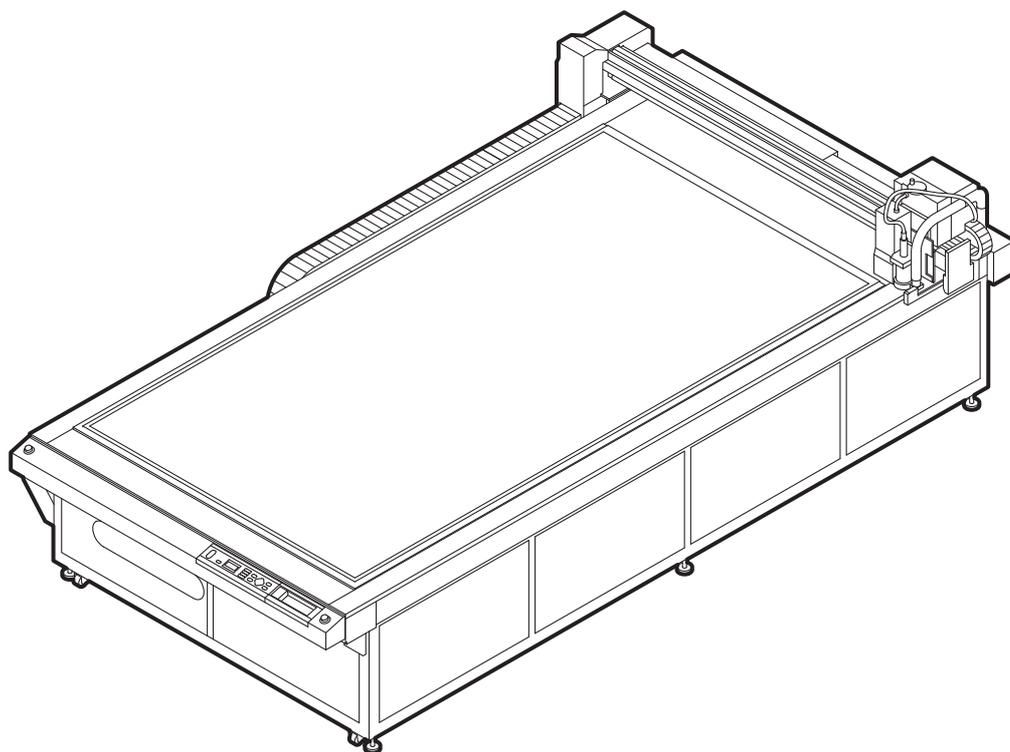


FLAT BED CUTTING PLOTTER

***CFB-1631***  
***CFB-1610***

OPERATION MANUAL



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## DISCLAIMER OF WARRANTY

- **DISCLAIMER OF WARRANTY :** THIS LIMITED WARRANTY OF MIMAKI SHALL BE THE SOLE AND EXCLUSIVE WARRANTY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS, AND MIMAKI NEITHER ASSUMES NOR AUTHORIZES DEALER TO ASSUME FOR IT ANY OTHER OBLIGATION OR LIABILITY OR MAKE ANY OTHER WARRANTY OR MAKE ANY OTHER WARRANTY IN CONNECTION WITH ANY PRODUCT WITHOUT MIMAKI'S PRIOR WRITTEN CONSENT. IN NO EVENT SHALL MIMAKI BE LIABLE FOR SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR FOR LOSS OF PROFITS OF DEALER OR CUSTOMERS OF ANY PRODUCT.
- Reproduction of this manual in whole or in part is strictly prohibited.

## FCC Statement (USA) & EN55022 (Europe)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Operation manual, may cause harmful interference to radio communications.

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

In the case where MIMAKI-recommended cable is not used for connection of this device, limits provided by FCC rules can be exceeded.

To prevent this, use of MIMAKI-recommended cable is essential for the connection of this plotter.

## Interference to televisions and radios

The product described in this manual generates high frequency when operating.

The product can interfere with radios and televisions if set up or commissioned under improper conditions.

The product is not guaranteed against any damage to specific-purpose radio and televisions.

The products interference with your radio or television will be checked by turning on/off the power switch of the product.

In the event that the product is the cause of interference, try to eliminate it by taking one of the following corrective measures or taking some of them in combination.

- Change the orientation of the antenna of the television set or radio to find a position without reception difficulty.
- Separate the television set or radio from this product.
- Plug the power cord of this product into an outlet which is isolated from power circuits connected to the television set or radio.

# Introduction

Thank you for purchasing a CF3 Series Flatbed Cutting Plotter.

This manual describes the CF3 Series Model TF2, Model R1, and Model M.

Carefully read this manual and then store it in a place where it can be easily reached.

## On This Operation Manual

- This manual describes the operation and maintenance of the CF3 Series Flatbed Cutting Plotter ("the unit").
- Carefully read this manual and then store it in a place where it can be easily reached.
- Ensure that this manual reaches the person using the unit.
- Every care was taken when writing this manual. Please contact your Mimaki representative if you discover any problems in the manual.
- We reserve the right to change this manual at any time, without notice.
- If this manual becomes unreadable due to fire or other damage, contact your Mimaki representative to purchase a new copy.



- This unit uses sharp blades. It can be extremely dangerous during operation. Never put your face or hands near the machine head. This can lead to severe cuts to your fingers or other body parts.

## Accessories

The accessories differ according to the type of head and the target application. Confirm the accessories supplied against the separate "ACCESSORIES". Contact your Mimaki representative immediately if anything is broken or missing.

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# Safety Precautions

## Symbols

Symbols are used in this Operation Manual for safe operation and for prevention of damage to the machine. The indicated sign is different depending on the content of caution. Symbols and their meanings are given below. Please follow these instructions as you read this manual.

### Examples of symbols

	Meaning
	Failure to observe the instructions given with this symbol can result in death or serious injuries to personnel. Be sure to read it carefully and use it properly.
	Failure to observe the instructions given with this symbol can result in injuries to personnel or damage to property.
	Important notes in use of this machine are given with this symbol. Understand the notes thoroughly to operate the machine properly.
	Useful information is given with this symbol. Refer to the information to operate the machine properly.
	Indicates the reference page for related contents.
	The symbol "  " indicates that the instructions must be observed as strictly as the CAUTION instructions (including DANGER and WARNING instructions). A sign representing a precaution (the sign shown at left warns of hazardous voltage) is shown in the triangle.
	The symbol "  " indicates that the action shown is prohibited. A sign representing a prohibited action (the sign shown at left prohibits disassembly) is shown in or around the circle.
	The symbol "  " indicates that the action shown must be taken without fail or the instructions must be observed without fail. A sign representing a particular instruction (the sign shown at left instructs to unplug the cable from the wall outlet) is shown in the circle.



## WARNING

<p><b>Do not disassemble or remodel the device</b></p>  <ul style="list-style-type: none"> <li>• Never disassemble or remodel the main unit of the plotter and the blower unit. Disassembling/remodeling any of them will result in electric shocks or breakdown of the device.</li> </ul> 	<p><b>Handling of the cable</b></p>  <ul style="list-style-type: none"> <li>• Take care not to damage, break or work on the power cable or communication cable. If a heavy matter is placed on the power cable, heated or drawn, the power cable can break to cause fire or electric shocks.</li> </ul>
<p><b>Do not use the device in damp places</b></p>  <ul style="list-style-type: none"> <li>• Avoid damp environments when putting the device into service. Do not splash water onto the device. High-humidity or water will give rise to fire, electric shocks or breakdown of the device.</li> </ul>	<p><b>Handling of tools</b></p>  <ul style="list-style-type: none"> <li>• Store cutter holders or blades in a place that is out of the reach of children. Never place cutter holders or blades in the tray on the operation panel.</li> </ul>
<p><b>Abnormal event occurs</b></p>   <ul style="list-style-type: none"> <li>• If the device is used under an abnormal condition where the device produces smoke or unpleasant smell, fire or electric shocks can result. Be sure to turn off the power switch immediately and detach the plug from the receptacle. Check first to be sure that the device no longer produces smoke, and contact a distributor in your district or MIMAKI office for repair. Never repair your device by yourself since it is very dangerous for you to do so.</li> </ul>	<p><b>Power supply and voltage</b></p>  <ul style="list-style-type: none"> <li>• This unit contains parts applied high voltage. Carrying out electrical work by those unauthorized for that work is prohibited.</li> <li>• To prevent electrical shock, be sure to set OFF the main power circuit breaker and disconnect the power plug before carrying out maintenance. For some units, capacitors may take one minute for discharging; therefore, start maintenance work three minutes after setting OFF the main power circuit breaker and disconnecting the power plug.</li> <li>• Be sure to carry out grounding work to prevent electrical shock.</li> <li>• Use the unit under the power specifications given. Be sure to connect the power cable plug to a convenient outlet grounded, or fire or electric shock might occur or it may cause electrical shock.</li> </ul>  <ul style="list-style-type: none"> <li>• The main power circuit breaker should be set ON only by personnel with sufficient knowledge about operations of this unit.</li> </ul>
<p><b>Leave maintenance to a serviceman</b></p>  <ul style="list-style-type: none"> <li>• Leave maintenance works to a serviceman whenever the device has broken. Never conduct maintenance works by yourself since the works are always accompanied by possible risks of electric shocks, etc.</li> </ul>	<p><b>Handling of the power cable</b></p>  <ul style="list-style-type: none"> <li>• Use a power cable attached to this unit.</li> <li>• Take care not to damage, break or work on the power cable. If a heavy matter is placed on the power cable, heated or drawn, the power cable can break to cause fire or electric shocks.</li> </ul>  <ul style="list-style-type: none"> <li>• The main power circuit breaker should be set ON only by personnel with sufficient knowledge about operations of this unit.</li> </ul>
<p><b>Preventive measure against dust</b></p>  <ul style="list-style-type: none"> <li>• When handling any dust-producing substance that will jeopardize the health of personnel, wear a mask or the like to prevent dust.</li> </ul>	<p><b>Grounding connection</b></p>  <ul style="list-style-type: none"> <li>• For this device, grounding connection is needed for prevention of an electric shock.</li> <li>• Be sure to carry out grounding work.</li> </ul>
<p><b>Safety measures</b></p>	
 <p>When processing flammable materials, please take the following safety measures.</p> <ul style="list-style-type: none"> <li>• Be sure to remove processing residues such as wood chips before starting processing.</li> <li>• Do not leave the machine in operation without operator.</li> <li>• Prepare a fire extinguisher nearby.</li> <li>• Do not place flammable materials near the machine.</li> </ul>	
<p><b>Replacing a fuse</b></p>	
 <ul style="list-style-type: none"> <li>• For prevention of an electric shock, be sure to turn off the main power switch and pull out the power supply inlet when replacing a fuse.</li> </ul>	

**For safe operation**

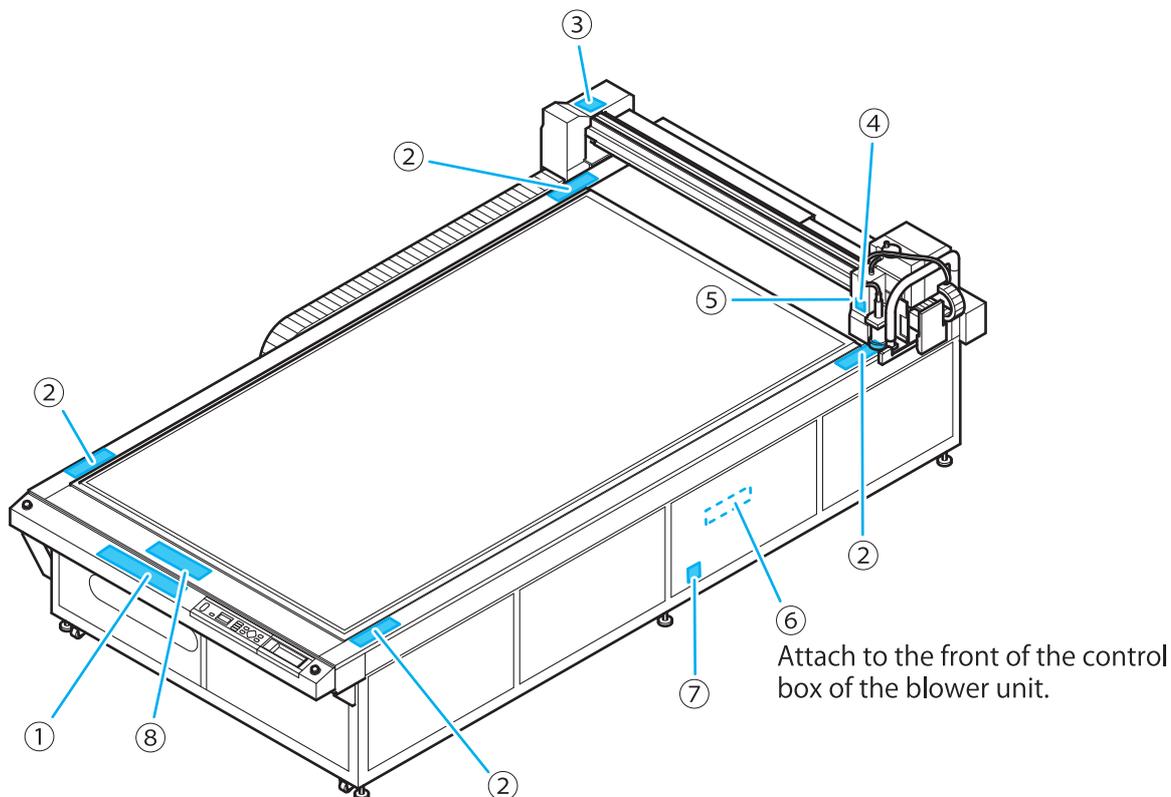
 <b>CAUTION</b>	
<b>Do not restart the power until 30 seconds after turn off</b>	
 <ul style="list-style-type: none"> <li>If the device is restarted, do not turn on the power until 30 seconds after turning off. The device may be caused faulty function.</li> </ul>	
<b>Do not put any matters on the cable</b>	<b>Do not move your face in front of cut panel</b>
 <ul style="list-style-type: none"> <li>Do not bend the power cable and the communication cable, and do not placed any matters. These cables may be broken and heated, the power cable can cause fire or electric shocks.</li> </ul>	 <ul style="list-style-type: none"> <li>Do not move your face and hands in front of the cut panel while the unit is working. The device can wind and touch your hairs or hands.</li> </ul>
<b>Do not dress baggy suits and accessories</b>	<b>The device is moved by our service engineer only</b>
 <ul style="list-style-type: none"> <li>Do not work with dressing baggy suits and any accessories, and also tie any long hairs.</li> </ul>	 <ul style="list-style-type: none"> <li>The device is too sensitive equipment, so in case if you require movement of the unit, please contact to our service engineer.</li> </ul>

**Precautions in installation**

 <b>CAUTION</b>	
<b>A place exposed to direct sunlight</b>	<b>A place that vibrates</b>
 <ul style="list-style-type: none"> <li>Do not install the device at a place where the temperature of the cut panel surface exceeds 60°C. The cut panel can deform or break down.</li> </ul>	 <ul style="list-style-type: none"> <li>The device will fail to give correct results if installed in a place that vibrates.</li> </ul>
<b>A place in which temperature and humidity</b>	<b>A place filled with dirt, dust or tobacco smoke</b>
 <ul style="list-style-type: none"> <li>Use the device under the following environment. Operating environment: 10 to 35 C 35 to 75 % (Rh)</li> </ul>	 <ul style="list-style-type: none"> <li>The plotter is a precision machine. Do not use it in a place that is filled with dirt and dust.</li> </ul>
<b>A plate that is not horizontal</b>	<b>Near flammable materials</b>
 <ul style="list-style-type: none"> <li>If the plotter is not leveled, the plotter will fail to give correct results. Also the tilted plotter can break.</li> </ul>	 <ul style="list-style-type: none"> <li>When the blower is used fully open, the exhaust port temperature becomes extremely high. Do not place flammable materials near the blower or in front of the exhaust port.</li> </ul>
<b>A place exposed to direct air blow from air conditioner., etc</b>	
 <ul style="list-style-type: none"> <li>Cutting quality could be adversely affected.</li> </ul>	

# Warning labels

Warning labels are stuck on the printer body. Be sure to fully understand the warning given on the labels. If a warning label is illegible due to stains or has come off, purchase a new one from your local distributor or our office.



Attach to the front of the control box of the blower unit.

<p>① Order No.(M902663)</p>	<table border="1"> <tr> <td></td> <td> <p><b>警告</b></p> <p>ヘッド移動中やリモートモードのときは、手や顔を近づけないこと。 カバーに当たり、ケガする原因になります。</p> </td> <td> <p><b>WARNING</b></p> <p>HAZARDOUS MOVING PARTS KEEP FINGERS AND OTHER BODY PARTS AWAY</p> </td> </tr> <tr> <td></td> <td> <p><b>AVERTISSEMENT</b></p> <p>PIECES MOBILES DANGEREUSES N'APPROCHEZ PAS VOS DOIGTS OU D'AUTRES PARTIES DU CORPS</p> </td> <td> <p><b>WARNING</b></p> <p>GEFÄHRLICH SICH BEWEGENDE TEILE HALTEN SIE FINGER UND ANDERE KÖRPERTEILE FERN</p> </td> </tr> </table>		<p><b>警告</b></p> <p>ヘッド移動中やリモートモードのときは、手や顔を近づけないこと。 カバーに当たり、ケガする原因になります。</p>	<p><b>WARNING</b></p> <p>HAZARDOUS MOVING PARTS KEEP FINGERS AND OTHER BODY PARTS AWAY</p>		<p><b>AVERTISSEMENT</b></p> <p>PIECES MOBILES DANGEREUSES N'APPROCHEZ PAS VOS DOIGTS OU D'AUTRES PARTIES DU CORPS</p>	<p><b>WARNING</b></p> <p>GEFÄHRLICH SICH BEWEGENDE TEILE HALTEN SIE FINGER UND ANDERE KÖRPERTEILE FERN</p>
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<p>② Order No.(M905672)</p>	<table border="1"> <tr> <td></td> <td> <p><b>CAUTION</b></p> <p>RISK OF GETTING TRAPPED do not insert hands</p> </td> <td> <p><b>VORSICHT</b></p> <p>VERLETZUNGSGEFAHR Führen Sie Ihre Hände nicht in das Gerät ein.</p> </td> <td> <p><b>ATTENTION</b></p> <p>RISQUE DE BLESSURE Ne pas introduire vos mains dans l'appareil.</p> </td> <td> <p><b>注意</b></p> <p>はさまれ注意 ■運転中は稼働部に手を触れないこと。 ■カバーを外したまま運転しないこと。 ■運転中はカバーの内側に手をいれないこと。</p> </td> </tr> </table>		<p><b>CAUTION</b></p> <p>RISK OF GETTING TRAPPED do not insert hands</p>	<p><b>VORSICHT</b></p> <p>VERLETZUNGSGEFAHR Führen Sie Ihre Hände nicht in das Gerät ein.</p>	<p><b>ATTENTION</b></p> <p>RISQUE DE BLESSURE Ne pas introduire vos mains dans l'appareil.</p>	<p><b>注意</b></p> <p>はさまれ注意 ■運転中は稼働部に手を触れないこと。 ■カバーを外したまま運転しないこと。 ■運転中はカバーの内側に手をいれないこと。</p>	
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<p>③ Order No.(M902667)</p>	<p>④ Order No.(M905694)</p>	<p>⑤ Order No. (M905871)</p>					
<p>⑥ Order No.(M905624)</p>	<p>⑦ Order No.(M903239)</p>						

⑧ Order No. (M915322)

 警告	 WARNING
<p>可燃性の材料を加工する際は、以下の安全対策をしてください。</p> <ul style="list-style-type: none"> <li>・ 木屑などの加工残留物は、加工開始前に確実に取り除いてください。</li> <li>・ 稼働中の機械から離れないうでください。</li> <li>・ 近くに消火器を用意してください。</li> <li>・ 機械の近くに可燃性の材料を置かないでください。</li> </ul>	<p>When processing flammable materials, please take the following safety measures.</p> <ul style="list-style-type: none"> <li>・ Be sure to remove processing residues such as wood chips before starting processing.</li> <li>・ Do not leave the machine in operation without operator.</li> <li>・ Prepare a fire extinguisher nearby.</li> <li>・ Do not place flammable materials near the machine.</li> </ul>
 AVERTISSEMENT	 WARNUNG
<p>Lors du traitement de matières inflammables, veuillez prendre les mesures de sécurité suivantes.</p> <ul style="list-style-type: none"> <li>・ S'assurer de retirer les résidus de traitement, tels que les copeaux de bois, avant de démarrer le traitement.</li> <li>・ Ne pas laisser la machine en fonctionnement sans opérateur.</li> <li>・ Préparer un extincteur à proximité.</li> <li>・ Ne pas placer de matériaux inflammables à proximité de la machine.</li> </ul>	<p>Bitte treffen Sie bei der Verarbeitung von brennbaren Materialien die folgenden Vorkehrungen.</p> <ul style="list-style-type: none"> <li>・ Entfernen Sie unbedingt Rückstände wie etwa Holzspäne, bevor Sie die Verarbeitung beginnen.</li> <li>・ Lassen Sie die Maschine nicht ohne Bediener in Betrieb.</li> <li>・ Halten Sie einen Feuerlöscher in der Nähe bereit.</li> <li>・ Lagern Sie keine brennbaren Materialien in der Nähe der Maschine.</li> </ul>

# How to Read this Manual

Function outlines using text and illustrations.

Set values or precautions that should be understood before operation.

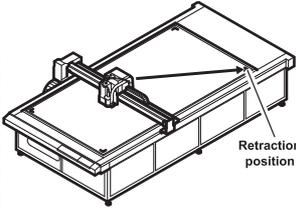
The page title.

Indicates the model to which the current page is applicable.

## Setting Automatic Head Retraction

Sets the time before the head begins to retract to the retraction position when cutting (drawing) of data from the PC is complete.

Item	Set value
OFF	No automatic retraction
1 s	Head moves to the retraction position one second after cutting (drawing) is complete.
3 s	Head moves to the retraction position three seconds after cutting (drawing) is complete.



R1  
TF2  
M

Setup

- 1** Display the third page of the local menu.

  - Press **[PAGE]** several times.

[ LOCAL ] 3 / 5  
 INTERFACE --->  
 MODE SET --->  
 SELF TEST --->
- 2** Press **[F2]** and select [MODE SET].

<MODE SET> 1 / 7  
 Z STROKE 7mm>  
 MULTI-PASS --->  
 VACUUM --->
- 3** Display the second page of the MODE SET menu.

  - Press **[PAGE]** several times.

<MODE SET> 2 / 7  
 AUTO VIEW OFF>  
 DUMMY CUT OFF>  
 ONE STROKE OFF>
- 4** Press **[F1]** and select the [AUTO VIEW] set value.

  - Set values: OFF, 1s, 2s
- 5** Press **[END]**

  - The settings are saved.
  - Press **[CE]** if you do not want to save the settings.

The head always automatically returns to the retraction position after cutting (drawing) or copying the internal sample data.

1-41

Number of an operation sequence.

Indicates a screen display.

Shows buttons in text, surrounded by .

Gives hints and precautions about operation.

Page number (Section 1, Page 41)

# Chapter 1

## Setup



### This Section....

... describes the setup operations required to connect the unit to a PC after unpacking it.

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# Installation

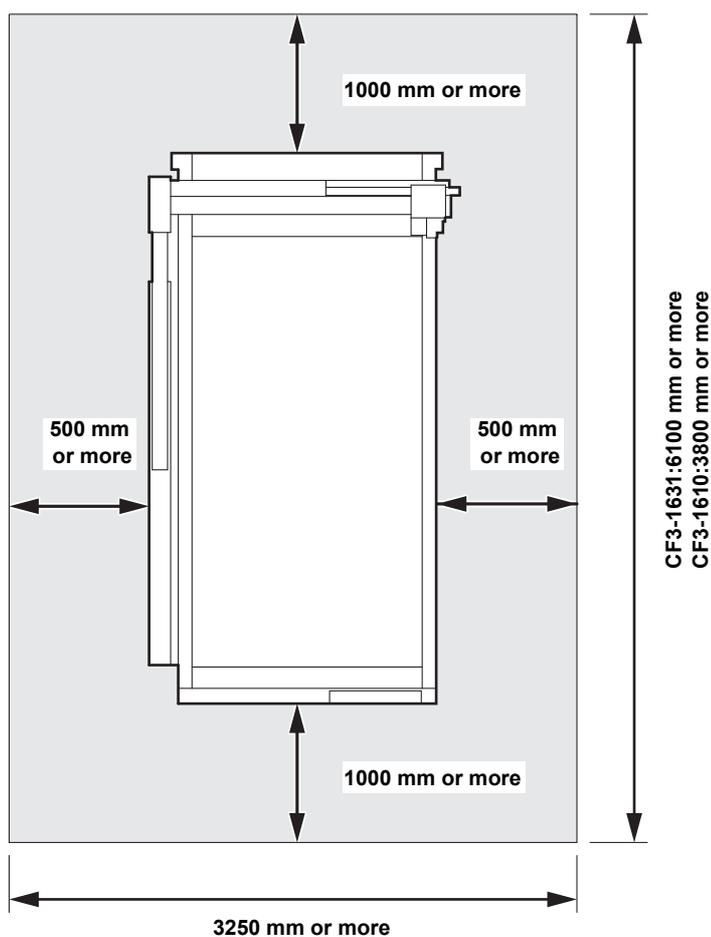


Install the unit in a location where the following installation space is available.



- Allow no objects inside the installation space. These may cause you to trip.
- Install the unit in a well-ventilated location. Using the plotter in a sealed room may result in nausea due to exhaust fumes from the blower.
- A ceiling height of at least 2300 mm above the floor is required.

Model	Width	Depth	Height	Total weight
CF3-1631	2250 mm (88.6 in)	4120 mm (162.2 in)	1320 mm (52.0 in)	Approx. 1050 kg (2314.9 lb)
CF3-1610	2250 mm (88.6 in)	1860 mm (73.2 in)	1320 mm (52.0 in)	Approx. 600 kg (1322.8 lb)



- This unit cannot be installed by the customer. Its installation should be entrusted to our service personnel or your electrical contractor.



- Be sure to carry out grounding work.



- In order to prevent electrical shock, carrying out electrical work by those unauthorized for that work is prohibited.

## Installing the Optional Blower Unit

It is extremely dangerous for the customer to attempt to install or connect the optional blower unit. Always contact your Mimaki representative to install or connect the blower unit.

# Names and Functions of Parts

## Main Unit

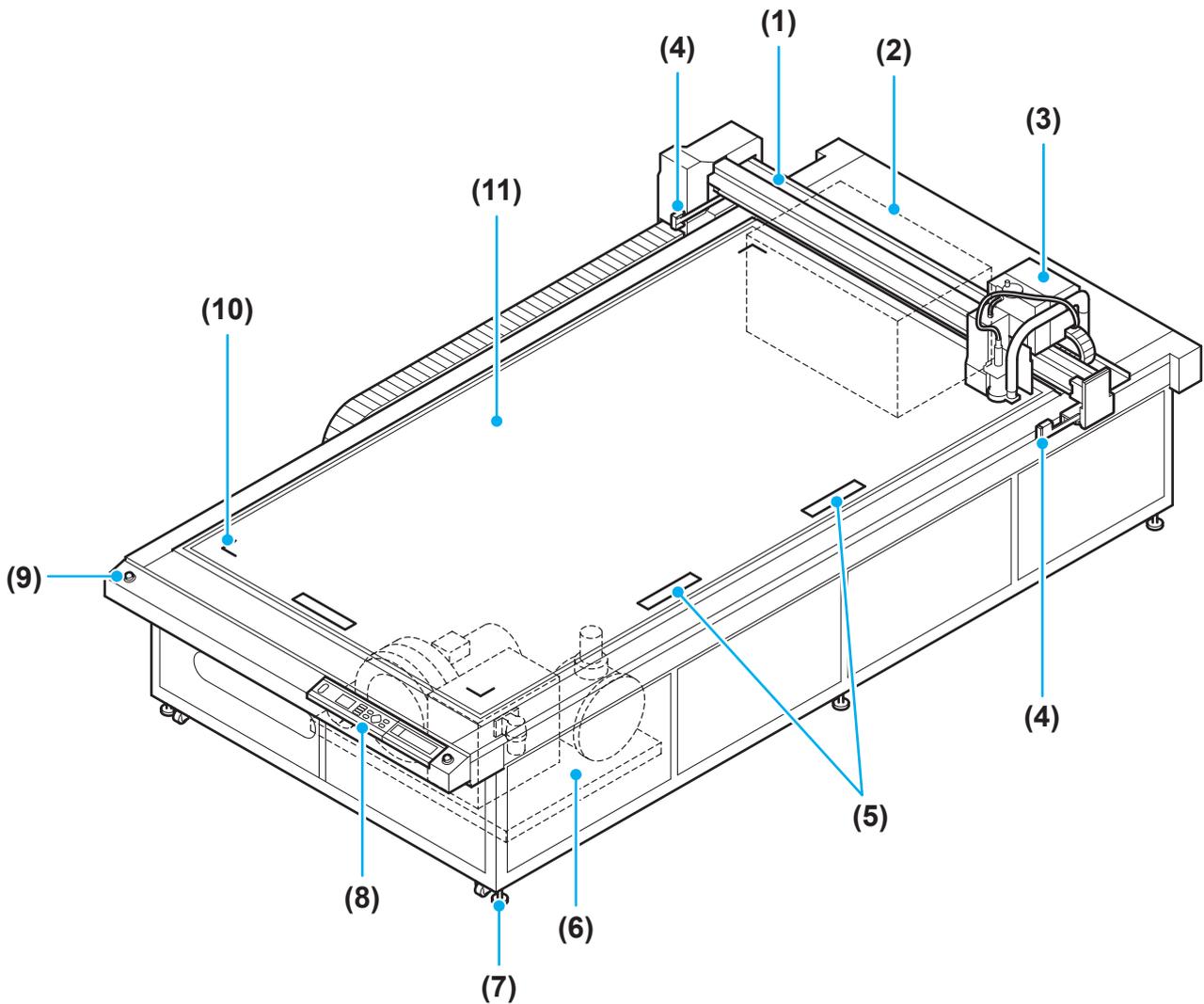
R1

TF2

M

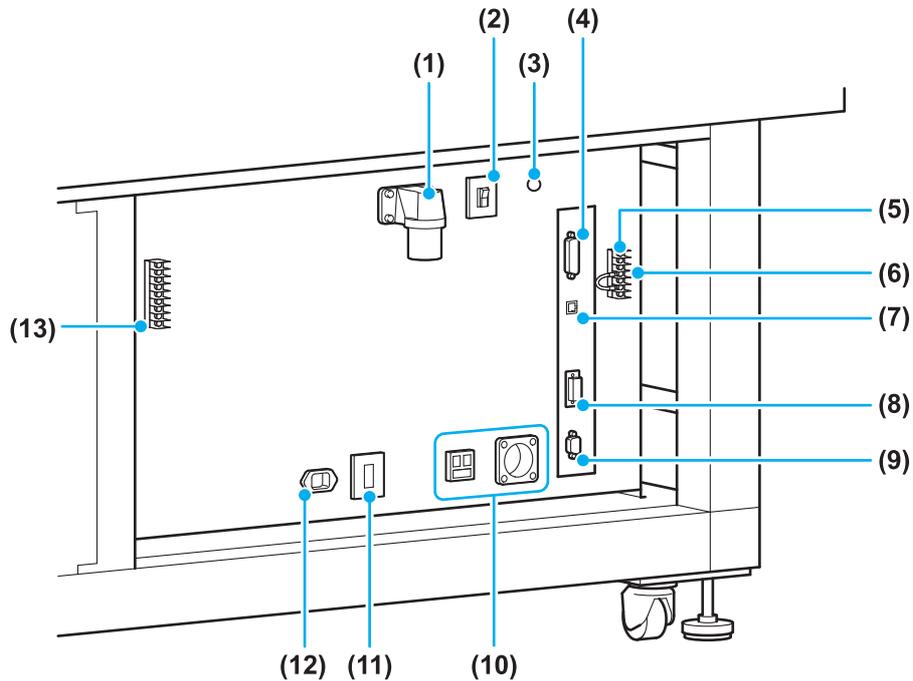
1

Setup



	Name	Function
(1)	Y bar	Moves the head in the Y direction.
(2)	Electrical box	Contains PCBs and other electronics.
(3)	Head	Holds a variety of tools. The mountable tool depends on the head.
(4)	Area sensor	Checks whether there is an obstruction between the left and right area sensors of the Y bar. The power will be turned OFF automatically when an obstruction is detected.
(5)	Work guide plates	Guides for mounting the workpiece. (☞ P.1-16)
(6)	Blower Unit (option)	Provides vacuum adhesion of the workpiece on the cutting panel.
(7)	Adjustable feet	Adjust the leg height to maintain the cutting panel surface horizontal.
(8)	Operation panel	Makes the settings required for the unit. (☞ P.1-8)
(9)	EMERGENCY switch	Press in the event of an emergency. The power is forcibly cut to stop unit operation.
(10)	Origin position mark	Indicates the maximum effective cutting area.
(11)	Cutting panel	Holds the workpiece. It offers a regular array of small holes for vacuum adhesion. (☞ P.1-16)

## Electrical Box



	Name	Function
(1)	Power inlet	Connector for the plotter power cable.
(2)	Main power switch	Turns the unit power ON / OFF. Normally, leave ON. Turn OFF when doing maintenance.
(3)	Power lamp	Lights when the main power switch is ON.
(4)	RS-232C interface	RS-232C interface connector (☞ P.1-10)
(5)	External I/O terminals	Connector for the unit emergency stop sequence.
(6)	Fuse holder	Holds a glass tube fuse. (☞ P.6-31)
(7)	USB interface	USB 2.0 interface connector (☞ P.1-10)
(8)	Blower signal connector	Connects to the interior of the electrical box.
(9)	Option connector	Connector to handle special applications.
(10)	Service inlet	Inlet to supply power to the dust collector. (☞ P.1-14) Select the socket according to the power supply specification used.
(11)	Power switch for the service socket	Turns the power supply to the dust collector ON/OFF. Normally, leave ON. (☞ P.1-14)
(12)	Service socket	Connects to the dust collector. (☞ P.1-14)
(13)	Blower control terminals	Connect to the optional blower unit with signal wires

## Head

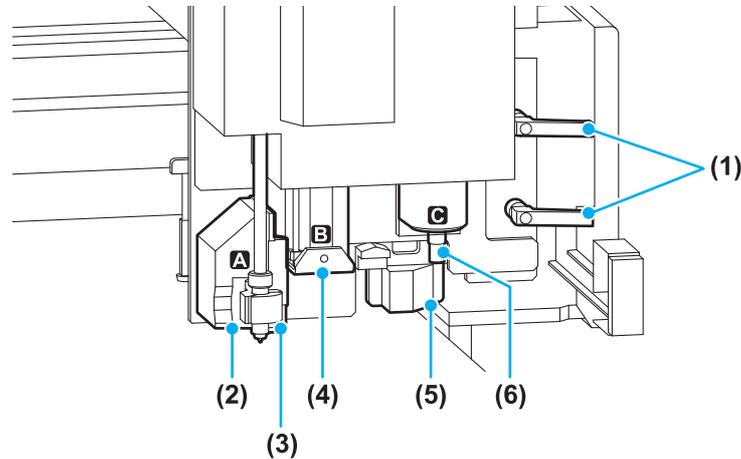
### For Model R1

R1

1

Setup

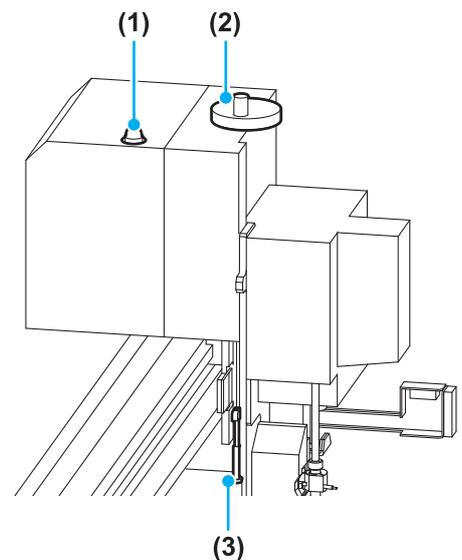
#### Front



	Name	Function
(1)	Head fixing screws	Fix the head to the Y bar. Loosen these screws to adjust the head height.
(2)	Unit A	Holds the pen and swivel blade. (☞ P.1-19)
(3)	Light pointer	Used for positioning to read register marks and setting the origin position.
(4)	Unit B	Mounts the reciprocating cutter holder.
(5)	Register mark sensor	Sensor to detect register marks.
(6)	Unit C	Mounts a grid roller or cutter holder (☞ P.1-24).

#### Left Side

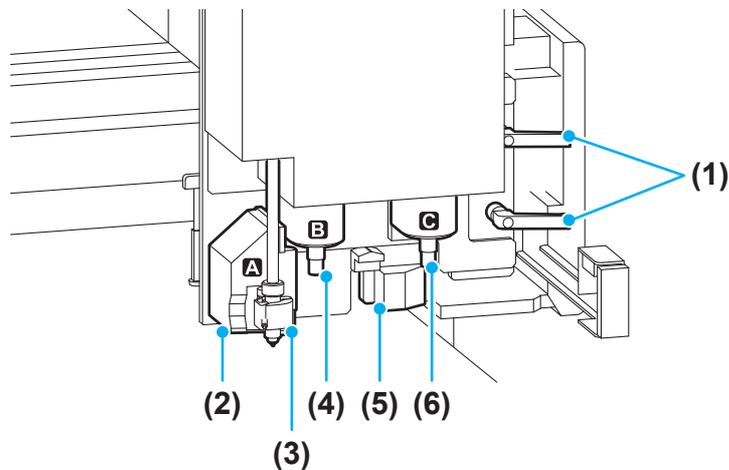
	Name	Function
(1)	Warning lamp	Lights when the reciprocating cutter is oscillating.
(2)	Height-adjustment dial	Adjusts the height of the head.
(3)	Height-adjustment bar	Adjusts the head height according to the thickness of the workpiece.



## For Model TF2

TF2

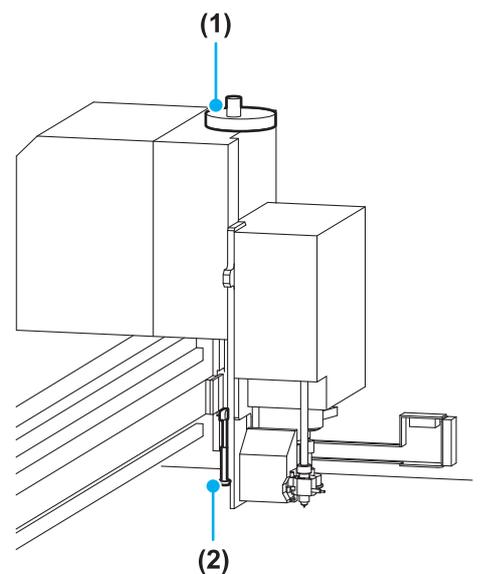
### Front



	Name	Function
(1)	Head fixing screws	Fix the head to the Y bar. Loosen these screws to adjust the head height.
(2)	Unit A	Holds the pen and swivel blade. (☞ P.1-19)
(3)	Light pointer	Used for positioning to read register marks and setting the origin position.
(4)	Unit B	Mounts the low-pressure cutter.
(5)	Register mark sensor	Sensor to detect register marks.
(6)	Unit C	Mounts a grid roller or high-pressure cutter.

