

# **CAMM SCRIBE**

by ROLAND DIGITAL GROUP

## **MODEL CS-20**

### **USER'S MANUAL**

Thank you very much for purchasing the CAMM SCRIBE Model CS-20.

- To ensure correct and safe usage with a full understanding of this product's performance, please be sure to read through this manual completely and store it in a safe location.
- Unauthorized copying or transferral, in whole or in part, of this manual is prohibited.
- The contents of this operation manual and the specifications of this product are subject to change without notice.
- The operation manual and the product have been prepared and tested as much as possible. If you find any misprint or error, please inform us.
- Roland DG Corp. assumes no responsibility for any direct or indirect loss or damage which may occur through use of this product, regardless of any failure to perform on the part of this product.
- Roland DG Corp. assumes no responsibility for any direct or indirect loss or damage which may occur with respect to any article made using this product.

**For the USA**

**FEDERAL COMMUNICATIONS COMMISSION  
RADIO FREQUENCY INTERFERENCE  
STATEMENT**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.

The I/O cables between this equipment and the computing device must be shielded.

**NOTICE**

**Grounding Instructions**

Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.

Check with qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug.

Repair or replace damaged or worn out cord immediately.

**Operating Instructions**

**KEEP WORK AREA CLEAN.** Cluttered areas and benches invites accidents.

**DON'T USE IN DANGEROUS ENVIRONMENT.** Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.

**DISCONNECT TOOLS** before servicing; when changing accessories, such as blades, bits, cutters, and like.

**REDUCE THE RISK OF UNINTENTIONAL STARTING.** Make sure the switch is in off position before plugging in.

**USE RECOMMENDED ACCESSORIES.** Consult the owner's manual for recommended accessories. The use of improper accessories may cause risk of injury to persons.

**NEVER LEAVE TOOL RUNNING UNATTENDED.**  
**TURN POWER OFF.** Don't leave tool until it comes to a complete stop.

**For Canada**

**CLASS B NOTICE**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

**CLASSE B AVIS**

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.



**ROLAND DG CORPORATION**

**1-6-4 Shinmiyakoda, Hamamatsu-shi, Shizuoka-ken, JAPAN 431-2103**

**MODEL NAME** : See the MODEL given on the rating plate.

**RELEVANT DIRECTIVE** : **EC MACHINERY DIRECTIVE (89/392/EEC)**

**EC LOW VOLTAGE DIRECTIVE (73/23/EEC)**

**EC ELECTROMAGNETIC COMPATIBILITY DIRECTIVE (89/336/EEC)**

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# Typographic Conventions

This manual uses certain typographic symbols, outlined below.

 This indicates a point requiring particular care to ensure safe use of the product.

** DANGER** : Failure to heed this message will result in serious injury or death.

** WARNING** : Failure to heed this message may result in serious injury or death.

** CAUTION** : Failure to heed this message may result in minor injury.

**NOTICE** : Indicates important information to prevent machine breakdown or malfunction and ensure correct use.

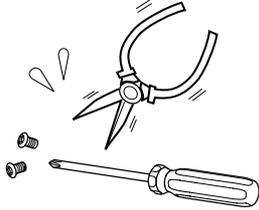


: Indicates a handy tip or advice regarding use.

# To Ensure Safe Use

## WARNING

Never disassemble or modify this product.



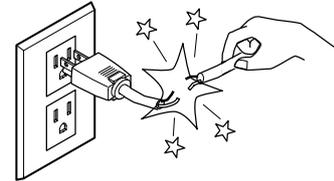
## WARNING

Use only with the power cord included with this product.

Use with other than the included power cord may lead to fire or electrocution.

## CAUTION

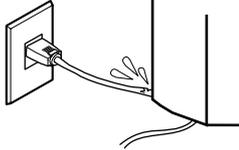
When pulling the power cord from an electrical socket, be sure to grip the plug.



## CAUTION

Handle the power cord with care.

Do not step on or damage the power cord, or allow heavy objects to be placed atop it. Failure to heed this may result in electrocution or fire.



## CAUTION

Handle the blade with care.



## CAUTION

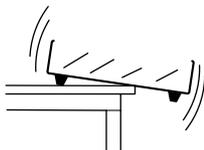
Do not inadvertently allow the hands, hair, or necktie near the rotating parts while in operation.



## CAUTION

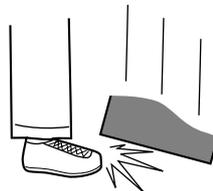
Do not install in an unstable or high location.

Do not install the machine on the edge of a table, or it may fall.



## CAUTION

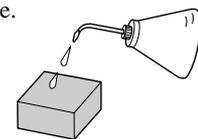
Do not drop when unpacking, installing, or moving.



## CAUTION

Do not use cutting oil when performing cutting.

Perform dry cutting with no cutting oil. Use of cutting oil may result in fire or machine failure.



## CAUTION

Wash hands when finished.

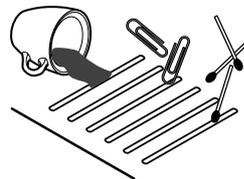
Wash hands with water to remove any adhering cutting chips.



## CAUTION

Do not allow liquids, metal objects or flammables inside the machine.

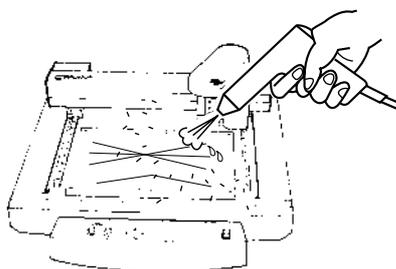
Fire or breakdown may result.



## CAUTION

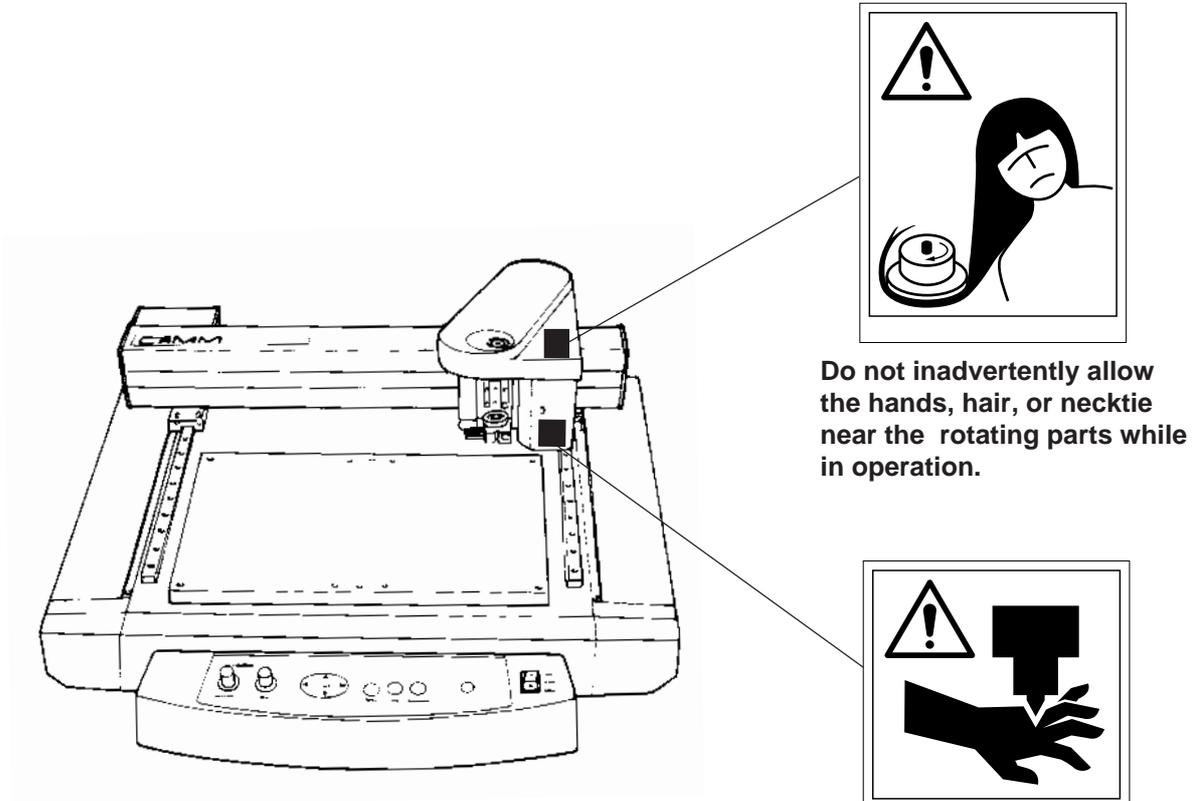
Use a vacuum cleaner to remove cutting dust. Do not use any blower like airbrush.

