Engraving Plotter

ME-300STII
ME-500STII
ME-650STII

OPERATION MANUAL

MIMAKI ENGINEERING CO., LTD.

URL: http://mimaki.com/

D202838-13

FOREWORD

This operation manual (It is also called this manual.) describes how to operate the Engraving Plotter ME-300STII/500STII/650STII (It is also called this machine throughout this manual.).
Keep this manual on hand.

For Safe Operation

Read this manual carefully to avoid risks.

To use this machine safely, operate this machine correctly and carefully.
Please read and fully understand this manual before using. Operating without full understanding can result in serious injuries to personnel. Also, when engraving, keep this manual on hand.

Definition of Warning / Caution

This manual describes precautions with the marks of "Danger!" "Warning!" "Caution".
These marks have the following meanings.

⚠ Danger	Failure to observe this can result in losing part of a body or serious injuries with lifelong effects.
⚠ Warning	Failure to observe this can result in moderate injuries (bruises, fracture, cut).
⚠ Caution	Failure to observe this can result in breakdown of this machine or equipment.

Follow the instructions of this manual.

Follow the instructions of this manual and do not operate anything else other than provided in this manual.
If operating anything else other than provided in this manual, you must regard for the safety yourself.

Use this machine for engraving only.

This is the machine tool for engraving. Use this machine exclusively for the purpose of engraving.

Follow the safety rules at your workplace.

Only the person who has read this manual carefully can use this machine.
Keep the person (children, old people, spectator or others) except operators away from this machine.
Keep the work tools including a cutter, endmill, or spanner out of reach of children.

Clothes and protectors for work

Change loose-fitting clothes and remove accessories before working if wearing them. Long hair must be secured.
If waste could be blown, wear goggles during work.

Requests

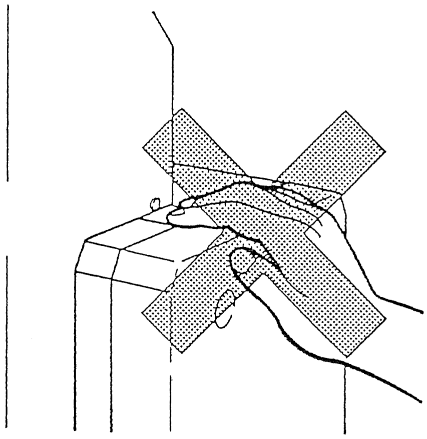
- This operation manual has been carefully prepared for your easy understanding, however, please do not hesitate to contact a distributor in your district or our office if you have any inquiry.
- In no event shall MIMAKI be liable for special, incidental or consequential damages or for loss of profits of dealer or customers of any product.
- Descriptions contained in this manual are subject to change without notice for improvement.
- In the case where this manual should be illegible due to destruction or lost by fire or breakage, purchase another copy of the operation manual from our office.
- You can also download the latest manual from our website.

Before Use

Danger

Do not touch the head and the X bar at work.

While this machine is in operation or waiting for data, do not touch the head and the X bar.
If touched, fingers will be pinched between the X bar slot and the head and cut.
Keep away from this machine 30 cm or more at work except when stopping in an emergency or operating the panel.



Danger

Do not touch carelessly to the cutter blade

The cutter blade is very sharp. There is a risk of injury such as cutting a finger.

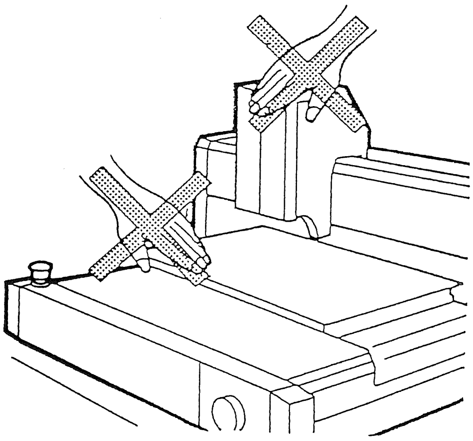
Warning

Do not touch the table except the operation panel and the emergency switch at work.

While this machine is in operation or waiting for data, do not touch the table.
If touched, you could suffer abrasions on the moving table.
Keep away from this machine 30 cm or more at work except when stopping in an emergency or operating the panel.

Keep your hands or head away from the head while the spindle is rotating.

While the spindle is rotating, keep your hands or head away from the head. It could catch hair or a sleeve, or the rotating blade could injure hands.
While the spindle is rotating, keep away from this machine 30 cm or more except when stopping in an emergency or operating the panel.



Warning

When processing flammable materials, please take the following safety measures.
· Be sure to remove processing residues such as wood chips before starting processing.
· Do not leave the machine in operation without operator.
· Prepare a fire extinguisher nearby.
· Do not place flammable materials near the machine.

Caution

Move this machine by two or more personnel.

This machine weighs 50 kg (ME-300STII), 82 kg (ME-500STII) or 95 kg (ME-650STII).
This machine must be carried by two or more people.

Follow the installation requirements.

Install this machine in a place where meets the following requirements.
If not, this machine may be broken.

- A place where is not exposed to direct sunlight
- A place where the temperature is between 5 and 40 °C
- A place where the humidity is between 35 to 75 % (RH)
- A place where no dust or dirt is entered
- A place where there is no tools or machines generating much oil or waste
- On the flat and even base
- A place where there is enough space for installation and maintenance

Do not connect cables with the power on.

Do not connect cables while the power of this machine or the host is on.
It may cause an electric shock, breakdown or abnormal action of this machine.
Turn off this machine while connecting cables.

Keep the cables away from moving parts of this machine.

Install this machine in order not the cables to contact moving parts of this machine.
The cables may be cut by the moving parts, or the connector may be removed during engraving and cause a breakdown of this machine.

Insert the power cable into a 3-pin receptacle.

Insert the power cable of this machine into a 3-pin grounding receptacle.
If there is no 3-pin receptacle, connect an earth wire with the installation adapter attached.
Without an earth wire, it may cause an electric shock or breakdown of this machine.

Do not pull out the plug or the connector at work.

Do not pull out the plug or the connector to turn off this machine at work.
It may cause breakdown of this machine. To turn off the power in an emergency, push the emergency switch.

Check around this machine before turning the power on.

Before turning on the power, check there is no people around this machine (within one meter or less), or there is no object on the table or the X bar.
If the power is turned on, the head and the table moves. They may contact and injure human body around this machine, objects may fall down from the table, or this machine may be broken.

Caution

Do not shake this machine heavily.

Do not shake this machine heavily to prevent breakdown of this precision mechanical equipment.
If shaken, cutting accuracy may reduce or the electric parts may be broken.
This machine must be carried by two or three people.

Handling of water or oil

Do not put water or oil on this machine. They may break precision parts or may cause an electric shock. In such a case, turn the power off immediately, and contact a distributor in your district.

Cleaning precautions

Do not use a spray including air gun to clean waste.
If used, waste may get into the precision part and may cause breakdown.
Vacuum up waste with a cleaner.

Mount the work and the tools firmly.

Mount the work and the tools properly and firmly following the instruction of this manual.
If not mounted firmly, engraving accuracy may reduce, the table may be scratched, or the work or the tools may come off and cause an injury.

Ventilate well.

When using harmful works to humans, ventilate the room well. For example, cutting PVC board in an improper cutting condition may generate a great amount of harmful gas.

Do not cut in an improper cutting condition.

If cutting in an improper cutting condition, the cutter may break, pop up, and cause an injury.

Cutting precautions

Wear goggles when cutting works. The operator must inform the person unrelated to this machine of risk of this machine or keep the person away from this machine.
A broken blade may injure the person.

CAD or data precautions

Please note that a breakdown of CAD or problems of data may cause an unexpected motion.

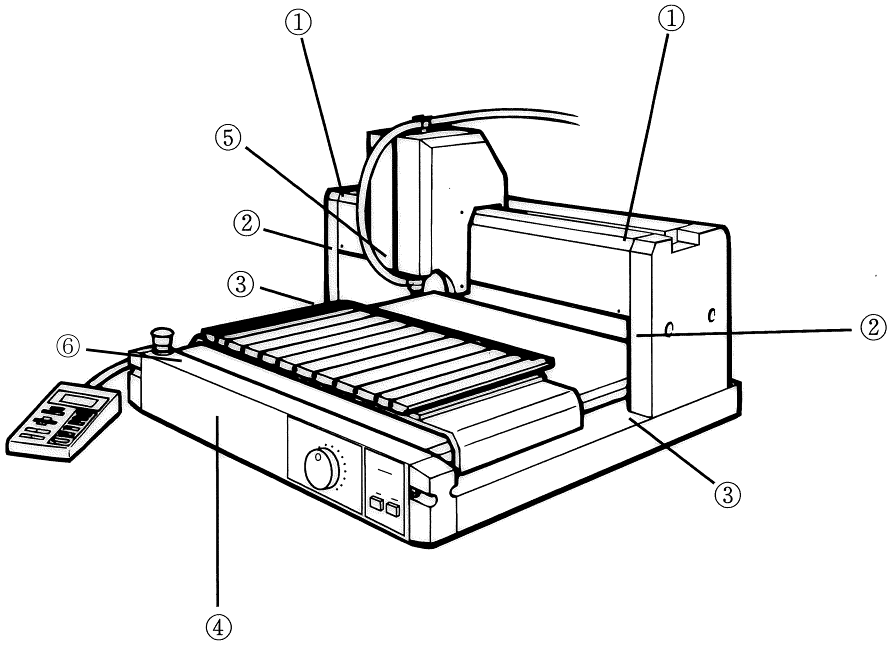
Cap the port after using.

The service power connecting port is located on the rear panel of this machine (see P.1-5).
Cap it when not in use or after using. If not capped, it may cause an electric shock.

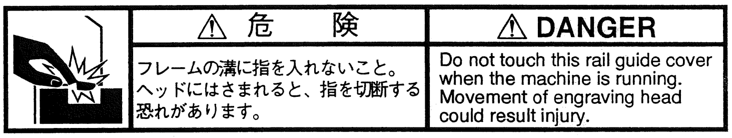
Position of the Warning Labels

The warning labels are adhered on this machine to warn the danger.

Be sure to read and understand this before working to avoid the danger.

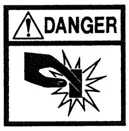


1



⚠ 危　　険	⚠ DANGER
フレームの溝に指を入れないこと。 ヘッドにはさまれると、指を切断する恐れがあります。	Do not touch this rail guide cover when the machine is running. Movement of engraving head could result injury.

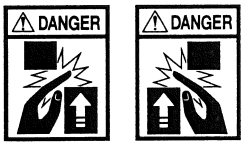
2



Do not insert fingers between the head and the side frame while the head is moving.

Fingers could be pinched by the head and cut.

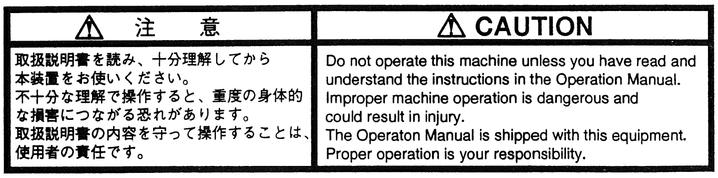
3



Do not insert hands or fingers between the table and the side frame while the table is moving.

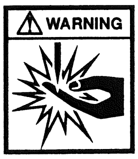
Hands or fingers could be cut.

4



⚠ 注　　意	⚠ CAUTION
取扱説明書を読み、十分理解してから本装置をお使いください。 不十分な理解で操作すると、重度の身体的な損害につながる恐れがあります。 取扱説明書の内容を守って操作することは、使用者の責任です。	Do not operate this machine unless you have read and understand the instructions in the Operation Manual. Improper machine operation is dangerous and could result in injury. The Operaton Manual is shipped with this equipment. Proper operation is your responsibility.

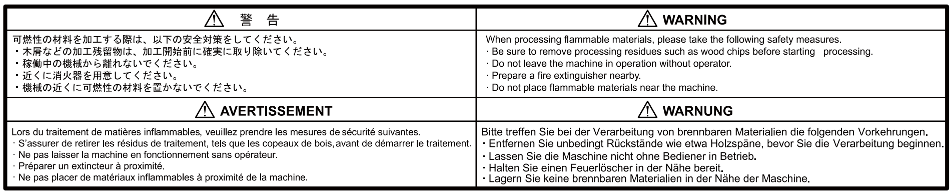
5



Do not touch the cutter blade while the machine is running.

Hands or fingers could be injured.

6



⚠ 警　告	⚠ WARNING
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。 ・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。 ・稼働中の機械から離れないでください。 ・近くに消火器を用意してください。 ・機械の近くに可燃性の材料を置かないでください。	When processing flammable materials, please take the following safety measures. · Be sure to remove processing residues such as wood chips before starting processing. · Do not leave the machine in operation without operator. · Prepare a fire extinguisher nearby. · Do not place flammable materials near the machine.
⚠ AVERTISSEMENT	⚠ WARNUNG
Lors du traitement de matières inflammables, veuillez prendre les mesures de sécurité suivantes. · S’assurer de retirer les résidus de traitement, tels que les copeaux de bois, avant de démarrer le traitement. · Ne pas laisser la machine en fonctionnement sans opérateur. · Préparer un extincteur à proximité. · Ne pas placer de matériaux inflammables à proximité de la machine.	Bitte treffen Sie bei der Verarbeitung von brennbaren Materialien die folgenden Vorkehrungen. · Entfernen Sie unbedingt Rückstände wie etwa Holzspäne, bevor Sie die Verarbeitung beginnen. · Lassen Sie die Maschine nicht ohne Bediener in Betrieb. · Halten Sie einen Feuerlöscher in der Nähe bereit. · Lagern Sie keine brennbaren Materialien in der Nähe der Maschine.

Definition of Term

This section explains keywords of this manual.

Tool

The instrument mounted on the head (spindle) when engraving is called Tool. The tools used on this machine are as follows:

Cutter
Endmill
Chip removal attachment
Vacuum hose

Host

Host computer is called Host for short.

Work

Engraving material including acrylic, stainless and ABS is called Work.

X axis · Y axis · Z axis

Movement of this machine from right to left, front to back, top to bottom is called X axis, Y axis, and Z axis respectively.

X and Y axis origin

The bottom left point of engraving data is called X and Y origin.

Z axis reference point

The reference point of cutting amount or raising amount is called Z axis reference point.

G-code

An NC-code that this machine can interpret and execute is called a G-code.

G-code is compatible with firmware version 1.40 or later.

Flatness follow-up function ON

The work surface (Z axis reference point) is automatically detected and engraved every time of up / down of the cutter.

Flatness follow-up function AUTO

The work surface is detected not only when up /down of the cutter, but during cutting.

Even an undulating work or a work with slanted surface can be engraved at a constant depth.

At work

The state of engraving received data, moving the head or the table using the operation panel, or performing self-test is called At work.

Standby

The state of waiting for data in the remote mode is called Standby.

Moving part

The head and the table are called Moving part.

During engraving

The state of engraving received data or performing self-test is called During engraving.

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CHAPTER 1

PREPARATION

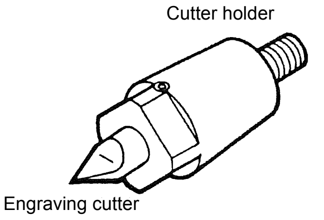
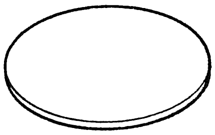
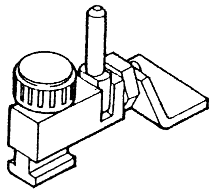
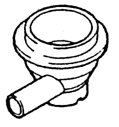
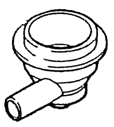
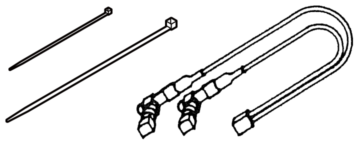
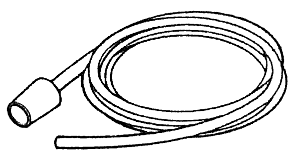
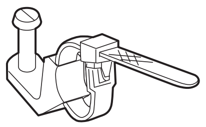
This chapter describes the preparation required to operate this machine.

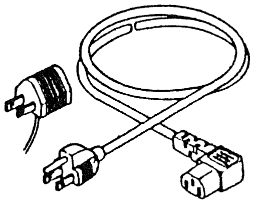
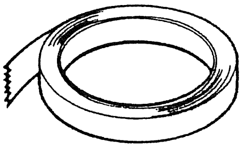
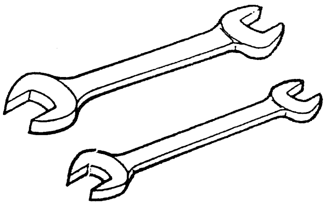
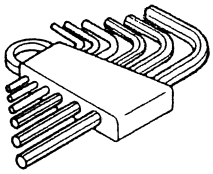
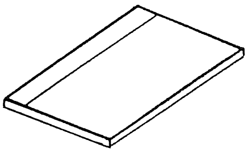
Confirming Accessories

When unpacked, confirm accessories.