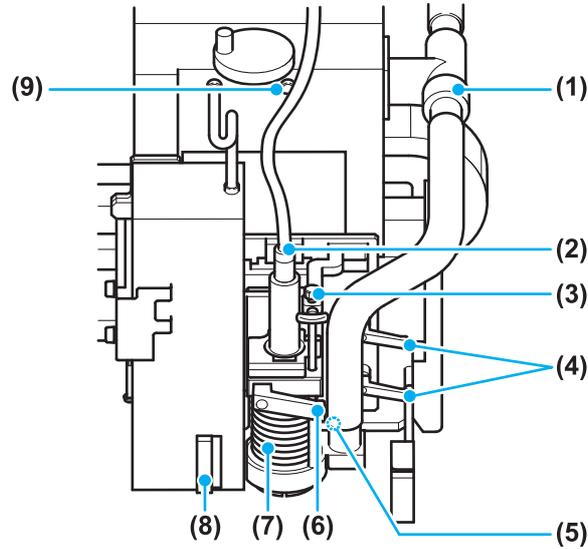
### Left Side

	Name	Function
(1)	Height-adjustment dial	Adjusts the height of the head.
(2)	Height-adjustment bar	Adjusts the head height according to the thickness of the workpiece.



## For Model M

### Front



M

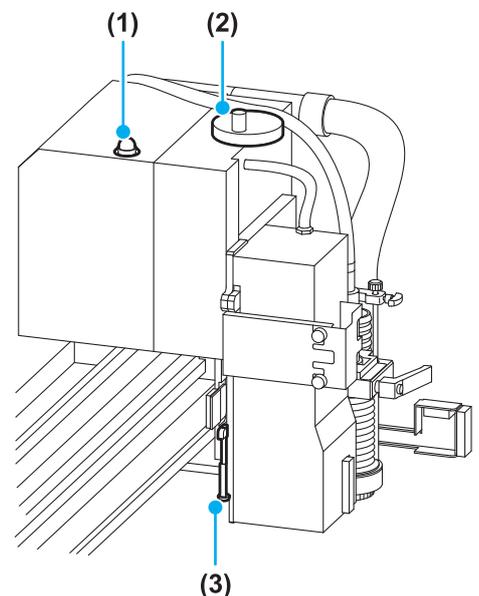
1

Setup

	Name	Function
(1)	Dust-collector adjusting window	Adjusts the performance of dust collection. (☞ P.2-33)
(2)	Spindle holder	Mounts the spindle motor. (☞ P.1-27)
(3)	Brush positioning rod	Adjusts the position of dust collecting brush. (☞ P.3-18)
(4)	Head fixing screws	Fix the head to the Y bar. Loosen these screws to adjust the head height.
(5)	Register mark sensor	Sensor to detect register marks.
(6)	Spindle fixing screws	Fix the spindle to the head. (☞ P.1-27)
(7)	Dust collector	Sucks in the dust produced by cutting.
(8)	Light pointer	Used for positioning to read register marks and setting the origin position.
(9)	Auxiliary air duster	Blows dust from the heads and operation panel.

### Left Side

	Name	Function
(1)	Warning lamp	Lights when the spindle is rotating.
(2)	Height-adjustment dial	Adjusts the height of the head.
(3)	Height-adjustment bar	Adjusts the head height according to the thickness of the workpiece.



# Operation Panel

R1

TF2

M

**Display**  
Displays the unit status and setup menus.

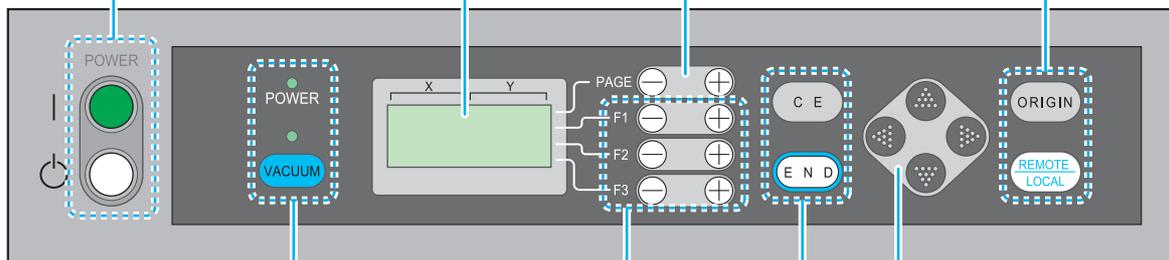
**ORIGIN key**  
Sets the drawing ORIGIN point on the unit cutting area.

**REMOTE/LOCAL key**  
Switches the unit between the remote status and local status.

**POWER ON switch**  
Press to turn on the unit power.  
(☞ P.1-11)

**POWER OFF switch**  
Press to turn off the unit power.  
(☞ P.1-11)

**PAGE keys**  
Displays the next or previous page.



**POWER lamp**  
The green lamp lights when the unit power is ON.

**VACUUM key**  
Turns vacuum adhesion of the workpiece on or off (☞ P.2-6). The green lamp lights when the vacuum is ON.

**Jog keys**  
Move the head in the direction of the arrow, when the local menu is displayed.

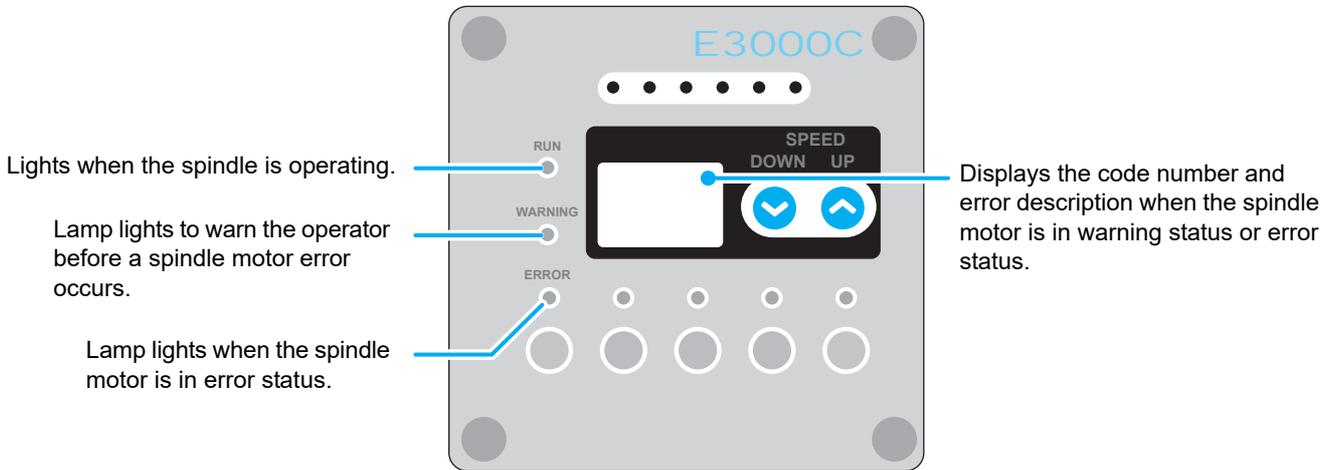
**CE key**  
Cancels a selection (clears data, copying, etc.) or reverts to the previous level without saving entered values.

**END key**  
Saves the entered values.

**FUNCTION keys**  
Select functions on the local menu and set values.

## Spindle Controller

The spindle controller is located on the left side of the unit.  
Check the condition from the viewing window of the left side cover.



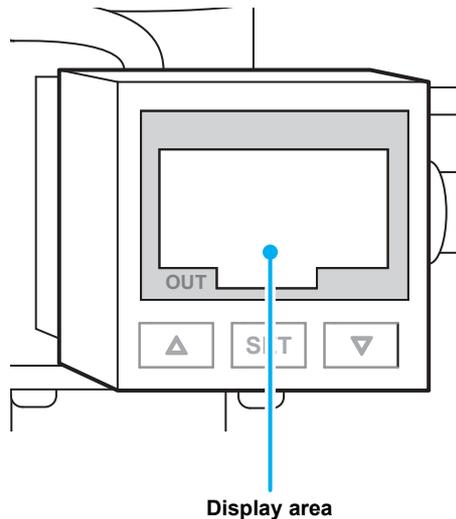
M

1

Setup

## Pressure Display

The pressure display is located on the left side of the unit.  
Check the condition from the viewing window of the left side cover.



# Cable Connections

R1

TF2

M



- Turn OFF (☞ P.1-11) the power before connecting the blower signal cable, RS-232C interface cable, or USB interface cable. Failure to turn off the power may result in electric shocks or damage to the unit.

## Connecting the Power Cable



- Connection work at the distribution board is required to provide the power supply for this unit.
- The customer cannot connect the unit power cable. Contact your Mimaki representative to arrange for connection of the power cable.
- Similarly, contact your Mimaki representative to arrange for connection of the power cable when moving the unit to another location.
- Mimaki bears no responsibility for problems arising if the customer connects the power cable without the assistance of a Mimaki technician.

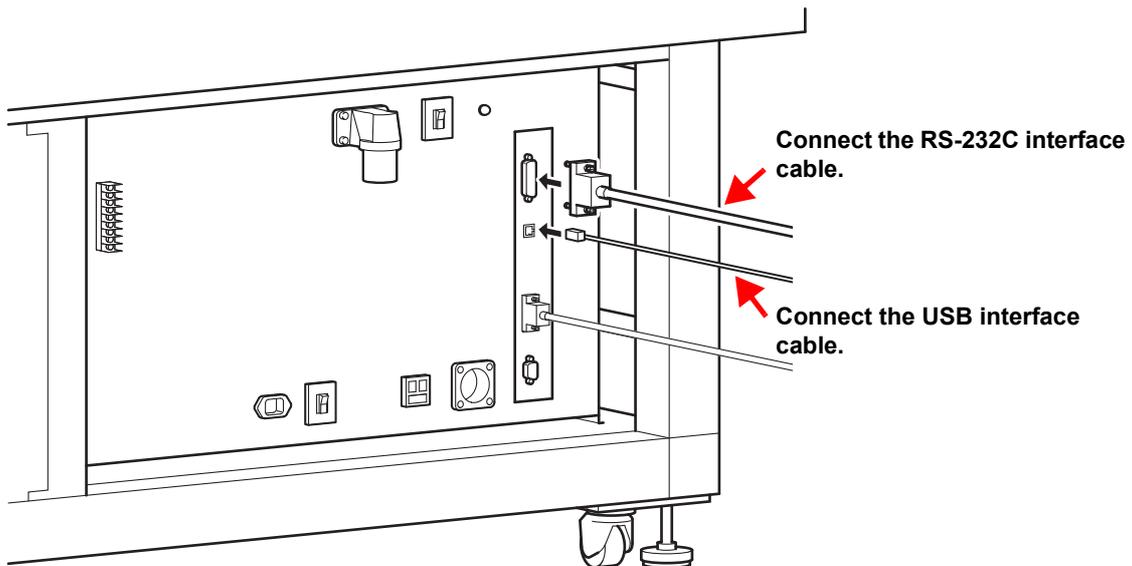
## Connecting the Blower Signal Cable

It is extremely dangerous for the customer to attempt to install or connect the optional blower unit. Always contact your Mimaki representative to connect the blower unit.

## Connecting the Interface Cable

The unit offers an RS-232C interface and USB interface as standard. Use an RS-232C interface cable recommended by Mimaki or one that suits the PC you are using.

- Turn off the plotter and PC before connecting the RS-232C interface cable.



# Turning the Power ON/OFF

R1  
TF2  
M



- While the power is ON, do not place objects other than the workpiece on the cutting panel. When the power is turned ON, the head moves to the upper-right retraction point. The head may be damaged if it hits an object.
- Wait at least 30 seconds after turning OFF the power before turning the power ON again. Failure to do so may result in unit malfunctions.

## Turning the Power ON

1

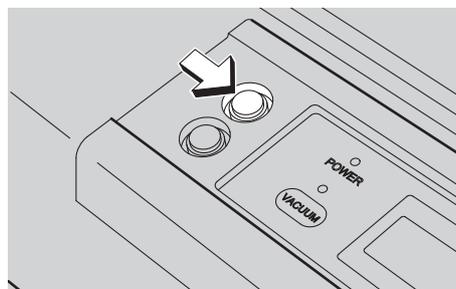
### Check for objects on the cutting panel.

- Remove any objects before turning ON the power.

2

### Press the POWER ON switch.

- The green POWER lamp lights. The head moves to the retraction point at the upper-right of the cutting panel.
- The first page of the local menu appears.



1

Setup

## Turning the Power OFF

Before turning OFF the power, confirm that no data is being received and no un-output data remains.

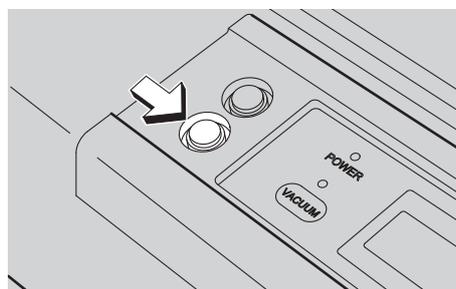
1

### Turn off the connected PC.

2

### Press the POWER OFF switch.

- The unit turns off after "POWER DOWN WAIT" is displayed and the POWER lamp goes out.



## Checking Uncut Data

To cut the data	(1) Press <b>REMOTE/LOCAL</b> to select remote status. (2) Received data volume is displayed and cutting (drawing) starts.
To delete the data	(1) Press <b>REMOTE/LOCAL</b> to select local status. (2) Clear the data. (☞ P.2-34)

# Emergency Stop

R1

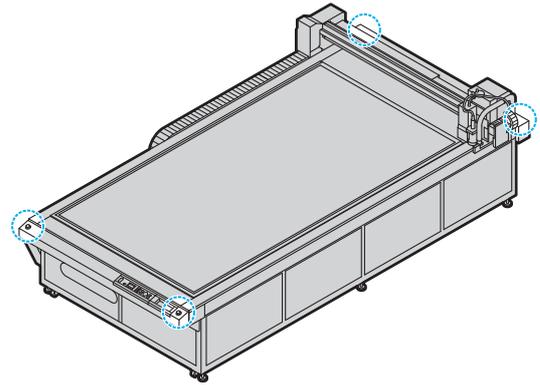
TF2

M

The emergency stop is used when an emergency situation arises.

Two EMERGENCY switches are provided.

Two at the front and two at the rear of the unit.

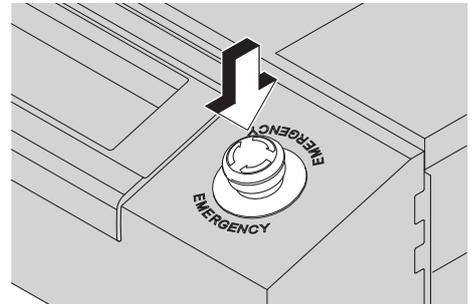


## Applying an Emergency Stop

1

**Press the EMERGENCY switch.**

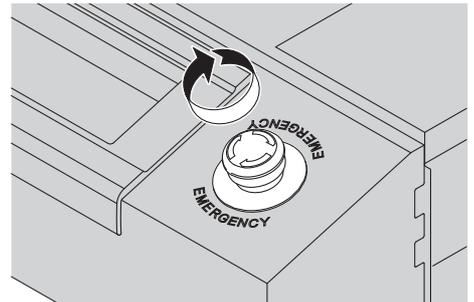
- Operation stops and the unit turns off.



## Resetting an Emergency Stop

1

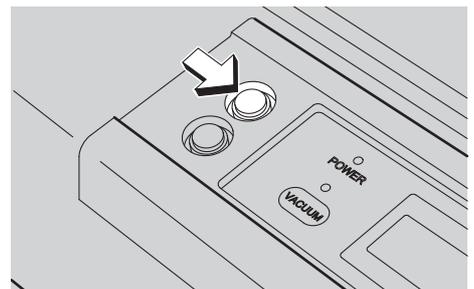
**Turn the EMERGENCY switch clockwise to unlock it.**



2

**Press the POWER ON switch.**

- Unit operation starts.



**Important!**

- Wait at least 30 seconds after turning OFF the power before resetting an emergency stop. Failure to do so may result in unit malfunctions.

# Compressed Air Connection

A compressed air connection is required for Model M.

**Important!**

- A compressor and air hoses are required to connect the compressed air supply.
- The compressor and air hoses are not available as options. They should be provided by the customer. Use air hoses with 8 mm connector bore diameter.
- The compressed air must meet the following conditions.  
**Pressure** : 0.4 MPa     **Flowrate** : 50 L/min  
**Clean, dry air** (Air containing oil or moisture can lead to damage.)

M

1

Setup

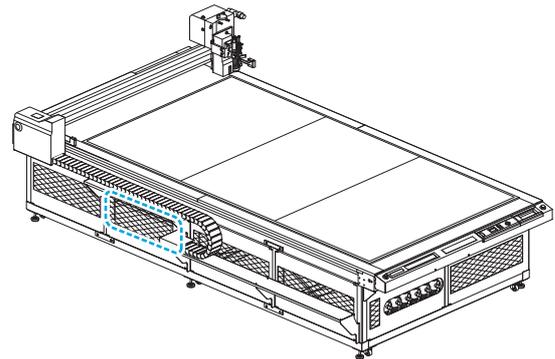
## Checking the Compressed Air Pressure

To ensure safe and stable use of the unit, periodically check the compressed air supply.

Pressure display is located at the position shown in the diagram.

**Hint!**

- When the option ZS sensor is mounted, remove the ZS sensor and check it.



1

**On the first page of the local menu, select [Z ORIGIN].**

- Press **(F1 +)** and select.

[ LOCAL ]	1 / 5
Z ORIGIN	--->
CONDITION	--->
TEST CUT	--->

2

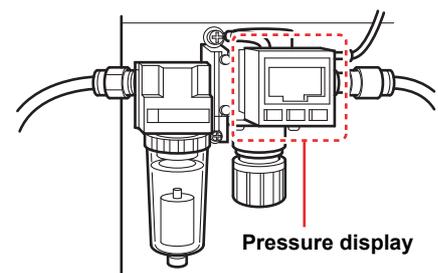
**Press **(F1 +)** to rotate the router.**

- Press **(F1 +)** again to stop rotation.

3

**Check the compressed air pressure.**

- Look at the pressure display to check the compressed air pressure.
- Adjust the pressure if the pressure display does not indicate 0.33 MPa.
- After checking, press **(END)**.



## Drain Bleed

When oil or water collects in the regulator, it bleeds automatically. You are recommended to spread a towel under the regulator.

# Dust Collector Connections

A commercially available dust collector must be connected to Model M to collect the dust generated during cutting.

**Important!**

- The dust collector is not available as an option. Provide a dust collector that meets the following conditions:

**Permits continuous operation**

**Power consumption 1 KW min.**

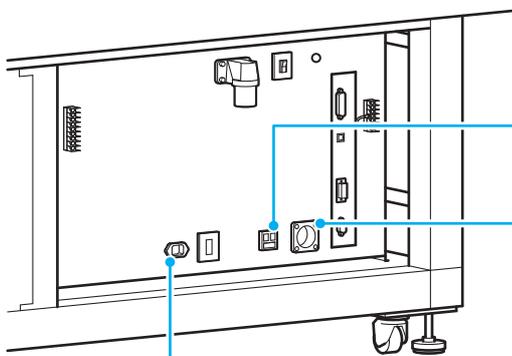
**Does not have self-hold switches**

- The dust collector switch must remain ON permanently. If the switch is not ON, dust collector operation will not start when the unit vacuum operation starts.
- The dust collector operation is interlocked with the plotter vacuum operation. When vacuum adhesion starts, the dust collector turns ON. When the vacuum turns off or the workpiece is released, the dust collector automatically turns OFF.

## Precautions for Dust Collector Connections

**Important!**

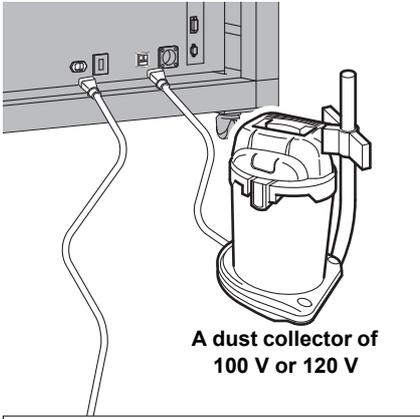
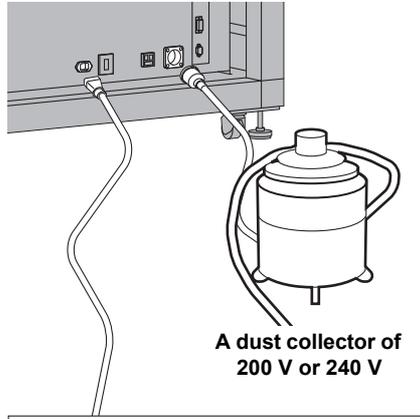
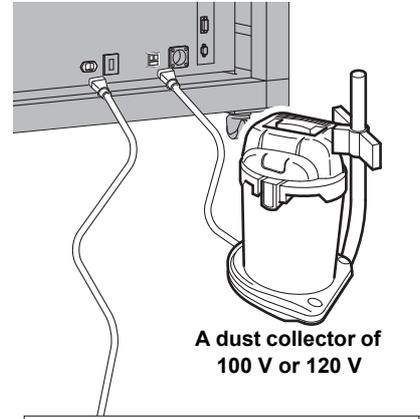
- Two types of power outlet are available for dust collector connections: 100 V and 200 V. Make the connection that matches the voltage of the dust collector that is being connected.



Connect the power cable to a power supply that is of the same voltage as the dust collector.

- The voltage from the power cable for dust collection cannot be automatically converted and output to the voltage of the connected dust collector. Be certain to connect a dust collector that matches the power supply voltage.

## Correct Connections and Incorrect Connections

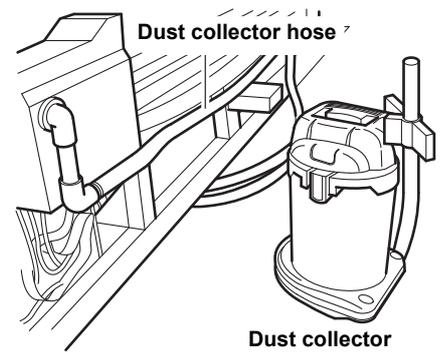
Connection of a dust collector of 100 V to 120 V	Connection of a dust collector of 200 V to 240 V	Incorrect connection
 <p data-bbox="316 1888 512 1939">A dust collector of 100 V or 120 V</p> <div data-bbox="129 1982 549 2096">  <p data-bbox="217 1984 512 2078">Connect to the same voltage (100 V or 120 V) as the dust collector that is being connected.</p> </div>	 <p data-bbox="783 1888 979 1939">A dust collector of 200 V or 240 V</p> <div data-bbox="580 1982 1000 2096">  <p data-bbox="668 1984 963 2078">Connect to the same voltage (200 V or 240 V) as the dust collector that is being connected.</p> </div>	 <p data-bbox="1241 1888 1437 1939">A dust collector of 100 V or 120 V</p> <div data-bbox="1038 1982 1458 2096">  <p data-bbox="1142 1984 1437 2078">Connect to a different voltage (200 V or 240 V) from the dust collector that is being connected.</p> </div>

## Connecting the Dust Collector

# 1

### Connect the dust collector hose to the dust collector.

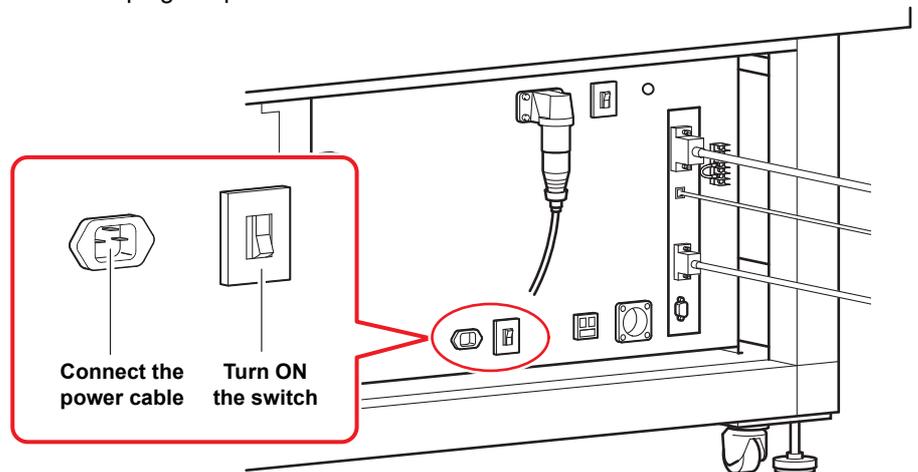
- Connect the end of the dust collector hose on the right side of the plotter unit to the dust collector.


**M**
**1**
**Setup**

# 2

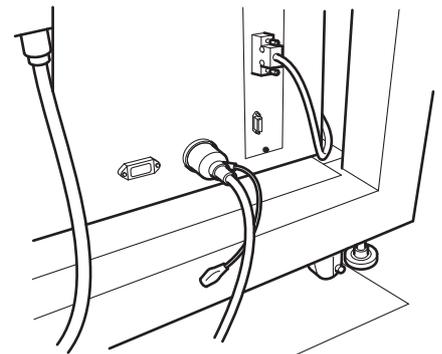
### Connect the dust collector power cable and turn ON the switch.

- Go to the rear of the unit and plug the power cable into the service socket.



# 3

### Insert the dust collector plug into the dust collector socket.



# 4

### Turn ON the dust collector.

# 5

### Press **VACUUM**.

# 6

### Press **F3 (+)** and select **VACUUM**.

- Vacuum adhesion starts.
- The dust collector operation starts as vacuum adhesion starts.

# Preparing the Cutting Panel

R1

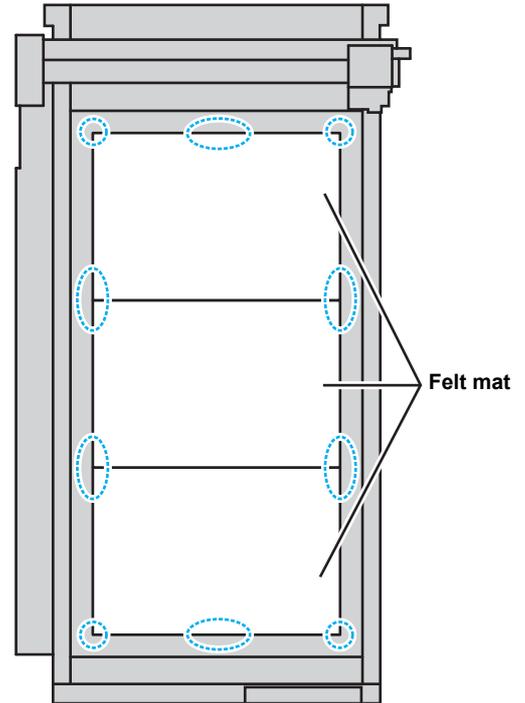
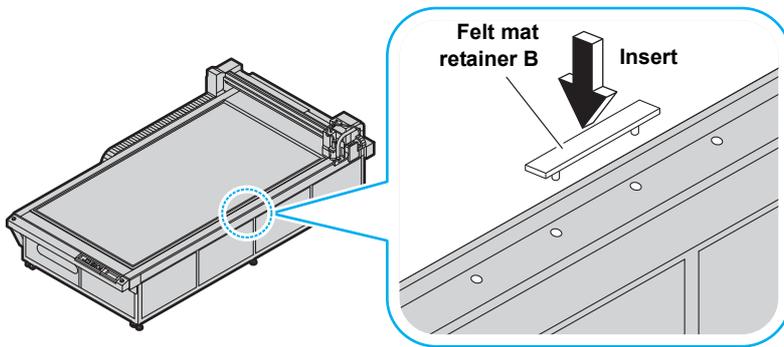
TF2

M

## Attach the felt mat (Models R1, M).

If using Model R1 or Model M, attach the felt mat to the cutting panel.

- (1) Put the felt mat on the cutting panel.
- (2) Insert a felt mat retainer B into the holes at each edge of the cutting panel.
  - Insert the felt mat retainers B along the edges of the felt mat.
  - Set felt mat retainers on the positions circled in the right. (6 places for CF3-1610)



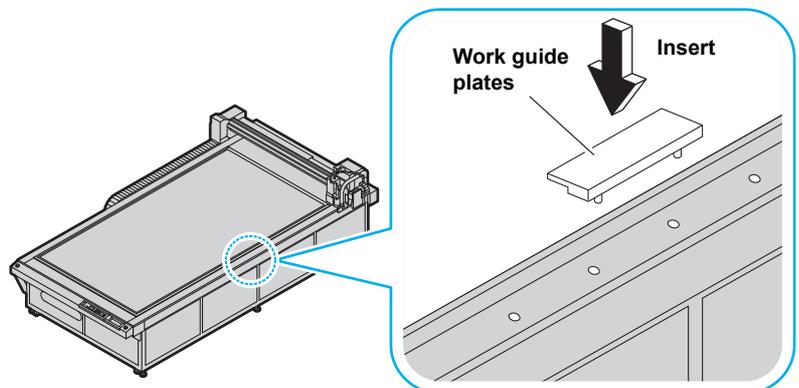
**Important!**

- Felt mat retainer differs from types of the head used.  
M model:Felt mat retainer A R1 model:Felt mat retainer B
- Use the felt mat retainer that suits the model that you will be using. Use of the incorrect type will result in the protrusion of the felt mat retainer and this may hit the head.
- When a felt mat is put down on the cutting board with M model, use felt mat retainer B.
- When not using a felt mat, remove the felt mat retainer not to hit a head.

## Inserting the Work Guide Plates

Insert the work guide plates as a guide to keep the workpiece straight.  
Insert them into the appropriate positions for the size of the workpiece.

- Insert a work guide plate into the holes at each edge of the cutting panel.



**Important!**

- When the work guide plate is mounted, be sure to adjust the head height and then turn the power on, not to hit the head.

# Blades and Workpieces

The types of workpiece that can be cut and the blade types that can be used differ according to the plotter model.

R1

TF2

M

## Workpiece Types that Can be Cut by Each Model (Guide)

Model TF2	Model R1	Model M
PVC sheet for signs	Corrugated cardboard	Channel
Reflective sheet	PVC sheet for signs	Aluminum composite panel
Joint sheet	Coated board	Timber
Sandblasted rubber	Plastic corrugated sheet	Plastic
Coated board	Reflective sheet	
Paternalport	Sandblasted rubber	
	Paternalport	

1

Setup

**Important!**

- Various types of workpiece may exist with the same name. Use the workpiece types in the table above as a guideline only.  
Always make a test cut before cutting actual workpieces. (P.2-22)

## Blade Types that Can Be Used in Each Model

Tool (Cutter) Type		Model TF2			Model R1			Model M
		A	B	C	A	B	C	
Cutter	High-speed, 30°		○	○		○	○	
	Carbide, 30°		○	○		○	○	
	Titanium-coated, 30°		○	○		○	○	
	High-speed, 45°		○	○		○	○	
	Carbide, 45°		○	○		○	○	
	Titanium-coated, 45°		○	○		○	○	
	High-speed, 7mm		○	○			○	
	Carbide design cutter, 30°		○	○			○	
	Titanium-coated double-edged cutter		○	○			○	
	Carbide double-edged round cutter		○	○			○	
	Carbide, 2°					○		
	20 mm cutter					○		
Carbide, 17°					○			
Pen		○			○			
Grid roller			○				○	
Swivel blade		○			○			
End mill	For aluminum composite panel							○
	For 15 m channel							○
	For 30m channel							○
	For 50m channel							○
	Timber							○
	Plastic							○

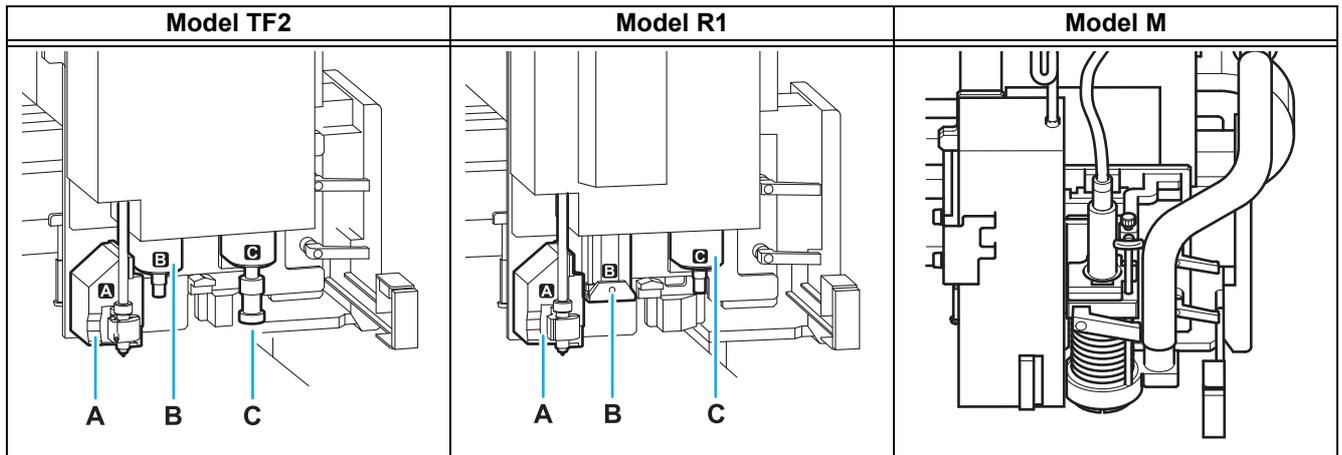
# Mounting Tools

R1

TF2

M

The heads (A, B, C) that mount tools for each model are shown below.



Model Name	Head	Applicable Tools	See page
Model TF2	A	Pen, swivel blade	P.1-19
	B	Low-pressure tangential cutter	P.1-22
	C	High-pressure tangential cutter (Grid roller)	P.1-22 P.1-24
Model R1	A	Pen, swivel blade	P.1-19
	B	Low-pressure tangential cutter	P.1-22
		Reciprocating cutter	P.1-25
	C	Grid roller	P.1-24
High-pressure tangential cutter		P.1-22	
Model M		Milling	P.1-27

## Mounting the Pen or Swivel Blade

Lift up the head if it is descended so that no tool can be mounted. (☞ P.2-21 "Adjusting the Head Height")

R1

TF2

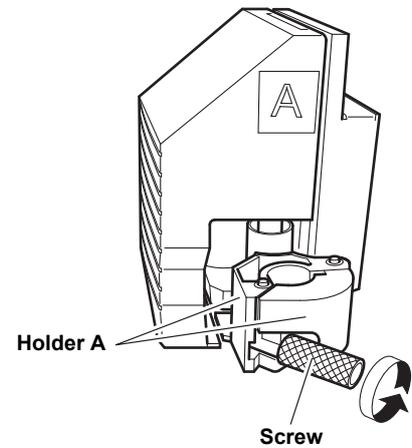
1

Setup

1

### Loosen the Unit A screw

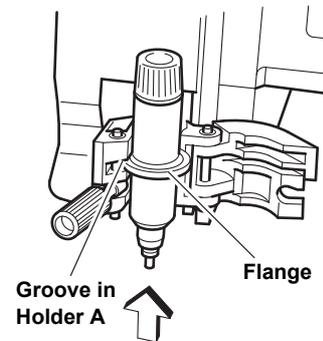
- Turn the screw counterclockwise to loosen it.
- Open out Holder A.



2

### Insert a ball point pen holder or swivel-blade holder into Unit A.

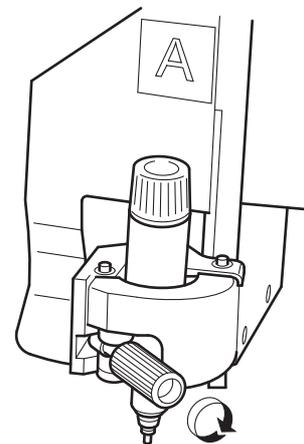
- Align the flange on the ball point pen holder or swivel-blade holder with the groove in Holder A.



3

### Tighten the Unit A screw.

- Close Holder A and tighten the screw clockwise.
- Correct quality may not be achieved if the screw is not fully tightened.



## Mounting the Swivel Blade

R1

TF2

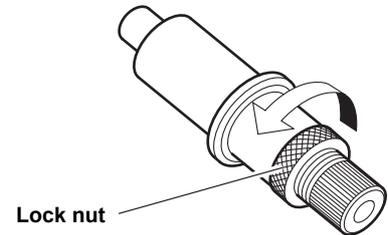


- Handle the blade carefully to avoid injury. For safety, handle the blade with the tweezers supplied.

1

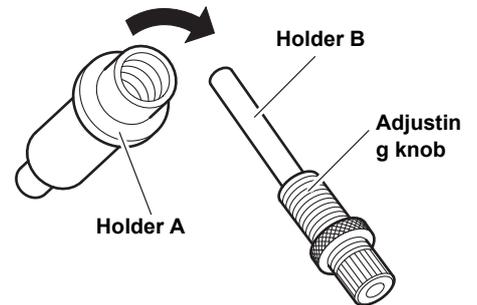
### Loosen the lock nut.

- Turn the lock nut counterclockwise to loosen it.



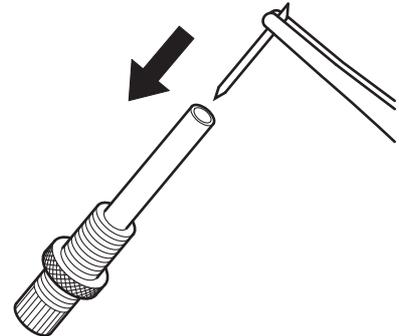
2

### Turn the adjusting knob counterclockwise to remove Holder B from Holder A.



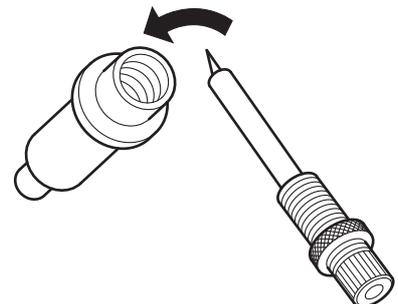
3

### Insert the blade with the tweezers.



4

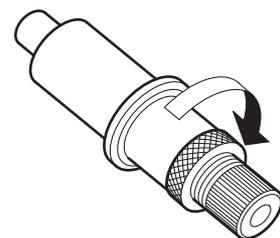
### Turn the adjusting knob clockwise to insert Holder B into Holder A.



5

### Tighten the lock nut.

- Turn the lock nut clockwise to tighten it.



**6****Adjust the amount that the blade protrudes.**

- For details about the adjustment, see P.2-20.

R1

TF2

**1**

Setup

**Replacing the Swivel Blade****1****"Mounting the Swivel Blade" Follow steps 1 - 5 to replace the blade.****2****Adjust the amount that the blade protrudes.**

- For details about the adjustment, see P.2-20.

## Mounting the Tangential Cutter

R1

TF2

Mount the tangential cutter in Unit B in Model R1 or Model TF2.

Lift up the head if it is descended so that the tangential cutter cannot be mounted. (☞ P.2-21 "Adjusting the Head Height")



- Do not touch the blade with bare hands. This may cause injury.

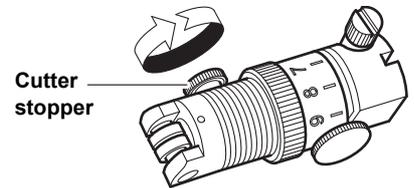
## Mounting the Tangential Cutter Blade

Mount the tangential cutter blade in the cutter holder.