Otherwise, dust spread in the air may harm your health or damage this machine.

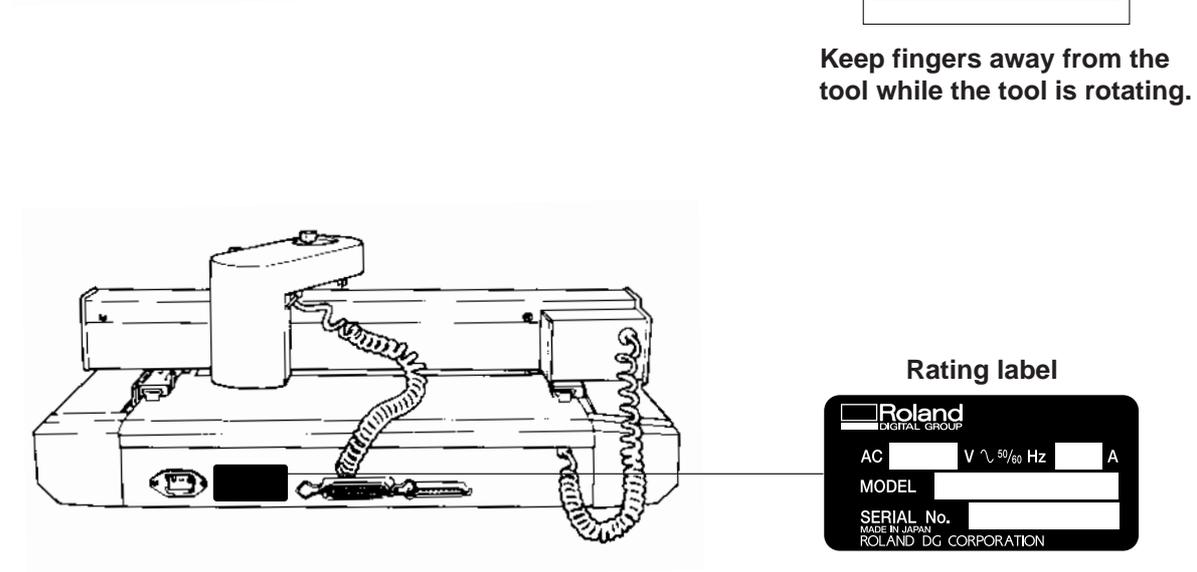


## ▲ About the Labels Affixed to the Unit

These labels are affixed to the body of this product. The following figure describes the location and content of these messages.



Do not inadvertently allow the hands, hair, or necktie near the rotating parts while in operation.



Keep fingers away from the tool while the tool is rotating.

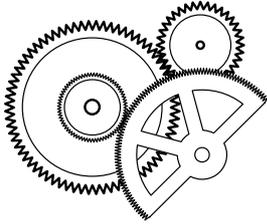
Rating label



## To Ensure Correct Use

### NOTICE

This product is a precision instrument and must be handled with care.



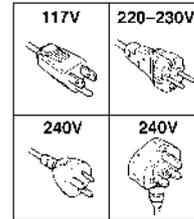
### NOTICE

Do not install in an area subject to dust, high humidity or poor ventilation.



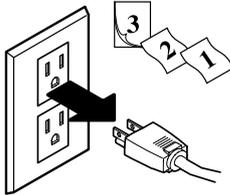
### NOTICE

Do not connect to an AC outlet that supplies other than the specified voltage.



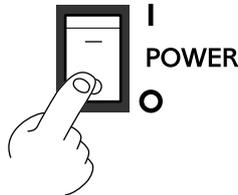
### NOTICE

When the unit is not in use for an extended period, detach the electrical plug from the AC outlet.



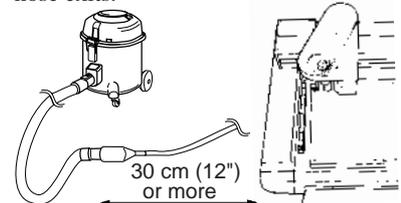
### NOTICE

When cleaning the CAMM SCRIBE, make sure that the main unit's power OFF.



### NOTICE

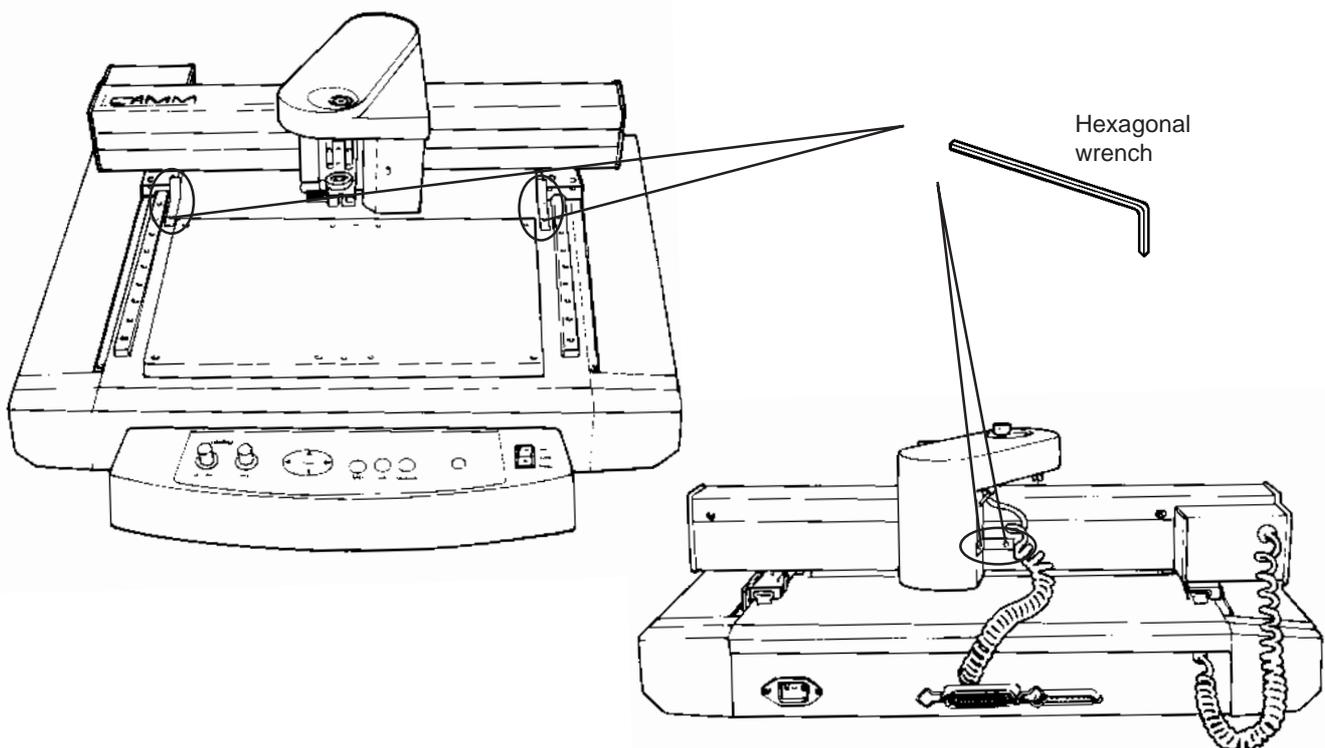
Always allow a minimum gap of 30 cm (12") on the side where the vacuum hose exits.



## Removing the Safe-transport Retainers

Retainers are attached at the locations shown below to ensure safety when transporting this product.

Use the hexagonal wrench included with the unit to remove the retainers before use. (Once removed, the retainers should be stored in a safe place because they are needed again when repacking the product.)



# 1 Great Features

## ● Engraving - ENGRAVER

You can engrave nametags and other plastic plates.  
The character cutter is usually used for engraving.

