that the setting value = [value displayed] + [X mm].** <br>**If the drawing from a cutter or other tool is misaligned to upward (dotted line labeled 2) Press ▼ to adjust so that the setting value = [value displayed] - [X 'mm].** |

3

## Performing offset adjustment (for R10)

For the router unit (R10), adjust as follows.

**1** Perform steps 1 to 8 of "Offset adjustment (tangential unit)".

• A screen for entering the setting value is displayed after test pattern cutting.

**2** Press [POSITION SELECT] and set the alignment position.

• Setting values: Lower left, upper right, upper left, lower right



```
D-Unit: R10
1. Please input linewidth.
2. Please put pointers at
   the selected position.

Lower Left                3.0mm
POSITION    Line Width +   Line Width -
SELECT
```
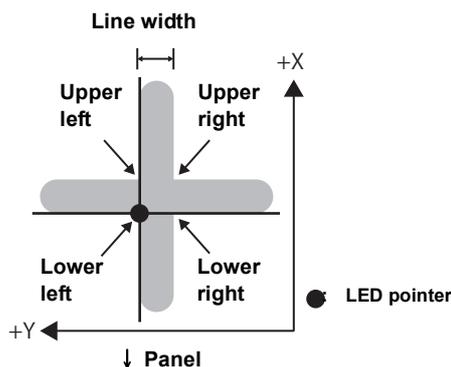
**3** Enter the line width using [Line Width +] or [Line Width -].

• Setting values: 0.1 to 6.0 mm

**4** Press ⊙ ⊙ ◁ ▷ to move the LED pointer to the selected position.

**5** Press the [ENTER] key, then adjust the offset value.

• To exit without saving, press [END/POWER].

**6** To alter the offset value set, press ⊙ ⊙ , select [Offset X] or [Offset Y], then press the [ENTER] key.

**7** Press ⊙ ⊙ , then enter a correction value.

• Offset X:-20.0 mm to +20.0 mm
• Offset Y:-20.0 mm to +20.0 mm
• To save, press [ENTER].
• To exit without saving, press [END/POWER].

**8** To end offset adjustment, press the [END/POWER] key.

## Performing theta angle adjustment

Adjust the angle of rotation by comparing a test pattern drawn with a pen to a test pattern drawn by a cutter or roller.

Hint ! • The values in parentheses in the figure below indicate the sizes when a roller is used.
• Mount the pen on unit A in advance.
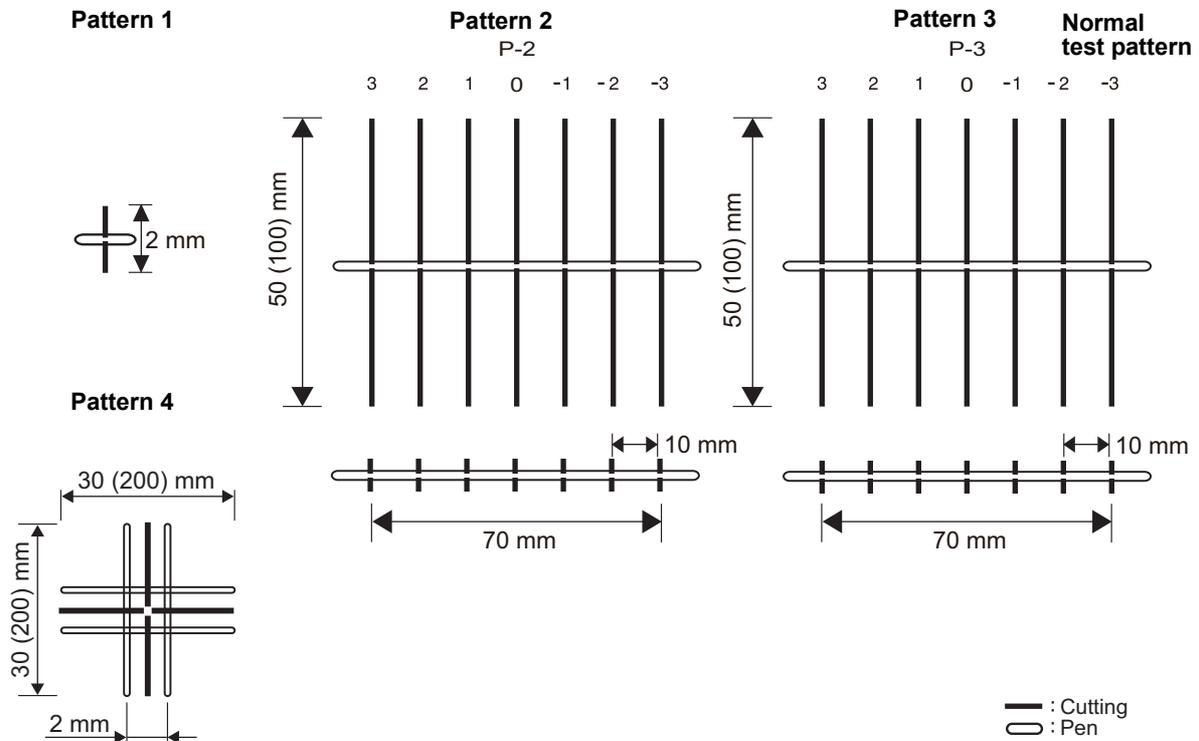


Adjust using the four theta angle adjustment patterns in sequence from pattern 1.

Adjust in the sequence Pattern 1 → Pattern 2 → Pattern 3 to achieve increasingly fine angle adjustment. (Pattern 4 is used to check the adjustment.)

| Item | Description |
|---|---|
| Pattern 1 | Lower the tool at a distance of 2 mm in the 0° and 180° directions. Draw crosshairs at the center as a reference. The angle can then be input as a numerical value, enabling a correction angle to be entered depending on the cutting results. |
| Pattern 2 | Perform facing cutting by altering the adjustment value within a range of ±3.0° centering around the current θ adjustment value.<br>Selecting the number with the smallest difference adjusts the θ angle to the closest value.<br>+3.0° to -3.0° (in 1° steps) (Plotting using the current adjustment value for zero)<br>If the tool is a roller (C16, C26, or C60), the length of the upper and lower patterns will be changed from 50 mm to 100 mm. |
| Pattern 3 | Perform facing cutting by altering the adjustment value within a range of ±0.9° centering around the current θ adjustment value.<br>Selecting the number with the smallest difference adjusts the θ angle to the closest value.<br>+0.9° to -0.9° (in 0.3° steps) (Plotting using the current adjustment value for zero)<br>If the tool is a roller (C16, C26, or C60), the length of the upper and lower patterns will be changed from 50 mm to 100 mm. |
| Pattern 4 | Corrects the angle of rotation. (Used to check the adjustment results.) |

**1** On the local mode screen, press [MENU].
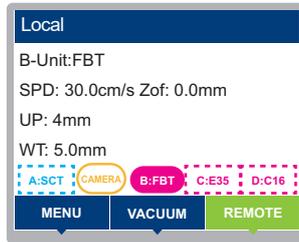
```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
   MENU      VACUUM      REMOTE
```

**2** Press ⊙ ⊙ to select [Tool] > [Tool Adjust], then press the [ENTER] key.

**3** Press ⊙ ⊙ to select a unit, then press the [ENTER] key.

  • Setting values: B, C, D
  • Tools currently mounted in the units are indicated.

**4** Press [TEST].

**5** Press ⊙ ⊙ to select [Theta Angle Adjust], then press the [ENTER] key.

**6** Press ⊙ ⊙ to select [Pattern 1–4], then press the [ENTER] key.

**7** Press the [SEL] key.

**8** Press ⊙ ⊙ ◁ ▷ to move the head into position for drawing, then press the [ENTER] key.

**9** When the confirmation screen is displayed, press the [ENTER] key.

  • Cutting is executed.

**10** Press ⊙ ⊙ to select [Theta Angle Adjust], then press the [ENTER] key.

**11** Press ⊙ ⊙ , then enter a correction value.

  • **Setting values**:
    [Pattern 1, Pattern 4]: -45.0º to +45.0º
    [Pattern2, Pattern 3]: -3 to +3
  • For details, see "Theta angle adjustment: Adjustment procedure for Pattern 1 to 4" on the next page.

**12** **Press the [ENTER] key.**

• To exit without saving, press [END/POWER].
• To exit, press [END/POWER] several times.

3

## Theta angle adjustment: Adjustment procedure for Pattern 1 to 4

Theta angle adjustment is possible with the following screen displayed.

| B-Unit:FBT | |
|---|---|
| CENTER A | 0.00mm |
| CENTER B | 0.00mm |
| OFFSET X | 0.0mm |
| OFFSET Y | 0.0mm |
| THETA ANGLE | 0.0° |
| << | TEST | >> |

Press ⓐ ⓥ to adjust. ➔

### Pattern 1:

(1) Measure misalignment between the shapes drawn by the pen and the cutter (or roller).
(2) Adjust as needed.
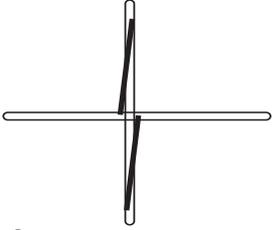
| When skewed clockwise | When skewed counterclockwise |
|---|---|
|  |  |
| **Press ⓐ to increase the cutter theta value.** | **Press ⓥ to decrease the cutter theta value.** |

### Pattern 4:

(1) Measure misalignment between the shapes drawn by the pen and the cutter (or roller).
(2) Adjust as needed.

| When skewed clockwise | When skewed counterclockwise |
|---|---|
|  |  |
| **Press ⓐ to increase the cutter theta value.** | **Press ⓥ to decrease the cutter theta value.** |
| **V-cut** | |
| When skewed clockwise | When skewed counterclockwise |
|  Spread outward |  Move inward |
| **Press ⓐ to increase the cutter theta value.** | **Press ⓥ to decrease the cutter theta value.** |
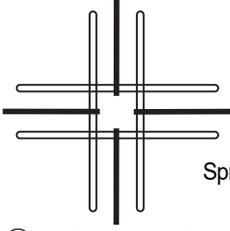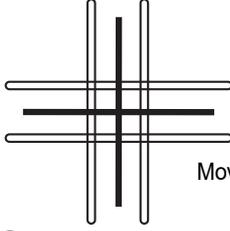
**Pattern 2, Pattern 3:**

Theta angle adjustment is possible with the following screen displayed.

```
THETA ANGLE

Pattern2                    Select：0  ←——  Press ▲ ▼ to change the value.



```
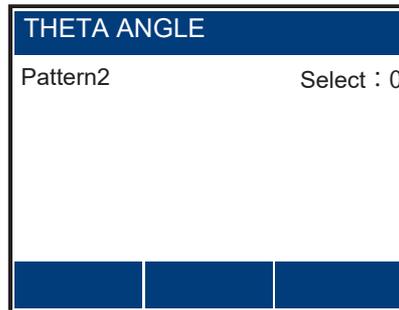
    **(1)** Measure misalignment between the shapes drawn by the pen and the cutter (or roller).
    **(2)** Enter the value (-3 to 3) for the row with the smallest difference in the vertical facing cutting.

● **Pattern 2**

- θ adjustment range: +3.0° to -3.0° (in 1° steps)
- Setting: -3 to 3

| θ angle | +3.0° | +2.0° | +1.0° | 0 | -1.0° | -2.0° | -3.0° |
|---|---|---|---|---|---|---|---|
| Setting value | 3 | 2 | 1 | 0 | -1 | -2 | -3 |

● **Pattern 3**

- θ adjustment range: +0.9° to -0.9° (in 0.3° steps)
- Setting: -3 to 3

| θ angle | +0.9° | +0.6° | +0.3° | 0 | -0.3° | -0.6° | -0.9° |
|---|---|---|---|---|---|---|---|
| Setting value | 3 | 2 | 1 | 0 | -1 | -2 | -3 |

P-2 (P-3)

| 3 | 2 | 1 | 0 | -1 | -2 | -3 | **Setting value** |

50 (100) mm

**Check using magnifying glass**

| No Good | OK | No Good |
|---|---|---|

**Enter the value (-3 to 3) for the row where the cut is the closest to the "OK" sample.**

10 mm

**Pattern 1**

70 mm
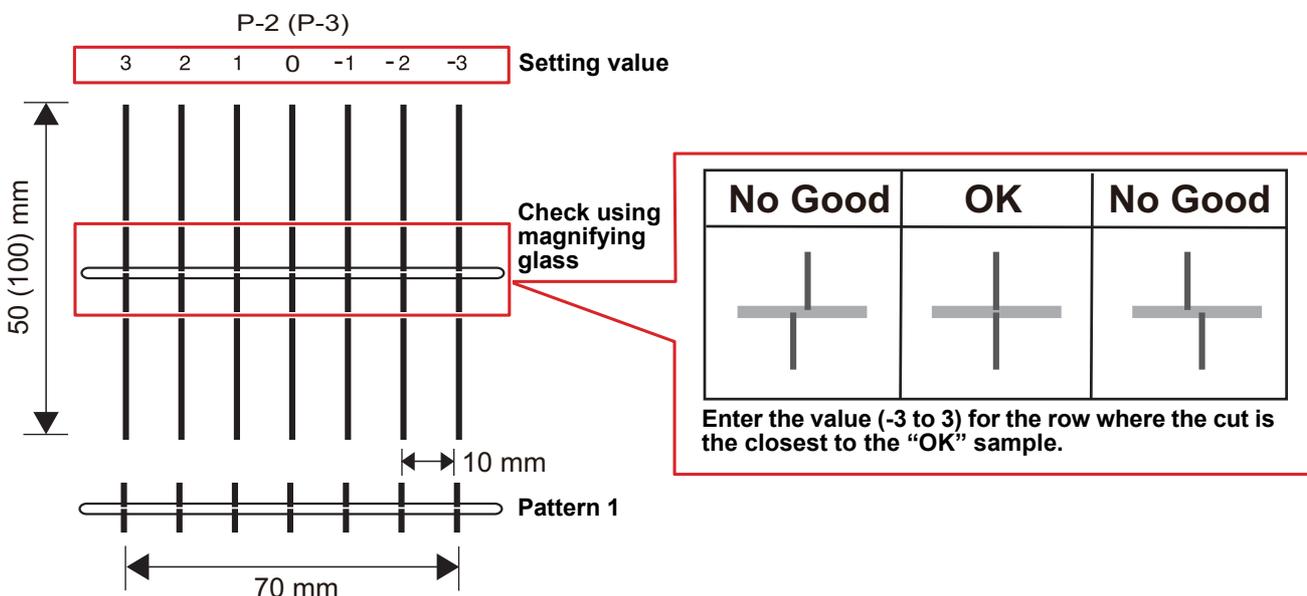
(Hint!) • For V cutting, the drawing results for pattern 1 will tend to be as shown below. If adjustment is satisfactory, as a guide, note that cuts are made at a position approximately ±1 mm from the line.

Too far    Too close

2 mm
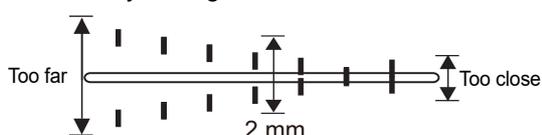
## Circle Θ Correction

If the start and end points are misaligned when a perfect circle is cut, correct the misalignment as follows.

### Performing circle Θ correction

The machine can correct misalignment for six circles of different radii.

| Type of circle for correction | Setting value | Test pattern size |
| --- | --- | --- |
| Radius < 5 mm | -20° to +20° | Radius = 3 mm |
| 5 mm ≤ Radius < 10 mm | -20° to +20° | Radius = 5 mm |
| 10 mm ≤ Radius < 15 mm | -9.8° to +9.8° | Radius = 10 mm |
| 15 mm ≤ Radius < 20 mm | -9.8° to +9.8° | Radius = 15 mm |
| 20 mm ≤ Radius < 50 mm | -9.8° to +9.8° | Radius = 20 mm |
| 50 mm ≤ Radius < 100 mm | -9.8° to +9.8° | Radius = 50 mm |
| 100 mm ≤ Radius | -9.8° to +9.8° | Radius = 100 mm |

(Important!)
- Correction may not be available depending on the software used.
- Set the arc theta correction value to [On] in advance.
  The value corrected here will not be applied in drawing (or cutting) unless correction is set to [On].



→ : **Cutting direction**
---- : **Path**
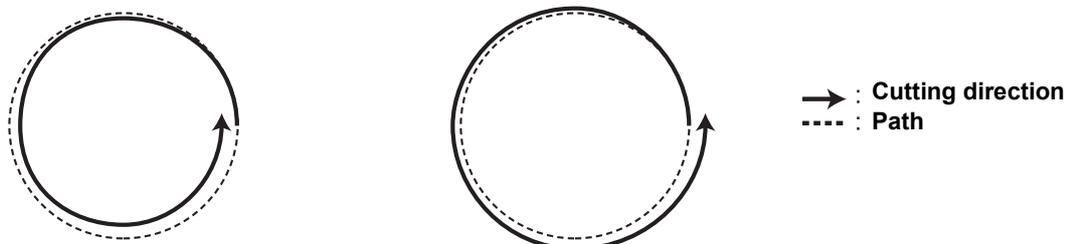
- Values of circle θ correction are automatically calculated based on the radius of circles to draw. Besides entering the correction value for the target range, also enter correction values for the ranges that are smaller and larger.

  Example:
  - For a radius of 4.5 mm, set correction values for [Radius < 5 mm] and [5 mm ≤ Radius < 10 mm]
  - For a radius of 10.5 mm, set correction values for [10 mm ≤ Radius < 15 mm] and [15 mm ≤ Radius < 20 mm]

---

**1** On the local mode screen, press [MENU].
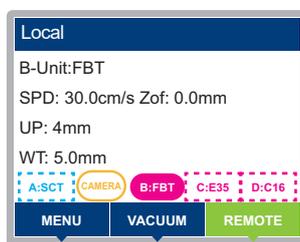


---

**2** Press ⊙ ⊙ to select [Tool] > [Tool Adjust], then press the [ENTER] key.

---

**3** Press ⊙ ⊙ to select a unit, then press the [ENTER] key.

- Setting values: B, C, D
- Tools currently mounted in the units are indicated.

**4** **Press ⒶⓋ to select [Circle Theta Adjust], then press the [ENTER] key.**

**5** **Press [TEST].**

**6** **Press ⒶⓋ to select the circle for correction.**

• Setting values: R < 5, 5 ≤ R < 10, 10 ≤ R < 15, 15 ≤ R < 20, 20 ≤ R < 50, 50 ≤ R < 100, R ≥ 100
• To change the drawing position from the current position, perform the procedures described in steps 8 to 9 below.

**7** **Press ⒶⓋ to select the rotation direction for drawing a circle.**

• Setting values: Counterclockwise, Clockwise

(Important!) • Select to suit the rotation direction of the application used.

**8** **Press the [SEL] key.**

**9** **Press ⒶⓋⒸⒹ to move the head into position for drawing, then press the [ENTER] key.**

**10** **When the confirmation screen is displayed, press the [ENTER] key.**

• Cutting is executed.

**11** **Press ⒶⓋ to select the type of circle for correction, then press the [ENTER] key.**

**12** **Press Ⓐ or Ⓥ to enter the correction value while checking the cutting results.**

• **Setting values:** -X.00º to +X.00º (see table on preceding page for input range)
• For details, refer to "How to perform circle theta correction".

**13** **Press the [ENTER] key.**

• To exit without saving, press [END/POWER].
• For adjustment of other circles, press Ⓐ or Ⓥ to display the screen for adjustment and repeat step 5 onward.
• To exit, press [END/POWER] several times.

How to perform circle theta correction

| Inward end point misalignment | Outward end point misalignment |
|---|---|
| Cutting direction — θ — Set the correction angle to a positive value. — Tangent line | Cutting direction — θ — Set the correction angle to a negative value. — Tangent line |
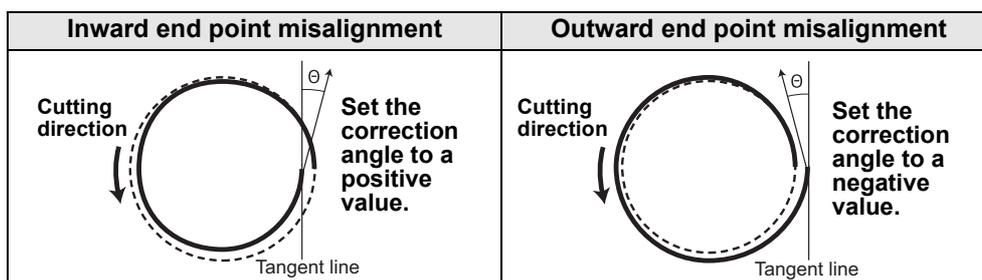
(Important!) • The machine will correct to the inner and outer sides of the direction of travel regardless of the rotation direction.

3

# Test Cutting

After changing cutting conditions or switching tools, make a test cut to check the following items. For details, see "Checking tool status" (☞ P.3-37).

| No. | Item to check | Point to check |
|---|---|---|
| (1) | Cutting (or drawing) conditions are suitable | The work is cut correctly, the drawing is not smudged, etc. |
| (2) | The tool is mounted straight | Tools that are eccentric will cause misalignment in cutting or other operations |
| (3) | Tools produce complementary results | When a Flat Blade Tool is used to cut along a drawing, the drawing and the cut pattern match, for example |

Hint! • In toggle mode, test cut drawing is only possible in the front area.

**1** **On the local mode screen, press [TEST CUT].**

• Press the [SEL] key to switch the function of the [FUNCTION] key.

```
Local
B-Unit:FBT
SPD: 30.0cm/s  Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
TEST CUT    COPY    DATA CLEAR
```
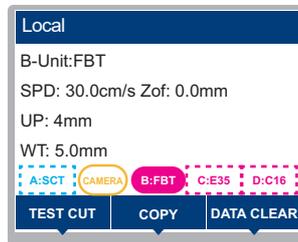
**2** **Press the [ENTER] key.**

• Test cutting begins.
• After cutting, the machine returns to local mode.

**3** **Check the cutting results**

• This process is finished if the results are normal.

# Checking tool status

Make a test cut using the tool selected with the [Tool Select] function. Items to check for each tool are as follows.
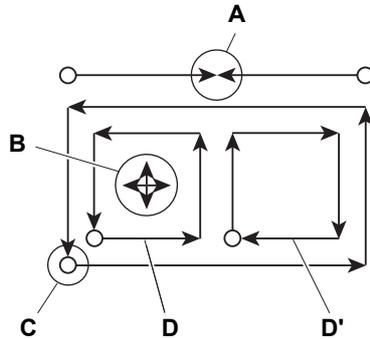


## Pen (only standard unit)

| Point to check | Cause | Corrective action | Reference page |
|---|---|---|---|
| Lines do not meet at A | Pen is incorrectly mounted | Fully tighten the holder screw. | P.2-4 |
| Lines are broken or faint | Out of ink | Replace the pen with a new one. | P.2-4 |
| | Weak pressure | Increase [Draw Press] in the cutting conditions. | P.3-17 |
| | Operation is too fast, causing the pen to lift. | Decrease [Draw Speed] in the cutting conditions. | P.3-17 |

## Reciprocating cutter/Flat Blade Tool (only TUT)

| Point to check | Cause | Corrective action | Reference page |
|---|---|---|---|
| B is not a cross | Cutter blade not centered | Check pattern B as described in "Center Adjustment." | P.3-22 |
| Lines do not meet at A | [End Correct] value in cutting conditions too low | Increase the [End Correct] value. | P.3-18 |
| | Cutter not centered | Perform [Center Adjust] in tool adjustment. | P.3-22 |
| Lines of A are misaligned | Incorrect θ angle of Flat Blade Tool | Perform [Theta Angle Adjust] in tool adjustment. | P.3-29 |
| Cutting is incomplete | Weak pressure | Increase [Cut/Draw Press] in the cutting conditions. | P.3-17 |
| Cutting is incomplete at corners | [Start Correct] and [End Correct] values in cutting conditions too low | Increase the [Start Correct] and [End Correct] values. | P.3-18 |
| D and D' are different lengths. | Cutter not centered | Perform [Center Adjust] in tool adjustment. | P.3-22 |
| Too many incisions at C | [Start Correct] value too high | Decrease [Start Correct] in the cutting conditions. | P.3-18 |
| | Cutter not centered | Check pattern A as described in [Center Adjust] in tool adjustment. Even with the same adjustment value, cutting depth varies by blade. Adjust to suit your application. | P.3-22 |

## Crease roller (only TUT)

| Point to check | Cause | Corrective action | Reference page |
|---|---|---|---|
| Lines do not meet at A | Cutter not centered | Perform [Center Adjust] in tool adjustment. | P.3-22 |
| Lines of A are misaligned | Incorrect θ angle of crease roller | Perform [Theta Angle Adjust] in tool adjustment. | P.3-29 |
| Creases are weak | Roller pressure is too low | Set [Zorg Offset] in the cutting conditions to [+]. | P.3-17 |
| | Weak pressure | Increase [Press Level] in the cutting conditions. | P.3-18 |
| The cardboard flutes are crushed along the crease | The cutting conditions are not suitable for the work. | Review the cutting conditions. | P.3-17 |

## Swivel cutter (standard unit only)

| Point to check | Cause | Corrective action | Reference page |
|---|---|---|---|
| Lines are broken | Swivel cutter blade incorrectly mounted | Fully tighten the holder screw. | P.2-8 |
| | Cutting is slow | Increase [Cut Speed] in the cutting conditions. | P.3-17 |
| | Weak cutting pressure | Increase [Cut Press] in the cutting conditions. | P.3-17 |
| Corners are rounded | Blade does not protrude enough | Increase the amount the blade protrudes. | P.2-8 |
| | Offset value too small | Increase [Edge Offset] in the cutting conditions. | P.3-17 |

## V-cut

### V-cut test cut pattern

- One of two cutting patterns is automatically selected depending on the work thickness setting.

  **(1)** For a thickness of 0–10 mm
  (Size on bottom of material cut: 45 x 75 mm)

  **(2)** For a thickness of 10–20 mm
  (Size on bottom of material cut: 75 x 130 mm)



Cut path on bottom surface

Top

State of cut material as viewed from the side

Bottom
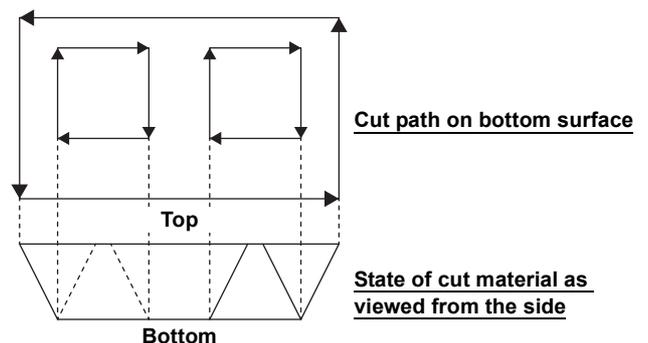
## Router (only R10)

### Router test cut pattern

• The pattern produced in test cutting includes both up-cuts and down-cuts. Select the cutting method that produces the cleanest cuts.
(Upcut/downcut settings are configured with FineCut/Coat9, which is included.)
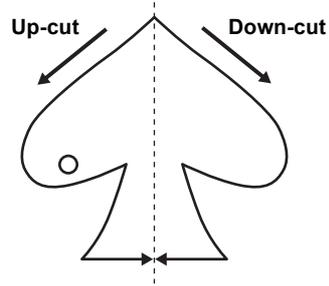
Up-cut    Down-cut

| Point to check | Cause | Corrective action | Reference page |
|---|---|---|---|
| Uneven cut surfaces in both up-cuts and down-cuts | Cutting dust or debris on the blade (end mill) | Clean off debris or cutting dust on the blade (end mill). | P.6-9 |
| | Blade (end mill) at end of service life | Replace the blade (end mill). | P.2-35 |
| | Wrong blade (end mill) for the work | Replace with the correct blade (end mill) for the work. | P.2-35 |
| | Wrong cutting conditions configured for blade (end mill) or work | Review the cutting conditions. | P.3-20 |

**3**

## Checking Status Between Tools (Standard Unit, TUT)

Make a test cut to check the status between tools (pen and Flat Blade Tool, or pen and crease roller).

### How to check

After drawing with the pen, perform test cutting with the Flat Blade Tool or crease roller at the same position to check the status between tools.
Corrective actions for 10 different cases, presented with samples, are described below.

Hint! • Each mentions either one or multiple items for adjustment. Refer to the sample to identify which items require adjustment.
• These descriptions apply to the pen and flat blade tools. Flat Blade Tool information also applies to the crease roller.

| Sample A  | **Overview**<br>The Flat Blade Tool is misaligned with the center of the pen, regardless of the direction of movement. |
| --- | --- |
| | **Corrective action**<br>Adjust offset as described in the tool adjustment information for cutter adjustment. ( ☞ P.3-25) |

| Sample B  | **Overview**<br>Cutting is skewed clockwise (or counterclockwise). |
| --- | --- |
| | **Corrective action**<br>Perform theta adjustment as described in the tool adjustment information for cutter adjustment. ( ☞ P.3-29) |

| Sample C  | **Overview**<br>The starting point for cutting is too far forward (or back). |
| --- | --- |
| | **Corrective action 1**<br>Adjust [Start Correct] in the cutting conditions. ( ☞ P.3-18) |
| | **Corrective action 2**<br>Perform center adjustment using pattern A as described in the tool adjustment information for cutter adjustment.<br>( ☞ P.3-22) |

| Sample D | Overview<br>Cuts are too long (or short). |
|---|---|
| | **Corrective action 1**<br>Adjust [End Correct] in the cutting conditions. ( ☞ P.3-18) |
| | **Corrective action 2**<br>Perform center adjustment using pattern A as described in the tool adjustment information for cutter adjustment.<br>( ☞ P.3-22) |

| Sample E | Overview<br>The Flat Blade Tool is misaligned to the right of the direction of movement. |
|---|---|
| | **Corrective action 2**<br>Perform center adjustment using pattern B as described in the tool adjustment information for cutter adjustment.<br>( ☞ P.3-22) |

| Sample F | Overview<br>Cutting is skewed clockwise (or counterclockwise), and the starting point for cutting is too far forward (or back). |
|---|---|
| | **Corrective action**<br>See corrective actions for samples B and C. |

| Sample G | Overview<br>Cutting is skewed clockwise (or counterclockwise), and the Flat Blade Tool is misaligned to the right (or left). |
|---|---|
| | **Corrective action**<br>See corrective actions for samples B and E. |
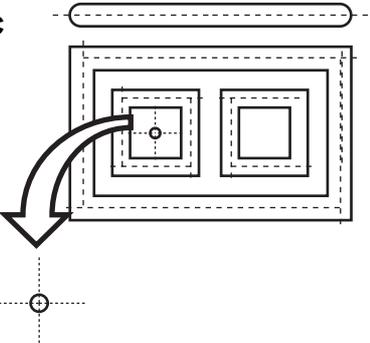
**3**

| Sample H  | **Overview**<br>The starting point for cutting is too far forward (or back), and the Flat Blade Tool is misaligned to the right (or left). |
|---|---|
| | **Corrective action**<br>See corrective actions for samples C and E. |

| Sample I  | **Overview**<br>Cuts are too long (or short), and the Flat Blade Tool is misaligned to the right (or left). |
|---|---|
| | **Corrective action**<br>See corrective actions for samples D and E. |

| Sample J  | **Overview**<br>Cutting is skewed clockwise (or counterclockwise), cuts are too long (or short), and the Flat Blade Tool is misaligned to the right (or left). |
|---|---|
| | **Corrective action**<br>See corrective actions for samples B, D, and E. |

# Setting the Drawing Origin

The drawing origin is the reference point for drawing, cutting, and creasing.
(It is normally set at the lower-right corner of the maximum effective cutting area.)
The drawing position moves as the origin is moved.
The drawing origin will be reset to the lower-right position when the following operations are performed:
- Turning off the power
- Resetting after an emergency stop ( P.1-12)

**Shape**

**Maximum effective Cutting area (in gray)**

**Drawing origin**

> **Hint!**
> - The drawing origin is at the coordinates (0, 0). When you move the head with the jog keys, the coordinates relative to the drawing origin are displayed.
> - With the Sample Cut function, each shape is cut, creased, or drawn next to the drawing origin.
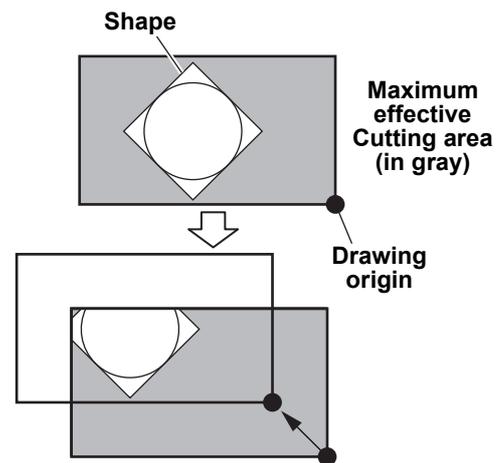
---

**1** **Press ⊙ ⊙ ⊙ ⊙ on the local mode screen.**

- The [JOG Function Selects] screen is displayed.