1

### Loosen the cutter stopper.

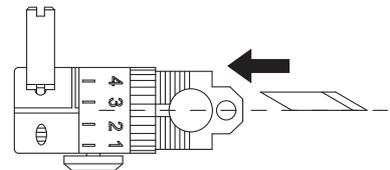
- Loosen the cutter stopper on the cutter holder.
- Turn the cutter stopper counterclockwise to loosen it.



2

### Insert the blade.

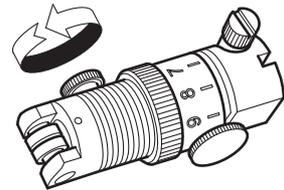
- Insert the blade using the tweezers supplied.
- Insert the blade into the holder, keeping it in the direction shown in the diagram.



3

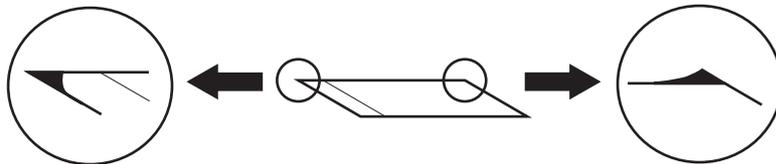
### Tighten the cutter stopper.

- Turn the cutter stopper clockwise to tighten it.

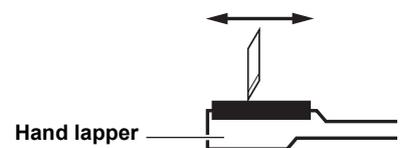


Hint!

- When mounting an NT high-speed blade, use the hand lapper supplied to round off the tip and grind down the ridge. Grinding off the ridge allows the blade to fit properly in the holder. Rounding off the tip improves the life of the cutter.



Lap the tip gently 5 to 10 times while checking the amount ground away.



## Replacing the Tangential Cutter

1

"Mounting the Tangential Cutter Blade" Follow steps 1 - 3 to replace the blade.

2

Adjust the amount that the blade protrudes.

- For details about the adjustment, see P.2-18.

R1  
TF2

1

Setup

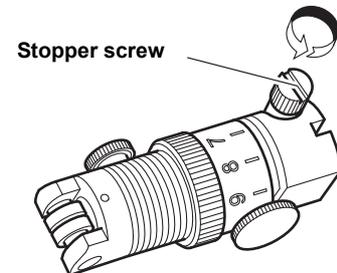
## Mounting the Cutter Holder

After mounting the cutter, mount the cutter holder into the unit.

1

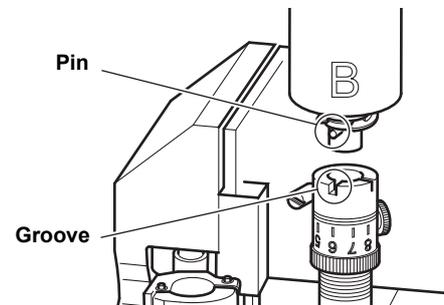
Loosen the cutter holder stopper screw.

- Turn the stopper screw counterclockwise to loosen it.



2

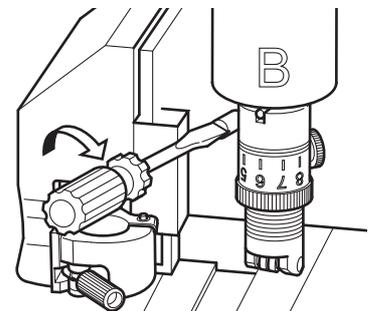
Insert the Unit B pin into the groove in the cutter holder.



3

Use the screwdriver supplied to tighten the stopper screw.

- Firmly fasten the cutter holder.
- Correct quality may not be achieved if the stopper screw is not fully tightened.



## Mounting the Grid Roller

R1

TF2

Mount the grid roller in Unit C in Model R1 or Model TF2.

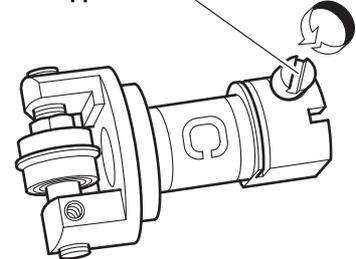
Lift up the head if it is descended so that the grid roller cannot be mounted. (☞ P.2-21 "Adjusting the Head Height")

1

### Loosen the grid roller stopper screw.

- Turn the stopper screw counterclockwise to loosen it.

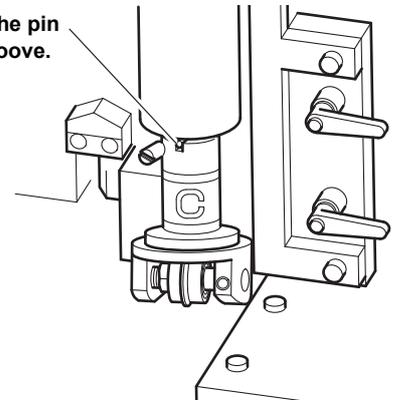
Stopper screw



2

### Insert the Unit C pin into the groove in the grid roller.

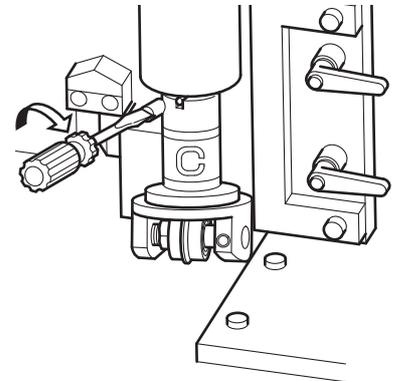
Align the pin and groove.



3

### Use the screwdriver supplied to tighten the stopper screw.

- Firmly fasten the cutter holder.
- Correct quality may not be achieved if the stopper screw is not fully tightened.



## Mounting the Reciprocating Cutter

The reciprocating cutter can be mounted in Unit B in Model R1 only.

### Mounting the Reciprocating Cutter Blade

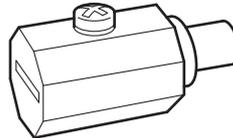
R1

1

Setup

**Hint!**

- A reciprocating cutter holder is required to mount the reciprocating cutter.

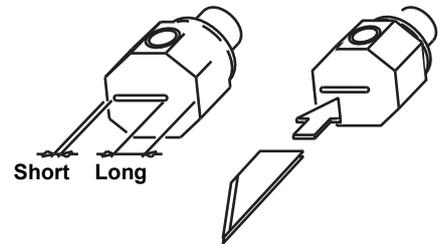


For Unit B, Model R1  
 Name : Cutter Holder 07 (SPA-0114)  
 Blade : Carbide 17° (SPB-0065)  
 20 mm blade (SPB-0055)

**1**

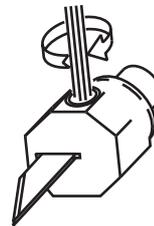
**Firmly push the blade as far as possible into the cutter holder.**

- For safety, handle the blade with the tweezers supplied.
- Be sure to orient the blade correctly.



**2**

**Use the 2.0 mm Allen key supplied to tighten the set screw and clamp the blade.**



Allen key  
2.0 mm

## Replacing the Reciprocating Cutter

- 1** Follow steps "Mounting the Reciprocating Cutter Blade" to replace the blade.

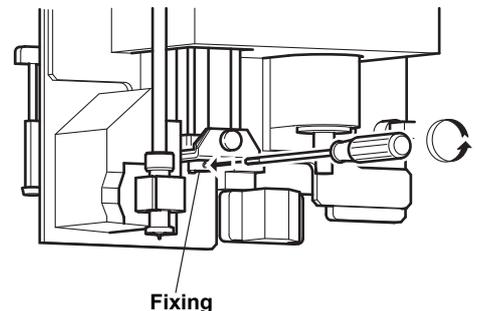
## Mounting the Reciprocating Cutter Holder

- 1** Press the jog keys in local mode to move the head forward.

- 2** Turn off the unit power.

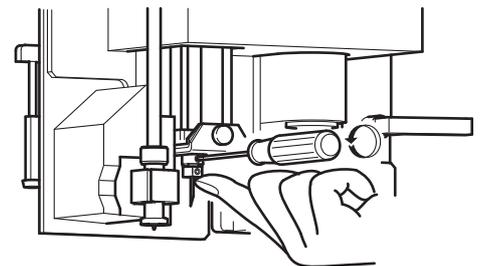
- 3** Loosen the Unit B fixing screw.

- Turn the fixing screw counterclockwise to loosen it.
- The fixing screw is 3 mm long. It will fall out of Unit B if it is loosened too much.



- 4** Tighten the fixing screw.

- Push the cutter holder firmly upwards to eliminate any clearance between the lug on Unit B and the groove in the reciprocating holder, and then tighten the fixing screw.
- Firmly fasten the cutter holder. If the holder is loose, the cutter may become unstable during cutting and reduce the cutting accuracy.



## Mounting the Milling Tool

### Precautions when Milling



- Do not touch the milling tool (end mill) with bare hands. This may cause injury.
- Always insert the end mill into the chuck before tightening the chuck nut. Tightening the chuck nut with no end mill inserted can result in overtightening of the chuck, causing disengagement of the jaws of the chuck and the chuck nut, so that the chuck gets stuck inside the spindle and cannot be removed even if the chuck nut is removed.
- Clean the chuck frequently (P.1-31). Dust from cutting or grinding accumulating inside the spindle and chuck can result in scratching and cause runout.
- Clean the shank of tools before insertion into the chuck. Dirt entering the chuck can cause runout.
- Take care not to overtighten the chuck. Overtightening can damage the spindle.
- Select an appropriate end mill for the operation. Also, select suitable machining conditions.
- You are recommended to select an end mill shaft diameter with a tolerance of  $^{+0.01}$  with respect to the chuck nominal diameter. A shaft diameter with a tolerance of  $^{-0.1}$  can be mounted. However, using a shaft not meeting these recommended tolerances may result in problems of runout or inadequate holding force.
- Before starting work each day, check the end mill, chuck, and chuck nut for damage. After the inspection, gradually increase the operating speed.
- **At the time of purchase, a temporary pin is mounted in the spindle. Remove the temporary pin before mounting the end mill.**

M

1

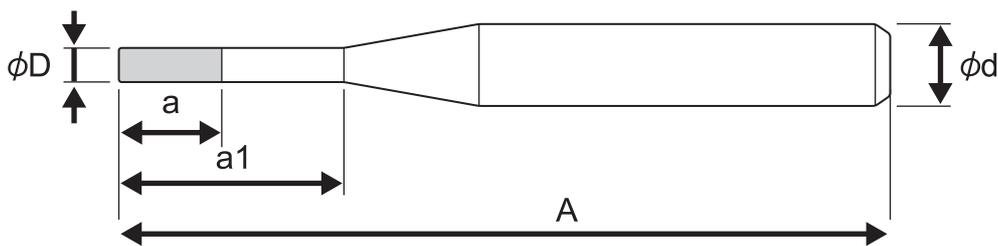
Setup

### Precautions when Using Cutting Tools



- Clean the shank of tools before insertion into the chuck. Dirt entering the chuck can cause runout.
- Do not apply severe shocks. Do not disassemble.

### Table of the Milling Tool (End Mill)



Model number	Blade diameter( $\phi D$ )	Blade length(a)	Active length(a1)	Whole length(A)	Shank diameter( $\phi d$ )
SPB-0068	$\phi 3$	12 mm		55 mm	$\phi 6$
SPB-0069	$\phi 4$	8 mm	24 mm	70 mm	$\phi 6$
SPB-0070	$\phi 6$	12 mm	42 mm	80 mm	$\phi 6$
SPB-0071	$\phi 6$	12 mm	63 mm	120 mm	$\phi 6$
SPB-0072	$\phi 4$	8 mm		50 mm	$\phi 6$
SPB-0074	$\phi 3$	6 mm		50 mm	$\phi 6$

## Mounting the Milling Tool (End Mill)

M

1

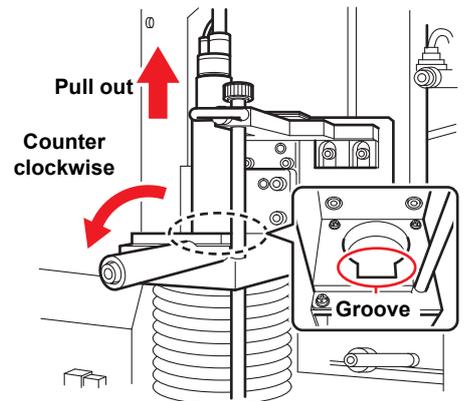
### Loosen the locking lever.

- Turn the locking lever counterclockwise to loosen it.

2

### Remove the spindle motor.

- (1) Turn the spindle motor to align the stopper with the groove in the unit.
- (2) Pull out the spindle motor.



3

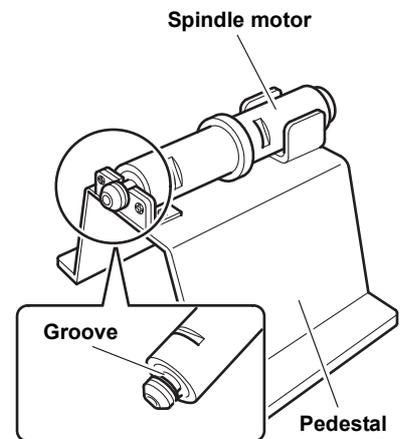
### Provide a pedestal to use for replacing the end mill.

- Positioning the pedestal with the end mill toward you makes replacement easier.

4

### Place the spindle motor on the pedestal.

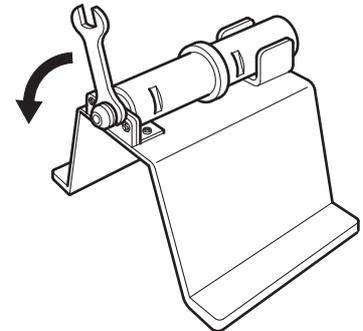
- Align the spindle motor groove with the mounting position on the pedestal.



5

### Loosen the chuck nut.

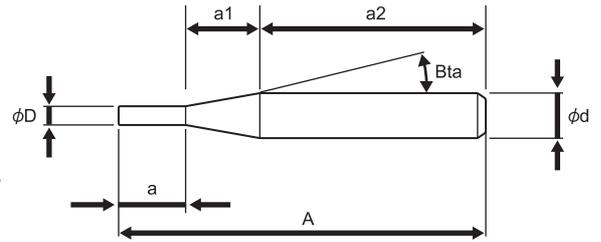
- Turn the chuck nut counterclockwise with the 14 mm wrench supplied.



# 6

## Insert the end mill.

- Use an end mill with A not exceeding 120 mm.



- (1) If  $a+a1=20$  mm or more and  $a2=50$  mm or more:

As the chuck grasps the end mill in the range  $a2$ , fully push the end mill into the spindle and tighten the chuck.

- (2) If  $a+a1=20$  mm or less and  $a2$  is either less or greater than 50mm:

Adjust  $a + a1 = 20$  mm from the chuck, and tighten the chuck to clamp the end mill in the range  $a2$ .

- (3) If  $a + a1 = 20$  mm or more and  $a2 = 50$  mm or less:

Adjust the boundary between  $a1$  and  $a2$  at the chuck, and tighten the chuck to clamp the end mill in the range  $a2$ .

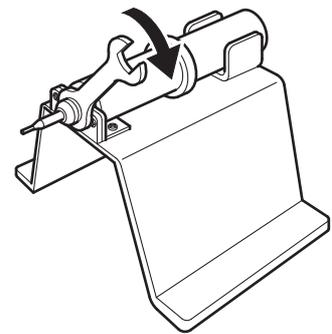


- When mounting the end mill with  $\phi 6$  of the blade in the condition of (1), refer to P.2-12 "Setting the Cutting Conditions" and decrease the round speed. If not decreased, it could destroy the spindle motor.  
Example) When cutting a form board  $A=120$ mm Set to 30000rpm in the case of  $a=63$ .

# 7

## Tighten the chuck nut.

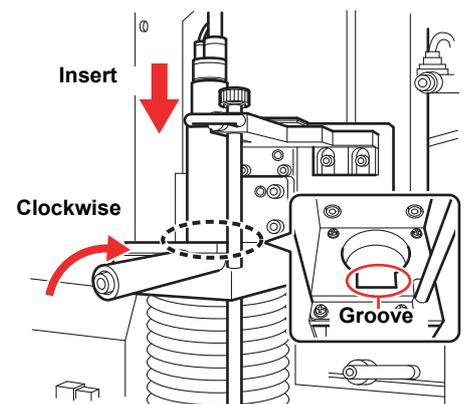
- Turn the chuck nut clockwise with the 14 mm wrench supplied.



# 8

## Return the spindle motor to its original position and tighten the locking lever.

- (1) Insert the spindle motor with the stopper aligned with the groove on the unit.
- (2) Turn the spindle motor to lock it.
- (3) Turn the locking lever clockwise.



- **Take care not to overtighten the locking lever.**  
Overtightening the locking lever can impair the spindle motor accuracy or the bearing life.
- **Spindle motor tightening guideline**  
Turn the spindle motor body by hand until it stops turning.

## Replacing the Milling Tool (End Mill)

**1**

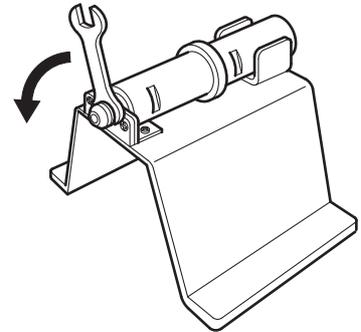
### Conduct steps 1 – 4 of "Mounting the Milling Tool (End Mill)".

- Place the spindle motor on the pedestal.

**2**

### Loosen the chuck nut.

- (1) Apply the 14 mm wrench supplied to the chuck nut.
- (2) Turn the wrench counterclockwise.
  - The chuck nut movement becomes harder after about one turn. Turn it further to release it.



**3**

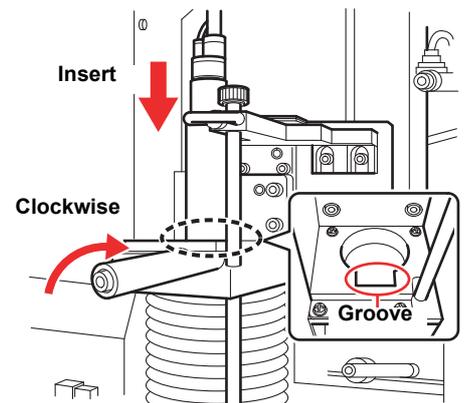
### Replace the end mill.

- Pull out the used end mill, and mount the new end mill as described in step 6 of "Mounting the Milling Tool (End Mill)".

**4**

### Tighten the chuck nut and return the spindle motor to its original position.

- (1) Insert the spindle motor with the stopper aligned with the groove on the unit.
- (2) Turn the spindle motor to lock it.
- (3) Turn the locking lever clockwise.



## Replacing the Chuck

# 1

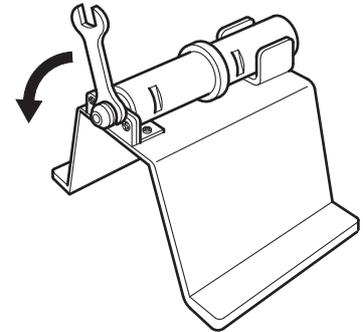
Conduct steps 1 – 4 of "Mounting the Milling Tool (End Mill)".

- Place the spindle motor on the pedestal.

# 2

Remove the chuck nut from the spindle.

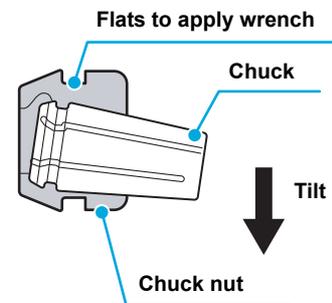
- Apply the 14 mm wrench supplied to the chuck nut.
- Turn the wrench counterclockwise to remove the chuck nut.
  - The chuck nut movement becomes harder after about one turn. Turn it further to release it.
  - Turn the wrench until the chuck nut is removed from the spindle.
- Remove the end mill from the chuck.



# 3

Remove the chuck from the chuck nut.

- As shown in the diagram to the right, tilt the chuck in the direction of the wrench flats and remove it.
- If the chuck cannot be removed, tilt it once more in the direction of the other wrench flats and remove it.



# 4

Mount the new chuck.

- Tilt the chuck in the direction of the wrench flats of the chuck nut side and insert it.

## Cleaning the Chuck

# 1

Remove the chuck as described in "Replacing the Chuck" and clean it.

**M**
**1**

Setup

# Local Status / Remote Status

R1

TF2

M

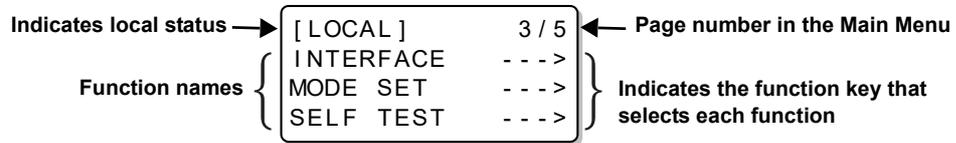
Press **REMOTE/LOCAL** on the operation panel to toggle between the local and remote status.

## Local Status and Displays

The local status permits movement of the heads, setup of the unit functions, and receiving data from the PC. All keys on the operation panel are enabled in local status. The following three screens appear in the local status.

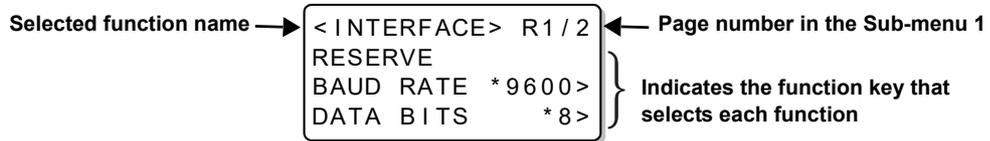
### Local Menu: Screen to select function names

This screen appears when the unit is turned ON. The Main Menu comprises five pages. (The menu differs according to the type of head.)



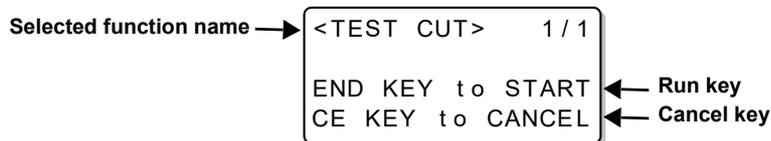
### Sub-menu 1: Screen to set values

This screen appears when a function is selected by pressing a function key on the Main Menu. Use the function keys to enter the set values. The \* displayed to the left of a set value indicates the currently enabled value.



### Sub-menu 2: Function execution screen

This is the screen to execute functions. Includes test cut, data clear, and automatic communication condition evaluation functions.



## Remote Status and Displays

R1

TF2

M

1

Setup

The remote status permits cutting or drawing of the received data.

The display shows the cutting (drawing) conditions and the received data volume. The number of displayed data decreases as cutting (drawing) proceeds.

POWER ON, POWER OFF, (VACUUM), and (REMOTE/LOCAL) are enabled on the operation screen panel.

The following three screens appear in the remote status.

### Tangential Cutter, Grid Roller Selected

This remote screen appears when HEAD:B, TOOL: Cutter 1, or Cutter 2 is selected for TOOL SELECT in the local menu.

F (start offset) and E (end offset) do not appear when the grid roller is selected.

```
[REMOTE]      0KB
TANGENTIAL BLD
S 30 P1500 R0.30
H 30 F0.00 E0.00
```

S : Cutting speed  
P : Cutting pressure  
R : Rounding radius  
H : Cutter raise angle  
F : Start offset  
E : End offset

### Pen Selected

This remote screen appears when HEAD:A, TOOL: Pen is selected for TOOL SELECT in the local menu.

```
[REMOTE]      0KB
PEN
S30 P200
```

S : Cutting speed  
P : Cutting pressure

### Swivel Blade Selected

This remote screen appears when HEAD:A or TOOL:SWIVEL is selected for TOOL SELECT in the local menu.

```
[REMOTE]      0KB
Swivel Blade
S30 P120 O0.30
```

S : Cutting speed  
P : Cutting pressure  
O : Offset

### Milling Head Attached

This remote screen appears when the milling head is attached.

```
[REMOTE]      0KB
MILLING
S30 Z10 R10000
```

S : Cutting speed  
Z : Down speed  
R : Rotational speed

# Matching the PC Specifications

R1

TF2

M

This section describes how to set up the functions to connect to a PC.

Important!

- The unit will automatically recognize its interface to the PC.
- The interface to the PC that first received the data is recognized, and the selection is cancelled with the Data Clear operation. (☞ P.2-34)

## Setting the Communication Conditions

### RS-232C Connection

Setting the communication conditions for an RS-232C connection to the PC.

Item	Set value
BAUD RATE	1200, 2400, 4800, 9600, 19200 (bps)
DATA BITS	7, 8 (bit)
PARITY	NON, ODD, EVEN
STOP BITS	1, 2 (bit)
HANDSHAKE	HARD, X CODE, E/A *1, SOFT*1

\*1. E/A (ENQ-ACK) and Software can be selected with the MGL-IIC3 command selected in the operation mode command settings.

1

Display the third page of the local menu.

- Press **(PAGE+)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

2

Press **(F1+)** and select **[INTERFACE.]**

```
< INTERFACE >
INTERFACE SELECT
RS-232C >
*USB >
```

3

Press **(F2+)** and select **[RS-232C.]**

```
< INTERFACE > R1 / 2
RESERVE
BAUD RATE 9600 >
DATA BITS 8 >
```

4

Select the **[BAUD RATE]** and **[DATA BITS]** set values.

**BAUD RATE setting** : Press **(F2+)** to select the set value (1200, 2400, 4800, 9600, 19200 (bps)).

**DATA BITS setting** : Press **(F3+)** to select the set value (7 or 8(bits)).

- The \* mark indicates the current set value.

5

Press **(PAGE+)**.

- Display the second page of **[INTERFACE.]**

```
< INTERFACE > R2 / 2
PARITY      NON >
STOP BITS   1 >
HANDSHAKE   HARD >
```

6

Select the [PARITY],[ STOP BITS], and [HANDSHAKE] set values.

- PARITY setting : Press **F1** (+) to select the set value (NON, ODD, EVEN).
- STOP BITS setting : Press **F2** (+) to select the set value (1 or 2 (bits)).
- HANDSHAKE setting : Press **F3** (+) to select the set value (HARD, X CODE, E/A, SOFT).

- Press **PAGE** (-) to revert to the previous page.

7

Press **END**.

- The settings are saved.
- Press **CE** if you do not want to save the settings.

### USB Connection

Setting the communication conditions for a USB connection to the PC.

Item	Set value
MACHINE No.	00 ~ 99

1

Select [INTERFACE].

- Conduct steps 1 and 2 of P.1-34 "RS-232C Connection".

```
<INTERFACE>
INTERFACE SELECT
RS-232C>
*USB>
```

2

Press **F3** (+) and select [USB].

```
<INTERFACE>  USB
MACHINE NO.  00>
RESERVE
RESERVE
```

3

Press **F1** (+) and select [MACHINE No.] (00~99).

```
<INTERFACE>  USB
MACHINE NO.  10>
RESERVE
RESERVE
```

4

Press **END**.

- The settings are saved.
- Press **CE** if you do not want to save the settings.

## Enabling PC Commands (CMD SW)

This setting enables the values set by the operation panel or the values (commands) set by the PC.

Item	Set value
Enable	Give priority to commands received from the PC. Ignore settings from the plotter operation panel.
Disable	Ignore settings received from the computer and give priority to settings from the plotter operation panel.

1

**Display the third page of the local menu.**

- Press **(PAGE ⊕)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

2

**Press **(F2 ⊕)** and select [MODE SET].**

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

3

**Display the third page of the MODE SET menu.**

- Press **(PAGE ⊕)** several times.

```
<MODE SET>    3 / 7
ROTATE        +90 ° >
COMMANDMGL - IIC3>
CMD SW        Enable>
```

4

**Press **(F3 ⊕)** to select the [CMD SW] set value.**

- Enable , Disable

5

**Press **(END)**.**

- The settings are saved.
- Press **(CE)** if you do not want to save the settings.

## Setting the Effective Area Return Values (OH UNIT)

Sets which value to return to the CAD system when the unit receives the effective area coordinate output command from the CAD system.

Item	Set value
INIT Val	Return the maximum effective cutting area of the unit.
SET Val	Return the value set for the cutting area in the local menu. (☞ P.2-29)

1

**Display the third page of the local menu.**

- Press **(PAGE+)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

2

**Press **(F2+)** and select [MODE SET].**

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI-PASS    - - - >
VACUUM        - - - >
```

3

**Display the fourth page of the MODE SET menu.**

- Press **(PAGE+)** several times.

```
<MODE SET>    4 / 7
OH UNIT INITVal >
ORIGIN LOWRIGHT >
GDP           0 . 025mm>
```

4

**Press **(F1+)** and select the [OH UNIT] set value.**

- Set values: INITVal , SETVal

5

**Press **(END)**.**

- The settings are saved.
- Press **(CE)** if you do not want to save the settings.

## Setting the Command Origin

This setting aligns the unit command origin position with the command origin position in the CAD system used. For more information on the command origin position handled by the CAD system, see the CAD Instruction Manual.

Item	Set value
LOWRIGHT	Lower-right of the maximum effective cutting area.
CENTER	Center of the maximum effective cutting area.

1

### Display the third page of the local menu.

- Press **(PAGE+)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

2

### Press **(F2+)** and select [MODE SET].

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

3

### Display the fourth page of the MODE SET menu.

- Press **(PAGE+)** several times.

```
<MODE SET>    4 / 7
OH UNIT INITVal>
ORIGIN LOWRIGHT>
GDP           0.025mm>
```

4

### Press **(F2+)** and select the [ORIGIN] set value.

- Set values: LOWRIGHT , CENTER

5

### Press **(END)**.

- The settings are saved.
- Press **(CE)** if you do not want to save the settings.

## Resolution (GDP<sup>\*1</sup>) Setting

This setting aligns the resolution of the unit with the resolution of the CAD system used. For more information on the resolution of the CAD system, see the CAD Instruction Manual.

Item	Set value
0.025 mm	Sets the GDP to 0.025 mm.
0.010 mm	Sets the GDP to 0.010 mm.

**1** Display the third page of the local menu.

- Press **(PAGE ⊕)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE    - - - >
MODE SET     - - - >
SELF TEST    - - - >
```

**2** Press **(F2 ⊕)** and select **[MODE SET]**.

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

**3** Display the fourth page of the **MODE SET** menu.

- Press **(PAGE ⊕)** several times.

```
<MODE SET>    4 / 7
OH UNIT INITVal>
ORIGIN LOWRIGHT>
GDP           0 . 025mm>
```

**4** Press **(F3 ⊕)** and select the **[GDP]** set value.

- Set values: 0.025 mm, 0.010 mm

**5** Press **(END)**.

- The settings are saved.
- Press **(CE)** if you do not want to save the settings.

\*1.GDP:Graphic Display Pitch

# Matching the Plotter Specifications



This unit uses the command MGL-IIC3.  
Set the CAD command to connect to the unit to MGL-IIC3.

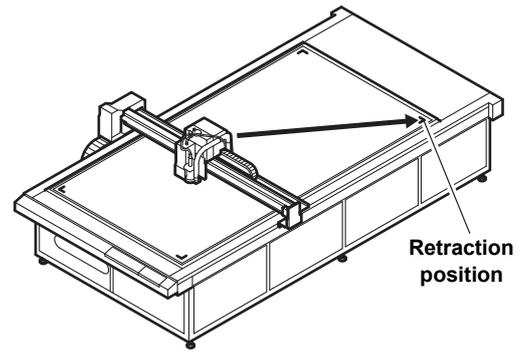


- Only the MGL-IIC3 commands are available in MODE SET. This command cannot be changed at the plotter.

# Setting Automatic Head Retraction

Sets the time before the head begins to retract to the retraction position when cutting (drawing) of data from the PC is complete.

Item	Set value
OFF	No automatic retraction
1 s	Head moves to the retraction position one second after cutting (drawing) is complete.
3 s	Head moves to the retraction position three seconds after cutting (drawing) is complete.



R1  
TF2  
M

1

Setup

**1** Display the third page of the local menu.

- Press **(PAGE+)** several times.

[ LOCAL ]	3 / 5
INTERFACE	--->
MODE SET	--->
SELF TEST	--->

**2** Press **(F2+)** and select **[MODE SET]**.

<MODE SET>	1 / 7
Z STROKE	7mm>
MULTI-PASS	--->
VACUUM	--->

**3** Display the second page of the MODE SET menu.

- Press **(PAGE+)** several times.

<MODE SET>	2 / 7
AUTO VIEW	OFF>
DUMMY CUT	OFF>
ONE STROKE	OFF>

**4** Press **(F1+)** and select the **[AUTO VIEW]** set value.

- Set values: OFF , 1s , 2s

**5** Press **(END)**.

- The settings are saved.
- Press **(CE)** if you do not want to save the settings.

**Hint!** • The head always automatically returns to the retraction position after cutting (drawing) or copying the internal sample data.

# Setting the Vacuum



Sets the vacuum operation when the optional blower is used.

Item	Set value	
AUTO OFF *1	ON	If automatic head retraction is set to 1 s or 3 s, the vacuum turns off automatically after head retraction.
	OFF	Vacuum remains on after head retraction.
REV. DRIVE	ON	Press <b>VACUUM</b> to select the blower operation (adhesion, release).
	OFF	Press <b>VACUUM</b> to start vacuum adhesion.

\*1. The vacuum cannot turn off automatically if automatic head retraction is OFF.

- Hint!**
- The optional blower is required to use the vacuum functions.
  - Regardless of the automatic head retraction setting, the vacuum automatically turns off after using the copy function, multi-pass function, or continuous register mark cutting.

## Enabling / Disabling the Vacuum Automatic OFF Function

### 1

Display the third page of the local menu.

- Press **PAGE** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

### 2

Press **F2** and select **[MODE SET]**.

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

### 3

Press **F3** and select **[VACUUM]**.

```
<VACUUM>
AUTO OFF      OFF>
REV DRIVE     OFF>
```

### 4

Select **[AUTO OFF]** or **[REV DRIVE]**.

- AUTO OFF setting** : Press **F2** to select the set value .
- REV DRIVE setting** : Press **F3** to select the set value.

### 5

Press **END**.

- The settings are saved.
- Press **CE** if you do not want to save the settings.

# Chapter 2

## Basic Operations



### This Section....

... describes the basic operations, such as mounting tools and workpieces.

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Workpiece.....	2-18		

# Basic Operation Workflow

This section describes the basic operation workflow.  
For details, see the reference page shown.

R1

TF2

M

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

**2** Fixing the Workpiece See "Fixing the Workpiece" (☞ P.2-5).

**3** Selecting Tools  
**For Model R1 or TF2.**  
See "Selecting Tools for Model R1 and Model TF2" (☞ P.2-8).  
**For Model M.**  
See "Setting the Z-axis Origin for Model M" (☞ P.2-9).

**4** Setting the Cutting Conditions See "Setting the Cutting Conditions" (☞ P.2-12).

**5** Making a Test Cut See "Making a Test Cut" (☞ P.2-22).

**6** Setting the Cutting Area See "Setting the Cutting Area" (☞ P.2-29).

**7** Setting the Drawing Origin See "Setting the Drawing Origin" (☞ P.2-31).

**8** Cutting (Drawing) See "Cutting (Drawing)" (☞ P.2-32).

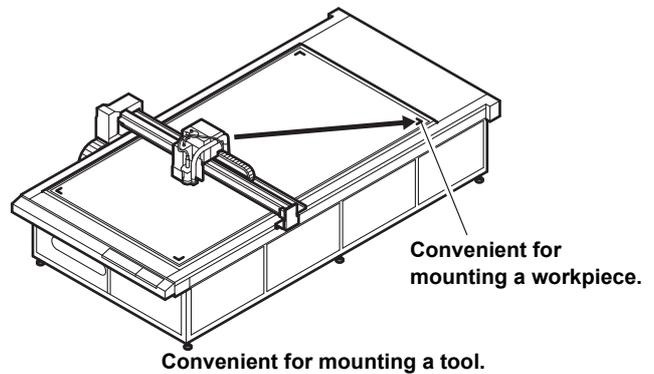
# Moving the Head

The head can be moved to a convenient position to mount the workpiece, make a test cut, or mount a tool. Two methods are available to move the head.

- Using the head retraction (View) function
- Using the jog keys

## Moving the Head Using the Head Retraction [VIEW] Function

Moves the head directly to a corner of the coordinate system.



R1

TF2

M

2

Basic Operations

Hint!

- If Automatic Head Retraction P.1-41 is set, the head automatically returns to the retraction position after cutting (drawing) is complete, so that the View function is not required.

1

Display the second page of the local menu.

- Press **PAGE** several times.

```
[LOCAL]      2 / 5
DATA CLEAR  --->
SINGLE COPY  --->
VIEW        --->
```

2

Press **F3** and select [VIEW].

```
<VIEW>      1 / 1
          ALL REMOVE>
<L  UPPER  R>
<L  LOWER  R>
```

3

Select the destination point.

- F1** : Move to the upper-right head full retraction position (for CF3-1631).
- F2** : Move to the upper-left head retraction position.
- F2** : Move to the upper-right head retraction position.
- F3** : Move to the lower-left head retraction position.
- F3** : Move to the lower-right head retraction position.

4

Press **END**.

- The head retracts to the designated position.

## Moving the Head Using the Jog Keys

Use this method for mounting tools or making a test cut or sample cut.

The following function allows the head to be accurately positioned using the jog keys.

- Changing the head travel speed (MAX , FAST , MIDDLE , LOW , AUTO).

The coordinates are displayed with respect to the command origin position.

```
<ORIGIN>      [mm]
382.6         565.0
SPEED         FAST>
```

# 1

### Select the local menu.

- If the unit is in remote status, press **REMOTE/LOCAL** to set local status.
- Any page from page 1 to page 4 can be open.

```
[LOCAL]        1 / 5
TOOL SELECT   --->
CONDITION     --->
TEST CUT      --->
```

# 2

### Press a jog key once.

- The head move mode is selected. The light pointer moves to the tool-tip position.
- The light pointer coordinates are displayed.

```
<ORIGIN>      [mm]
00.00         00.00
SPEED         FAST>
```

# 3

### Press a jog key to move the head.

- The destination coordinates are displayed.

To change the head travel speed : Press **F2+** .

```
<ORIGIN>      [mm]
382.62        565.55
SPEED         FAST>
```

# 4

### Press **END** or **CE** .

- The tool tip moves to the light pointer position and the display at Step 1 reappears.

```
[LOCAL]        1 / 5
TOOL SELECT   --->
CONDITION     --->
TEST CUT      --->
```

# Fixing the Workpiece

Two methods are available to fix a workpiece.

- Fixing the Workpiece by Vacuum Adhesion
- Fixing the Workpiece with Adhesive Tape



- The following table shows the acceptable workpiece thicknesses.

Model	Model M	Model R1	Model TF2
Workpiece thickness	50 mm	20 mm	10 mm

- Four area stickers are stuck on the table. They indicate the maximum effective cutting area. Mount the workpiece inside this area. The plotter is unable to cut outside the area indicated by the area stickers.