## ● Cutting - CUTTER

You can cut materials such as commercially available vinyl films, fluorescent and reflective sheets, and rubber sheets for sandblasting stencils.  
The appropriate blade for the material to be cut should be used.

## ● Plotting - PEN

You can perform plotting on plastic plates and sheets.  
This function can also be used to check tool movement before material is actually cut.

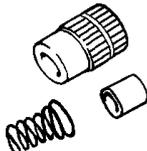
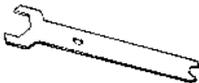
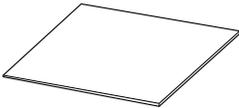
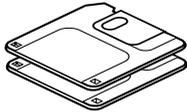
## ○ Scoring - SCORE

This scribes the surface of materials such as aluminum or brass. An optional diamond scraper that has diamond chips embedded in its blade tip is used to engrave the surface of the material by scraping. This produces a lustrous engraved area and an attractive finish, especially when aluminum is used.

Tools and pens that can be used with the CAMM SCRIBE are optionally available from Roland DG Corp. For details, see "Appendix A List of Options"

# 2 Confirmation of Included Items

This product is packed with the following accessory items in addition to the CAMM SCRIBE. Before using the CAMM SCRIBE, check to make sure that all items are included.

Character cutter -- 1  Engraving-tool holder -- 1	Blade for sheets -- 1  Blade holder -- 1	Oil based fiber tipped pen -- 1 	Tool adapter -- 1  (Spring and Spacer -- 1 each)	Diamond scraper adapter -- 1 
Hexagonal screw-driver -- 1 	Spanner -- 1 	Test material -- 1 set Sheet  Plate 	Adhesive sheet for securing material -- 1 sheet 	Dust collector hose and duct -- 1 
Hexagonal wrench -- 1 	Power cord -- 1 	CAMM SCRIBE DRIVER for Windows 95 and Windows 3.1 -- 1  EZ SCRIBE -- 1	User's manual -- 1  EZ SCRIBE User's manual -- 1	

# 3 Part Names

## Front

### Table

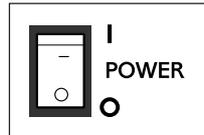
The table grips the workpiece to be cut and plot.

### Control Panel

(Described on the following page.)

Tool carriage

Power switch



### Dust collector hose port

This is where the dust collector is attached to take up cuttings while engraving is in progress.

### Tool mounting screw

This secures the depth regulator nose or tool adapter in place.

### Depth regulator nose

This is used to attach the character cutter for engraving and to adjust the amount of blade extension.

## Rear

### Power connector

The power cord included with the machine connected here.

### Parallel connector

A parallel (printer) cable is connected here.

### Serial connector

A serial (RS-232C) cable is connected here.

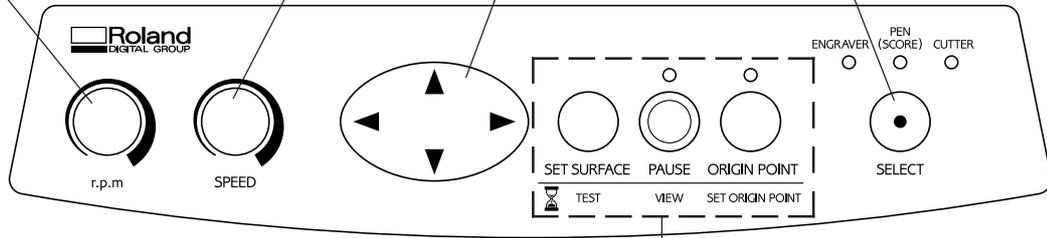
# Control Panel

**r.p.m knob**  
This sets the spindle speed (in rpm).

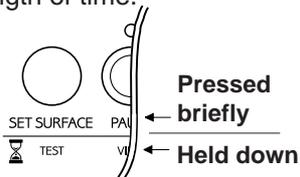
**SPEED knob**  
This sets the cutting or plotting speed.

**ARROW keys**  
These are used to move the tool carriage in the direction of the arrow. Hold down the key for faster movement.

**SELECT key**  
This selects the cutting or plotting mode. The LED for the selected mode lights up.



The functions of these keys differ depending on whether the key is pressed briefly and immediately released or held down for a certain length of time.



**SET SURFACE / TEST key**

**Pressed briefly:** When the character cutter has been installed, this moves the tool up or down.  
**Held down for one second or longer:** Performs test cutting.

**PAUSE / VIEW key**

**Pressed briefly:** Pauses operation.  
**Held down for two seconds or longer:** Moves the tool carriage to the rear right (the VIEW position) and pauses operation.

**ORIGIN POINT / SET ORIGIN POINT key**

**Pressed briefly:** Moves the tool carriage to the origin point.  
**Held down for two seconds or longer:** Makes the present position of the tool carriage the origin point.

## 4 Task Flow

Follow the steps shown below to work with materials on the CAMM SCRIBE.

1. Install and connect the computer and the CAMM SCRIBE.
2. Install the driver software and set up the interface.
3. Use a software application to create the data.
4. Switch on the power to the CAMM SCRIBE.
5. Load the material and install the tool.
6. Set the origin point.
7. Set the cutting conditions (test cut).
8. Send the data from the computer to perform machining.
9. End operations.
10. Switch off the power.
11. Clean up.

# 5 Installation and Connections

## Installation

### NOTICE

Never install this unit in any of the following situations, as it could result in damage:

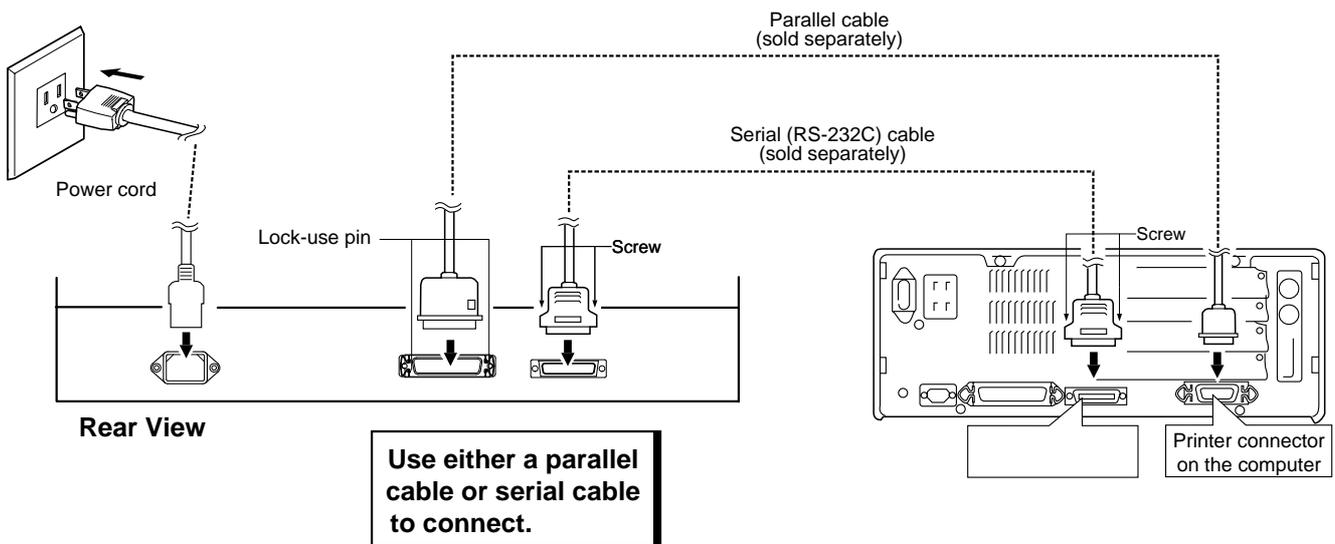
- Places where the installation surface is unstable or not level.
- Places with excessive electrical noise.
- Places with excessive humidity or dust.
- Places with poor ventilation, because the CAMM SCRIBE generates considerable heat during operation.
- Places with excessive vibration.
- Places exposed to strong illumination or direct sunlight.

When arranging setup space for the CAMM SCRIBE, make sure you have a space that is at least 800 mm (32") wide, 800 mm (32") in depth, and 600 mm (24") in height.