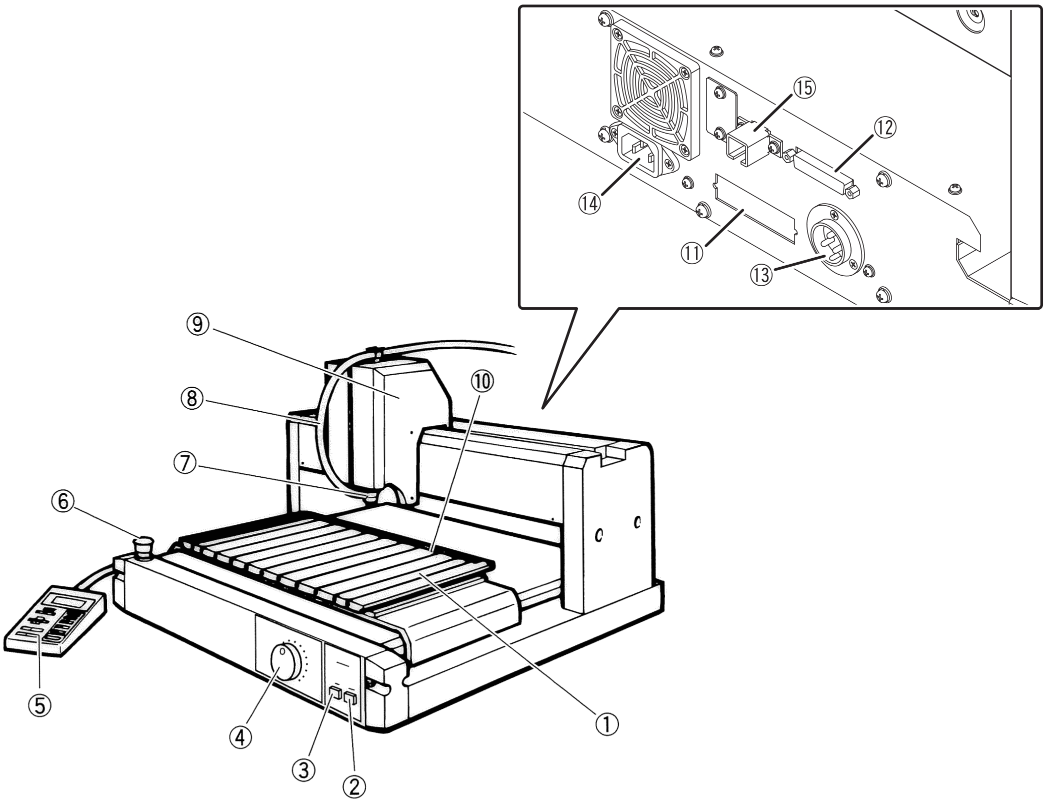
If you find anything missing or damaged, contact a distributor in your district or our office.

Standard accessories

No.	Part Name	Part No.	Q'ty	Illustration	Remarks
1	Cutter Holder	SPA-0021	1		☞ P.1-9 ☞ P.6-2
2	Engraving Cutter	SPB-0010	1		
3	Flatness Sensor Adjuster	M500505	1		For setting the flatness correction amount ☞ P.3-11
4	Clamp Tool	SPA-0019	2		For setting work ☞ P.3-4
5	Chip Removal Attachment (Large) (Small)	SPA-0015 SPA-0016	? ?	 SPA-0015  SPA-0016	ϕ26mm ϕ11mm ☞ P.1-11
6	Motor Brush Cable Tie (Large) 2 (Small)10	E108563	1		☞ P.6-3
7	Vacuum Hose	M000925	1		☞ P.1-8 ☞ P.1-12
8	Hose clip		2		

No.	Part Name	Part No.	Q'ty	Illustration	Remarks
8	Power Cable	E300275	1		Grounding adapter attached ☞ P.1-7
9	Double-sided Adhesive Tape	NO.532	1		For setting work ☞ P.3-4
10	Wrench	10×12 14×17	2		For setting the cutter 12mm 17mm ☞ P.1-9
11	Hexagonal wrench set	ASW 0770	1		For change cutter blade ☞ P.6-2
12	Driver		1		For removing the reference scale ☞ P.3-5
13	Operation Manual	D200110	1		

Part Names and Functions



No.	Name	Indication in this manual	Function	☞
1	Clamp Table	Clamp table	The table on which the work is placed	P.3-3
2	Power Off switch	Power switch	Turns off the power to the machine.	P.2-4
3	Power On switch	Power switch	Turns on the power to the machine.	P.2-4
4	Knob to adjust the number of revolutions of the spindle	Adjusting knob	Adjusts the number of revolutions (rpm) of the spindle.	P.2-7
5	Operation Panel	Operation panel	The panel for operating the machine	P.2-2
6	Emergency Stop Switch	EMERGENCY switch	Stops the machine in an emergency.	P.2-5
7	Chip Removal Attachment	Chip removal attachment	Vacuums dust and chips during engraving.	P.1-8
8	Vacuum Hose	Vacuum hose	The hose which connects the chip removal attachment to a cleaner	
9	Head	Head	Performs engraving. A cutter or a pen can be attached.	
10	Reference Scale	Reference scale	Used as reference when setting the work parallel to the machine.	P.3-3

No.	Name	Indication in this manual	Function	☞
11	Connector for the Operation Panel	Connector for the operation panel	The operation panel cable is connected to the connector.	P.1-7
12	RS-232C Interface Connector	Interface connector	The interface cable is connected to the connector.	
13	Service Power Connecting port	Service power connecting port	The relay BOX[1] is inserted into the port.	
14	Power Inlet	Power inlet	The power cable is connected to the inlet.	
15	USB interface	interface connector	Connect USB Interface Cable.	

[1] optional

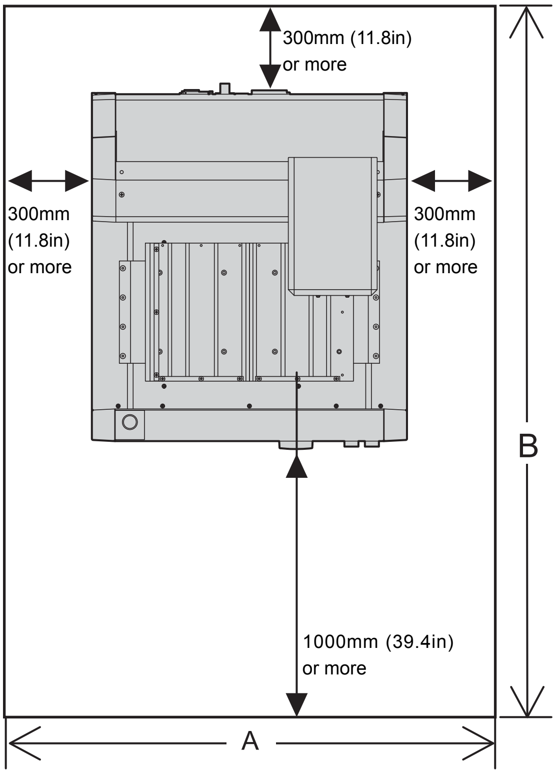
Choosing the Installation Site

Caution

Follow the conditions of an installation site.
Install this machine at the place where meets the following conditions.
If not, this machine may be broken.

- A place where is not exposed to direct sunlight
- A place where the temperature is between 5 and 40 °C
- A place where the humidity is between 35 to 75 % (RH)
- A place where no dust or dirt is entered
- A place where there is no tools or machines generating much oil or waste
- On the flat and even base
- A place where there is enough space for installation and maintenance

Follow the conditions above to select an installation site.



Maintenance space :

Shows a required space to replace parts or repair this machine. Maintenance space needs at least 1 m around the machine.
A desk, a small rack, or other movable things as needed are allowed to put in the maintenance space.

Installation space :

Shows a minimum required space to install and operate this machine. Do not put anything on the installation space.

A guide for the installation space and the maintenance space.

	Dimensions				Installation Space		Maintenance Space	
	Width	Depth	Height	Weight	A	B	Width	Depth
ME-300STII	540mm (21.3in)	630mm (24.8in)	530mm (20.9in)	50kg (110.2lb) or less	1140mm (44.9in)	1930mm (76.0in)	2540mm (100.0in)	2630mm (103.5in)
ME-500STII	785mm (30.9in)	750mm (29.5in)	530mm (20.9in)	82kg (180.8lb) or less	1385mm (54.5in)	2050mm (80.7in)	2785mm (109.6in)	2750mm (108.2in)
ME-600STII	880mm (34.6in)	960mm (37.8in)	530mm (20.9in)	95kg (209.4lb) or less	1480mm (58.3in)	2260mm (89.0in)	2880mm (113.4in)	2960mm (116.5in)

Connecting the Cables

Caution

Do not connect cables with the power on.
Do not connect cables while the power of this machine or the host is on.
It may cause an electric shock, breakdown or abnormal action of this machine.
Turn off this machine while connecting cables.

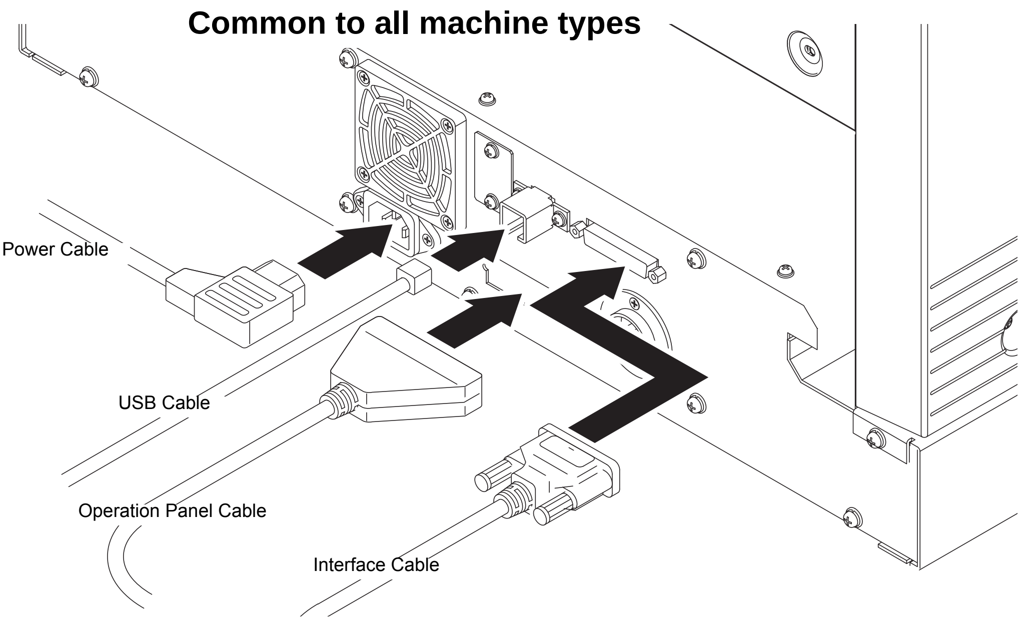
Keep the cables away from moving parts of this machine.
Install this machine in order not the cables to contact moving parts of this machine.
The cables may be cut by the moving parts, or the connector may be removed during engraving and this machine may be broken.

After the installation site is determined, connect the cables.

Connect the power cable, the operation panel cable, and the interface cable.

How to connect the power cable (machine side) / USB cable / operation panel cable / interface cable

Connect the power cable, the USB cable, the operation panel cable, and the interface cable to the rear of this machine as illustrated in the figure.

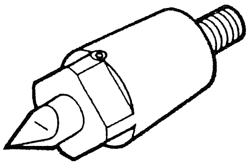
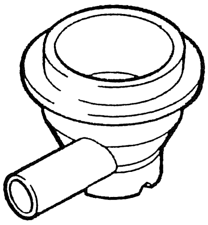
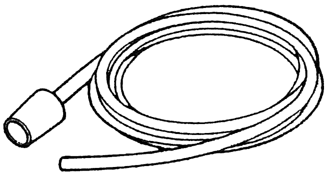
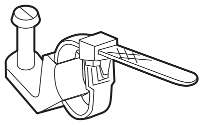


Common to all machine types

Accessories

Select the accessories according to the type of work or engraving.[*1]

For information on how to attach them, see the reference page of each tool.

Name	Application	Illustration	☞
Cutter	It is used for engraving.		P.1-9
Chip Removal Attachment	It vacuums dust during engraving. It is used when the cutter is used. Two types of the opening diameter, ϕ26mm and ϕ11mm, are available.		P.1-11
Vacuum Hose	It is used for connecting the chip removal attachment and the cleaner.		P.1-12
Hose clip	Fix the chip removal attachment.		P.1-12

---

*1. Refer to the Cutting Condition Table. (☞ P.6-6)

Mounting Tools

Warning

Turn the power of this machine off when mounting tools.
If the spindle rotates during mounting the tools, it could cause injury including fracture of fingers or hands, avulsion of nails, or burn.
Before mounting the tools, turn the power of this machine off.

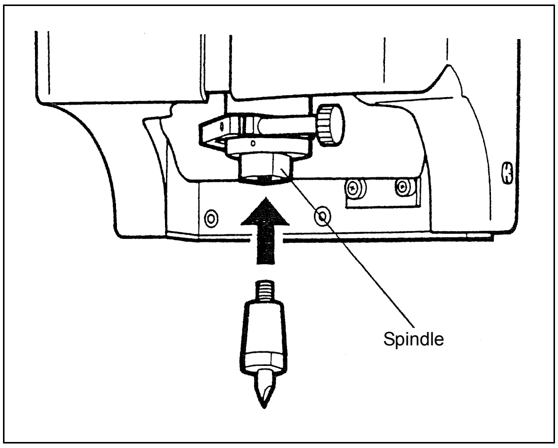
Attention to the cutting edge of cutting blade
Caution to the cutting edge of the cutter during tool exchange.
The cutter blade is very sharp. There is a risk of injury such as cutting a finger.

Caution

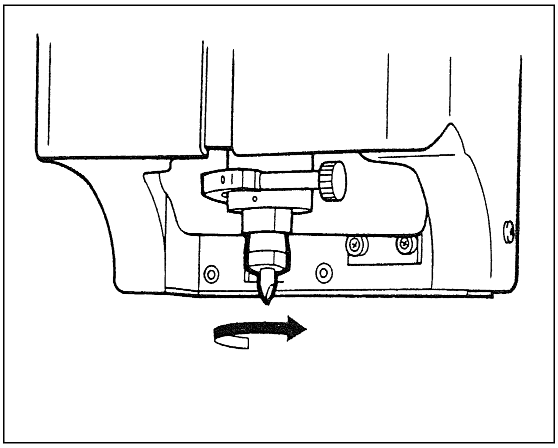
Mount the tools firmly.
Mount the tools properly and firmly following the instruction of this manual.
If not mounted firmly, engraving accuracy may reduce, or the tools may come off and cause an injury.

How to mount the cutter and the endmill

1 Insert the cutter into the spindle.



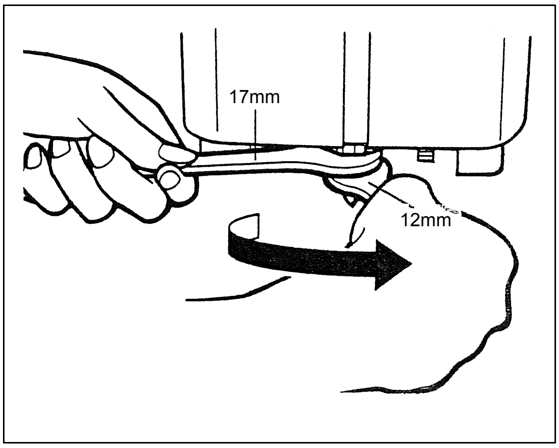
2 Turn the cutter manually to the direction of the arrow.



3 Tighten it with a spanner.

Fit a 17 mm spanner to the spindle, and a 12 mm spanner to the cutter.

Holding the spanner on the spindle, turn the spanner on the cutter to the direction of the arrow and tighten it.



Warning

Turn the power of this machine off when mounting tools.
If the spindle rotates during mounting the tools, it could cause injury including fracture of fingers or hands, avulsion of nails, or burn.
Before mounting the tools, turn the power of this machine off.

Caution

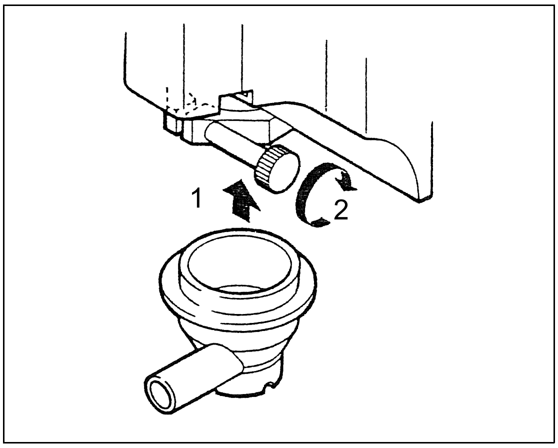
Mount the tools firmly.
Mount the tools properly and firmly following the instruction of this manual.
If not mounted firmly, engraving accuracy may reduce, or the tools may come off and cause an injury.

How to mount the chip removal attachment

1 Insert the flange of the chip removal attachment into the slot of the holder.

Push it until it contacts the sensor.

2 Turn the knob to tighten it.



How to mount the vacuum hose

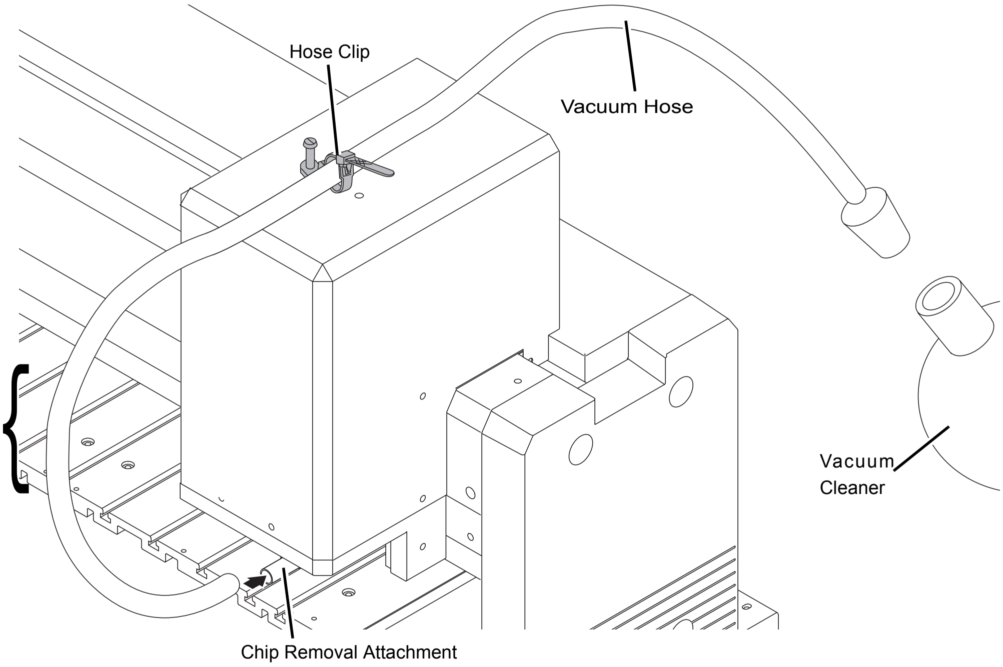
Attach the tip of one side of the vacuum hose to the chip removal attachment, and the other side to the vacuum cleaner.

Fix it on the head with a hose clip.

Use a vacuum cleaner that meets the following conditions.