R1

TF2

M

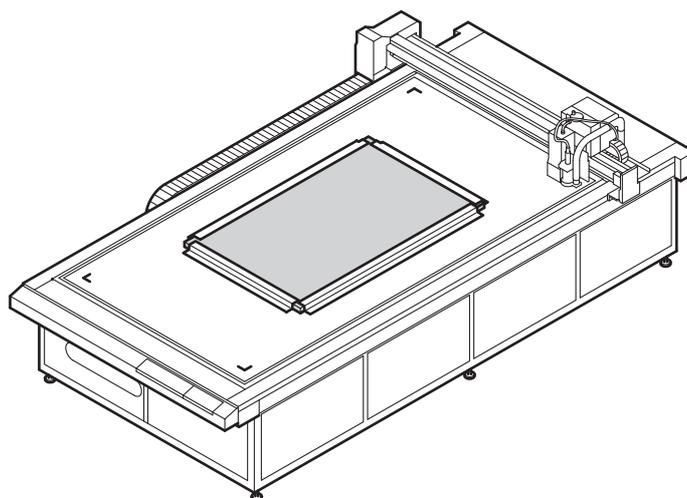
## Fixing the Workpiece with Adhesive Tape

If no optional blower is used or if the vacuum is unable to completely fix the workpiece (such as a thick gasket or industrial rubber) use adhesive tape to fasten the workpiece.



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

Fix the four edges of the workpiece with the adhesive tape.



2

Basic Operations

## Fixing the Workpiece by Vacuum Adhesion

Relatively thin workpieces, such as thin coated board or corrugated cardboard, can be fixed by vacuum adhesion.

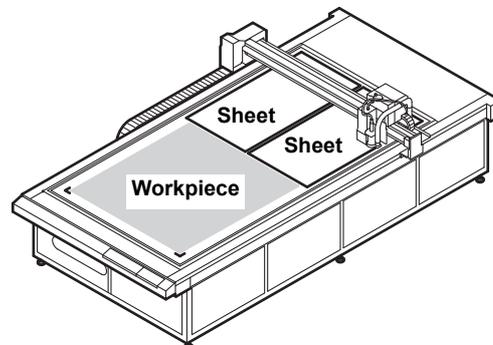
R1

TF2

M

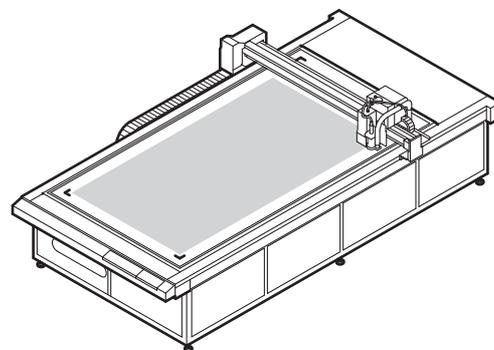
Important!

- The optional blower is required to use the vacuum function.
- If the workpiece is too small to cover all the air holes on the cutting panel, use some sort of sheet to cover all the remaining holes. If some of the air holes are not covered, the adhesion force may be too low to fully fasten the workpiece.



1

Put the workpiece on the cutting panel.



2

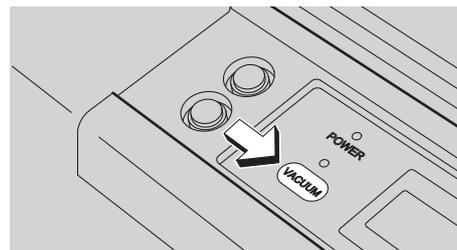
Set the vacuum valves to match the workpiece size.

- "Setting the Vacuum Valves to Match the Workpiece Size" See (☞ P.2-7).

3

Press **VACUUM** .

- The green VACUUM lamp lights. (Green)
- Vacuum adhesion starts if REV. DRIVE in "Setting the Vacuum" (☞ P.1-42) is set OFF. The operations from Step 4 are not required.
- If REV. DRIVE in "Setting the Vacuum" (☞ P.1-42) is set ON, proceed to Step 4.



4

Press **F2 (+)** and select **[VACUUM]**.

- Vacuum operation starts.

<VACUUM MENU>

VACUUM>  
REVERSE>

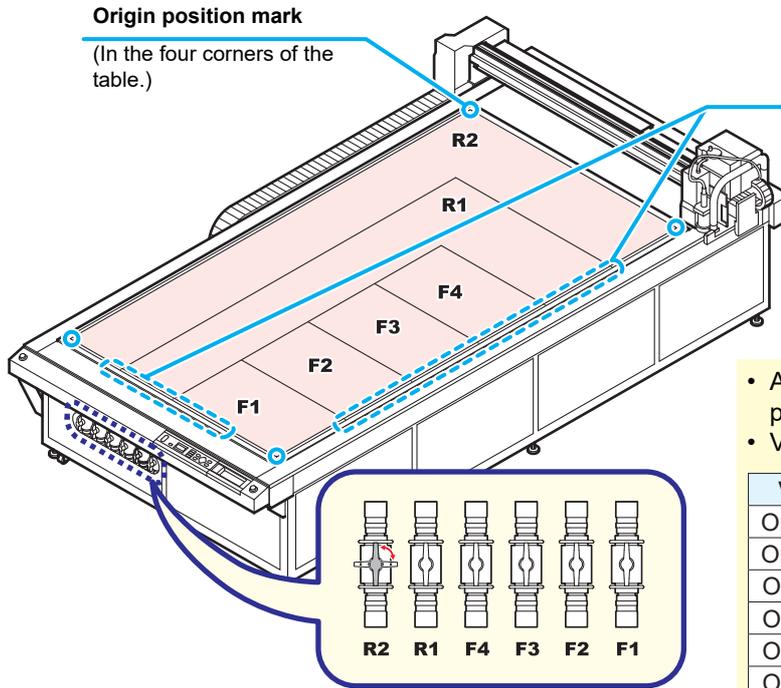
5

Press **END** .

## Setting the Vacuum Valves to Match the Workpiece Size

Ensure that the cutting range does not protrude outside the maximum cutting area.

For Model CF3-1631.



Origin position mark  
(In the four corners of the table.)

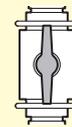
▲ Marks

Use as guides for opening or closing the valves.  
Marks are also provided on the unit front panel.

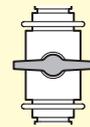
- Align the workpiece with the origin position marks in the four corners.
- Vacuum Valves

Valve	Table
Open R1	Vacuum applied to area R1.
Open R2	Vacuum applied to area R2.
Open F1	Vacuum applied to area F1.
Open F2	Vacuum applied to area F2.
Open F3	Vacuum applied to area F3.
Open F4	Vacuum applied to area F4.

- Opening and closing vacuum valves

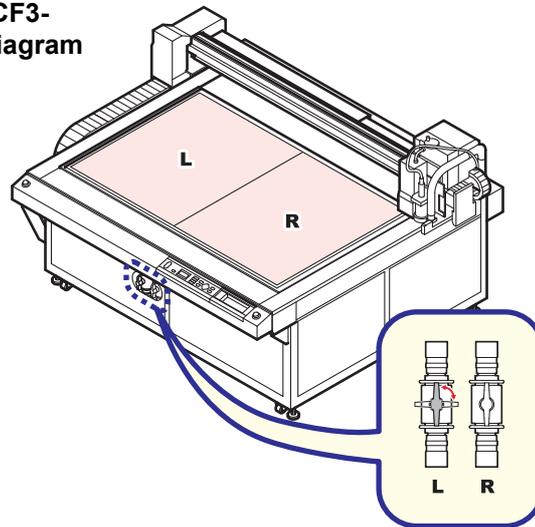


Open



Closed

The vacuum valves for CF3-1610 are shown in the diagram at the right.



# Selecting Tools

## Selecting Tools for Model R1 and Model TF2

In the following situations, select the unit and tool to use.

- If the pen number cannot be designated by the CAD system
- When a test cut or self-test is run using the plotter alone
- If the MODE SET CMD switch is set to DISABLE.



- 1

**Display the first page of the local menu.**

  - Press **(PAGE+)** several times.

```
[ LOCAL ]           1 / 5
TOOL SELECT  --->
CONDITION    --->
TEST CUT     --->
```

---

- 2

**Press **(F1+)** and select [TOOL SELECT].**

```
<TOOL SELECT>1 / 1
HEAD           A>
TOOL           PEN>
```

---

- 3

**Press **(F1+)** and select Unit.**

  - Set values: A, B, C

---

- 4

**Press **(F2+)** and select TOOL.**

  - The selectable tools differ according to the type of head.  
(☞ Tools Available for Each Type of Head)

---

- 5

**Press **(END)**.**

  - The settings are saved.
  - Press **(CE)** if you do not want to save the settings.

### Tools Available for Each Type of Head

Unit Tool	A	B	C
Model Name	Pen / Swivel blade	Cutter 1 - 2	Roller 1 - 4 / R. Cutter 1 - 2
Model R1	○	○	○
Model TF2	○	○	○



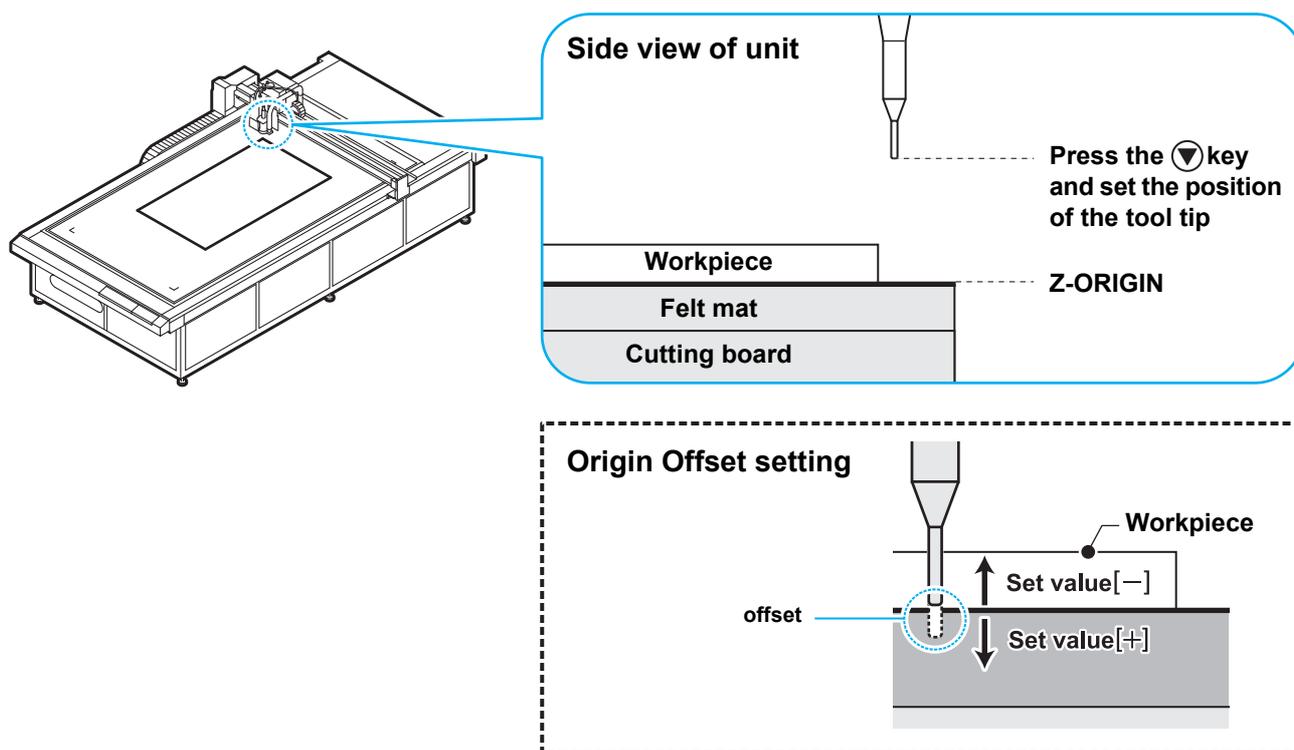
- Tools cannot be selected for Model M.

## Setting the Z-axis Origin for Model M

The following settings can be made on the Z-axis Origin setting.

Z ORIGIN	Save the origin coordinates
ORIGIN OFFSET*1	Adjusted amount of cutting based on the Z-axis origin (-3.0 to +3.0mm)

\*1. To surely cut media, [+] setting is recommended. (Set the value that the felt mat is slightly cut)



M

2

Basic Operations



- Always reset the Z-axis origin after changing the head height. Using the unit without resetting the Z-axis origin can damage the unit, if the end mill is pushed through the cutting panel, for example.

## Saving the origin coordinates

Important!

- The Z-axis origin cannot be set for Model R1 or Model TF2.
- The rotational speed and descent speed settings are not saved.
- This origin coordinate setting is cleared when the power is turned off.
- Setting the Z-axis origin will disable the setting of the Z cutting position via command.

1

### Display the first page of the local menu.

- Press **PAGE** several times.

```
[ LOCAL ]      1 / 5
Z ORIGIN     - - - >
CONDITION    - - - >
TEST CUT     - - - >
```

2

### Press **F1** and select [Z ORIGIN].

```
<Z ORIGIN>    1 / 2
MILLING      START >
MILLspd     5000 rpm >
Z : 0 . 0mm  5mm / s >
```

3

### Press the jog keys **▲** **▼** to set the Z-axis origin.

- F1** : Rotate the router.
- F2** : Set the router speed.
- F3** : Change the Z axis descent speed.

- To move the head during this setting : Press the jog keys **◀** **▶**

4

### Press **END**.

- The set origin coordinates are saved.
- Press **CE** if you do not want to save the settings.

## Saving the origin offset value

1

Display the first page of the local menu.

- Press **(PAGE +)** several times.

```
[LOCAL]      1 / 5
Z ORIGIN    - - - >
CONDITION   - - - >
TEST CUT    - - - >
```

2

Press **(F1 +)** and select [Z ORIGIN].

```
<Z ORIGIN>  1 / 2
MILLING     START >
MILLspd     5000 rpm >
Z: 0.0mm    5mm/s >
```

3

Press **(PAGE +)** **(PAGE -)** to display the second page.

- Origin Offset setting screen is displayed.

```
<Z ORIGIN>  2 / 2
ORG OFFSET  +0.0 >
```

4

Press **(F1 +)** **(F1 -)** to set the offset value.

- Set values : -3.0 - +3.0 mm

```
<Z ORIGIN>  2 / 2
ORG OFFSET  +0.3 >
```

5

Press **(END)**.

- The set offset value is saved.
- Press **(CE)** if you do not want to save the settings.

M

2

Basic Operations

# Setting the Cutting Conditions

After setting the cutting conditions, make a test cut to confirm that the set conditions are suitable. (☞ P.2-22)

**Important!**

- The set cutting conditions apply to the tool set in Selecting Tools (☞ P.2-8). (For Model R1 or TF2. )
- If the approximation type is set to Arc in the FineCut plotter settings, an excessive load may be applied to the cutter and damage the cutter tip when cutting some media. If Arc is set, adjust the FineCut cutting conditions or set the R speed at the plotter.
- If R speed is set, the R speed set value takes priority over the FineCut speed setting during cutting.
- If the 2N cutter holder is used in the R1 head, set the VIBRATION cutting condition to OFF. Setting VIBRATION from 1 to 5 may damage the cutter holder or unit.



**1**

**Display the first page of the local menu.**

- Press **PAGE+** several times.

[ LOCAL ]	1 / 5
TOOL SELECT	--->
CONDITION	--->
TEST CUT	--->

**2**

**Press **F2+** and select [CONDITION] .**

**3**

**Press **PAGE+** **PAGE-** to display the page to set.**

- The displayed items differ according to the tool. (☞ Setup Pages for Each Tool )

**4**

**Press **F1+** **F2+** **F3+** to make the setting.**

- Press **F1-** **F2-** **F3-** to revert the set value to the previous value.

**5**

**To select and set another item, repeat Steps 3 and 4.**

- For details about the settings, see P.2-14 "Set Items".

**6**

**When all settings are complete, press **END** .**

- The setting is saved.
- Press **CE** if you do not want to save the setting.

## Setup Pages for Each Tool

Tool Name	Setup Page Sequence
<p><b>θ cutter</b></p>	
<p><b>Reciprocating cutter</b></p>	
<p><b>Radius cutter</b></p>	
<p><b>Crease roller</b></p>	
<p><b>Swivel blade</b></p>	
<p><b>Pen</b></p>	
<p><b>Milling Tool</b></p>	

## Set Items

The cutting condition set items differ according to the tool.



Set Item	Tool Type						Set value
	A		B		C		
	Swivel cutter	Pen	Tangential cutter	Reciprocating cutter <sup>(*)1</sup>	Radius cutter	Crease roller	
SPEED	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 (cm/s) <sup>*3</sup>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.2, 0.5, 1, 2, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 (cm/s)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.1 ~ 3 (step 0.1cm/s) 3.0 ~ 10 (step 1cm/s) 10.0 ~ 50 (step 5cm/s)
PRESSURE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20 ~ 100 (step 5g) 100 ~ 400 (step 10g)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	300 ~ 1500 (step 100g)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	500 ~ 1500 (step 100g) *Fixed 1500g in setting VIBRATION
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1000 ~ 5000 (step 100g)
ACCELE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.1 ~ 0.5 (step 0.1G)
F OFFSET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 ~ 2.50 (step 0.05mm)
E OFFSET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 ~ 2.50 (step 0.05mm)
UP ANGLE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 ~ 45 (step 1°)
RING DIS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 ~ 2.50 (step 0.05mm)
PRESS COR	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 ~ 500 (step 100g)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 ~ 1000 (step 100g)
Y PRESS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-5000 ~ +5000 (step 100g)
OFFSET	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0 ~ 2.50 (step 0.05mm)
VIBRATION	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFF, 1 ~ 5

\*1. Valid for Model R1 only.

\*2. Available only when the VIBRATION cutting condition is set OFF if cutter holder 2N is mounted Unit B in Model R1.

\*3. Setting of 55 cm / s can be selected with firmware version V 3.40 or later.

Outline

Speed of tool movement in the X or Y direction. Changes according to the type of tool and workpiece and the data size.

Pressure when cutting the workpiece with a press tool.

Maximum tool acceleration. Changes according to the type of tool and workpiece and the data size.

Offset for cutting start position when the tool descends. When cutting a thick workpiece, setting this offset to a large value cuts from the front of the workpiece to simplify separation. Adjust this setting while checking the finish.

Offset for cutting end position when the tool ascends. When cutting a thick workpiece, setting this offset to a large value makes an extra cut from the end position that simplifies. Adjust this setting while checking the finish.

Sets the minimum angle to raise the cutter and change the direction, when changing the cutting (crease) direction. This reduces the degree of damage to the workpiece by the tool.

Sets the rounding radius (R) and adds a line segment between segments for a consecutive series of line segments. This reduces the degree of damage to the workpiece by the tool.

Corrects the tool downwards pressure when cutting (crease cutting) a thick workpiece. Applying the PRESS COR value to the previously set press value ensures satisfactory cutting when the tool descends.

Corrects the press value in the Y-axis direction to allow crease cutting with a different pressure to the X-axis direction. When crease cutting corrugated cardboard, position the corrugated cardboard with the flutes in the Y direction to cut with a lighter pressure than in the X direction.

This is the offset value for the tip of the swivel blade cutter. Change the setting according to the workpiece thickness and wear of the cutter blade.

Sets the oscillation speed in 5 steps. Normally, set this item to 4 or 5. Reduce the oscillation speed for a heat-sensitive workpiece. Set OFF when using cutter holder 2N.



Set Item	Tool Type						Set value
	A		B		C		
	Swivel cutter	Pen	Tangential cutter	Reciprocating cutter (*)	Radius cutter	Crease roller	
R5 SPEED	<input type="checkbox"/>	OFF, 0.5 (mm/s), 0.1, 0.2, 0.5, 1.0, 2.0 (cm/s)					
	<input type="checkbox"/>	OFF, 1, 2 (cm/s)					
R10 SPEED	<input type="checkbox"/>	OFF, 0.5 (mm/s), 0.1, 0.2, 0.5, 1.0, 2.0 (cm/s)					
	<input type="checkbox"/>	OFF, 1, 2, 3, 4, 5 (cm/s)					
R15 SPEED	<input type="checkbox"/>	OFF, 0.5 (mm/s), 0.1, 0.2, 0.5, 1.0, 2.0 (cm/s)					
	<input type="checkbox"/>	OFF, 1, 2, 3, 4, 5, 10 (cm/s)					
R20 SPEED	<input type="checkbox"/>	OFF, 1, 2, 3, 4, 5, 10, 15 (cm/s)					
R30 SPEED	<input type="checkbox"/>	OFF, 1, 2, 3, 4, 5, 10, 15, 20 (cm/s)					
R40 SPEED	<input type="checkbox"/>	OFF, 1, 2, 3, 4, 5, 10, 15, 20, 25 (cm/s)					
R50 SPEED	<input type="checkbox"/>	OFF, 1, 2, 3, 4, 5, 10, 15, 20, 25, 30 (cm/s)					
R100 SPEED	<input type="checkbox"/>	OFF, 1, 2, 3, 4, 5, 10, 15, 20, 25, 30 (cm/s)					
Z SPEED	<input type="checkbox"/>	1 ~ 100(step 1mm/s)					
ROUND SPEED	<input type="checkbox"/>	5000 ~ 60000 (rpm)					
MEDIA HEIGHT	<input type="checkbox"/>	0.1 ~ 55.0 (mm)					
Z-ORIGIN POSITION	<input type="checkbox"/>	_____					

● Recommended Cutting Conditions for Model M (Items marked \* can be set using the FineCut software.)

Workpiece Type	End Mill	Cut Count	
Acryl : (Sumitomo Chemical) SUMIPEX 3t	SPB-0074	1	• For details about the end mill (the blade length or the whole length), see P.1-27 "Table of the Milling Tool (End Mill)".
Acryl : (Sumitomo Chemical) SUMIPEX 5t	SPB-0072	1	
AP Panel 3t	SPB-0068	1	
Form Board 15mm	SPB-0069	2	
		1	
Form Board 30mm	SPB-0070	3	
		2	
		1	
Form Board 50mm	SPB-0071	5	
		4	
		3	
		2	

## Outline

Speed for cutting an arc with a radius less than 5 mm. If OFF, the previously set speed is used for cutting.
Speed for cutting an arc with a radius at least 5 mm but less than 10 mm. If OFF, the previously set speed is used for cutting.
Speed for cutting an arc with a radius at least 10 mm but less than 15 mm. If OFF, the previously set speed is used for cutting.
Speed for drawing an arc with a radius at least 15 mm but less than 20 mm. If OFF, the previously set speed is used for drawing.
Speed for drawing an arc with a radius at least 25 mm but less than 30 mm. If OFF, the previously set speed is used for drawing.
Speed for drawing an arc with a radius at least 30 mm but less than 40 mm. If OFF, the previously set speed is used for drawing.
Speed for drawing an arc with a radius at least 40 mm but less than 50 mm. If OFF, the previously set speed is used for drawing.
Speed for drawing an arc with a radius at least 50 mm but less than 100 mm. If OFF, the previously set speed is used for drawing.
Descent speed for the milling tool.
Rotation speed (rpm) of the milling tool.
Designates the thickness of the mounted workpiece.
The Z origin coordinates set on P.2-9 is displayed.(The origin coordinates cannot be set here.)

Thickness ( mm )	Cutting Direction *	Speed ( cm/s )	ACCELE ( G )	Round Speed (x1000rpm)	Depth ( mm )	Z SPEED ( mm/s )	End Mill Diameter* ( mm )
3	Up-Cut	3	0.3	40	3	10	3
5	Up-Cut	2.5	0.3	25	5	10	4
3	Up-Cut	1	0.3	30	3	10	3
17	Up-Cut	1	0.3	30	9	10	4
17	Up-Cut	1	0.3	30	17	10	4
32	Up-Cut	1	0.3	30	11	10	6
32	Up-Cut	1	0.3	30	22	10	6
32	Up-Cut	1	0.3	30	32	10	6
53	Up-Cut	1	0.3	30	10	10	6
53	Up-Cut	1	0.3	30	21	10	6
53	Up-Cut	1	0.3	30	32	10	6
53	Up-Cut	1	0.3	30	43	10	6
53	Up-Cut	1	0.3	30	53	10	6

R1

TF2

M

2

Basic Operations

# Adjusting the Blade to Match the Workpiece

This section describes how to adjust a tangential cutter blade or swivel blade.



- It is not possible to adjust a reciprocating cutter blade or a milling tool.



- Handle the blade carefully to avoid injury. For safety, handle the blade with the tweezers supplied.



## Adjusting the Tangential Cutter

A cutter holder is required to mount the tangential cutter.

A tangential cutter can be mounted in Unit B or Unit C. However, the type of cutter holder differs.



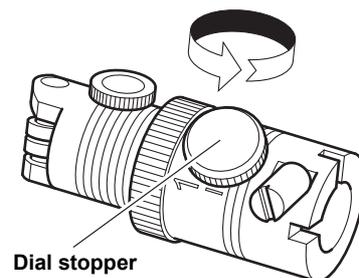
- Special tangential cutter blades and holders are available to suit different workpieces. Contact your dealer or an office of MIMAKI for details.

	Head Type	Cutter Holder	Cutter	Applicable Workpiece
R1	Unit B	Cutter holder 2 N	For high-speed, 30° For carbide, 30°	Workpiece thickness 2 mm max.
		Cutter holder 07	For 20 mm blade For carbide, 17°	Corrugated cardboard
	Unit C	Crease roller CN Boat-shaped plate YN	—————	Corrugated cardboard
TF2	Unit B	Cutter holder 4N	For high-speed, 30° For carbide, 30°	Workpiece thickness 5mm max.
	Unit C	Cutter holder 7N	For high-speed, 30° (7 mm)	Workpiece thickness 7mm max.
		Cutter holder JN	For carbide double-edged cutter	Joint sheet

1

**Loosen the dial stopper.**

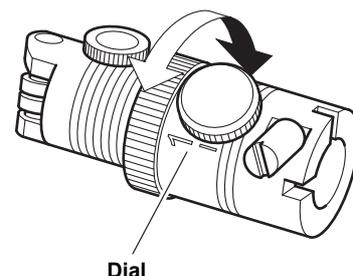
- Turn the dial stopper counterclockwise to loosen it.



2

**Turn the dial.**

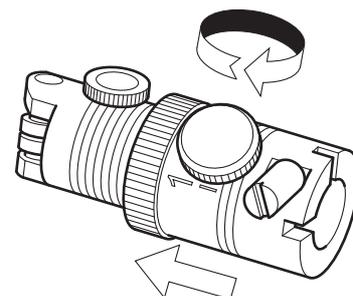
- Turning the dial one graduation in the direction of the arrow extends the blade 0.1 mm, and turning it one revolution extends the blade 1 mm.
- As a rule of thumb, the blade tip should protrude by **(workpiece thickness + 0.2 mm)**.



3

**Tighten the dial stopper while pushing the dial in the direction of the arrow.**

- The dial has some play. To eliminate discrepancies in the amount that the blade protrudes, push the dial in the direction of the arrow while tightening the dial stopper.



R1

TF2

2

Basic Operations

**Important!**

- When mounting a tangential cutter in Unit B, set the VIBRATION cutting condition to OFF. (☞ P.2-12)  
Setting VIBRATION from 1 to 5 may damage the cutter holder or unit.

## Adjusting the Swivel Blade

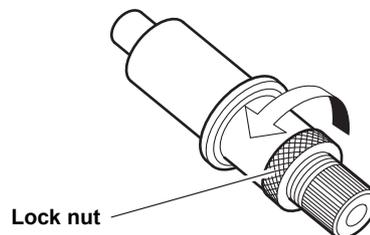
The blade supplied is suitable for PVC sheet for signs.

A variety of special cutters is available to suit the workpiece you are handling. Contact your dealer or an office of MIMAKI for details.

**1**

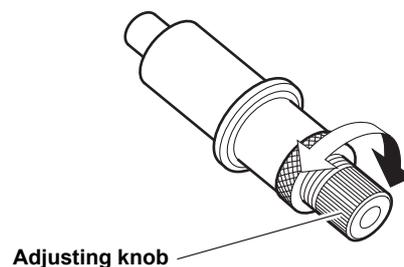
### Loosen the lock nut.

- Turn the lock nut counterclockwise to loosen it.


**2**

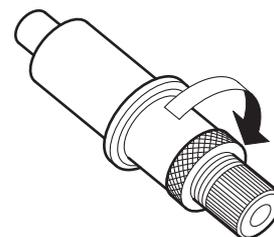
### Turn the adjusting knob to adjust the amount that the blade protrudes.

- The blade tip enters the holder when the adjusting knob is turned clockwise.
- As a rule of thumb, the blade tip should protrude by  $(\text{workpiece thickness} + \text{base paper thickness}/2)$ .


**3**

### Tighten the lock nut, while ensuring that the adjusting knob does not turn.

- Turn the lock nut clockwise to tighten it.



# Adjusting the Head Height

After mounting the workpiece and tool, adjust the head height according to the workpiece thickness. Adjust the head height each time the workpiece thickness changes.

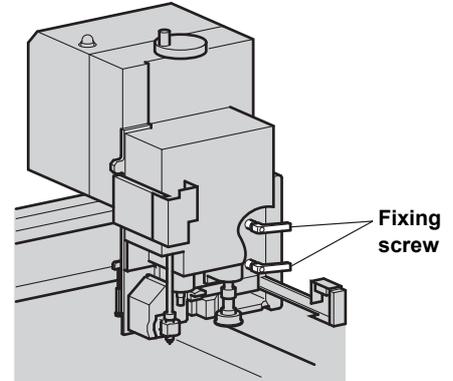


- When raising the head, support the head base by hand. Attempting to raise the head with the height-adjustment dial alone can damage the height-adjustment dial.
- When locking the head, do not tighten just one of the two fixing screws. This could damage the fixing screw.

## 1

### Loosen the head fixing screws

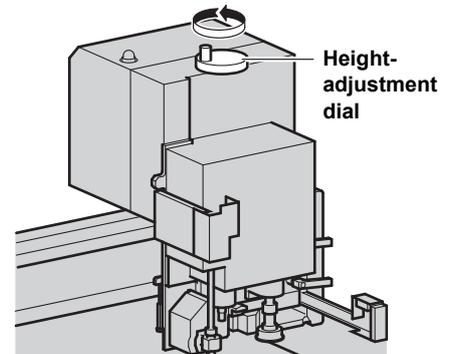
- There are two fixing screws.
- Turn the fixing screws counterclockwise to loosen them.



## 2

### Raise the head.

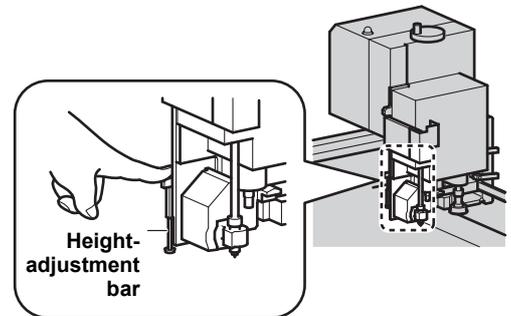
- Turn the height-adjustment dial clockwise to raise the head.



## 3

### Turn the height-adjustment dial to lower the head while holding down the height-adjustment bar.

- Lower the head until the bottom edge of the height-adjustment bar touches the workpiece surface.



## 4

### Tighten the fixing screws alternately, starting from the bottom.

- Turn the fixing screws clockwise to lock the head.

R1

TF2

M

## 2

Basic Operations

# Making a Test Cut

After changing the cutting conditions or tool, make a test cut to check the items listed below. For details, see "Checking the Tool Status" (🔧 P.2-23).



No.	Check Item	Check Point
(1)	Are the cutting (drawing) conditions suitable?	Work is correctly cut or drawing is not smudged.
(2)	Is tool mounted eccentrically?	An eccentric tool can cause displacement in the cutting or drawing.
(3)	Do tools match?	When a tangential cutter cuts over a drawing, do the drawn and cut patterns match?

## 1

**Press REMOTE  
LOCAL to display the local menu.**

- If the unit is in remote status, press REMOTE/LOCAL to set local status.

```
[ LOCAL ]           1 / 5
TOOL SELECT  --->
CONDITION    --->
TEST CUT     --->
```

## 2

**Press the jog keys ▲▼◀▶ to move the head to the test cut position.**

```
<ORIGIN>           [mm]
  00.00    00.00
SPEED                FAST>
```

## 3

**Press ORIGIN .**

- The local menu is displayed.
- If the first page of the local menu does not appear, press PAGE + to display the first page.

```
[ LOCAL ]           1 / 5
TOOL SELECT  --->
CONDITION    --->
TEST CUT     --->
```

## 4

**Press F3 + .**  
**[TEST CUT] is selected.**

```
<TEST CUT>

END KEY to START
CE KEY to CANCEL
```

## 5

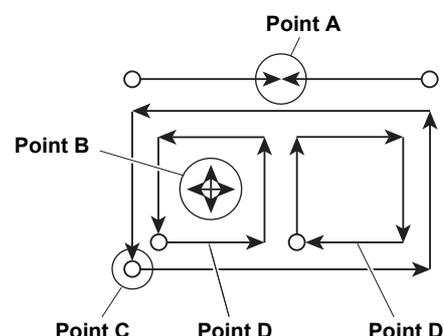
**Press END .**

- The test cut starts.
- Press CE to cancel the test cut and return to Step 2.

## Checking the Tool Status

Make a test cut using the tool selected by the Tool Select function. This section describes the check items for each tool.

### Test cut pattern drawn by Model TF2 or Model R1



### Pen (Model TF2 or Model R1)

Check Point	Cause	Remedy	See page
Point A contact points do not match	Pen incorrectly mounted.	Fully tighten the holder screw.	P.1-19
Lines broken or faint	Out of ink	Replace the pen with a new one.	P.1-19
	Press value low	Increase the "PRESSURE" in the cutting conditions.	P.2-12
	Speed is too high, causing the pen to lift.	Decrease the "SPEED" in the cutting conditions.	P.2-12

### Tangential Cutter (Model TF2 or Model R1)

Check Point	Cause	Remedy	See page
Point A contact points do not match	"E OFFSET" value too low in cutting conditions.	Increase the "E OFFSET".	P.2-12
	Blade is mounted eccentrically	Conduct Adjust Eccentricity in tool adjustments.	P.6-6
Lines displaced at Point A	Abnormal angle $\theta$ of tangential cutter	Conduct Adjust $\theta$ in tool adjustments.	P.6-8
Cutting incomplete	Press value low	Increase the "PRESSURE" in the cutting conditions.	P.2-12
Cutting incomplete at corners	The "F OFFSET" and "E OFFSET" values in the cutting conditions are too low.	Increase the "F OFFSET" and "E OFFSET".	P.2-12
D and D' have different dimensions	Blade is mounted eccentrically	Conduct Adjust Eccentricity in tool adjustments.	P.6-6
Too many cuts at Point C	"F OFFSET" value is too large.	Decrease the "F OFFSET" in the cutting conditions.	P.2-12
	Blade is mounted eccentrically	Conduct Adjust Eccentricity in tool adjustments.	P.6-6

## Crease Roller (Model TF2 or Model R1)

Check Point	Cause	Remedy	See page
Point A contact points do not match	Blade is mounted eccentrically	Conduct Adjust Eccentricity in tool adjustments.	P.6-6
Lines displaced at Point A	Abnormal angle $\theta$ of crease roller	Conduct Adjust $\theta$ in tool adjustments.	P.6-8
Crease is weak	Press value low	Increase the "PRESSURE" in the cutting conditions.	P.2-12
	Crease roller for corrugated cardboard is used on coated board.	Use a crease roller for coated board.	
Crease lines torn along flutes of corrugate cardboard.	Y PRESS value in the cutting conditions is too high.	Align the corrugated cardboard flutes in the Y-axis direction.	
		Decrease the "Y PRESS" in the cutting conditions.	P.2-12

## Swivel Blade (Model TF2 or Model R1)

Check Point	Cause	Remedy	See page
Broken lines	Swivel cutter incorrectly mounted.	Fully tighten the holder screw.	P.1-19
	Speed is too slow.	Increase the "SPEED" in the cutting conditions.	P.2-12
	Press value low	Increase the "PRESSURE" in the cutting conditions.	P.2-12
Corners rounded off	The blade does not protrude enough.	Increase the amount that the blade protrudes.	P.2-18
	Offset value is too small.	Increase the "OFFSET" in the cutting conditions.	P.2-12

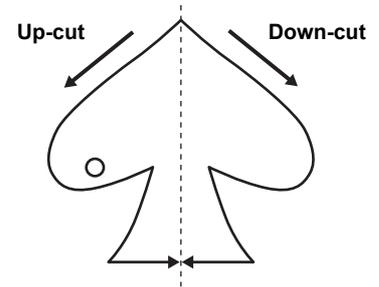
R1

TF2

## Milling Tool

### Test cut pattern drawn by Model M.

- The test pattern drawn for the milling tool differs from the one drawn by Model TF2 or Model R1.
- The up-cut and down-cut are conducted in a single test cut pattern. Select the cutting method producing the cleanest cut as the cutting method to use.  
(The up-cut / down-cut setting is made by the FineCut software supplied.)



M

2

Basic Operations

Check Point	Cause	Remedy	See page
Unevenness in cut surfaces for both up-cut and down-cut.	Spindle motor is not firmly mounted.	Firmly fix the spindle motor.	P.1-28
	Head is not firmly mounted.	Firmly fix the head.	P.2-21
	Dirt or chips stuck to the end mill.	Clean all dirt and chips from the end mill.	P.5-5
	End mill has reached its service life.	Replace the end mill.	P.1-30
	Inappropriate end mill for the workpiece being cut.	Use an end mill suitable for the workpiece.	P.1-30
	The set cutting conditions do not suit the end mill or workpiece.	Review the cutting conditions.	P.2-12

# Checking the Status Between Tools

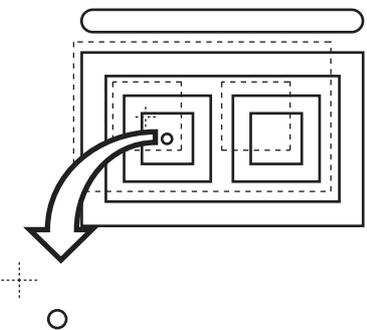
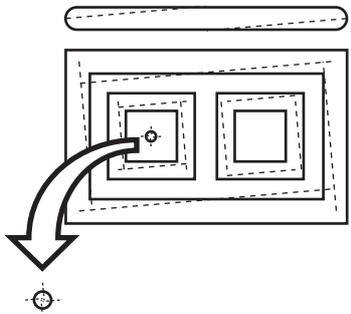
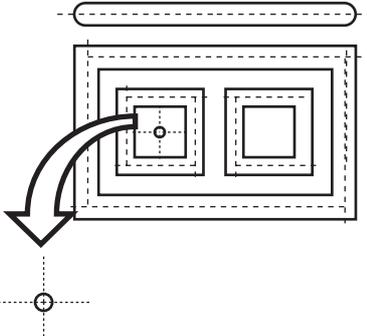
Make a test cut to check the status between the tools (pen and tangential cutter or pen and crease roller).

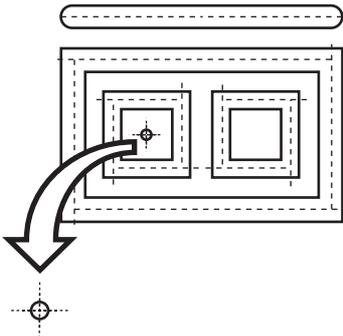
## Check Method

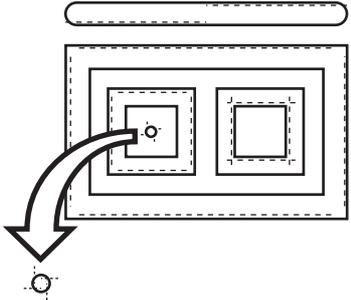
Draw the pattern with the pen. Then make a test cut at the same position using the tangential cutter or crease roller to check the status between tools.