## Connections

### NOTICE

- Always make sure that the power is off on both the computer and the CAMM SCRIBE whenever any cables are connected or disconnected.
- Securely connect the power cord, computer I/O cable and so on so that they will not be unplugged and cause failure during operation.
- Cables are available separately. One which you are sure matches the model of computer being used should be selected.



# Driver Software Installation

This product includes driver software for Windows.  
This driver must be installed if you are using Windows.  
Refer to the explanation included with the driver to install it.

## Interface Setup

CAMM SCRIBE automatically detects the type of interface (parallel or serial) from the first batch of data sent from the computer after the power is switched on.  
When using a serial connection for the interface, however, the communication parameters on the computer should be set as follows.  
The communication parameters for the CAMM SCRIBE are locked in and cannot be changed.

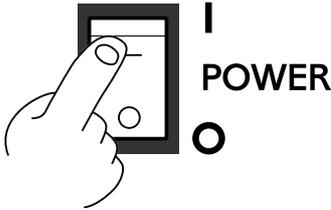
Communication parameters for a serial connection

Stop bit	1 bit
Data bit	8 bit
Parity	None
Baud rate	9600bps
Handshake	Hardware

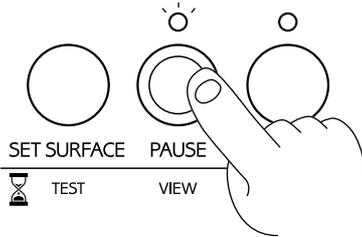
## Powerup

To ensure safety, operation of the CAMM SCRIBE is paused when the power is switched on.  
Press the **PAUSE/VIEW** key to end the paused state.

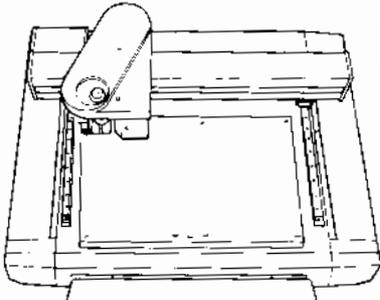
**1** Switch on the CAMM SCRIBE's power switch.  
(The PAUSE LED flashes at this time.)



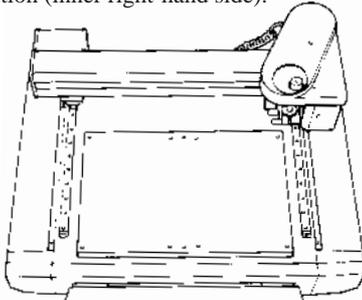
**2** Press the **PAUSE/VIEW** key.



**3** The tool carriage moves to the left rear.



**4** The tool carriage stops when it reaches the VIEW position (inner right-hand side).



The CAMM SCRIBE is now ready to receive data.

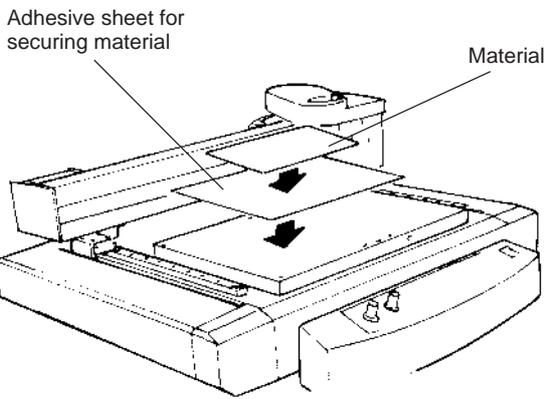
# 6 Before Starting to Cut and Plot

## Loading the Material

If the material is not secured correctly, it may not be cut and plot as intended. Some examples of material loading are shown below. Refer to these to use the appropriate method for the material at hand to secure it in place.

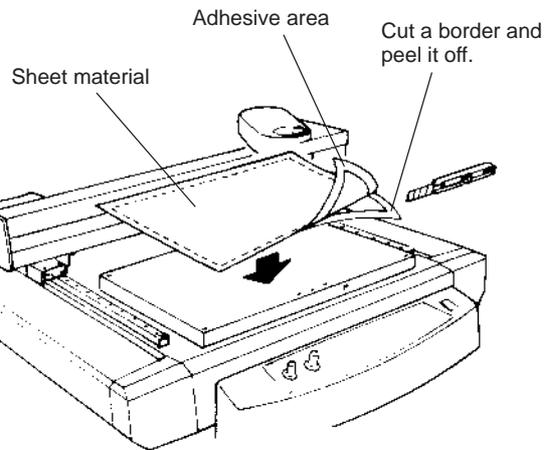
\* Be sure that the tool carriage is at the VIEW position ( inner right-hand side ) before loading material.

### Using the included adhesive sheet...



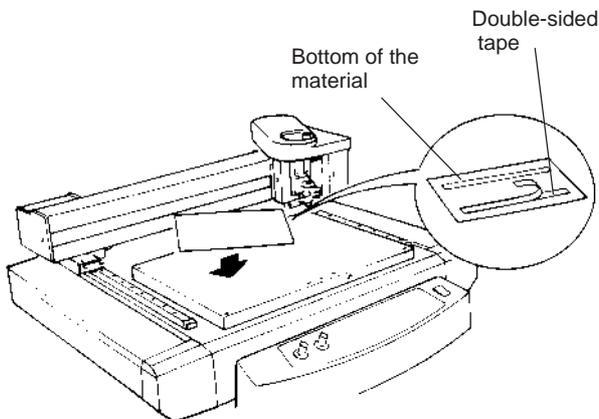
\*\*\*\*\*      \*\*\*\*\*      ENGRAVER      SCORE

### Peel off the edges from the back of the sheet material...



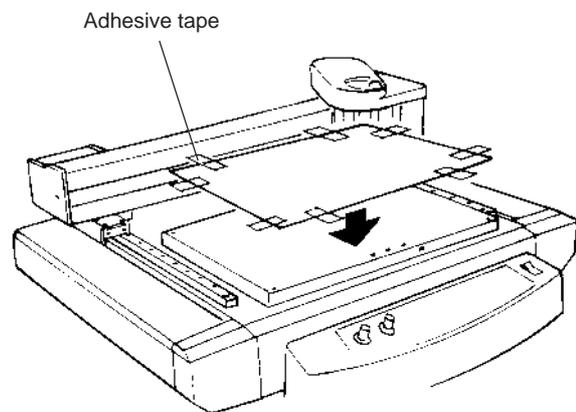
\*\*\*\*\*      CUTTER      \*\*\*\*\*      \*\*\*\*\*

### Using commercially available double-sided tape...



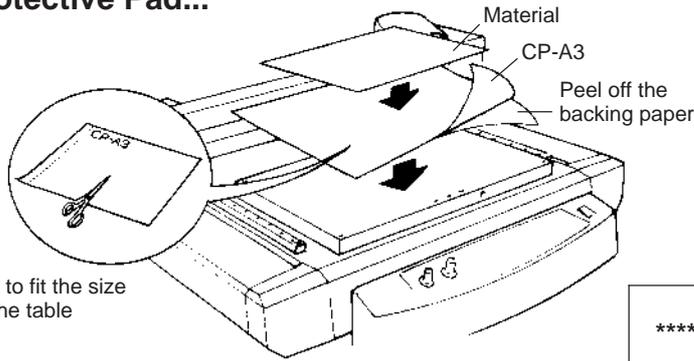
\*\*\*\*\*      CUTTER      ENGRAVER      SCORE

### Using commercially available adhesive tape...



PEN      CUTTER      \*\*\*\*\*      \*\*\*\*\*

## Using the Optional CP-A3 Cutting-use Protective Pad...



- The peel-off sheets are used to protect the CP-A3 after use. Do not throw them away.
- One CP-A3 can be used about 100 times. Replace it once it loses its grip (stickiness).

\*\*\*\*\*

**CUTTER**

\*\*\*\*\*

\*\*\*\*\*

## Installing a Tool

The steps for installing a tool are shown below. Follow these steps to install the appropriate tool for the task.

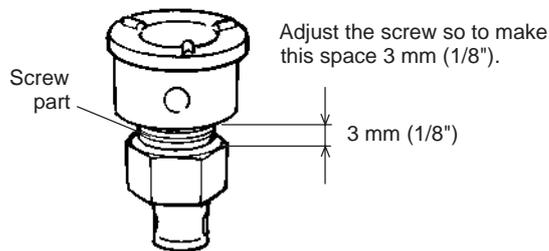
### For Engraving (Character Cutter)

\* Use **SELECT** key to choose "ENGRAVER" as the mode.