1. The inside diameter is 32 mm to 38mm.
2. Maximum static pressure [*1] is 2100mm Aq or less.[*2]

Fix this part with loosened in order not the chip removal attachment to be pulled up.


Hose Clip
Vacuum Hose
Vacuum Cleaner
Chip Removal Attachment

[*1] Indicates on the vacuum cleaner.

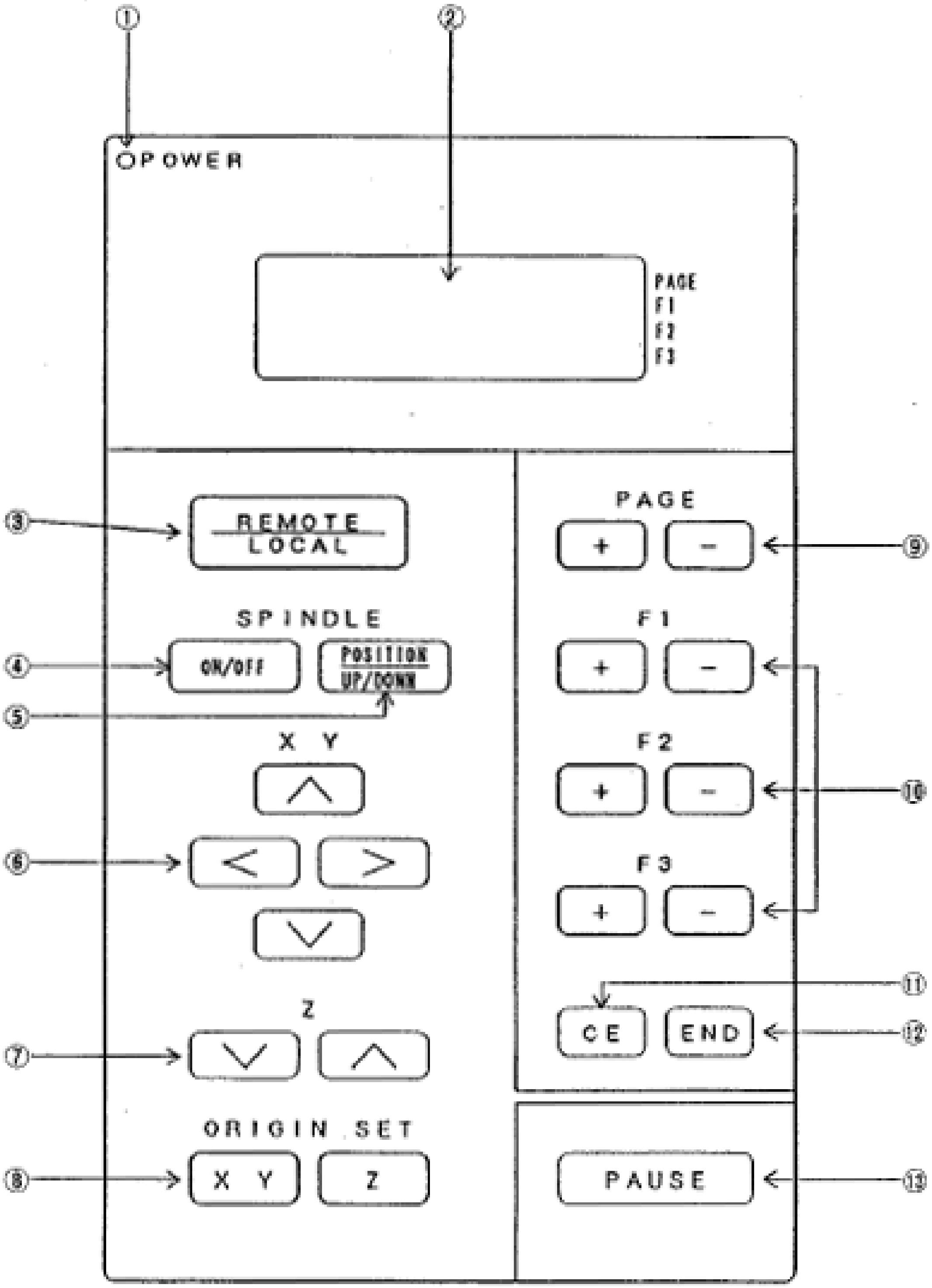
[*2] Using with the pressure exceeding this value may reduce the flatness follow-up ability or may cause malfunction.

CHAPTER 2
PREPARATORY OPERATIONS

This chapter describes the most basic operations before starting working with the machine.

Operation Panel

The names and functions of the operation panel components are as follows.


①
②
POWER
PAGE
F1
F2
F3
③
REMOTE
LOCAL
SPINDLE
④
ON/OFF
POSITION
UP/DOWN
⑤
X Y
⑥
Z
⑦
ORIGIN SET
⑧
X Y
Z
PAGE
+
−
⑨
F1
F2
F3
⑩
CE
END
⑪
⑫
PAUSE
⑬

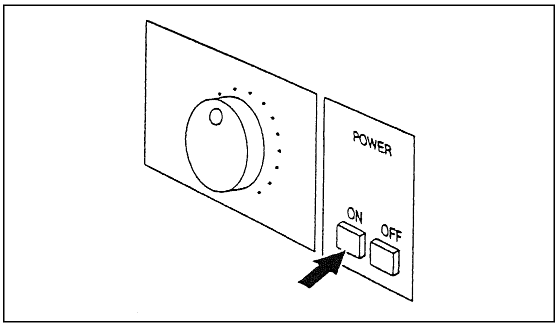
No.	Name	Indication in this manual	Function
1	Power Indicator Lamp	POWER lamp	Lights up when the power is turned on.
2	LCD Display		Gives information required for operation to the operator. (16 columns x 4 lines)
3	REMOTE/LOCAL Key	REMOTE LOCAL	Changes the operation mode between the remote and the local or stops the operation temporarily.
4	SPINDLE ON/OFF Key	SPINDLE ON/OFF	Switches ON/OFF of the spindle.
5	SPINDLE POSITION UP/DOWN Key	SPINDLE POSITION UP/DOWN	Specifies the lifting amount and cutting depth of the cutter.
6	X/Y Coordinates Move Key	< > ∧ ∨	Moves the X/Y coordinates. < : Moves the head to the left. > : Moves the head to the right. ∧ : Moves the clamp table to the back. ∨ : Moves the clamp table to the front.
7	Z Axis Move Key	︽ ︾	Moves the cutter on Z axis. ︽ : Raises the head. ︾ : Lowers the head.
8	Origin Set Key (XY)	X Y	Specifies the X/Y axis origin.
	Origin Set Key (Z)	Z	Specifies the Z axis origin.
9	Page (±) Key	Page + Page -	Changes the page shown on the LCD.
10	Function Key	F1 + F1 - F2 + F2 - F3 + F3 -	Selects an operation item (set value).
11	Cancel Key	CE	Interrupts the operation.
12	End Key	END	Terminates the operation (with data set or cutting to be executed).
13	Pause Key	PAUSE	Suspends the machine instantaneously.

How to Turn On /Off the Power

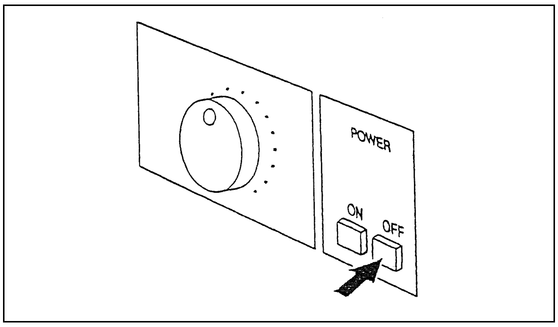
⚠ **Caution**	Check around this machine before turning the power on. Before turning on the power, check there is no people around this machine (within one meter or less), or there is no object on the table or the X bar. If the power is turned on, the head and the table moves. They may contact and injure human body around this machine, objects may fall down from the table, or this machine may be broken.

Turn On/Off the power to the machine by means of the switch mounted on the right side of the machine. Before turning the power on, release the emergency stop. (☞ P.2-5)

ON



OFF

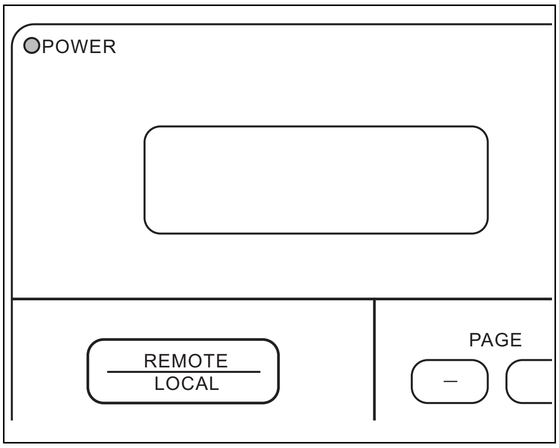


Initial action

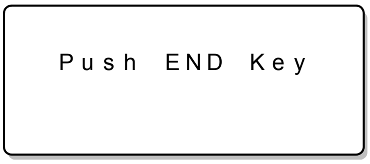
After the power is turned on, this machine automatically performs the following operations.

This sequence of operations is called initial action.

1 The POWER lamp lights up.



2 When the LCD shows the display of right, press END key.



Push END Key

3 The indication shown on the right appears on the LCD.

The numerals may be different.
Initialize after displaying.

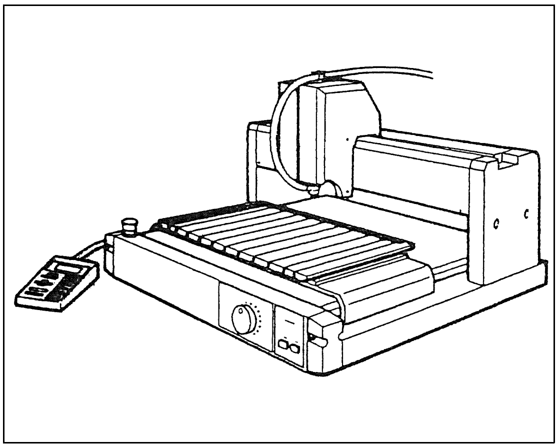
```
System Ver 1.00
  Please Wait
```

Compatible display

```
Initializing...
```

4 The cutter rises along the Z axis and the head moves to the back left position.

The table moves to the cutting origin position.



5 The head moves to the X, Y origin position which was previously set.

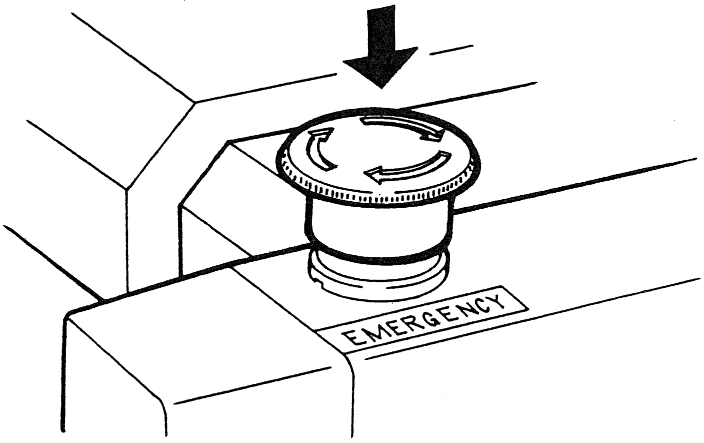
6 The first page of the local mode is displayed on the LCD.

```
[LCL]Spin.OFF1/4
Condition    -->  F1
Test Cut     -->  F2
Data Clear   -->  F3
```

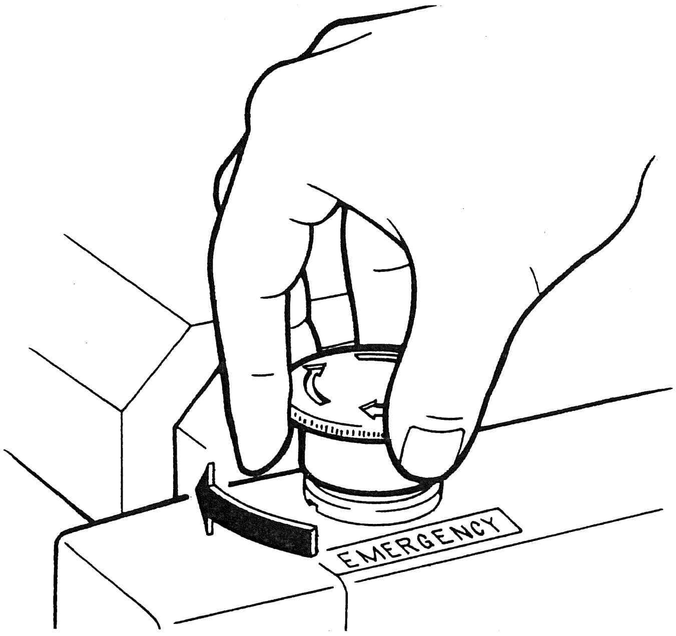
How to stop the machine in an emergency

If you need to immediately stop the machine in an emergency, press the EMERGENCY switch located on the upper left in the front of the machine.

Pressing the EMERGENCY switch turns the power off, and all the transmitted data will be erased.



To release the machine from the emergency stop, turn the switch in the direction of the arrow. To restart work, turn on the power to the machine.



Important!	This machine cannot be turned on during an emergency stop. To turn the power on, release the emergency stop.

How to Turn On/Off the Spindle

Danger

Keep your hands or head away from the head while the spindle is rotating.
While the spindle is rotating, keep your hands or head away from the head. It could catch hair or a sleeve, or the rotating blade could injure hands.
While the spindle is rotating, keep away from this machine 30 cm or more except when stopping in an emergency or operating the panel.

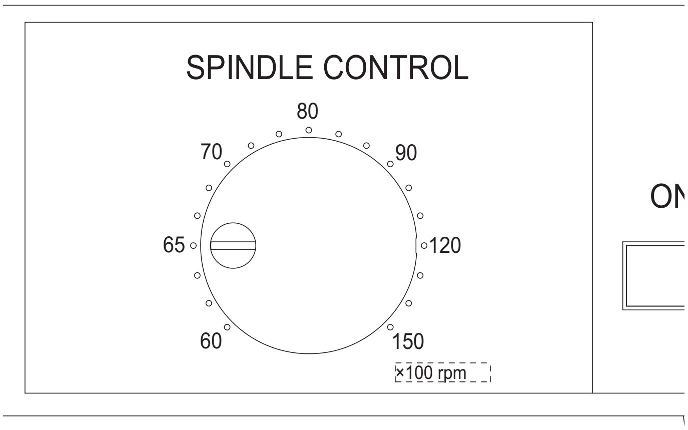
How to turn on/off the rotation of the spindle

Rotate the spindle before starting engraving.

Pressing SPINDLE ON/OFF key rotates the spindle. Another press will stop the spindle.

How to adjust the rotating speed of the spindle

Adjust the rotating speed of the spindle using the adjusting knob (☞ P.1-4) located on the right in the front of the machine.



Important!

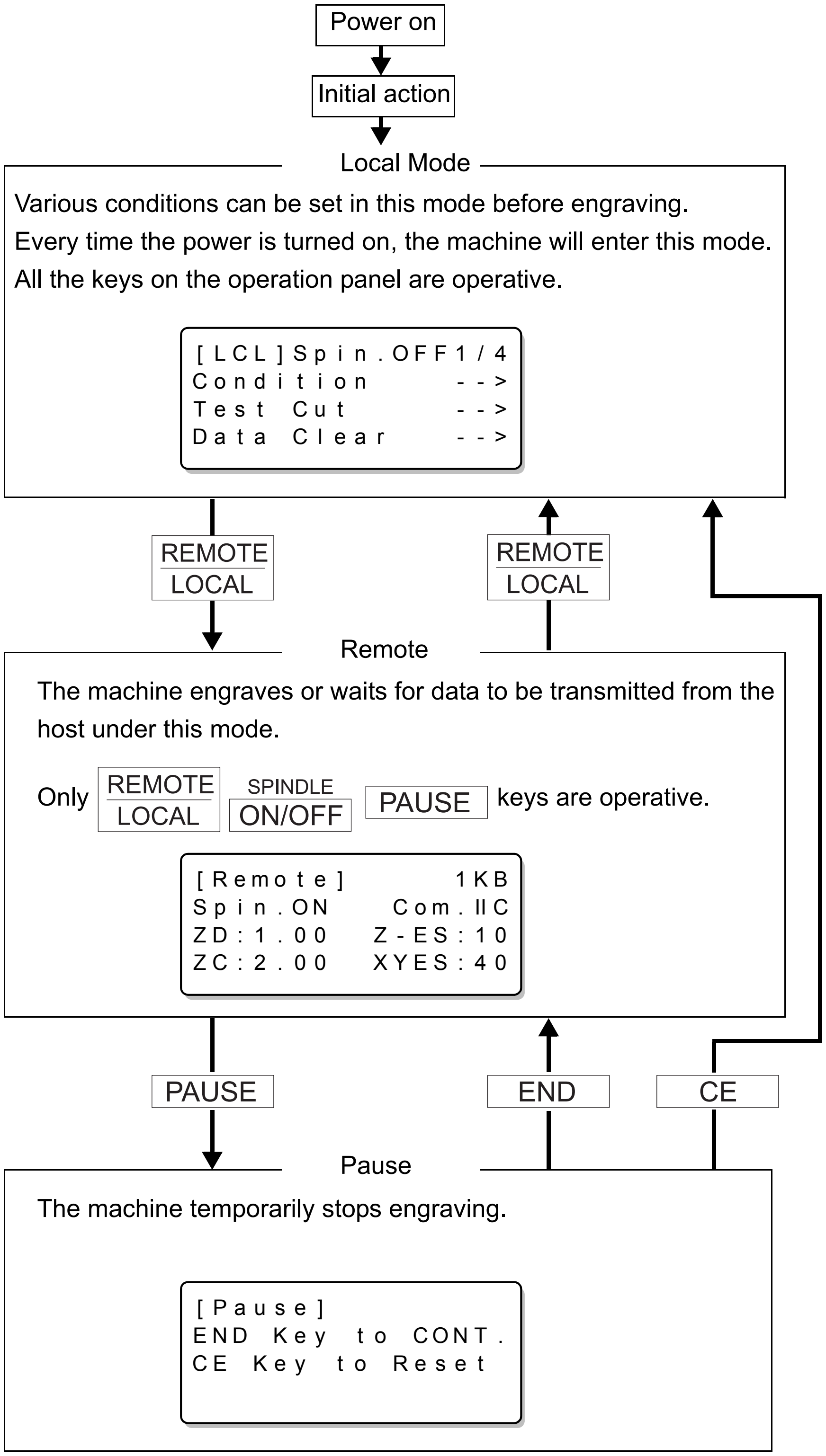
Automatic spindle rotation on/off
In the following cases, this machine automatically turns the spindle rotation on/off.