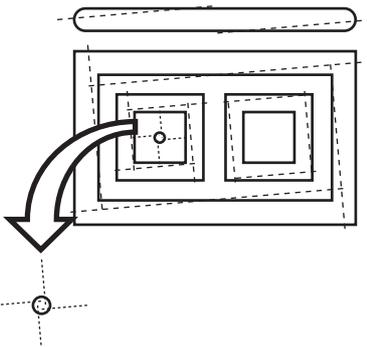
Appropriate remedies are described below for ten types of sample.

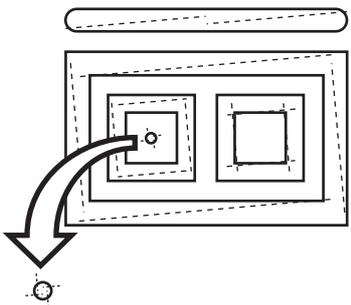
- Hint!**
- Some samples require the adjustment of one item, while others require the adjustment of multiple items. Refer to the sample to identify the items requiring adjustment.
  - The description below refers to the pen and tangential cutter. For the crease roller, read "tangential cutter" as "crease roller."

<p><b>Sample A</b></p> 	<p><b>Overview</b> The tangential cutter is displaced with respect to the center of the pen, regardless of the direction of movement.</p> <hr/> <p><b>Remedy</b> Adjust the Offset in Adjust Cutter in tool adjustments. (👉 P.6-3)</p>
<p><b>Sample B</b></p> 	<p><b>Overview</b> The cut is rotated clockwise or counterclockwise.</p> <hr/> <p><b>Remedy</b> Conduct Adjust <math>\theta</math> in Adjust Cutter in tool adjustments. (👉 P.6-3)</p>
<p><b>Sample C</b></p> 	<p><b>Overview</b> Cutting start point is too far forward or backward.</p> <hr/> <p><b>Remedy1</b> Adjust the F OFFSET value in the cutting conditions. (👉 P.2-12)</p> <hr/> <p><b>Remedy2</b> Adjust Pattern A in Adjust Eccentricity in Adjust Cutter in tool adjustments. (👉 P.6-3)</p>

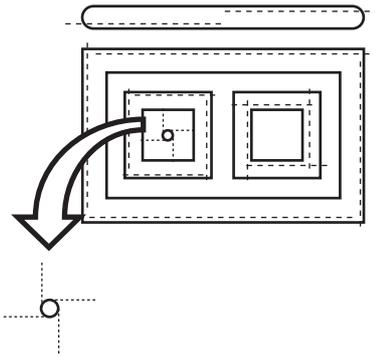
<p><b>Sample D</b></p> 	<p><b>Overview</b> Cutting end point is too long or too short.</p>
	<p><b>Remedy1</b> Adjust the E OFFSET value in the cutting conditions. (P.2-12)</p> <p><b>Remedy2</b> Adjust Pattern A for Adjust Eccentricity in Adjust Cutter in tool adjustments. (P.6-3)</p>

<p><b>Sample E</b></p> 	<p><b>Overview</b> The tangential cutter is displaced to the right of the direction of movement.</p>
	<p><b>Remedy</b> Adjust Pattern B for Adjust Eccentricity in Adjust Cutter in tool adjustments. (P.6-3)</p>

<p><b>Sample F</b></p> 	<p><b>Overview</b> The cut is rotated clockwise or counterclockwise, and the cutting start point is too far forward or backward.</p>
	<p><b>Remedy</b> See the remedies described for Sample B and Sample C.</p>

<p><b>Sample G</b></p> 	<p><b>Overview</b> The cut is rotated clockwise or counterclockwise, and the tangential cutter is displaced to the right or left.</p>
	<p><b>Remedy</b> See the remedies described for Sample B and Sample E.</p>

Sample H



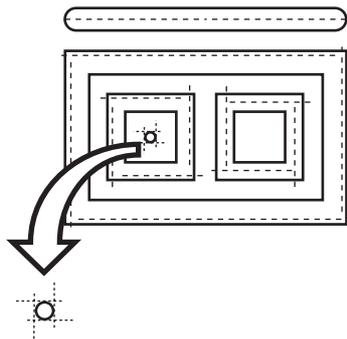
**Overview**

The cutting start point is too far forward or backward, and the tangential cutter is displaced to the right or left.

**Remedy**

See the remedies described for Sample C and Sample E.

Sample I



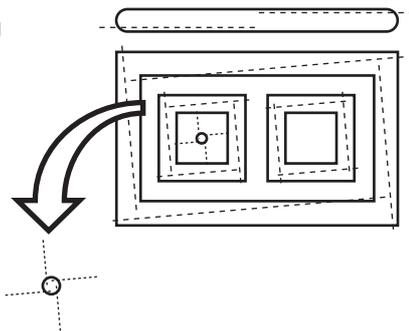
**Overview**

The cutting end point is too long or too short, and the tangential cutter is displaced to the right or left.

**Remedy**

See the remedies described for Sample D and Sample E.

Sample J



**Overview**

The cut is rotated clockwise or counterclockwise, the cutting end point is too long or too short, and the tangential cutter is displaced to the right or left.

**Remedy**

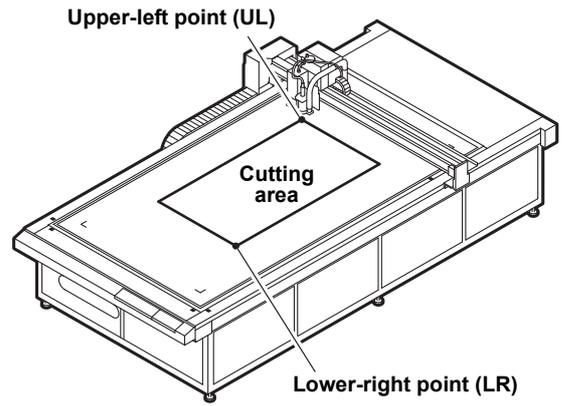
See the remedies described for Sample B, Sample D, and Sample E.

R1

TF2

# Setting the Cutting Area

The maximum cutting area is set when the unit is turned on. The cutting area can be set to any size to match the size of the workpiece. The cutting area is set by designating the lower-right (LR) and upper-left (UL) points of the cutting area.



**Hint!** • To clear the set cutting area, turn the unit off and back on. The cutting area reverts to its maximum size.

R1  
TF2  
M

**1**

Press **REMOTE/LOCAL** to display the local menu.

- If the unit is in remote status, press **REMOTE/LOCAL** to set local status.

```
[ LOCAL ]      1 / 5
TOOL SELECT  --->
CONDITION    --->
TEST CUT     --->
```

**2**

Display the fourth page of the local menu.

- Press **PAGE(+)** several times.

```
[ LOCAL ]      4 / 5
CUT AREA      --->
AXIS ALIGN    --->
MANUAL CUT    --->
```

**3**

Press **F1(+)**.  
[CUT AREA] is selected.

```
<CUT AREA>
LOWER RIGHT  >
```

**4**

Press **F1(+)**.

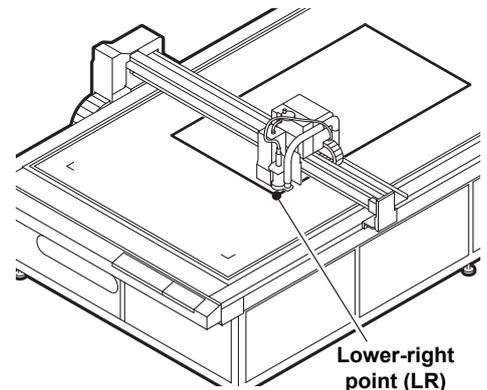
- The light pointer moves to the currently set lower-right (LR) point.
- The coordinates are displayed with respect to the command origin position.

```
<AREA L/R>
-600.0  -450.0
SPEED    FAST>
```

**5**

Align the light pointer with the lower-right corner of the required cutting area.

- Press the jog keys to move the light pointer to the lower-right corner (LR) of the cutting area that you wish to set.
- If necessary, change the head travel speed.
- To change the head travel speed, press **F2(+)**.



**2**  
Basic Operations

6

Press **END**.

- The LR point is saved.
- Press **CE** to return to Step 3 without saving the setting.

```
<AREA L/R>
-450.0  -300.0
SPEED    FAST>
```

```
<CUT AREA>
UPPER LEFT  >
```

7

Press **F1+**.

- The light pointer moves to the currently set upper-left (UL) point.
- The coordinates are displayed with respect to the command origin position.

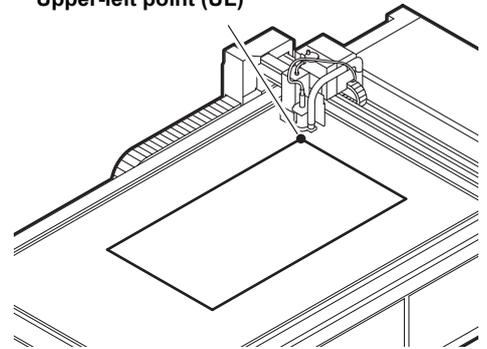
```
<AREA U/L> [mm]
600.0  450.0
SPEED    FAST>
```

8

Align the light pointer with the upper-right corner of the required cutting area.

- Press the jog keys to move the light pointer to the upper-left (UL) corner of the cutting area that you wish to set.
- If necessary, change the head travel speed.
- To change the head travel speed, press **F2+**.

Upper-left point (UL)



9

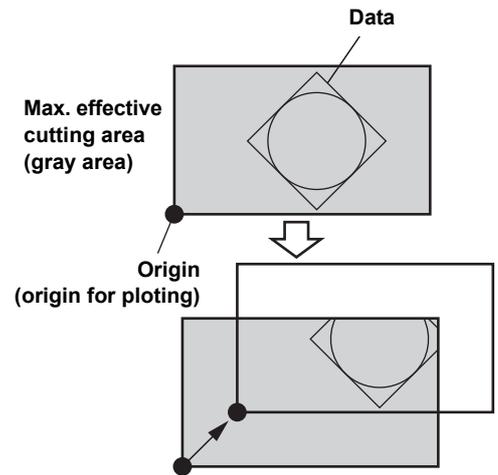
Press **END**.

- The UR point is saved.
- Press **CE** if you do not want to save the settings.

# Setting the Drawing Origin

The origin is the reference point for drawing, cutting, and grid cutting. (It is normally set at the lower-right corner of the maximum effective cutting area.)

The drawing position moves as the origin is moved.



**Hint!**

- The origin is set as coordinate position (0, 0). When the head is moved by pressing the jog keys, the screen displays the coordinates with respect to the origin.
- The Sample Cut function cuts (draws, grid cuts) the data next to the origin.

R1  
TF2  
M

2

Basic Operations

1

Press **PAGE (+)**.  
Select the local menu.

- If the unit is in remote status, press **REMOTE/LOCAL** to set local status.

```
[ LOCAL ]      1 / 5  
TOOL SELECT  --->  
CONDITION    --->  
TEST CUT     --->
```

2

Press the jog keys **▲ ▼ ◀ ▶** to move the light pointer to the position where you wish to set the origin.

- Move the light pointer to the tool tip to display the current light pointer coordinates.
- To change the head travel speed : press **F2 (+)**.

```
<ORIGIN>      [ mm ]  
382.6   565.0  
SPEED      FAST>
```

3

Press **ORIGIN**.

- The origin is set.
- The tool tip moves to the light pointer position.

# Cutting (Drawing)

## Effective Cutting Area

The table below shows the maximum effective cutting area for each model.

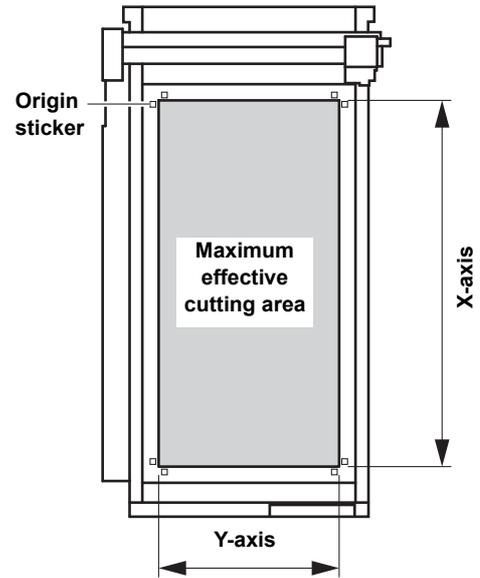
The maximum effective cutting area does not change according to the head (TF, R1, M).

R1

TF2

M

Model Name	X-axis (mm)	Y-axis (mm)
CF3-1610	1000	1600
CF3-1631	3100	1600



## Cutting (Drawing)

1

Set the origin and press **REMOTE LOCAL**.

- The remote mode is selected.

2

Download data from the host computer.

- Cutting starts automatically after the data is received.
- When cutting is complete, the display appears as shown to the right.

```
[REMOTE]      0KB  
TANGENTIAL BLD  
S 30 P1500 R0.30  
H 30 F0.00 E0.00
```

3

Press **VACUUM**

4

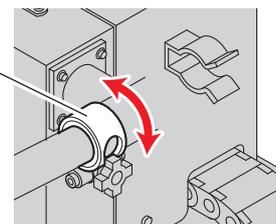
Press **F2 (+)**, select **[REVERSE]**, and remove the workpiece.

- Once the workpiece has been removed, press **VACUUM** and stop the blowing air.

## Adjusting the dust collector force when using Model M.

Use the dust-collector adjusting window to the right of the head to adjust the dust-collection force according to the size of the cutting data.

Dust-collector  
adjusting window



R1

TF2

M

## Interrupting Processing

Follow the procedure below to interrupt data processing during drawing, cutting, or grid cutting in remote status for any reason.

1

Press  during unit operation.

- After a while, unit operation stops and it enters the local status.
- The time when operation stops depends on the data being processed.
  - Processing a circle** : Stops when the circle is complete.
  - Other line segments** : Stops when processing of each vector is complete.

2

Basic Operations

## Restarting Processing

1

Press .

- The unit enters remote status and processing restarts.

## Functions that Can Be Set After Interrupting Processing

- **Change the cutting conditions**

 P.2-12 "Setting the Cutting Conditions"

- **Clear the data remaining in the receive buffer**

 P.2-34 "Interrupting Processing (Data Clear)"

## Interrupting Processing (Data Clear)

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

- (1) To clear an interrupted cutting (drawing) file from the receive buffer, without restarting processing.
- (2) To clear received but unprocessed data from the receive buffer.
- (3) To clear data remaining in the receive buffer before receiving data from running the SINGLE COPY function.
- (4) To cut using a PC that is different from the PC that sent the cutting data the previous time.

# 1

### Set local status.

- If the unit is in remote status, press **(REMOTE/LOCAL)** to set local status.
- Press **(REMOTE/LOCAL)** during data processing to interrupt the processing.

```
[ LOCAL ]          1 / 5
TOOL SELECT  --->
CONDITION    --->
TEST CUT     --->
```

# 2

### Display the second page of the local menu.

- Press **(PAGE +)** several times.

```
[ LOCAL ]          2 / 5
DATA CLEAR  --->
SINGLE COPY --->
VIEW       --->
```

# 3

### Press **(F1 +)**. [DATA CLEAR] is selected.

```
<DATA CLEAR>
END KEY to START
CE KEY to CANCEL
ORGkey to SC.CLR
```

# 4

### Press **(END)**.

- The data is cleared.
- Press **(CE)** to cancel the data clear. Return to Step 2.

R1

TF2

M

# Chapter 3

## *Making the Most of the Unit*



### **This Section....**

... describes some operations that make the unit even more useful.

Assigning Pen Numbers .....	3-2
Cutting the Same Data Again (Copy).....	3-4
Setting Multi-pass Cutting .....	3-5
Setting Multi-pass Cutting (Models R1, TF2) .....	3-5
Setting Multi-pass Cutting (Model M) .....	3-7
One Stroke Setting.....	3-8
Rotating Coordinate Axes (ROTATE).....	3-9
Setting the Cutter Stroke.....	3-10
Setting the Displayed Units.....	3-11
Swivel Blade Dummy Cut .....	3-12
Setting Axis Alignment .....	3-13
Setting the Displayed Language (DISPLAY) .....	3-14
Setting NR Head Retraction.....	3-15
Setting the Close Time.....	3-16
Manual Cutting.....	3-17
Cleaning the Table.....	3-18

# Assigning Pen Numbers

This section describes how to assign pen numbers in the data to tools on the unit.  
For this unit, up to six pens can be assigned to each tool.

**This example describes how to make the following settings.**

Pen 1 (pen number in drawing data) : Set to PEN.

Pen 2 (pen number in cutting data) : Set to  $\theta$  CUTTER 1 (Tangential Cutter 1).

The following settings allow simultaneous drawing and cutting of Pen 1 and Pen 2 data.

## 1

**Display the third page of the local menu.**

- Press **PAGE** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

## 2

**Press **F2**.  
[MODE SET] is selected.**

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI-PASS    - - - >
VACUUM        - - - >
```

## 3

**Display the fifth page of the MODE SET menu.**

- Press **PAGE** several times.

```
<MODE SET>    5 / 7
PEN ASSIGN    - - - >
DRAW LVL NORMAL>
UNIT          mm>
```

## 4

**Press **F1**.  
[PEN ASSIGN] is selected.**

```
<PEN ASSIGN>  1 / 6
PEN1
HEAD           B>
TOOL    $\theta$  CUTTER1>
```

## 5

**Press **F2** to change HEAD from B to A.**

- Set values: A, B, C

```
<PEN ASSIGN>  1 / 6
PEN1
HEAD           A>
TOOL    $\theta$  CUTTER1>
```

## 6

**Press **F3** and select TOOL to [PEN].**

- The set values differ according to the mounted tools.

```
<PEN ASSIGN>  1 / 6
PEN1
HEAD           A>
TOOL           PEN>
```

## 7

**Press **PAGE** to display the PEN 2 setup menu.**

```
<PEN ASSIGN>  2 / 6
PEN2
HEAD           A>
TOOL   R. CUTTER1>
```

## 8

**Press **F2** to change HEAD from A to B.**

- Set values: A, B, C

```
<PEN ASSIGN>  2 / 6
PEN2
HEAD           B>
TOOL   R. CUTTER1>
```

R1  
TF2

**9**

Press **(F3+)** and select **TOOL** to **[θ CUTTER1]**.

- The set values differ according to the mounted tools.
- To set Pens 3 to 6, repeat the procedure from Step 7.

```
<PEN ASSIGN> 2 / 6
PEN2
HEAD          B>
TOOL  θ CUTTER1>
```

**10**

Press **(END)** .

- The settings are saved.
- Press **(CE)** if you do not want to save the settings.

**R1****TF2****3**

Making the Most of the Unit

# Cutting the Same Data Again (Copy)

Previously cut data can be cut again in offline status.  
This eliminates the need to send the same data many times from the PC.



- Use DATA CLEAR to clear (☞ P.2-34) the receive buffer before receiving the data to be copied. If the data is not cleared, the other data in the receive buffer will be copied.

1

**Clear the data (☞ P.2-34).**

- Clear the data immediately before receiving the data to copy.

2

**Cut the data to copy (☞ P.2-32).**

3

Press **REMOTE LOCAL** to select local status.

[ LOCAL ]	1 / 5
TOOL SELECT	---
CONDITION	---
TEST CUT	---

4

Press a jog key **▲ ▼ ◀ ▶** to move the origin (☞ P.2-31).

- Reset the origin to the position to be copied. Failure to reset the origin results in cutting at the same position.

5

Press **PAGE (+)** to display the second page of the local menu.

[ LOCAL ]	2 / 5
DATA CLEAR	---
SINGLE COPY	---
VIEW	---

6

Press **F2 (+)** and select **[SINGLE COPY]**.

<COPY>	1 / 1
END KEY to START	
CE KEY to CANCEL	

7

Press **END** to copy the data.

- Press **CE** to cancel the copy.
- When copying is complete, the display reverts to the screen at Step 5 after the head retraction.
- To cut once more, repeat the procedure from Step 4.

[ LOCAL ]	2 / 5
DATA CLEAR	---
SINGLE COPY	---
VIEW	---

R1

TF2

M

# Setting Multi-pass Cutting

## Setting Multi-pass Cutting (Models R1, TF2)

The same data can be cut up to five times, while changing the press value.  
This is an effective means of cutting a workpiece that cannot be cut in one pass.

**Important!**

- Multi-pass cutting is not possible for Unit B of Model R1.
- Set the cut start time that sets the delimiter between data. Multi-pass cutting starts if the next data is not received within the set time.

Set Item	Set value	Description
CUT START	OFF, 5, 15, 30, 45, 60 (s)	Set the cut start time that sets the delimiter between data. Multi-pass cutting starts if the next data is not received within the set time.
PRESS 1st	OFF, 300 g to 5000 g* <sup>1</sup> (50 g steps)	Sets the press value for the first cut.
PRESS 2nd		Sets the press value for the second cut.
PRESS 3rd		Sets the press value for the third cut.
PRESS 4th		Sets the press value for the fourth cut.
PRESS 5th		Sets the press value for the fifth cut.

\*1. The set values differ according to the unit.

**Unit B** : 300 g to 1500 g

**Unit C** : 1000 g to 5000 g (except grid roller)

**Hint!**

- Multi-pass cutting is disabled if PRESS 1ST to PRESS 5TH are all set to OFF.

### 1

**Display the third page of the local menu.**

- Press **PAGE** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

### 2

**Press **F2** and select [MODE SET].**

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI-PASS    - - - >
VACUUM        - - - >
```

### 3

**Press **F2** and select [MULTI-PASS].**

```
<MULTI-PASS>  1 / 2
CUT START     OFF>
PRESS . 1st   OFF>
PRESS . 2nd   OFF>
```

### 4

**Press **F1** and select [CUT START].**

- Set value: OFF, 5, 15, 30, 45, 60 (s)

```
<MULTI-PASS>  1 / 2
CUT START      15s>
PRESS . 1st    OFF>
PRESS . 2nd    OFF>
```

### 5

**Select the PRESS 1 or PRESS 2 press value.**

- Set value: 300 g to 5000 g
- F2**: Sets the first press value
- F3**: Sets the second press value

```
<MULTI-PASS>  1 / 2
CUT START      15s>
PRESS . 1st    500g>
PRESS . 2nd    500g>
```

R1  
TF2

3

Making the Most of the Unit

6

Press **PAGE (+)** to display the second page of the MULTI-PASS menu.

```
<MULTI - PASS> 2 / 2
PRESS. 3rd    OFF>
PRESS. 4th    OFF>
PRESS. 5th    OFF>
```

7

Select the PRESS 3 to PRESS 5 press values.

```
<MULTI - PASS> 2 / 2
PRESS. 3rd    700g>
PRESS. 4th    900g>
PRESS. 5th    1000g>
```

- F1 (+)**: Sets the third press value.
- F2 (+)**: Sets the fourth press value.
- F3 (+)**: Sets the fifth press value.

8

Press **END** .

- The press value settings are saved.
- Press **CE** if you do not want to save the settings.

**Important!**

- To use FineCut to output data, set "OFF" at Step 4 and set multi-pass cutting in the FineCut output settings.



## Setting Multi-pass Cutting (Model M)

The same data can be cut up to 100 times, while changing the press value.  
This is an effective means of cutting a workpiece that cannot be cut in one pass.

**Important!**

- Set the cut start time that sets the delimiter between data. Multi-pass cutting starts if the next data is not received within the set time.

Set Item	Set value	Description
CUT START	OFF, 5, 15, 30, 45, 60 (s)	Set the cut start time that sets the delimiter between data. Multi-pass cutting starts if the next data is not received within the set time.
CUT COUNT	OFF, 2 - 100	Sets the number of cuts made.

# 1

Display the third page of the local menu.

- Press **(PAGE+)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

# 2

Press **(F2+)** and select **[MODE SET]**.

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI-PASS    - - - >
VACUUM        - - - >
```

# 3

Press **(F2+)** and select **[MULTI PASS]**.

```
<MULTI-PASS> 1 / 1
CUT START     OFF>
CUT COUNT     OFF>
DEP : 00.00mm/Step
```

# 4

Press **(F1+)** and select **[CUT START]**.

- Set values: OFF, 5, 15, 30, 45, 60 (s)

```
<MULTI-PASS> 1 / 1
CUT START     15s>
CUT COUNT     OFF>
DEP : 00.00mm/Step
```

# 5

Press **(F1+)** and select **[CUT COUNT]**.

- Set values: OFF, 2 - 100
- [DEP] displays the cutting depth per cut.  
(workpiece thickness ÷ number of cuts)

```
<MULTI-PASS> 1 / 1
CUT START     15s>
CUT COUNT     010S>
DEP : 00.00mm/Step
```

# 6

Press **(END)** to save the setting.

- Press **(CE)** if you do not want to save the setting.

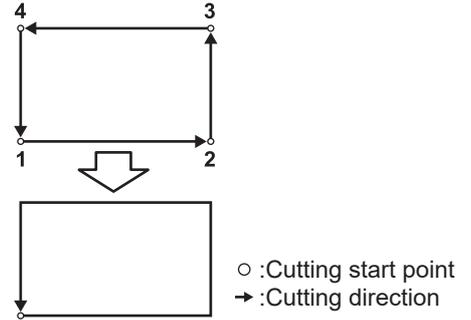
M

3

Making the Most of the Unit

# One Stroke Setting

Received data comprising non-consecutive line segments, such as that shown here, can be cut in a single stroke.



Set value	Description
OFF	No one-stroke cutting
ON	One-stroke cutting
SORT	One-stroke cutting, starting from the point near the tool

R1  
TF2  
M



• This function is only available if MARK SENSOR is set "OFF".

- 1

**Display the third page of the local menu.**

  - Press **(PAGE ⊕)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

---

- 2

**Press **(F2 ⊕)** and select [MODE SET].**

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

---

- 3

**Press **(PAGE ⊕)** to display the second page of the MODE SET menu.**

```
<MODE SET>    2 / 7
AUTO VIEW     OFF>
DUMMY CUT     OFF>
ONE STROKE    OFF>
```

---

- 4

**Press **(F3 ⊕)** and select the [ONE STROKE] set value.**

  - Set values: OFF, ON, SORT

```
<MODE SET>    2 / 7
AUTO VIEW     OFF>
DUMMY CUT     OFF>
ONE STROKE    ON>
```

---

- 5

**Press **(END)** .**

  - The setting is saved.
  - Press **(CE)** if you do not want to save the setting.

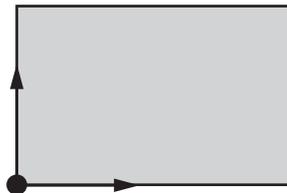
**Important!**

• To use FineCut to output data, set "OFF" at Step 4 and set one-stroke cutting (Sort) in the FineCut output settings.

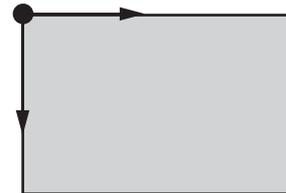
# Rotating Coordinate Axes (ROTATE)

If the command origin is set at the lower-right point, this setting determines the direction to rotate the coordinate axes to match the CAD system.

Set value	Description
+ 90°	Sets the coordinate axes at the lower-right corner of the maximum effective cutting area.
- 90°	Sets the coordinate axes at the lower-left corner of the maximum effective cutting area.



Command origin set at lower-right corner.



Set rotated by -90°.



3

Making the Most of the Unit

1

Display the third page of the local menu.

- Press **(PAGE+)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET     - - - >
SELF TEST    - - - >
```

2

Press **(F2+)** and select [MODE SET].

```
<MODE SET>    1 / 7
Z STROKE     7mm>
MULTI-PASS   - - - >
VACUUM       - - - >
```

3

Display the third page of the MODE SET menu.

- Press **(PAGE+)** several times.

```
<MODE SET>    3 / 7
ROTATE       +90°>
COMMAND MGL-IIC3
CMD SW      Enable>
```

4

Press **(F1+)** and select the [ROTATE] set value.

- Set values +90°, -90°

```
<MODE SET>    3 / 7
ROTATE       -90°>
COMMAND MGL-IIC3
CMD SW      Enable>
```

5

Press **(END)** to save the setting.

- Press **(CE)** if you do not want to save the setting.

# Setting the Cutter Stroke

This setting shortens the distance that the tool rises when cutting (or drawing) data with frequent up/down movements of the tangential cutter or grid roller and milling. It thereby reduces the total cutting time.

Set value	Description
7mm (8mm) *1	Tool rises 7 mm (8mm *1) above the workpiece surface.
4mm (3mm) *1	Tool rises 4 mm (3mm *1) above the workpiece surface.

\*1. Setting value when milling

1

**Display the third page of the local menu.**

- Press **PAGE** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

2

**Press **F2** and select [MODE SET].**

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI-PASS    - - - >
VACUUM        - - - >
```

3

**Press **F2** and select the [Z STROKE] set value.**

- Set values: 7 mm, 4 mm
- When milling, the setting values will be 8 mm and 3 mm.

```
<MODE SET>    1 / 7
Z STROKE      4mm>
MULTI-PASS    - - - >
VACUUM        - - - >
```

4

**Press **END** to save the setting.**

- Press **CE** if you do not want to save the setting.

R1

TF2

M

# Setting the Displayed Units

Sets the units for the values displayed on the screen.

Set value	Description
mm	Displays millimeters.
inch	Displays inches.

- 1** Display the third page of the local menu.

  - Press **PAGE+** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

---

- 2** Press **F2+** and select **[MODE SET]**.

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

---

- 3** Display the fifth page of the **MODE SET** menu.

  - Press **PAGE+** several times.

```
<MODE SET>    5 / 7
PEN ASSIGN    - - - >
DRAW LVL NORMAL>
UNIT          mm>
```

---

- 4** Press **F3+** and select the **[UNIT]** set value.

  - Set values:mm , inch

```
<MODE SET>    5 / 7
PEN ASSIGN    - - - >
DRAW LVL NORMAL>
UNIT          inch>
```

---

- 5** Press **END** to save the setting.

  - Press **CE** if you do not want to save the setting.

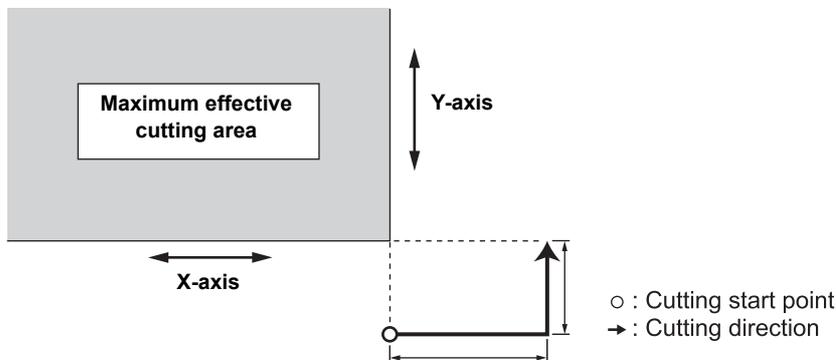


## 3

# Swivel Blade Dummy Cut

Sets whether the swivel blade makes a cut outside the maximum effective cutting area to turn the blade to the direction of movement when the power is turned on and the tool is set to swivel blade.

Set value	Description
OFF	Makes no dummy cut.
ON	Makes a dummy cut.



**1**

Display the third page of the local menu.

- Press **(PAGE+)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

**2**

Press **(F2+)** and select **[MODE SET]**.

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

**3**

Display the second page of the **MODE SET** menu.

- Press **(PAGE+)** several times.

```
<MODE SET>    2 / 7
AUTO VIEW     OFF>
DUMMY CUT     OFF>
ONE STROKE    OFF>
```

**4**

Press **(F2+)** and select the **[DUMMY CUT]** set value

- Set values: OFF, ON

```
<MODE SET>    2 / 7
AUTO VIEW     OFF>
DUMMY CUT     ON>
ONE STROKE    OFF>
```

**5**

Press **(END)** to save the setting.

- Press **(CE)** if you do not want to save the setting.

# Setting Axis Alignment

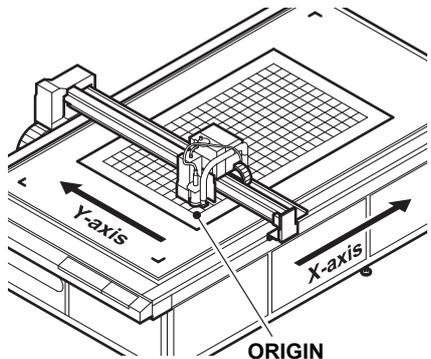
This function aligns the machine axes with a printed grid.  
The machine axes (X and Y axes) can be aligned with a grid, such as scale lines printed on the workpiece.

**1 Set local status.**

- If the unit is in remote status, press **[REMOTE/LOCAL]** to set local status.

[ LOCAL ]	1 / 5
TOOL SELECT	---
CONDITION	---
TEST CUT	---

**2 Set the ORIGIN at the left edge of the grid on the workpiece. (☞ P.2-31)**



**3 Display the fourth page of the local menu.**

- Press **[PAGE+]** several times.

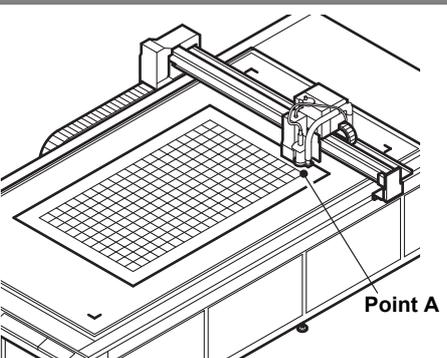
[ LOCAL ]	4 / 5
CUT AREA	---
AXIS ALIGN	---
MANUAL CUT	---

**4 Press **[F2+]** and select **[AXIS ALIGN]**.**

<ALIGN>	[ mm ]
0.0	0.0
SPEED	AUTO>

**5 Align the light pointer with the right edge point (A) of the grid.**

- Press the jog keys to move the light pointer to the right edge of the grid.
- The head travel speed can be changed during head movement.  
**[F2+]**: Change speed



**6 Press **[END]** to save Point A.**

- Press **[CE]** if you do not want to save the setting.

R1  
TF2  
M

3

Making the Most of the Unit

# Setting the Displayed Language (DISPLAY)

Select English or Japanese as the displayed language.

1

## Set local status.

- If the unit is in remote status, press **REMOTE/LOCAL** to set local status.

[LOCAL]	1 / 5
TOOL SELECT	--->
CONDITION	--->
TEST CUT	--->

2

## Display the third page of the local menu.

- Press **PAGE** several times.

[LOCAL]	3 / 5
INTERFACE	--->
MODE SET	--->
SELF TEST	--->

3

## Press **F2** and select [MODE SET].

<MODE SET>	1 / 7
Z STROKE	7mm>
MULTI-PASS	--->
VACUUM	--->

4

## Display the sixth page of the MODE SET menu.

- Press **PAGE** several times.

<MODE SET>	6 / 7
MARK SENSOR	--->
RESERVE	
DISPLAY	JPN>

5

## Press **F3** and select DISPLAY.

- Set values: JPN, ENG

6

## Press **END** to save the setting.

- Press **CE** if you do not want to save the setting.



# Setting NR Head Retraction

Sets whether the head retracts when a pause command (NR command) is received from the PC.

Set value	Description
Enable	Head retracts when the NR command is received.
Disable	Head does not retract when the NR command is received.

- 1 Set local status.**

  - If the unit is in remote status, press **REMOTE/LOCAL** to set local status.

```
[ LOCAL ]      1 / 5
TOOL SELECT  --->
CONDITION    --->
TEST CUT     --->
```

---

- 2 Display the third page of the local menu.**

  - Press **PAGE+** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     --->
MODE SET      --->
SELF TEST     --->
```

---

- 3 Press **F2+** and select **[MODE SET]**.**

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI-PASS    --->
VACUUM        --->
```

---

- 4 Display the seventh page of the **MODE SET** menu.**

  - Press **PAGE+** several times.

```
<MODE SET>    7 / 7
NR ESC.  Enable>
CLOSE TIME  OFF>
RESERVE
```

---

- 5 Press **F1+** and select the set value.**

  - Set value: Enable, Disable

```
<MODE SET>    7 / 7
NR ESC.  Enable>
CLOSE TIME  OFF>
RESERVE
```

---

- 6 Press **END** to save the setting.**

  - Press **CE** if you do not want to save the setting.



# Setting the Close Time

The data can be automatically cleared when a preset time comes after cutting (drawing) of data sent from the PC is complete.

Set value	Description
OFF	Do not clear data automatically. Conduct the procedure in P.2-34 to DATA CLEAR.
5 s to 30 s	Data is automatically cleared when the set time elapses after cutting (drawing) is complete.

## 1

### Set local status.

- If the unit is in remote status, press **(REMOTE/LOCAL)** to set local status.

```
[LOCAL]      1 / 5
TOOL SELECT  - - - >
CONDITION    - - - >
TEST CUT     - - - >
```

## 2

### Display the third page of the local menu.

- Press **(PAGE+)** several times.

```
[LOCAL]      3 / 5
INTERFACE    - - - >
MODE SET     - - - >
SELF TEST    - - - >
```

## 3

### Press **(F2+)** and select [MODE SET].

```
<MODE SET>   1 / 7
Z STROKE     7mm>
MULTI-PASS   - - - >
VACUUM       - - - >
```

## 4

### Display the seventh page of the MODE SET menu.

- Press **(PAGE+)** several times.

```
<MODE SET>   7 / 7
NR ESC.      Enable>
CLOSE TIME   OFF>
RESERVE
```

## 5

### Press **(F2+)** and select the set value.

- Set values: OFF , 5 s - 30 s

```
<MODE SET>   7 / 7
NR ESC.      Enable>
CLOSE TIME   30s>
RESERVE
```

## 6

### Press **(END)** to save the setting.

- Press **(CE)** if you do not want to save the setting.

R1

TF2

M

# Manual Cutting

Use this function to move the tool. The head can be lowered to cut the workpiece as the tool moves.

- 1 Set local status.**
  - If the unit is in remote status, press **REMOTE/LOCAL**.

[ LOCAL ]	1 / 5
TOOL SELECT	---
CONDITION	---
TEST CUT	---
- 2 Display the fourth page of the local menu.**
  - Press **PAGE** several times.

[ LOCAL ]	4 / 5
CUT AREA	---
AXIS ALIGN	---
MANUAL CUT	---
- 3 Press **F3** and select [Manual CUT].**

<MOVE>	[mm]
3110.0	0.0
SPEED	AUTO>
PEN	UP>
- 4 Press **▲▼◀▶** to move Tool.**
  - The tool travel speed and the tool height can be changed during tool movement.

To change the speed : Press **F2** (AUTO / MID. / SLOW / FAST / MAX.)  
To raise or lower the tool: Press **F3** (UP / DOWN)

<MOVE>	[mm]
3110.0	0.0
SPEED	SLOW>
PEN	DOWN>
- 5 Press **END** when manual cutting is complete.**



# Cleaning the Table

Cleans away dust after cutting with Model M.

1

## Set local status.

- If the unit is in remote status, press **REMOTE/LOCAL** to set local status.