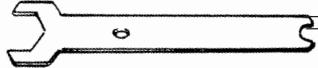
When installing a cutter for engraving, make sure the blade tip protrudes beyond the surface of the material by an amount equal to the depth of engraving to be performed.

Move the tool carriage to a position over the material surface, then install the cutter.

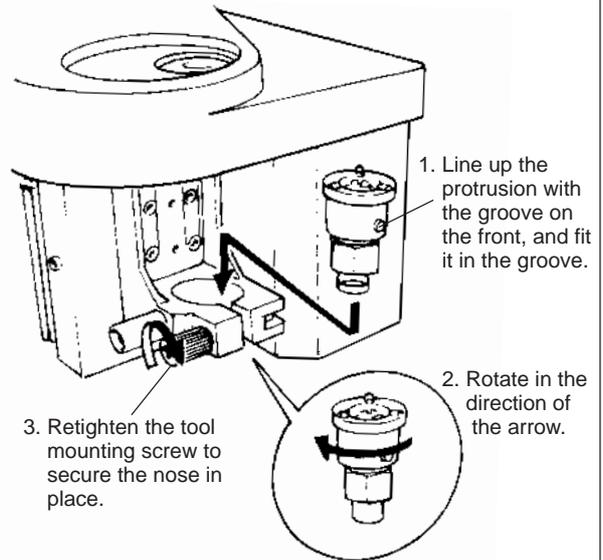
- 1** Install the depth regulator nose as shown in the figure.



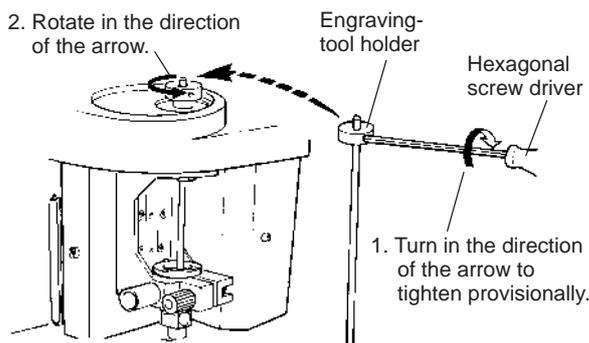
The spanner included with the unit is 3 mm (1/8") thick, and can be used as to check the width of the space.



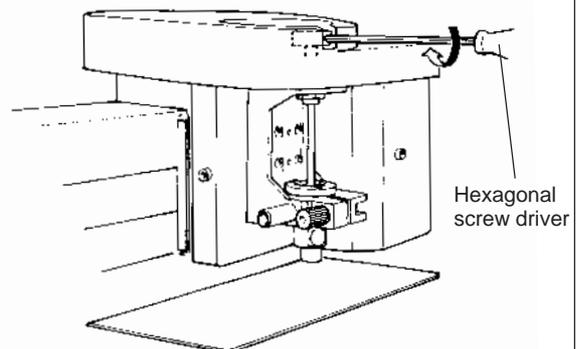
- 2** Loosen the tool mounting screw and insert the depth regulator nose in the tool carriage.



- 3** Provisionally tighten the character cutter in the engraving-tool holder, and install the engraving-tool holder on the tool carriage.

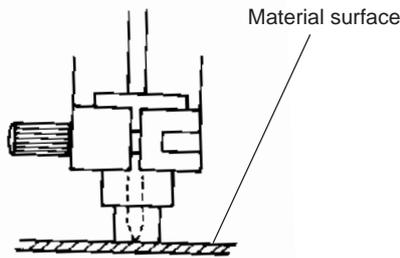


- 4** Press the **SET SURFACE** key to lower the tool, then loosen the screw for the engraving-tool holder.

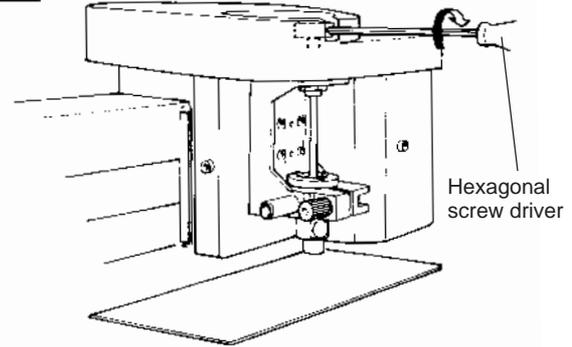


**5**

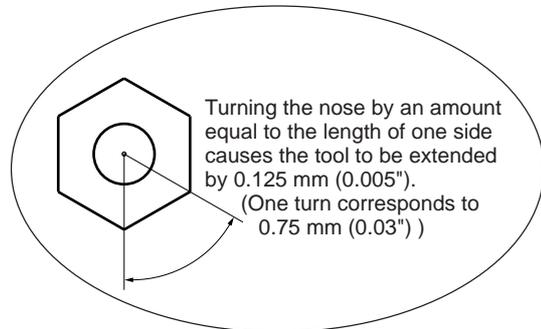
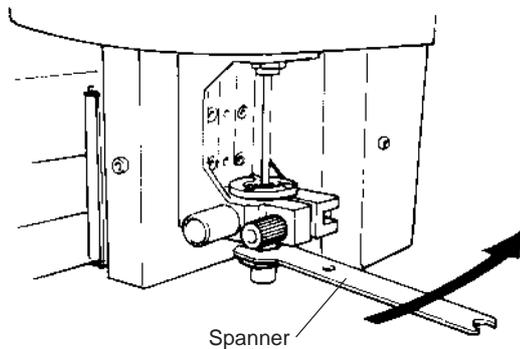
Gently lower the cutter until the tip of the blade touches the surface of the material.

**6**

Tighten the screw securely to secure the blade in place.

**7**

Press the **SET SURFACE** key to raise the cutter. Use the spanner to turn the depth regulator nose in the direction of the arrow to extend the blade depth to the desired engraving depth.



When engraving an acrylic panel, the depth that can be engraved at one time is about 0.25 mm (0.01"). To engrave to a greater depth, repeat the same engraving several times, increasing the amount of blade extension with each pass until the desired engraving depth is reached.

**Example:** Engraving to a depth of 1 mm (0.04")

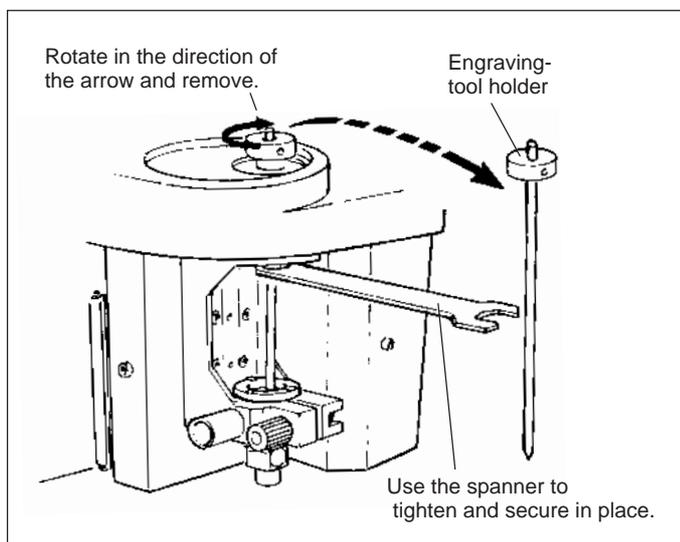
[Number of engraving passes] : 4

[Amount of blade extension]

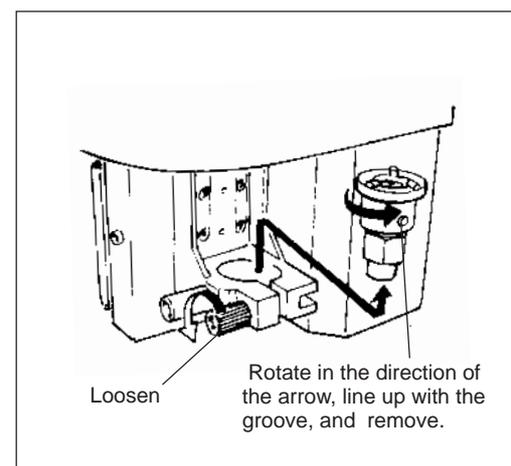
1st pass: 0.25 mm (0.01") -> 2nd pass: 0.5 mm (0.02") ->