(1) When any data is received in the remote mode, the spindle automatically rotates.
(2) After this machine has stopped for about three seconds in the remote mode, the spindle rotation automatically stops.
(3) When Test Cut or Self Test (engraving a logo) is performed, the spindle automatically rotates.

Operation Modes

How to change the operation mode

This machine is operated under the major three different operation modes.


Power on
Initial action
Local Mode
REMOTE
LOCAL
REMOTE
LOCAL
Remote
PAUSE
END
CE
Pause

Local Mode

Various conditions can be set in this mode before engraving.
Every time the power is turned on, the machine will enter this mode.
All the keys on the operation panel are operative.

```
[LCL]Spin.OFF1/4
Condition    -->
Test Cut     -->
Data Clear   -->
```

Remote

The machine engraves or waits for data to be transmitted from the host under this mode.

Only REMOTE/LOCAL SPINDLE ON/OFF PAUSE keys are operative.

```
[Remote]      1KB
Spin.ON   Com.IIC
ZD:1.00   Z-ES:10
ZC:2.00   XYES:40
```

Pause

The machine temporarily stops engraving.

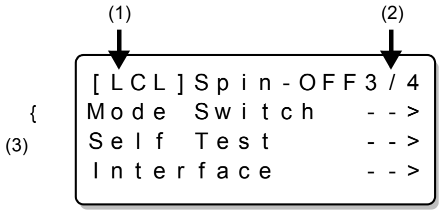
```
[Pause]
END Key to CONT.
CE Key to Reset
```

Local mode

When the power is turned on, the machine will perform the initial action, then will go to the local mode. Engraving and cutting conditions can be set in this mode. All the keys on the operation panel are operative.

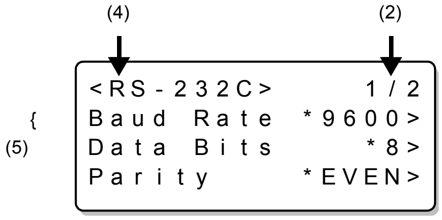
There are three LCD displays in this mode, type A, B, C.

Type A



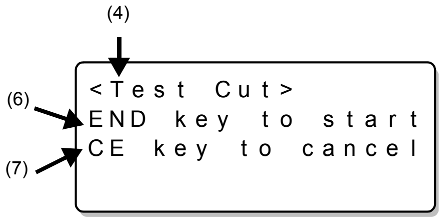
```
[LCL]Spin-OFF3/4
Mode Switch   -->
Self Test     -->
Interface     -->
```

Type B



```
<RS-232C>      1/2
Baud Rate   *9600>
Data Bits      *8>
Parity       *EVEN>
```

Type C



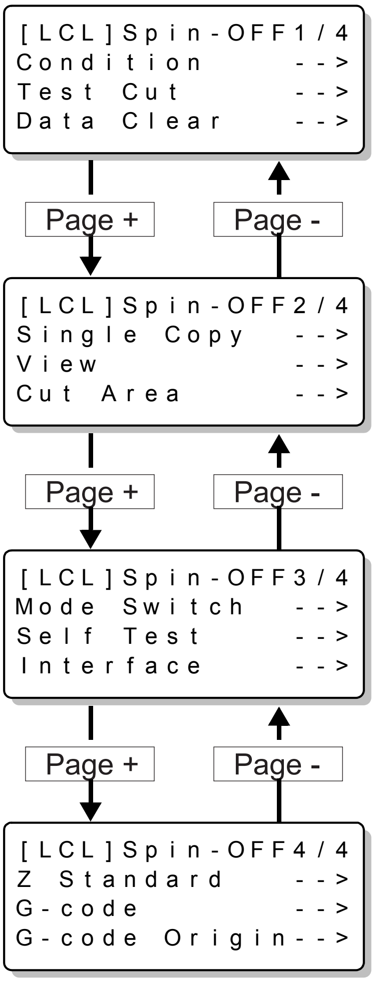
```
<Test Cut>
END key to start
CE key to cancel
```

No.	Display	Description
(1)	[Local]	Indicates that the machine is now in the local mode.
(2)	* / * A) B)	A) Indicates the total number of pages. B) Indicates the current page number. Press Page + or Page - key to change the number.
(3)	Mode Switch Self Test Interface	Indicates the items that can be operated.
(4)	<XXXXXXXXX>	Indicates the operation items.[*1]
(5)	Baud Rate Data Bits Parity	Indicates the set item.
(6)	END key to Start	Press END key to execute test or others.
(7)	CE key to cancel	Press CE to cancel test or others.

*1. For details of the items, see the next page.

The operation items available under the local mode are listed in the table below.

No.	Operation Item	Description	☞
1	Cut Area	Specifies an effective cut area in accordance with the work.	P.3-7
2	Condition	Sets the cutting speed and moving speed.	P.3-14
3	Test Cut	Engraves as a trial to check whether the cutting conditions are appropriate.	P.3-16
4	Data Clear	Clears the operation being executed (engraving).	P.4-2
5	Single Copy	Engraves data in buffer repeatedly.	P.4-3
6	View	Moves the head to the waiting position (back left).	P.4-5
7	Self Test	Check a quality of engraving with a pattern.	P.4-6
8	Mode Switch	Eight types of setting items are available.	P.4-7
9	Interface	Sets the communication conditions for serial interface (RS-232C).	P.4-9
10	Z Standard	Sets Z axis reference point automatically.	P.3-9
11	G-code	There are setting items when a G-code is selected.	P.4-9
12	G Work Origin	Registers the origin of a work coordinate system available when G-code is selected.	P.4-9



```
[LCL]Spin-OFF1/4
Condition     -->
Test Cut      -->
Data Clear    -->
```

```
[LCL]Spin-OFF2/4
Single Copy   -->
View          -->
Cut Area      -->
```

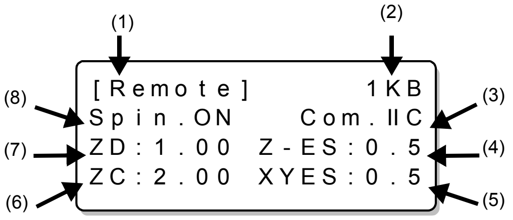
```
[LCL]Spin-OFF3/4
Mode Switch   -->
Self Test     -->
Interface     -->
```

```
[LCL]Spin-OFF4/4
Z Standard    -->
G-code        -->
G-code Origin-->
```

Remote mode

The machine waits for data from the host or engraves works in this mode.

Press REMOTE LOCAL in the local mode to change to the remote mode.[*1]



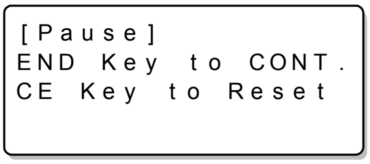
No.	LCD	Description
1	[Remote]	Indicates that the machine is in the remote mode.
2	1KB	Indicates the amount of non-plotted data in the receive buffer.
3	Com.IIC	Indicates the current command.
4	Z-ES 0.5	Indicates cutting speed of Z axis. [mm/s]
5	XYES 0.5	Indicates cutting speed of X/Y axis. [mm/s]
6	ZC 2.00	Indicates the lifting amount of the cutter in terms of Z axis. [mm] [*2]
7	ZD 1.00	Indicates the cutting depth of the cutter in terms of Z axis. [mm] [*2]
8	Spin.ON	Indicates that the spindle motor is on.

*1. If a G-code is set using an operation switch command, when the cutting operation for the received data is completed, the machine automatically returns to the local mode.

*2. If a G-code is set using an operation switch command, the cutting depth and lifting amount are disabled and *** is displayed for each of them.

Pause mode

Press PAUSE key while the machine is engraving to enter the pause mode.
(If the cutter is moving, the machine stops immediately.) *1*2*3*4*5



```
[Pause]
END Key to CONT.
CE Key to Reset
```

Press END key under the pause mode to continue engraving.
Press CE key to return to the local mode.

---

*1. During the pause mode, spindle stops. When it resume, will rotates the spindle again.
*2. The location of the Z axis in the pose mode can be set by a pose of Operation switch.
*3. While the flat detection is in operation (When the auto flat detection switch is ON or AUTO (☞ P.3-9)), the machine does not stop until the operation is completed.
*4. While the flatness follow-up function is active (the auto flat detection operation switch is set to AUTO), the machine may not stop immediately.
*5. hen moving to the local mode after pressing REMOTE LOCAL , if "Please wait" is being displayed, even by pressing PAUSE , you cannot stop the machine immediately.

CHAPTER 3
BASIC OPERATIONS

This chapter describes the basic operations required to perform engraving.

Operation Flow

The basic engraving procedure is as follows.

This chapter describes the operations after the tool is set and the power is turned on. For information on how to attach tools or how to turn the power on, see the previous chapter.

1. Attach the tools.
☞ "Mounting Tools" (P.1-9)

2. Turn the power on.
☞ "How to Turn On /Off the Power" (P.2-4)

3. Set the work.
☞ "How to Set the Work" (P.3-3)

4. Set X / Y origin.
☞ "How to Set X / Y Axis Origin" (P.3-6)

5. Set the cutting area.
☞ "How to Set Cutting Area" (P.3-7)

When auto flat detection switch is OFF

6. Set Z axis reference point.
☞ "How to Set Z Axis Reference Point" (P.3-8)

When auto flat detection switch is ON or AUTO

6. Set flatness correction amount.
☞ "How to Set Flatness Correction Amount" (P.3-10)

7. Set cutting depth / lifting amount of the cutter.
☞ "How to Set Cutting Depth / Lifting Amount in Z Axis" (P.3-12)

8. Set cutting conditions.
☞ "How to Set Cutting Conditions" (P.3-14)

9. Test the cutting conditions.
☞ "How to Test-Cut" (P.3-16)

10. Send data from the host (engraving).
☞ "How to Send Data from the Host" (P.3-17)

11. Turn the power off.
☞ "How to Turn On /Off the Power" (P.2-4)

12. Clean the machine or surroundings.
☞ "Daily Care" (P.3-18)

How to Set the Work

Danger

Stop rotation of the spindle when setting a work and change to the local mode.
If this machine receives data in the remote mode, the spindle rotates and the head starts to move. If the spindle rotates during setting the works, it could cause injury including fracture of fingers or hands, avulsion of nails, or burn.
Before setting a work, stop rotation of the spindle and change to the local mode.

Caution

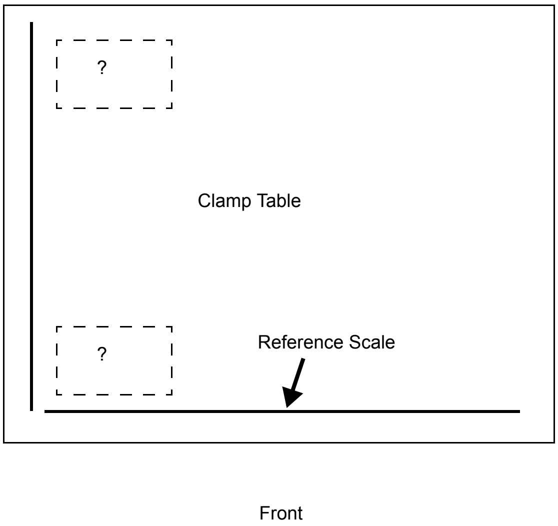
Set a work firmly.
Set a work properly and firmly following the instruction of this manual.
If not set firmly, engraving accuracy may reduce or the work may come off and cause an injury.

Set a work on the clamp table.

Although the reference setting position of works differs by CAD to be connected, generally set on the following positions.

Upper-left corner (A shown on the right figure) or

Lower-left corner (B shown on the right figure)

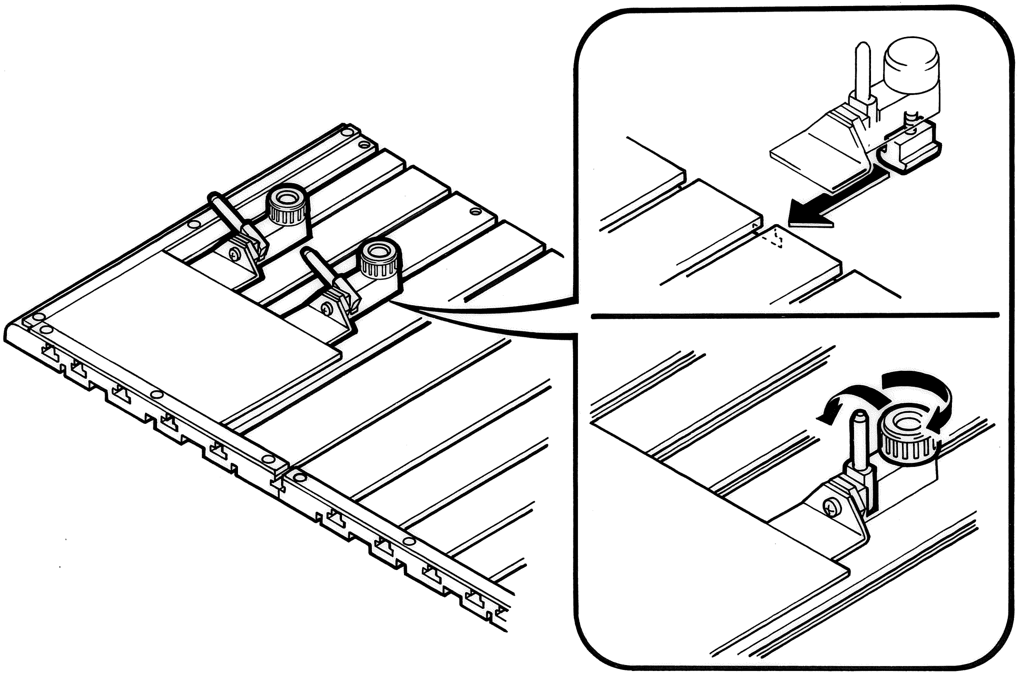


Determine the setting position of works depending on the CAD used.

For setting works, there are two ways as follows.

Clamping the work with the clamp tools

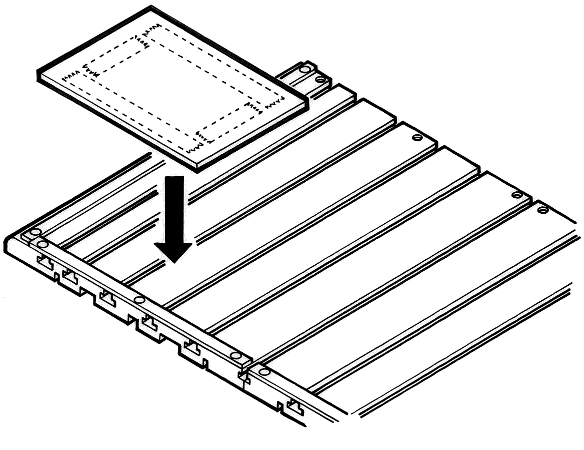
Set the work along the reference scale, clamp with a clamp tool, and fix it firmly.



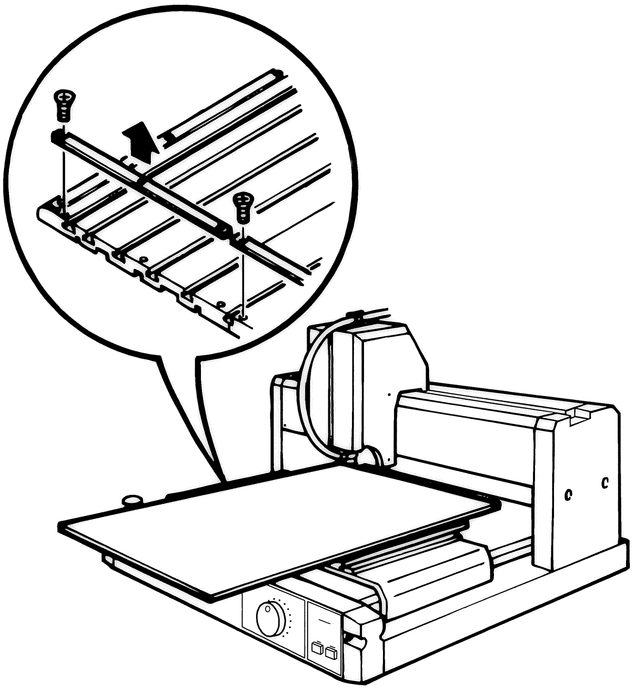
Attaching the work with a double-sided adhesive tape

This is effective for setting an unformed or a large work.

Attach a double-sided adhesive tape to the back of the work, and put it on the clamp table.

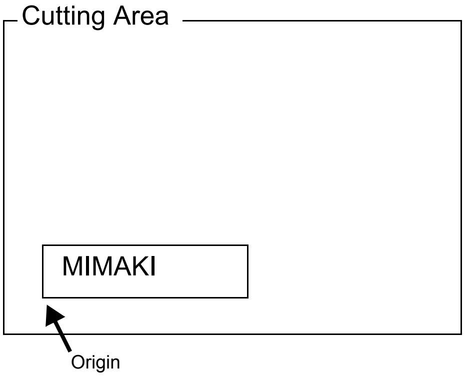


Important! For a work larger than the table, remove the reference scale and attach with a double-sided adhesive tape.



How to Set X / Y Axis Origin

The X / Y axis origin (It is also called origin.) is the start point of engraving.
This machine engraves as the figure below[*1] with reference to an origin.



Important!

- If a G-code is set using an operation switch, set the origin using the G Work Origin Menu. (☞ P.4-12)

1 Move the head to the target position with < > ∧ ∨.

```
<Move>  Spin.OFF
Xaxis        0.00mm
Yaxis      315.00mm
Zaxis        0.00mm
```

Important!

- The moving speed increases while the F3 + is also held.
- When you press the Page -, you can change the transfer unit of X-axis and Y-axis. (0.1mm↔0.01mm)

2 Press X Y to set.
The origin set here is saved after the power is turned on again.

```
<XY Origin>
Xaxis        0.00mm
Yaxis        0.00mm
```

Important!