```
[ LOCAL ]      1 / 5
Z ORIGIN     - - - >
CONDITION    - - - >
TEST CUT     - - - >
```

2

## Display the fifth page of the local menu.

- Press **PAGE+** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
DUST SWEEP   - - - >
```

3

## Press **F3+** and select [DUST SWEEP].

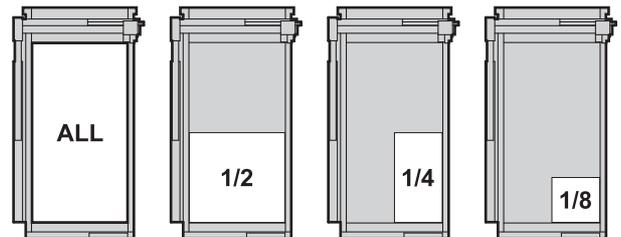
```
<DUST SWEEP>
SWEEP AREA  1 / 8 >
END KEY to START
CE KEY to CANCEL
```

4

## Press **F1+** and select the cleaning range.

- Set values: 1/8 , 1/4 , 1/2 , ALL

```
<DUST SWEEP>
SWEEP AREA  1 / 2 >
END KEY to START
CE KEY to CANCEL
```



5

## Press **END** to start cleaning.

- Press **CE** to cancel cleaning.

```
<DUST SWEEP>
SWEEPING
CE Key : ABORT
```

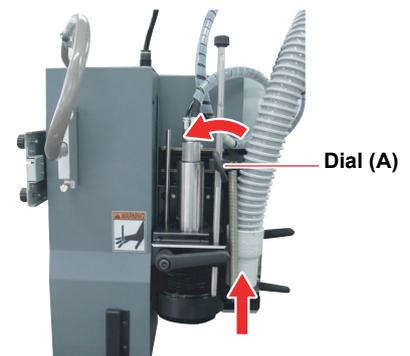
## Adjusting the Brush

Table cleaning may be ineffective when cutting a thick workpiece or if the head is raised. In this case, lower the brush position before cleaning.

1

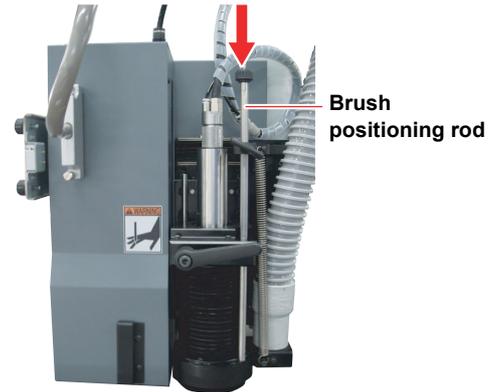
## Loosen the dial (A).

- The brush ascends.



**2**

**Lower the brush positioning rod until it stops.**

**3**

**Adjust the brush to a suitable position.**

- (1) Lower the brush positioning rod while turning the dial (A).
  - (2) Adjust the brush to about 2 mm – 5 mm from the table.
  - (3) Tighten the dial (A).
- Pushing down the brush positioning rod while turning the dial (A) allows the brush to drop lower than the head at some times.

**4**

**Clean the table.**

- Clean the table by conducting the procedures described to the left.

**5**

**When cleaning is complete, loosen the dial (A).**

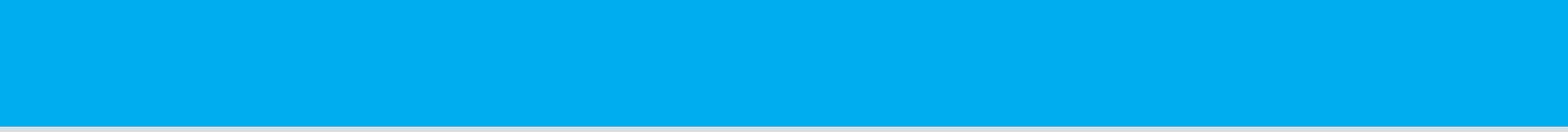
**6**

**Push down the brush positioning rod and tighten the dial (A) within the cutting range.**

- Take care not to overtighten the dial (A). (Tighten it such that the brush positioning rod can slide vertically.)

**M****3**

Making the Most of the Unit



# Chapter 4

## Register Mark Reading Functions



### This Section....

... describes how to create register mark data and explains the functions to read them.

Precautions when Creating Data with Register Marks.....	4-2
Size of Register Marks .....	4-2
Permitted Arrangements of Register Marks and the Design .....	4-3
Prohibited Drawing Areas around Register Marks .....	4-4
Guide to Register Mark Separation and Register Mark Size .....	4-6
Register Mark Colors .....	4-7
Bleeding or Smudging of Register Marks .....	4-7
Setting Register Mark Detection .....	4-8
Precautions Related to Register Mark Detection .....	4-8
Setting Register Mark Detection .....	4-9
Detecting Register Marks.....	4-10
Using the Light Pointer to Check the Workpiece Tilt .....	4-10
Register Mark Detection Procedure .....	4-11
Continuous Cutting of Register Marks .....	4-12
Clearing the Register Mark Offsets.....	4-13

# Precautions when Creating Data with Register Marks

Several restrictions apply when creating data with register marks.

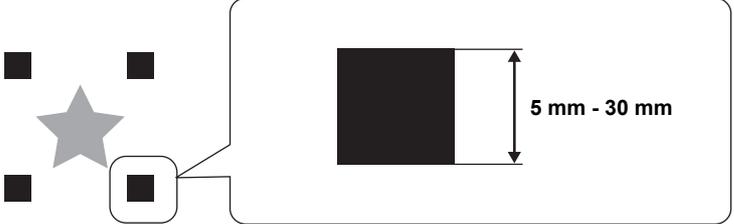
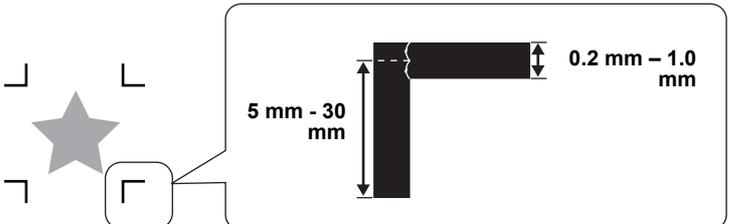
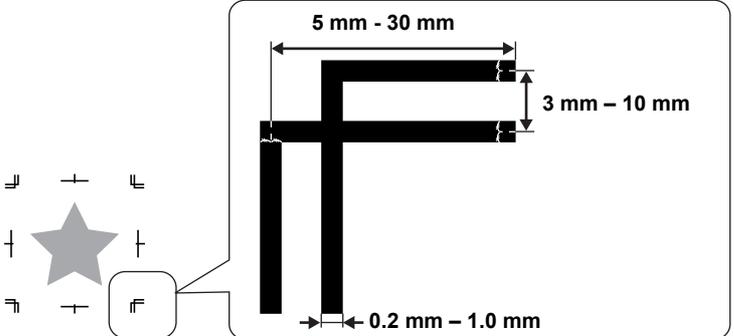
To get the best out of the register mark functions, carefully read the precautions below to gain the knowledge required when creating register marks.

**Hint!**

- The register marks described here are used to detect the work orientation and the lengths of the X and Y axes. They are not crop marks.

## Size of Register Marks

See "Guide to Register Mark Separation and Register Mark Size" (👉 P.4-6) for guidelines on a side length of register marks with respect to the data.

<p><b>Square register marks</b></p>		<ul style="list-style-type: none"> <li>• Set a side length of the register mark between 5 mm and 30 mm.</li> </ul>
<p><b>Single register marks</b></p>		<ul style="list-style-type: none"> <li>• Set a side length of the register mark between 5 mm and 30 mm.</li> <li>• Use a register mark line thickness between 0.2 mm and 1.0 mm.</li> </ul>
<p><b>Double register marks</b></p>		<ul style="list-style-type: none"> <li>• Set a side length of the register mark between 10 mm and 30 mm.</li> <li>• Use a register mark line thickness between 0.2 mm and 1.0 mm.</li> </ul>

R1

TF2

M

## Permitted Arrangements of Register Marks and the Design

The TP1 start position must be 10 mm min. from the left edge of the workpiece and 30 mm min. from the maximum effective cutting area.

<p><b>Square register marks</b></p>	
<p><b>Single register marks Double register marks</b></p>	

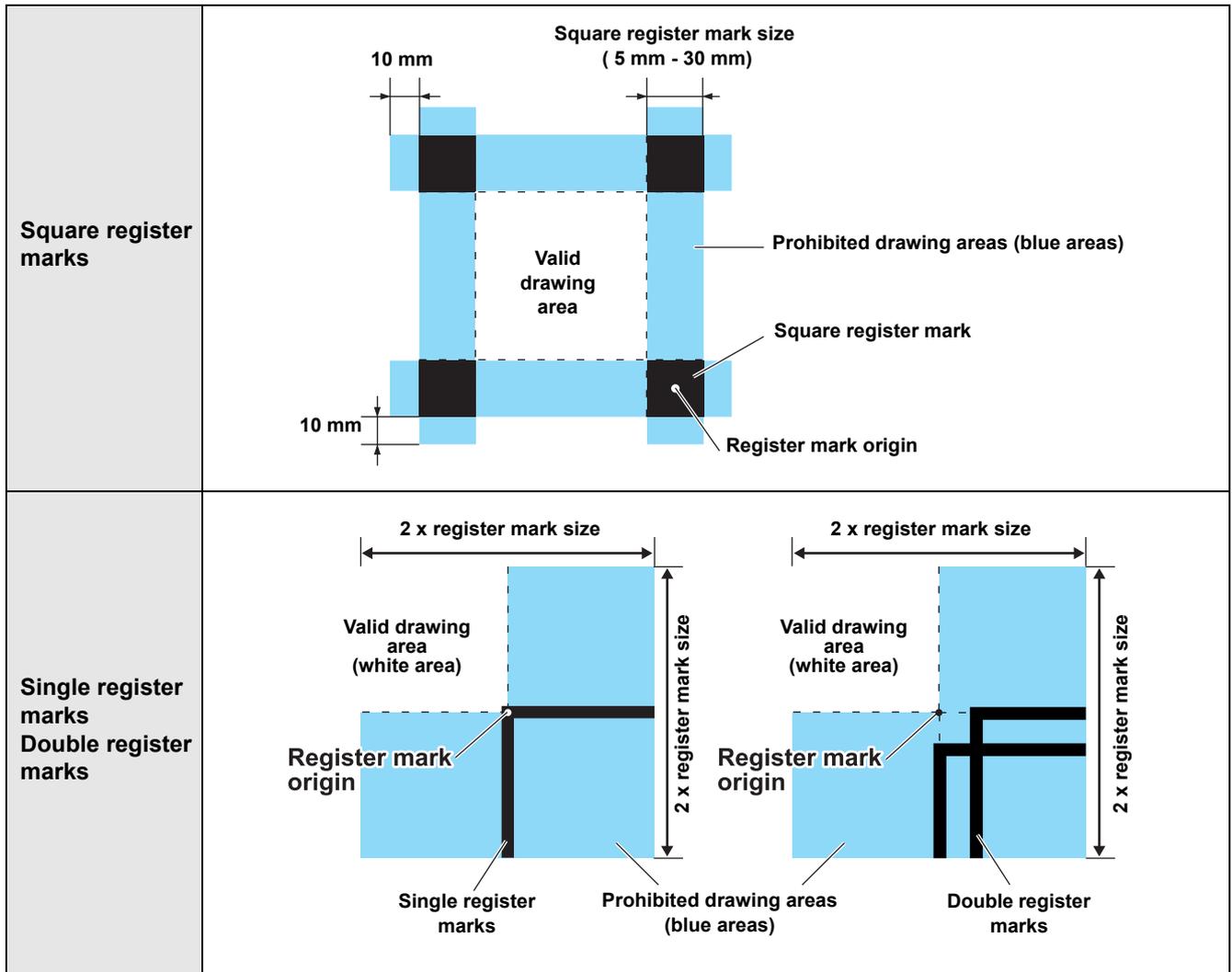


## Prohibited Drawing Areas around Register Marks

Ensure that the areas around the register marks (area equivalent to the register mark size from the register mark origin) remain free of data and dirt. Otherwise, false detection or incorrect reading of the register marks may occur.

**Hint!**

- False detection of the register marks causes displacement of the cutting position.



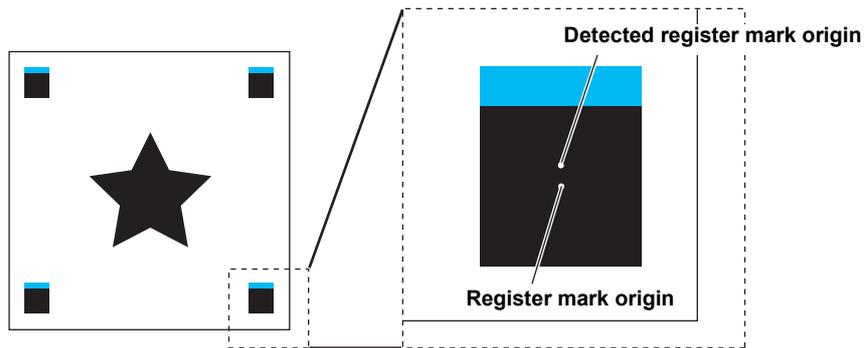
## False Detection of Register Marks - Example 1

### Plate displacement during offset printing

- Color printing by offset printing requires the output of CMYK plates. A slight displacement between these plates also causes a displacement of the printed register marks.
- Register mark detection on the print with plate displacement results in displacement of the register mark origin and therefore of the cutting position.

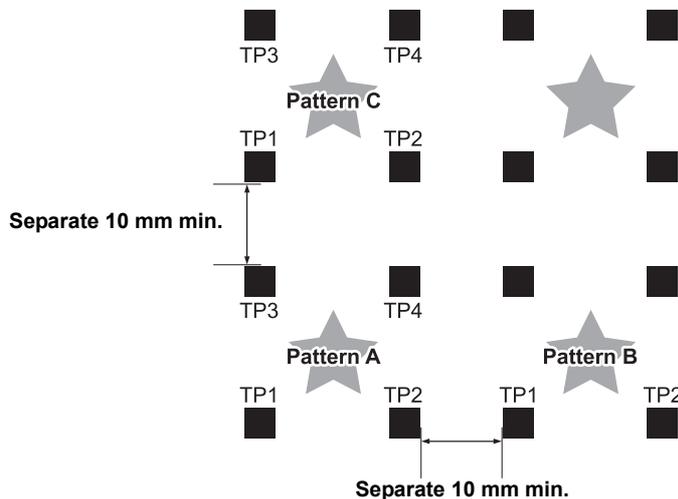
**Hint!**

- Therefore, when using offset printing, print the register marks on only one of the four CMYK plates (such as printing register marks as K100%). Printing the register marks on one plate only eliminates concerns about plate displacement.
- Determine an easily detected register mark color by considering the color of the printed workpiece. (☞ P.4-7 "Register Mark Colors")



## False Detection of Register Marks - Example 2

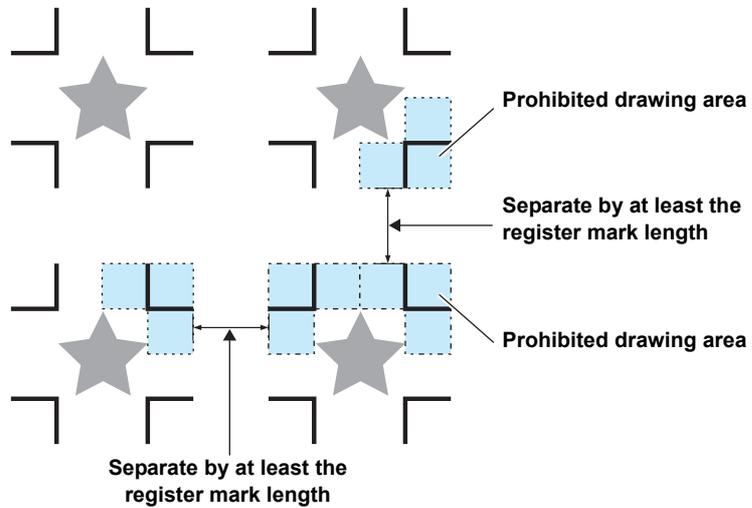
Square register marks (TP3 of Pattern A and TP1 of Pattern C; TP2 of Pattern A and TP1 of Pattern B) are not separated by at least 10 mm.



## False Detection of Register Marks - Example 3

Register mark separation (TP2 to TP1; TP4 to TP2) does not exceed the register mark length.

### ■ For single register marks



## Guide to Register Mark Separation and Register Mark Size

The chart below shows a guide to the register mark separation (A) and register mark size (B). The register marks may not be detected correctly if the register mark size (B) is too small with respect to the register mark separation (A). Create register marks of an appropriate size.

Square register marks	Single register marks	Double register marks

A	200 mm max.	500 mm	1000 mm	1500 mm min.
B	10 mm	15 mm	20 mm	30 mm

## Register Mark Colors

Black or white are the recommended colors for register marks.

It is possible to detect register marks in other colors but they must not be in the same color system as the workpiece.

Confirm in advance that the register mark color can be read.

If the workpiece surface has a high gloss or a hairline pattern, or if it has some background colors, register marks may not be correctly.



## Bleeding or Smudging of Register Marks

Bleeding or smudging of the register marks may result in incorrect detection of the register mark origin and displaced cutting.



# Setting Register Mark Detection

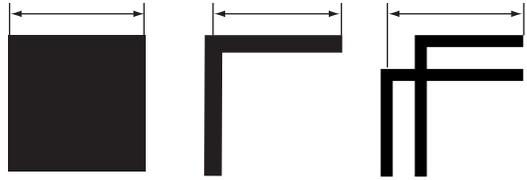
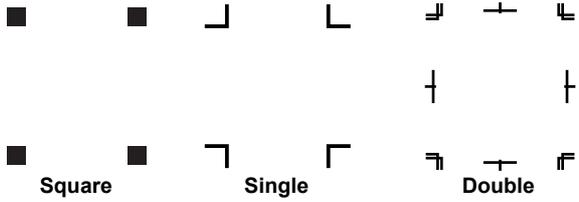
## Precautions Related to Register Mark Detection



- To set the distance between the printed register marks the same as the cut distance, enter the distance between the printed register marks used for register mark detection. (Scale Correction -> P.5-10)
- When register marks are detected, the origin is set at TP1. When the origin is moved to another position using the jog keys, the new origin is enabled.
- Rotation is disabled.
- One-stroke cutting is disabled.
- To detect the register mark with FineCut, select "LOWRIGHT" in the command origin setting. (P.1-38)

## Table of Settings

Make the following settings to make cuts using register marks.

Set Item	Set value	Description
DETECT	OFF	Set for cutting normal workpieces, not for outline cutting.
	1 pt	Detects TP1 and sets the origin.
	2 pt	Detects TP1 and TP2. Conducts tilt correction and scale correction in the workpiece direction.
	3 pt	Detects TP1, TP2, and TP3. Conducts tilt correction and scale correction in the workpiece direction and Y-direction.
SIZE	5 mm - 30 mm	Sets a side length of the register mark edge length. 
	Square, Single, Double	Select from three register mark styles:  Square                      Single                      Double
X COPY	1~99	This is effective for multiple identical patterns equally spaced. The unit automatically makes the designated number of cuts based on the original data, while consecutively reading the register marks.   • Set the number of copies here to 1 if the actual number of copies is set using FineCut or other software.
Y COPY		
SCALE	OFF <sup>*1</sup>	No scale correction during register mark detection.
	after	Enter the X and Y sizes in the data after register mark detection to correct the scale. SCALE is not conducted if DETECT is set to "1pt".
	before	Enter the X and Y sizes in the data before register mark detection to correct the scale. SCALE is not conducted if DETECT is set to "1pt".

\*1. Set to OFF when using FineCut.



## Setting Register Mark Detection

1

Display the third page of the local menu.

- Press **(PAGE+)** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

2

Press **(F2+)** and select **[MODE SET]**.

```
<MODE SET>    1 / 7
Z STROKE      7mm>
MULTI - PASS  - - - >
VACUUM        - - - >
```

3

Display the sixth page of the MODE SET menu.

- Press **(PAGE+)** several times.

```
<MODE SET>    6 / 7
MARK SENSOR   - - - >
RESERVE
DISPLAY       JPN>
```

4

Press **(F1+)** and select **[MARK SENSOR]**.

```
<DETECT SET> 1 / 2
DETECT        OFF>
SIZE          10mm>
STYLE         Square>
```

5

Set **[DETECT]**, **[SIZE]**, and **[STYLE]**.

- P.4-8 "Table of Settings"
- DETECT : Press **(F1+)** to set.
- SIZE : Press **(F2+)** to set.
- STYLE : Press **(F3+)** to set.

```
<DETECT SET> 1 / 2
DETECT        1pt>
SIZE          30mm>
STYLE         Single>
```

6

Press **(PAGE+)**.

- The second page of the DETECT SET menu appears.

```
<DETECT SET> 2 / 2
X COPY        1>
Y COPY        1>
SCALE         OFF>
```

7

Set **[X COPY]**, **[Y COPY]**, and **[SCALE]**.

- P.4-8 "Table of Settings"
- X COPY : Press **(F1+)** to set.
- Y COPY : Press **(F2+)** to set.
- SCALE : Press **(F3+)** to set.

```
<DETECT SET> 2 / 2
X COPY        10>
Y COPY        10>
SCALE         before>
```

8

Press **(END)** to save the settings.

- Press **(CE)** if you do not want to save the settings.

R1  
TF2  
M

4

Register Mark Reading Functions

**Important!**

- When setting [STYLE] to "Double" at Step 5, set [SIZE] to 10mm or more. If 10mm or less, register mark could not be detected.

# Detecting Register Marks

The unit can automatically detect register marks printed on the workpiece to cut round outlines of designs printed on the workpiece.

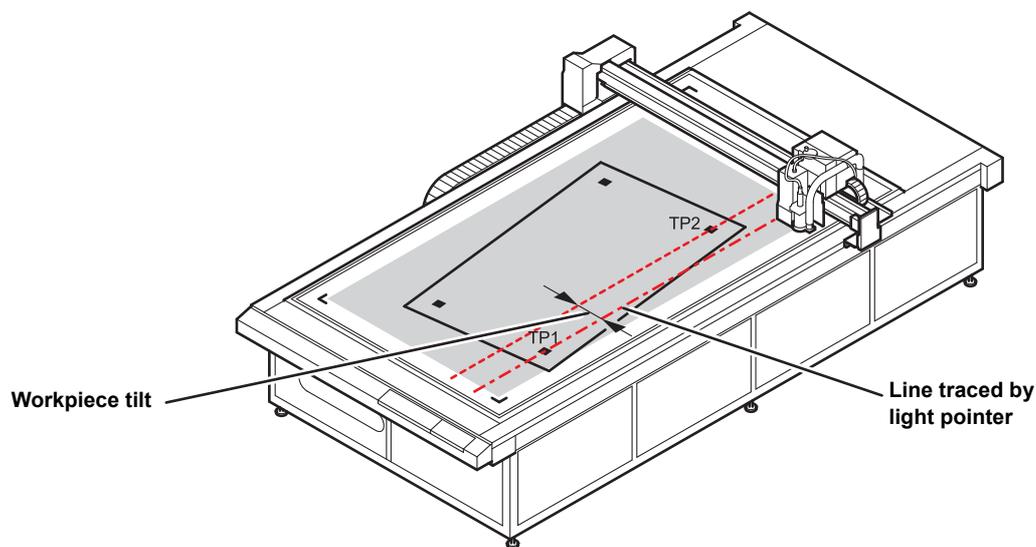
**Important!**

- If the workpiece has curled, flatten it out.
- If using cutting software that does not offer register mark functions, ensure that the areas between TP1 and TP3 and between TP1 and TP2 are free of images and dirt.

## Using the Light Pointer to Check the Workpiece Tilt

The light pointer turns on when the jog mode is selected.

By pressing the jog keys to move the light pointer between points TP1 and TP2, the tilt of the workpiece can be checked from the light-pointer line. Adjust the tilt of the workpiece to this line.



# Register Mark Detection Procedure

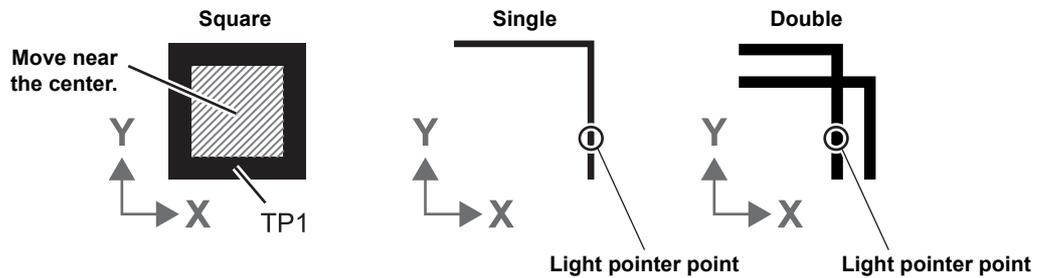
**1** Mount the workpiece.

**2** Press **END** in local mode.

- The mark search mode is selected.

```
[Mark Search]
Set LED Pointer
SPEED      AUTO>
Head Move to LR>
```

**3** Press the jog keys to accurately align the light pointer to the positions shown below.



- If SPEED is set to "AUTO", the speed changes automatically while the jog keys are pressed.
- Press **F3** to move the head to the LR(Lower-Right) position.

**4** Press **END**.

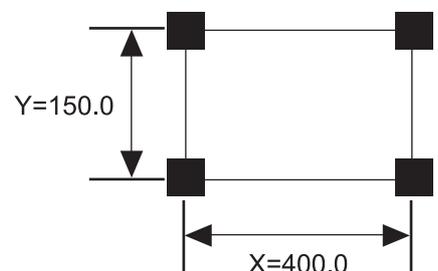
- Register mark detection starts.
- If SCALE is set to "before", when **END** is pressed, the screen shown at Step 5 appears before register mark detection starts.
- An error message appears if the register marks cannot be detected. Mount the workpiece again.

**5** After the register marks are detected, the **SCALE CORRECT** screen appears. (This example shows 4-point detection.)

```
<SCALE SET>
1 - 2 (X)    400 . 8 >
1 - 3 (Y)    149 . 1 >
```

**Hint!**

- If the data lengths and detected lengths differ, use **F1** **F2** to set them.
- If [SCALE] is set to OFF, the <SCALE SET> screen is not displayed.
- If [DETECT] is set to "2pt", the screen to enter the X length is not displayed.
- If [DETECT] is set to "1pt" the <SCALE SET> screen is not displayed.



**6** Press **END** after setting.

- The local mode is selected.
- If SCALE is set to "before", register mark detection starts.
- Press **CE** to disable the scale correction.

R1  
TF2  
M

4

Register Mark Reading Functions

# Continuous Cutting of Register Marks

The FineCut cutting software permits continuous cutting of workpieces with only one set of register mark data printed.

**Important!**

- When data remains in the receive buffer, the remaining data will also be cut. Be sure to carry out the Data Clear operation before performing continuous cutting.  
 P.2-34"Interrupting Processing (Data Clear)"

## 1 Make the FineCut settings and start plotting.

- Select the single mode.
- Set the number of continuous cuts.
- Select the number of register marks to detect.
  - For details, see the FineCut Operation Manual.



## 2 When cutting of the first workpiece is complete, replace the workpiece and press **VACUUM**.

- Press **CE** to cancel continuous cutting.

```
[REMOTE]
Exchange SHEET
VAC : Resume
CE : Abort
```

## 3 Detect the register marks. ( P.4-10)

- Copying starts when register mark detection is complete.
- Repeat Step 2 and Step 3 for the designated number of cuts.

```
[REMOTE]
Set LED Pointer
SPEED      AUTO>
HeadMove to LR->
```



```
[REMOTE]
*Auto Copy Mode*
          2 / 3
SKIP      0
```

## 4 When the designated number of workpieces has been cut, the head automatically retracts and the system reverts to local mode.

```
[LOCAL]          1 / 5
TOOL SELECT --->
CONDITION --->
TEST CUT --->
```

R1

TF2

M

# Clearing the Register Mark Offsets

The offsets must be cleared after cutting data with register marks using software other than FineCut. Use DATA CLEAR to clear the offsets for axis alignment and scale correction. The cutting size may be incorrect if data with no register marks is cut without clearing the offsets.

- 1 Set the local mode.**
  - If the unit is in remote status, press **REMOTE/LOCAL** to set local status.
  - Press **REMOTE/LOCAL** during data processing to interrupt the processing.

[ LOCAL ]	1 / 5
TOOL SELECT	---
CONDITION	---
TEST CUT	---
- 2 Display the second page of the local menu.**
  - Press **PAGE+** several times.

[ LOCAL ]	2 / 5
DATA CLEAR	---
SINGLE COPY	---
VIEW	---
- 3 Press **F1+** and select DATA CLEAR.**

<DATA CLEAR>
END KEY to START
CE KEY to CANCEL
ORGkey to SC.CLR
- 4 Press **ORIGIN** to conduct [SCALE CLEAR].**
  - Press **CE** to cancel the SCALE CLEAR and return to Step 2.
  - The display reverts to the local menu after the offsets are cleared.

[ LOCAL ]	2 / 5
DATA CLEAR	---
SINGLE COPY	---
VIEW	---



R1

TF2

M

# Chapter 5

## Daily Maintenance



### This Section....

... describes how to maintain the unit and how to replace the head with an optional head.

Daily Maintenance .....	5-2
Cutting Panel Surface .....	5-2
Covers .....	5-2
Unit B .....	5-3
Cleaning the Blower Filter .....	5-4
Cleaning the Dust Collector Brush .....	5-5
Maintaining the Dust Collector Hose (when Using M Head) .....	5-5
Cleaning the Milling Tool (End Mill) .....	5-5
Cleaning with Auxiliary Air .....	5-6
Cleaning the Photoelectric Sensors and Register Mark Sensor .....	5-6
Replacing the Head with an Optional Head .....	5-7
Replacing a Model R1 or TF2 Head with a Model M Head .....	5-8
Replacing a Model M Head with a Model R1 or TF2 Head .....	5-9

# Daily Maintenance

Periodic cleaning is recommended to ensure continuous satisfactory use of the unit.



- Do not use an abrasive cleaner or thinners. These could deform the covers or cutting panel.

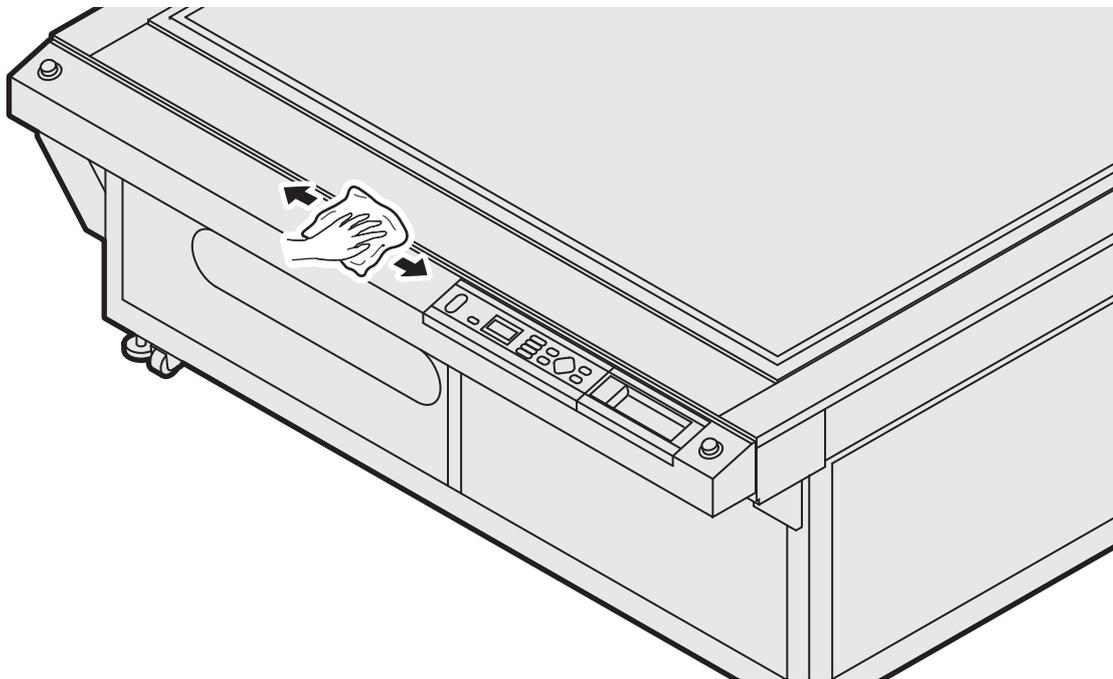
## Cutting Panel Surface

Clean the air holes with a fine needle if they become blocked. The blocking foreign matter will be discharged from the blower outlet.

If the surface is lightly contaminated, wipe off the dirt with a clean, dry cloth. For more severe dirt, wipe off the dirt with a small amount of alcohol on a clean, dry cloth.

## Covers

If the surface is lightly contaminated, wipe off the dirt with a clean, dry cloth. For more severe dirt, wipe off the dirt with a small amount of alcohol on a clean, dry cloth.



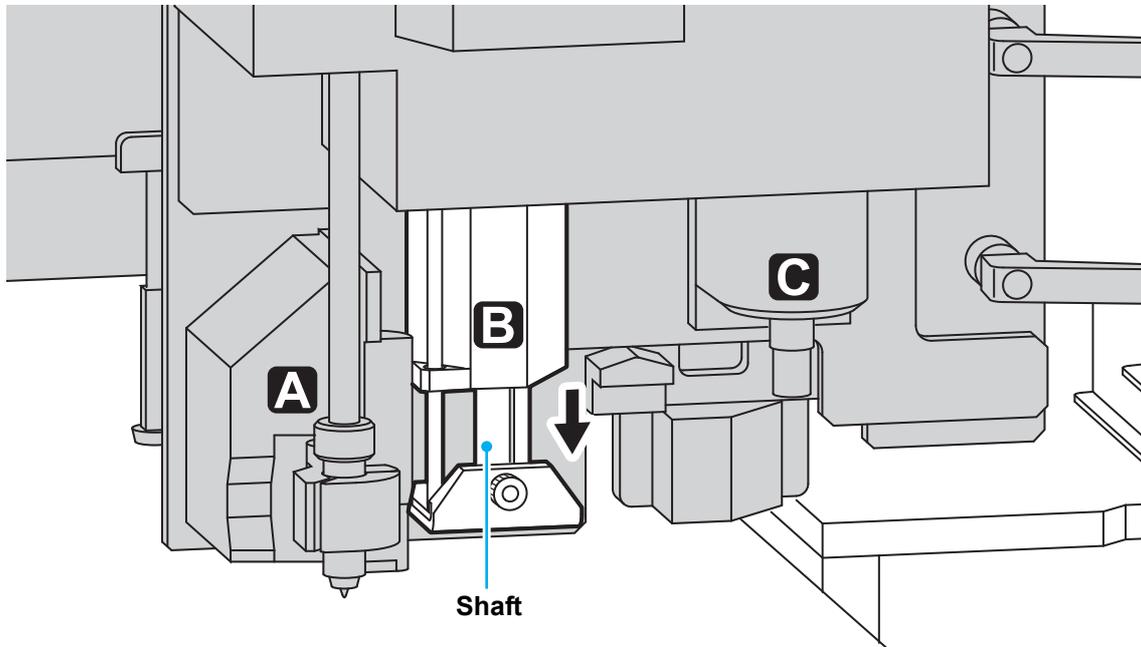
R1

TF2

M

## Unit B

The reciprocating shaft in Model R1 may cease moving if lubrication is inadequate. Before starting work, wipe the surface with a clean, dry cloth. Then, apply a small amount of the supplied grease to the shaft with a brush.



R1

5

Daily Maintenance

## Cleaning the Blower Filter

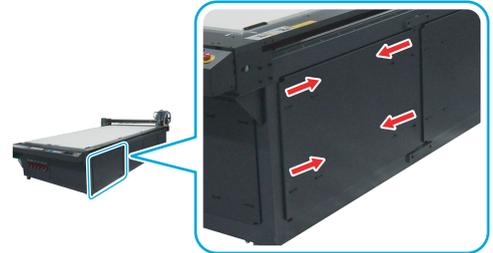
The workpiece adhesion force will decrease if the filter becomes blocked in the optional blower. Clean the filter periodically.

**1**

### Open the cover at the right of the unit.

- Open the cover where the optional blower is installed.

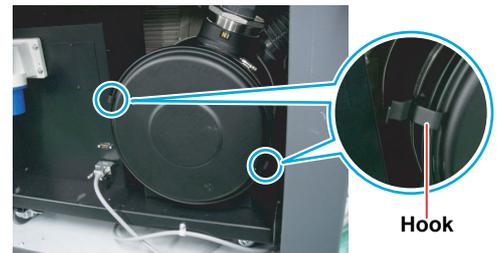
- (1) Loosen the eight screws and slide the cover in the direction of the arrows.
- (2) Remove the cover.



**2**

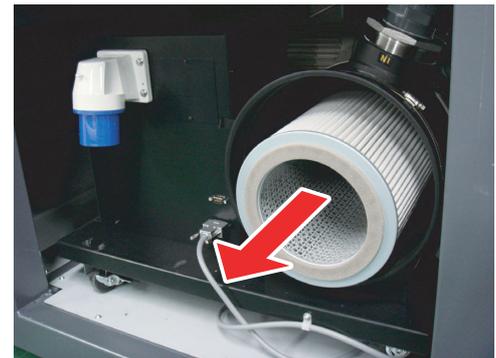
### Remove the lid.

- Disengage the hooks and remove the lid.



**3**

### Remove the filter.



**4**

### Use a vaccum cleaner to suck dust and dirt from the filter.

**5**

### Put the filter back in its original position.

- (1) Push in the filter and firmly close the lid.
  - The hooks will not engage unless the lid is firmly closed.
- (2) Engage the hooks.

**6**

### Close the cover that was removed at Step 1.

R1

TF2

M

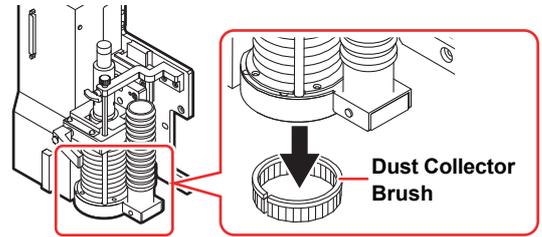
## Cleaning the Dust Collector Brush

Clean the dust-collector brush when significant dust generated during cutting sticks to it.

# 1

### Remove and clean the dust-collector brush.

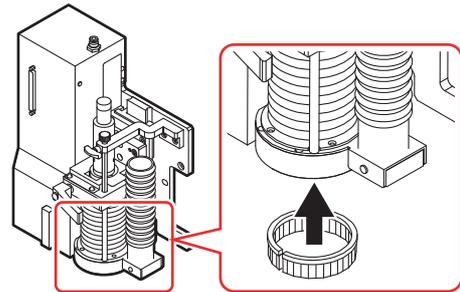
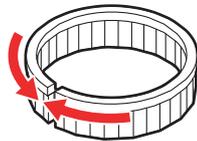
- Pull off the dust-collector brush.



# 2

### Mount the dust-collector brush.

- Mount the dust-collector brush so that it bends down.



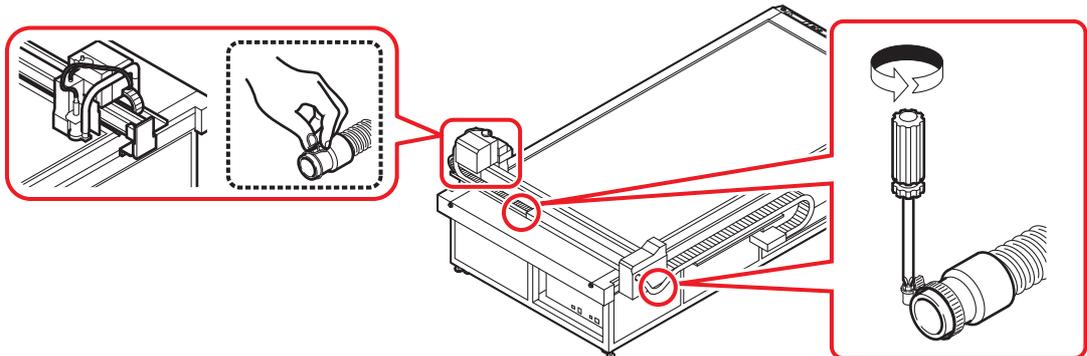
## Maintaining the Dust Collector Hose (when Using M Head)

The suction force drops off if the dust-collector hose is blocked.