---

**2** **Press ⊙ ⊙ to select [Plot Origin Setting], then press the [ENTER] key.**

- The [Plot Origin Setting] screen appears.
- The head moves over the cutting panel, and the LED pointer is lit.

---

**3** **Press ⊙ ⊙ ⊙ ⊙ to move the LED pointer where you wish to set the origin.**

- The head moves in each direction accordingly.
- The LED pointer XY coordinates are indicated on the operating panel.

| Plot Origin Setting |
|---|
| X= 0.0 Y= 0.0 |
| Vacuum [SEL] |
| Auto 1.0mm |
| JOG SPEED \| PLOT ORIGIN \| JOG UNIT |

> **Hint!**
> - When set to toggle mode, the current area is displayed in the first row.
>   Front Area/Rear Area/Standby Area

---

**4** **Press the [ENTER] key.**

- The origin is set.
- The maximum drawing area is indicated.
- An error is displayed if the drawing origin is set in the positive direction from the upper-left point specified in the cutting area setting ( P.4-6). Complete this setting again.

---

> **Important!**
> - Some areas cannot be specified in toggle mode (an error is displayed).
>   The origin cannot be set in the Y-bar retraction area. ( P.4-16)
> - Setting the origin in the area at the rear changes the rear area origin.

## Moving the Head to the Current Drawing Origin

**1** Press [PLOT ORIGIN] on the [Plot Origin Setting] screen.

 • The drawing origin coordinates are displayed.

**2** Press the [ENTER] key.

 • The head moves to the current drawing origin.

```
Plot Origin Setting
     X=   0.0    Y=   0.0
Start Moving                [ENT]


```

Hint! • When set to toggle mode, the up and down keys can be used to select the drawing origin to be moved.

```
Plot Origin Setting

Move Position         Front Area
     X=   0.0     Y=   0.0


Start Moving               [ENT]


```
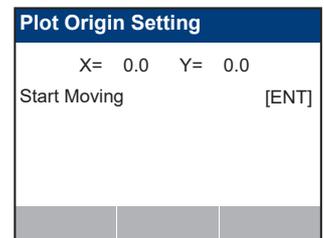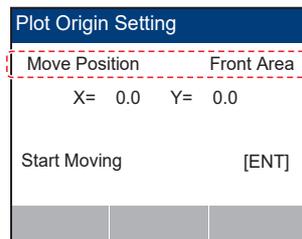
# Cutting or Drawing

## Effective Cutting Area

Maximum effective cutting area is listed below by model (with the figure showing the area for CFX-2513 models).



| Model | X axis (mm) | Y axis (mm) |
|---|---|---|
| CFX-2513 | 1,300 | 2,540 |
| CFX-2531 | 3,190 | 2,540 |
| CFX-2550 | 5,080 | 2,540 |
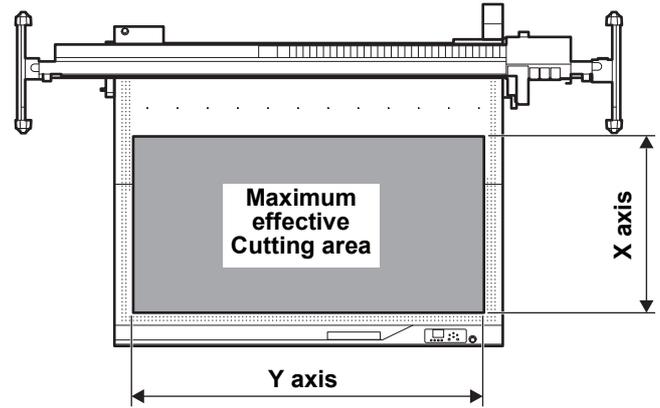
Important!
• In toggle mode, the effective drawing area in the X direction is limited to 1,250 mm for CFX-2531 models and 2,200 mm for CFX-2550 models.

## Cutting or Drawing

**1** **After setting the drawing origin, press [REMOTE].**

• The machine switches to remote mode.

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
MENU    VACUUM   REMOTE
```
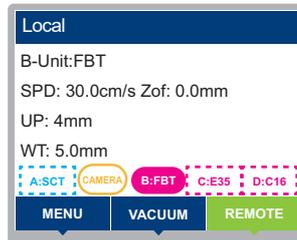
**2** **Send data from the host computer.**

• Cutting begins automatically after the data is received.
• After cutting is finished, the following screen is displayed.

```
Remote                    15KB
B-Unit:FBT
SPD: 30.0cm/s    Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
                VACUUM   LOCAL
```
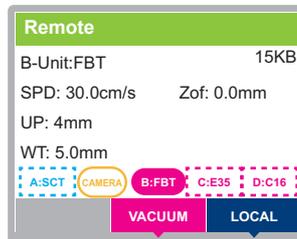
3

## Interrupting Processing

To interrupt data processing during drawing, cutting, or creasing in remote mode, do the following.

⚠ **Caution**
- If cutting is interrupted, the cutting trace may be prominent at that point. Do not interrupt cutting unless absolutely necessary.

**1** **Press [REMOTE] during machine operation.**

## Resuming Processing

**1** **Press [REMOTE] to resume processing.**
- The machine switches to remote mode and resumes processing.

### Functions that can be set after interruption

● **Clearing data in the receive buffer**

☞ P.3-47 "Stopping Processing (Data Clear)"

## Stopping Processing (Data Clear)

In the following cases, clear the received data from the receive buffer.

**(1)** To clear a file for which you paused cutting (or drawing) from the receive buffer, without resuming processing

**(2)** To clear data received but not yet processed from the receive buffer

**(3)** To clear data remaining in the receive buffer before receiving data for use with the copying function

**(4)** To cut using a different computer from the one that previously sent the cutting data

**1**

**Access the local mode screen.**

• When in remote mode, press [REMOTE] to enter local mode.
• Press [REMOTE] during data processing to interrupt processing.

**2**

**Press the [SEL] key.**

• The function of the [FUNCTION] key at the bottom of the screen is switched.

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
TEST CUT      COPY      DATA CLEAR
```
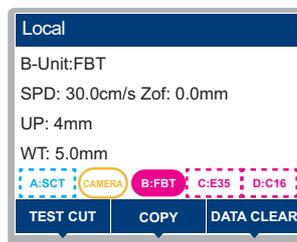
**3**

**Press [DATA CLEAR].**

• The confirmation window appears.

**4**

**Press the [ENTER] key.**

• The data is cleared.
• To cancel data clearing, press the [END/POWER] key. The machine returns to the screen of step 2.

## Exiting toggle mode

**1**

**After drawing in either area is finished or paused, clear the data.**

(Important!) • Clearing the data discards both front and rear drawing data.

**3**

**3-47**

# Restarting After Safety Sensor Detection

The machine will make an emergency stop if an obstruction is detected by the safety sensors during remote operation.
A function is provided to allow operation to be resumed from recoverable data without having to cancel all of the cutting after operation stopped.

The subsequent operation will vary depending on the selected tool at the time the safety sensor detected an obstruction.

- For FBT, E12/E35/E60, C16/C26/C60, V45/VAS:
  The machine switches to paused state, and some line data will be discarded after the interruption, but subsequent operation can be continued.
- For R10:
  The machine switches to local mode, and subsequent cutting data is discarded.
  To complete cutting, cutting must be repeated using the same data.

(Important!) • If the machine was stopped by pressing an emergency switch, all subsequent data is discarded.

## Restart procedure after an emergency stop

**1** Operation stops immediately if a light curtain is triggered while operating in remote mode.

**2** If the obstruction remains, remove the obstruction, then press the [ENTER] key. If operation stops while the V cut tool is lowered, remove the V cut holder before pressing the [ENTER] key. (☞ P.1-13 "Removing the V-cut holder following an emergency stop")

- Initialization starts.

| | | |
|---|---|---|
| Safe sensor reacts. Please remove obstacle. | B-Unit After remove obstacle Press Enter key. | Start initial movement. Press Enter_key. |
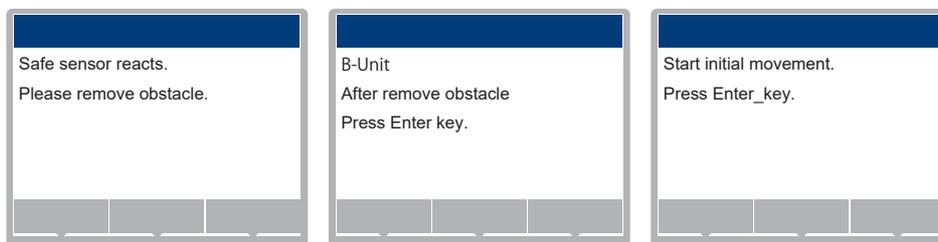
### ●For tools other than R10:

The machine switches to pause mode once initialization is complete. Press [REMOTE] to cut the subsequent data after the safety sensor stop.

```
Pause
B-Unit:FBT            !DataRemain
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU    VACUUM    REMOTE
```
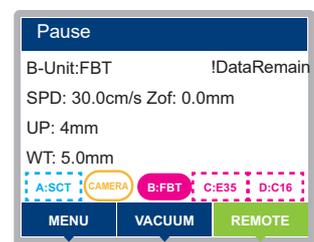
### ●For R10:

The machine switches to local mode once initialization is complete, and subsequent data is discarded.
To complete cutting, repeat cutting using the same data.

```
Local＜Setup1＞
D-Unit:R10
SPD: 3.0cm/s Zof: 0.0mm
UP: 10mm   ROT: 40000rpm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU    VACUUM    REMOTE
```
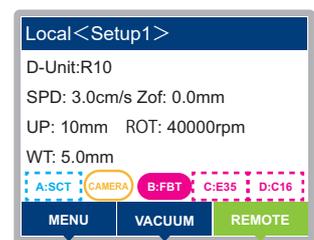
# Turning the Power Off

Before turning off the power, confirm that no data is being received, and that there is no data remaining to process.

## 1   Turn off the connected computer.

## 2   Hold down the [END/POWER] key to turn off the machine.

- A confirmation screen is displayed (press the [ENTER] key to turn off the machine).
- The [ENTER] key is no longer lit.
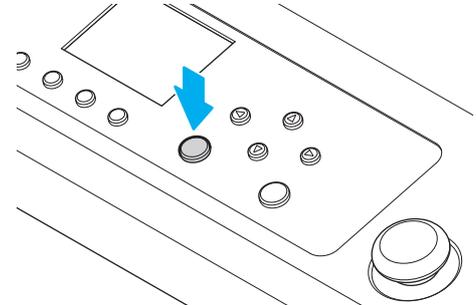
## 3   Set the main power supply switch on the right side of the machine to the "O" side.
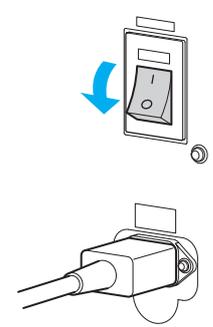
### Checking for unprocessed data

| To use the data for cutting | **(1)** Press [REMOTE] to switch to remote mode.<br>**(2)** The amount of data received is displayed, and cutting (or drawing) begins. |
|---|---|
| To erase the data | **(1)** Press [LOCAL] to switch to local mode.<br>**(2)** Clear the data (☞ P.3-47). |

# Chapter 4
# Helpful Tips

💡 **About this chapter**

This chapter describes operating procedures and settings for using the machine more conveniently.

# Function Setting List

This section outlines the various functions and describes their settings.

## Function setting list

| Function | | | Setting value | Default | Overview |
|---|---|---|---|---|---|
| Drawing Settings | Cut Mode ( P.4-30) | | Normal | Normal | Set the cutting quality. |
| | | | Sharp | | |
| | | | Fast | | |
| | Vacuum Auto-On ( P.1-20) | | Disable, Enable | Disable | Interlocks vacuum on/off with the remote key. |
| | Vacuum Auto-Off ( P.1-20) | | Disable, Enable | Disable | Turns off the vacuum after automatic retraction. |
| | Auto View ( P.1-19) | | Off, lower right, lower left, upper right, upper left, middle right, middle left, drawing origin | Off | Set the operation performed after drawing data is processed. |
| | Close Time ( P.4-15) | | 0 to 30 sec | 3 sec | Set the wait time until performing operations executed after drawing data has been processed. |
| | Sorting ( P.4-12) | | On, Off | Off | Enables cutting sequence modification before cutting. |
| | Flat Follow-Up | FBT | On, Off | Off | Set the function to cut according to the flatness of the felt mat, based on the measured flatness of the table. |
| | | C16/C26/C60 | | | |
| | | E12/E35/E60 | | | |
| | | V45/VAS | | | |
| | | R10 | | | |
| Command Settings | Command | | MGL-3C | MGL-3C | – |
| | Priority ( P.4-40) | SP, VS, AS, FS, ZF, ZA, ZO | Host, Panel | Host | Set which settings take priority if a setting item has been set differently on the machine and host computer. |
| | OH:Response Value ( P.4-41) | | Initial value, Setting value | Setting value | Set which value to return to the software after the machine receives a command to return effective area coordinates to the software. |
| Copy Settings | Setup Copy ( P.4-46) | | ──── | ──── | Copy setting values to the settings of another user. |
| | Setup Reset ( P.4-47) | | ──── | ──── | Reset the settings to defaults. |
| Communication Settings | Network ( P.4-44) | IP Address | ──── | ──── | Shows the current IP address of the machine. |
| | | MAC Address | ──── | ──── | Shows the current MAC address of the machine. |
| | | DHCP | On | On | Set to ON to use an IP address assigned by the DHCP server. |
| | | | Off | | |
| | | AutoIP | On | On | Set to ON to use an IP address set via the AutoIP protocol. Note that DHCP is given priority when DHCP is set to ON. |
| | | | Off | | |
| | | IP Address[*1] | ──── | ──── | Set the IP address used by the machine. |
| | | Default Gateway[*1] | ──── | ──── | Set the default gateway used by the machine. |
| | | DNS Address[*1] | ──── | ──── | Set the DNS server address used by the machine. |
| | | Subnet Mask[*1] | ──── | ──── | Set the subnet mask digit number used by the machine. |

| Function | | | Setting value | Default | Overview |
|---|---|---|---|---|---|
| Communication Settings | RS-232C (☞P.4-42) | Baud Rate | 1200 to 38400 bps | 38400 bps | |
| | | Data Len | 7, 8 bit | 8 bit | |
| | | Parity | None, Odd, Even | None | |
| | | Stop Bits | 1, 2 | 1 | |
| | | Handshake | X-PRM, None | None | |
| Machine Settings | Language (☞P.4-36) | | English, Japanese | English | Set the display language. |
| | Time Set | | -20 to 0 to +4 h | ———— | This can be set within the range of -20 to +4 hours. |
| | Unit: Length (☞P.4-37) | | mm, inch | mm | Select the length unit displayed for jog functions. |
| | Key Buzzer (☞P.4-38) | | On, Off | On | Key sounds can be muted with this setting. |
| | Startup Mode (☞P.4-39) | | Local, Remote | Local | Set the mode that is active after the machine is turned on. |
| | TP Detect Setup (☞P.5-9) | | Sensor, Camera | Sensor | Set when cutting data with register marks. |
| | Continue Mode | | Disable/Continuous/ Toggle | Disable | Set to enable works to be switched and drawing operations to be executed continuously without using the operation panel.<br>• In toggle mode, the table is divided into two areas, front and rear, with each area set up for continuous drawing. |
| | Remote Control | Setting | Disable / Enable | Enable | Enabled to allow remote control by Mimaki Remote Access. |
| | | PIN code | 0000 to 9999 | 0000 | Enter the same PIN code as used for MRA. The PIN code is used for authentication between the machine and MRA.<br>• Setting the machine to 0000 allows MRA to access the machine using any PIN code. |
| | | KeyLife | 5 min to 120 min | 30 min | Set the wait time before Mimaki Remote Access automatically terminates remote control if left idle during remote control. |
| | Select Vacuum | | Front+Rear, Front, Rear | Front+Rear | Set the vacuum to be turned on or off. Displayed for CFX-2531 and CFX-2550 models only. |
| | Thickness Detect[2] | | Manual, Every time | Manual | Set whether work thickness is automatically detected each time or manually when drawing begins. |
| | Felt Mat Thickness (☞P.4-28) | | 3.0 to 6.0 mm | 4.2 mm | Set the felt mat thickness. |
| | Reset | | ———— | ———— | Resets the details set for "Setup", "Tool", "Communication Set", and "Machine Setup" to the original settings. |

*1: Available when both [DHCP] and [AutoIP] are set to OFF.
*2: Output the data via Ethernet when the setting is set to [Every time].

**4**

In local mode, press the Ⓐ Ⓥ ◄ ► jog keys to access the jog function selection menu, where the following settings are available.

| Function | Details | Reference page |
|---|---|---|
| **Plot Origin Setting** | Set the cutting (drawing) start position. | P.3-43 |
| **Mark Origin Detection** | The machine detects a register mark indicating the origin position. | P.5-14 |
| **Workpiece Thickness** | Enter work thickness and adjust head height. | P.3-11 |
| **Underlay** | Set whether or not underlay is used and its thickness. | P.3-6 |
| **2-point Axis Correction** | Align vertical and horizontal axes of the machine with vertical and horizontal lines on loaded graph paper or the like. | P.4-5 |
| **Cutting Area Settings** | Set the cutting (or drawing) range. | P.4-6 |
| **Manual Cutting** | Cut works manually using jog keys. | P.4-8 |
| **Mark Offset** | Perform offset adjustment to correct the register mark detection position. | P.5-16 |
| **Camera Adjustment** | Use the camera app to make adjustments when an optional camera unit is installed. | P.5-12 |
| **Move to View Pos.** | The head can be moved directly to any corner of the table or to the drawing origin. | P.3-4 |
| **Pointer Offset** | Adjust the offset between the LED pointer and tool. | P.4-9 |
| **Change jog speed** | Change the jog speed. (In jog mode, press the [JOG/SPEED] key.)<br>Each press of the [JOG SPEED] key switches the speed.<br>(Auto → Low → Middle → High) | – |
| **Change unit of jog movement** | Set the amount of movement when the head is moved with the jog keys. (In jog mode, press the [JOG/UNIT] key.)<br>Each press of the [JOG UNIT] key switches the amount of movement.<br> • Default: 1.0 mm (1/16 inch)<br> • Setting values: For mm:<br>   0.1 mm, 1.0 mm<br> • Setting values: For inch:<br>   1/16 inch, 1/160 inch | – |
| **View** | Jog mode used when there is drawing data. | – |

Important!
 • When positions such as the origin are specified in jog mode, the center of the LED pointer is set to the specified position.
 • In jog mode, pressing the [SEL] key turns vacuum operation on and off.

## 2-point Axis Correction

Align vertical and horizontal axes of the machine with vertical and horizontal lines on loaded graph paper or the like.
The specified drawing origin and correction point are used to correct axis tilt (θ).
The correction angle will be cleared when the following operations are performed:
- Resetting the drawing origin
- Specifying the drawing origin at the correction point
- Turning off the power
- Resetting after an emergency stop ( ☞ P.1-12)



**Correction point**

**Drawing origin**

---
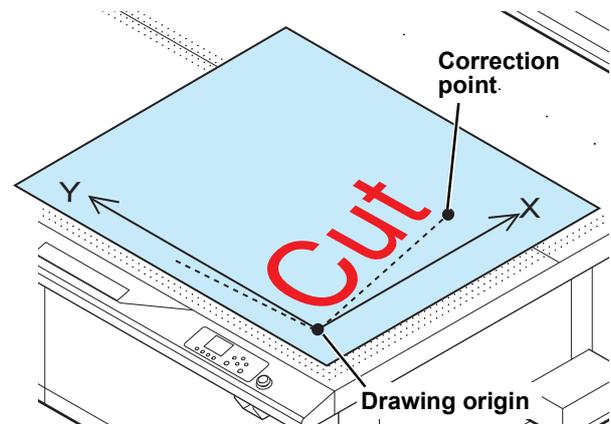
**1** Load a ruled work.

---

**2** Set the drawing origin ( ☞ P.3-43).

---

**3** Press ⓐ ⓥ ⓐ ⓑ on the local mode screen.
- The [JOG Function Selects] screen is displayed.

---

**4** Press ⓐ ⓥ to select [2point Axis Correction], then press the [ENTER] key.
- The [2point Axis Correction] screen appears.
- The head moves over the cutting panel, and the LED pointer is lit.

---

**5** Press ⓐ ⓥ ⓐ ⓑ to move the LED pointer to the correction point.
- The head moves in each direction accordingly.
- The LED pointer XY coordinates are indicated on the operating panel.

---

**6** Press the [ENTER] key to confirm the correction point.
- The correction angle (θ= -45° to 45°) is displayed.
- If out of range, an error is displayed. Complete the correction again.

## Cutting Area Settings

The cutting area is set covering an area from the drawing origin to the upper left (UL) point that you set. Set the UL point position here.
The cutting area will be cleared when the following operations are performed:
- Turning off the power
- Resetting after an emergency stop ( ☞ P.1-12)

**Upper left (UL) point**

**Cut area**

**Drawing origin**


**1**
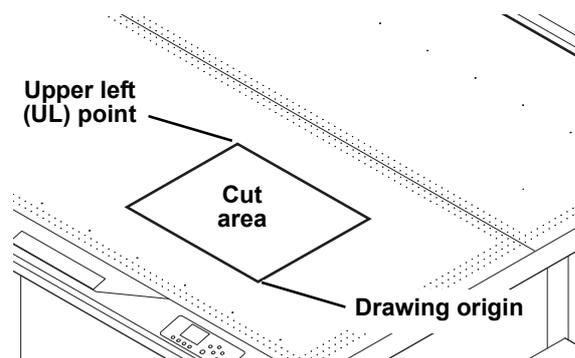
### Press ⒶⓋ◀▶ on the local mode screen.

• The [JOG Function Selects] screen is displayed.


**2**

### Press ⒶⓋ to select [Cut Area], then press the [ENTER] key.

• The [Cut Area] screen appears.
• The head moves over the cutting panel, and the LED pointer is lit.

| Cut Area | |
|---|---|
| X= 0.0 Y= 0.0 | |
| Vacuum | [SEL] |
| Auto | 1.0mm |
| JOG SPEED | CUT AREA | JOG UNIT |


**3**
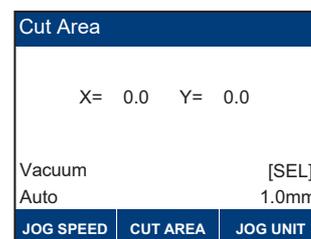
### Press ⒶⓋ◀▶ to move the LED pointer to the point in the upper left.

• The head moves in each direction accordingly.
• The LED pointer XY coordinates are indicated on the operating panel.


**4**

### Press the [ENTER] key.

• The maximum drawing area is indicated.

Important!
- Set the UL point in the positive direction from the origin.
- Set the origin within the cutting area. An error will occur if it is set outside the cutting area.


Important!
- The cutting area has no effect in toggle mode.

## Moving the Head to a Corner of the Cutting Area

**1** On the [Cut Area] screen, press the [CUT AREA] key.

**2** Press ⓐ ⓥ to select the destination.

• Setting values: Upper left, upper right, lower left, lower right
• Destination coordinates are indicated for the setting value.

| Cut Area | |
|---|---|
| Move Position | Upper Left |
| X= 1300.0 | Y= 2540.0 |
| | |
| Start Moving | [ENT] |

**3** Press the [ENTER] key.

• The head moves to the specified position.

**4**

## Manual Cutting

With the tool lowered, use jog keys to move the head. This enables work cutting.

**(Important!)** • Manual cutting is only available with certain tools. If it is not available, an error is displayed.
Compatible tools
Flat blade tool (FBT), reciprocating cutter (E12, E35, E60)

---

**1**  **Set up the work to cut and set the work thickness  (☞ P.3-11).**

---

**2**  **Mount the cutting tool and select it in [Tool] > [Tool Select] (☞ P.3-15).**

• If [Cutting Edge Detection] has not been performed, do it in advance. (☞P.3-13)

---

**3**  **Press Ⓐ Ⓥ ◀ ▶ on the local mode screen.**

• The [JOG Function Selects] screen is displayed.

---

**4**  **Press Ⓐ Ⓥ to select [Manual Cut], then press the [ENTER] key.**

• The [Manual Cut] screen appears.
• The head moves over the cutting panel.
• The selected tool is lowered to the raised position.
• The coordinates indicated are the XY position of the selected tool.

---

**5**  **Press Ⓐ Ⓥ ◀ ▶ to move the tool.**

• The head moves in each direction accordingly.
• To switch the tool between raised and lowered, press the [Z UP] / [Z DOWN] keys.

| Manual Cut | |
|---|---|
| B-Unit:FBT | |
| X=  0.0 | Y=  0.0 |
| SPD: 30.0cm/s   Zof: 0.0mm | |
| UP: 4mm | |
| Z=  UP | 1.0mm |
| | Z DOWN    JOG UNIT |

---
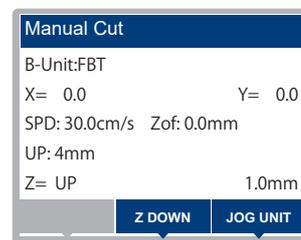
**6**  **When finished, press the [END/POWER] key.**

• The tool is fully raised.

## Aligning the Pointer Position

Adjust the alignment of the pen tip and LED pointer position.
Draw an adjustment pattern with the pen, then adjust by using JOG operations to match the positions.

(Important!) • Mount the pen on the standard unit.

**1** **Set up the work and set the work thickness to draw the adjustment pattern (☞ P.3-11).**

**2** **Press ⒶⓋ◀▶ on the local mode screen.**

• The [JOG Function Selects] screen is displayed.

**3** **Press ⒶⓋ to select [Pointer Offset], then press the [ENTER] key.**

• The drawing start standby screen appears.

**4** **Press the [ENTER] key to start drawing.**

• A cross pattern is drawn.
• Once drawing is complete, the LED pointer lights up and moves to the intersection of the cross drawn.

**5** **Press ⒶⓋ◀▶ to align the LED pointer with the intersection of the cross drawn.**

• The head moves in each direction accordingly.
• The LED pointer XY coordinates are indicated on the operating panel.

**6** **Once aligned with the intersection, press the [ENTER] key.**

• The aligned value is displayed for a few seconds, then the menu is exited.

4

# Assigning Pen Numbers

Set up assignment of tools on the machine corresponding to pen numbers in data.
Up to eight pens can be assigned to tools on the machine.

**This example shows how to configure the following settings.**

        Pen 1 (pen number in drawing data )    → Set to pen
        Pen 2 (pen number in cutting data )     → Set to reciprocating cutter
With these settings, Pen 1 and Pen 2 data can be drawn and cut at the same time.

---

**1** On the local mode screen, press [MENU].

| Local |
| --- |
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT　CAMERA　B:FBT　C:E35　D:C16 |
| MENU　　VACUUM　　REMOTE |

---
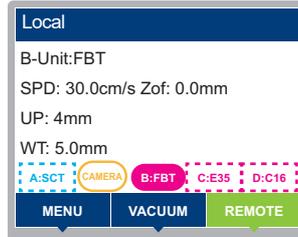
**2** Press ▲▼ to select [Tool] > [Tool Setting], then press the [ENTER] key.

---

**3** Press ▲▼ to select [Pen Allocation], then press the [ENTER] key.

• The current tool name is indicated.

---

**4** Press ▲▼ to select a pen number to assign, then press the [ENTER] key.

• In this example, [PEN No. 1] is selected.
• Setting values: PEN No. 1 to 8

---

**5** Press ▲▼ to select the combination of units and tools.

• Setting values vary depending on the tools mounted.

| Unit | Tool | Max. no. of groups saved |
| --- | --- | --- |
| A | SCT | 1 |
| A | PEN | 1 |
| B, C, D | FBT | 3 |
| B, C | E12/E35/E60 | 2 |
| B, C, D | C16/C26/C60 | 3 |
| B, C, D | V45/VAS | 3 |
| D | R10 | 1 |

---

**6** Press the [ENTER] key.

• To set other pen numbers, repeat steps 2 to 4.

---

**7** To exit, press the [END/POWER] key several times to return to the local mode screen.

---

# Cutting the Same Data Again (Copy)

Previously cut data can be cut again while offline.
This eliminates the need to send the same data repeatedly from the computer.

(Important!) • Copying is not available when continuous mode is enabled.

**1** **Cut once using the data that you will make copies with (☞ P.3-47).**

• Only one data item can be stored in the receive buffer.
• Any new data received overwrites existing data. (Copying is not available for multiple items, or by specifying items that were previously received.)

**2** **Press [LOCAL] to switch to local mode.**

**3** **Set the drawing origin (☞ P.3-43).**

• Reset the origin to the position for copying. If the origin is not reset, cutting will be performed in the same place.

**4** **On the local mode screen, press the [SEL] key.**

• The function of the [FUNCTION] key at the bottom of the screen is switched.