- If you attempt to set the origin outside of the cut area, an error message (ERROR 901 OPERATION) will appear on the LCD.

```
ERROR 901
OPERATION
```

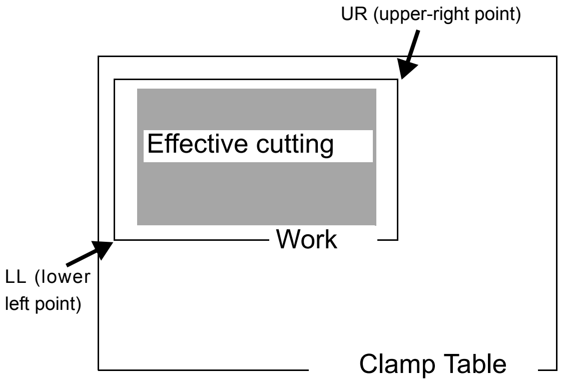
How to clear

To clear the set origin to return to the lower-left corner press REMOTE LOCAL.

[*1] When MIMAKI logo is engraved at the self test. (☞ P.4-6)

How to Set Cutting Area

Set an effective cutting area in accordance with the size of the work to be engraved on.[*1]



* Maximum size of the effective cutting area *

Model	Max. size (mm)
ME-300STII	310(X) x 220 (Y)
ME-500STII	483 (X) x 305 (Y)
ME-650STII	650 (X) x 440 (Y)

1 Press Page + (or Page -) to display the second page of the local mode.

```
[LCL]Spin-OFF2/4
Single Copy    -->
View           -->
Cut Area       -->   F3
```

2 Press F3 + (or F3 -) to display the screen shown on the right.

```
<Cut Area>
Lower Left      ->   F1
```

3 Press F1 + (or F1 -) to move the head to the existing LL point.

Press < > ∧ ∨ to move the head to the target LL point.

```
<Area L/L>
Xaxis       0.00mm
Yaxis       0.00mm
Zaxis       0.00mm
```

4 Press END to set the LL point temporarily.

The screen is displayed as shown on the right.[*2]

```
<Cut Area>
Upper Right     ->   F1
```

5 Press F1 + (or F1 -) to move the head to the existing UR point.

Press < > ∧ ∨ to move the head to the target UR point.

```
<Area U/R>
Xaxis     483.00mm
Yaxis     305.00mm
Zaxis       0.00mm
```

6 Press END to set the LL point and the UR point.[*2]

---

*1. If a G-code is set using an operation switch, the cut area setting is disabled.

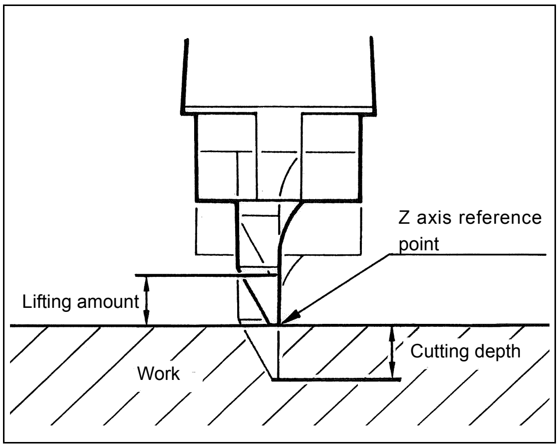
*2. Press CE on the step 4 and 6 to cancel it.

How to Set Z Axis Reference Point

The Z axis reference point is a basis of cutting depth and lifting amount of the cutter.
Be sure to set this when the power is turned on or works or tools are replaced.

Important!

- If a G-code is set using an operation switch, set the origin using the G Work Origin Menu.
(☞ P.4-12)



There are three ways to set Z axis reference point.

1) When “Auto flat detection switch” is OFF (manual setting)*1
2) When “Auto flat detection switch” is OFF (automatic setting)
3) When “Auto flat detection switch” is ON or AUTO.

When the auto flat detection switch is OFF (manual setting)

1 Press ▽ until the tip of the cutter meets the surface of the work.*2

```
<Move>  Spin.OFF
Xaxis       0.00mm
Yaxis       0.00mm
Zaxis      -0.03mm
```

2 Press Z to set.
Please set again the origin that was set here when you turn on the power again.

```
<Z Standard>


Zaxis       0.00mm
```

---

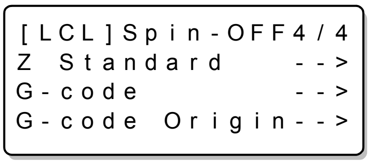
*1. For the auto flat switch, see "How to Set the Mode Switch" (P.4-7).
*2. When you press the Page + , you can change the transfer unit of Z-axis. (0.1mm⇔0.01mm)

When the auto flat detection switch is OFF (automatic setting)

Detect the work to be engraved to set Z axis reference point automatically.

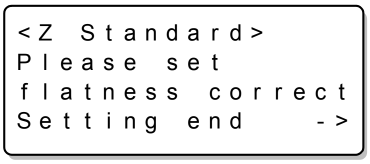
Before operating below, set the chip removal attachment and move the head onto the work.

1. Press Page + (or Page -) to display the fourth page of the local mode.



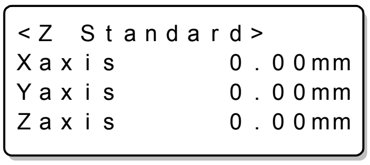
```
[LCL]Spin-OFF4/4
Z Standard   -->
G-code       -->
G-code Origin-->
```

2. Press F1 + (or F1 -) to display the screen shown on the right.[*1]
   Press Z to set the flatness correction amount.
   (☞P.3-10)
   If the flatness correction amount is not set, fourth line is not displayed.



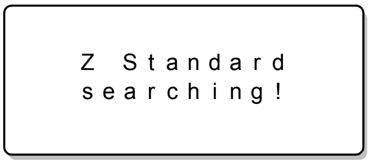
```
<Z Standard>
Please set
flatness correct
Setting end   ->
```

3. Press F3 + (or F3 -) to display the screen shown on the right.[*1]



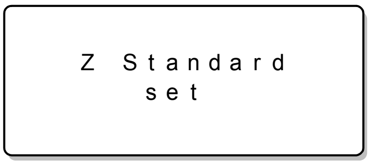
```
<Z Standard>
Xaxis      0.00mm
Yaxis      0.00mm
Zaxis      0.00mm
```

4. Press Z to display the screen shown on the right. Then the machine starts to detect the work surface.
   (The cutter is lowered.)



```
  Z Standard
  searching!
```

5. When the work surface is detected, the screen shown on the right appears, Z axis reference point is set, and the operation is completed.
   (The cutter is raised.)



```
  Z Standard
     set
```

When engraving a work after setting as above, do not replace the cutter although the chip removal attachment can be removed.

When the auto flat detection switch is ON or AUTO

The sensor automatically sets Z axis reference point. Set the flatness correction amount before that.

For the flatness correction amount, see P.3-10.

[*1] Press CE on the step 2 and 3 to cancel it.

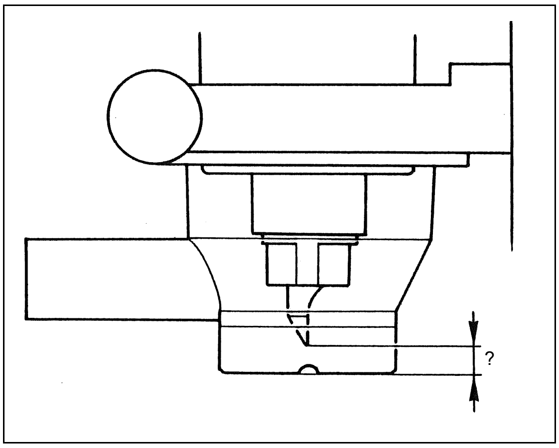
How to Set Flatness Correction Amount

Flatness Correction Amount

The flatness correction amount is the distance between the tip of the cutter and the top of the chip removal attachment (“h” in the figure on the right).

The flatness correction amount needs to be set when the auto flat detection switch is at “ON” or “AUTO” position.

Also when automatically set the Z-axis standard point at the automatic flat switch OFF, it is necessary to set.



Meet the following two requirements to set the flatness correction amount.

- Adjust the flatness correction amount to 0.8 mm or more. If 0.8 mm or more cannot be secured, replace the blade with a short one.
- Set to meet the following conditions for the relation between the flatness correction amount and the cutting depth[*1] because the chip removal attachment moves up and down 6 mm.
  (Cutting depth + h) < 6 mm
  If (Cutting depth + h) becomes over 6 mm, it exceeds the movable range of the chip removal attachment, and may cause breakdown of the machine.

Important! After setting the flatness correction amount, adjust the cutting correction. (☞ P.3-12)
You can engrave more precisely with the adjustment.

How to choose the auto flat detection switch

The auto flat detection switch has the following three types.

Switch it when needed.[*2]

AUTOUse when engraving general works to be cut 4 mm deep or less.

ONWhen performing flatness follow-up function with a material that is likely to generate burr or waste, the machine may not engrave precisely. In this case, use “ON”.

OFFUse in the following cases.

1. Cutting depth is 4 mm or more.
2. When the cutter used is longer than the chip removal attachment (commercial endmill or others).
3. When modelling
4. When engraving with raised
5. When a command is to a G-code

[*1] For setting cutting depth, see “How to Set Cutting Depth / Lifting Amount in Z Axis” (☞ P.3-12).

[*2] For switching, see “How to Set the Mode Switch” (☞ P.4-7).

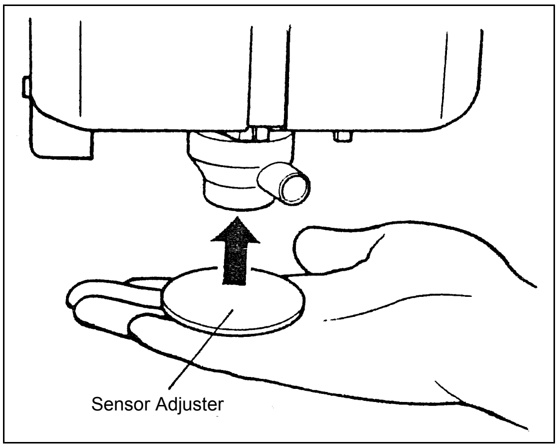
Important!

Stop rotation of the spindle when setting and change to the local mode.
Before setting the flatness correction amount, stop rotation of the spindle and change to the local mode. If setting while the spindle is rotating, the cutter may pass through the sensor adjuster and cut hands.
Even when under suspension, the spindle rotates once it receives data in the remote mode.
Before setting, stop rotation of the spindle and change to the local mode.

How to set

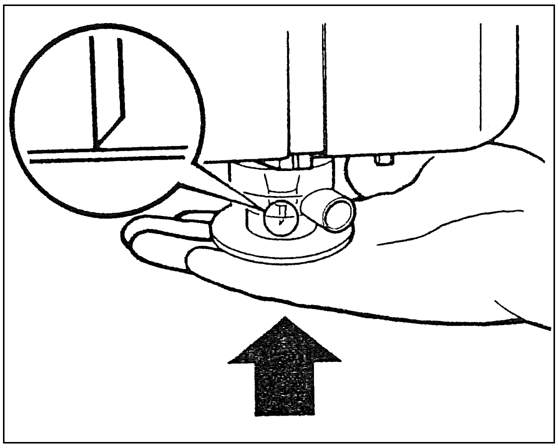
1 Set to the local mode, and stop the spindle if rotating.

2 Fit the flat sensor adjuster horizontally to the chip removal attachment.



3 Put a hand as shown in the right figure, and push the adjuster up until it contacts the tip of the cutter.

Holding the adjuster , press Z to set.



When the screen appears as shown in the right, the operation is complete.

It cannot be set if the correction value (h) is 0.8 mm or less.[*1]

```
Flatness correct
      set
```

---

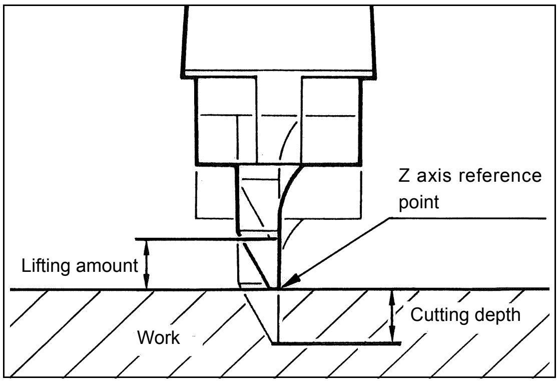
*1. If it cannot be set when the correction value is 0.8 mm or more, check the following possible causes.
The chip removal attachment is set incorrectly. (☞P.1-11)
The length of the cutter blade is incorrect. (☞P.6-2)

How to Set Cutting Depth / Lifting Amount in Z Axis

Specify cutting depth and lifting amount of the cutter in terms of Z axis.

A = Cutting depth

B = Lifting amount

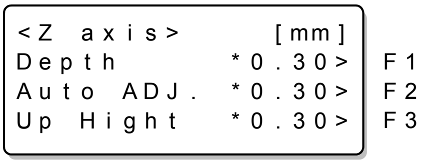


Set Item	Description	Set Value	
		With the chip removal attachment	Without the chip removal attachment
Depth	Set the cutting depth from the Z axis reference point.	0.0 to 4.0 mm[1]	0.0 to 60 mm
Up Hight	Set the lifting amount from the Z axis reference point.[2]	0.0 to 60 mm	0.0 to 60 mm
Auto ADJ.	Set this value when the flat detection is ON or AUTO, because the cutter may cut into the work even when the cutting depth is set to 0.	-0.5 to 0.5 mm	-0.5 to 0.5 mm
	Set this value when the flat detection is off and auto setting of Z axis reference point is on, because the detected Z axis reference point does not fit to the surface of the work.		
	Adjust this value when setting the flatness correction amount to cut more precisely.		

[1] The settable cutting depth relates to the flatness correction amount. See "How to Set Flatness Correction Amount" (P.3-10).

[2] When the flat detection switch is ON or AUTO, enter a distance between the tip of the chip removal attachment and the work. When the flat detection switch is off, enter a distance between the tip of the cutter and the work.

1 Press SPINDLE POSITION UP/DOWN to display the screen shown as the right.



```
<Z axis>        [mm]
Depth         *0.30>   F1
Auto ADJ.     *0.30>   F2
Up Hight      *0.30>   F3
```

2 Adjust the cutting depth with the function keys.

Refer to the table below.

Key operation	Set value
Press F1 + (or F1 -).	Changes the value by 0.01 mm.
Press and hold down the F1 + (or F1 -).	Change the increase or decrease amount depending on the time you press and hold

3 Press END to set.[1]

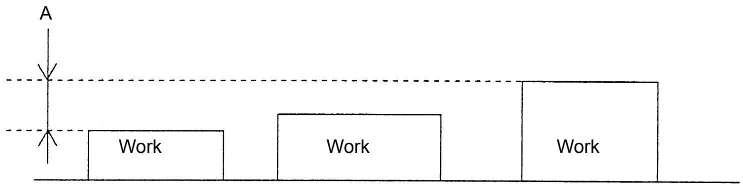
[1] Press CE to cancel.

Lifting amount

When engraving multiple works with different thickness at the same time, be careful of the followings to set the lifting amount.

1. When the chip removal attachment is mounted when the flat detection is ON or AUTO:

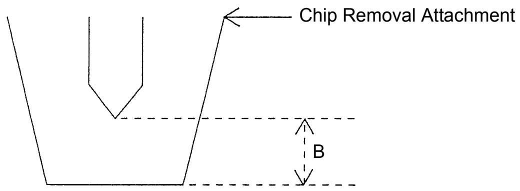
   Set the lifting amount larger than the difference in thickness between the thickest and thinnest works.



Lifting amount of the cutter > A

2. When the chip removal attachment is mounted when the flat detection is OFF:

   Set the lifting amount larger than the distance A above plus the distance between the tip of the cutter and the tip of the chip removal attachment.



Lifting amount of the cutter > A + B

Caution

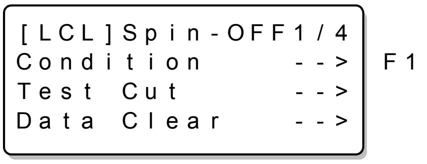
If a G-code is set using an operation switch command, the values for the cutting depth, lifting amount, and cutting correction are disabled.

```
Engraving-depth,
adjust,up-height
are invalid with
G-code.
```

How to Set Cutting Conditions

Set Item	Description	Setting Range
XY-ES (Cutting speed in XY axis)	Sets cutting speed in X/Y axis.	0.5, 1, 2, 3, 5, 8, 10, 15, 20, 30, 40, 50, 60 mm/s
Z-ES (Cutting speed in Z axis)	Sets cutting speed in Z axis.	0.5, 1, 2, 3, 5, 8,10, 15, 20, 30 mm/s
XY-MS (Moving speed in X/Y axis)	Sets moving speed of the cutter in X/Y axis when the cutter is raised.	20, 40, 60, 80 mm/s
Z-MS (Moving speed of the spindle in Z axis)	Sets lifting speed of the spindle in Z axis.	5, 10, 15, 20, 25, 30 mm/s

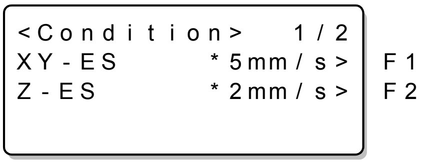
1. Press Page + (or Page -) to display the first page of the local mode.



```
[LCL]Spin-OFF1/4
Condition    -->   F1
Test Cut     -->
Data Clear   -->
```

2. Press F1 + (or F1 -) to display the screen shown on the right.

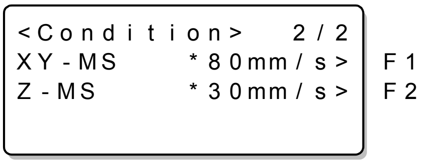
   Set the cutting speed (XY-ES, Z-ES) with the function keys.



```
<Condition>   1/2
XY-ES     *5mm/s>   F1
Z-ES      *2mm/s>   F2
```

3. Press Page + to display the screen shown on the right.

   Set the moving speed (XY-MS, Z-MS) with the function keys.



```
<Condition>   2/2
XY-MS    *80mm/s>   F1
Z-MS     *30mm/s>   F2
```

4. Press END to set the values.[*1]

[*1] Press CE to cancel.