3rd pass: 0.75 mm (0.03") -> 4th pass: 1 mm (0.04")

## How to Remove the Cutter for Engraving



## How to Remove the Depth Regulator Nose

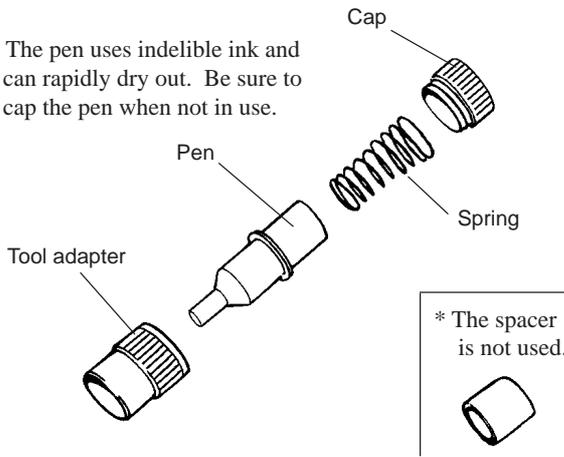


## For Pen Plotting

\* Use **SELECT** key to choose "**PEN (SCORE)**" as the mode.

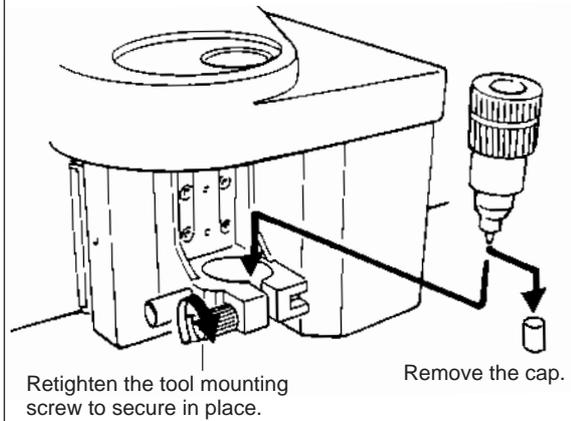
- 1** Insert the pen into the tool adapter, insert the spring that comes with the tool adapter, then attach the cap.

\* The pen uses indelible ink and can rapidly dry out. Be sure to cap the pen when not in use.



- 2** Loosen the tool mounting screw and insert the tool adapter into the tool carriage.

\* If the depth regulator nose is installed, it should be removed.



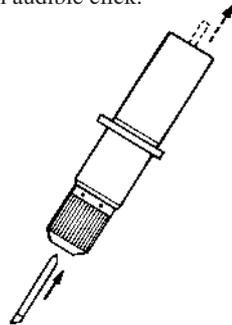
## For Cutting

\* Use **SELECT** key to choose "**CUTTER**" as the mode.

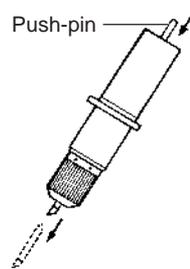
### NOTICE

Do not drop or damage the blade holder. Damage to the blade holder may impede its movement within the tool adapter.

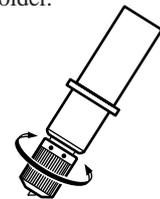
- 1** Insert the blade into the blade holder until it snaps into place with an audible click.



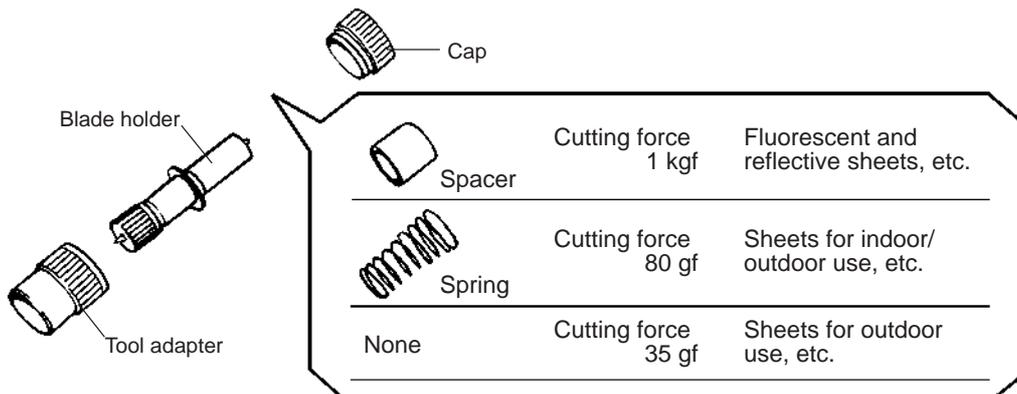
The tool can be removed by pressing the push-pin.



For fine adjustment of the blade tip, turn the lower part of the blade holder.



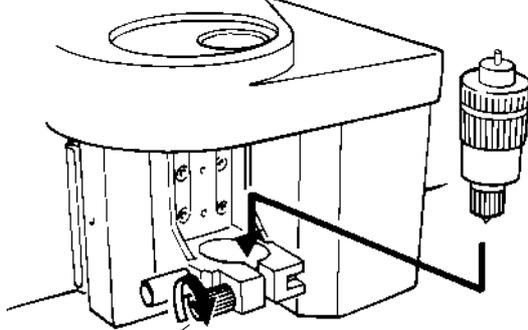
- 2** Insert the blade holder into the tool adapter. Then, depending on the thickness of the material to be cut, insert the spacer or spring included with the tool adapted, or attach the cap without inserting either the spacer or the spring.



\* Select in order of "Spacer", "Spring" and "None" when thinner the material becomes.

- 3** Loosen the tool mounting screw and insert the tool adapter into the tool carriage.

\* If the depth regulator nose is installed, it should be removed.



Retighten the tool mounting screw to secure in place.

\* If the sheet is to be applied to a hard material such as glass or an acrylic panel, it is possible to eliminate the transfer step and enable smaller characters to be cut by affixing the sheet to the material first, before cutting.

< Example >

1. Prepare the sheet to be cut.
2. Prepare the rigid material (acrylic panel, glass panel, etc.).
3. Peel off the backing paper from the sheet and affix the sheet to the rigid material.
4. Use double-sided tape or the like to secure the rigid material with the affixed sheet to the table.
5. Perform cutting.
6. Peel off the unneeded portions.

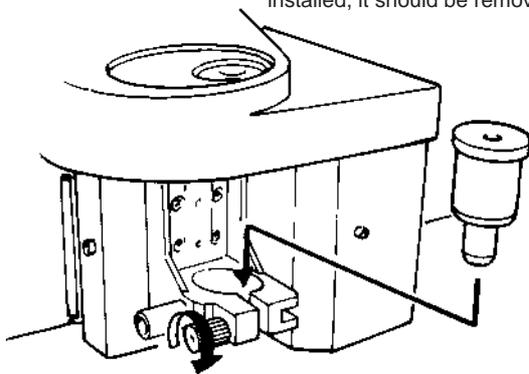
## For the Scoring (Diamond scraper)

\* Use **SELECT** key to choose "**PEN (SCORE)**" as the mode.

When performing scoring, be sure to purchase the diamond scraper (optionally available).

- 1** Loosen the tool mounting screw and insert the special adapter into the tool carriage.

\* If the depth regulator nose is installed, it should be removed.



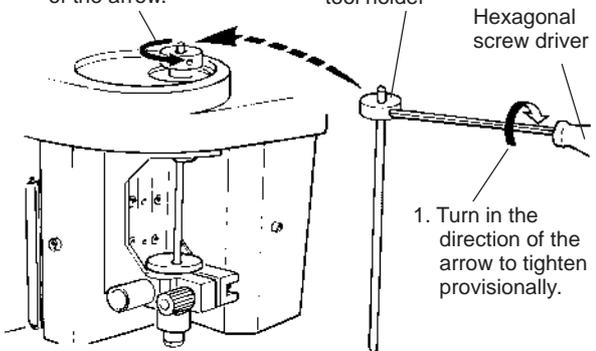
Retighten the tool mounting screw to secure in place.