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
TEST CUT    COPY    DATA CLEAR
```
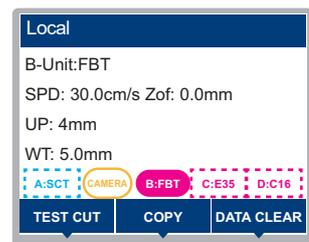
**5** **Press [COPY].**

• Copying cannot begin unless cutting data has been received since startup.

**6** **Press the [ENTER] key to start copying.**

• To exit without copying, press the [END/POWER] key.
• To switch to remote mode and start cutting (or drawing), press the [ENTER] key.
• After copying, the machine switches to local mode.
  Head retraction follows the setting in [MENU] > [Setting] > [Draw] > [Auto View]. (☞ P.1-19)
• To cut again, follow these instructions from step 3.

4

# Changing the Cutting Order

Cutting data sent from the host computer can be rearranged to cut in a different order. (This utilizes the sorting function.)
If the order of data sent from software prevents data from being cut efficiently, the sequence of cutting can be changed to streamline cutting.

Some software sends data in the order in which the data was created or edited.
- This prevents efficient cutting if scanned data has been modified, for example, because modified portions will be cut at the end.

## To cut after sorting

Sorting enables cutting in individual blocks, where one block corresponds to movement with the pen down to raising the pen. Once one block has been cut, the block with the nearest origin position is then cut.

The host data start point and cutting direction are not changed.
● marks: Data starting point, equivalent to the cutting starting point
Arrows:    Data direction, equivalent to the cutting direction
Number:   Block cutting order
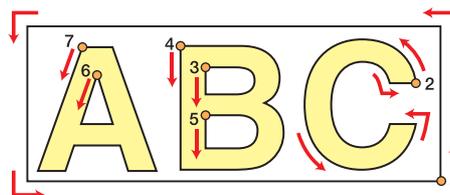


## Setting Up Sorting

**1** On the local mode screen, press [MENU].
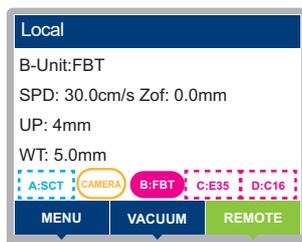


**2** Press (▲)(▼) to select [Setting] > [Draw] > [Sorting], then press the [ENTER] key.

**3** Press (▲)(▼) to select the setting.
- Setting values: ON, OFF

**4** Press the [ENTER] key.
- To exit without saving, press the [END/POWER] key.

**5** To exit, press the [END/POWER] key several times to return to the local mode screen.

(Important!) 
- Changing the setting value will clear the receive buffer.
- Enabling sorting reduces the receive buffer size to approximately 16 MB.

# Setting the Cutter Stroke

The machine can be set to move a shorter distance to raise the tool when cutting (or drawing) data with many up/down movements of the tangential cutter or crease roller. This reduces the total cutting time.

⚠️ **Caution**
- When using a work holder, set a value larger than the length between the blade tip and the pressure face of the work holder. If this is too small, the work holder will rub against the work surface when raised and moved.

---

**1** On the local mode screen, press [MENU].
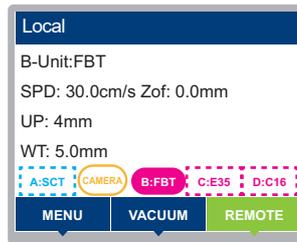
```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU    VACUUM    REMOTE
```

---

**2** Press ⓐ ⓥ to select [Tool] > [Tool Setting], then press the [ENTER] key.

---

**3** Press ⓐ ⓥ to select the tool.

- For units with many available tools, use ⟨⟨ ⟩⟩ to switch screens.
- Configurable tools vary by unit. (☞ Unit and Tool Combinations)

**Important!**
- Regardless of the tools actually mounted, tool settings for each unit can be configured.
- Tool settings are saved on a per-unit basis. They are not applied to other units.

---

**4** Press the [ENTER] key.

- The settings are saved.
- To exit without saving, press the [END/POWER] key.

---

**5** Press ⓐ ⓥ to select the [Up Height] setting to configure, then press the [ENTER] key.

- Items displayed vary by tool. (☞ "Setting items")

---

**6** Press ⓐ ⓥ to select the setting value.

- Setting values: 2 to 40 mm, Fullup

---

**7** Press the [ENTER] key.

- The settings are saved.
- To exit without saving, press the [END/POWER] key.

---

**4**

# Dummy Cutting with a Swivel Cutter (Only Standard Unit)

The machine can be set to perform dummy cutting if data is received when a swivel cutter is selected at the start of cutting.

- After the initial dummy cutting, dummy cutting is not performed again when the next data is cut (until the power is turned off).
- Unless dummy cutting has been performed already, dummy cutting is performed when the tool is switched to a swivel cutter during cutting.
- Safety sensor activation resets the dummy cutting state, and dummy cutting is performed the next time the conditions for it are met.
- Dummy cutting is not performed unless the corresponding setting in the tool settings is set to ON.
- The dummy cut is made in the following position: 1 mm next to the origin, 1 mm in the negative Y direction, and 10 mm in the positive X direction.



**1** On the local mode screen, press [MENU].
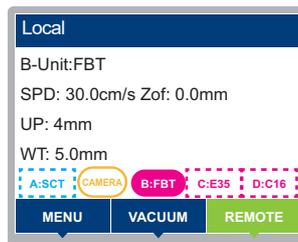


**2** Press ⓐ ⓥ to select [Tool] > [Tool Setting], then press the [ENTER] key.

**3** Press ⓐ ⓥ to select [A-Unit] > [A-Unit:SCT], then press the [ENTER] key.
- For units with many available tools, use [ << ] [ >> ] to switch screens.
- Configurable tools vary by unit. (☞ Unit and Tool Combinations)

(Important!)
- Regardless of the tools actually mounted, tool settings for each unit can be configured.
- Tool settings are saved on a per-unit basis. They are not applied to other units.

**4** Press ⓐ ⓥ to select [Dummy Cut], then press the [ENTER] key.

**5** Press ⓐ ⓥ to select the setting value.
- Setting values: OFF, ON

**6** Press the [ENTER] key.
- The settings are saved.
- To exit without saving, press the [END/POWER] key.

# Setting the Close Time

After data sent from a computer is cut (or drawn), the following operations are automatically performed at a preset time.
- Auto head retraction ( P.1-19)
- Vacuum off ( P.1-20)

**1** On the local mode screen, press [MENU].

| Local |
| --- |
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 |
| MENU    VACUUM    REMOTE |
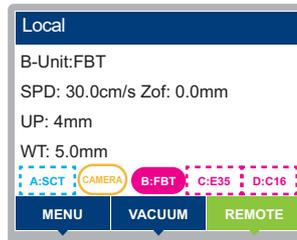
**2** Press ⊛ ⊛ to select [Setup] > [Draw] > [Close Time], then press the [ENTER] key.

**3** Press ⊛ ⊛ to select the setting.
- Setting values: 0 to 30 sec

**4** Press the [ENTER] key.
- To exit without saving, press the [END/POWER] key.

**5** To exit, press the [END/POWER] key several times to return to the local mode screen.

4

# Continuous Cutting

## Continuous Cutting Function (Continue Mode)

Continue Mode enables continuous work switching and drawing operations without using the operation panel. After drawing data is sent to the machine, simply replacing a work (turning on the vacuum) after one drawing is finished automatically starts the next drawing (when the data setting is [Copy] or [ID linkage]).

**Hint!**
- In continuous mode, no distinction is made between front and rear areas, and the entire drawing area is used.
- Toggle cutting is available when an optional extended table is connected.

**Important!**
- Output the data via Ethernet when using continue mode.

## Toggle Cutting (Toggle Mode)

In toggle mode, the table is divided into two areas, front and rear, with each area set up for continuous drawing. Another work can be set up in the rear area during drawing in the front area, which saves time for replacement during drawing.

**Important!**
- In toggle mode, the effective drawing area in the X direction is limited to 1,250 mm for CFX-2531 models and 2,200 mm for CFX-2550 models.
- Disabling continuous mode also disables toggle mode.
- Disabling continuous mode discards data received up to that point.

Note: Figure applies to CFX-2531
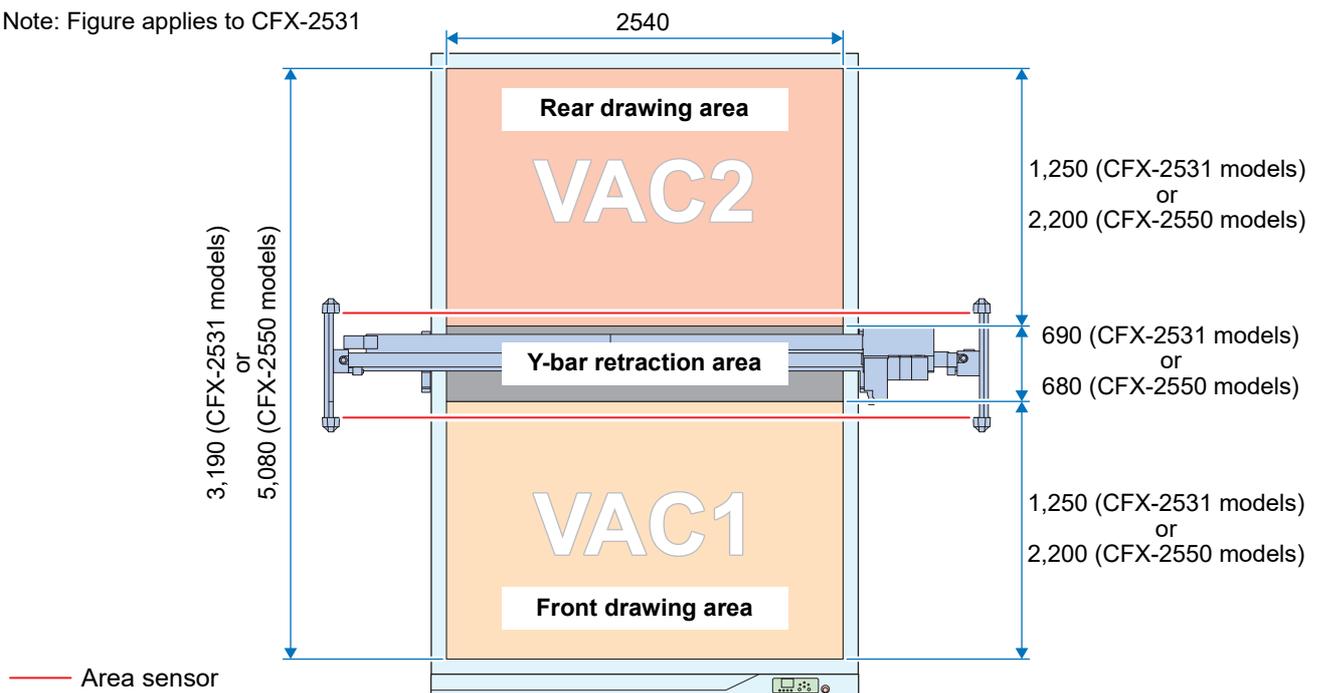


**Hint!**
- Toggle cutting (toggle mode) is available on CFX-2531 and CFX-2550 models.

4-16

## Setup

Configure the settings for continuous and toggle modes, and for the origin.

### Mode settings

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
MENU      VACUUM      REMOTE
```
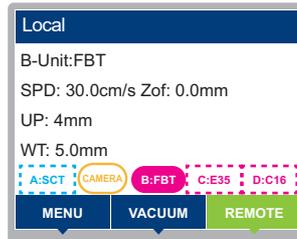
**2** **Press ⓐ ⓥ to select [Machine Setup] > [Continue Mode Setting] > [Continue Mode], then press the [ENTER] key.**

Hint! • The [Continue Mode] menu is not displayed unless all data sent to the machine has been drawn.

**3** **Press ⓐ ⓥ to select [SET CONF], then press the [ENTER] key.**

• Setting value: Disable/Continue/Toggle
• Setting to Continue enables continue mode.
• Setting to Toggle enables toggle mode.

Hint! • Toggle mode cannot be selected for the CFX-2513 model or when an extended table is connected.

**4**

## 4

**Press** ⊕⊕ **to select [Front Area Setting], then press the [ENTER] key.**

• Set [Cut data], [Thickness], and [Type of ID'd Mark].

| Item | Overview | Options | Useful for | Notes |
|---|---|---|---|---|
| Cut data | Specify how data is prepared for continuous mode | Copy | When using the same data | Data received at one time is reused. |
| | | Receiving | When you will change the drawing data each time | The data received is used for drawing. Data must be sent each time. |
| | | ID linkage | Low-volume production of multiple drawing data files, etc. | When a data ID code is printed on the work, the code is read to receive data from the server.<br>• Requires ID codes to be printed. |
| Thickness | Selects numerical input or measurement | Numerical input | • When you wish to save time<br>• When drawing on works of the same thickness | Work thickness can be set in a range of 0.1 mm to 54.0 mm. Each time, drawing is performed for the specified work thickness.<br>• Work thickness is not measured. |
| | | Measure | When using works of various thicknesses for drawing | Work thickness is measured before cutting begins. Pen caps must be installed (SCT and PEN cannot be used for drawing in this mode).<br>• Work thickness is measured each time, which takes more time overall than numerical input. |
| Type of ID'd Mark | Only when data mode is set to ID linkage | Type.1<br>Type.2<br>Type.3<br>Type.4 | – | Multiple types of shapes cannot be set. When assigning IDs, use the same mark form. ( ☞ P.5-2) |

**Hint !**
• In toggle mode, different [Cut data], [Thickness], and [Type of ID'd Mark] settings can be set for the front and rear areas.
• For CFX-2513 models, rear area settings are not displayed in the menu.

## 5

**When using toggle mode, set the origin mode.**

• Default: FR method

• FF method:
The rear area origin is set to the lower right of the rear area. The coordinate system is oriented the same way as for the front area.

• FR method:
The rear area origin is set to the upper left. The coordinate system is rotated 180°.

**Hint !**
• For CFX-2513 models, not displayed in the menu.

FR method Rear area origin

Rear drawing area

FF method Rear area origin

Y-bar retraction area
(Origin cannot be set here)

Front drawing area

Front area origin

4-18
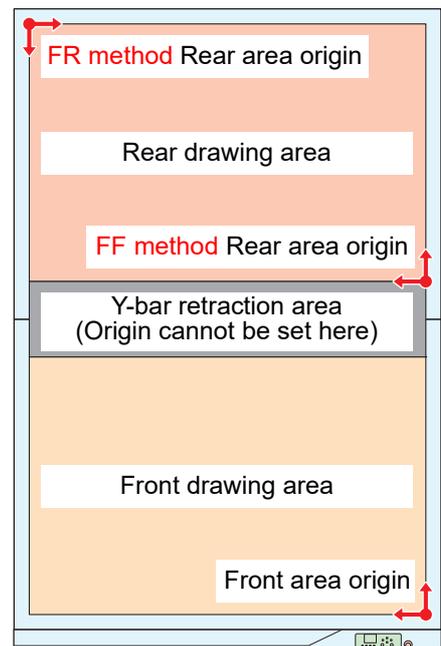
## Setting the origin

Set the origin in the jog origin setup. Each drawing starts from the same origin.
- In toggle mode, different origins can be set for the front and rear areas.
- In toggle mode, the origin for the front drawing is set if the position where the origin is set lies within the front drawing area. If it is in the rear drawing area, the origin for the rear drawing is set. The same applies when the origin is set using [Mark Origin Detection].
- The origin cannot be set in the Y-bar retraction area (see the figure below).



Rear drawing area

Y-bar retraction area
(Origin cannot be set here)

Front drawing area

(Important!) • Cutting area settings have no effect in toggle mode.

**4**
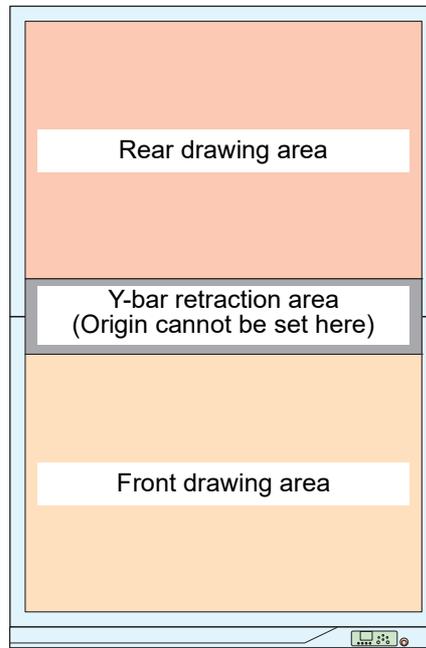
# Cutting

## In continuous mode

**1** **Press the [REMOTE] key.**

• The machine switches to remote mode.

| Local | | Continue Mode Setting (F) | |
|---|---|---|---|
| B-Unit:FBT | | B-Unit:FBT | 15KB |
| SPD: 30.0cm/s Zof: 0.0mm | | SPD: 30.0cm/s Zof: 0.0mm | |
| UP: 4mm | | UP: 4mm | |
| WT: 5.0mm | | WT: Not set | Not Ready |
| A:SCT CAMERA B:FBT C:E35 D:C16 | | A:SCT CAMERA B:FBT C:E35 D:C16 | |
| MENU VACUUM REMOTE | | VACUUM LOCAL | |
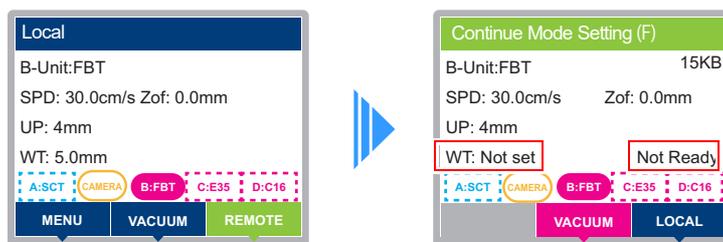
**Hint!** • When continuous mode is enabled, the machine can switch to remote mode even if work thickness is not detected.
At that time, work thickness is indicated as the work thickness setting value or as [Not set]. (The actual value is applied after work thickness is measured.)
• When continuous mode is enabled, the title of the remote screen changes from [Remote] to [Continue Mode(F)].
• The current state of the effective area is displayed at the lower right of the panel. ( ☞ P.1-9)

**2** **Set up the work and turn on the vacuum.**

**Important!** • When [Work Thickness] is set to [Measure], work thickness is measured at the origin. Be sure to set the origin within the work area. Failure to measure work thickness may cause the tool tip to come into contact with the work, which may damage it.

Drawing area
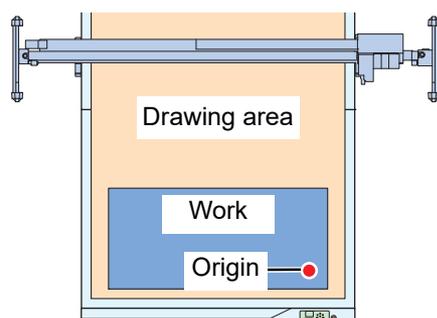
Work

Origin

**OK** because the origin lies within the work area

Work

Drawing area
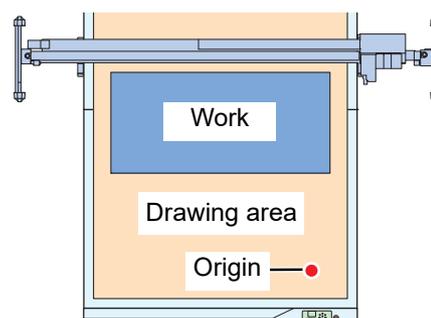
Origin

**Not acceptable** because the origin lies outside the work area

**Hint!** • Vacuum can be turned on either by using the panel or a foot switch.
• The origin can be set anywhere in the drawing area.

### ● When the data setting is [ID linkage]

• Register mark and data ID code detection is performed relative to the specified origin.
• If the work thickness setting is set to [Measure], work thickness is detected before mark detection.
• After successful detection of the data ID, data is received from the cutting link and drawing begins.
• If data ID code detection fails, an error is displayed.

**Important!** • If data cannot be received for a certain period after data ID code detection, an error is displayed.
• If set to [ID linkage], disable the data ID code setting in TP Detect Setup. ( ☞ P.5-9)

## ● When the data setting is [Copy] or [Receiving]

**3** **Send data from the host computer.**

• Once the data is received, the head moves to the origin.
• If the work thickness setting is set to [Measure], work thickness is detected.

Hint❗ • Step 3 can be done before step 2 if you prefer.

**4** **Collect the work after cutting is finished.**

• The head is retracted when cutting is finished.

Hint❗ • Once retraction is complete, the vacuum is forcibly turned off for the cut area.

Important❗ • Software settings for automatic head retraction or other functions that move the head to a predetermined position after drawing cannot be used. If the software requests head retraction, the head moves to the position indicated by the software and then to the retraction position.

**5** **Set up the new work before turning on the vacuum.**

• Repeat steps 2 to 4.
• If the cutting data was set up for copying, there is no need to send the data again.
• Turning the vacuum ON immediately moves the head to the origin, followed by work thickness measurement (when the work thickness setting is set to [Measure]) and drawing operations.

**6** **Pause operation as needed.**

• To pause drawing, press the [LOCAL] key.
• To resume operation, press the [REMOTE] key again.

**7** **Exit continuous mode when finished.**

• To exit continuous mode, clear the data after the drawing is finished or while operation is paused.

**8** **Use new data for drawing, as needed.**

• To prepare new drawing data, clear the data and start over from the beginning.

4

## In toggle mode

Drawing in the front area and then the rear area is performed as follows.

Hint! | • The order of areas used for drawing can be reversed.

---

**1** **Press the [REMOTE] key.**

• The title changes to [Continue Mode(F)] or [Continue Mode(R)].
• [Continue Mode(F)] indicates that the front (front side) area is active and [Continue Mode(R)] that the rear area is active.

Hint! | • The active area during standby is set to the area for which the vacuum was last turned on.
Example: When [Continue Mode(F)] is displayed, turning on the rear area vacuum (Vacuum 2) changes the mode to [Continue Mode(R)].
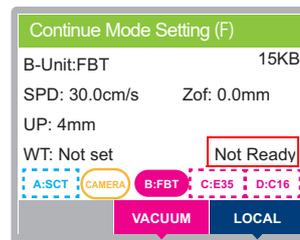
Important! | • The active area is not changed during drawing.
• The rear area vacuum should be turned on with a foot switch.

| Continue Mode Setting (F) | |
| --- | --- |
| B-Unit:FBT | 15KB |
| SPD: 30.0cm/s | Zof: 0.0mm |
| UP: 4mm | |
| WT: Not set | Not Ready |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 | |
| VACUUM | LOCAL |

---

**2** **Set up a work and turn on the front area vacuum.**

• The front area with the vacuum turned on becomes active.

● **When the data setting is [ID linkage]**

• As in continuous mode, the head moves to the origin and detects marks and data ID codes.
• If the work thickness setting is set to [Measure], work thickness is detected before mark detection.
• After successful detection of the data ID, data is received from the cutting link and drawing begins.
• If data ID code detection fails, an error is displayed in the same way as for continue mode.

---

● **When the data setting is [Copy] or [Receiving]**

---

**3** **As in continuous mode, data is received from the host computer, and then drawing operations are performed.**

• Once the data is received, the head moves to the origin.
• If the work thickness setting is set to [Measure], work thickness is detected.

Important! | • Data cannot be received while drawing is in progress or paused. Wait until drawing is finished.
• Drawing will not start if the vacuum was turned off before the data was received. Turn on the vacuum.

---

**4** **Collect the work after cutting is finished.**

• The head is retracted when cutting is finished.

Hint! | • When toggle mode is enabled, the retraction position is in the center of the retraction area.
• The vacuum for the area used for cutting will be forcibly turned off after retraction regardless of the Vacuum Auto-Off setting.

Important! | • Whether or not the vacuum is on is used to determine whether the uncut area is ready.
Example: If the work is ready (vacuum is on) in the rear area when cutting in the front area is finished, the active area switches to the rear area (from [Continue Mode(F)] to [Continue Mode(R)). Cutting starts if there is active data in the rear area.

---

● **When the rear area work is ready**

**5** **As with the front area, after data is sent, drawing on the rear area begins.**

- If the rear area data setting was [ID linkage], the head moves to the origin, measures work thickness, and detects the data ID.

**Important!** • Before rear area drawing data is sent, make sure the panel display is [Continue Mode(R)]. If data is sent while [Continue Mode(F)] is shown, front area drawing data will be overwritten.

**6** **Collect the work from the front area**

- Turn the vacuum off and collect the work.

**7** **Set up a new work in the front area, then turn the vacuum on.**

- After drawing in the rear area is finished, start drawing in the front area.

**8** **After drawing in the rear area is finished, collect the work.**

- Set up a new work, then turn the vacuum on.
- After drawing in the front area is finished, start drawing in the rear area.

**9** **From this point, keep collecting finished works and setting up new ones.**

**10** **When drawing in only one area**

- Drawing priority is given to the area where the work is ready. For this reason, if a new work is not set up after drawing in the rear area is finished, for example, the machine does not switch to the rear area after drawing in the front area is finished.
In this state, after the work in the front area is collected, a new work is set up, the vacuum is turned on, and drawing will be performed in the front area.

**11** **Pause operation as needed.**

- Press the [LOCAL] key while drawing is in progress.

**Important!** • The active area does not change during drawing, including when paused.

**12** **To exit toggle mode, clear the data either after drawing is finished in either area or when drawing is paused.**

- Clearing the data discards both front and rear drawing data.

**13** **Use new data for drawing, as needed.**

- To prepare new drawing data, clear the data and start over from the beginning.

## Restrictions in Continuous and Toggle Modes

**(1)** Cutting area settings have no effect in toggle mode. The maximum drawing area corresponds to the cutting area.

**(2)** In toggle mode, the axis correction setting has no effect.

**(3)** In toggle mode, these kinds of drawing are only possible in the front area: "Sample Cutting (☞ P.7-14)," "Test Cutting (☞ P.3-36)," and "Adjusting Tools (☞ P.3-21)."

**(4)** If an internal pattern is drawn in continuous mode, the data received will be discarded.

**(5)** If new data is received between drawings when [Cut data] is set to [Copy], the original data is discarded and the new data is used.

**(6)** New data cannot be received while drawing is in progress or paused (in toggle mode, rear area drawing data cannot be sent while the front area is being used for drawing).

**(7)** The [Vacuum Auto-On] setting has no effect. Vacuum operation is not interlocked with switching between [Remote] and [Local].

**(8)** These modes cannot be used at the same time as single mode for continuous register mark cutting. (Can be used in multi mode)

**(9)** These modes cannot be used at the same time as the edge detection function.

**(10)** These modes cannot be used at the same time as the backside cutting function.

**(11)** In continue mode and toggle mode, data cannot be cut if it exceeds the cutting buffer size (normally 22 MB, and 16 MB when sorting is enabled).

## Settings Initialized by Enabling/Disabling Continue Mode

Changing continuous mode from [Enable] to [Disable] or vice versa initializes or disables the following.

**(1)** Received data is discarded (data is cleared).
- This also disables copying of received data.

**(2)** Cutting area settings are canceled (initialized).

**(3)** The axis correction setting is canceled (initialized).

**(4)** Work thickness is considered not set.

**(5)** When the setting is changed from [Enable] to [Disable], the drawing origin is set to the lower right of the screen (the origin at startup).

# Flat Follow-Up Function

## About the flat follow-up function

Flat follow-up function

The flat follow-up function is a function that corrects the height of various points during cutting based on measurements of the felt surface height made beforehand using flatness measurement.
If there are locations that are not fully cut through when cutting shapes, the flat follow-up function can be enabled to ensure that those areas are fully cut through.
Adjust the [Zorg Offset] value to ensure full cutting through via test cuts near the origin point at the lower right, which forms the datum point for flatness measurement.

Tools for which flat follow-up can be used:

1. Flat blade tool (FBT)
2. Creasing roller (C16/C26/C60)
3. Reciprocating cutter (E12/E35/E60)
4. V-cut tool (V45/VAS)
5. End mill (R10)

**Caution**

- The creasing roller can be used when the pressure level setting is disabled (position control).

**Important!**

- The flat follow-up function cannot be used with the following operations, even when it is enabled:
  - Test Cut
  - Sample Cutting
  - Tool Adjust
  - Manual Cut

- The flat follow-up function cannot cope with excessive unevenness, such as debris on the felt surface during measurement.
- Enabling the flat follow-up function may reduce the speed.
  The flat follow-up function increases tracking accuracy by performing multiple corrections according to the height of the felt mat surface. Therefore, long cutting movements are divided into sections, and the height is corrected at the division points. This division may reduce the movement speed.
  The flat follow-up function should be disabled if speed is a priority.
- When the flat follow-up function is enabled, operation may not stop immediately when a remote key is pressed to pause operation. This is due to the line divisions described above.

4

## Setting the flat follow-up function

**1** On the local mode screen, press [MENU].

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
   MENU        VACUUM      REMOTE
```

**2** Press ⒜ ⒱ to select [Setup] > [Draw] > [Flat Follow-Up], then press the [ENTER] key.

**3** Press ⒜ ⒱ to select the tool to be set, then press the [ENTER] key.

Available tool groups
- FBT
- C16/C26/C60
- E12/E35/E60
- V45/VAS
- R10

(Important!)
- C16/C26/C60, E12/E35/E60, or V45/VAS cannot be set individually.
- If the same tool is mounted on more than one unit (for example, if FBTs are mounted on the B and C units), they cannot be set individually for each unit.

**4** Press ⒜ ⒱ to select the setting.

- Setting values: ON (flat follow-up enabled), OFF (flat follow-up disabled)
- Default: OFF

**5** Press the [ENTER] key

- The value entered is saved.
- To exit without saving, press the [END/POWER] key.

**6** To exit, press the [END/POWER] key several times to return to the local mode screen.

## Setting the felt mat flatness

(Important!)　• The felt mat is measured over the entire drawing area. The measurement area cannot be specified.
　• Do not place work or other objects on top of the felt mat when measuring.
　• Remove any debris on top of the felt mat.
　• The flatness of the felt mat must be measured in order to use the flat follow-up function.
　　If the state of the felt mat has changed with use, measure the flatness using this menu.

**1** On the local mode screen, press [MENU].
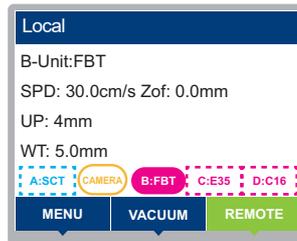
```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU      VACUUM      REMOTE
```

**2** Press ⓐ ⓥ to select [Machine Setup], then press the [ENTER] key.

**3** Press ⓐ ⓥ to select [Flatness], then press the [ENTER] key.

**4** Press the [ENTER] key to start measurement.

　• Progress is indicated as a percentage while measurement is in progress.

**5** When measurement is complete, this is displayed on the screen. Press the [ENTER] key to exit this menu.

⚠ **Caution**
A warning is displayed if there is a problem with the measurement results.
Check the following:
　• Check for any debris on the felt mat
　• Check for any deep depressions or cuts on the felt mat

**4**

# Setting Felt Mat Thickness

Changes in the thickness of the felt mat due to factors such as wear will affect the work thickness measurement results.
The felt mat thickness can be set using either of the following methods.
- Update the felt mat thickness using the flatness measurement value ( ☞ "Set by measuring flatness" P.4-28)
- Enter the felt mat thickness manually ( ☞ "Entering values manually" P.4-29)

**⚠ Caution**
- When setting the felt mat thickness automatically, flatness measurement must also be performed. If you wish to set only the felt mat thickness, it must be entered manually.
- Changing the felt mat thickness clears the previously measured work thickness. The work thickness should be set again.

## Set by measuring flatness

**1** On the local mode screen, press [MENU].
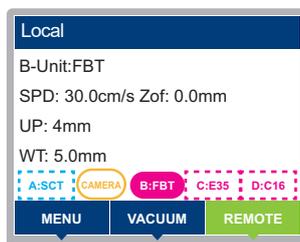
```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
    MENU      VACUUM      REMOTE
```

**2** Press ⊕ ⊕ to select [Machine Setup], then press the [ENTER] key.

**3** Press ⊕ ⊕ to select [Flatness], then press the [ENTER] key.

**4** Press the [ENTER] key to start measurement.

- Progress is indicated as a percentage while measurement is in progress.

**5** When measurement is complete, this is displayed on the screen. Press the [ENTER] key to exit this menu.

**⚠ Caution**
A warning is displayed if there is a problem with the measurement results.
Check the following:
- Check for any debris on the felt mat
- Check for any deep depressions or cuts on the felt mat

**6** If measurement was successful, pressing the [ENTER] key in Step 5 displays the felt mat thickness update screen. The felt mat thickness calculated from the flatness measurement is displayed.
Check the measurement results, and to update the felt mat thickness, press the [ENTER] key.
To exit without updating, press the [END] key.

```
Machine Setup              3/3
Felt Mat Thickness      5.0mm


Update                     [ENT]
Not update                 [END]
```
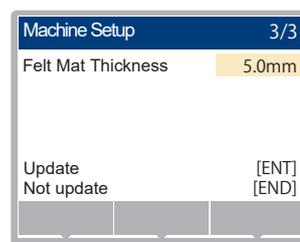
**Hint!**
- The settings can be altered using the ⊕ ⊕ keys before pressing the [ENTER] or [END] key for the measurement results.

**⚠ Caution**
- Upper and lower limits apply to the felt mat thickness. If the measurement results are outside the upper or lower limits, a warning is displayed, and the corresponding upper or lower limit is displayed.

# Entering values manually

**1**  **On the local mode screen, press [MENU].**

| Local |
|---|
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 |
| MENU    VACUUM    REMOTE |
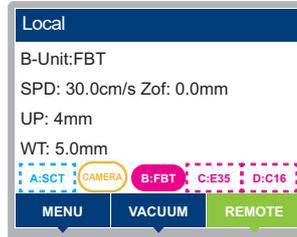
**2**  **Press ⏶ ⏷ to select [Machine Setup], then press the [ENTER] key.**

**3**  **Press ⏶ ⏷ to select [Felt Mat Thickness], then press the [ENTER] key.**

**4**  **Press ⏶ ⏷ to enter the felt mat thickness.**

- Setting values: 2.0 to 6.0 mm
- Default: 4.2 mm
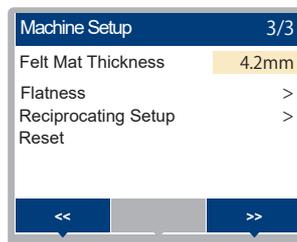
| Machine Setup | 3/3 |
|---|---|
| Felt Mat Thickness | 4.2mm |
| Flatness | > |
| Reciprocating Setup | > |
| Reset | |
| << | >> |

**5**  **Press the [ENTER] key.**

- The value entered is saved.
- To exit without saving, press the [END/POWER] key.

**Important!**  • Do not place the work raised more than 6 mm from the cutting panel surface (6 mm is the maximum thickness of the felt mat). There is a risk of insufficient raising height, particularly when using the creasing roller.

**4**

## Setting Cutting Quality

Set the cutting quality.

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU    VACUUM    REMOTE
```
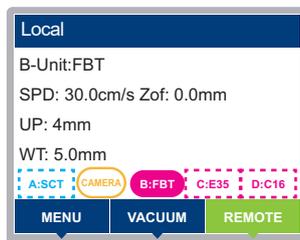
**2** **Press ⊕ ⊖ to select [Setting] > [Draw] > [Cut Mode], then press the [ENTER] key.**

**3** **Press ⊕ ⊖ to select the setting.**

- Normal: Regular cutting mode.
- Sharp:  Mode that prioritizes cutting quality.
- Fast:   Used to perform cutting in a short time.