Error messages related to the cutting conditions

The followings are error messages and the causes that will be displayed when setting cutting conditions and changing to the remote mode. To solve them, see each reference page.

When the flat detection switch is ON or AUTO

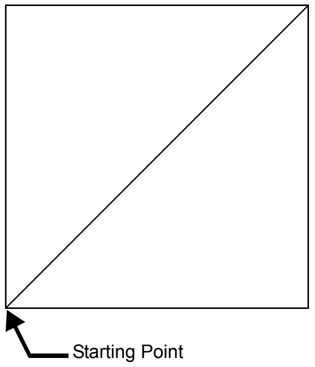
Error Message	Cause	☞
[Remote] 1KB Warning.1 Cutter too short or en- graving too deep	1.The cutter is too short. 2. Cutting is too deep.	P.5-4
* Warning.2 * Flatness correc- tion not set. Please set.	1.The flatness correction amount is not set when the flat detection switch is ON or AUTO.	P.5-4
* Warning.3 * Flatness correc- tion not enough Please check!	1.The cutter is too long. 2.Flatness correction amount is too small	P.5-4
* Warning.4 * Set Chip removal attachment.	1.The chip removal attachment is not set when the flat detection switch is ON or AUTO. 2.When setting flat correction amount and A axis reference point, dust-collecting nozzle is not attached.	P.5-4

When the flat detection switch is OFF

Error Message	Cause	☞
* Warning.5 * Flatness sensor switch is OFF. Turn it on.	The flatness correction amount is set when the flat detection switch is OFF.	P.5-5
* Warning.6 * Remove chip re- moval attachment	When the flatness detection switch is "off" and the dust-collecting nozzle is attached, the cutting is set to more than 4mm.	P.5-5

How to Test-Cut

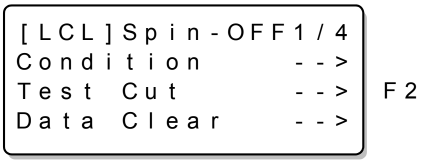
Test whether the cutting conditions (cutting speed, moving speed), cutting depth and lifting amount of the cutter are proper to the work.



1 Press < > ∧ ∨ to move the cutter to the start position for test-cutting.

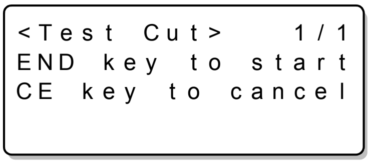
Press CE (or END) and return the local mode.

2 Press Page + (or Page -) to display the first page of the local mode.



```
[LCL]Spin-OFF1/4
Condition    -->
Test Cut     -->   F2
Data Clear   -->
```

3 Press F2 + (or F2 -) to display the screen shown on the right.



```
<Test Cut>    1/1
END key to start
CE key to cancel
```

4 Press END to start test-cutting.*1

---

*1. Press CE to cancel.

How to Send Data from the Host

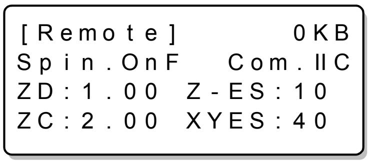
Danger

Check around this machine before sending data.
Before sending data, check there is no people around this machine (within one meter or less).
This machine starts to work immediately after receiving data. The head or the table moved suddenly could contact and injure human body around this machine.

Before sending data from the host, check the setting is correct and the work is firmly set, and then go to the operations below.

1. Adjust rotation speed of the spindle as needed.

2. Press REMOTE LOCAL to change to the remote mode.



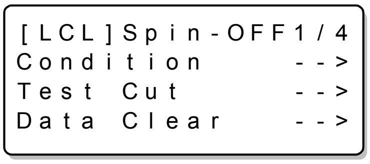
```
[Remote]      0KB
Spin.OnF   Com.IIC
ZD:1.00  Z-ES:10
ZC:2.00  XYES:40
```

3. Send data referring to the operation manual of the host.

4. When engraving is finished, remove the work.

   Press REMOTE LOCAL to change to the local mode.

   Move the head to its waiting position (☞ P.4-5), and remove the work.



```
[LCL]Spin-OFF1/4
Condition     -->
Test  Cut     -->
Data  Clear   -->
```

Important!

To stop operation during engraving, select from two ways as follows.
Emergency stop (☞ P.2-5)
If abnormal action of this machine could break this machine or injure the worker, press the emergency switch. If pressed, the power is turned off and all the transmitted data is erased.
Change to the pause mode. (☞ P.2-12)
If there are obstacles on the work or the table, change the mode to PAUSE.
After removing the obstacles in the pause mode, you can continue engraving.

Daily Care

Danger

Do not clean this machine when the power is on.
Do not clean this machine while the power of this machine is on.
If the head or the table moves during cleaning, fingers could be pinched and cut between the head cover and the side frame, or you could suffer abrasions or cut on the moving table.
Turn off this machine before cleaning.

Attention to the cutting edge of cutting blade
Please be careful when clean the cutting edge and touch the cutting blade.
The cutter blade is very sharp. There is a risk of injury such as cutting a finger.

Caution

Do not clean this machine with air gun.
Do not use an air gun to clean this machine.
If air is sprayed, waste may get into the precision part and may cause breakdown.
The waste also may get into the eyes or mouth of the worker who is cleaning or others around this machine, and injure them.
For cleaning, use a vacuum cleaner.

Cleaning this machine and surroundings

At the end of daily work, clean this machine and surroundings in the following way.
If a lot of waste is generated by the operation, clean them even when in operation.

1. Vacuum dust and chips on the table or surroundings with a cleaner.
   When oil is used, wipe it off with a dry cloth. If stained badly, wipe it off with an alcohol-soaked cloth.

2. Remove the cutter, and then wipe around the spindle with a dry cloth.

3. If oil happens to attach to the operation panel, wipe it off with a dry cloth.

CHAPTER 4

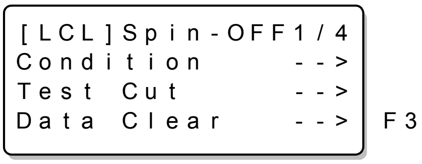
ADVANCE OPERATION AND ADJUSTMENTS

This chapter describes advanced operations and adjustments of the machine.

How to Clear Data

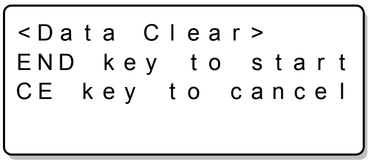
Data stored in the receive buffer is cleared in the following procedures.[1]

1 Press Page + (or Page -) to display the first page of the local mode.



```
[LCL]Spin-OFF1/4
Condition    -->
Test Cut     -->
Data Clear   -->
```

2 Press F3 + (or F3 -) to display the screen shown on the right.



```
<Data Clear>
END key to start
CE key to cancel
```

3 Press END to clear data in the buffer.[2]

---

[1] Even after clearing data, the data sent before can be used to engrave again by copying.
If new data is sent, the data sent before clearing the data cannot be used. (The old data is erased with the new data.)

[2] Press CE on the step 3 to cancel clearing of the data.

How to Copy

Data stored in the receive buffer is used to engrave (copying) again in the following procedures.

1. Press Page + (or Page -) to display the second page of the local mode.

```
[LCL]Spin.OFF2/4
Single Copy  -->   F1
View         -->
Cut Area     -->
```

2. Press F1 + (or F1 -) to display the screen shown on the right.

```
<Copy>
END key to start
CE key to cancel
```

3. Press END to start copying.[*1]

Note 1) If no data is stored in the receive buffer, an error message (ERROR C31 NO DATA) will appear on the LCD.

```

   ERROR C31
    NO DATA
```

Note 2)The receive data must be smaller than the receive buffer capacity (smaller than 27 MB).
If the data is larger than the receive buffer capacity (larger than 27 MB), an error message (ERROR C32 DATA too BIG) will appear on the LCD.

```

   ERROR C32
  DATA too BIG
```

Note 3)If you try to start the other test or copying during copying, an error message (ERROR 902 DATA REMAIN) will appear on the LCD.

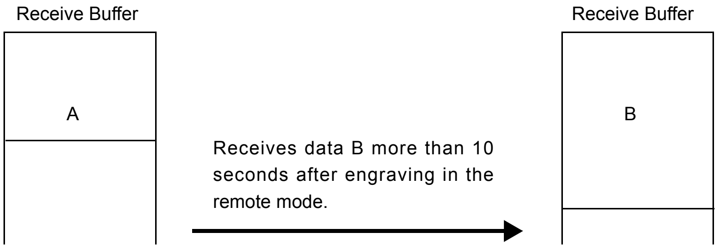
```

   ERROR 902
  DATA REMAIN
```

Note 4)Test Cut or Self Test cannot be repeated.

[*1] Press CE on the step 3 to cancel copying.

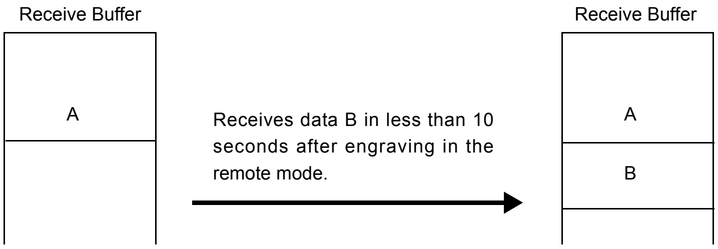
Relation between overwriting of received data and copying

When the machine receives a new data from the host more than 10 seconds after finishing engraving the last data, the data in the receive buffer of this machine is erased and replaced with a new one. If copying after engraving the new data, only the new data is copied.


Receive Buffer
A
Receives data B more than 10 seconds after engraving in the remote mode.
Receive Buffer
B

When the machine receives a new data from the host within 10 seconds after engraving the data A, the new data is stored next in the data A.

When copied after engraving the data B, the machine engraves both the data A and the data B. [*1]

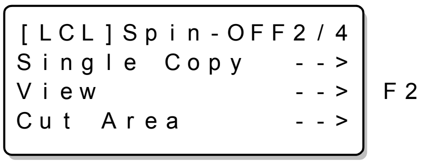

Receive Buffer
A
Receives data B in less than 10 seconds after engraving in the remote mode.
Receive Buffer
A
B

[*1] If a G-code is set using an operation switch command, because the local mode arises after engraving, the data is replaced with new data even before 10 seconds elapse.

How to Move the Head out of Engraving Area

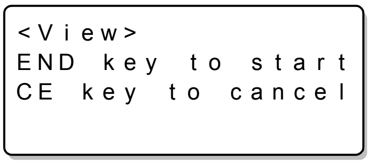
The head is moved to the back left of the clamp table in the following procedures.
If the cutter is lowered, the head will move after lifting the cutter.

1 Press Page + (or Page -) to display the second page of the local mode.



```
[LCL]Spin-OFF2/4
Single Copy   -->
View          -->
Cut Area      -->
```

2 Press F2 + (or F2 -) to display the screen shown on the right.



```
<View>
END key to start
CE key to cancel
```

3 Press END to start to move the head.[1]

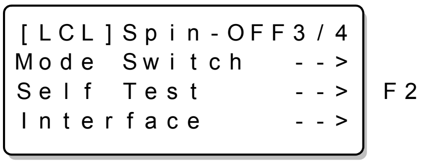
---

[1] Press CE on the step 3 to cancel moving of the head.

How to Perform Self Test

The quality of engraving differs depending on materials or thickness of the work.
To ensure the quality of engraving, engrave the test pattern on the work to be used and check the quality.

1 Press `Page +` (or `Page -`) to display the third page of the local mode.



```
[LCL]Spin-OFF3/4
Mode Switch  -->
Self Test    -->  F2
Interface    -->
```

2 Press `<` `>` `∧` `∨` to move the head to the start point, and set X / Y origin. (☞P.3-6) [*1]

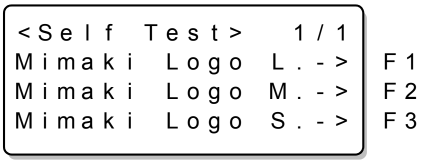
Press `CE` (or `END`) and return the local mode.

3 Press `F2 +` (or `F2 -`) to display the screen shown on the right.

Mimaki Logo L.Large

Mimaki Logo M.Medium

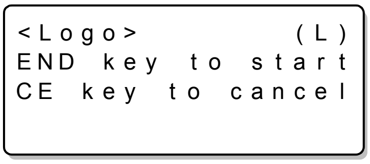
Mimaki Logo S.Small



```
<Self Test>   1/1
Mimaki Logo L.->  F1
Mimaki Logo M.->  F2
Mimaki Logo S.->  F3
```

4 Press the function key to select a desired size of the logo. Then the screen shown on the right appears on the LCD.

The selected size of the Mimaki logo is displayed at the right edge of the displayed first line.



```
<Logo>         (L)
END key to start
CE key to cancel
```

5 Press `END` to start the test.[*2]

[*1] If a G-code is set using an operation switch command, set the origin by using the G Work Origin Menu.

[*2] Press `CE` on the step 6 to cancel the self test.

How to Set the Mode Switch

There are the following set items in the mode switch. Change the set value as needed.

Set Item	Description	Set Value
AUTO VIEW	Sets the time between completion of engraving and the head moving out of the engraving area.	*OFF 1 sec 3 sec
FLATNESS	Not to perform the auto flat detection	*OFF
	To perform the auto flat detection	ON
	To perform the auto flat detection and the flatness follow-up function	AUTO
COMMAND	Sets the command and GDP (resolution).[*1][*2]	
	IIc-25:MGL-IIc325 μm	IIc-25
	IIc-10:MGL-IIc310 μm	*IIc-10
	Ic1-50:MGL-Ic150 μm	c-50
	Ic1-100:MGL-IC1100 μm	c-100
	Ic1-10:MGL-IC110 μm	c-10
	G-code	G-code[*3][*4][*5]
SPINDLE	Enables or disables the rotation of the spindle. If OFF is set, the spindle will not rotate even if the SPINDLE ON/OFF switch is pressed or the spindle on/off command is sent from the computer.	*ON OFF
UNIT	Sets the unit for indicating coordinates during moving the head to mm or inch.	*mm inch
OH UNIT	Sets the response value to OH command to the maximum effective area value (initial value) or the LL/UR value (set value).	*Maximum Setting
ORIGIN	Sets the command origin position (0, 0) to the center or the lower left.[*1]	Center *Low-Left
Z SIGN(ZM)	Sets the direction of Z coordinate axis in ZM command.	*P(+) M(-)
PAUSE[*6]	When you pause, you can select the to intact or up the tool.	*Tool_up Not_up

*1. If changed, all the coordinate systems are initialized.
Also all the receive buffer contents are cleared.
*2. If COMMAND set is changed, recheck the response value to OH command and the origin position.
*3. G-code is compatible with firmware version 1.40 or later.
*4. Set the resolution using a G-code in another menu. (☞ P.4-10)
*5. If a G-code is selected, auto flat detection or flatness follow-up is not performed.
*6. This function is compatible with firmware version 1.40 or later.

"*" indicates the default setting.

1 Press [Page +] (or [Page -]) to display the third page of the local mode.

```
[LCL]Spin-OFF3/4
Mode Switch  -->   F1
Self Test    -->
Interface    -->
```

2 Press [F1 +] (or [F1 -]) to display the screen shown on the right.

Press the function key to set the values of Auto View, Flatness, and Command.

```
<Mode Set>    1/3
Auto View    *OFF>   F1
Flatness     *OFF>   F2
Command   *IIc-25>   F3
```

3 Press [Page +] to display shown on the right.

Press the function key to set the values of Unit, Spindle, and OH unit.

```
<Mode Set>    2/3
Unit          *mm>   F1
Spindle       *ON>   F2
OH       *Maximum>   F3
```

Important! OH response value is valid only when the command is IIc, and is not valid for Ic1 and G code.

4 Press [Page +] to display the screen shown on the right.

Press the function key to set the ORIGIN, the value for Z direction, Tool-up selection at the time of pause.

```
<MODE SET>    3/3
Oriigin   *Center>   F1
Z Sigh(ZM)*M(-)>     F2
Pause    *Tool_up>   F3
```

Important! Origin • Z direction is valid only when the command is IIc. It is not valid for Ic1 and G code.

5 Press [END] to fix the setting.[*1]

[*1] Press [CE] on the step 5 to cancel the setting.

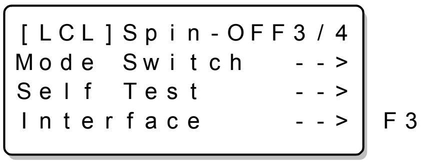
How to Set Communication Conditions

Specify the communication conditions for RS-232C interface.

Item	Indications on LCD	Description
Baud Rate	1200	1200 bps
	2400	2400 bps
	4800	4800 bps
	9600*	9600 bps
	19200	19200 bps
Data Bits	7	7 bits
	8*	8 bits
Parity	NON*	Parity check is not performed.
	EVEN	Even parity
	ODD	Odd parity
Stop Bits	1*	1 bit
	1.5	1.5 bits
	2	2 bits
Handshake	HARD*	Hardware handshake
	CODE	XON/XOFF handshake

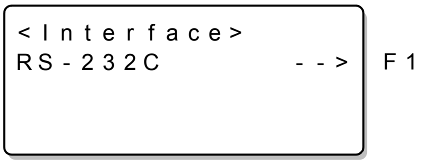
“*” indicates the default value.

1. Press Page + (or Page -) to display the third page of the local mode.



```
[LCL]Spin-OFF3/4
Mode Switch   -->
Self Test     -->
Interface     -->   F3
```

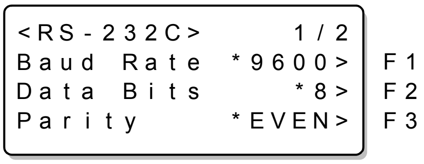
2. Press F3 + (or F3 -) to display the screen shown on the right.



```
<Interface>
RS-232C       -->   F1
```

3. Press F1 + (or F1 -) to select RS-232C.

   Press the function key to set the values of BAUD RATE, DATA BITS, and PARITY.

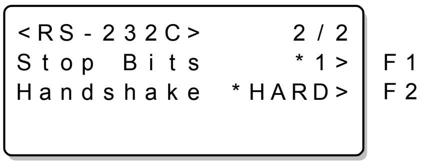


```
<RS-232C>      1/2
Baud Rate  *9600>   F1
Data Bits     *8>   F2
Parity     *EVEN>   F3
```

4. Press Page + to go to the next page.

   Press the function key to set the values of STOP BITS and HANDSHAKE.