- 2** Provisionally tighten the diamond scraper in the engraving-tool holder, and insert it into the tool carriage.

2. Rotate in the direction of the arrow.

Engraving-tool holder

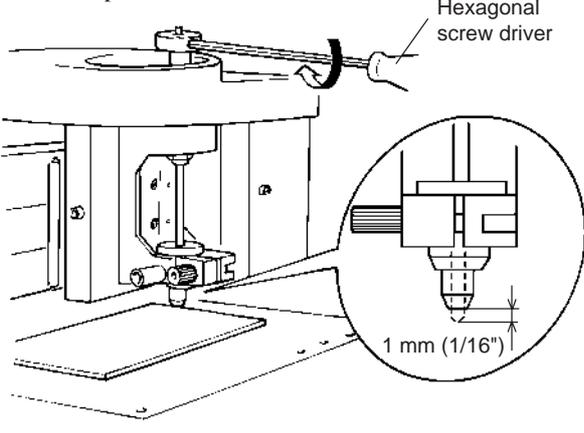
Hexagonal screw driver



1. Turn in the direction of the arrow to tighten provisionally.

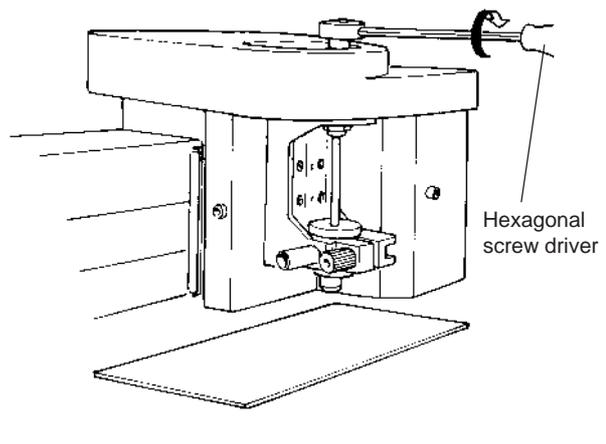
- 3** Loosen the screw for the engraving-tool holder and lower the blade of the diamond scraper until it protrudes about 1 mm (1/16") from the tip of the adapter.

Hexagonal screw driver



1 mm (1/16")

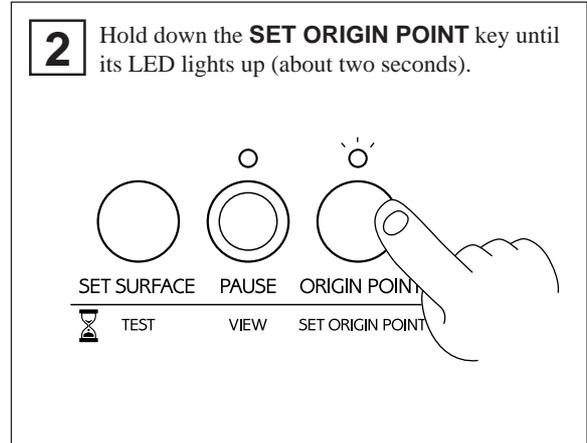
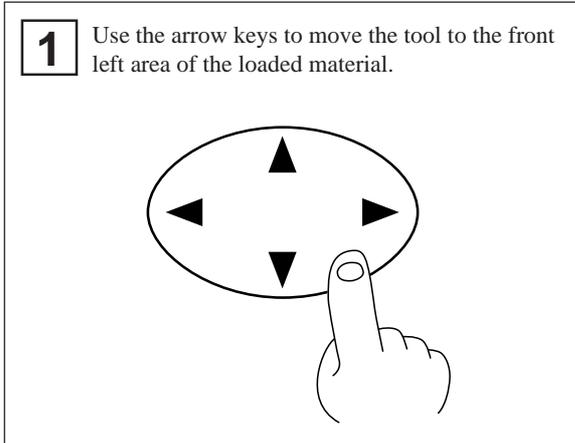
- 4** Tighten the screw securely to secure the tool in place.



Hexagonal screw driver

# Setting the Origin Point

The origin point set with the software determines the position on the CAMM SCRIBE that is set. Usually, the origin on the CAMM SCRIBE is set to a location at the front left of the material secured in place. This section explains how to set the origin point at the front left of a piece of material.



\* The origin point that is set here remains in memory even when the power is switched off.

↓  
The origin point has now been set.

# About Tools and Materials

The combinations of appropriate tools and materials for the different modes are shown below. Please refer to this to make the correct selections. Please be aware that conditions may vary depending on factors such as the sharpness of the tool and the hardness of the material. When performing cutting, it is not possible to cut thin, soft vinyls.

Mode	Toolname	Modelnumber	Material
Engraving <b>( ENGRAVER )</b>	Character cutter (Used with the depth regulator nose - included)	ZEC-H2032 (others)	Resin materials (nameplates, etc.)
Scoring <b>( SCORE )</b>	Diamond scraper (Diamond scraper Adapter - included)	(ZDC-D2000)	Aluminum Brass
Cutting <b>( CUTTER )</b>	Blade for sheet (Used with the tool adapter - included)	ZEC-U1005	Vinyl films
		(ZEC-U5025)	Fluorescent and reflective sheets
		(ZEC-U3075)	Rubber sheets for sandblasting stencils
Plotting <b>( PEN )</b>	Oil-based fiber-tipped pen (Used with the tool adapter - included)	ST-5SPA-ON	Resin materials (nameplates, etc.)

Model numbers in parentheses ( ) are for optional items.

\*Material thickness -- Up to 5 mm (3/16")

\*Engraving depth ---- Varies according to the type of material.

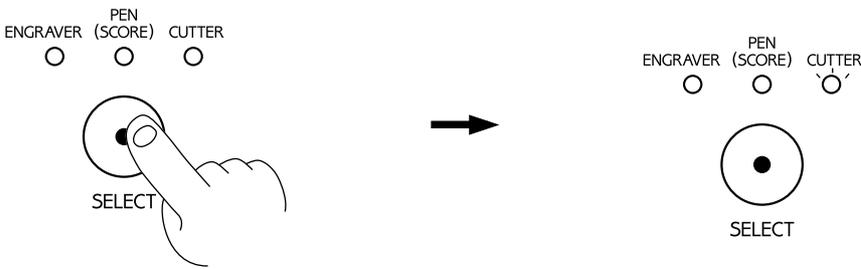
To achieve deep engraving on a hard material, repeatedly carry out engraving at the same location, extending the blade tip slightly with each pass.

# Test Cutting

The CAMM SCRIBE can perform test cutting to check whether cutting conditions are correct. Test cutting is also recommended to determine optimal cutting conditions such as the compatibility of the material and tool, as well as cutting speed. If the results of test cutting are less than satisfactory, refer to "About Tools and Materials" and "Setting Cutting Conditions" and redo the settings.

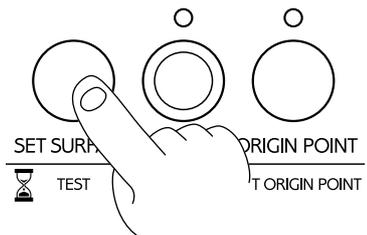
It may be a good idea to use a blank area of a piece of material or an extra scrap for test cutting.

**1** Use the **SELECT** key to choose the cutting or plotting mode. The LED for the selected mode lights up.

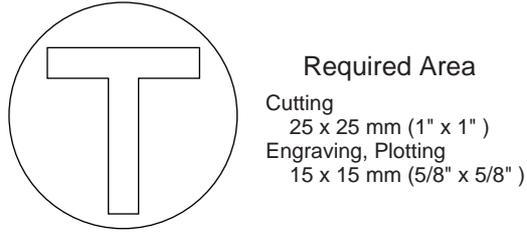


**2** Check again to make sure that the correct material and tool for the select mode have been loaded and installed.

**3** Hold down the **SET SURFACE / TEST** key for one second or more.



**4** Test cutting starts.



**Required Area**  
 Cutting  
 25 x 25 mm (1" x 1")  
 Engraving, Plotting  
 15 x 15 mm (5/8" x 5/8")

# Setting Cutting Conditions

## Changing the Offset Value... ( Only When Performing Cutting )

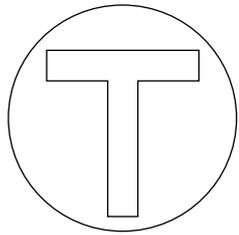
When performing cutting, make sure that an appropriate value has been set for the offset.