**4** **Press the [ENTER] key.**

- To exit without saving, press the [END/POWER] key.

**5** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

Hint!
- Set to [Sharp] when cutting the following kinds of data.
   **a** Text that is 10 mm or smaller
   **b** Patterns or text with many sharp edges
   **c** Fine cutting
      Note that the finish may be rough if the data sent from the computer is too intricate. In this case, select [Fast] for a smoother finish.

## Setting the Speed of Head Movement

Set the speed of head movement when tools are up.
With [Auto] selected, the cutting speed setting value in cutting conditions corresponds to the speed when up.

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU      VACUUM      REMOTE
```

**2** **Press ⓐ ⓥ to select [Tool] > [Tool Setting], then press the [ENTER] key.**

**3** **Press ⓐ ⓥ to select the tool.**

- For units with many available tools, use `<<` `>>` to switch screens.
- Configurable tools vary by unit. (☞ Unit and Tool Combinations)

**(Important!)**
- Regardless of the tools actually mounted, tool settings for each unit can be configured.
- Tool settings are saved on a per-unit basis. They are not applied to other units.

**4** **Press the [ENTER] key.**

- The settings are saved.
- To exit without saving, press the [END/POWER] key.

**5** **Press ⓐ ⓥ to select [Up speed], then press the [ENTER] key.**

- Items displayed vary by tool. (☞ Setting items)

**6** **Press ⓐ ⓥ to select the setting.**

- Setting values: Auto, 5, 10 to 100 cm/s (in 10 cm/s increments)

**7** **Press the [ENTER] key.**

- The settings are saved.
- To exit without saving, press the [END/POWER] key.

**8** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

4

## Setting an Offset for Adjusted Blade Pressure (Standard Unit)

Set when there are uncut portions at the beginning and end of cuts, and in other situations.

**1** On the local mode screen, press [MENU].

Local

B-Unit:FBT

SPD: 30.0cm/s Zof: 0.0mm

UP: 4mm

WT: 5.0mm

A:SCT | CAMERA | B:FBT | C:E35 | D:C16

MENU | VACUUM | REMOTE

**2** Press ⓐⓥ to select [Tool] > [Tool Setting], then press the [ENTER] key.

**3** Press ⓐⓥ to select [A-Unit] > [A-Unit: SCT], then press the [ENTER] key.

• For units with many available tools, use 〈〈  〉〉 to switch screens.
• Configurable tools vary by unit. (☞ Unit and Tool Combinations)

(Important!) • Regardless of the tools actually mounted, tool settings for each unit can be configured.
• Tool settings are saved on a per-unit basis. They are not applied to other units.

**4** Press the [ENTER] key.

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

**5** Press ⓐⓥ to select [Adj-prs Offset], then press the [ENTER] key.

• Items displayed vary by tool. (☞ Setting items)

**6** Press ⓐⓥ to select the setting.

• Setting values: -9 to 9 (approx. -30 g to 30 g)

**7** Press the [ENTER] key.

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

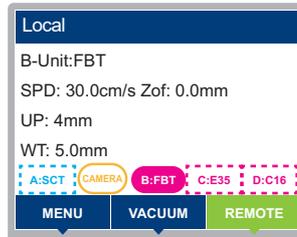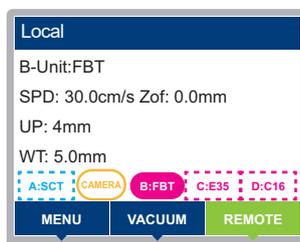**8** To exit, press the [END/POWER] key several times to return to the local mode screen.

## Eliminating Pieces Left Uncut in Works (Standard Unit)

Intentionally overlapping the start and end points prevents the work from being left uncut.
Specify whether overcutting is enabled or disabled, and set the length.
When an overcutting length is set, a cut of the specified length is made back from the starting point, and the tool is raised after intentional overcutting at the end.
Overcutting is also performed at corners other than start and end points.

**Overcut portion**
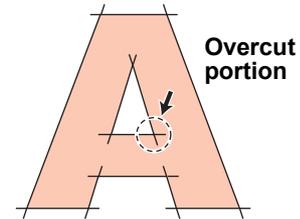
(Important!) • Setting up suitable overcutting can reduce pieces left uncut at the beginning and end of cuts on works that are easily bent. Avoid setting the value too high, which may leave scratches on the finished piece.
• Overcutting only applies to drawing with a swivel cutter.

---

**1** **On the local mode screen, press [MENU].**
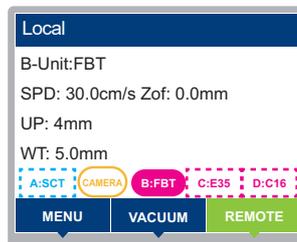
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU    VACUUM    REMOTE

---

**2** **Press ⒜ ⒱ to select [Tool] > [Tool Setting], then press the [ENTER] key.**

---

**3** **Press ⒜ ⒱ to select the tool.**

• For units with many available tools, use  «   »  to switch screens.
• Configurable tools vary by unit. (☞ Unit and Tool Combinations)

(Important!) • Regardless of the tools actually mounted, tool settings for each unit can be configured.
• Tool settings are saved on a per-unit basis. They are not applied to other units.

---

**4** **Press the [ENTER] key.**

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

---

**5** **Press ⒜ ⒱ to select [Over Cut], then press the [ENTER] key.**

• Items displayed vary by tool. (☞ Setting items)

**4**

**6** Press ⒶⓋ to select the overcut setting.

• Setting values: Off or 0.1 to 1.0 mm (in 0.1 mm increments)
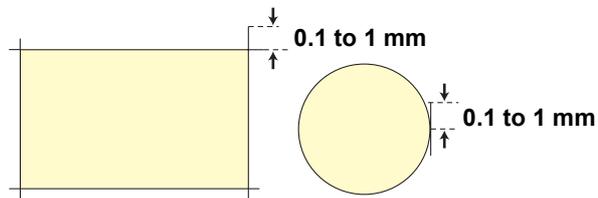
**0.1 to 1 mm**

**0.1 to 1 mm**

**7** Press the [ENTER] key.

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

## Setting Up a Double Roller Effect

Two crease lines can be drawn, centered on and offset from the position of a normal crease line.

Important! • The normal crease line is not drawn.

**Offset 0.1 to 3.0 mm** **Offset 0.1 to 3.0 mm**
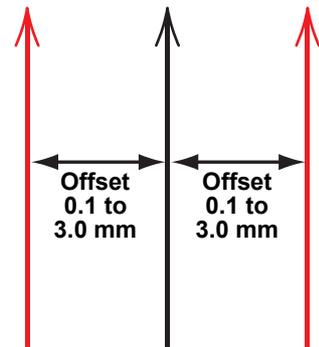
——— : Normal crease line

——— : With the double roller effect enabled, these crease lines are actually drawn

**1** **On the local mode screen, press [MENU].**

> Local
> B-Unit:FBT
> SPD: 30.0cm/s Zof: 0.0mm
> UP: 4mm
> WT: 5.0mm
> A:SCT   CAMERA   B:FBT   C:E35   D:C16
> MENU   VACUUM   REMOTE
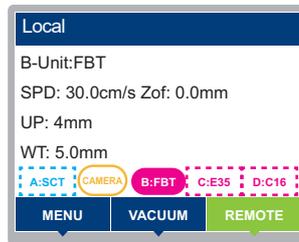
**2** **Press ⒜⒱ to select [Tool] > [Tool Setting], then press the [ENTER] key.**

**3** **Press ⒜⒱ to select the unit to which the crease roller (C16, C26, C60) is mounted, then press the [ENTER] key.**

• The crease roller can be mounted on B, C, or D.
• Setting values: A, B, C, D

**4** **Press ⒜⒱ to select the crease roller (C16, C26, C60), then press the [ENTER] key.**

**5** **Press ⒜⒱ to display [Double Roller], then press the [ENTER] key.**

**6** **Press ⒜⒱ to set a setting value, then press the [ENTER] key.**

• The double roller function is not used when [OFF] is selected for the setting value.
• Setting values: OFF, 0.1 to 3.0 mm

Hint! • A (w) is displayed after the tool name when the double roller is set to an option other than off.

**7** **To exit, press the [END/POWER] key.**

## Setting the Display Language

Select English or Japanese as the display language.

**1** On the local mode screen, press [MENU].

> Local
> B-Unit:FBT
> SPD: 30.0cm/s Zof: 0.0mm
> UP: 4mm
> WT: 5.0mm
> A:SCT  CAMERA  B:FBT  C:E35  D:C16
> MENU  VACUUM  REMOTE
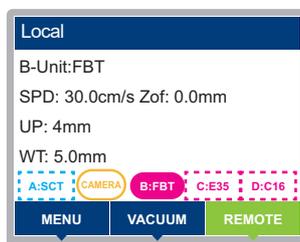
**2** Press ⒜⒱ to select [Machine Setup] > [Language], then press the [ENTER] key.

**3** Press ⒜⒱ to select the language.

• Setting values: English, Japanese

**4** Press the [ENTER] key.

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

**5** To exit, press the [END/POWER] key several times to return to the local mode screen.

## Setting the Display Unit

Select the length unit displayed for jog functions.

| Setting value | Overview |
|---|---|
| mm | Displays values in millimeters |
| inch | Displays values in inches |

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s  Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
MENU      VACUUM      REMOTE
```

**2** **Press ▲▼ to select [Machine Setup] > [Unit: Length], then press the [ENTER] key.**

**3** **Press ▲▼ to select the setting.**

• Setting values: mm, inch

**4** **Press the [ENTER] key.**

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

**5** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

4

## Setting the Key Buzzer

You can turn off the buzzer sound that is played when keys are pressed.

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
MENU        VACUUM        REMOTE
```

**2** **Press ⓐ ⓥ to select [Machine Setup] > [Key Buzzer], then press the [ENTER] key.**

**3** **Press ⓐ ⓥ to select the On / Off.**

• Setting values: On, Off

**4** **Press the [ENTER] key.**

• The settings are saved.
• To exit without saving, press the [END/POWER] key.

**5** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

Hint ! • Setting the buzzer to OFF does not disable sounds for errors, warnings, or completion of operation.

## Setting Startup Mode

Set the mode that is active after the machine is turned on.

4-39

**1** **On the local mode screen, press [MENU].**

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU      VACUUM      REMOTE
```

**2** **Press ⒶⓋ to select [Machine Setup] > [Startup Mode], then press the [ENTER] key.**

**3** **Press ⒶⓋ to select Local or Remote mode.**

   • Setting values: Local, Remote

**4** **Press the [ENTER] key.**

   • The settings are saved.
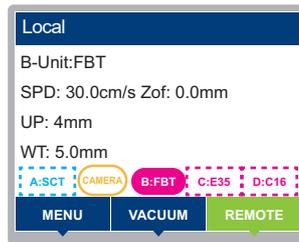   • To exit without saving, press the [END/POWER] key.
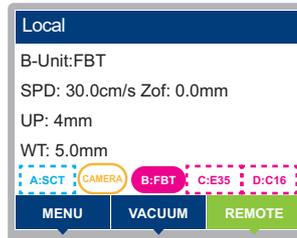
**5** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

( Hint ! )   • When [Startup Mode] is set to remote, cutting edge detection is automatically performed immediately after startup.

**4**

## Setting Commands

### Setting Priority

Set which settings take priority if a setting item has been set differently on the machine and host computer.

**1** On the local mode screen, press [MENU].

| Local |
|---|
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 |
| MENU    VACUUM    REMOTE |

**2** Press ⊙⊙ to select [Setting] > [Command] > [Priority], then press the [ENTER] key.

**3** Press ⊙⊙ to select the setting.

| SP | Selecting tools |
|---|---|
| VS | Setting movement speed |
| AS | Setting acceleration |
| FS | Setting tool pressure |
| ZF | Setting cutting pressure |
| ZA | Setting movement speed with tools up |
| ZO | Setting the amount of blade correction |

**4** Press the [ENTER] key.

• To exit without saving, press the [END/POWER] key.

**5** Press ⊙⊙ to select the setting.

• Setting values: Host, Panel
   Host:Host computer setting values take precedence.
   Panel:Machine setting values take precedence.
• To set other items, repeat steps 4 to 7.

**6** Press the [ENTER] key.

• To exit without saving, press the [END/POWER] key.

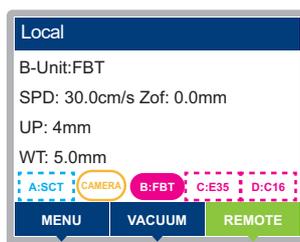**7** To exit, press the [END/POWER] key several times to return to the local mode screen.

## Setting Effective Area Return Values (OH:Response Value)

Set which value to return to the software after the machine receives a command to return effective area coordinates to the software.
Default: Returns the machine's maximum effective cut area value.
Setting values: Returns the value set in the [Cut Area] setting.

**1** **On the local mode screen, press [MENU].**

Local

B-Unit:FBT

SPD: 30.0cm/s Zof: 0.0mm

UP: 4mm

WT: 5.0mm

A:SCT   CAMERA   B:FBT   C:E35   D:C16

MENU   VACUUM   REMOTE

**2** **Press ⓐ ⓥ to select [Setup] > [Command] > [OH: Response Value], then press the [ENTER] key.**

**3** **Press ⓐ ⓥ to select the setting.**

• Setting values: Initial value, Setting value

**4** **Press the [ENTER] key.**

• To exit without saving, press the [END/POWER] key.

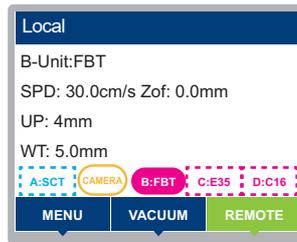**5** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

4

## Setting Computer Connection Conditions

The communication conditions must be set to suit the interface used.

**Caution**
- Connect and disconnect the cables carefully. Applying excessive force to the cables may damage them.

### Using a LAN Cable

Connect a host PC to the machine using a LAN cable. Insert a LAN cable until it engages with a click.

**Warning**
- Do not unplug the cable while data is being transferred.

#### ● Network Connection Precautions

Make sure the network is set up as follows: Cutting will not be possible if the network is not set up correctly.
- Use a Category 6 or higher LAN cable.
- The machine and host PC must be set for the same local network. This product cannot be connected via a router.
- Use a 1000BASE-TX compatible computer or switching hub. Cutting requires 1000BASE-TX support.

### Using an RS-232C Cable

Connect a host PC to the machine using an RS-232C cable.

**Caution**
- Turn off the power to the machine and host PC before connecting the cable.

**Warning**
- Do not unplug the cable while data is being transferred.

---

**1** On the local mode screen, press [MENU].

Local

B-Unit:FBT

SPD: 30.0cm/s Zof: 0.0mm

UP: 4mm

WT: 5.0mm

A:SCT  CAMERA  B:FBT  C:E35  D:C16

MENU  VACUUM  REMOTE

---
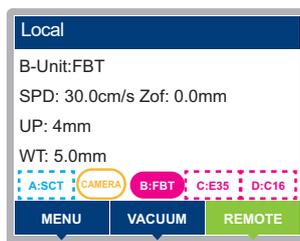
**2** Press ⓐ ⓥ to select [Communication Set] > [RS-232C] > [Baud Rate], then press the [ENTER] key.

---

**3** Press ⓐ ⓥ to select the setting.

• Setting values: 1200, 2400, 4800, 9600, 19200, 38400 (bps)

**Important!**
- The recommended setting is 38400 bps.
- Set the host computer transfer speed to match the machine.

**4**

**Press the [ENTER] key.**

• To exit without saving, press the [END/POWER] key.

**5**

**Press ⒜ ⒝ to select each of the following settings, then press the [ENTER] key.**

• RS-232C settings include the following items.
  Data Len, Parity Bit, Stop bit, Handshake
• For details on each setting item, see P.4-43.

**6**

**Press ⒜ ⒝ to select the setting value.**

• For details on each setting item, see P.4-43.

**7**

**Press the [ENTER] key to confirm the setting values.**

• To exit without saving, press the [END/POWER] key.

**8**

**To exit, press the [END/POWER] key several times to return to the local mode screen.**

## Setting items

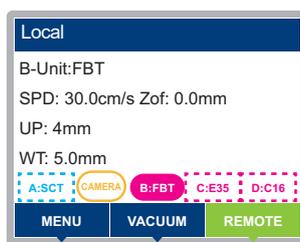| Baud Rate | 1200, 2400, 4800, 9600, 19200, 38400 (bps) |
|---|---|
| **Data Len** | 7, 8 (bit) |
| **Parity** | None, Odd, Even |
| **Stop Bits** | 1, 2 (bit) |
| **Handshake** | X-PRM, None |

**4**

## Setting the Network

• Network settings are not user-specific settings.
For example, settings made for user 1 also apply to users 2 to 4.

---

**1**

**On the local mode screen, press [MENU].**

| Local |
|---|
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 |
| MENU    VACUUM    REMOTE |

---

**2**

**Press ⒜⒱ to select [Communication Set] > [Network], then press the [ENTER] key.**

---

**3**

**Press ⒜⒱ to select [Check IP Address], then press the [ENTER] key.**

• Shows the current IP address of the machine.

(Hint!) • It takes some time after a network connection is established until the IP address is determined.
"0.0.0.0" is displayed when the IP address has not been determined yet.

---

**4**

**Press the [ENTER] key.**

---

**5**

**Press ⒜⒱ to select [Check MAC Address], then press the [ENTER] key.**

• Shows the current IP address of the machine.
• Press ⒝ to display the next address.

---

**6**

**Press the [ENTER] key.**

---

**7**

**Press ⒜⒱ to select [DHCP], then press the [ENTER] key.**

• Press ⒜⒱ to select On / Off.
• Set to ON to use an IP address set by the DHCP server.

---

**8**

**Press the [ENTER] key.**

---

**9**

**Press ⒜⒱ to select [Auto IP], then press the [ENTER] key.**

• Press ⒜⒱ to select On / Off.
• Set to ON to use an IP address set via the AutoIP protocol. Note that DHCP is given priority when DHCP is set to ON.

---

**10**

**Press the [ENTER] key.**

• If either DHCP or AutoIP is set to [ON], go to step 15.
• If both DHCP and AutoIP are set to [OFF], go to step 11.

**11**

**Press ⒶⓋ to select the next setting item.**

• When both DHCP and AutoIP are set to [OFF], set the IP address, default gateway, DNS address, and subnet mask.

Hint! • IP Address:       Sets the IP address used by the machine.
• Default Gateway: Sets the default gateway used by the machine.
• DNS Address:     Sets the DNS server address used by the machine.
• Sub Net Mask:    Sets the subnet mask used by the machine based on the number of digits from the highest position when represented in binary format.

**12**

**Press the [ENTER] key.**

**13**

**Press ⒶⓋ◀▶ to set.**

**14**

**Press the [ENTER] key to confirm the setting values.**

• To exit without saving, press the [END/POWER] key.

**15**

**To exit, press the [END/POWER] key several times to return to the local mode screen.**

Hint! • Restart the machine to apply network settings.

4

## Copying Setting Values from Another User's Settings

**1** On the local mode screen, press [MENU].

| Local |
|---|
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT CAMERA B:FBT C:E35 D:C16 |
| MENU VACUUM REMOTE |

**2** Press ▲▼ to select [Setup] > [Setup Copy], then press the [ENTER] key.

**3** Press ▲▼ to select [Target], then press the [ENTER] key.

**4** Press ▲▼ to select a setting option, then press the [ENTER] key.
- Setting values: Draw, Command, Tool, All

**5** Press ▲▼ to select [Copy From], then press the [ENTER] key.

**6** Press ▲▼ to select a setting option, then press the [ENTER] key.
- Setting values: Setting 1 to 4 (other than the current setting number)

Hint! • The current setting number is indicated in [Copy To]. (This number cannot be changed.)

**7** Press ▲▼ to select [Execute], then press the [ENTER] key.
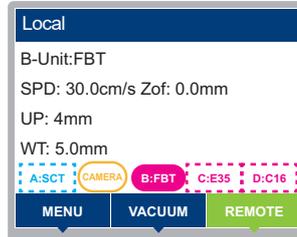- Setting values: 1 to 4 (other than the current setting number)

**8** Check the setting details and press [COPY].
- The setting values are copied.
- To exit without changing the settings, press the [END/POWER] key.

**9** To exit, press the [END/POWER] key several times to return to the local mode screen.

## Restoring Default Settings

**1** **On the local mode screen, press [MENU].**

Local

B-Unit:FBT

SPD: 30.0cm/s Zof: 0.0mm

UP: 4mm

WT: 5.0mm

A:SCT   CAMERA   B:FBT   C:E35   D:C16

MENU   VACUUM   REMOTE

**2** **Press ⓐ ⓥ to select [Setup] > [Setup Reset], then press the [ENTER] key.**

**3** **Press [RESET].**

• Settings will be reset.

• To exit without changing the settings, press the [END/POWER] key.

**4** **To exit, press the [END/POWER] key several times to return to the local mode screen.**

4

## Setting the Reciprocating Cutter Blade Position

The reciprocating cutter cuts by vibrating the tool up and down, but the lowest point of the blade reciprocating movement can be set.

In mat: Positions the blade inside the mat at its lowest reciprocating point. Cuts with the blade penetrating the mat, but cuts without leaving dotted lines.
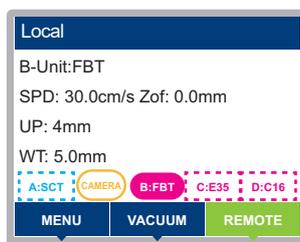
On mat: Positions the blade on the mat surface at its lowest reciprocating point. Cuts without the blade penetrating the mat, so minimizes damage to the mat. However, dotted line cutting may result, preventing cutting unless the cutting speed is reduced.

⚠ **Caution**
- Be sure to readjust the reciprocating cutter tool if this setting has been altered.
  Readjustment is required particularly for CENTER A.

**1** On the local mode screen, press [MENU].

| Local |
| --- |
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |

A:SCT CAMERA B:FBT C:E35 D:C16

MENU | VACUUM | REMOTE

**2** Press ⓐⓥ to select [Machine Setup], then press the [ENTER] key.

**3** Press ⓐⓥ to select [Reciprocating Setup], then press the [ENTER] key.

**4** Press ⓐⓥ to select the [Blade lowest pos.] setting.
- Setting values:In mat, On mat
- Default:In mat

**5** Press the [ENTER] key.
- The value entered is saved.
- To exit without saving, press [END/POWER].

**6** To exit, press the [END/POWER] key several times to return to the local mode screen.
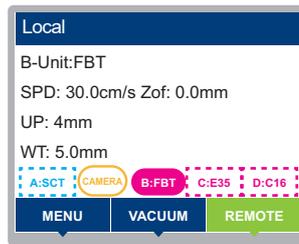
# Switching Users

Setting values for cutting conditions and main unit settings can be saved separately for up to four users (users 1 to 4).
Selecting a user number corresponding to the user allows the configuration to be changed without the need to reset parameters.

Important!
- The user cannot be changed while cutting is suspended. Clear the data before changing the user.
- To copy another user's setting values, use "Setup Copy ( ☞ P.4-46)."

**1** On the local mode screen, press [MENU].

Local

B-Unit:FBT

SPD: 30.0cm/s Zof: 0.0mm

UP: 4mm

WT: 5.0mm

A:SCT  CAMERA  B:FBT  C:E35  D:C16

MENU  VACUUM  REMOTE

**2** Press ⓐ ⓥ to select [Setting] > [Change User], then press the [ENTER] key.

**3** Press ⓐ ⓥ to select the setting.
- Setting values: 1 to 4

**4** Press the [ENTER] key.
- To exit without changes, press the [END/POWER] key.

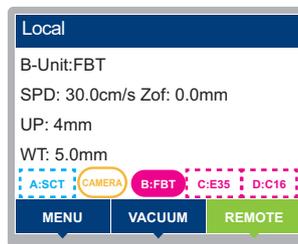**5** To exit, press the [END/POWER] key several times to return to the local mode screen.

4

# Checking Machine Information

Enables you to check information about the machine.
You can check the following items of machine information.

| Item | | Explanation |
|---|---|---|
| Power ON Time | | Indicates cumulative hours of use. |
| Version | Model | Identifies the model. |
| | Serial No. | Indicates the serial number of the machine. |
| | Firmware | Indicates the machine firmware version. |
| | Command | Indicates the name and version of commands supported by the machine. |
| Error History | | Shows a record of past errors. |
| Unit & Tool | | Indicates the units mounted in stations A to D, and the tools. |
| Usage | | Indicates the usage time for the drive system parts. Indicates if the recommended replacement intervals are close or exceeded. |

**1** On the local mode screen, press [MENU].

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU    VACUUM    REMOTE
```

**2** Press ⊙ ⊙ to select [Information], then press the [ENTER] key.

**3** Press ⊙ ⊙ to select the machine information to display.

• There is no need to select [Power ON Time].

```
Information
Power ON Time          9999H
Version                    >
Error History              >
Unit & Tool                >
```
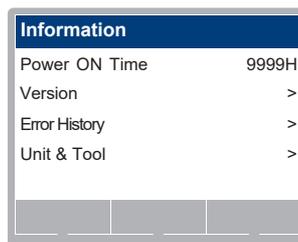
**4** Press the [ENTER] key.

• A screen is displayed with information to review.
• The following information is displayed when you select [Error History].
• Press ⊙ ⊙ to display the next screen of the error history.