   To return to the previous page, press Page - .



```
<RS-232C>      2/2
Stop Bits     *1>   F1
Handshake  *HARD>   F2
```

5. Press END to fix the setting.[*1]

[*1] Press CE on the step 4 to cancel the setting.

Setting G-code Items

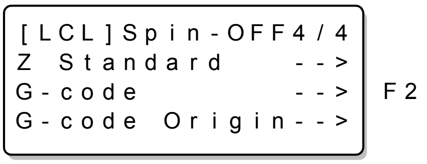
When a data format (command) sent from the host is set to a G-code, you must set the items below. Switch setting values as needed.

This function is compatible with firmware version 1.40 or later.

Set Item	Description	Set Value
Character Code System	Selects a character code system for the G-code. When AUTO is selected, judges the code system by the PROG.Start code.	*ASCII ISO EIA AUTO
GDP (resolution)	Sets the resolution for the command. The setting unit when the value's decimal points are omitted can be selected. If the value has decimal points, it is set in units of 1.0mm (or 1.0 inch). Note that the unit is set as mm or inch according to the setting made using an operation switch.	When the unit is set as mm *0.001mm 1.0mm When the unit is set as inch * 0.0001inch 1.0inch
Start Code	Selects a start signal to send to the host computer when the RS-232C interface is used. If there is no need to do so, select OFF. If OFF is not selected and if the AUTO/MANUAL key is pressed when there is no data in the receive buffer, the selected code is sent to the host computer.	* OFF DC1 DC2 DC3 DC4
PROG.Start Code	Selects whether to put a program start code (% or carriage return code) or not at the top of data.	* ON OFF
Work Coordinates System	If the work coordinates system is not specified by a command, the coordinates system selected for this setting item applies. The origin of each coordinates system is set by the G work origin.	* 1 2 3 4 5 6
PROG.End	When the engraving is finished, set whether to shift to the local mode or to remain in the remote mode. This function is compatible with firmware version 1.70 or later.	* Local Remote

“*” indicates the default value.

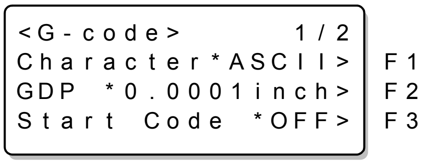
1 Press Page + (or Page -) to display the fourth page of the local mode.



```
[LCL]Spin-OFF4/4
Z Standard    -->
G-code        -->
G-code Origin-->
```

2 Press F2 + (or F2 -) to display the screen shown on the right.

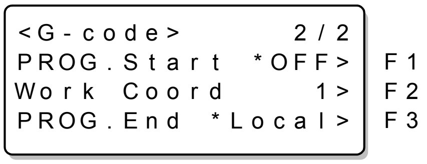
Use function keys from 1 to 3 to select a value for the character set, GDP, and start code each.



```
<G-code>        1/2
Character*ASCII>   F1
GDP   *0.0001inch>   F2
Start Code  *OFF>   F3
```

3 Press Page + (or Page -) to display the screen shown on the right.

Use function keys from 1 to 3 to select a value for the Program Start code, Work Coordinates system and Program End each.



```
<G-code>        2/2
PROG.Start  *OFF>   F1
Work Coord      1>   F2
PROG.End  *Local>   F3
```

4 Press END to fix the setting.[*1]

[*1] Press CE on the step 4 to cancel the setting.

Registering an Origin for the G-code Work Coordinates System

If a command is set to a G-code, you can register, in six locations, the X, Y, and Z axes of a work coordinates origin serving as the reference point for the cutting position for each work.

The registration procedure is shown as below.

To select a registered work coordinates origin, specify it from the software you are using, or set it by selecting the work coordinates system in the G-code setting items.

In addition, this function is compatible with firmware version 1.40 or later.

1 Press [Page +] (or [Page -]) to display the fourth page of the local mode.

```
[LCL]Spin-OFF4/4
Z Standard   -->
G-code       -->   F2
G-code Origin-->
```

2 Press [F3 +] (or [F3 -]) to display the screen shown on the right.

Using [F1 +] (or [F1 -]), select the work coordinates origin you want to register.
(Origin option 1 to 6)

```
<G Work Origin>
Origin Select 1>   F1
Set Origin.1  -->  F2
```

3 Press [F2 +] (or [F2 -]) to display the screen for setting the selected work coordinates origin.

The displayed numerical values for the axes indicate the distances from the values set for the currently selected work coordinates origin.

```
<Work.1>Spin.OFF
Xaxis     20.00mm
Yaxis      0.00mm
Zaxis    -30.00mm
```

4 Use [<] [>] [︿] [﹀] [︽] [︾] to move the head to the target position.

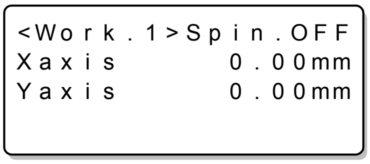
```
<Work.1>Spin.OFF
Xaxis     -5.00mm
Yaxis     10.00mm
Zaxis    -10.00mm
```

Important!

- While [F3 +] is held down together, the moving speed increases.
- Press [Page -], and you can change the transfer unit for the X and Y axes.
  (0.1mmn0.01mm)
- Press [Page +], and you can change the transfer unit for the Z axis.
  (0.1mmn0.01mm)

5 When you are done moving the X and Y axes to the target positions, press [X Y].

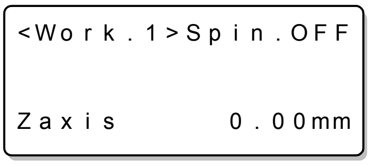
The current positions of the X and Y axes are registered into the selected work coordinates origin.
The values registered here are kept in memory even after the power is turned off and then turned on again.



```
<Work.1>Spin.OFF
Xaxis      0.00mm
Yaxis      0.00mm
```

6 When you are done moving the Z axis to the target position, press [Z].

The current position of the Z axis is registered into the selected work coordinates origin.
The value registered here is kept in memory even after the power is turned off and then turned on again.

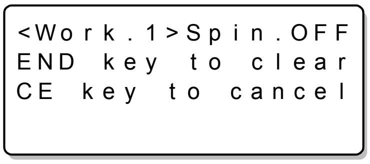


```
<Work.1>Spin.OFF


Zaxis      0.00mm
```

7 Press [END] or [CE] to return to the screen in step 2 above.

To clear the registered origin

Press [REMOTE/LOCAL] if you want to clear the values set for the X and Y axes registered into the origin and return the origin to the lower left corner of the machine.



```
<Work.1>Spin.OFF
END key to clear
CE key to cancel
```

Press [END] to clear the registered origin and reset it to a point at the bottom left of the machine.

Press [CE] to return to the screen for setting the selected work coordinates origin without clearing the origin.

Important!	If a G-code is set using an operation switch, you can register a work coordinate origin by using the startup procedure previously described on How to Set X / Y Axis Origin (☞ P.3-6) or How to Set Z Axis Reference Point(☞ P.3-8). In that case, however, among the Setting G-code Items (☞ P.4-10), only the Work Coordinate origins for the coordinates system selected in the Work Coordinates system can be covered.

CHAPTER 5

ERRORS AND SOLUTIONS

Error Messages and Solutions

Error message	Cause	Solution
ERROR C02 MAIN RAM	Trouble has occurred in the control RAM.	Contact your dealer or a sales office of MIMAKI.
ERROR C04 EEPROM	Trouble has occurred in the system ROM.	
ERROR C10 COMMAND	Code other than command data has been received.	Make the command setting consistent with the setting on the host computer side. (☞ P.4-7) If a G-code is set, check its settings for the G-code setting items. (☞ P.4-10)
ERROR C11 PARAMETER	A parameter outside the numerical range has been received.	Check the command setting on the host computer. The point specified by G-code data went off the scale. (☞ P.4-7)
ERROR C12 DEVICE	The plotter received an improper device control command.	
ERROR C20 I/O	The communication condition is different.	Make the communication condition same as that of the host computer side. (☞ P.4-9)
ERROR C27 BUFFER OVER	The interface is faulty.	Check the interface cable. (☞ P.4-9)
ERROR 901 OPERATION	An invalid operation was performed on the control panel.	Refer to the relevant page of operation manual for valid operations.
ERROR C31 NO DATA	The plotter started the plural sheets cutting but found that there is no data in the receiver buffer.	Refer to the explanation of the plural sheets cutting function. (☞ P.4-3)
ERROR C32 DATAtooBIG	Received data is too large, it is not possible to cut the number of copies	
ERROR 902 DAT REMAIN	The plotter executed an improper operation during a halt.	Press the REMOTE LOCAL key to cut the remaining data or execute data clear if there is no need of using the data in the receiver buffer.(☞ P.4-2)
ERROR 401 MOTOR X	An excessive load was applied to the head driving motor.	Turn the power off once and turn it on again. If the same error message still appears, contact your distributor or a sales office of MIMAKI.
ERROR 402 MOTOR Y	An excessive load was applied to the table driving motor.	
ERROR 403 X CURRENT	An overcurrent error in the motor in the head driving motor.	
ERROR 404 Y CURRENT	An overcurrent error in the motor in the table driving motor.	

Error message	Cause	Solution
ERROR 461 MOTOR Z	An excessive load was applied to the Z motor.	Turn the power off once and turn it on again. If the same error message still appears, contact your distributor or a sales office of MIMAKI.
ERROR 463 Z CURRENT	An overcurrent error in the motor in the Z motor.	
ERROR 510 X ORIGIN	The plotter has failed to detect the origin sensor.	
ERROR 50A Y ORIGIN		
ERROR 511 Z ORIGIN		
ERR C80 ZM COMM. ⇩ Operating guidance is displayed ERROR C80 ZM Com.offscale Stop send data. then push CE key	The coordinate specified by 3-axis line interpolation command (ZM) is in off-scale area.	1. Change the parameter of ZM command not to be placed in off-scale area. 2. Reset the XY origin point and Z axis reference point not to be placed in off-scale area.
ERROR CA0 G-code offscale ⇩ Operating guidance is displayed ERROR CA0 G-code offscale Stop send data, then push CE key	The point specified by G-code data went off the scale.	1. Check the G-code data. 2. Set the position of the work coordinates origin to a position in which it does not go off the scale.
ERR CA4 COMMAND Z	An error occurred in the Z-axis-related commands.	1. Make the command setting consistent with the setting on the host computer side. (☞ P.4-7) 2. If a G-code is set, check its settings for the G-code setting items. (☞ P.4-10) 3. If an error occurs after confirming above 1 and 2, please contact our sales office.

Other Error Messages

```
[REMOTE]    0KB

*** Offscale ***
```

Cause	Cutting data exceeds the effective cutting area.
Solution	Enlarge the effective cutting area. (☞ P.3-7)

REMOTE

```
*Warning.1*
Depth too deep.
Stop send data,
then push CE key
```

LOCAL

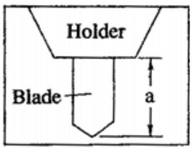
```
Warning.1 Cutter
too short or en-
graving too deep
```

Cause1	The cutter is too short.
Solution1	Replace with a long cutter.
Cause2	Cutting depth is too deep.
Solution2	Reduce the cutting depth. To cut deeply, set the flat detection switch to OFF. (☞ P.4-7)

```
* Warning.2 *
Flatness correc-
tion not set.
Please set.
```

Cause	Flatness correction amount is not set when the auto flat detection is ON or AUTO.
Solution	Set the flat correction amount (☞ P.3-10) or set FLATNESS to OFF(☞ P.4-7).

```
* Warning.3 *
Flatness correc-
tion not enough
Please check!
```

Cause	The cutter is too long.
Solution	Flatness correction amount cannot be set when “a” is 9 mm or more. Replace it with a short cutter. 

```
* Warning.4 *
Set Chip removal
attachment.
```

Cause	The chip removal attachment is not mounted when the auto flat detection is ON or AUTO.
Solution	Mount the chip removal attachment (☞ P.1-11) or set FLATNESS to OFF (☞ P.4-7).

```
* Warning.5 *
Flatness sensor
switch is OFF.
Turn it on.
```

Cause	Flatness correction amount has been set when the flat detection switch is OFF.
Solution	Set Z axis reference point (☞ P.3-8) or set the flatness correction amount with the flat detection switch ON or AUTO. (☞ P.3-10)

```
* Warning.6 *
Remove chip re-
moval attachment
```

Cause	Cutting depth is set to 4 mm or more with the chip removal attachment mounted when the flat detection switch is OFF.
Solution	Remove the chip removal attachment.

Troubleshooting

If the following troubles have occurred, check each check point.

Power is not turned on.

Trouble	The power lamp on the operation panel does not light if the power switch is on.

Check Point	Solution
1. Is the power cable connected firmly?	Connect it to the machine and to the receptacle firmly. ☞ P.1-7
2. Is the cable of the operation panel connected to the machine firmly?	Connect it to the machine firmly. ☞ P.1-7
3. Is the emergency stop switch released?	Release the emergency stop switch. ☞ P.2-5

The cutter is not lowered.

Trouble	The machine is running with the cutter raised.

Check Point	Solution
1. Is Z axis reference point set?	Set Z axis reference point. ☞ P.3-8
2. Is the vacuum hose pulling up the chip removal attachment?	Mount it in order not the vacuum hose to pull up. ☞ P.1-12

The spindle does not rotate.

Trouble	The machine is running with the spindle stopped.

Check Point	Solution
1. Is the spindle rotated before sending data from the host computer?	Set the spindle rotation to ON before sending data. ☞ P.2-7
2. Did the host computer send a command to stop rotation of the spindle?	Release the command following the operation manual of the host computer.
3. Is the SPINDLE of the operation switch OFF?	Set the SPINDLE of the operation switch to OFF. ☞ P.4-7

The machine does not engrave finely.

Trouble	Engraved line width is unequal.	
	Check Point	Solution
	1. Is the work fixed on the clamp table firmly?	Fix the work firmly on the clamp table. ☞ P.3-3
	2. Is the chip removal attachment mounted firmly?	Mount the chip removal attachment firmly. ☞ P.1-11
	3. Is dust and chips surely vacuumed?	Check the suction power of the cleaner does not decrease.
	4. Is the vacuum hose pulling up the chip removal attachment?	Mount it in order not the vacuum hose to pull up. ☞ P.1-12
	5. Is cutting depth too shallow?	Set the cutting depth properly. ☞ P.3-2
	6. Is there burr?	Check the cutting condition meets the material of the work used. ☞ P.3-13
		Replace it with a new cutter. ☞ P.6-2
	7. Is the rack for this machine loosened?	Put this machine on the fast rack.

CHAPTER 6 APPENDIX

How to Install the Cutter

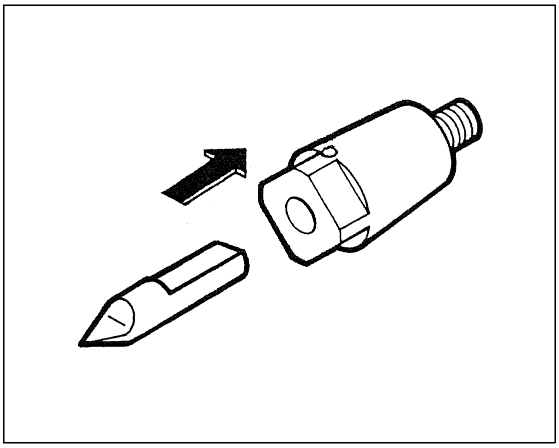
Danger

Handle the cutter blade with care.
The tip of the cutter blade is so sharp that could cut fingers.
If the cutter blade is dropped down, the tip of the blade will be chipped and worsen the engraving quality.
Handle the cutter blade with care.

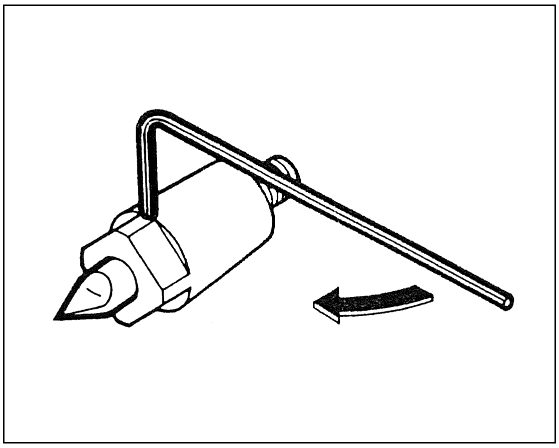
Install the cutter blade to the cutter holder as follows.

1 Insert a cutter blade or an end mill into the holder.

Insert it to the end.



2 Put the hexagon wrench (1.5 mm) in the hole of the holder, and turn to the direction of the arrow to tighten it.



How to Replace the Motor Brush

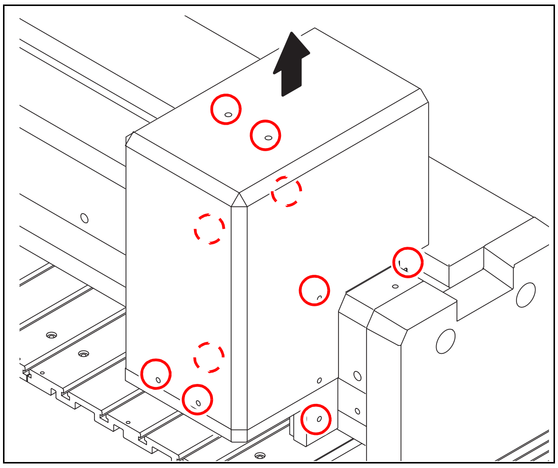
Danger

Unplug the power cable before replacing the motor brush.
If the cover of the motor brush is removed with the power on, the moving head could cause injury including cut of fingers or hands, or avulsion of nails.
If the spindle rotates during replacing the motor brush, it could cause burn.
Unplug the power cable when replacing the motor brush.

When the spindle does not rotate well, replace the motor brush as follows.
To work easily, move the head to the right end in advance.