# 1

### Disconnect the hose joints and clean the dust-collector hose.

- The hose joints are located at the positions shown in the diagram below.



# 2

### Reconnect the hose joints in their original positions.

**M**
**5**

Daily Maintenance

## Cleaning the Milling Tool (End Mill)

Clean all dirt and chips from the end mill with the auxiliary air or with a brush.

## Cleaning with Auxiliary Air

Blow dust generated during cutting from the operation panel and other panels with the auxiliary air.

**Hint!**

- To use the auxiliary air, connect a cleaner hose.
- Connect the cleaner hose to the quick connector and to the black dial at the right of the head.

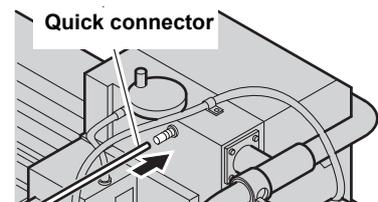


- Due to the effects of the air, the cleaner hose may fly around if it is disconnected while air is flowing. Turn off the air flow before releasing or disconnecting the hose. (The hose can be dangerous if it enters your eye.)
- **Before connecting the cleaner hose to the quick connector, check that an air comes out of the black dial at the right of the head.**

# 1

### Connect the cleaner hose (supplied).

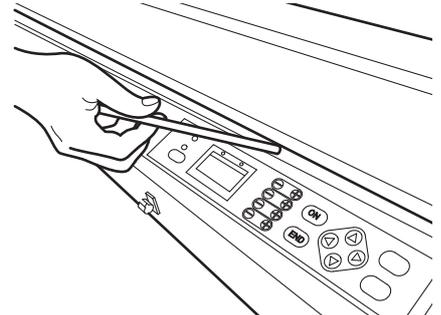
- Connect the cleaner hose to the quick connector in front of the head and to the black dial at the right of the head.



# 2

### Conduct cleaning.

- The strength of the auxiliary air can be adjusted by the dial at the right of the head.



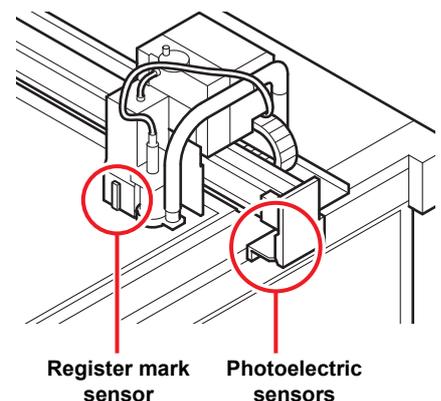
- Due to the effects of the air, the quick connector may fly around if it is disconnected while air is flowing. Turn off the air flow before releasing or disconnecting the connector. (The connector can be dangerous if it enters your eye.)

## Cleaning the Photoelectric Sensors and Register Mark Sensor

Wipe dust generated during cutting off the photoelectric sensors or register mark sensor with a clean, dry cloth.

**Important!**

- The photoelectric sensors are located on each side of the Y bar.



Register mark sensor

Photoelectric sensors

# Replacing the Head with an Optional Head

## Parts Required to Replace the Head

To replace the head with an optional head, other parts are required in addition to the optional head itself. Make sure that all the parts listed in the table below are available.

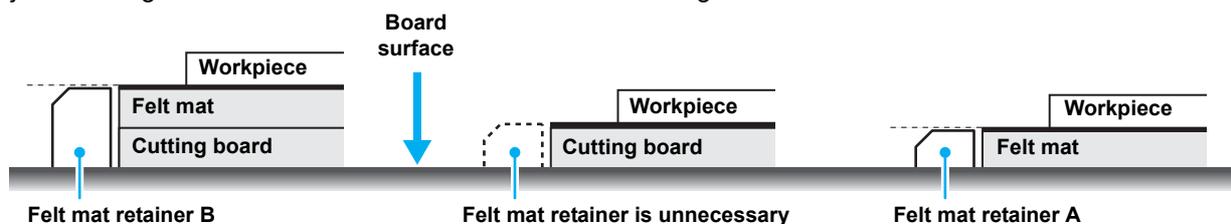
Model of Head Purchased	Parts Required to Replace the Head		Model Currently Used					
			CF-1631			CF-1610		
	Part Name	Part No.	M	R1	TF2	M	R1	TF2
Model M (OPT-C0209)	Felt mat	SPC-0530		6	6		2	2
	Felt mat retainer A	SPC-0519		10	10		6	6
	Felt mat retainer B	SPC-0520			10			6
Model TF2 (OPT-C0210)	Cutting board	SPC-0521	2					
		SPC-0522	1					
		SPC-0523				1		
	Felt mat retainer B	SPC-0520	10			6		
Model R1 (OPT-C0211)	Cutting board	SPC-0521	2					
		SPC-0522	1					
		SPC-0523				1		
	Felt mat	SPC-0518	3		3	1	1	
	Felt mat retainer B	SPC-0520	10		10	6	6	

**Important!**

- Felt mats used for R1 model and for M model are different.
- When using R1 model, have felt mat M (SPC-0530) to replace to M head.
- A pack for Felt mat M (SPC-0530) contains 6 mats.
- Use the felt mat retainer that suits the model that you will be using. Use of the incorrect type will result in the protrusion of the felt mat retainer and this may hit the head.

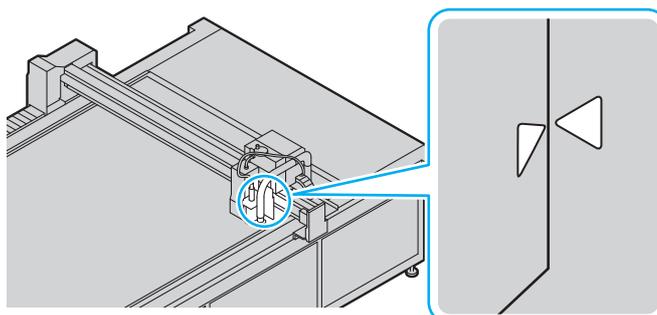
## Selecting the Felt Mat Retainer

Adjust the height of the felt mat retainer and felt mat or cutting board.



## Adjust the Head Position before Replacing the Head

Turn the height-adjustment dial to align the  mark on the head with the  mark on the unit before replacing the head. Replacing the head without aligning these marks can damage the head.



R1

TF2

M

5

Daily Maintenance

# Replacing a Model R1 or TF2 Head with a Model M Head



- Always turn off the power before replacing the head.

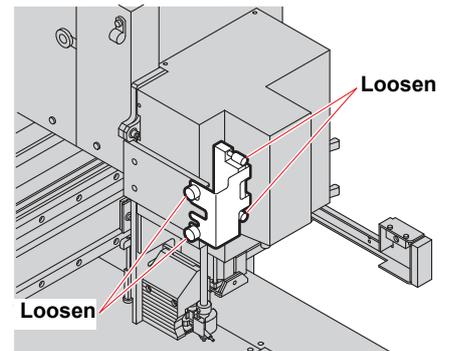
Hint!

- Before using a Model M head, install the dust-collector hose and controller and connect a compressed-air supply. Consult your Mimaki representative for details.

## 1

### Remove the connector.

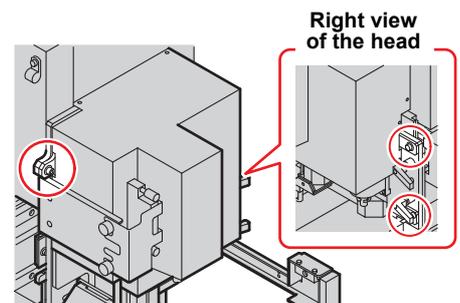
- (1) Loosen the two screws in the connector cover and remove the cover.
- (2) Loosen the top and bottom screw in the connector and remove the connector.



## 2

### Remove the Model R1 or TF2 Head.

- (1) Remove the three screws at the sides of the head.
- (2) Pull the head forward to remove it.



## 3

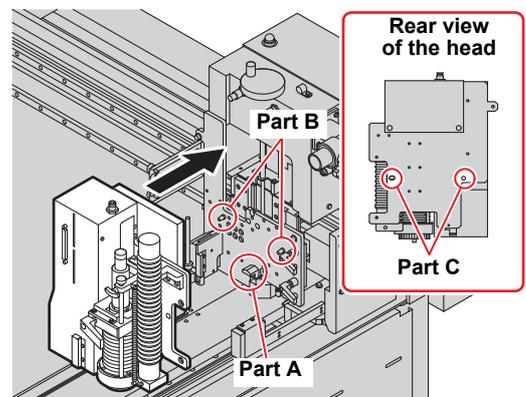
### Prepare the Model M Head.

- Remove the Model M head from the head stand. See Step 2 for details about removing the head.
- Attach the head removed at Step 2 onto the head stand for storage. See Step 4 for details about attaching the head.

## 4

### Attach the Model M Head.

- (1) Check that the head fixing screws are horizontal.
  - (2) Support the Model M head at Part A shown in the diagram.
  - (3) Align the screw holes in the unit with the screw holes in the head.
  - (4) Mount the head.
    - Engage the Holes C at the rear of the head with the Lugs B on the unit.
    - If it is difficult to engage the lugs in the holes, move the head from side to side.
- When mounting the head, take care not to trap any cables.



**5**

**Tighten the three screws removed at Step 2.**

**6**

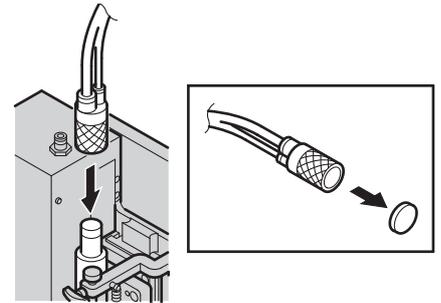
**Connect the connector.**

- Connect the connector and reattach the cover.

**7**

**Connect the motor cable connector to the spindle motor.**

- Remove the cap from the end of the connector before connecting it.



**8**

**Mount the dust-collector hose.**

## Replacing a Model M Head with a Model R1 or TF2 Head

R1  
TF2  
M

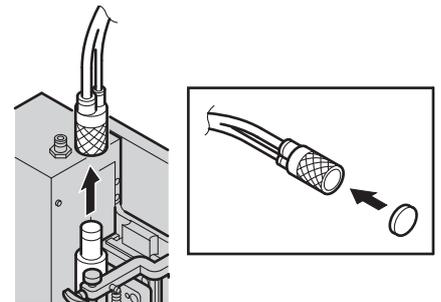


- Always turn off the power before replacing the head.

**1**

**Disconnect the motor cable connector from the spindle motor and apply the cap to the connector.**

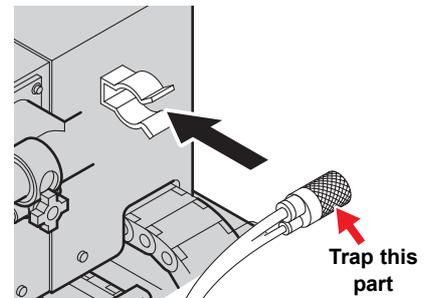
- (1) Turn the connector several times clockwise.
- (2) Remove the connector.
- (3) Attach the protective cap to the connector.



**2**

**Trap the motor cable connector in the fixing spring assembly on the right of the head.**

- Trap the end of the connector in the fixing spring assembly.



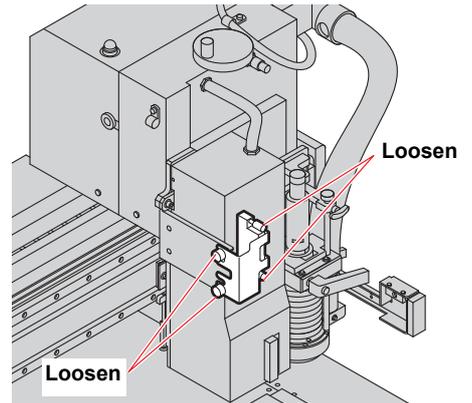
**5**

Daily Maintenance

3

**Remove the dust-collector hose and connectors.**

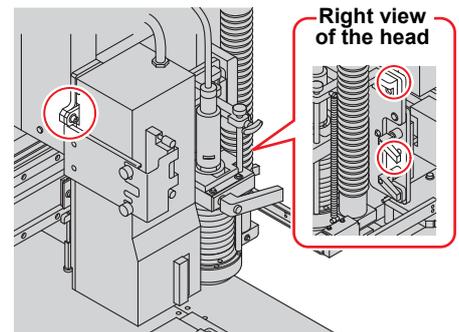
- (1) Loosen the two screws in the connector cover and remove the cover.
- (2) Loosen the top and bottom screws in the connector and remove the connector.
- (3) Remove the dust-collector hose.



4

**Remove the Model M head.**

- (1) Remove the three screws at the sides of the head.
- (2) Pull the head forward to remove it.



5

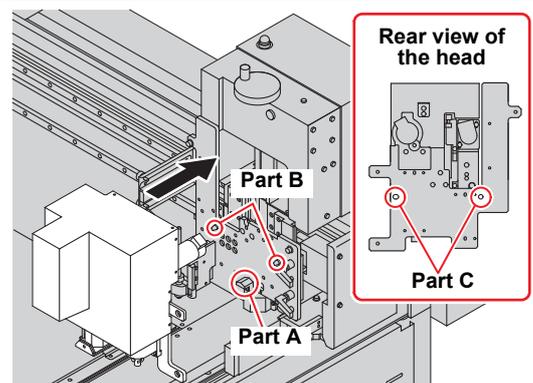
**Prepare the replacement head.**

- Remove the Model R1 or TF2 head from the head stand. See Step 4 for details about removing the head.
- Attach the head removed at Step 4 onto the head stand for storage. See Step 6 for details about attaching the head.

6

**Mount the Model R1 or TF2 head.**

- (1) Check that the head fixing screws are horizontal.
  - (2) Support the head at Part A shown in the diagram.
  - (3) Align the screw holes in the unit with the screw holes in the head.
  - (4) Mount the head.
    - Engage the Holes C at the rear of the head with the Lugs B on the unit.
    - If it is difficult to engage the lugs in the holes, move the head from side to side.
- When mounting the head, take care not to trap any cables.



7

**Tighten the three screws removed at Step 4.**

8

**Attach the connector which was removed at Step 3.**

- Connect the connector and reattach the cover.



# Chapter 6

## Troubleshooting



### This Section....

describes what to do if you think the unit is broken and gives the appropriate remedies for each displayed error number. It also describes the self-test functions.

Now What Do I Do? .....	6-3	Spindle motor does not rotate .....	6-20
Adjusting the Tools .....	6-4	Runout of the end mill .....	6-20
Adjusting the Cutter .....	6-4	Abnormal noise or vibration during	
Circle $\theta$ Correction .....	6-11	rotation .....	6-20
Light Pointer Adjustment .....	6-14	Dust collector does not work .....	6-20
Adjust the mark sensor .....	6-15	Problems Causing an Error Display .....	6-21
Adjust the offset of the router (spindle) ..	6-16	Non-fatal Errors .....	6-21
Troubleshooting .....	6-18	Fatal Errors .....	6-23
Unit does not operate when the power is		Errors Displayed on the Spindle	
turned ON .....	6-18	Controller .....	6-24
Unit does not operate after the CAD data is		Self Test .....	6-25
sent .....	6-18	Conducting a Self Test .....	6-26
An error occurs when the data is sent ....	6-18	Making an DATA DUMP .....	6-28
Tool lifts up the paper .....	6-19	Making a PARAMETER DUMP .....	6-30
Drawn lines are broken or smudged .....	6-19	Replacing the Fuse.....	6-32
No reciprocating movement .....	6-19	Specifications .....	6-33

# Now What Do I Do?

Problem	Solution
<p>Inadequate cutting</p> <ul style="list-style-type: none"> <li>When the cutter descends, cutting is incomplete, although the blade protrudes by more than the workpiece thickness.</li> </ul>	<p>The workpiece can be reliably cut by increasing the pressure when the cutter descends.</p> <ul style="list-style-type: none"> <li>Set or increase the pressure offset value that is added to the press value. (👉 P.2-12 "Setting the Cutting Conditions")</li> </ul>
<p>Cutting incomplete at the start or end point</p> <ul style="list-style-type: none"> <li>Cutting is incomplete at the positions where the cutter descends or ascends.</li> </ul>	<p>Increase the start offset setting to move forward the position where the cutter descends. (👉 P.2-12 "Setting the Cutting Conditions")</p> <p>Increase the end offset setting to move backward the position where the cutter ascends. (👉 P.2-12 "Setting the Cutting Conditions")</p>
<p>Circle start and end points do not match</p> <ul style="list-style-type: none"> <li>A circle start and end points can be displaced due to the workpiece thickness and hardness.</li> </ul>	<p>Use circle <math>\theta</math> correction to correct for the displacement.</p>
<p>Grid lines torn along flutes of corrugate cardboard.</p> <ul style="list-style-type: none"> <li>Tearing can occur if the press value in the cutting conditions is too high when grid cutting along the flutes of corrugated cardboard.</li> </ul>	<p>(1) Align the corrugated cardboard flutes in the Y-axis direction.</p> <p>(2) Set the press value in the cutting conditions. (👉 P.2-12)</p>
<p>Workpiece lifts up (Model M)</p> <ul style="list-style-type: none"> <li>A workpiece fastened by vacuum adhesion can be lifted up if the workpiece is small or the dust-collection force is too high.</li> </ul>	<ul style="list-style-type: none"> <li>Use a workpiece no smaller than 50 mm dia.</li> <li>Open the dust-collector adjusting window and adjust the dust-collection force. (👉 P.6-14)</li> <li>Ensure that the dust-collector brush does not contact the workpiece.</li> </ul>

R1

TF2

M

# Adjusting the Tools

Tool adjustment is required if the start and end points do not match when cutting (drawing) with the unit.  
 Tool adjustment is possible only when using Model R1 or Model TF2.  
 The adjustment functions (1) - (3) of tool adjustment can be set only when using R1 model or TF2 model.

## The following six tool adjustments are available:

Menus that can be selected depend on the model.

- (1) Cutter adjustment..... Adjusts the cutter mounted in Head B or C.
- (2) Roller adjustment ..... Adjusts a roller mounted in Head C.
- (3) Circle  $\theta$  correction ..... Adjustment if start and end points do not match when cutting (drawing) a circle.
- (4) Light pointer adjustment..... Adjustments when the register marks cannot be detected.
- (5) Adjustment of mark sensor .... Adjust when the cut position is shifted at the mark detection.
- (6) Adjustment of Router Offset... Adjust when the cut position of milling cut on the M1 head shifts at mark detection.

## Adjusting the Cutter

Adjusts the cutter mounted in Head B or C.  
 The following adjustments are available to adjust the cutter.

**Hint!** • A roller can be adjusted in the same way.

<p><b>1 Adjust Eccentricity</b> P.6-6</p>	<p>Make this adjustment after replacing the blade or the tool.</p>	<p><b>Adjust Eccentricity</b></p> <pre>&lt;ADJ&gt; CENTER 1 / 3 A ( LENG ) +00.00&gt; B +00.00&gt; TEST PATTERN -&gt;</pre>
<p><b>2 Adjust <math>\theta</math> Angle</b> P.6-8</p>	<p>Adjusts the cutter and roller angle of rotation.</p>	<p><b>Adjust <math>\theta</math> Angle Screen</b></p> <pre>&lt;ADJ&gt; <math>\theta</math> 2 / 3 CUTTER <math>\theta</math> +0000&gt; PATTERN No. 1&gt; TEST PATTERN -&gt;</pre>
<p><b>3 Adjust Offset</b> P.6-4</p>	<p>Adjusts for displacement between the cutter and tool positions.</p>	<p><b>Adjust Offset Screen</b></p> <pre>&lt;ADJ&gt; CENTER 3 / 3 CUTTER X +36.40&gt; CUTTER Y +45.40&gt; TEST PATTERN -&gt;</pre>



6

Troubleshooting

● For more efficient cutter adjustment, follow the sequence below:



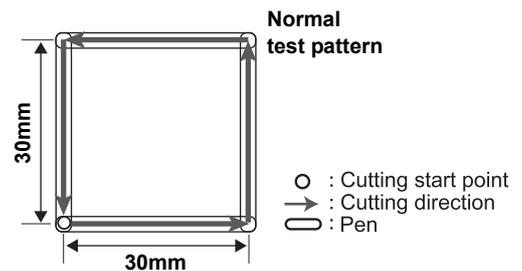
This sequence is one recommended example. Set in a sequence that will be convenient for you.

## Adjusting the Offsets

Conduct positioning to correct for displacements by comparing a test pattern drawn by the pen with a test pattern drawn by the cutter or roller.

**Hint!**

- First, mount a pen in Unit A.



# 1

### Display the fifth page of the local menu.

- Press **PAGE (+)** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
TOOL ADJUST  - - - >
```

# 2

### Press **F3 (+)** and select **TOOL ADJUST.**

- If Head C is the cutter, the third line displays [C CUTTER ADJUST].

```
<TOOL ADJUST> 1 / 2
B CUTTER ADJUST>
C ROLLER ADJUST>
CIRCLE θ COR  >
```

# 3

### Press **F1 (+)** or **F2 (+)**.

- **F1 (+)** : Selects Head B
- **F2 (+)** : Selects Head C

```
<ADJ> CENTER 1 / 3
A (LENG)  +00.00>
B          +00.00>
TEST PATTERN  - >
```

# 4

### Press **PAGE (+)** several times to display the third page of the menu.

- The Adjust Offset Screen is displayed.
- If a Head containing a roller was selected at Step 3, [ROLLER X][ROLLER Y] are displayed in the second and third lines.

```
<ADJ> CENTER 3 / 3
CUTTER X +36.40>
CUTTER Y +45.40>
TEST PATTERN  - >
```

# 5

### Press the jog keys to move the head to the drawing position.

# 6

### Press **F3 (+)** to start drawing the test pattern.

# 7

### Check and adjust the test pattern.

- Press **F1 (+) F1 (-)** or **F2 (+) F2 (-)** to make the adjustments.  
**CUTTER X(ROLLER X)** : 33.0 ~ 41.0 (33.0 ~ 41.0)  
**CUTTER Y(ROLLERY)** : 41.0 ~ 49.0 (86.0 ~ 94.0)
- For details, see P.6-5 "Adjusting the Offsets".

R1

TF2

# 8

Press **(PAGE +)** to make further adjustments.  
 Press **(END)** to save the adjusted values and exit.

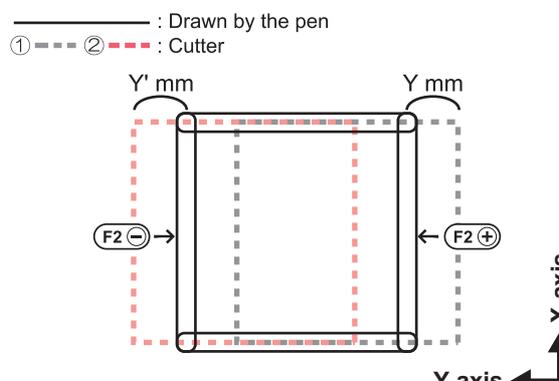
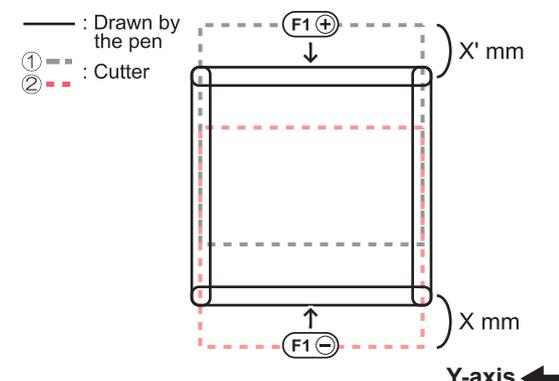
- To make further adjustments, press **(PAGE +)** to display the adjustment screen.  
**Adjust Eccentricity** : Operations from Step 4 on P.6-6.  
**Adjust  $\theta$  Angle** : Operations from Step 4 on P.6-8.
- Press **(CE)** to exit without saving the adjusted values.

## Adjusting the Offsets

The offsets can be adjusted on the screen below.

Distance from pen to cutter (roller) with respect to the X axis. Press <b>(F1 +)</b> or <b>(F1 -)</b> to adjust. (0.05 mm pitch)	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">                     &lt;ADJ&gt; CENTER 3 / 3  <span style="border: 1px solid red; padding: 2px;">CUTTER X +36 . 40&gt;</span>  <span style="border: 1px solid red; padding: 2px;">CUTTER Y +45 . 40&gt;</span>                      TEST PATTERN -&gt;                 </div>	← Distance from pen to cutter (roller) with respect to the Y axis. Press <b>(F2 +)</b> or <b>(F2 -)</b> to adjust. (0.05 mm pitch)
---	--	---

- Measure the displacement between the patterns drawn with the pen and cutter (roller).
- Make the adjustment.

Displaced horizontally from the operation panel	Displaced vertically from the operation panel
 <p>                     — : Drawn by the pen                      ① - - - ② - - - : Cutter                 </p> <p>                     Y' mm                      Y mm                      F2- →   ← F2+                      X-axis ↑                      Y-axis ←                 </p> <p> <b>When a drawing by the cutter is displaced to the right (dotted line 1)</b>                      Press <b>(F2 +)</b> to set the Set value = (Current indicated value) + (Y mm).  <b>When a drawing by the cutter is displaced to the left (dotted line 2)</b>                      Press <b>(F2 -)</b> to set the Set value = (Current indicated value) - (Y' mm).                 </p>	 <p>                     — : Drawn by the pen                      ① - - - ② - - - : Cutter                 </p> <p>                     X' mm                      X mm                      F1+ ↓   ↑ F1-                      X-axis ↑                      Y-axis ←                 </p> <p> <b>When a drawing by the cutter is displaced downward (dotted line 1)</b>                      Press <b>(F1 -)</b> to set the Set value = (Current indicated value) - (X mm).  <b>When a drawing by the cutter is displaced upward (dotted line 2)</b>                      Press <b>(F1 +)</b> to set the Set value = (Current indicated value) + (X' mm).                 </p>

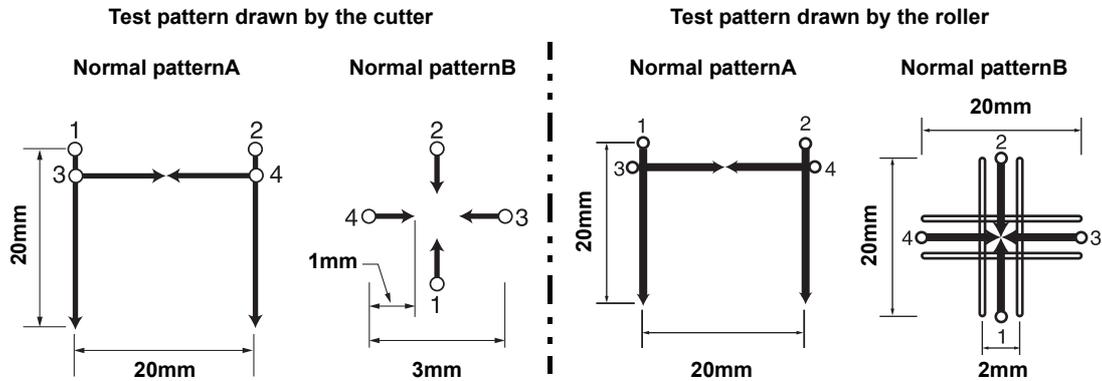


## Adjusting Eccentricity

Adjust the eccentricity by checking the test pattern drawn by the cutter or roller.

**Hint!**

- First, mount a pen in Unit A.



# 1

**Display the fifth page of the local menu.**

- Press **PAGE** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
TOOL ADJUST  - - - >
```

# 2

**Press **F3** and select TOOL ADJUST.**

- If Head C is the cutter, the third line displays [C CUTTER ADJUST].

```
<TOOL ADJUST>1 / 2
B CUTTER ADJUST>
C ROLLER ADJUST>
CIRCLE θ COR  >
```

# 3

**Press **F1** or **F2**.**

- **F1** : Selects Head B
- **F2** : Selects Head C
- The Adjust Eccentricity Screen is displayed.

```
<ADJ> CENTER 1 / 3
A (LENG)  +00.00>
B          +00.00>
TEST PATTERN  - >
```

# 4

**Press the jog keys to move the head to the drawing position.**

# 5

**Press **F3** to start drawing the test pattern.**

# 6

**Check and adjust the test pattern**

- Press **F1** **F1** or **F2** **F2** to make the adjustments.  
**A(LENGTH):** - 4 ~ + 4  
**Set values :** - 4 ~ + 4
- For details, see P.6-7 "Adjusting the Eccentricity".

R1  
TF2

# 7

Press **(PAGE +)** to make further adjustments.  
 Press **(END)** to save the adjusted values and exit.

- To make further adjustments, press **(PAGE +)** to display the adjustment screen.  
**Adjust Angle of  $\theta$**  : Operations from Step 4 on P.6-8.  
**Offset Adjustment** : Operations from Step 4 on P.6-4.
- Press **(CE)** to exit without saving the adjusted values.

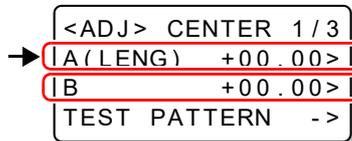
## Adjusting the Eccentricity

The eccentricity can be adjusted on the screen below.

### Adjusting Pattern A

Aligns the center of the cutter (roller) with the center of the holder.

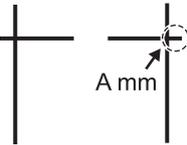
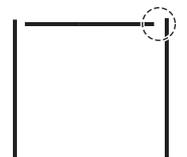
Press **(F1 +)** or **(F1 -)** to adjust.  
 (0.05 mm pitch)



### Adjusting Pattern B

Adjustment to check whether the tool is tilted.  
 Press **(F2 +)** or **(F2 -)** to adjust.  
 (0.05 mm pitch)

- Check the position of the horizontal line with respect to the vertical lines on Pattern A.
  - Check if the horizontal line protrudes or if there are gaps.
- Check if the X and Y axis lines in Pattern B form straight lines.
- Make the adjustment.

Adjusting Pattern A	Adjusting Pattern B
 <p><b>Line protrudes</b>                      Measure distance A on the diagram.                      Press <b>(F1 +)</b> to adjust in the positive direction to Set value = -A.</p>  <p><b>Gap</b>                      Measure distance A on the diagram.                      Press <b>(F1 -)</b> to adjust in the negative direction to Set value = +A.</p>	 <p><b>Top line displaced to the right</b>                      Press <b>(F2 +)</b> to adjust in the positive direction to Set value = (length B in diagram) / 2.</p>  <p><b>Top line displaced to the left</b>                      Press <b>(F2 -)</b> to adjust in the negative direction to Set value = (length B in diagram) / 2.</p>
<p>• When using the 2° carbide reciprocating cutter, adjust the horizontal line to protrude approx. 2 mm.</p>	



# 6

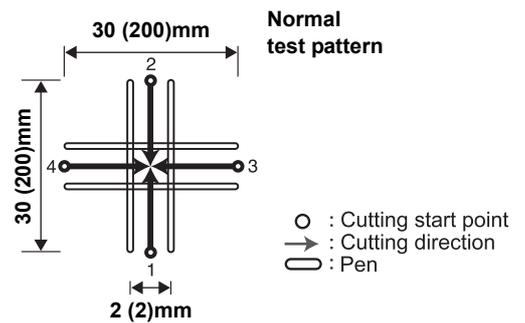
Troubleshooting

## Adjusting the $\theta$ Angle

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

**Hint!**

- Two adjustment test patterns are available for a cutter: Pattern 1 and Pattern 2. Values in parentheses ( ) in the diagram show the sizes of Pattern 2.
- First, mount a pen in Unit A.



# 1

**Display the fifth page of the local menu.**

- Press **PAGE (+)** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
TOOL ADJUST  - - - >
```

# 2

**Press **F3 (+)** and select TOOL ADJUST.**

- If Head C is the cutter, the third line displays [C CUTTER ADJUST].

```
<TOOL ADJUST> 1 / 2
B CUTTER ADJUST>
C ROLLER ADJUST>
CIRCLE  $\theta$  COR >
```

# 3

**Press **F1 (+)** or **F2 (+)**.**

- **F1 (+)** : Selects Head B
- **F2 (+)** : Selects Head C

```
<ADJ> CENTER 1 / 3
A (LENG)    +00.00>
B           +00.00>
TEST PATTERN - >
```

# 4

**Press **PAGE (+)** several times to display the second page of the menu.**

- The  $\theta$  Adjust Angle Screen is displayed.
- If a head containing a roller was selected at Step 3, [ROLLER  $\theta$ ] is displayed in the second line.

```
<ADJ>  $\theta$       2 / 3
CUTTER  $\theta$     +0000>
PATTERN No.   1 >
TEST PATTERN  - >
```

# 5

**Press the jog keys to move the head to the drawing position.**

- If a head containing a roller was selected at Step 3, proceed to Step 7.

# 6

**Press **F2 (+)** and select Pattern 1 or Pattern 2.**

```
<ADJ>  $\theta$       2 / 3
CUTTER  $\theta$     +0000>
PATTERN No.   2 >
TEST PATTERN  - >
```

R1

TF2

**7**Press **(F3+)** to start drawing the test pattern.**8**

Check and adjust the test pattern.

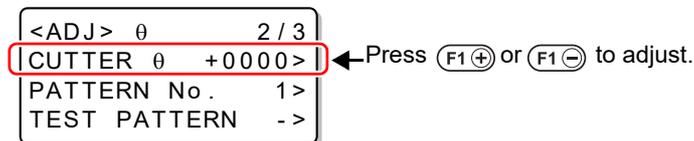
- Press **(F1+)** **(F1-)** to adjust.  
**Set values:**- 4500 ~ + 4500
- For details, see "Adjusting the  $\theta$  Angle" at the bottom of the page.

**9**Press **(PAGE+)** to make further adjustments.Press **(END)** to save the adjusted values and exit.

- To make further adjustments, press **(PAGE+)** to display the adjustment screen.  
**Offset Adjustment** : Operations from Step 4 on P.6-4.  
**Adjust Eccentricity** : Operations from Step 4 on P.6-6.
- Press **(CE)** to exit without saving the adjusted values.

### Adjusting the $\theta$ Angle

The  $\theta$  angle can be adjusted on the screen below.



- (1) Check the displacement between the patterns drawn with the pen and cutter (roller).
- (2) Make the adjustment.

Rotated clockwise	Rotated counterclockwise
<p>Press <b>(F1-)</b> to decrease the CUTTER <math>\theta</math> value.</p>	<p>Press <b>(F1+)</b> to increase the CUTTER <math>\theta</math> value.</p>

**R1**  
**TF2**
**6**

Troubleshooting

## Circle $\theta$ Correction

Conduct the operations below to correct for displacements if the start and end points do not match when cutting (drawing) a circle.

### Setting Arc $\theta$ Correction

Before setting circle  $\theta$  correction, set arc  $\theta$  correction to Enable.

1

Display the fifth page of the local menu.

- Press **PAGE** several times.

```
[LOCAL]      5 / 5
RESERVE     - - - >
RESERVE     - - - >
TOOL ADJUST - - - >
```

2

Press **F3** and select  
TOOL ADJUST.

```
<TOOL ADJUST> 1 / 2
B CUTTER ADJUST>
C ROLLER ADJUST>
CIRCLE  $\theta$  COR  >
```

3

Press **F3** and select  
CIRCLE  $\theta$ .

```
<CIRCLE  $\theta$ >   1 / 1
B HEAD       - >
C HEAD       - >
```

4

Press **F1** or **F2** and  
select the head to set.

```
<CIRCLE  $\theta$ >   1 / 4
R<5          +0.0K>
5<R<10      +0.0K>
TEST PATTERN - >
```

5

Press **PAGE** several times to display  
the fourth page of the menu.

```
<CIRCLE  $\theta$ >   4 / 4
ARC  $\theta$       Disable>
```

6

Press **F3** and select  
"Enable".

```
<CIRCLE  $\theta$ >   4 / 4
ARC  $\theta$        Enable>
```

7

Press **END**.

- The setting is saved.
- Press **CE** if you do not want to save the settings.



## Circle $\theta$ Correction

The unit can conduct correction for five circles of different radius.

Circle type for correction	Radius (R) < 5 mm	20 mm <Radius (R) < 50mm
	5 mm <Radius (R) < 10mm	50 mm <Radius (R) < 100mm
	10 mm <Radius (R) < 20mm	100 mm <Radius (R)

**Important!**

- In some cases, this cannot be corrected by the CAD system.
- First, set arc  $\theta$  correction to Enable.  
If arc  $\theta$  correction is not set to Enable, this offset will not be applied to the drawing (cut).

# 1

Display the fifth page of the local menu.

- Press **(PAGE+)** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
TOOL ADJUST  - - - >
```

# 2

Press **(F3+)** and select  
TOOL ADJUST.

```
<TOOL ADJUST> 1 / 2
B CUTTER ADJUST>
C ROLLER ADJUST>
CIRCLE  $\theta$  COR  >
```

# 3

Press **(F3+)** and select  
CIRCLE  $\theta$ .

```
<CIRCLE  $\theta$ >   1 / 1
B HEAD        - >
C HEAD        - >
```

# 4

Press **(F1+)** or **(F2+)** and  
select the head to set.

```
<CIRCLE  $\theta$ >   1 / 4
R<5          +0.0°>
5<R<10      +0.0°>
TEST PATTERN - >
```

# 5

Press **(F3+)** to start drawing the test pattern.

- Draw the [R < 5] and [5 < R < 10] test patterns.

# 6

Check and adjust the test pattern.

- Press **(F1+)** **(F1-)** or **(F2+)** **(F2-)** to make the adjustments.  
**Set values:** - 20° ~ + 20°
- For details, see P.6-12 "Circle  $\theta$  Correction Method".

# 7

Press **(PAGE+)** several times to display  
the second page of the menu.

```
<CIRCLE  $\theta$ >   2 / 4
10<R<20     +0.0°>
20<R<50     +0.0°>
TEST PATTERN - >
```

# 8

Press **(F3+)** to start drawing the test pattern.

- Draw the [10<R<20] and [20<R<50] test patterns.

R1  
TF2

# 6

Troubleshooting

**9****Check and adjust the test pattern.**

- Press  $(F1+)$   $(F1-)$  or  $(F2+)$   $(F2-)$  to make the adjustments.  
**Set values:** - 9.8° ~ + 9.8°
- For details, see "Circle  $\theta$  Correction Method" at the bottom of the page.