```
Error History
[00000]              ———— Record number
2023/7/1  12:55:15   ———— Time of occurrence
ERROR 504            ———— Error No.
CLAMP UP             ———— Error details
```

4-50
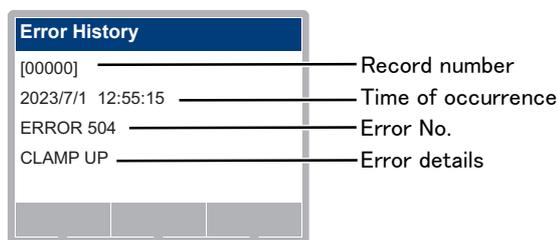
# Updating the Machine Firmware

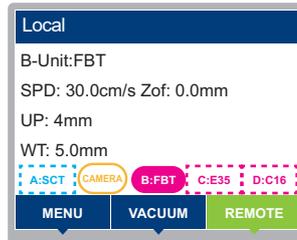The Mimaki Firmware Updater can be used to update the machine firmware.
The Mimaki Firmware Updater can be downloaded from our website.

**1** **Connect the machine to the host PC using a LAN cable.**

**2** **On the local mode screen, press [MENU].**

| Local |
| --- |
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 |
| MENU    VACUUM    REMOTE |

**3** **Press ▲ ▼ to select [Firmware Update].**

• Pressing the [END] key exits firmware updating.

| **Firmware Update** |
| --- |
| Operate the Updaterto start Firmware Update. |
| Completed                [END] |

**4** **Use the Mimaki Firmware Updater to start updating the machine firmware.**

• The machine automatically restarts while updating is in progress.

(Important!) • Do not turn off the power or operate the machine while updating is in progress.
Failure to operate in accordance with the instructions provided by the updater may result in serious malfunctioning of the product.

4

# Chapter 5
# Register Mark Reading Functions

**About this chapter**

This chapter describes how to create register mark data and the register mark scanning functions.

Several restrictions apply when preparing data with register marks.
To take full advantage of register mark functions, read the following precautions carefully and prepare register marks correctly.
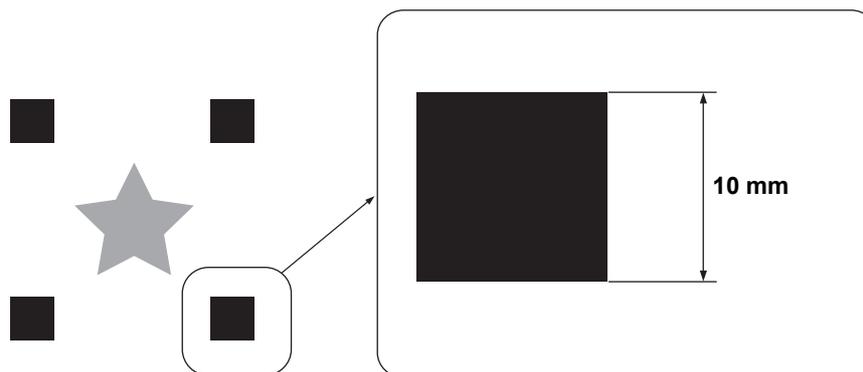
> **Hint!**
> • The register marks described here are used to detect work skewing and X and Y axis lengths, which distinguishes these marks from trimming register marks.
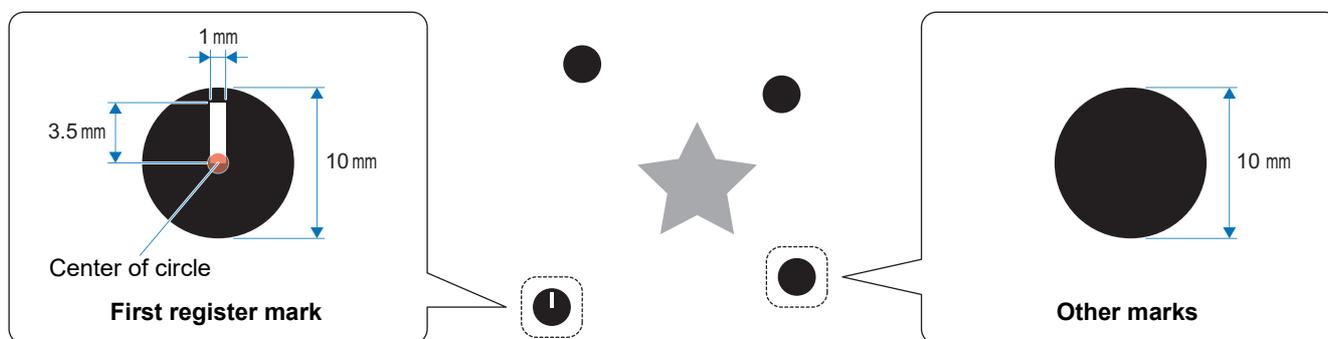
## Register Mark Size

### ● Mark Form:Type.1, Type.2



• The length of one side of a register mark should be 10 mm.
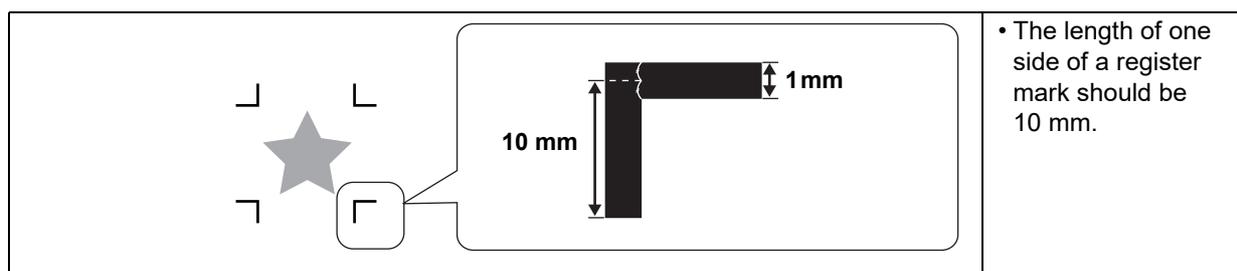
### ● Mark Form:Type.3, Type.4



> **Hint!**
> • The Type.3 and Type.4 marks are identical, but Type 4 can be printed without margins for multiple originals arranged together in multi-mode copying.

### ● Mark Form:Type.5



**First register mark**

Center of circle

**Other marks**

> **Important!**
> • In free arrangement mode, prepare marks with a diameter of 10 mm.
> • Free arrangement mode requires an optional camera.

### ● Mark Form:Type.6

The register mark can be any shape. Specify any four points using a camera for correction.

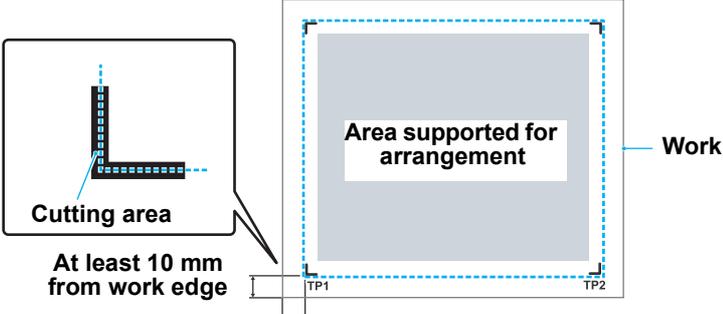## Supported Arrangements of Register Marks and Patterns

Leave a margin of at least 10 mm between register marks and the edge of the work.

(Hint!) • Sensors must be positioned over the marks to read them. For this reason, square marks are recommended.

(Important!) • Leave a margin of at least 30 mm from the edge of the work for edge detection. Otherwise the register mark may cause incorrect edge detection.
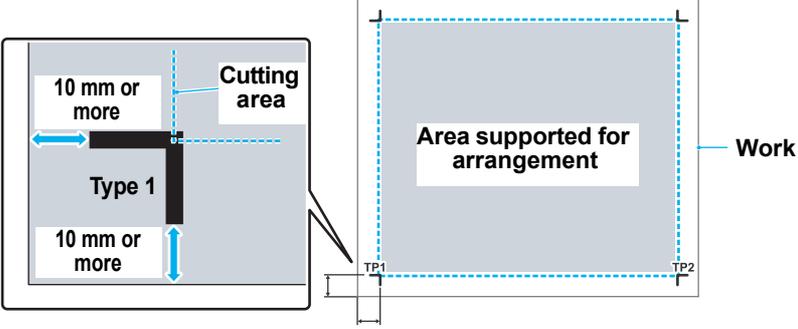
| | |
|---|---|
| **Mark Form: Type.1** |  |
| **Mark Form: Type.2** |  |
| **Mark Form: Type.3 and Type.4** |  |
| **Mark Form: Type.5 in free arrangement mode (requires an optional camera)** |  |

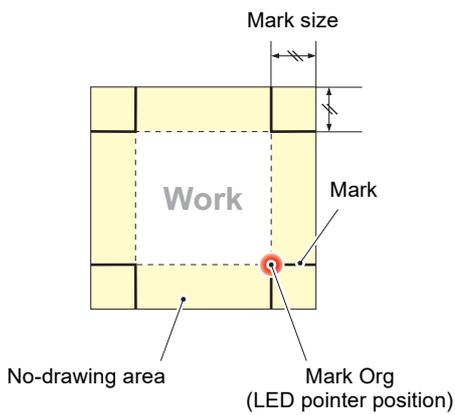| Mark Form: Type.6 (requires an optional camera) | This can be any shape. Specify the position using the camera. There are no particular restrictions relating to positioning area. |
|---|---|
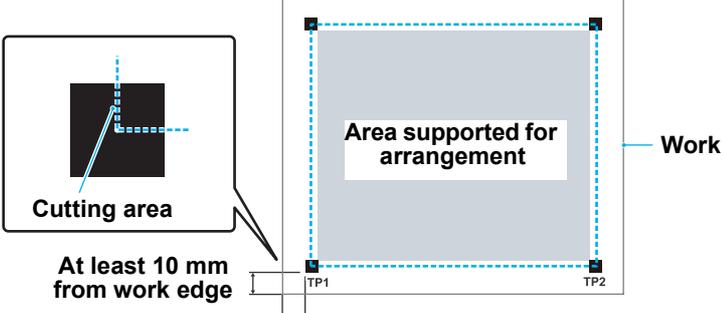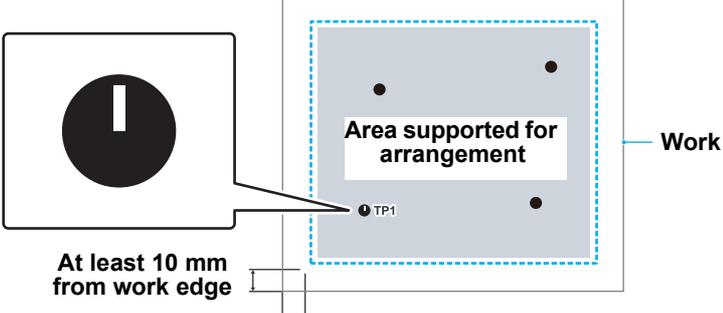
# No-Drawing Areas Around Register Marks

Keep the area around register marks (from the mark origin and including the mark itself) free of both data and debris. If not, misdetection or scanning errors may occur.
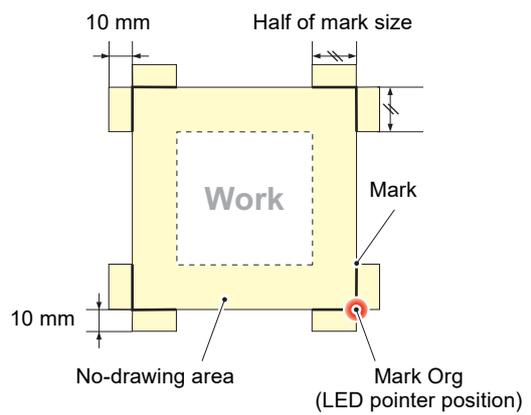
**Hint!**
- Misdetection of the mark origin will cause the cutting position to be shifted.
- The LED pointer position for mark detection is the same whether a camera is used or not.
- With camera detection, the requirement to keep the area around the mark (30 mm × 40 mm) free of data applies to Type.1 to Type.4 as well as Type.5.
- No particular restrictions apply to Type.6.

**Mark Form:Type.1 (outer)**

Mark size

Work

Mark

No-drawing area

Mark Org
(LED pointer position)

**Mark Form:Type.2 (inner)**

10 mm          Half of mark size

Work

Mark

10 mm

No-drawing area

Mark Org
(LED pointer position)

**Mark Form:Type.3, Type.4 (square)**

Square mark size
10 mm          10 mm

Work

Square mark

10 mm

No-drawing area

Mark origin (center of square)
(LED pointer position)
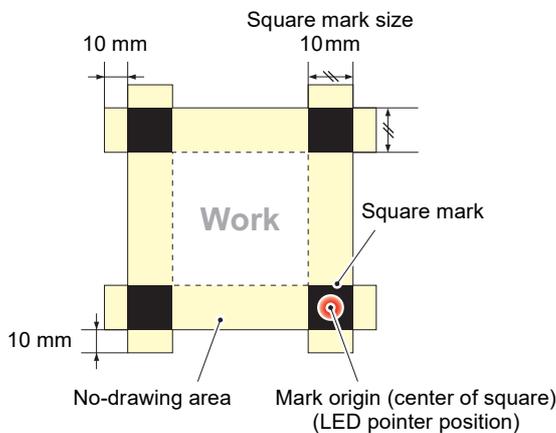
**Mark Form:Type.5 (free arrangement mode/circle)**

30 mm

40 mm

10 mm

Work

Circle mark

No-drawing area

Origin
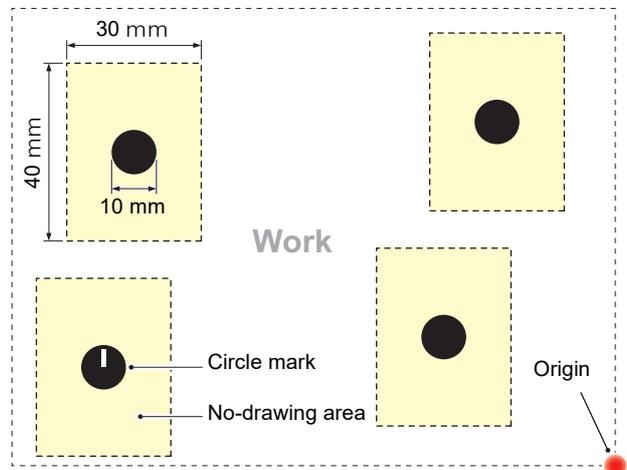
# Arranging a series of register marks

A   A   A
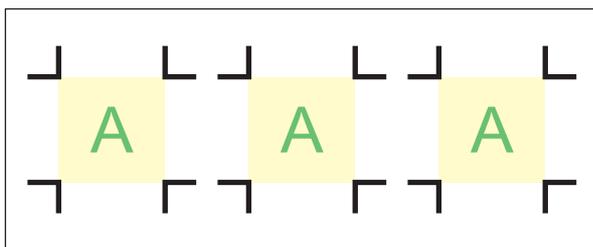
**Inner/outer/square marks: Same as usual**

A   A   A
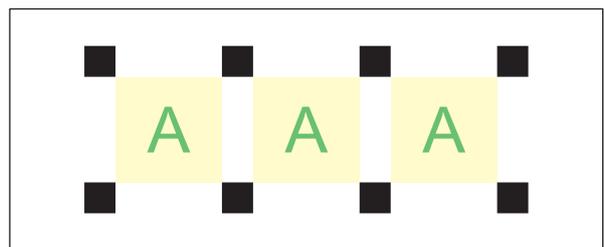
**Zero margin register mark**

**Hint!**
- Marks in a series are arranged the same as usual for inner/outer marks, square marks, and freely placeable marks. For marks without margins, the same mark serves as a left and right mark, and the same mark serves as a top and bottom mark.

5

## Misdetection of mark origin: Example 1

From misaligned plates in offset printing

- Reproducing printing in offset printing requires the use of each plate (C, M, Y, and K).
  Slight plate misalignment during printing causes misalignment of printed register marks.
- When the register marks of works printed with misaligned plates are detected, the origin will also be misaligned, which will result in misaligned cutting.

( Hint! ) 
- When offset printing is used, only print a register mark from one of the CMYK plates (such as by setting the mark color to K100%). Printing a mark from a single plate eliminates concerns about plate misalignment.
- Print marks in a color that is easy to detect, accounting for the work color. ( ☞ P.5-7 "Register Mark Color")
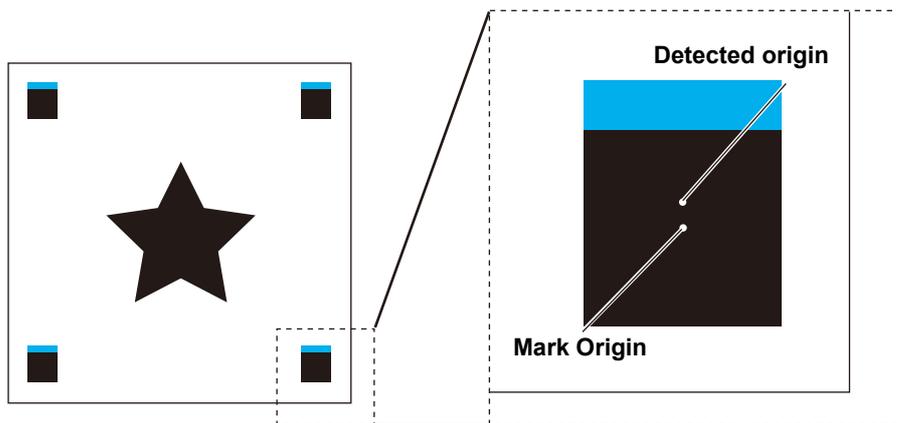


## Misdetection of mark origin: Example 2

There is a risk of misdetection unless square marks are at least 10 mm apart (TP3 on Pattern A and TP1 on Pattern C, or TP2 on Pattern A and TP1 on Pattern B).
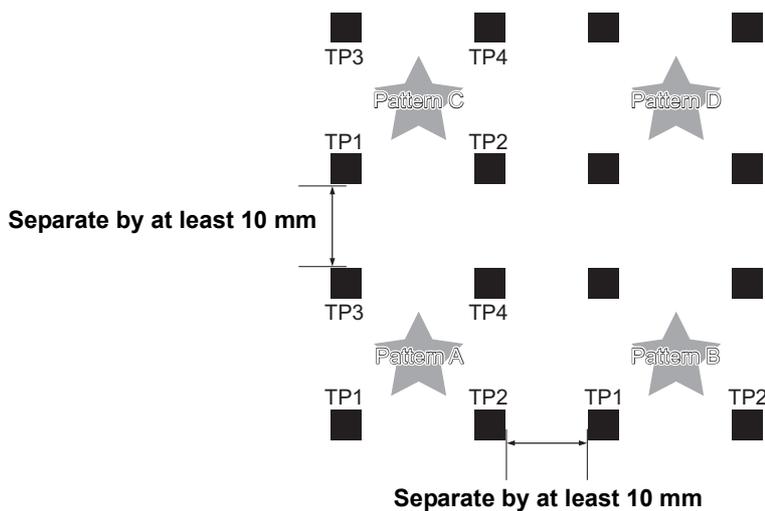
## Misdetection of mark origin: Example 3

There is a risk of misdetection unless marks are separated by a distance at least as long as their length (TP2 and TP1, TP4 and TP2).

● **Type.1 marks**

No-drawing area

At least as separate as the mark length

No-drawing area

**At least as separate as the mark length**
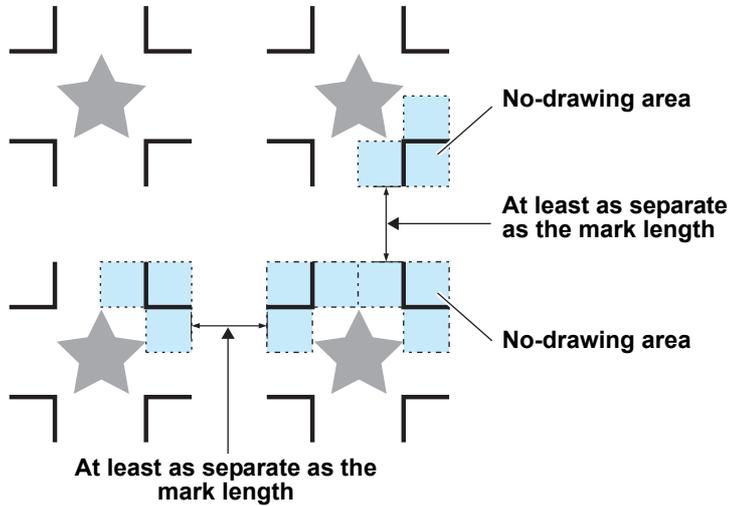
# Register Mark Color

Black register marks are recommended.
Although marks in other colors can also be detected, do not use a color similar to the work color.
Confirm in advance that the color of your mark can be detected.

Additionally, marks may not be detected correctly on works that are glossy, patterned (with a hairline finish), or have certain background colors.

**Black marks**

推　奨

**5**
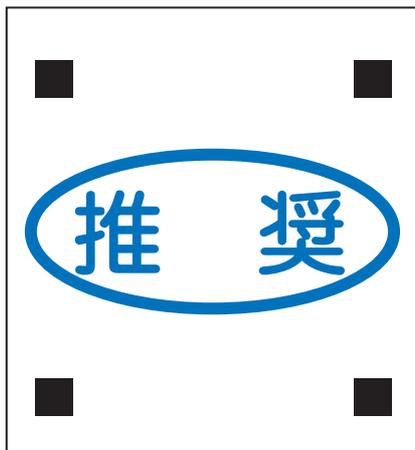
## Blurry or Smudged Register Marks

With blurry or smudged marks, there is a risk of origin misdetection, which will result in misaligned cutting.

# Setting Mark Detection Operation

## Precautions on Mark Detection

⚠️ **Caution**

- Once a mark is detected, the origin is set at the TP1 position (except for freely placeable marks). Using the jog keys to set the origin to another position enables that origin.

## Setting list

Configure the settings as follows to cut using register marks.

| Setting item | Setting value | Overview |
|---|---|---|
| Mark Detect | Sensor | Set this option to use the mark sensor for detection. |
| | Camera | Set this option to use the camera unit for detection. |
| Data ID Code | Off | Disables data ID code scanning after mark detection. |
| | Sensor | Scans data ID codes with the mark sensor after mark detection. |
| | Camera | Scans data ID codes with the camera unit after mark detection. |
| Register mark search | Off | Disables mark detection. |
| | On | Set to ON for automatic mark searching after cutting. Also set the scan width. |
| Scanning width | 10 to 99 cm (in 5 cm increments) | Set the scanning width in cm when mark searching is set to ON. |
| Media Number | Media 1 to 8 | Set a media-specific adjustment value for the mark offset as needed. |
| After Detect Mode | Local | Switches to local mode after the mark origin detection. |
| | Remote | Switches to remote mode after the mark origin detection. |

**Important!**

- [Data ID Code] should be set to the same option as [Mark Detect] if not set to OFF.
- When using the data ID linkage function in Continue or Toggle Mode, set the data ID code setting for mark detection to OFF. (☞ P.4-16)
- Marks are searched for only after ID cutting has ended.

## Setting Mark Detection Operation

**1** On the local mode screen, press [MENU].

```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT   CAMERA   B:FBT   C:E35   D:C16
MENU      VACUUM      REMOTE
```

**2** Press ⒜⒱ to select [Machine Setup] > [TP Detect Setup] > [Mark Detect], then press the [ENTER] key.

**3** Press ⒜⒱ to select the setting value.
• Setting values: Sensor, Camera

**4** Press the [ENTER] key to confirm the setting values.

**5** Press ⒜⒱ to select the next setting item.
• Mark detection options are as follows.
  Mark Detect / Data ID Code / Search Mark / Width / Media Number
• For details on each setting item, see P.5-9.

**6** Press the [ENTER] key.

**7** Press ⒜⒱ to select the setting value.
• For details on the setting values for each item, see P.5-9.

**8** Press the [ENTER] key to confirm the setting values.

**9** To exit, press the [END/POWER] key several times to return to the local mode screen.
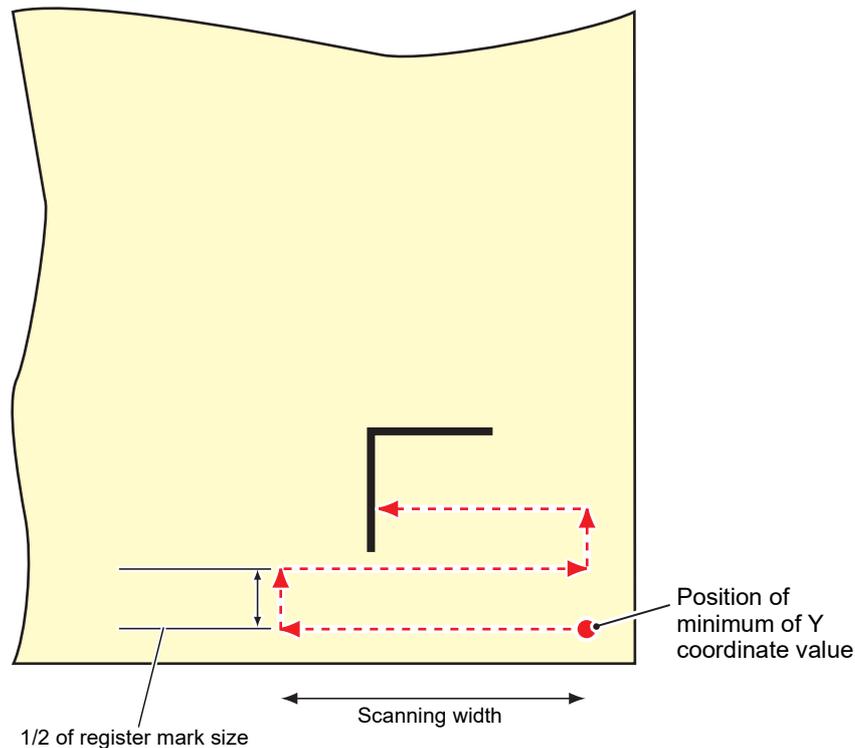
## Automatic mark detection (corner mode marks only)
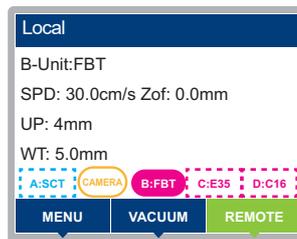
Set up automatic mark searching as follows.
With both mark detection and searching enabled, the machine searches for the next mark automatically after ID cutting.
Bidirectional scans are made over the preset scanning width from the origin after auto updating at a spacing corresponding to half the register mark size. Mark detection is then performed when lines, points, or printed objects are found.
If a square mark or the vertical/horizontal lines of other marks are detected correctly, it is recognized as a register mark, and the origin is set.



Position of minimum of Y coordinate value

Scanning width

1/2 of register mark size

---

**1** **On the local mode screen, press [MENU].**