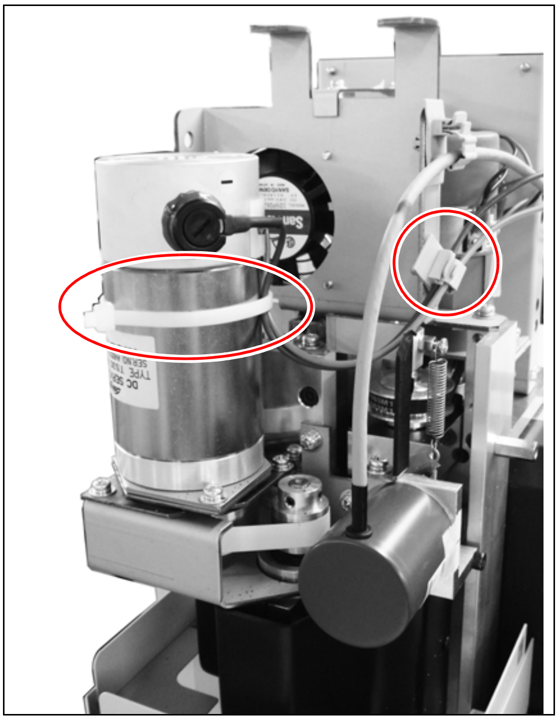
1. Move the head to the right end, turn the power off, and pull out the power cable.

2. Remove the ten screws, and remove the head covers pulling to the direction of the arrow.



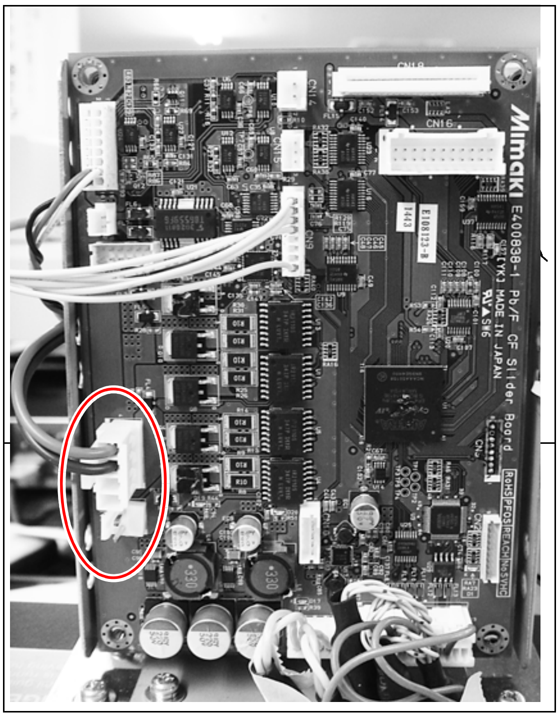
Important! Be careful not to drop the parts in the gap of the machine.

3. Cut the cable ties securing the cables.



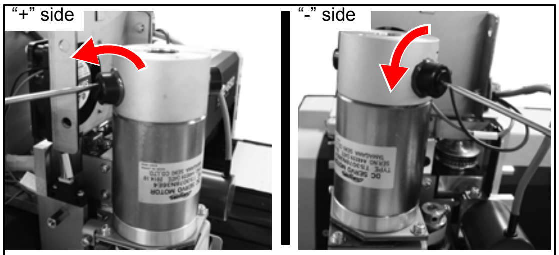
4. Remove the clamp that secures the cable.

5 Remove the CN7 connector from the PCB.


Mimaki
E400838-1 Pb/F CF Slider Board
MADE IN JAPAN
CN16
CN18

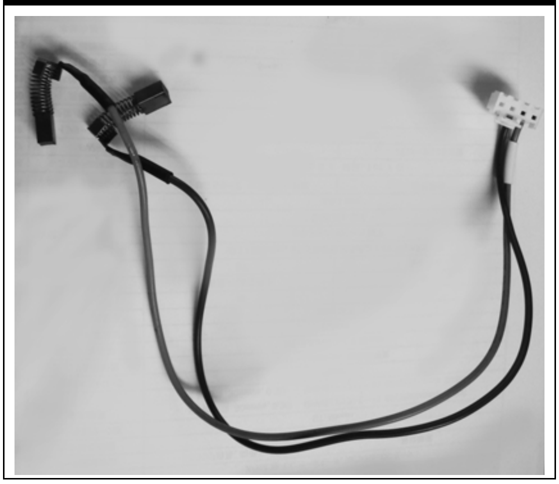
6 Open the lid, remove the old motor brush.

- Using a flat-blade screwdriver, open the cover.



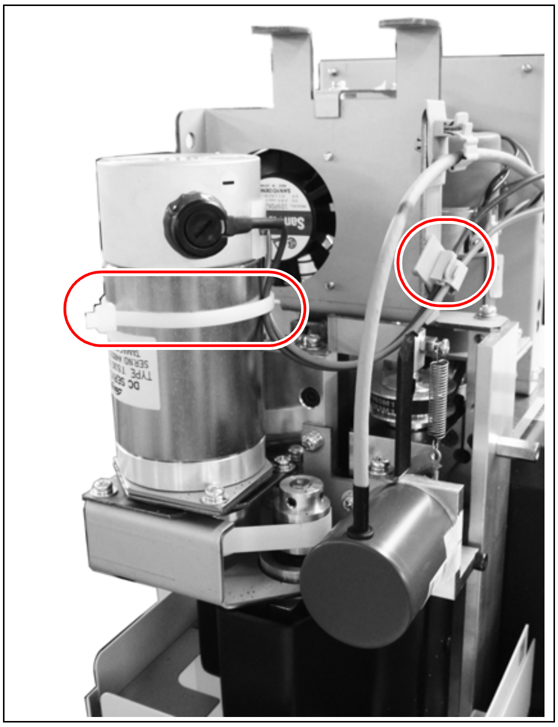
7 Install a new motor brush.

- Please install in the reverse order of removing.
- When install the motor brush, attach "- side" (front) come to the blue line and "+ side" come to the red line in (back).
- Plug in the connector to CN7 of head PCB.



8 Secure the cable.

- Secure the lead wire (red / blue) with the new cable tie to the motor.
- Fix to the bracket with a cable clamp.



9 When wiring is complete, make sure that the cables are not pulled at the top or the bottom of Z axis.

Move Z axis up and down several times to check the cables move smoothly.

Important! If the spindle does not rotate after replacing the motor brush, contact your dealer.

Cutting Condition Table

Depending on the type of engraving or the material to be engraved, you must change such settings as the cutting conditions, the spindle rotating speed, and the tool. Configure the settings using values in the table below as reference.[*1]

The table is based on the engraving cutters that come with the product as supplied items. For other types of cutters, the conditions may be different.

Engraving

Material	Tool		Cutting depth (mm)	Rotating speed (rpm)	Feed speed (mm/s)	Remarks
Transparent acrylic	Engraving cutter	0.2mm	0.1 ~0.2	14000	XY:20 Z:10	
		0.4mm	0.2 ~0.4	12000	XY:30 Z:10	
White acrylic		0.2mm	0.1~0.15	14000	XY:15 Z:10	Soft compared to transparent acrylic and likely to produce burrs
		0.4mm	0.2~0.4	14000	XY:30 Z:10	
PVC		0.2mm	0.05~0.1	14000	XY:10 Z: 5	Made of soft material and likely to produce burrs
		0.4mm	0.05~0.2	14000	XY:20 Z:10	
ABS		0.2mm	0.5 or less	14000	XY:20 Z: 5	
		0.4mm	1.1 or less	14000	XY:40 Z: 5	
Metal plate		0.2mm	0.07	14000	XY:2~5 Z:2	The cutter must be used with plane tracking sensor turned OFF.

Forming cut out letters

Material	Tool		Cutting depth (mm)	Rotating speed (rpm)	Feed speed (mm/s)	Remarks
Acrylic plate (2 mm thick)	Straight endmill	ϕ1~2	2.2	10000	XY: 5 Z: 5	1)3 blade is more suitable than 2 blade. 2)For PVC material, if chippings cannot be discharged well, a high helix angle cutter must be used. 3)Suplemental material must be used under the workpiece.
Acrylic plate (3 mm thick)		ϕ2	2	14000	XY:15 Z:10	

[*1] The listed values are given just as an example. Make fine adjustment as needed.

Modeling

Material	Tool	Cutting depth (mm)	Rotating speed (rpm)	Feed speed (mm/s)	Remarks
ABS	Ball endmill (f2)	2	10000	XY:20 Z:10	1) If the spindle rotating speed is too high, chippings may remain and make the appearance bad. 2) In general, the quality of the cut surface differs depending on whether to cut downward or upward. 3) If the cutting depth is too small, the cutting quality may become bad. 4) The conditions differ between side-face cutting and groove machining.

Supplied items

Use the supplied items or optional items below.

For supplied items or optional items, contact the shop where you purchased our product or our sales office.

Supplied items and optional items

Part No.	Part Name	Unit of package	ME-300 STII	ME-500 STII	ME-650 STII	Remarks / Specifications
SPA-0015	Dust cleaner (large)	1 set	○	○	○	Standard accessory ϕ26 End Tip transparent plastic
SPA-0016	Dust cleaner (small)	1 set	○	○	○	Standard accessory ϕ11 End Tip transparent plastic
SPA-0019	Clamp tool	1 set	○	○	○	
SPA-0021	Engraving Cutter Holder ST ϕ6	1 p	○	○	○	Standard accessory To mount ϕ6 engraving cutter and endmill
SPA-0024	Engraving Cutter Holder STϕ3	1 p	○	○	○	To mount φ3 endmill
SPA-0025	Dust collecting nozzle for modeling	1 set	○	○	○	Brush-type
SPA-0026	Holder for BS Tapered Shank Cutter	1 p	○	○	○	Attachment to mount BS cutter
SPA-0027	Spindle (ST type)	1 p	○	○	○	
SPA-0032	Cutter holder ST (1/4”)	1 p	○	○	○	
SPB-0010	Engraving cutter ST(0.4)	1 p	○	○	○	Standard accessory Blade tip width: 0.4mm, taper: 60°, Shank ϕ6, carbide
SPB-0014	Engraving cutter ST(0.2)	1 p	○	○	○	Blade tip width: 0.2mm, taper: 60°, Shank ϕ6, carbide
SPB-0015	Engraving cutter ST(1.0)	1 p	○	○	○	Blade tip width: 1.0mm, taper: 60°, Shank ϕ6, carbide
SPB-0016	Braille cutter ST	1 p	○	○	○	Braille forming shank ϕ6
SPB-0017	Endmill ST (2.0)	1 p	○	○	○	For forming cut out letters For modeling Blade tip ϕ2.0, high-speed steel, shank
SPB-0018	Ball endmill ST(2.0)	1 p	○	○	○	For modeling Blade tip R1.0, high-speed steel, shank ϕ6
SPB-0026	Endmill ST(1.0)	1 p	○	○	○	For forming cut out letters For modeling Blade tip ϕ2.0, high-speed steel, shank ϕ6
SPC-0066	Absorbent sheet (300)	1 p	○			
SPC-0067	Absorbent sheet (500)	1 p		○		
SPC-0068	Absorbent sheet (650)	1 p			○	

Part No.	Part Name	Unit of package	ME-300 STII	ME-500 STII	ME-650 STII	Remarks / Specifications
OPT-C0078	Vacuum Pump Controller	1 set	○	○	○	Synchronized with SPINDLE ON/OFF For connection to a vacuum cleaner (on/off control)
OPT-C0081	Relay BOX (200V electricity system)	1 set	○	○	○	
OPT-C0090	High-speed spindle kit	1 set	○	○	○	
OPT-C0093	Absorbent table 300	1 set	○			
OPT-C0094	Absorbent table 500	1 set		○		

Starter kit

Part Name	Part No.	Specifications	Unit of package	Remarks
Engraving cutter ST	OPT-C0082	Engraving cutter ST (0.2, 0.4, 1.0) Cutter holder ST ϕ6 x 2 p	1 set	
Modeling kit	OPT-C0083	Endmill ST (1.0, 2.0) Ball endmill ST 2.0 Cutter holder ST (ϕ3, ϕ6) Dust collecting nozzle for modeling	1 set	

Machine Specification

Item			ME-300STII	ME-500STII	ME-650STII
X/Y axis	Engraving	Range	310 x 220 mm (12.4 x 8.8”)	483 × 305 mm (19.0 x 12.0”)	650 × 440 mm (25.6 x 17.3”)
	Speed	When engraving	0.5, 1, 2, 3, 5, 8, 10, 15, 20, 30, 40, 50, 60 mm/s (0.02 - 2.4”/sec)		
		When moving	20, 40, 60, 80 mm/s (0.8 - 3.1”/sec)		
	Acceleration	When engraving	0.05 G		
		When moving	0.3 G		
	Mechanical Resolution		0.5 μm		
Z axis	Maximum Stroke		60 mm (2.4”)		
	Speed	When engraving	0.5, 1, 2, 3, 5, 8, 10, 15, 20, 30 mm/s (0.02 - 1.2”/sec)		
		When moving	5, 10, 15, 20, 25, 30 mm/s (0.2 - 1.2”/sec)		
	Acceleration	When engraving	0.05 G		
		When moving	0.3 G		
	Mechanical Resolution		0.25 μm		
Spindle		Maximum rotating speed	14000 rpm		
		Range of rotating speed	Stepless adjustment within the range of 7000 to 14000 rpm		
Maximum Work Thickness			50 mm		
Table Flatness Accuracy			0.2 mm	0.2 mm	0.3 mm
Distance Accuracy			± 0.1 mm / 300 mm		
Perpendicularity			Less than ± 0.3 mm / 300 mm, or ± 0.2% of travel distance, whichever is largest		
Repetition Accuracy			Less than 0.05 mm		
Origin Repeatability			± 0.1 mm		
Command			MGL-IIC3, MGL-IC1[*1], G code[*2]		
Program Step			MGL-IIC3	25 μm, 10 μm	Switching by the operation panel
			MGL-IC1	50μm, 100μm, 10μm	
			G code	1 μm, 1.0mm, 0.0001inch, 1.0inch	
Maximum Load Capacity of the Table			Les than 20 kg (44 lbs)		
Receive Buffer Capacity			27 MB		
Interface			RS-232C, USB2.0		
Power-supply Voltage			AC 100V - 240V		
Power-supply Frequency			50 /60 Hz		
Power Consumption			450W or less		
Operating Environment			5 to 40 °C (41 to 104 °F) 35 to 75 % (Rh) No condensation		
Accuracy guarantee range			10 to 25 °C 45 to 65 % (Rh) No condensation		
External Dimensions (W) x (D) x (H)			540×630×530mm (21.6 x 25.2 x 21.2”)	785 x 750 x 530 mm (30.9 x 30 x 21.2”)	880 x 960 x 530 mm (34.6 x 38.4 x 21.2”)
Weight			50 kg (110lbs)	80 kg (176 lbs)	95 kg (209 lbs)

*1. (a) MGL-IIC3 is the HP-GL and CAM-GLII MODE2 compliant exclusive command.
(b) MGL-IC1 is the GP-GL compliant exclusive command.

*2. G-code is compatible with firmware version 1.40 or later.

Interface Specification

1. Specifications

(CCITT V24, EIA RS-232C, JIS X5101)

Transfer method :Asynchronous

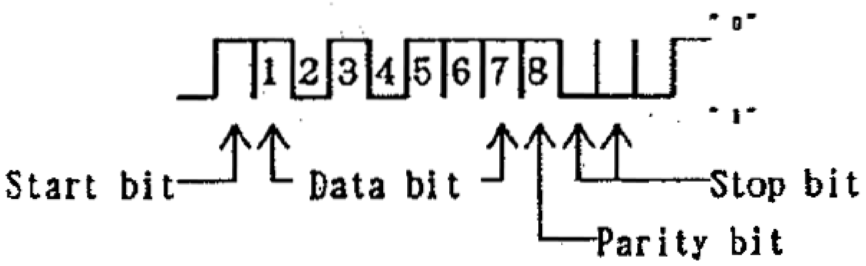
Transfer speed : 1200, 2400, 4800, 9600, 19200,38400 bit/sec

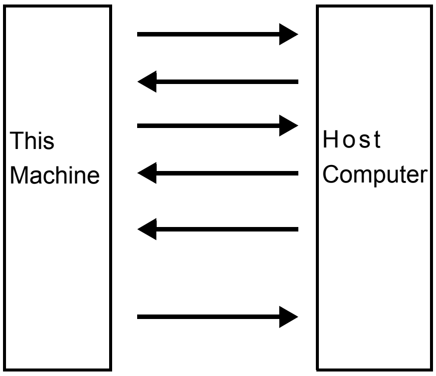
Stop bit :1, 2 bit

Parity check :Even parity, odd parity, or not parity

Data length : 7or 8 bit

2. Example of data signal type


"0"
"1"
1
2
3
4
5
6
7
8
Start bit
Data bit
Stop bit
Parity bit

Pin	Abb.	Name	Signal Direction
1	FG (AA)	Protective ground	
2	SD (BA)	Transmit data	
3	RD (BB)	Receive data	
4	RS (CA)	Request to Send	
5	CS (CB)	Clear to Send	
6	DR (CC)	Data set ready	
7	SG (AB)	Signal ground	
20	ER (CD)	Data Terminal Ready	

This Machine
Host Computer

Supported G-code List

The following table is a list of G-codes supported by this machine.

G-code is compatible with firmware version 1.40 or later.

No.	G code	Function
1	G00	Positioning
2	G01	Linear interpolation
3	G02	Circular arc interpolation CW
4	G03	Circular arc interpolation CCW
5	G04	Dwell
6	G10	Work coordinates system offset
7	G17	XY plane specification
8	G54	Work coordinates system 1 selection
9	G55	Work coordinates system 2 selection
10	G56	Work coordinates system 3 selection
11	G57	Work coordinates system 4 selection
12	G58	Work coordinates system 5 selection
13	G59	Work coordinates system 6 selection
14	G80	Fixed cycle cancellation
15	G81	Hole drilling cycle
16	G82	Hole drilling cycle (With dwell)
17	G83	Deep hole drilling cycle
18	G90	Absolute input
19	G91	Incremental input
20	G92	Coordinates system setting
21	G98	Initial level restoration
22	G99	R-point level restoration
23	M00	Program stop
24	M02	End of program
25	M03	Spindle normal rotation
26	M05	Spindle stop
27	M08	Coolant ON
28	M09	Coolant OFF
29	M30	Program end
30	F	Feed speed
31	%	Program start
32	()	Note section

G20 (Input in inches) and G21 (Input in mm) are not valid as a command. Those units are automatically set referring the setting for coordinate indication unit to an operation switch in the operation panel menu.

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FW: 1.70