**10****Press  $(PAGE+)$  several times to display the third page of the menu.**

```
<CIRCLE  $\theta$ > 3 / 4
50<R<100 +0.0°>
R>100 +0.0°>
TEST PATTERN ->
```

**11****Press  $(F3+)$  to start drawing the test pattern.**

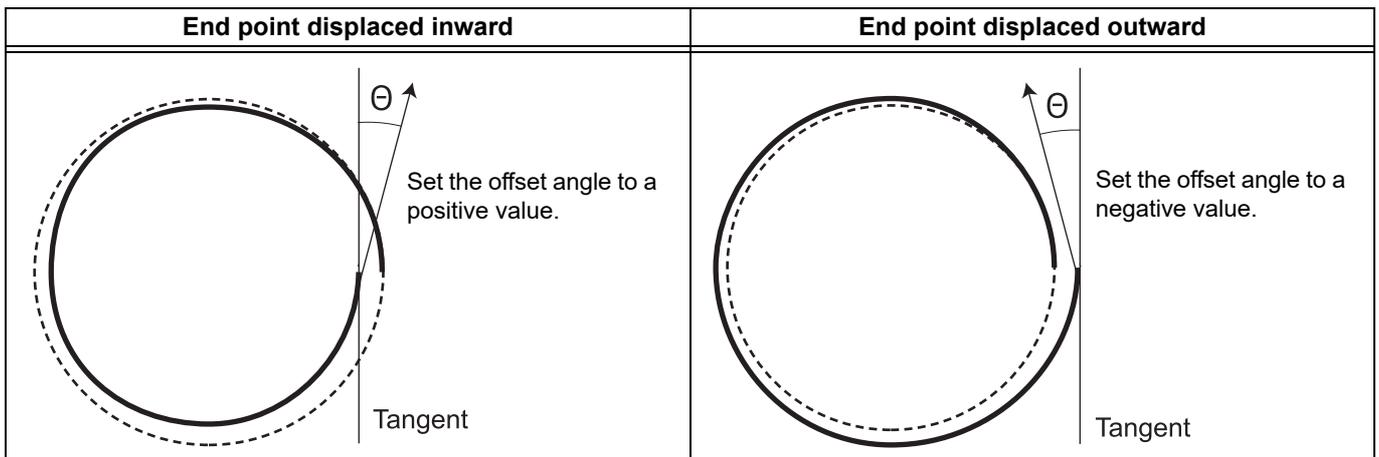
- Draw the [50 < R < 100] and [R > 100] test patterns.

**12****Check and adjust the test pattern.**

- Press  $(F1+)$   $(F1-)$  or  $(F2+)$   $(F2-)$  to make the adjustments.  
**Set values:** - 9.8° ~ + 9.8°
- For details, see "Circle  $\theta$  Correction Method" at the bottom of the page.

**13****Press  $(END)$  to save the adjusted values.**

- Press  $(CE)$  if you do not want to save the settings.

**Circle  $\theta$  Correction Method**

## Light Pointer Adjustment

The register marks cannot be read if the light pointer position is displaced.  
First, mount a pen in Unit A.

**Important!**

- For the M model, replace with another head by the procedure on P.5-9 or remove the M head.
- The connector cover must be installed.
- If you turn on the power with no head, an error will be displayed, but adjustment can be done without problems.

# 1

**Display the fifth page of the local menu.**

- Press **PAGE (+)** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
TOOL ADJUST  - - - >
```

# 2

**Press **F3 (+)** and select [TOOL ADJUST].**

```
<TOOL ADJUST>1 / 2
B CUTTER ADJUST>
C ROLLER ADJUST>
CIRCLE θ COR  >
```

# 3

**Press **PAGE (+)** several times to display the second page of the menu.**

```
<TOOL ADJUST>2 / 2
LIGHT POINTER  >
```

# 4

**Press **F1 (+)** and select [LIGHT POINTER].**

```
<POINTER OFS>1 / 1
POINTX      +0 . 0mm>
POINTY      +0 . 0mm>
TEST PATTERN  - >
```

# 5

**Press **F3 (+)** to start drawing the test pattern.**

- Turn on and move the light pointer.

# 6

**Move the light pointer to the center of the cross pattern.**

- Adjust the light pointer position if it is not aligned with the center of the pattern drawn by the pen.

#### Moving the light pointer in the X-axis direction

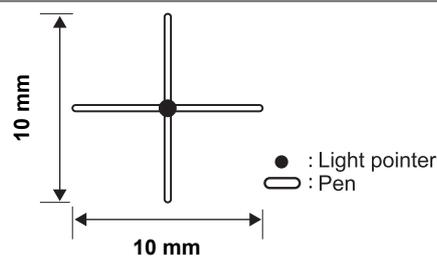
Move up : Press **F1 (+)** (-3 to +3 mm)

Move down : Press **F1 (-)** (-3 to +3 mm)

#### Moving the light pointer in the Y-axis direction

Move right : Press **F2 (+)** (-3 to +3 mm)

Move left : Press **F2 (-)** (-3 to +3 mm)



# 7

**Press **END** to save the adjusted values.**

- Press **CE** if you do not want to save the settings.

R1

TF2

M

# 6

Troubleshooting

## Adjust the mark sensor

In the case of the M model, replace with another head by the procedure of P.5-9, or remove the M head. The connector cover must be installed.

If the power is turned on without head, an error will be displayed, but adjustment can be done without problems.

### Adjust offset between pen tip and mark sensor

Draw a filled square of 5 mm square and read the center of the square with a mark sensor.

If you press the **ORIGIN** key during this adjustment, the cross is drawn at the position where the head currently exists, and the light of the mark sensor moves to the center of the cross.

If the light of the mark deviates from the center of the cross, please perform this adjustment.

Adjust the light pointer offset after performing this adjustment.

#### 1 Display the fifth page of the local menu.

- Press **PAGE** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
TOOL ADJUST  - - - >
```

#### 2 Press **F3** and select **[TOOL ADJUST]**.

```
<TOOL ADJUST>1 / 2
B CUTTER ADJUST>
C ROLLER ADJUST>
CIRCLE θ COR >
```

#### 3 Press **PAGE** to display the second page.

```
<TOOL ADJUST>2 / 2
LIGHT POINTER >
MARK SENSOR >
MIL OFFSET >
```

#### 4 Press **F2** to select **[MARK SENSOR]**.

```
<TOOL ADJUST>2 / 2
LIGHT POINTER >
MARK SENSOR >
MIL OFFSET >
```

#### 5 Press **F3** to start drawing the test pattern.

- Draw a filled square of 5 mm square and read the center of the square with a mark sensor.
- Press **F1** or **F2** to adjust.

```
<SENSOR OFF >1 / 1
X      +*. *mm>
Y      -*. *mm>
TEST PATTERN - >
```

#### 6 Press **END** to register the adjusted value.

- If you do not want to register, press **CE**.



## Adjust the offset of the router (spindle)

Adjust the center of the mark sensor and router when M head is installed.

**Hint!**

- It is necessary to adjust the deviation between the mark sensor and the pen tip in advance. "Adjust the mark sensor" P.6-14

# 1

**Mount the router head and turn on the power again.**

# 2

**Prepare the adjustment work.**

- Set something with a slight thickness such as a cut edge of cardboard.

# 3

**Install the workpiece and align the workpiece height.**

# 4

**Set the Z origin to be slightly scraped off the top surface of the workpiece.**

- You can also set the Z origin as usual. Set the cutting amount easy to adjust.

# 5

**Display the fifth page of the local menu.**

- Press **PAGE** several times.

```
[ LOCAL ]      5 / 5
RESERVE      - - - >
RESERVE      - - - >
TOOL ADJUST  - - - >
```

# 6

**Press **F3** to select [MIL OFFSET].**

```
<TOOL ADJUST> 2 / 2
LIGHT POINTER >
MARK SENSOR   >
MIL OFFSET    >
```

# 7

**Press **F3** to draw the adjustment pattern.**

- When drawing is completed, the mark sensor light moves to the vicinity of the intersection of the cross cutting marks.

```
<MIL OFFSET> 1 / 2
X             + * . *mm>
Y             - * . *mm>
PATTERN>
```

**Hint!**

- After drawing the adjustment pattern, sometimes the sensor does not move to the pattern. This is because the head (router) has exceeded the drawing range. In such a case move the position of the drawing inside the board face. (As a guide, set the work inside 150 mm from the X origin)

# 8

**Adjust the offset amount of X and Y with the **F1** **F2** key.**

- Press the **F1** **F1** or **F2** **F2** key to move the head, so overlap the sensor light at the adjustment point.
- See Step 11 for adjustment points.

```
<MIL OFFSET> 1 / 2
X             + * . *mm>
Y             - * . *mm>
PATTERN>
```

R1

TF2

M

6

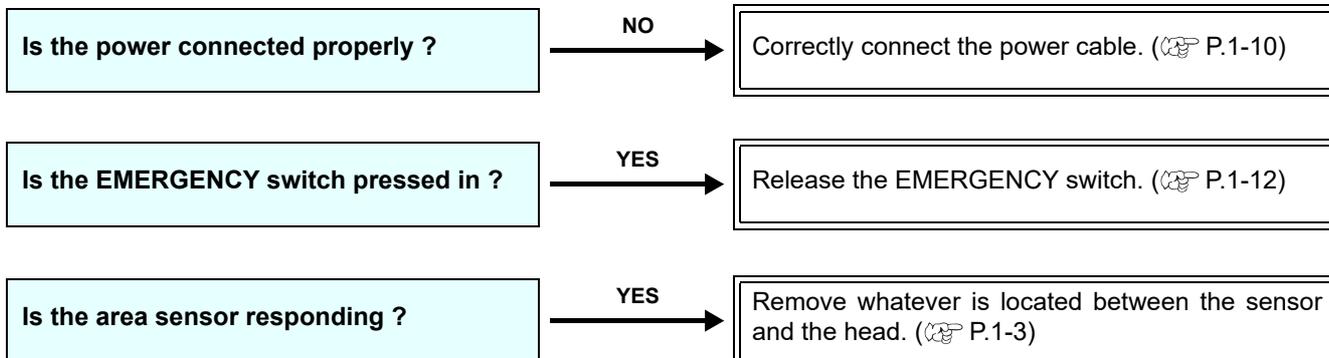
Troubleshooting



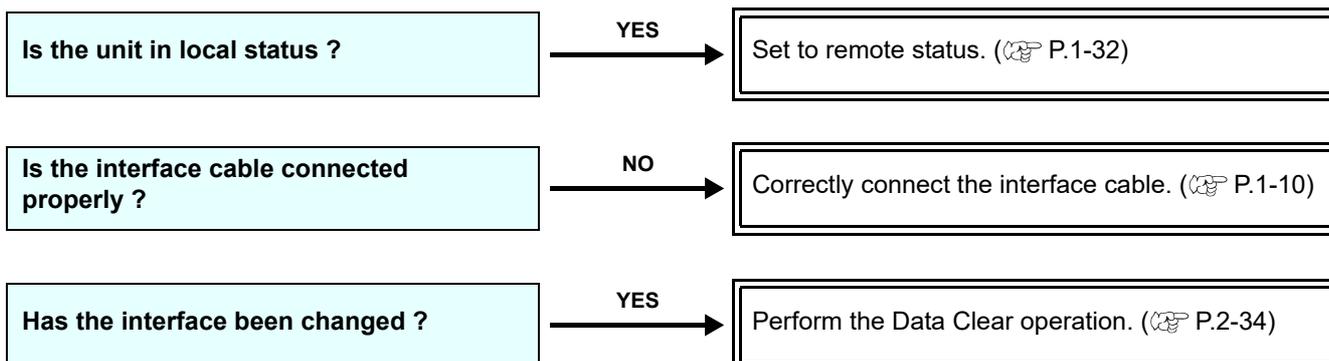
# Troubleshooting

Make some final checks if you think that the unit has broken down. Contact your Mimaki representative if the problem cannot be solved by the remedy described.

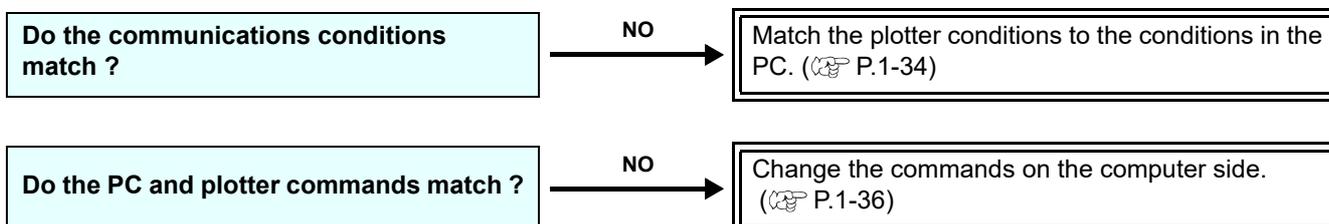
## Unit does not operate when the power is turned ON



## Unit does not operate after the CAD data is sent



## An error occurs when the data is sent



## Tool lifts up the paper

Is the paper (sheet) wrinkled or flexed?	YES	Flatten out the paper (sheet). (☞ P.2-5)
Is the head too low?	YES	Adjust the head height to suit the thickness of the workpiece. (☞ P.2-21)
Is pen up / down operation defective?	YES	Turn off the power and move Unit A vertically. Contact your Mimaki representative if Unit A does not move up and down normally.

## Drawn lines are broken or smudged

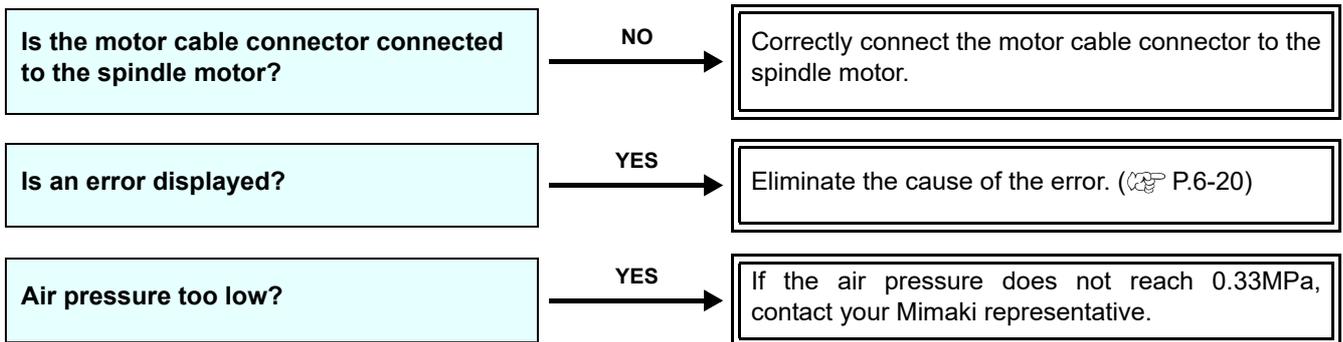
Is the Unit A screw loose?	YES	Re-tighten the Unit A screw. (☞ P.2-18)
Is the drawing speed too high?	YES	Decrease the "SPEED" in the cutting conditions. (☞ P.2-12)
Is the drawing pressure too low?	YES	Increase the "PRESSURE" in the cutting conditions. (☞ P.2-12)
Is the pen out of ink?	YES	Replace the pen with a new one. (☞ P.1-19)

## No reciprocating movement

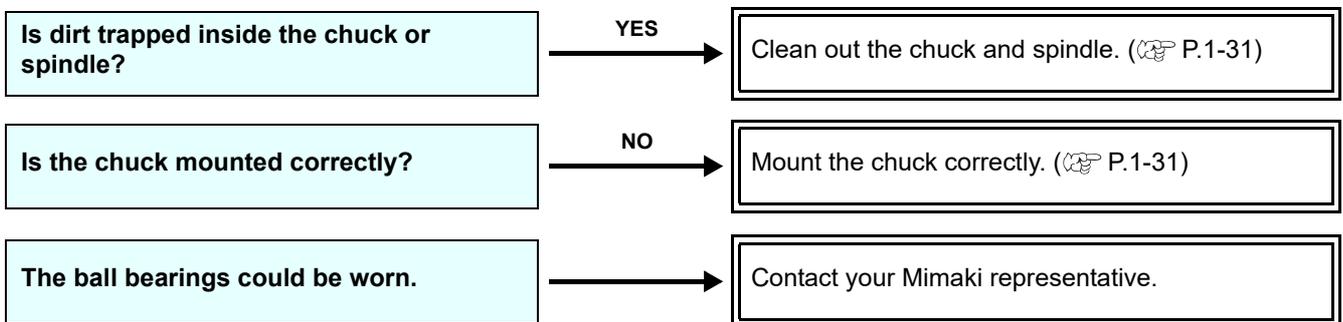
Inadequate lubrication of the reciprocating shaft?	YES	Apply a small amount of grease to the shaft. (☞ P.5-3)
Is the oscillation movement turned off?	YES	Set the "VIBRATION" cutting condition from 1 to 5. (☞ P.2-12) Contact your Mimaki representative if reciprocating movement does not start.



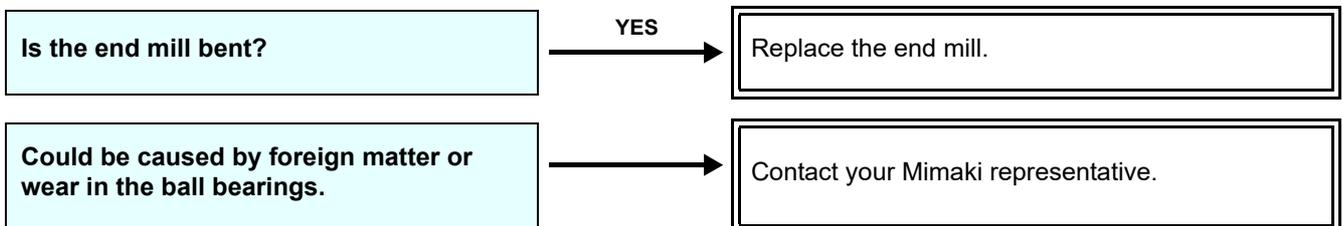
## Spindle motor does not rotate



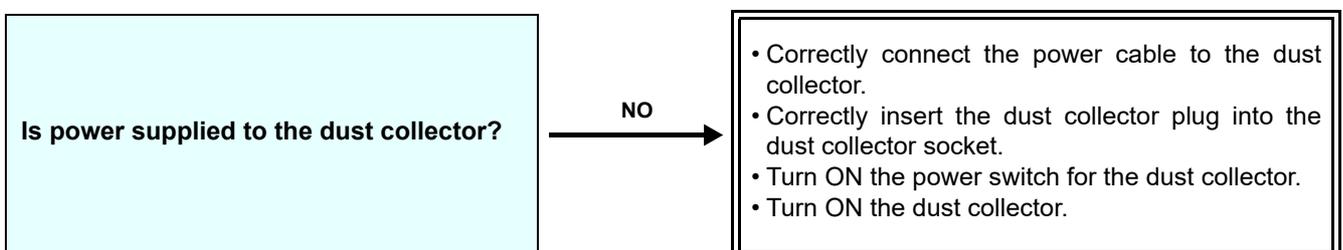
## Runout of the end mill



## Abnormal noise or vibration during rotation



## Dust collector does not work



# Problems Causing an Error Display

A message appears on the screen when an abnormality occurs in this unit.  
Take the appropriate remedy for the displayed message.

## Non-fatal Errors

Display		Cause	Remedy
ERROR 10 ERROR 11 ERROR 12	COMMAND PARAMETER DEVICE	Communications conditions differ in plotter and PC.	Match the communications conditions. (☞ P.1-34)
ERROR 13	POLYGON	The polygon buffer overflowed.	Break up and send the polygon data.
ERROR 20	I/O	Communications conditions differ in plotter and PC.	Match the communications conditions. (☞ P.1-34)
		The plotter was turned on while the PC was turned off.	Turn the PC on before turning the plotter on.
ERROR 27	BUFFER OVER	A serial interface error occurred.	Match the communications conditions. (☞ P.1-34)
ERROR 30	OPERATION	An illegal key operation was made, such as changing the communications conditions while cutting was interrupted.	Do not make illegal key operations.
		An ASCII dump was made with an effective area less than A3.	Set the effective area to at least A3 size before conducting an ASCII dump.
		An ASCII dump was made with the origin set at a position that does not allow an effective area of A3 to be obtained.	
ERROR 31	NO DATA	The copy function was used with no data received.	Before using the copy function, receive the data from the PC and cut it. (☞ P.3-4 "Cutting the Same Data Again (Copy)")
ERROR 32	DATA TOO LARGE	An attempt was made to copy data exceeding 1 MB in size.	Send data less than 1 MB in size.
ERROR 36	MARK DETECT	The register marks could not be detected.	Check if the paper is curled.
			Check if the register mark detection start point is designated correctly. (☞ P.4-11)
			Check if black or white register marks are printed.
			Check that there is no printing or dirt between the register marks.
			Check that all the register mark detection settings are correct. (☞ P.4-9)
			Contact your dealer or an office of MIMAKI if these remedies do not work and register mark detection is not possible.



Display	Cause	Remedy
ERROR 36 MARK DETECT Stop Data send & Exec. [DATA CLEAR] - PUSH ANY Key -	The register marks could not be detected.	Press any key to revert to local mode.
ERROR 37 MARK ORG	During register mark detection, the origin was outside the cutting area.	Move the workpiece to shift the register marks inside the cutting area.
ERROR 38 MARK SCALE	During consecutive register mark detection and copying, unread or misread marks resulted in an abnormal correction magnification value ( $\pm$ more than 30%).	Avoid cutting in positions where register marks cannot be correctly detected. See ERROR 36 for the causes of register mark detection errors.
ERROR 62 VAC / TILT	Excessive blower current.	Turn off the plotter and blower. Wait a while and turn them back on.
ERROR 75 REC.CUTTER	Appropriate cutting conditions not set.	Set appropriate cutting condition values. (☞ P.2-12)
	Worn blade	Replace the blade with a new one. (☞ P.1-26)
ERROR 83 NO HEAD	The head is not mounted.	Mount the head.
ERROR 85 AIR PRESS	Low cooling-air pressure supplied to the Model M head. (Cutting operation continues)	Check the compressor.
		Check the air hoses.
ERROR 86 MILL LOAD	Excessive load applied during milling operation with Model M head. (Cutting operation continues)	Change the cutting conditions. (☞ P.2-12) Replace the end mill.
ERROR 87 MILL WARM	The controller detected an abnormality during milling. (Cutting operation continues)	Take the appropriate remedy according to the controller display. (☞ P.6-23)
ERROR 88 MILL ERROR	The controller detected an abnormality and applied an emergency stop during milling.	
ERROR 89 MILL MOTOR	The spindle motor is not connected.	Check the connection of the spindle motor (☞ P.1-27).
		Check the spindle motor disconnection.
ERROR 91 MARK POS	The register mark position lies outside the range of sensor movement.	Move the workpiece to shift the register marks inside the range of sensor movement.
*** OFF SCALE ***	Data extends beyond the effective cutting area.	(1) Stop processing(☞ P.2-33)and clear data. (2) Expand the effective cutting area or enter data within the effective cutting area.



6

## Fatal Errors

Immediately turn off the unit power if one of the following errors occurs.

If the message appears after the unit is turned back on after waiting a while, immediately turn off the power and contact your dealer or an office of MIMAKI.

Error Message		Error Message		Error Message	
ERROR 00	MAIN ROM	ERROR 40	X OVERLOAD	ERROR 53	Z ORIGIN
ERROR 01	SERVO ROM	ERROR 41	Y OVERLOAD	ERROR 70	$\theta$ OVERLOAD *1
ERROR 02	MAIN RAM	ERROR 42	X OVERCURRENT	ERROR 71	$\theta$ OVERCURRENT *2
ERROR 03	SERVO RAM	ERROR 43	Y OVERCURRENT	ERROR 72	CUTTER Z LOAD
ERROR 04	EEPROM	ERROR 46	PEN SENSOR	ERROR 73	ROLLER Z LOAD
ERROR 05	HANDSHAKE	ERROR 50	X SENSOR	ERROR 90	F/W
ERROR 06	BUFFER	ERROR 51	Y SENSOR		
ERROR 08	POWER	ERROR 52	$\theta$ ORIGIN		

\*1. If using the Model M head,  $\theta$  is displayed as Z.

\*2. ERROR 70  $\theta$  OVERCURRENT can occur if the head is too high or if  $\theta$  rotation occurs when the Head B tool has not reached the workpiece.

Contact your dealer or an office of MIMAKI if ERROR 70  $\theta$  OVERCURRENTD re-occurs after lowering the tool to contact the workpiece and retransmitting the data.

If using the Model M head,  $\theta$  is displayed as Z.



## Errors Displayed on the Spindle Controller

These errors relate to the spindle motor when the Model M head is used.

Error	Cause	Remedy	
Warnings	A0	The spindle motor cable is not connected. Or defective connector contact.	Check the motor cable.
	A1	Compressed air pressure dropped during rotation.	Check the compressed air pressure.
			Check that the compressor is in operating status.
	A2	Unit internal temperature increased.	Turn off the plotter. Wait a while and turn it back on.
	A3	A load is applied to the spindle motor.	Change the cutting conditions.
	A4	Emergency stop signal is input while motor is stopped.	
A5	Compressed air pressure is too high.	Check the compressed air pressure.	
Errors	E1	Current exceeded the permitted value.	Change the cutting conditions.
			Turn off the plotter. Wait a while and turn it back on.
	E2	Applied voltage exceeded the permitted value.	Turn off the plotter. Wait a while and turn it back on.
	E3	The motor cable connector is disconnected or the sensor is defective.	Check the motor cable connector.
			Turn off the plotter. Wait a while and turn it back on.
	E4	Unit internal temperature is abnormally high.	
	E5	Circuit error	
	E6	Motor was constrained and rotation stopped at least 3 s.	Turn off the plotter and remove the constraint. Wait a while and turn the plotter back on.
	E7	Inadequate compressed air pressure at motor startup.	Check the compressed air pressure. Turn off the plotter. Wait a while and turn it back on.
		Compressed air pressure remained inadequate for at least 4 s during rotation.	
	E8	Overload status continued for a certain time.	Change the cutting conditions. Turn off the plotter. Wait a while and turn it back on.
	EA	A rotation command was input before the power was turned on.	Turn off the plotter. Wait a while and turn it back on.
	EL	The connected spindle motor cannot be used.	Use the CF3 spindle motor.
	EH	A rotation speed exceeding the set value was maintained for a certain time.	
EE	Motor was started during emergency stop signal input.	Turn off the plotter. Wait a while and turn it back on.	
	An emergency stop was applied during motor rotation.		
EC	Internal memory error		

Contact your dealer or an office of MIMAKI if the problem cannot be solved by the remedy described above.

M

6

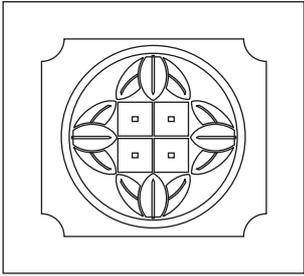
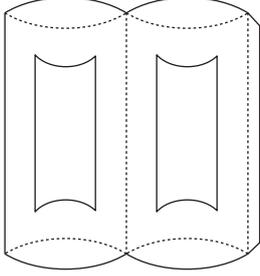
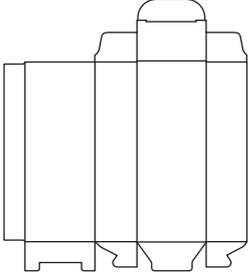
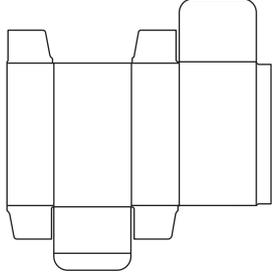
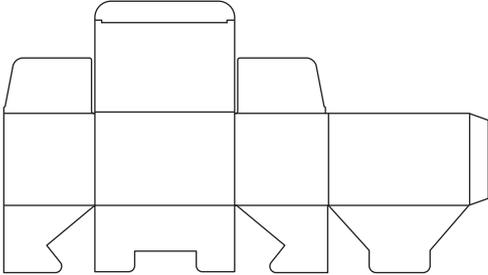
Troubleshooting

# Self Test

If the cutting quality is unsatisfactory, use the self-test function to determine if there is a problem with the commands from the PC or with the plotter unit itself.

## What is a Self Test ?

The plotter cuts, draws, and grid cuts 11 types of sample, without receiving commands from the PC. If the cutting quality is poor, change the cutting conditions and adjust the tool. If these changes do not improve the cutting quality, contact your Mimaki representative.

Overview of the Self Test	
<p><b>PATTERN CUT 1</b> Uses the tool selected by the Tool Select function. The sample is a Japanese family crest using a variety of line segments.</p> 	<p><b>PATTERN CUT 2</b> The sample is a paper pattern for the apparel industry. The outer lines are cut after drawing the inner lines.</p> 
<p><b>DATA DUMP (P.6-27)</b> The unit draws the data sent from the PC as ASCII code to check for abnormalities.</p>	
<p><b>SAMPLE 0.5 mm</b> Use this to make a paper container sample from thick paper (approx. 0.5 mm thick). The perimeter is cut after cutting the grid. Requires thick paper at least A4 in size.</p> 	<p><b>SAMPLE1.0 mm</b> Use this to make a paper container sample from corrugated cardboard (approx. 1 to 2 mm thick). The perimeter is cut after cutting the grid. Requires corrugated cardboard at least A3 in size.</p> 
<p><b>SAMPLE 1.5 mm</b> Use this to make a paper container sample from corrugated cardboard (approx. 1.5 to 3 mm thick). The perimeter is cut after cutting the grid. Requires corrugated cardboard at least A2 in size.</p> 	
<p><b>R = 3 / 5 / 10 / 20 / 50 / 100</b> Cuts a circle with the selected radius. (Radius (R) = 3, 5, 10, 20, 50, 100 mm)</p>	
<p><b>PARAMETER DUMP</b> Conducts drawing with the conditions set in the unit.</p>	



## Conducting a Self Test

The pen number must be assigned before conducting PATTERN CUT or SAMPLE CUT with Model R1 or TF2. (P.3-2)

Set the following values as the initial values.

Pen No.		Model R1	Model TF2
1	Head	B	B
	Tool	Reciprocating cutter 1	Cutter 1
2	Head	C	C
	Tool	Roller 1	Roller 1
3	Head	B	B
	Tool	Reciprocating cutter 2	Cutter 1
4	Head	C	C
	Tool	Roller 1	Roller 1
5	Head	A	A
	Tool	Swivel blade	Swivel blade
6	Head	A	A
	Tool	Pen	Pen

# 1

Set the origin at the point where you wish to run the self test.

# 2

Display the third page of the local menu.

- Press **PAGE** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

# 3

Press **F3** and select [SELF TEST].

```
<SELF TEST>  1 / 5
PATTERN CUT1 - - - >
PATTERN CUT2 - - - >
DATA DUMP    - - - >
```

**R1**
**TF2**

# 6

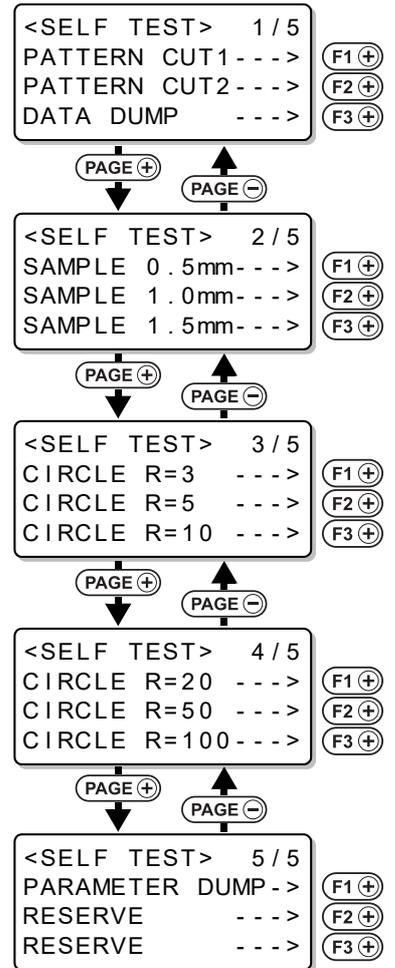
**Troubleshooting**

# 4

## Select the self test items.

- (1) Press **PAGE (+)** **PAGE (-)** to switch between screens.
- (2) Press **F1 (+)** **F2 (+)** **F3 (+)** to select the self-test items to run.

- For details about DATA DUMP and PARAMETER DUMP, see P.6-27 and P.6-29 respectively.



# 5

## Press **END** to draw the data.

- Press **CE** to cancel SELF TEST.



## Making an DATA DUMP

### Hint!

- An DATA DUMP is not possible for Model M.
- The ASCII dump requires a pen and A3 or larger paper.
- If paper smaller than A3 is used, the drawing may extend outside the paper.
- When ASCII dump is set, the tool automatically changes to pen. Ensure that a pen is mounted in Unit A.

1

Use the Tool Select function to set the tool to pen. (☞ P.2-8)

2

Position A3 or larger paper in landscape direction.

3

Set ORIGIN at the left edge of the paper.  
(☞ P.2-31)

4

Display the third page of the local menu.

- Press **PAGE** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

5

Press **F3** and select  
[SELF TEST].

```
<SELF TEST>   1 / 5
PATTERN CUT1 - - - >
PATTERN CUT2 - - - >
DATA DUMP     - - - >
```

6

Press **F3** and select  
[DATA DUMP].

```
<DATA DUMP>   1 / 1
END KEY to START
CE KEY to CANCEL
```

7

Press **END**.

- The tool moves to the upper-left corner of the paper.

```
<DATA DUMP>   1 / 1
A3 LOCA CONFIR >
*UPPER LEFT SET
*MARGIN 10*10mm
```

8

Check the paper position.

- Check that the pen tip is at the upper-left corner of the paper.
- If the pen tip is not located at the upper-left corner of the paper, align the upper-left corner of the paper with the pen.

9

Press **F1** to make the DATA DUMP.

- The unit draws the communications conditions.

R1

TF2

6

Troubleshooting

---

# 10

## Send data from the PC.

- The unit draws the ASCII code data.
  - To quit, press **REMOTE/LOCAL** . Wait a while and conduct DATA CLEAR. (☞ P.2-34)
- 

R1

TF2

## Making a PARAMETER DUMP

### Hint!

- A PARAMETER DUMP is not possible for Model M.
- The parameter dump requires a pen and A3 or larger paper.
- If paper smaller than A3 is used, the drawing may extend outside the paper.
- When parameter dump is set, the tool automatically changes to pen. Ensure that a pen is mounted in Unit A.

# 1

Use the Tool Select function to set the tool to pen. (☞ P.2-8)

# 2

Position A3 or larger paper in landscape direction, using the origin position mark as the reference.

# 3

Display the third page of the local menu.

- Press **PAGE** several times.

```
[ LOCAL ]      3 / 5
INTERFACE     - - - >
MODE SET      - - - >
SELF TEST     - - - >
```

# 4

Press **F3** and select [SELF TEST].

```
<SELF TEST>   1 / 5
PATTERN CUT1 - - - >
PATTERN CUT2 - - - >
DATA DUMP     - - - >
```

# 5

Press **PAGE** to display the fifth page of the SELF TEST menu.

```
<SELF TEST>   5 / 5
PARAMETER DUMP - - >
RESERVE       - - - >
RESERVE       - - - >
```

# 6

Press **F1** and select [PARAMETER DUMP].

```
<PARAM DUMP>  1 / 1
END KEY to START
CE KEY to CANCEL
```

# 7

Press **END**.

- The tool moves to the upper-left corner of the paper.

```
<PARAMETER DUMP>
A3 LOCA CONFIR >
*UPPER LEFT SET
*MARGIN 10*10mm
```

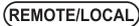
# 8

Check the paper position.

- Check that the pen tip is at the upper-left corner of the paper.
- If the pen tip is not located at the upper-left corner of the paper, align the upper-left corner of the paper with the pen.

**R1**
**TF2**
**6**
**Troubleshooting**

**9****Press  to make the parameter dump.**

- The unit starts drawing the parameters.
- To quit, press . Wait a while and DATA CLEAR. ( P.2-34)

R1

TF2

# Replacing the Fuse

The fuse is contained in the fuse holder on the front of the electrical box.



- Fuse replacement is only required if the external I/O terminals are used. For normal use without the external I/O terminals, replacement of the fuse is not necessary.
- Replace the fuse if the plotter stops operating when an emergency stop function or other device is connected to the external I/O terminals.

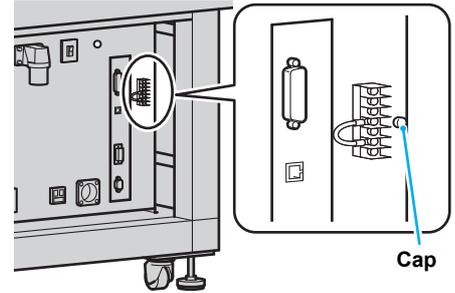


- To prevent electric shocks, turn off the main power switch and disconnect the power socket before replacing the fuse.

**1**

## Remove the fuse holder cap.

- Turn the cap counterclockwise to remove it from the fuse holder.



**2**

## Check whether the fuse has blown.

### How to check for a blown fuse.

- Visually check the wire inside the glass tube. If the wire is broken, the fuse has blown.
- Check the conductivity with a tester. If there is no conductivity, the fuse has blown.

	Visual check	Checking with a tester
Normal		With conduction
Abnormal		Without conduction

**3**

## Replace the fuse.

- (1) Remove the blown fuse from the cap holder.
- (2) Replace with a supplied fuse.

- Replacement fuse: ET1A (time-lag, low-breaking capacity; rating: 1A, 250 V AC)



**4**

## Attach the cap to the fuse holder.

- Turn the cap clockwise, while pushing it in.

R1

TF2

M

**6**

Troubleshooting

# Specifications

SPECIFICATIONS		Type	CF3-1631	CF3-1610
Effective plotting width	X axis		3100 mm (122.0 in)	1000 mm (39.4 in)
	Y axis		1600 mm (63.0 in)	
Driving method			X, Y, Z, $\theta$ DC servo Special timing driving	
Maximum speed			50 cm/s (630.0 in/s)	
Maximum acceleration			0.5 G	
Mechanical resolution			X axis : 0.00234 mm (0.000092 in) Y axis:0.003125 mm (0.000123 in) $\theta$ axis : 0.005625° Z axis:0.001875 mm (0.000074 in)	
Command resolution			0.025 mm / 0.010 mm (switchable on operation panel)	
Static accuracy *1	Repeat accuracy		$\pm 0.15$ mm ( $\pm 0.006$ in)	
	Range accuracy		$\pm 0.1$ mm ( $\pm 0.004$ in) or $\pm 0.1\%$ of travel distance, whichever is largest	
	Origin reproducibility		$\pm 0.15$ mm ( $\pm 0.006$ in)	
	Perpendicular accuracy		1.5 mm (0.06 in)	
Work securing method			Vacuum suction by blower *2	
Maximum cut work thickness			M model : 50 mm (2.0 in) R1 model : 20 mm (0.8 in) TF2 model : 10 mm (0.4 in)	
Maximum set work thickness			M model : 50 mm (2.0 in) R1 model : 20 mm (0.8 in) TF2 model : 25 mm (1.0 in)	
Settable work weight			120 kg (264.6 lb) max. (No point load)	60 kg (132.3 lb) max. (No point load)
Receiving buffer capacity			1 MB	
Command			MGL-IIc3 (MGL-IIc supported) *3	
Interface			USB / RS-232C	
Operating environment			10 - 35 °C (50 - 95 °F) 35 - 75 % (Rh), no condensation	
External dimensions	Width		2250 mm (88.6 in) or less	
	Depth		4120 mm (162.2 in) or less	1860 mm or less
	Height		Approx. 1320 mm (52.0 in)	
	Cutting panel surface height		Approx. 840 mm (33.1 in)	
Weigh			Approx. 1050 kg (2314.9 lb)	Approx. 600 kg (1322.8 lb)
Power supply			Single phase AC200 V - 240 V 50 / 60 Hz 6 A or less 1200 VA or less	
Service outlet power supply (for dust collector)			Single phase AC100 V - 120 V (50/60Hz)15 A or less Single phase AC220 V - 240 V (50Hz)10 A or less	
Blower power supply			Single phase AC200 V *2 - 240 V 50/60Hz for one unit 30A or less, 6000W or less	

\*1. This is the accuracy for pen writing with almost no load. The guaranteed temperature range is 20 to 25°C.

\*2. Up to three blowers for absorption equivalent to 2.2kw can be set (up to two for CF3-1610). The blower is an option. It is not attached to the main body.

\*3. This is a dedicated HP-GL command.