```
Local
B-Unit:FBT
SPD: 30.0cm/s Zof: 0.0mm
UP: 4mm
WT: 5.0mm
A:SCT  CAMERA  B:FBT  C:E35  D:C16
MENU    VACUUM    REMOTE
```

---

**2** **Press ▲▼ to select [Machine Setup] > [TP Detect Setup] > [Search Mark], then press the [ENTER] key.**

---

**3** **Press ▲▼ to select [On], then press the [ENTER] key.**

• Setting values: OFF, ON

---

**4** **Press ▲▼ to select the width to scan, then press the [ENTER] key.**

• Setting values: 10 to 99 cm

---

**5-11**

**5** | To exit, press the [END/POWER] key several times to return to the local mode screen.

(Important!)
- If no marks are recognized, a failure message is displayed for a certain time.
- Register mark searching may not be performed correctly unless the work and mark color that were previously detected are used. In this case, manually detect the mark again.
- Register mark searching cannot be performed unless mark detection is performed normally at least once after startup.

## Mark Detection Camera Adjustment

Use the camera to capture an image of the work with a printed mark, and then make adjustments in the camera application.
This is performed if the camera cannot detect marks due to the type of work used or other reasons.

(Hint!)
- Available when an optional camera is installed.
- The camera application (OBSCURAS) must be running.

**1** | Set up a work with printed marks.

**2** | Press ⓐ ⓥ ◁ ▷ on the local mode screen.
- The [JOG Function Selects] screen is displayed.

**3** | Press ⓐ ⓥ to select [Camera Adjustment], then press the [ENTER] key.
- The [Camera Adjustment] screen appears.

**4** | Press ⓐ ⓥ ◁ ▷ to move the LED pointer to the mark origin.
- The head moves in each direction accordingly.
- X and Y coordinate values on the operating panel are updated.

**5** | Press the [ENTER] key.

**6** | Make adjustments in the camera application.
- To adjust image quality, refer to the camera application (OBSCURAS) instruction manual.

**7** | Press the [ENTER] key.
- Camera operation stops, and the machine returns to local mode.

# Mark Detection Mode

The machine has detection modes for two types of register marks, as follows.

(Hint!) • The detection mode is specified by a command.
• For details on settings, refer to the FineCut/Coat9 or CAMLINK2 instruction manual.

## Corner mode

Marks are placed to enclose the pattern in a square area.
A number of marks from 1 to 4 is specified by command.



**Corner mode (Type.1)**

• The first point serves as the mark origin.
• Specifying two or more points will compensate for work skew, and specifying three or more will compensate for work shrinking and expansion and printing at the wrong size.
• ID cutting is supported (requires specifying four points).
• Choose from Type.1 to Type.4 mark shapes.
• Four points must be specified in order to use Type.4 (no margins) marks or backside cutting.

## Free arrangement mode

Place any number of marks (up to 2,048) anywhere around the pattern.
The origin position is not a mark position.
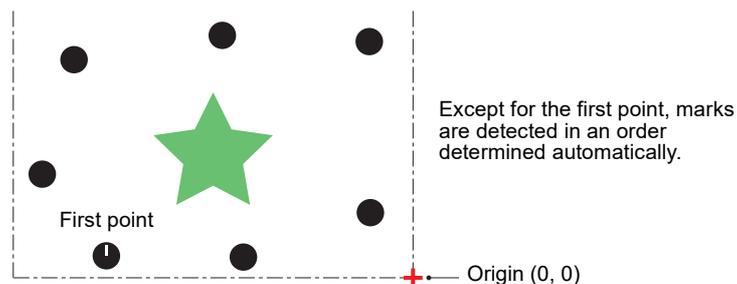


**Free arrangement mode (Type.5)**

• Marks must not overlap the pattern (they must be placed some distance from it).
• ID cutting is not available.
• Backside cutting with mark chips is not available (only available in corner mode).
• Only a Type 5 mark shape is available (only the shape of the first point is different).
• Requires an optional camera.
• Because correction accuracy declines if fewer than four points are specified, or if they are placed far from the pattern, an appropriate number of points must be used and placed at suitable positions, based on the pattern size.
• Type.6 conforms to corner mode. (ID cutting is not possible)

**5**

# Detecting Register Marks

The machine can automatically detect register marks printed on works to cut around patterns printed on the work.
Work edges are also detected.
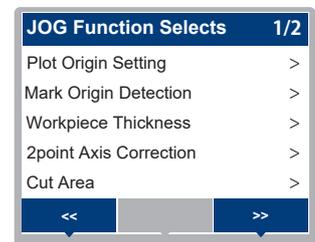
**(Important!)** • Flatten works if they are curled.

## Detecting the Mark Origin

The mark printed at the origin reference position is detected as the basis for setting the drawing origin.
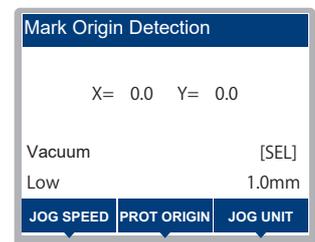
**1** **Set up a work with printed marks.**

**2** **Press ⒶⓋ◁▷ on the local mode screen.**

• The [JOG Function Selects] screen is displayed.

| JOG Function Selects | 1/2 |
|---|---|
| Plot Origin Setting | > |
| Mark Origin Detection | > |
| Workpiece Thickness | > |
| 2point Axis Correction | > |
| Cut Area | > |
| << | >> |

**3** **Press ⒶⓋ to select [Mark Origin Detection], then press the [ENTER] key.**

• The [Mark Origin Detection] screen appears.
• The [PLOT ORIGIN] key can be pressed to move the head to the current drawing origin. (☞ P.3-44)

| Mark Origin Detection | |
|---|---|
| X= 0.0    Y= 0.0 | |
| Vacuum | [SEL] |
| Low | 1.0mm |
| JOG SPEED | PROT ORIGIN | JOG UNIT |

**4** **Press ⒶⓋ◁▷ to move the LED pointer to the mark origin.**

• The head moves in each direction accordingly.
• X and Y coordinate values on the operating panel are updated.

**(Important!)** **Detecting register marks**
• When detecting marks on the plotter, the position for LED pointer alignment is as follows.
**LED pointer position**
Referring to the following figure, align the LED pointer with the indicated positions on register marks.

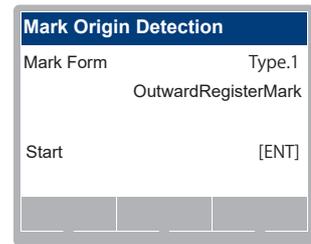| Type.1 | Type.2 | Type.3, Type.4 | Type.5 |
|---|---|---|---|



**Move point of LED pointer**
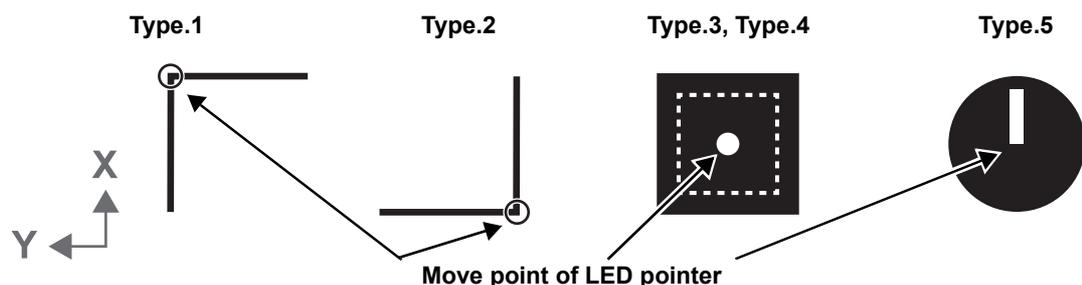
• Type.6 is at a position set by the user, so align approximately close to the mark.

**5**  **Press the [ENTER] key.**

• The [Mark Form] screen appears.

> **Mark Origin Detection**
>
> Mark Form                    Type.1
>                   OutwardRegisterMark
>
> Start                          [ENT]

---

**6**  **Press ⓐ ⓥ to select the printed mark shape.**

• Type.1 to Type.6 (Type.5 and Type.6 are available only when a camera is connected) ( ☞ P.5-2)

---

**7**  **Press the [ENTER] key.**

• Mark detection is performed by the camera or mark sensor.

---

**8**  **After normal detection, the tool is moved over the mark origin and the machine switches to local or remote mode.**

• With ID detection set to enable, ID data is automatically detected after mark detection.
• After detection, the mode can be specified. ( ☞ P.5-9)

---

**9**  **An error screen is displayed if mark detection fails.**

• An error number and message ( ☞ P.7-12) is displayed.
• Press the [END] key to return to local mode.

> **Mark Origin Detection**
>
> Exec.result :NG  11
>          Unrecognizable Mark

**5**
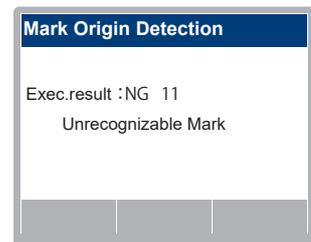
## Setting Mark Origin in Teaching Mode

If the mark form Type.6 (teaching) is specified for mark origin setting, the camera can be used to set any position on printed data as the origin.
A compatible application and optional camera is required for this.

**1** **Select the mark form in step 6 of the mark origin setting procedure, and select Type.6.**

- Pressing [ENTER] to select the mark form launches the camera application (OBSCURAS) on the connected PC. The image from the camera is then displayed, enabling a position to be specified.



Cursor position

Hint!
- For details, refer to the "OBSCURAS - Function Guide".
- For details of how to use teaching mode, refer to the instruction manual for the corresponding application (such as FineCut).
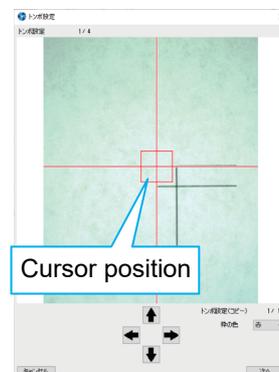
## Aligning the Register Mark Detection Position

Perform offset adjustment to correct the register mark detection position. Load work on which register marks are printed.

**1** **Mount a pen or swivel cutter on the standard unit, then select [Tool] > [Tool Select] to select Unit A ( P.3-15).**

- When using a pen, use the pen (SPC-0726) provided as standard.

**2** **Press (▲)(▼)(◀)(▶) on the local mode screen.**

- The [JOG Function Selects] screen is displayed.

**3** **Press (▲)(▼) to select [Mark Offset], then press the [ENTER] key.**

- The [Mark Offset] screen appears.
- The head moves over the cutting panel, and the LED pointer is lit.
- The media number for alignment is indicated in the upper right of the screen. ( P.5-9)
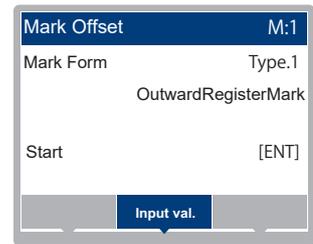


| Mark Offset | M:1 |
|---|---|
| X= 0.0 | Y= 0.0 |
| Vacuum | [SEL] |
| Low | 1.0mm |
| JOG SPEED | JOG UNIT |

**4** **Press (▲)(▼)(◀)(▶) to move the LED pointer to the mark origin.**

- The head moves in each direction accordingly.
- The LED pointer XY coordinates are indicated on the operating panel.

## 5 Press the [ENTER] key.

• The [Mark Form] screen appears.

(Hint!) • The [Input val.] key can be pressed to allow the correction value in step 8 to be entered without drawing.

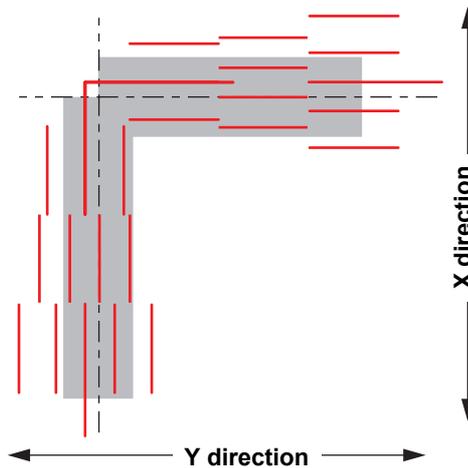| Mark Offset | M:1 |
|---|---|
| Mark Form | Type.1 |
| | OutwardRegisterMark |
| Start | [ENT] |
| | Input val. |

## 6 Press ⓐ ⓥ to select the printed mark shape.

• Type.1 to Type.4, Type.6 (Alignment is not possible with Type.5) (☞ P.5-2)

## 7 Press the [ENTER] key.

• After mark detection by the camera or mark sensor, a central line along the detected register mark is cut along with five secondary lines on either side, spaced 0.2 mm apart. With Type.6, use the camera application on the PC.
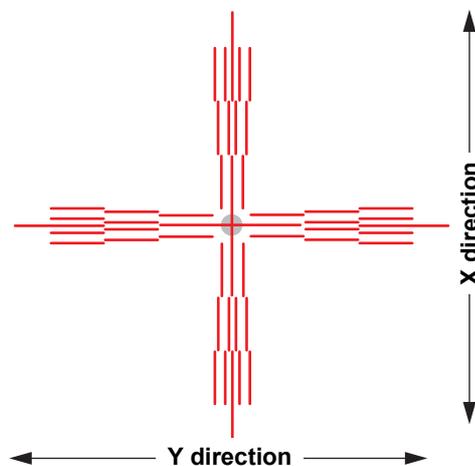
Misaligned by +0.2 mm from the register mark center line (indicated by – - –) in X and Y directions

X direction

Y direction

When adjusting mark offset with square marks

X direction

Y direction
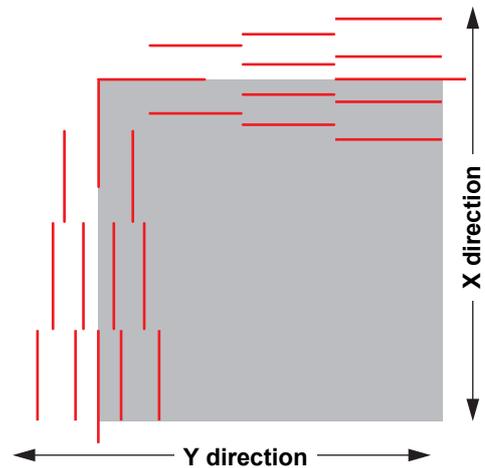
When adjusting sensor offset with teaching marks

X direction

Y direction

**8**  **After drawing is complete, enter the correction value.**

- Press ⓐ ⓥ to select a setting item for input, then press the [ENTER] key.
- Press ⓐ ⓥ to enter the correction value, then press the [ENTER] key to confirm input.
- Enter -0.2 for misalignment of +0.2 mm.
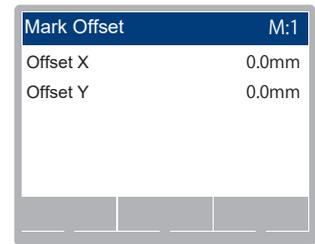
| Mark Offset | M:1 |
|---|---|
| Offset X | 0.0mm |
| Offset Y | 0.0mm |

**9**  **Press the [END/POWER] key to exit.**

# Continuous Cutting with Register Marks

Cutting with FineCut/Coat9 or CAMLINK2 cutting software enables continuous cutting of works that have only one set of marks printed on them.

> **Important!**
> • When cutting multiple images printed on a single work, select multi mode.
> • If data remains in the receive buffer, the remaining data is also cut. Be sure to clear the data before continuous cutting. ( P.3-47 "Stopping Processing (Data Clear)")

**1** **Set "FineCut/Coat9" and "CAMLINK2" then start plotting.**



   **(1)** Select single mode.
   **(2)** Set the number of times to repeat cutting.
   **(3)** Select the number of register marks to detect. ("FineCut" and "Coat9" use only four detection points.)
   • For details on settings, refer to the FineCut/Coat9 or CAMLINK2 instruction manual.

**2** **After cutting for the first work is finished, replace the work, align the LED pointer with the mark origin, and press the [ENTER] key.**

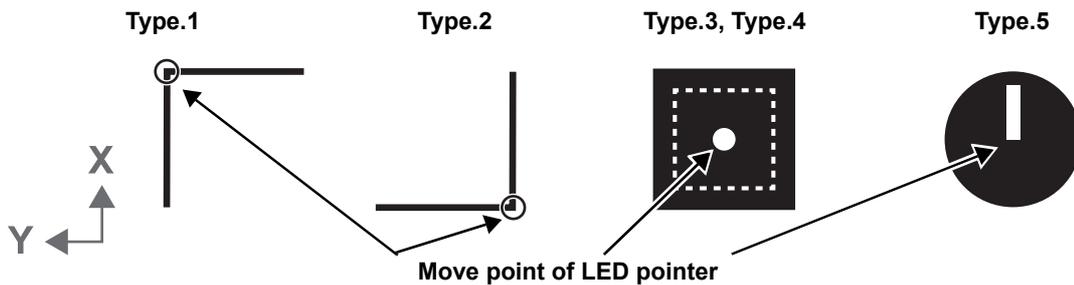   • To cancel continuous cutting, press the [END/POWER] key.

> **Important!**
> **Detecting register marks**
> • When detecting marks on the plotter, the position for LED pointer alignment is as follows.
> **LED pointer position**
> Referring to the following figure, align the LED pointer with the indicated positions on register marks.



Type.1     Type.2     Type.3, Type.4     Type.5

**Move point of LED pointer**

   • Type.6 is at a position set by the user, so align approximately close to the mark.

**3** **Detect register marks.**

   • After marks have been detected, the copying process begins.
   • Repeat steps 2 and 3 for the specified cutting quantity.

**4** **After the specified cutting quantity is complete, the machine returns to [Remote].**

   • Head retraction follows the setting in [Setting] > [Draw] > [Auto View]. ( P.1-19)

**5**

# Linking Cutting and Printing (ID Cut)

By adding a data ID code to register marks, you can send cutting data automatically from a computer.
For instructions on adding data ID code, also refer to the FineCut/Coat9 or RasterLink7 instruction manual.
You can print and cut at the same time (ID cut) in conjunction with RasterLink7.
For details, refer to the ID Cut Guide.

## Setting Up ID Cut

**1** **Change the settings for scanning data ID code (☞P.5-9).**

• Switch to data ID code ([Sensor] or [Camera]).

**2** **Set up a work.**

**3** **Detect register marks (☞P.5-14).**

• After marks have been detected, the data ID code is scanned.
• If ID scanning fails, an error is displayed and the process is suspended.

**4** **After data ID code scanning, switch to remote mode.**

• Cutting data is automatically sent from the computer.
• Note that cutting will begin automatically.

**5** **After cutting, the machine searches for the next mark.**

• The time for detection is affected by the specified width and area.
• Mark detection is only possible using the sensor.

Hint! • When data ID is used, the size of data to cut (distance between marks) must be at least about 70 mm.
• Register mark searching may not be performed correctly unless the work and mark color that were previously detected are used. In this case, manually detect the mark again.
• Use the same data ID code setting (camera or sensor) and mark detection setting.

# Backside Cutting Using Mark Chips

Use this function when cutting works made of materials such as corrugated cardboard that cannot be cleanly cut from the front side. This function can be combined with data ID codes.
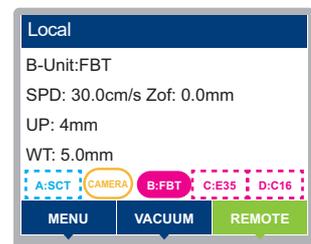Also refer to the FineCut/Coat9 instruction manual.

( Hint! ) • To embed the mark chip required in backside cutting, the work must be at least 3 mm thick.

**1** **Set up a work.**

**2** **Detect the mark origin.**

**3** **Press the [REMOTE] key.**

• The machine switches to remote mode.

| Local |
|---|
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  B:FBT  C:E35  D:C16 |
| MENU    VACUUM    REMOTE |

**4** **Send data from the host computer.**

• Cutting begins automatically after the data is received.

**5** **Cut the diagonal of the register mark.**

**6** **After cutting is finished, retract the head to the upper right.**

• The head is retracted regardless of operation settings.
• After the head retraction, the vacuum turns off.
• To pause operation, press the [END/POWER] key.

**7** **Flip the work over vertically and embed the mark chip.**
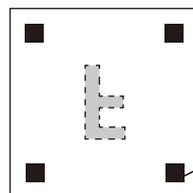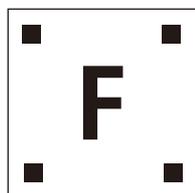
**Embed the mark chip**

**8** **Press the [ENTER] key.**

• Turn the vacuum on. (If it was off before head retraction, it remains off.)
• Switch to jog mode for mark origin detection.

5

**9** **Detect the mark origin.**

- Switch to remote mode after mark origin detection.
- After the mode is switched, cutting begins automatically.

**10** **After cutting is finished, retract the head to the upper right.**

# Surface Cutting Using Edge Detection

Work edges can be detected. This enables accurate cutting even when works are skewed.

(Important!)  • This function requires an optional camera unit and the dedicated FineCut/Coat9 or CAMLINK2 application.

5-23

**1**  **Set up the camera in [Option Setup] (☞ P.1-22).**

**2**  **Set up edge detection operation.**

• Refer to the FineCut/Coat9 or CAMLINK2 instruction manual.
• For details on settings, refer to the FineCut/Coat9 or CAMLINK2 instruction manual.

**3**  **Set up a work with the top surface facing up (☞ P.3-43).**

**4**  **Set up FineCut/Coat9 or CAMLINK2, then start output.**

**(1)** Cutting is arranged.
**(2)** In [Plotter Out], set up [Edge detect].
**(3)** Click [Output].
• For details on settings, refer to the FineCut/Coat9 or CAMLINK2 instruction manual.

**5**  **The machine automatically switches to jog mode.**

**6**  **Press ⊙ ⊙ ⊙ ⊙ to align the LED pointer with the lower right (edge origin) of the work.**

**7**  **Press the [ENTER] key to perform automatic edge detection and start cutting.**

5

# Backside Cutting Using Edge Detection

Register marks printed on the top surface can be detected, along with the work edge, to enable backside cutting.

**(Important!)**
- This function requires an optional camera unit and the dedicated FineCut/Coat9 or CAMLINK2 application.
- Register marks must be printed on the work.

**1** Set up the camera in [Option Setup] ( ☞ P.1-22).

**2** Set up edge detection operation.
- Refer to the FineCut/Coat9 or CAMLINK2 instruction manual.
- For details on settings, refer to the FineCut/Coat9 or CAMLINK2 instruction manual.

**3** Set up a work with the top surface facing up ( ☞ P.3-43).

**4** Set up FineCut/Coat9 or CAMLINK2, then start output.

(1) Cutting of the work with register marks is arranged.
(2) Execute [Detect Mark].
(3) In [Plotter Out], set up [Reverse Cut Mode].
(4) In [Plotter Out], set up [Edge detect].
(5) In [Plotter Out], set up [Register Mark Setting].
(6) Click [Output].
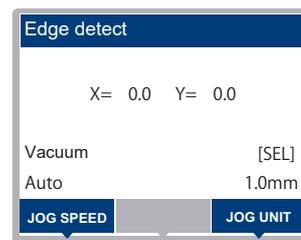- For details on settings, refer to the FineCut/Coat9 or CAMLINK2 instruction manual.

**5** The machine automatically switches to jog mode.

**6** Press ▲ ▼ ◀ ▶ to align the LED pointer with the lower right (edge origin) of the work.
- The [Edge detect] screen appears.

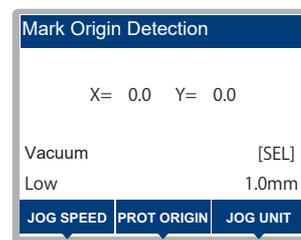| Edge detect | |
|---|---|
| X= 0.0  Y= 0.0 | |
| Vacuum | [SEL] |
| Auto | 1.0mm |
| JOG SPEED | JOG UNIT |

**7** Press the [ENTER] key to perform automatic edge detection.

**8** The machine switches to the mark origin setting.
- The [Mark Origin Detection] screen appears.

| Mark Origin Detection | | |
|---|---|---|
| X= 0.0  Y= 0.0 | | |
| Vacuum | | [SEL] |
| Low | | 1.0mm |
| JOG SPEED | PROT ORIGIN | JOG UNIT |

**9** Press ⊙ ⊙ ⊙ ⊙ to move the LED pointer to the mark origin, then press the [ENTER] key.
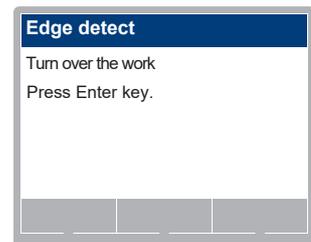
**10** Detect the mark origin.

**11** Retract the head to the upper right.

• The head is retracted regardless of operation settings.
• After the head retraction, the vacuum turns off.
• To pause operation, press the [END/POWER] key.
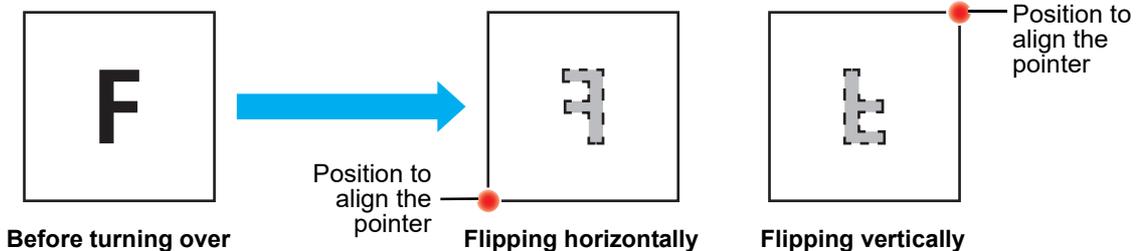• The [Edge detect] screen appears.

| Edge detect |
|---|
| Turn over the work |
| Press Enter key. |

**12** Flip the work over.

• Flip the work over in the direction set in [Reverse Cut Mode].

**13** Press ⊙ ⊙ ⊙ ⊙ to move the LED pointer to the following position.

• If the work is flipped horizontally: Lower left
• If the work is flipped vertically: Upper right

**Before turning over** → Position to align the pointer **Flipping horizontally** **Flipping vertically** Position to align the pointer

• Edge detection begins.
• After detection, cutting begins.

5

# Chapter 6
# Routine Maintenance

**About this chapter**

To ensure years of precise performance, maintain the machine periodically based on the frequency of use.
Read the maintenance precautions thoroughly before maintaining this product.

# Routine Maintenance

Regular cleaning is recommended to keep the machine in good working order.

⚠ **Caution**
- Do not use abrasive detergents or thinners. These may deform covers and the cutting panel.

## Cutting Panel Surface

Clear any clogged suction holes by inserting a thin wire. The dislodged material will be discharged through the vacuum exhaust port.
For light soiling, wipe with a clean, dry cloth. For heavier soiling, wipe after moistening a clean, dry cloth with a small amount of alcohol.

⚠ **Caution**
- Do not allow liquids to get inside the machine. Otherwise there is a risk of failure, electric shock, or fire.

## Operating Panel Surface

If cutting dust or debris adheres to the panel, use a vacuum cleaner or similar appliance with a brush nozzle to remove the dust and debris from the panel.

## Covers

For light soiling, wipe with a clean, dry cloth. For heavier soiling, wipe after moistening a clean, dry cloth with a small amount of alcohol.
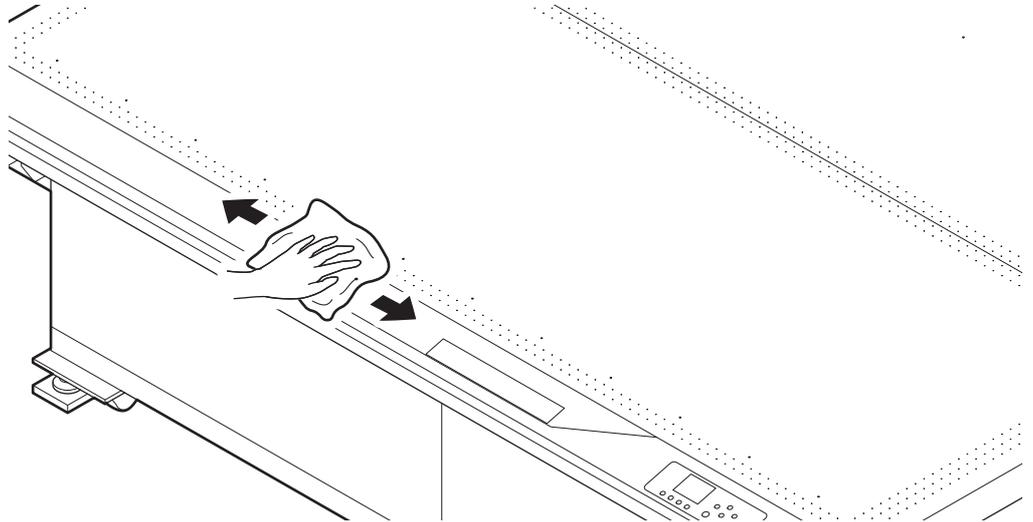


## Cutter Blade Maintenance

Cutting works that have adhesive on them will cause the adhesive to stick to the blade, reducing sharpness. Wipe with alcohol or similar.

⚠ **Caution**
- Avoid touching the cutter blade during maintenance. This may cause injury.

# Units

**Important!** • Before mounting and after removal, wipe the rear surface of the unit and the mounting surface of the Y-slider.

## Standard unit, tangential unit (TUT)

If cutting dust or debris adheres to the surface, wipe with a dry cloth or the like.

**Important!** • Do this work with the power off.
• Remove any mounted tools.

## Reciprocating tool

If cutting dust or debris adheres to the surface, blow it away with a blower or wipe with a dry cloth or the like.

**Important!** • Do this work with the power off.
• Remove any mounted tools.

**1** **Clean the sensor and guide rail.**

**⚠ Caution**
• Do not use organic solvents, which will dissolve the lens surface.
• Do not touch the sensor directly with your fingers. This may reduce sensor sensitivity.
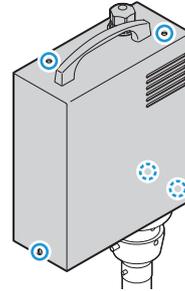


Sensor section

Guide rail
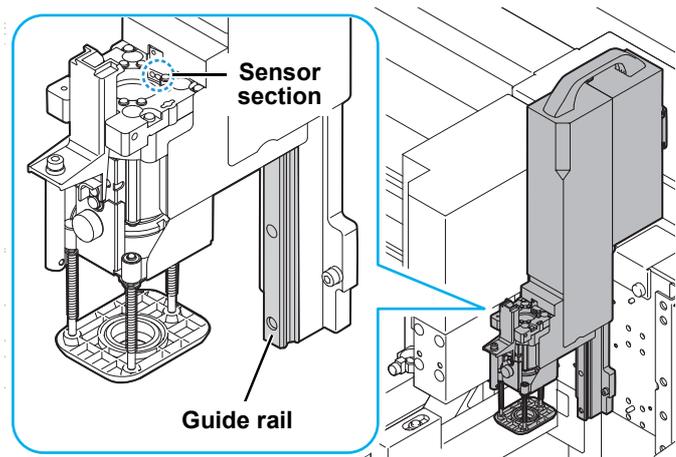
## Electric reciprocating tool (E12, E35, E60)

Grease the sliding surface of the reciprocating main shaft periodically (approximately once a month).
Grease used: SPA-0163 grease tube (provided with main unit)

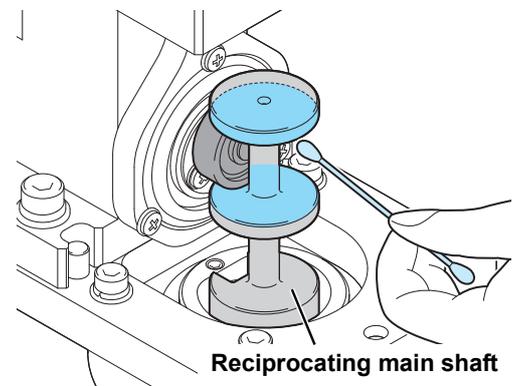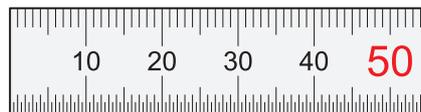**1** **Remove reciprocating unit cover.**

(Important!) • Do this work with the power off.

**2** **Using a cotton swab, grease the area between the plates of the reciprocating main shaft (sliding surface with bearing).**

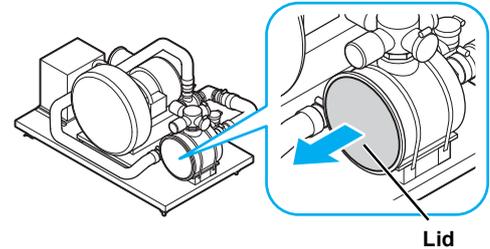(Important!) • Amount of grease to apply: approx. 0.05 g.

10    20    30    40    50

**Reciprocating main shaft**

**3** **Reattach the reciprocating unit cover.**
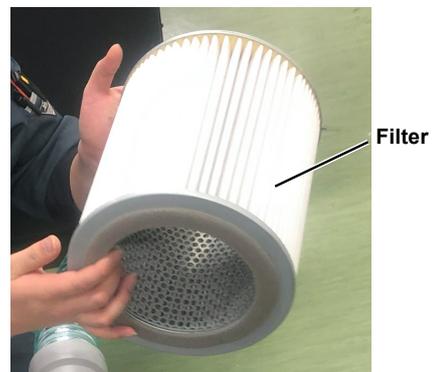
## Cleaning the Blower Filter

Work suction will be weaker if the filter of the optional blower becomes clogged.
Clean the filter regularly.

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**1** **Remove the blower filter lid.**

• Unhook and remove the lid.

**Lid**

---

**2** **Remove the filter.**

**Filter**

---

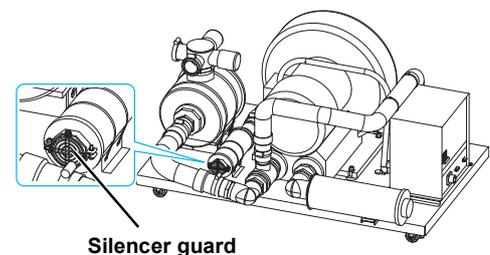**3** **Vacuum the filter to remove dust or debris.**

---

**4** **Reinstall the filter in the original position.**

**(1)** Hold the filter as you fully close the lid.
• The lid cannot be hooked unless it is fully closed.
**(2)** Hook the lid.

---

**5** **Reattach the lid removed in step 1.**

---

**6** **Vacuum the silencer guard at the rear to remove dust or debris.**

• Clean the mesh on the surface of the guard.

**Silencer guard**

---

**6**

## Cleaning the Camera Unit

It is essential to clean the camera unit after use, because dust and fingerprints tend to remain on it over the course of use.
The lens in particular requires appropriate maintenance.

**1**  **Remove debris or cutting dust from the lens surface with a blower or air duster.**

**2**  **Using a dedicated cleaning cloth lightly moistened with anhydrous alcohol, wipe the lens in a swirling motion from the center outward.**

(Important!)
- Do this work with the power off.
- To prevent undue wear, do not apply force when wiping the lens.

## Cleaning the Photoelectric Sensors and LED Pointer

If cutting dust or debris adheres to the photoelectric sensors or LED pointer, wipe with a dry cloth or the like.

(Important!)
- Photoelectric sensors are located at both ends of the Y-bar.



LED pointer beam aperture          Photoelectric sensors
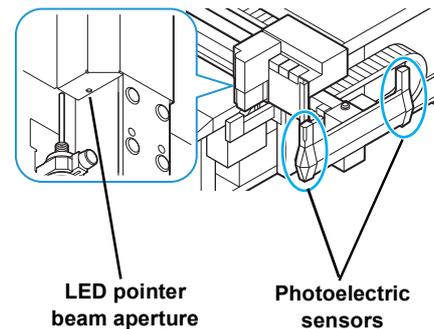
# Cleaning the Mark Sensor/Y-Bar Rail

If cutting dust or debris adheres to the mark sensor, wipe with a dry cloth or the like.

Additionally, if the Y-bar rail becomes dirty, operation may become noisy or other problems may occur. Wipe off any dust with a dry cloth.
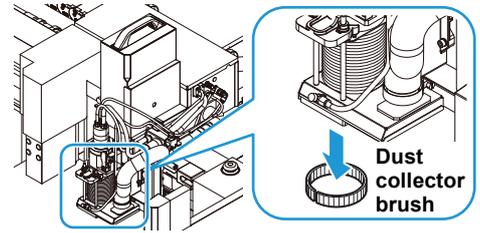


**Mark sensor**
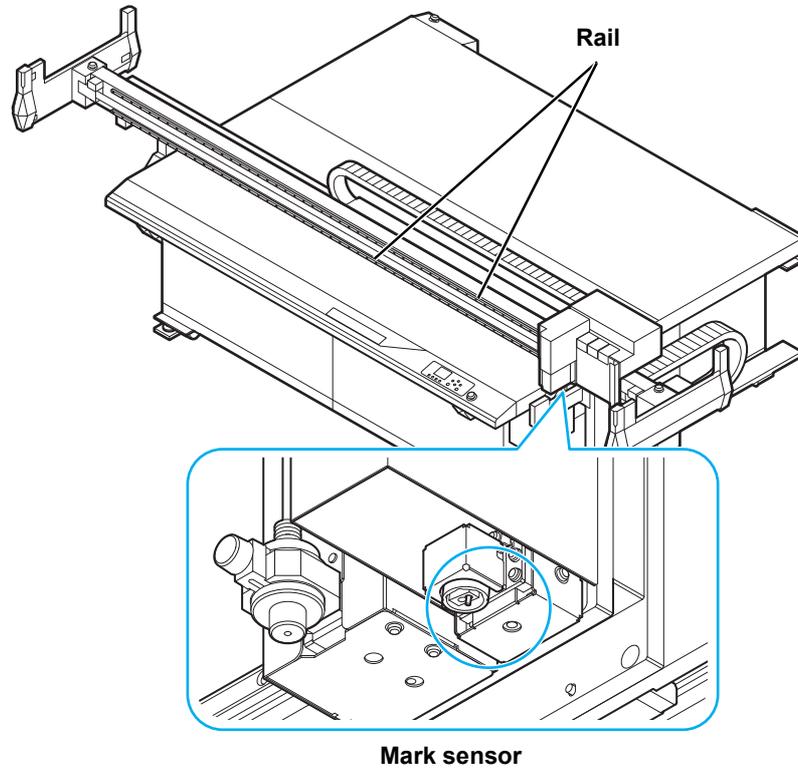
## Cleaning the Dust-Collector Brush (Only R10)

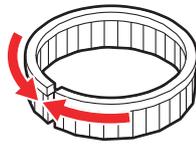Clean the dust-collector brush if you are concerned about cutting dust or debris adhering to it.

**1** **Remove and clean the dust-collector brush.**

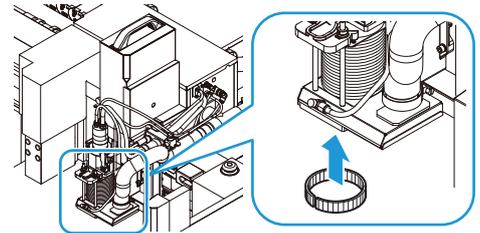• Pull off the dust-collector brush.

**Dust collector brush**

**2** **Mount the dust-collector brush.**

• Bend the dust-collector brush as you mount it.

Hint! • There is a vertical gap of 1.5 mm in the groove into which the dust collector brush is mounted.
The brush is mounted flush against the upper edge of the groove.

## Dust-Collector Hose Maintenance (Only R10)

Suction for collecting cutting dust will be weaker if the dust-collector hose becomes clogged.

**1** **Disconnect the dust-collector hose joints and clean the hose.**

• The dust-collector hose joints are located at the positions shown in the following figure.

**Right side**
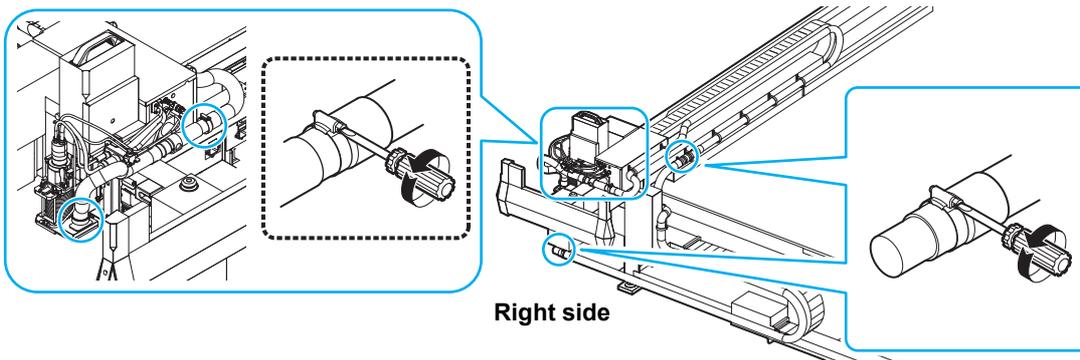
**2** **Reconnect the hose joints in the original positions.**

## Cleaning with Auxiliary Air (Only R10)

Use auxiliary air to blow away cutting dust or debris adhering to the operating panels or other parts.

> **Hint !**
> • A cleaning hose must be connected in order to use the auxiliary air.
> • The cleaning hose can be connected to the quick connector on the blue knob at the right of the head.

> **⚠ Caution**
> • The auxiliary airflow may cause the hose to fly around if you accidentally let go of it. Turn off the airflow before releasing or disconnecting the hose. (The tip of the hose may be dangerous if it enters your eye.)
> • Before connecting the cleaning hose to the quick connector, make sure that air is coming out of the blue knob at the right of the head.
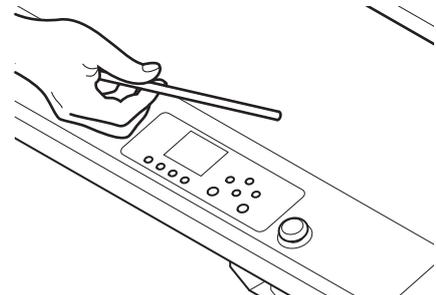
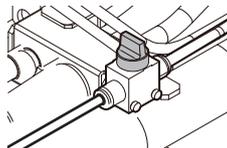**1**  **Connect the included cleaning hose.**

• Connect the cleaning hose to the quick connector and to the blue dial at the right of the head.
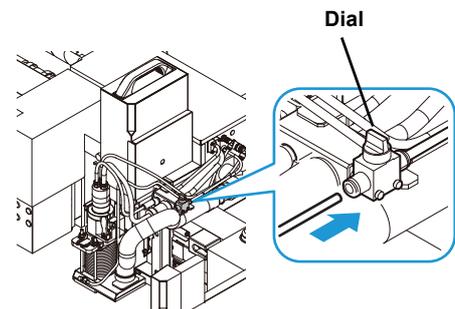
Dial

**2**  **Clean the machine as needed.**

• Adjust the auxiliary airflow with the dial at the right of the head.

## Cleaning the Router Blade (End Mill) (Only R10)

Using auxiliary air or a brush to clean debris or cutting dust on the router blade (end mill).

# Chapter 7
# Troubleshooting

**About this chapter**

This chapter explains the procedures for troubleshooting and addressing messages on the display.
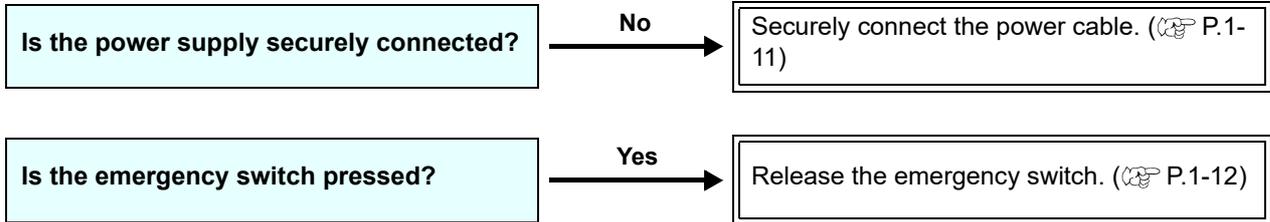
# Troubleshooting Scenarios

| Issue | Corrective action |
|---|---|
| Inadequate cutting<br>• Works may not be cut completely even if blade protrusion when the cutter is down exceeds work thickness. | Stronger pressure when the cutter is down can ensure that works are cut.<br>• Enter a Z offset (for FBT). (☞ P.4-32)<br>  ☞ P.3-15 "Configuring Tool Settings" |
| The reciprocating cutter leaves works uncut at beginning and end points.<br>• Cutting may be incomplete at positions where the cutter is lowered or raised. | Increase the start offset setting to move forward the position where the cutter is lowered.<br>☞ P.3-15 "Configuring Tool Settings" |
| | Increase the end offset setting to move backward the position where the cutter is raised.<br>☞ P.3-15 "Configuring Tool Settings" |
| The swivel cutter leaves works uncut at beginning and end points. | Set up overcutting.<br>☞ P.4-33 "Eliminating Pieces Left Uncut in Works (Standard Unit)" |
| Circle start and end points do not match.<br>• Circle start and end points to cut may be misaligned due to work thickness and hardness. | Set up circular theta correction to compensate for the amount of misalignment.<br>☞ P.3-34 "Circle Θ Correction" |

# Troubleshooting

Double-check the following points if you suspect mechanical failure. If the measures do not restore normal operation, contact a dealer or our service office.

## Does not work when power is turned on

7-3

| Is the power supply securely connected? | **No** → | Securely connect the power cable. (☞ P.1-11) |

| Is the emergency switch pressed? | **Yes** → | Release the emergency switch. (☞ P.1-12) |

## Sending data from software does not work

| Is the machine in local mode? | **Yes** → | Switch to remote mode. (☞ P.1-15) |

| Is the interface cable connected correctly? | **No** → | Securely connect the interface cable. (☞ P.1-11) |

| Have you changed the interface? | **Yes** → | Perform data clearing. (☞ P.3-47) |
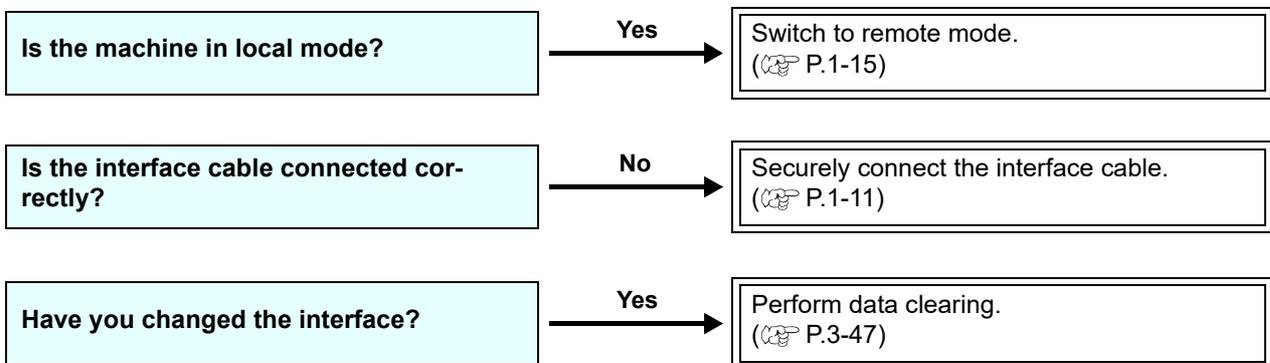
## An error occurs when data is sent

| Are communication conditions the same on both pieces of equipment? | **No** → | Match the conditions on the computer. (☞ P.4-42) |

| Do the computer and plotter commands match? | **No** → | Change the commands on the computer. (☞ P.4-40) |

7
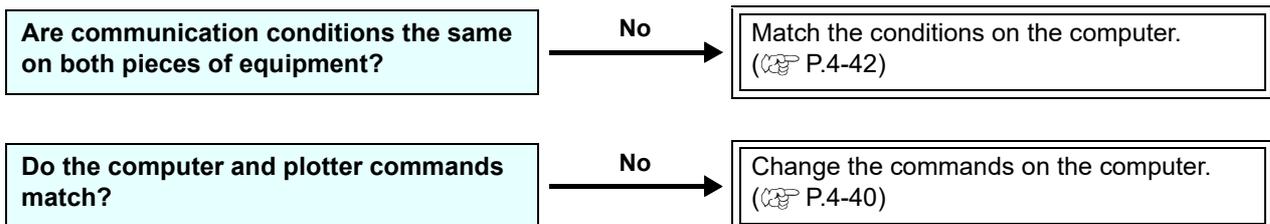
## The tool lifts up works (only standard unit)

| | | |
|---|---|---|
| Is the paper (sheet) wrinkled or curled? | **Yes** → | Flatten out the work. (☞ P.3-8) |
| Is there a problem with raising/lowering the pen? | **Yes** → | With the power off, move Unit A up and down. If Unit A does not move up and down normally, contact a dealer or our service office. |

## Drawn lines are broken or faint

| | | |
|---|---|---|
| Is the drawing speed too fast? | **Yes** → | Slow down [Cut Speed] in the cutting conditions. (☞ P.3-17) |
| Is the drawing pressure too weak? | **Yes** → | Increase [Cut Press] in the cutting conditions. (☞ P.3-17) |
| Is the pen out of ink? | **Yes** → | Replace the pen with a new one. (☞ P.2-4) |

## No reciprocating movement (only TUT)

| | | |
|---|---|---|
| Insufficient grease on the reciprocating shaft? | **Yes** → | Apply a small amount of grease to the shaft. (☞ P.6-4) |
| Is the connector cable connected? | **No** → | Connect the connector cable. (☞ P.2-19) |
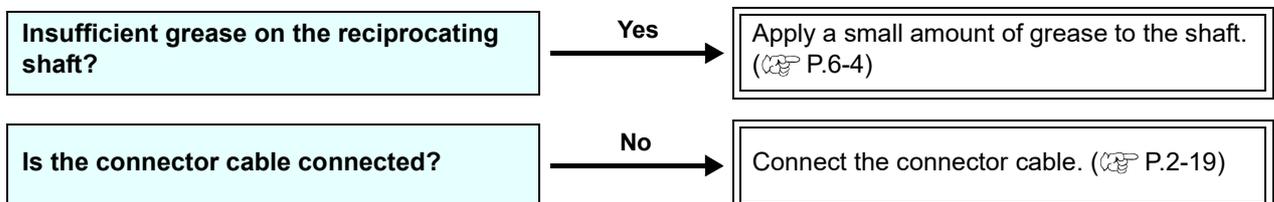
# Warning/Error Messages

In case of problems with the machine, a message appears on the display.
Take appropriate measures based on the message.

## Resolvable Errors

7-5

| Message | Cause | Corrective action |
|---|---|---|
| INFORMATION 129<br>Battery Exchange | The internal clock battery is spent and must be replaced. | Contact a dealer or our service office. |
| ATTENTION 203<br>Maintenance command | Communication error occurred. | Turn off the power on the machine and turn it on after a while. If this error continues to be displayed, contact your local dealer or our service office. |
| ERROR 401<br>Motor X | The Y-bar motor was overloaded. | |
| ERROR 402<br>Motor Y | An overcurrent error was detected in the head motor. | |
| ERROR 403<br>X Current | An overcurrent was detected in the Y-bar motor. | |
| ERROR 404<br>Y Current | An overcurrent was detected in the head motor. | |
| ERROR 499<br>Motor ZA | The Z motor was overloaded. | |
| ERROR 499<br>Motor ZB | | |
| ERROR 499<br>Motor ZC | | |
| ERROR 499<br>Motor ZD | | |
| ERROR 49a<br>ZA Current | An overcurrent error was detected in the Z motor. | |
| ERROR 49a<br>ZB Current | | |
| ERROR 49a<br>ZC Current | | |
| ERROR 49a<br>ZD Current | | |
| ERROR 49b<br>Motor TB | The T motor was overloaded. | |
| ERROR 49b<br>Motor TC | | |
| ERROR 49b<br>Motor TD | | |
| ERROR 49c<br>TB Current | An overcurrent error was detected in the T motor. | |
| ERROR 49c<br>TC Current | | |
| ERROR 49c<br>TD Current | | |
| ERROR 4a0<br>X1 Servo AMP LinkUP Err | An X motor control unit problem occurred. | |
| ERROR 4a0<br>X2 Servo AMP LinkUP Err | | |
| ERROR 4a1<br>Y Servo AMP LinkUP Err | A Y motor control unit problem occurred. | |

7

7-5

| Message | Cause | Corrective action |
|---|---|---|
| ERROR 4a2<br>Origin search fail | Origin sensor could not be detected. | Turn off the power on the machine and turn it on after a while. If this error continues to be displayed, contact your local dealer or our service office. |
| ATTENTION 4a3<br>AC AMP[00] RS232 ERR | Unable to communicate with motor control unit. | |
| ATTENTION 4a4<br>Front Vacuum Error | An error was detected in the vacuum 1. | Turn off the plotter and vacuum. Wait a while and turn them back on. |
| ATTENTION 4a4<br>Rear Vacuum Error | An error was detected in the vacuum 2. | |
| ERROR 50a<br>Y Origin | A problem was detected with Y origin detection. | Turn off the power on the machine and turn it on after a while. If this error continues to be displayed, contact your local dealer or our service office. |
| ERROR 556<br>Y Limit Sensor | The head has exceeded the operating range in the Y direction. | |
| ATTENTION 557<br>Obstacle detection | The light curtain was triggered. | Remove the obstacle from the light curtain detection area. |
| ERROR 560<br>X Limit Sensor | The head has exceeded the operating range in the X direction. | Turn off the power on the machine and turn it on after a while. If this error continues to be displayed, contact your local dealer or our service office. |
| ERROR 562<br>X1 Origin | A problem was detected with X origin detection. | |
| ERROR 562<br>X2 Origin | | |
| ERROR 563<br>ZA Origin | A problem was detected with Z (A station) origin detection. | |
| ERROR 563<br>ZB Origin | A problem was detected with Z (B station) origin detection. | |
| ERROR 563<br>ZC Origin | A problem was detected with Z (C station) origin detection. | |
| ERROR 563<br>ZD Origin | A problem was detected with Z (D station) origin detection. | |
| ERROR 564<br>TB Origin | A problem was detected with $\Theta$ (B station) origin detection. | |
| ERROR 564<br>TC Origin | A problem was detected with $\Theta$ (C station) origin detection. | |
| ERROR 564<br>TD Origin | A problem was detected with $\Theta$ (D station) origin detection. | |
| ATTENTION 567<br>ZS Sensor | Edge detection sensor did not respond. | Make sure that the pen is attached to the pen holder.<br>If this error is displayed while the pen is properly installed, turn off the power on the machine and turn it on after a while.<br>If this error continues to be displayed, contact your local dealer or our service office. |

| Message | Cause | Corrective action |
|---|---|---|
| ATTENTION 568<br>Camera Not Connected | Could not connect to camera. | Turn off the main power to both the connected PC and the machine, and then turn it on again after a while. |
| ATTENTION 569<br>Camera Communication | Camera communication is not available. | |
| ATTENTION 56a<br>Camera Process | | |
| INFORMATION 901<br>Invalid Operation | The function is not available. | This is an operation that cannot be performed.<br>Please refer to the corresponding page of the operation manual. |
| ATTENTION 92c<br>MDL Emergency | An emergency stop instruction was received from the MDL command interface. | Perform the emergency stop release operation on the external device that instructed the emergency stop. |
| INFORMATION c10<br>Commands | Received a code other than a COMMAND code. | Check the command setting on the host computer. |
| INFORMATION c11<br>Parameter | A parameter outside the numerical range has been received. | |
| ATTENTION c17<br>Mode Settings | Positioning was specified for the unit set to pressure control, or vice versa. | Change the application software settings to match the settings on the device side. |
| ATTENTION c18<br>Parameter Range | The value range of the command parameter specified by the application software is not appropriate. | Check the command settings of the application software. |
| ATTENTION c19<br>Many Parameters | Too many command parameters specified by the application software. | |
| INFORMATION c20<br>I/O | The communication condition is different. | Make the communication condition same as that of the host computer side. (☞ P.4-42) |
| INFORMATION c31<br>No Data | "COPY" was executed, but no data is saved to the receive buffer. | Please refer to the copy function.<br>(☞ P.4-11) |
| INFORMATION c32<br>DataTooBig | The received data is too big for multiple sheet cutting. | |
| INFORMATION c36<br>Mark Detect | No register mark was detected.<br>Or a register mark could not be detected five times in succession for a multi mode copy (could not continue using auto skip). | • Make sure work is not floating.<br>• Check to see if the starting point to detect the register mark has been set properly. (☞ P.5-14)<br>• Check to see if the black register mark is printed against the white background.<br>• Check to see if there is no dust or dirt between the register marks.<br>• Check to see if there is no mistake in register mark settings. (☞ P.5-9)<br>• Check the camera lens for dirt.<br>• Adjust the camera.<br>• Confirm the status and the settings described above. If still no register mark is detected, contact your distributor or a sales office of Mimaki. |
| INFORMATION c37<br>Mark Org | The origin point was detected outside the cutting area. | Arrange the register marks inside the sheet. |

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| Message | Cause | Corrective action |
|---|---|---|
| INFORMATION c38<br>Mark Scale | Register mark detection was achieved. However, this error is attributable to a false detection or a compensation value setting error, since the calculated compensation value is wrong. | Correct the compensation value if it is wrong, and perform detection again. |
| | The required scale compensation value was not smaller than 1.3 times or not greater than 0.7 times. | Remove the cause of the detection error, for example, correct the blurred print of register mark data and then retry. |
| | A detection error occurred since the distance from the adjacent graphics was too short. | Increase the distance from the adjacent graphics properly, and perform printing again. |
| | The designated spacing between the register marks is not correct. | The value of the spacing between the register marks designated by the command is wrong and it is attributable to a selection error of data. Therefore, check the output data. |
| | The print is not uniform and some graphics are omitted. | Correct the graphic data to obtain a uniform print and perform printing again. |
| | As the printed register mark was blurred, it was not read correctly and the register mark of the next graphics was read by mistake. | Perform printing again, taking care that the print is not blurred. |
| INFORMATION c39<br>Mark ID | Failed to detect the base register mark. | See "INFORMATION c36" corrective actions. (☞ P.7-7) |
| | ID code could not be read properly. | • Check that the data ID code is printed correctly.<br>• Perform printing again, taking care that the print is not blurred. |
| ATTENTION c1a<br>Missing Parameters | Too few command parameters specified by the application software. | • Check the command settings of the application software. |
| ATTENTION c1c<br>Option Required | There are no options required to execute the command. | • Add optional features. |
| ATTENTION c1d<br>Device Select | Sensors and other devices are not available. | • Check to confirm that the sensor and camera sensors are enabled and correctly selected. (☞ P.5-9) |
| ATTENTION c3a<br>Mark Not Detected | As the printed registration mark was blurred, it was not read correctly and the registration mark of the next graphics was read by mistake. | • Check the settings and operation procedures in accordance with the software instruction manual. |
| INFORMATION c3d<br>Pen Stroke | Pen height is not appropriate. | Check the pen holder installation. |
| ATTENTION c3f<br>Pen Head | Pen head initialization failed. | Turn off the power on the machine and turn it on after a while. If this error continues to be displayed, contact your local dealer or our service office. |
| INFORMATION c60<br>PenEncoder | The height of the pen cannot be detected. | |
| ATTENTION c68<br>A tool has come off | A tool has detached from the holder. Or it was intentionally removed. | Check to confirm that the tool is correctly mounted. |
| INFORMATION c6d<br>Offscale | The cutting data exceeds the effective cutting area. | Either increase the size of the cut area or reduce the data. |
| | For R10<br>If you attempt to cut deeper than the cutter length of the end mill, an "Offscale" error will occur, limiting the cutting depth. | To cut more deeply into thick workpieces, replace the tool with an end mill with a longer cutter length. |

| Message | Cause | Corrective action |
|---|---|---|
| ERROR ca5<br>Spindle | An overcurrent error was detected in the Spindle motor. | Turn off the power on the machine and turn it on after a while. If this error continues to be displayed, contact your local dealer or our service office. |
| ERROR ca6<br>Unit mounting position | The unit is installed in the wrong position. | Install the unit correctly. (☞ P.2-2) |
| ERROR ca7<br>Tool mounting position | Unavailable tools detected. | • Install the tool correctly.<br>• If the barcode sticker is dirty, replace it. |
| ATTENTION ca8<br>Edge Detect: B-Unit | Failed to detect the cutting edge of B-Unit. | Make sure you have installed the tool correctly.<br>If automatic cutting edge detection is not possible, perform detection manually. (☞ P.3-13) |
| ATTENTION ca9<br>Edge Detect: C-Unit | Failed to detect the cutting edge of C-Unit. | |
| ATTENTION caa<br>Edge Detect:D-Unit | Failed to detect the cutting edge of D-Unit. | |
| ATTENTION cab<br>Work thickness over | The work thickness measurement result exceeds the upper limit for cutting. | Change the work to one with a thickness that can be cut.<br>If the work thickness is automatically measured without attaching the pen cap, attach it, restart the device, and measure again. |
| ATTENTION cac<br>Unrecognizable Mark | Marks were not recognized. | • Check to see if the starting point to detect the register mark has been set properly. (☞ P.5-14)<br>• Verify that the shape of the printed register mark is the same as the one specified in the operation or application.<br>• Make sure that the size of the printed register mark is approximately 10 mm on each side. |
| ATTENTION cad<br>Mark Detection Failed | Failed to detect the mark. | • Check to see if the starting point to detect the register mark has been set properly. (☞ P.5-14)<br>• Set the work so that it has the minimum tilt possible.<br>• Check for another mark or print data near the mark to be detected. |
| ATTENTION caf<br>No Specified Tool | An attempt was made to perform a function without the required tools installed. | • Check to confirm that the required tool is correctly mounted at the specified position. (☞ P.4-50 "Checking Machine Information" > [Unit & Tool])<br>• If the cut is caused by data from the host computer, check the settings of the application software. |
| ATTENTION cb1<br>Pressure level TUT | The pressure level setting ranges differ for the low-pressure TUT and high-pressure TUT. Pressure levels were specified by a command outside the respective setting ranges. | • Specify the pressure level within the setting range of each of the low pressure TUT and high pressure TUT. |
| INFORMATION cb3<br>Time to recommend exchange | The recommended replacement time for the drive system components indicated on the panel is nearing. | Contact a dealer or our service office. |
| INFORMATION cb4<br>Time to recommend exchange | The recommended replacement time for the drive train components indicated on the panel has passed. | Contact a dealer or our service office. |

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| Message | Cause | Corrective action |
|---|---|---|
| INFORMATION cb8<br>Edge Detect not Comp. | Operation cannot be executed because blade edge detection has not been completed. | Clear the data (☞ P.3-47) before completing blade edge detection (☞ P.3-13). |
| ATTENTION cb9<br>Tool Length:B-Unit | The length of the tool (blade) attached to the unit shown on the panel has changed since the last edge detection. | Clear the data (☞ P.3-47) and then execute the blade edge detection (☞ P.3-13) again. |
| ATTENTION cba<br>Tool Length:C-Unit | | |
| ATTENTION cbb<br>Tool Length:D-Unit | | |
| ATTENTION cbc<br>Measurements are abnormal | As a result of flatness measurement, the difference between the maximum and minimum values exceeds the normal value.<br>It is expected that there will be debris, cutouts, deep indentations, etc. on the mat surface. | • Check the mat surface for any abnormalities such as dust, cutouts, deep dents, etc.<br>• If there is no abnormality on the mat surface, please contact your dealer, our sales office or call center. |
| ATTENTION cbd<br>Spindle Controller | Stopped due to overload during cutting.<br>Refer to "Error numbers displayed on spindle controller" (☞ P.7-13) | • Restart the machine.<br>• Change the cutting conditions before cutting again.<br>  • Increase the rotation speed.<br>  • Reduce the cutting depth for each cut. |
| ATTENTION cbe<br>Felt mat Upper limit | The thickness of the felt mat calculated from the measurements in flatness measurement exceeds the maximum thickness that can be used. | • If the felt mat is a non-genuine product, replace it with a genuine product.<br>• If there are any labels or debris on the felt mat surface, remove them, clean, and then repeat flatness measurement. |
| ATTENTION cbf<br>Felt mat Lower limit | The thickness of the felt mat calculated from the measurements in flatness measurement is below the minimum thickness that can be used. | • Replace the felt mat with a new one.<br>• If flatness measurement was performed without attaching the pen cap, attach the pen cap, then measure again. |
| ATTENTION cc0<br>Underlay upper limit | The underlay thickness measurement result exceeds the maximum allowed thickness. | • Replace the underlay with thinner underlay.<br>• If the underlay thickness was measured automatically without attaching the pen cap, attach the pen cap, then measure again. |

## System Halt and Other Errors

(Important!) • If other system halt numbers or error numbers are displayed, turn off the power on the machine and turn it on after a while.
If this error continues to be displayed, contact your local dealer or our service office.

## Status Messages

These messages do not indicate errors but require an appropriate response.

| Message | Cause | Corrective action |
|---|---|---|
| !Data Remain | An attempt was made to perform an operation that cannot be performed while paused. | Please change remote mode and draw (cut) all data. Or, execute Data Clear to abort the plotting. |
| Change the work<br>Press Enter_key. | The plotter is waiting for the work to be replaced during continuous copying in the single mode. | Replace the work with a new one, and resume continuous copying. |
| Safe sensor reacts.<br>Please remove obstacle. | The light curtain was triggered. | Remove the obstacle from the light curtain detection area. |
| Release the Emergency switch | The Emergency switch is pushed. | Release the emergency switch. |
| Failed to detect<br>ZS sensor response.<br>Please make sure the tool<br>is attached to A-Unit. | Edge detection sensor did not respond. | Make sure that the pen is attached to the pen holder.<br>If this error is displayed while the pen is properly installed, turn off the power on the machine and turn it on after a while.<br>If this error continues to be displayed, contact your local dealer or our service office. |
| Thickness is not set. | Work thickness is not set. | Set the work thickness. (☞ P.3-11) |
| Cutting edge no detect. | Some tools do not perform cutting edge detection. | Perform the cutting edge detection for all installed B to D-Unit tools.<br>(☞ P.3-13) |

7

## Mark Origin Detection Errors

| Error No. | Cause | Corrective action |
|---|---|---|
| 1 | The machine attempted to retrieve data captured by the camera application, but there was no data. | **(1)** Restart the camera application.<br>**(2)** Restart the machine.<br>**(3)** If the issue persists, contact your dealer or our sales office or call center. |
| 3 | The camera could not be recognized. | **(1)** Restart the camera application.<br>**(2)** Restart the machine.<br>**(3)** Check the LAN connection.<br>**(4)** If the issue persists, contact your dealer or our sales office or call center. |
| 4 | Camera connection could not be confirmed. | |
| 5 | Dust or dirt has been detected on the lens. | **(1)** Make sure the lens is not dirty and clean as needed. |
| 6 | Image composition not possible because image capture failed during ID data detection. | **(1)** If the issue does not recur after detection is attempted again, there is no problem.<br>**(2)** Restart the camera application.<br>**(3)** Restart the machine. |
| 11 | The mark you attempted to capture could not be recognized. | **(1)** Check the mark detection position.<br>**(2)** Check the mark shape.<br>**(3)** Make sure the printed mark matches specifications (☞ P.5-2). |
| 12 | Marks were too close to each other, causing multiple marks to be detected within the capture area. | **(1)** Leave more space between marks and print them again. |
| 13 | Marks were detected, but the angle of rotation was not recognized. | **(1)** If the issue does not recur after detection is attempted again, there is no problem.<br>**(2)** Restart the camera application. |
| 14 | The detection position is too far forward, so the mark is out of the capture area. | **(1)** Move the pointer to the mark origin position and retry detection. |
| 15 | The detection position is too far back, so the mark is out of the capture area. | |
| 16 | The detection position is too far left, so the mark is out of the capture area. | |
| 17 | The detection position is too far right, so the mark is out of the capture area. | |
| 90 | An error occurred on the main unit during capture that prevented the camera from shooting. | **(1)** If the issue does not recur after detection is attempted again, there is no problem.<br>**(2)** Restart the camera application.<br>**(3)** Restart the machine. |
| 91 | Not connected to the camera application. | **(1)** Restart the camera application.<br>**(2)** Restart the machine.<br>**(3)** Check the LAN connection. |
| 92 | The data captured by the camera application does not match the data you were attempting to obtain. | **(1)** Restart the camera application.<br>**(2)** Restart the machine.<br>**(3)** If the issue persists, contact your dealer or our sales office or call center. |
| 93 | Image capture by the camera failed due to a communication error between the camera application and the camera, or a similar problem. | **(1)** Restart the camera application.<br>**(2)** Restart the machine.<br>**(3)** Check the LAN connection. |

## Error numbers displayed on spindle controller

| Error No. | | Cause | Corrective action |
|---|---|---|---|
| Warning Displays | A0 | The spindle motor cable is not connected. Or the connector contacts are faulty. | • Check the motor cable. |
| | A1 | The compressed air pressure dropped during rotation. | • Check the compressed air pressure.<br>• Check whether the compressor is operating. |
| | A2 | The temperature inside the unit has risen. | • Turn off the plotter power supply, and wait a while before turning back on. |
| | A3 | The spindle motor is overloaded. | • Alter the cutting conditions. |
| | A4 | An emergency stop signal was input while the motor was stopped. | |
| | A5 | The compressed air pressure is too high. | • Check the compressed air pressure. |
| Error Displays | E1 | The current exceeded the tolerances. | • Alter the cutting conditions.<br>• Turn off the plotter power supply, and wait a while before turning back on. |
| | E2 | The voltage exceeded the tolerances. | • Turn off the plotter power supply, and wait a while before turning back on. |
| | E3 | The motor cable connector is detached. Or the sensor is faulty. | • Check the motor cable connector.<br>• Turn off the plotter power supply, and wait a while before turning back on. |
| | E4 | The temperature inside the unit increased abnormally. | |
| | E5 | Circuit abnormality. | |
| | E6 | The motor is restrained and has stopped rotating for more than 3 seconds. | • Turn off the plotter power supply, remove the cause of the problem, and wait a while before turning back on. |
| | E7 | • The compressed air pressure was too low when the motor started.<br>• The compressed air pressure was too low continuously for at least 4 seconds while the motor was operating. | • Check the compressed air pressure.<br>• Turn off the plotter power supply, and wait a while before turning back on. |
| | E8 | The overload continued for a specified length of time or longer. | • Turn off the plotter power supply, and wait a while before turning back on. |
| | EA | A rotation command was input before the power was turned on. | • Turn off the plotter power supply, and wait a while before turning back on. |
| | EL | An unsupported spindle motor was connected. | • Use a dedicated CFX spindle motor. |
| | EH | The motor speed exceeded the preset value for a specified length of time. | • Turn off the plotter power supply, and wait a while before turning back on. |
| | EE | • The motor was started while an emergency stop signal was input.<br>• An emergency stop occurred while rotating. | |
| | EC | Internal memory abnormality. | |
| | Et | The temperature inside the motor increased abnormally. | |

(Extract from Nakanishi Inc. operation manual)

**7**

# Sample Cutting

The machine can cut a sample stored internally to enable troubleshooting if data cannot be cut correctly. The offset amounts for the work used can also be checked and updated in the FineCut/Coat9 and CAMLINK2 settings.

(Important!)  • Sample cutting is not available unless the receive buffer is empty, in which case an error is displayed. Perform data clearing in advance.

| Sample Patterns and Overview | |
|---|---|
| **Crest**<br>Used with the tool selected in [Tool Select]. This sample is a crest with a variety of line styles.<br> | **Spade**<br>Performs both up-cuts and down-cuts in a single pattern. Select the cutting method that produces the cleanest cuts.<br> |
| **Square, triangle, and circle**<br>Cuts the inner lines before the outer one.<br> | **V-cut**<br>Used for basic quality checking with the V-cut tool.<br><br>**Required tools**<br>**Units B to D: V-cut tool**<br>• Available only when V45 and VAS are selected. |
| **R = 3/5/10/15/20/50/100**<br>Cuts a circle with the selected radius.<br>(Radius (R) = 3, 5, 10,15, 20, 50, 100 mm)<br><br>**R = 3 to 100** | **V-CUT straight lines**<br>Check the θ correction values for the work to be cut using the V-cut tool.<br><br>**Required tools**<br>**Units B to D: V-cut tool**<br>• Available only when V45 and VAS are selected.<br>• Mount the pen on unit A in advance. |
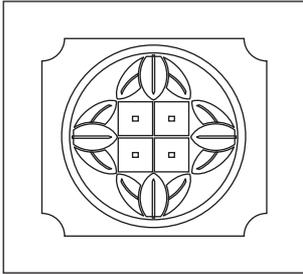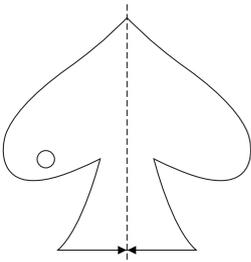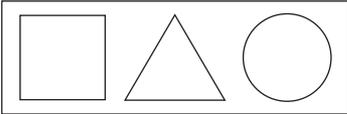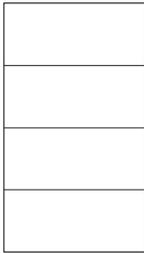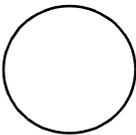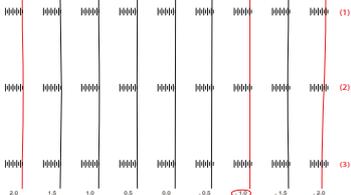
7-14

# Cutting Samples to Troubleshoot Issues

Before sample cutting, pen numbers must be assigned. (☞ P.4-10)

**1** | **Set the drawing origin at the location where to perform sample cutting (☞ P.3-43).**

**2** | **On the local mode screen, press [TEST CUT].**

• Press the [SEL] key to switch the function of the [FUNCTION] key.

| Local |
| --- |
| B-Unit:FBT |
| SPD: 30.0cm/s Zof: 0.0mm |
| UP: 4mm |
| WT: 5.0mm |
| A:SCT  CAMERA  **B:FBT**  C:E35  D:C16 |
| TEST CUT    COPY    DATA CLEAR |
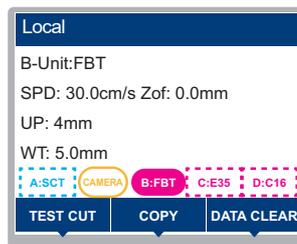
**3** | **Press ⒶⓋ to select [Sample Cut].**

**4** | **Press the [ENTER] key.**

**5** | **Press ⒶⓋ to select a cutting pattern.**

• Setting values: Crest, spade, square/triangle/circle, V-cut, V-cut straight line, circle R = 3 to R = 100

Hint! • In toggle mode, sample cut drawing is only possible in the front area.

**6** | **Press the [ENTER] key to start drawing.**

• To exit without performing sample cutting, press the [END/POWER] key.

## Sample cutting results

If sample data can be cut normally but other data cannot
⇒ There is a problem with the host computer.
If both sample data and other data cannot be cut normally (when start/end points are not cut)
⇒ Set a higher value in [Adj-prs Offset] (☞ P.4-32) to apply stronger pressure when the cutter is down.

**7**

## V-CUT straight line θ correction value selection

The results for the V-CUT straight line pattern can be used to check the θ correction value for the tool and work used.

However, this should be used after all of the tool adjustments (Center Adjust , Offset Adjust, Theta Angle Adjust) have been completed for the tool used.

> Hint!
> • If problems arise with the cutting quality and accuracy for V-cutting, check to confirm that the tool has been correctly adjusted and the θ correction amount is appropriate.



θ correction amount (units: °)
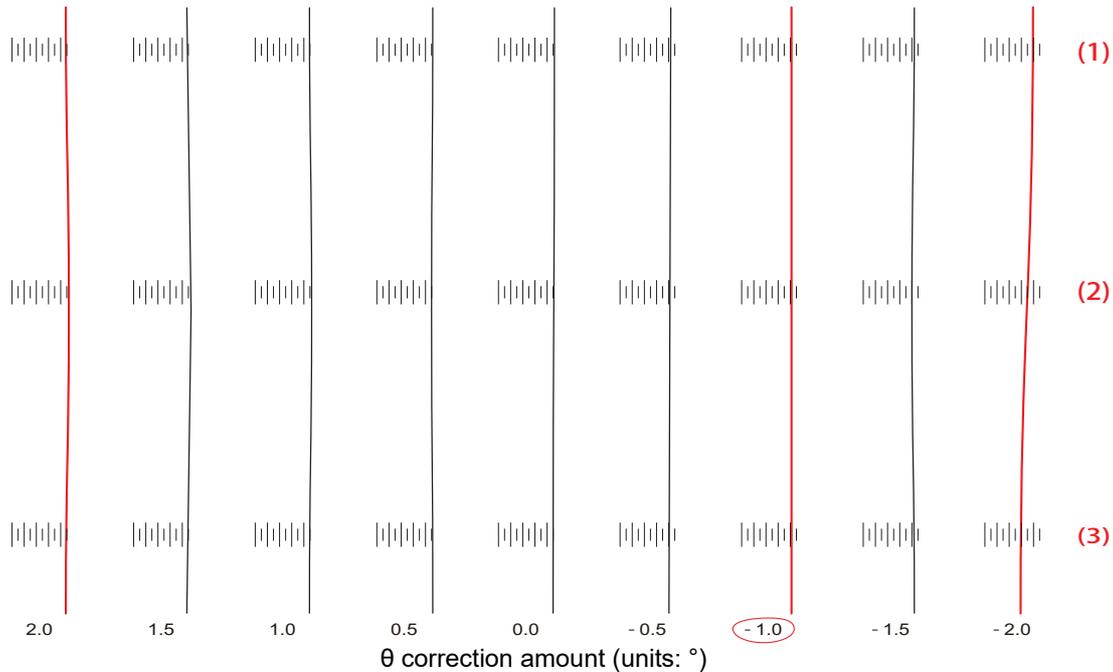
• The difference between the cut marks for V-cutting and the vertical lines drawn with the pen correspond to the θ correction amount at the position where **(1)**, **(2)**, and **(3)** are parallel to the scale at the same position or at the nearest position.
  Enter these values on the FineCut/Coat9 or CAMLINK2 conditions setting screen.
• If the cut marks are not parallel or are curved, check the following.
  Is the V-cut tool loose?
  Readjust the tool.

# Chapter 8
# Appendix

**About this chapter**

This chapter explains the specifications of the machine.

# Specifications

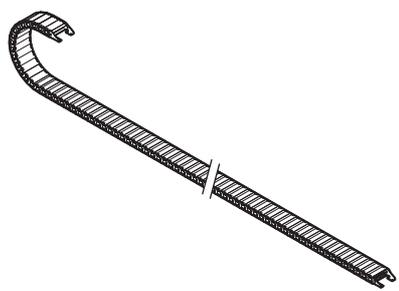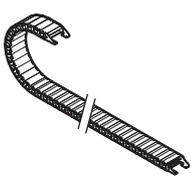| Specifications | Model | CFX-2513 | CFX-2531 | CFX-2550 |
|---|---|---|---|---|
| Active Working Space | X axis | 1300 mm | 3190 mm | 5080 mm |
| | Y axis | 2540 mm | | |
| Work size that can be set | X axis | 1890 mm | 3780 mm | 5670 mm |
| | Y axis | 2570 mm | | |
| Drive types | | X/Y axis: AC servo<br>Z/θ axis: DC servo | | |
| Mountable units | A | Standard unit (standard) | | |
| | B | Tangential unit (optional) | | |
| | C | Tangential unit (optional) | | |
| | D | Tangential unit (optional) | | |
| Maximum cuttable height | | E12: 54 mm    E35: 54 mm    E60: 54 mm    V45: 20 mm    VAS: 20 mm<br>FBT: 10 mm    C16: 54 mm    C26: 54 mm    C60: 20 mm | | |
| Maximum work weight on table | | 50 kg/m$^2$ (must be distributed) | | |
| Method of securing works | | Held by vacuum | | |
| Commands | | MGL-3C | | |
| Receive buffer capacity | | 22 MB (16 MB when sorting is enabled) | | |
| Interfaces | | RS-232C / Ethernet | | |
| Power supply specifications | | 200 to 240 V AC, 50/60 Hz, 12 A or less, single phase | | |
| Power consumption | | 3000 W or less | | |
| External dimensions | | 4,050 mm × 2,150 mm × 1,500 mm | 4,050 mm × 4,050 mm × 1,500 mm | 4,050 mm × 5,950 mm × 1,500 mm |
| Weight of main unit | | 440 kg | 660 kg | 880 kg |
| Noise level | During standby | Max. 55 dB(A) | | |
| | During operation | Max. 79 dB(A) | | |
| Compliance with standards | | VCCI-class A, FCC class A, CE markings, CB report (EN62368),<br>UL62368-1, Machinery Directive, RoHS, REACH | | |
| Operating environment | Permissible ambient temperature Relative humidity | 5 to 35°C<br>35 to 75% RH, no condensation | | |
| | Temp. range for guaranteed accuracy Relative humidity | 20 to 25°C<br>35 to 65% RH, no condensation | | |
| | Temp. gradient | ±10°C/h or less (±50°F/h or less) | | |
| Packing | Main unit | No stacking (when moving)<br>May be stacked up to 2 units high in storage. (Must not be moved while stacked.)<br>Must not be stacked with other products. | | |
| | Extended table | May be stacked up to 2 units high in storage<br>Must not be stacked with other products. | | |

# Optional accessories

## Optional accessories

| Part name | Low-pressure tangential Unit - TUT-15 | Part name | Low-pressure tangential Unit - TUT-30 | Part name | Router unit |
|---|---|---|---|---|---|
| Part No. | OPT-C0250 | Part No. | OPT-C0271 | Part No. | OPT-C0251 |
| Notes | | Notes | | Notes | |

| Part name | Flat Blade Tool - FBT | Part name | V-Cut Tool: 45° - V45 | Part name | V-Cut Tool: Angle Selection Type - VAS |
|---|---|---|---|---|---|
| Part No. | OPT-C0256 | Part No. | OPT-C0264 | Part No. | OPT-C0265 |
| Notes | | Notes | | Notes | |

| Part name | V45 Tool TYPE-S | Part name | VAS Tool TYPE-S | Part name | |
|---|---|---|---|---|---|
| Part No. | OPT-C0277 | Part No. | OPT-C0278 | Part No. | |
| Notes | | Notes | | Notes | |

| Part name | Creasing Tool: 16 mm dia. - C16 | Part name | Creasing Tool: 26 mm dia. - C26 | Part name | Creasing Tool: 60 mm dia. - C60 |
|---|---|---|---|---|---|
| Part No. | OPT-C0261 | Part No. | OPT-C0262 | Part No. | OPT-C0263 |
| Notes | | Notes | | Notes | |

| Part name | Universal pen adapter | Part name | Blade edge adjuster (for swivel cutter) | Part name | Blade edge adjuster MSP |
|---|---|---|---|---|---|
| Part No. | OPT-C0259 | Part No. | OPT-C0066 | Part No. | OPT-C0240 |
| Notes | | Notes | | Notes | |

| Part name | X31 cableveyor assy. | Part name | X50 cableveyor assy. | Part name | X13 cableveyor assy. |
|---|---|---|---|---|---|
| Part No. | OPT-C0253 | Part No. | OPT-C0254 | Part No. | OPT-C0270 |
| Notes | | Notes | | Notes | |

| Part name | Foot switch 6 m assy. | Part name | Foot switch 10 m assy. | Part name | |
|---|---|---|---|---|---|
| Part No. | OPT-C0275 | Part No. | OPT-C0276 | Part No. | |
| Notes | | Notes | | Notes | |

| Part name | Electric Reciprocating Tool: Amplitude 1.2 mm - E12 | Part name | Electric Reciprocating Tool: Amplitude 3.5 mm - E35 | Part name | Electric Reciprocating Tool: Amplitude 6.0 mm - E60 |
|---|---|---|---|---|---|
| Part No. | OPT-C0272 | Part No. | OPT-C0257 | Part No. | OPT-C0258 |
| Notes | | Notes | | Notes | |

| Part name | 5.5 kW/6.3 kW vacuum unit assy. | Part name | Additional table unit for CFX | Part name | |
|---|---|---|---|---|---|
| Part No. | OPT-C0249 | Part No. | OPT-C0248 | Part No. | |
| Notes | | Notes | | Notes | |

# Accessories

## Options

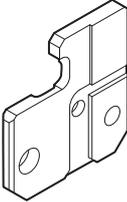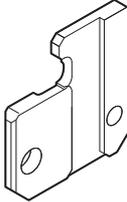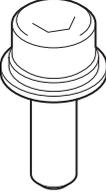| Part name | Part No. | Specifications |
|---|---|---|
| Computer interface cable (5 m) | RSC-32-05 | For RS-232C connection |
| Additional table unit for CFX | OPT-C0248 | |
| 5.5 kw / 6.3 kw vacuum unit assy. | OPT-C0249 | Single layer 200 V, 5.5 / 6.3 kw<br>Sold separately: Filter element (SPC-0226) |
| Tangential Unit - TUT-15 | OPT-C0250 | |
| Low-pressure tangential Unit - TUT-30 | OPT-C0271 | |
| Camera Unit - Camera | OPT-C0252 | |
| X31 cableveyor assy. | OPT-C0253 | Used for 2513 → 2531, 2550 → 2531 |
| X50 cableveyor assy. | OPT-C0254 | Used for 2513 → 2550, 2531 → 2550 |
| Universal pen adapter | OPT-C0259 | Compatible with 9 pens |
| Flat Blade Tool - FBT | OPT-C0256 | |
| Electric Reciprocating Tool: Amplitude 1.2 mm - E12 | OPT-C0272 | |
| Electric Reciprocating Tool: Amplitude 3.5 mm - E35 | OPT-C0257 | |
| Electric Reciprocating Tool: Amplitude 6.0 mm - E60 | OPT-C0258 | |
| Creasing Tool: Diameter 16 mm - C16 | OPT-C0261 | |
| Creasing Tool: Diameter 26 mm - C26 | OPT-C0262 | |
| Creasing Tool: Diameter 60 mm - C60 | OPT-C0263 | |
| V-Cut Tool: 45° - V45 | OPT-C0264 | |
| V-Cut Tool: Angle Selection Type - VAS | OPT-C0265 | |
| V45 Tool TYPE-S | OPT-C0277 | |
| VAS Tool TYPE-S | OPT-C0278 | |
| 5.5 kW/6.3 kW blower base (with filter/silencer) | OPT-C0266 | 5.5 / 6.3 kw (for overseas use)<br>Sold separately: Filter element (SPC-0226) |
| X13 cableveyor assy. | OPT-C0270 | Used for 2531 → 2513, 2550 → 2513 |
| Blade edge adjuster | OPT-C0066 | |
| Blade edge adjuster MSP | OPT-C0240 | |
| Vacuum unit control cable 5 m assy. | OPT-C0273 | |
| Foot switch 6 m assy. | OPT-C0275 | Optional for 2513; included as standard accessories only for 2531 and 2550 |
| Foot switch 10 m assy. | OPT-C0276 | Included as a standard accessory only for 2550 |
| Router unit | OPT-C0251 | |

# OPT-C0248 Additional Table Unit for CFX

| | Check | | | Check | | | Check |
|---|---|---|---|---|---|---|---|
| Part Name | Leg board | | Part Name | Hard mat B3.0 CFX | | Part Name | Spanner |
| Quantity | 4 | | Quantity | 2 | | Quantity | 1 |
| Remarks | M028921 | | Remarks | SPC-0925 | | Remarks | 19 mm |

| | Check | | | Check | | | Check |
|---|---|---|---|---|---|---|---|
| Part Name | Spanner | | Part Name | – | | Part Name | – |
| Quantity | 1 | | Quantity | – | | Quantity | – |
| Remarks | 24 mm | | Remarks | – | | Remarks | – |
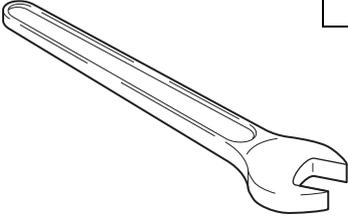
## OPT-C0250/OPT-C0271 Tangential Unit TUT-15/TUT-30
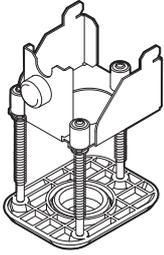
| | | Check | | | Check | | | Check |
|---|---|---|---|---|---|---|---|---|
| Part Name | Media holder pressing unit S assy. | | Part Name | | | Part Name | | |
| Quantity | 1 | | Quantity | | | Quantity | | |
| Remarks | M028945 | | Remarks | | | Remarks | | |

## OPT-C0256 Flat Blade Tool - FBT

| | Check | | Check | | Check |
|---|---|---|---|---|---|
| Part Name | Cutter blade retainer T4 | Part Name | Cutter blade retainer T6 | Part Name | Screw |
| Quantity | 1 | Quantity | 1 | Quantity | 2 |
| Remarks | **M215334** | Remarks | M215335 | Remarks | CS3x10SMW, black |

## OPT-C0264 V-Cut Tool: 45° - V45
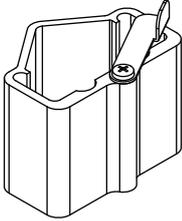
| | Check | | Check | | Check |
|---|---|---|---|---|---|
| | | | | | |
| **Part Name** | V45 tool exchange jig | **Part Name** | | **Part Name** | – |
| **Quantity** | 1 | **Quantity** | | **Quantity** | – |
| **Remarks** | M028935 | **Remarks** | | **Remarks** | – |

## OPT-C0265 V-Cut Tool: Angle Selection Type - VAS
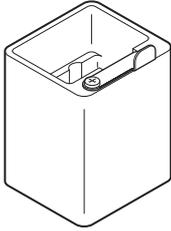
| | | | | | |
|---|---|---|---|---|---|
| | Check | | Check | | Check |
|  | | | | | |
| Part Name | VAS tool exchange jig | Part Name | | Part Name | – |
| Quantity | 1 | Quantity | | Quantity | – |
| Remarks | M028934 | Remarks | | Remarks | – |

## OPT-C0249 5.5 kw / 6.3 kw Vacuum Unit Assy.

| | Check | | Check | | Check |
|---|---|---|---|---|---|
| Part Name | Power cable | Part Name | Vacuum control cable 5 m assy. | Part Name | Blower hose |
| Quantity | 1 | Quantity | 1 | Quantity | 2 |
| Remarks | Depends on destination | Remarks | OPT-C0273 | Remarks | |

| | Check | | Check | | Check |
|---|---|---|---|---|---|
| Part Name | Hose clamp | Part Name | | Part Name | – |
| Quantity | 4 | Quantity | | Quantity | – |
| Remarks | | Remarks | | Remarks | – |

# OPT-C0252 Camera Unit - CAMERA
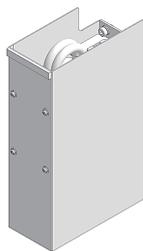
| | Check | | Check | | Check |
|---|---|---|---|---|---|
|  | |  | |  | |
| Part Name | Camera unit main unit | Part Name | LAN cable | Part Name | Switching hub |
| Quantity | 1 | Quantity | 1 | Quantity | 1 |
| Remarks | | Remarks | | Remarks | |

| | Check | | Check | | Check |
|---|---|---|---|---|---|
|  | |  | | | |
| Part Name | Power cable for hub | Part Name | Screw | Part Name | – |
| Quantity | 1 | Quantity | 4 | Quantity | – |
| Remarks | | Remarks | CS5x12SMW | Remarks | – |

## OPT-C0251 Router Unit: 1 kW - R10

| | Check |  | | Check |  | | Check |
|---|---|---|---|---|---|---|---|
|  | | |  | | |  | |

| Part Name | Desk tray | Part Name | End mill replacement stand | Part Name | Safety glasses |
|---|---|---|---|---|---|
| Quantity | 1 | Quantity | 1 | Quantity | 1 |
| Remarks | Fubo 1200 | Remarks | – | Remarks | VG-2010 |

Purchase from a dealer or our service office.

## Tools

★ : Included as a standard accessory
○ : Optional accessory/supply

| Part name | Part no. | PEN OPT-C0259 | FBT OPT-C0256 | E12 OPT-C0272 | E35 OPT-C0257 | E60 OPT-C0258 | V45 OPT-C0264 /OPT-C0277 | VAS OPT-C0265 OPT-C0278 | C16 OPT-C0261 | C26 OPT-C0262 | C60 OPT-C0263 | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ball pen holder | SPA-0183 | ★ | | | | | | | | | | |
| Ballpoint pen refill | SPC-0726 | ○ | | | | | | | | | | |
| Holder for pressurized ballpoint pens | SPA-0288 | ○ | | | | | | | | | | |
| Pressurized ballpoint pen refill | SPC-0815 | ○ | | | | | | | | | | |
| Swivel cutter holder | SPA-0001 | ○ | | | | | | | | | | |
| Swivel cutter holder | SPA-0090 | ○ | | | | | | | | | | Recommended for CFX |
| Swivel cutter holder K | SPA-0329 | ○ | | | | | | | | | | |
| Carbide blade | SPB-0001 | ○ | | | | | | | | | | 3 pc |
| Blade for low-pressure PVC sheet | SPB-0030 | ○ | | | | | | | | | | 3 pc |
| Blade for small letters | SPB-0003 | ○ | | | | | | | | | | 3 pc |
| Blade for rubber sheet S | SPB-0005 | ○ | | | | | | | | | | 3 pc |
| Blade for reflective sheet | SPB-0006 | ○ | | | | | | | | | | 2 pc |
| Blade for fluorescent sheet | SPB-0007 | ○ | | | | | | | | | | 3 pc |
| Blade holder T4 | M215334 | | ○ | | | | | | | | | Included with FBT |
| High-speed steel blade 30° | SPB-0043 | | ○ | | | | | | | | | 40 pcs x 5 cases |
| Carbide blade 30° | SPB-0045 | | ○ | | | | | | | | | 3 pc |
| Carbide blade DLC | SPB-0080 | | ○ | | | | | | | | | 3 pc |
| Carbide blade 45° | SPB-0093 | | ○ | | | | | | | | | 3 pc |
| Carbide blade 45° DLC | SPB-0081 | | ○ | | | | | | | | | 3 pc |
| Titanium-coated blade 30° | SPB-0047 | | ○ | | | | | | | | | 1 pc |
| Titanium-coated blade 30° | SPB-0050 | | ○ | | | | | | | | | 1 pc x 3 sets |
| Titanium-coated blade 45° | SPB-0008 | | ○ | | | | | | | | | 1 pc |
| Cutter blade retainer T6 | M215335 | | ○ | | | | | | | | | Included with FBT |
| Carbide design blade 30° | SPB-0051 | | ○ | | | | | | | | | 3 pcs |
| Joint sheet blade | SPB-0063 | | ○ | | | | | | | | | 3 pcs |
| Reciprocating cutter holder S06 | SPA-0343 | | | | ○ | ○ | | | | | | |
| Carbide blade 2° | SPB-0064 | | | | ○ | ○ | | | | | | 5 pcs |
| Carbide blade 7×15 | SPB-0075 | | | ○ | ○ | ○ | | | | | | For rubber up to 15 mm |
| Reciprocating cutter holder M06 | SPA-0344 | | | | ○ | ○ | | | | | | For CFL |
| 20 mm blade | SPB-0055 | | | | ○ | ○ | | | | | | 10 pcs |
| Carbide blade 17° | SPB-0065 | | | ○ | ○ | ○ | | | | | | 5 pcs |
| Carbide blade 17° DLC | SPB-0083 | | | ○ | ○ | ○ | | | | | | 5 pcs |
| Reciprocating cutter holder L06 | SPA-0345 | | | | ○ | − | | | | | | |
| Carbide blade 25×5 | SPB-0077 | | | | ○ | − | | | | | | 5 pcs |
| Carbide blade 25×5 DLC | SPB-0078 | | | | ○ | − | | | | | | 5 pcs |
| Carbide blade 25×5 F DLC | SPB-0079 | | | | ○ | − | | | | | | 5 pcs |

Appendix

8

| Part name | Part no. | PEN OPT-C0259 | FBT OPT-C0256 | E12 OPT-C0 | E35 OPT-C0257 | E60 OPT-C0258 | V45 OPT-C0264/OPT-C0277 | VAS OPT-C0265/OPT-C0278 | C16 OPT-C0261 | C26 OPT-C0262 | C60 OPT-C0263 | Other | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reciprocating cutter holder S10 | SPA-0346 | | | | ○ | ○ | | | | | | | |
| 40 mm carbide blade for CFR | SPB-0056 | | | | ○ | ○ | | | | | | | 5 pcs |
| Reciprocating cutter blade S10 Carbide 2° × 50 mm | SPB-0094 | | | | ○ | ○ | | | | | | | CFX only |
| Reciprocating cutter blade S10 Carbide 2° × 20 mm | SPB-0097 | | | | ○ | | | | | | | | CFX only |
| Media holder unit S | SPA-0359 | | | | ○ | ○ | | | | | | | |
| Media holder unit L | SPA-0360 | | | | ○ | ○ | | | | | | | |
| V-Cut Tool 45° | OPT-C0264 | | | | | | ○ | – | | | | | |
| V-cut blade 45 | SPB-0095 | | | | | | ○ | – | | | | | |
| V-Cut Tool: Angle Selection Type | OPT-C0265 | | | | | | – | ○ | | | | | |
| V-cut blade 45 | SPB-0095 | | | | | | – | ○ | | | | | |
| Creasing Tool: 16 mm dia. - C16 | OPT-C0261 | | | | | | | | ○ | – | – | | Fine (for coated board/ E/F corrugated board) |
| Creasing Tool: 26 mm dia. - C26 | OPT-C0262 | | | | | | | | – | ○ | – | | Medium (for AB/AA corrugated board) |
| Creasing Tool: 60 mm dia. - C60 | OPT-C0263 | | | | | | | | – | – | ○ | | Thick (for AAA corrugated board) |
| Filter element | SPC-0240 | | | | | | | | | | | ○ | For blower |
| Filter □ 90 | SPC-0922 | | | | | | | | | | | ○ | For units, etc. |
| Filter □ 60 | SPC-0923 | | | | | | | | | | | ○ | Around head |
| Felt mat 2513X | SPC-0924 | | | | | | | | | | | ○ | |
| Felt mat for additional table | SPC-0925 | | | | | | | | | | | ○ | |

## ● End mill list



**Protruding length (mm)**
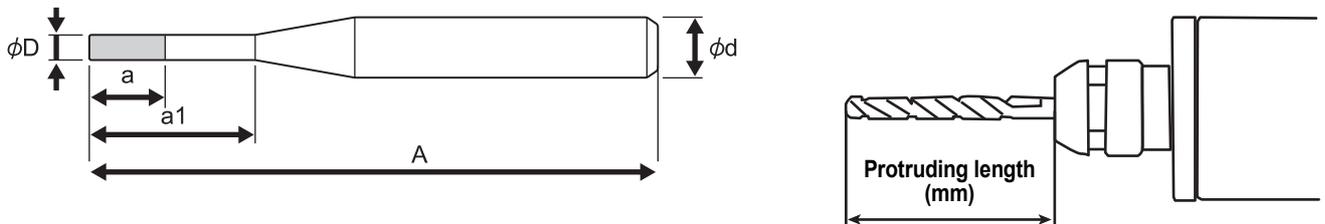
| End mill type | No. of cutting blades | Cutter diameter ($\phi$D) | Cutter length (a) | Effective length (a1) | Overall length (A) | Shank diameter ($\phi$d) | Protruding length (mm) | Max. rotation speed (× 1,000 rpm) | Groove cutting depth (mm) | Side face cutting depth (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| SPB-0067 | 2 | $\phi$3 | 9 mm | - | 60 | $\phi$6 | 21 | 40 | 1.5 | 4.5 |
| SPB-0068 | 2 | $\phi$3 | 12 mm | - | 50 | $\phi$6 | 23 | 40 | 1.5 | 4.5 |
| SPB-0069 | 2 | $\phi$4 | 8 mm | 24 mm | 70 | $\phi$6 | 36 | 30 | 2 | 6 |
| SPB-0070 | 2 | $\phi$6 | 12 mm | 42 mm | 80 | $\phi$6 | 46 | 30 | 3 | 9 |
| SPB-0071 | 2 | $\phi$6 | 12 mm | 63 mm | 120 | $\phi$6 | 66 | 30 | 3 | 9 |
| SPB-0072 | 1 | $\phi$4 | 8 mm | - | 50 | $\phi$6 | 16 | 40 | 2 | 6 |
| SPB-0074 | 1 | $\phi$3 | 6 mm | - | 50 | $\phi$6 | 16 | 40 | 1.5 | 4.5 |
| SPB-0103 | 1 | $\phi$6 | 12 mm | - | 50 | $\phi$6 | 21 | 40 | 3 | 9 |
| SPB-0104 | 1 | $\phi$6 | 22 mm | - | 58 | $\phi$6 | 31 | 40 | 3 | 9 |
| SPB-0105 | 1 | $\phi$6 | 32 mm | - | 100 | $\phi$6 | 46 | 30 | 3 | 9 |

## ● Collet chuck

| Model No. | Shank diameter |
|---|---|
| SPA-0369 | $\phi$6 |

**8-16**

# Supplies

● **Swivel cutter**



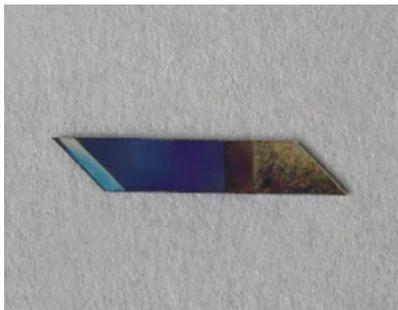| Part name | Cutter holder for swivel cutter | Part name | Swivel cutter blade for PVC sheet | Part name | Swivel cutter blade for small text |
|---|---|---|---|---|---|
| Part No. | SPA-0090 | Part No. | SPB-0001 | Part No. | SPB-0003 |
| Notes | | Notes | | Notes | |



| Part name | Swivel cutter blade for rubber sheet | Part name | Swivel cutter blade for reflective sheet | Part name | Swivel cutter blade for fluorescent sheet |
|---|---|---|---|---|---|
| Part No. | SPB-0005 | Part No. | SPB-0006 | Part No. | SPB-0007 |
| Notes | | Notes | | Notes | |



| Part name | Swivel cutter holder | Part name | Swivel cutter holder | Part name | Swivel cutter blade for PVC sheet, low pressure |
|---|---|---|---|---|---|
| Part No. | SPA-0001 | Part No. | SPA-0329 | Part No. | SPB-0030 |
| Notes | | Notes | | Notes | |

● **FBT flat blade (tool)**

| Part name | Titanium-coated blade 45° | Part name | Titanium-coated blade 30° | Part name | Titanium-coated blade 30° |
|---|---|---|---|---|---|
| Part No. | SPB-0008 | Part No. | SPB-0047 | Part No. | SPB-0050 |
| Notes | For T4 | Notes | For T4 | Notes | For T4 |

| Part name | Carbide blade 30° | Part name | High-speed steel blade 30° | Part name | Carbide blade 30° DLC |
|---|---|---|---|---|---|
| Part No. | SPB-0045 | Part No. | SPB-0043 | Part No. | SPB-0080 |
| Notes | For T4 | Notes | For T4 | Notes | For T4 |

| Part name | Carbide blade 45° DLC | Part name | Carbide blade 45° (25L) | Part name | Carbide design blade 30° |
|---|---|---|---|---|---|
| Part No. | SPB-0081 | Part No. | SPB-0093 | Part No. | SPB-0051 |
| Notes | For T4 | Notes | For T4 | Notes | For T6 |

| | | | | | |
|---|---|---|---|---|---|
|  | | | | | |
| Part name | Joint sheet carbide blade | Part name | | Part name | |
| Part No. | SPB-0063 | Part No. | | Part No. | |
| Notes | For T6 | Notes | | Notes | |

● **Reciprocating cutter**

| | | | | | |
|---|---|---|---|---|---|
|  | |  | |  | |
| Part name | Carbide blade 2° | Part name | Carbide blade 7×15 | Part name | Reciprocating cutter holder S06 |
| Part No. | SPB-0064 | Part No. | SPB-0075 | Part No. | SPA-0343 |
| Notes | For S06 | Notes | For S06 | Notes | For S06 |

| | | | | | |
|---|---|---|---|---|---|
|  | |  | |  | |
| Part name | 20 mm blade | Part name | Carbide blade 17° | Part name | Carbide blade 17° DLC |
| Part No. | SPB-0055 | Part No. | SPB-0065 | Part No. | SPB-0083 |
| Notes | For M06 | Notes | For M06 | Notes | For M06 |

| | | | | | |
|---|---|---|---|---|---|
|  | |  | |  | |
| Part name | Reciprocating cutter holder M06 | Part name | Carbide blade 25×5 | Part name | Carbide blade 25×5 DLC |
| Part No. | SPA-0344 | Part No. | SPB-0077 | Part No. | SPB-0078 |
| Notes | For M06 | Notes | For L06 | Notes | For L06 |

| | | | | | |
|---|---|---|---|---|---|
|  | |  | |  | |
| Part name | Carbide blade 25×5_F DLC | Part name | Reciprocating cutter holder L06 | Part name | Reciprocating cutter holder S10 |
| Part No. | SPB-0079 | Part No. | SPA-0345 | Part No. | SPA-0346 |
| Notes | For L06 | Notes | For L06 | Notes | For S10 |

| | | | | | |
|---|---|---|---|---|---|
|  | |  | |  | |
| Part name | Reciprocating cutter blade S10 carbide 2° × 50 mm | Part name | Reciprocating cutter blade S10 carbide 2° × 20 mm | Part name | 40 mm carbide blade for CRF (5 pcs) |
| Part No. | SPB-0094 | Part No. | SPB-0097 | Part No. | SPB-0056 |
| Notes | For S10 | Notes | For S10 | Notes | For S10 |

| Part name | Media holder unit L assy. | Part name | | Part name | |
|---|---|---|---|---|---|
| Part No. | SPA-0360 | Part No. | | Part No. | |
| Notes | | Notes | | Notes | |

● **Creasing roller**

| Part name | Creasing roller 16-CN | Part name | Creasing roller 16-DN | Part name | Creasing roller 26-T1 |
|---|---|---|---|---|---|
| Part No. | SPB-0098 | Part No. | SPB-0099 | Part No. | SPB-0100 |
| Notes | Crease 16 | Notes | Crease 16 | Notes | Crease 26 |

| Part name | Creasing roller 26-CR | Part name | Creasing roller 60-UN | Part name | |
|---|---|---|---|---|---|
| Part No. | SPB-0101 | Part No. | SPB-0102 | Part No. | |
| Notes | Crease 26 | Notes | Crease 60 | Notes | |

● **V-cut**
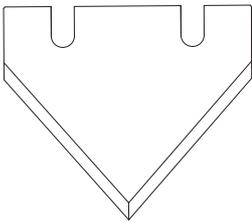


| Part name | V-cut blade 45 | Part name | | Part name | |
|---|---|---|---|---|---|
| Part No. | SPB-0095 | Part No. | | Part No. | |
| Notes | | Notes | | Notes | |

● **R10**



| Part name | End mill for resin | Part name | End mill for aluminum composite sheet | Part name | End mill for 15 mm channels |
|---|---|---|---|---|---|
| Part No. | SPB-0067 | Part No. | SPB-0068 | Part No. | SPB-0069 |
| Notes | | Notes | | Notes | |



| Part name | End mill for 30 mm channels | Part name | End mill for 50 mm channels | Part name | End mill for 5 mm acrylic |
|---|---|---|---|---|---|
| Part No. | SPB-0070 | Part No. | SPB-0071 | Part No. | SPB-0072 |
| Notes | | Notes | | Notes | |

| | | | | | |
|---|---|---|---|---|---|
|  | |  | |  | |
| Part name | End mill for 3 mm acrylic | Part name | End mill for 10 mm acrylic MDF | Part name | End mill for 20 mm acrylic MDF |
| Part No. | SPB-0074 | Part No. | SPB-0103 | Part No. | SPB-0104 |
| Notes | | Notes | | Notes | |

| | | | | | |
|---|---|---|---|---|---|
|  | | | | | |
| Part name | End mill for 30 mm MDF | Part name | | Part name | |
| Part No. | SPB-0105 | Part No. | | Part No. | |
| Notes | | Notes | | Notes | |

# Marker Pens Compatible with the CFX Series

| Manufacturer | Part name | Ink type | Notes |
|---|---|---|---|
| Pentel | Felt-tip pen | Water-based | Popular water-based pens |
| Pentel | Fine cardboard marker | Oil-based | For corrugated cardboard |
| Pentel | Medium cardboard marker | Oil-based | For corrugated cardboard |
| Pilot | Fine oil-based marker | Oil-based dye | |
| Pilot | Ultra fine oil-based marker | Oil-based dye | |
| Pilot | Permanent Marker 100 | Oil-based | Will not dry uncapped for a full day; economical |
| Pilot | Medium oil-based marker | Oil-based dye | |
| Sakura Color Products | My Name ultra fine | Oil-based | |
| Sakura Color Products | My Name | Oil-based | |
| Sakura Color Products | My Name fine | Oil-based | |
| Zebra | Mckee Pro fine special purpose DX | Oil-based pigment | Can be used on uneven or wet surfaces, or on smooth surfaces such as craft tape. |
| Sailor Pen Co. | Crafty | Oil-based | Can also write on coated surfaces such as craft tape. Not repelled by coatings; permanent, quick-drying, and durable. |

Mimaki printer firmware

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Appendix

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**CFX Series Operation Manual**