When using the blade for vinyl films that comes with the CAMM SCRIBE, set the offset value to 0.25 mm (0.00984").

(The offset is set to 0.25 mm (0.00984") when the CAMM SCRIBE is shipped from the factory.)

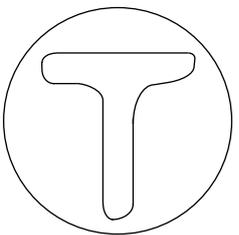
- 1** Use **SELECT** key to choose "**CUTTER**" as the mode.
- 2** Press the **PAUSE** key.
- 3** Hold down the ▲ key for two seconds or more to change the offset value to 0.75 mm (0.0295"), or hold down the ▼ key for two seconds or more to change it to 0.25 mm (0.00984").  
 The LED for the **SELECT** key's **CUTTER** mode flashes, and the setting is made.

Correct offset value



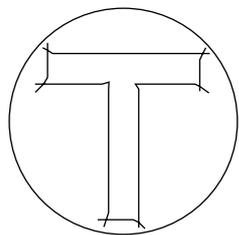
Corners are attractively cut

Offset too small



Corners are rounded

Offset too large



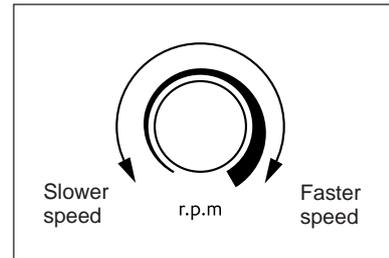
Corners have "horns"

## Spindle Speed

### NOTICE

Adjust the spindle speed to match the material being engraved. Depending on the material, a spindle speed that is too fast may cause the material to melt.

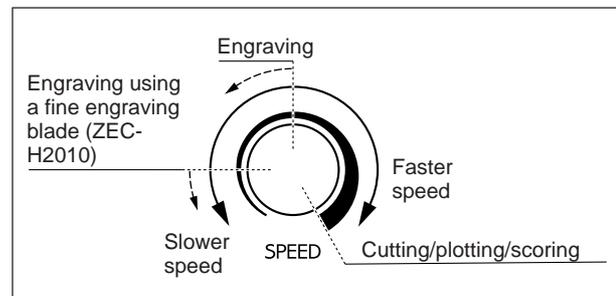
Turn the **r.p.m** knob on the control panel to change the spindle speed.



## Cutting and Plotting Speed

Turn the **SPEED** knob on the control panel to change the cutting and plotting speed (tool-movement speed.)

The tool-lowering speed also changes accordingly.



When the values set within the application software or the driver are sent after adjusting the cutting and plotting speed on the CAMM SCRIBE, the software and driver values are changed.

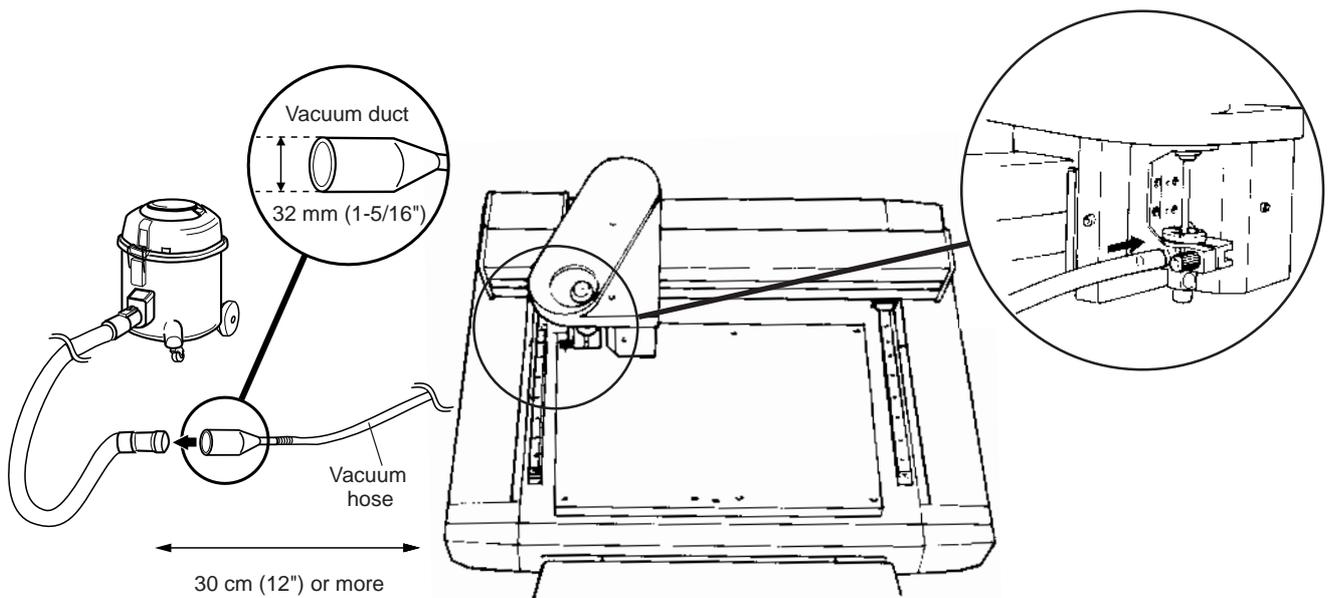
Conversely, you can also change the cutting and plotting speed by rotating the knobs on the CAMM SCRIBE after starting a cutting operation using the software and driver values.

## Attaching a Vacuum Cleaner

The dust collector hose and duct included with the CAMM SCRIBE can be attached to an ordinary household vacuum cleaner to remove cuttings during engraving.

### NOTICE

Always allow a minimum gap of 30 cm (12") on the side where the vacuum hose exits. The vacuum hose must have sufficient space in which to move. When the vacuum hose cannot move smoothly, it can cause malfunctions or errors in operation.



When the fitting diameters do not match or when the vacuum duct cannot be inserted into the suction opening of the vacuum cleaner, use strong commercial tape (cloth or electrical) to join the fittings.

## 7 Sending Cutting and Plotting Data

Cutting and plotting is performed when data is sent from the computer (software application).

Refer to the manual for the software and drivers you are using for an explanation of how to output cutting and plotting data.

### Changes That Can Be Made While Cutting and Plotting

#### Pausing Operation

**PAUSE** . . . . . Pressing the **PAUSE/VIEW** key causes operation to pause, even when cutting and plotting is in progress.

Press the **PAUSE/VIEW** key a second time to continue cutting and plotting.

**ESCAPE** . . . . . Holding down the **PAUSE/VIEW** key for one second or longer causes the tool carriage to move to the **VIEW** position and stop.

Press the **PAUSE/VIEW** key a second time to continue cutting and plotting.

**STOP** . . . . . Press the **PAUSE/VIEW** key to pause operation.

Stop sending data from the computer, then switch off the power to the CAMM SCRIBE.

To restart the cutting and plotting operation from the beginning, switch the power back on, and send the data from the computer again. (The origin-point setting remains in memory even when the power is switched off.)

#### Spindle Speed

Changes the **r.p.m** knob on the control panel.

#### Cutting and Plotting Speed

Changes the **SPEED** knob on the control panel.

## 8 Ending Cutting and Plotting Operations

### ▲ CAUTION

- After finishing, be sure to wash the hands with water to remove any adhering cutting chips.
- Use a vacuum cleaner to remove cutting dust.  
Do not use any blower like airbrush. Otherwise, dust spread in the air may harm your health or damage this machine.

**1** Press the **PAUSE/VIEW** key to move the tool carriage to a position where the tool and material can easily be removed.

**2** Move the tool carriage to the inner-right area of the table, make sure operation is stopped, then remove the material.  
• If the material is secured by an adhesive sheet or double-sided tape, peel the adhesive sheet off of the table and store it in a location free from dust.

**3** Remove the tool and put it away.  
• If the day's operations are finished, remove the blade, tool adapter, and depth regulator nose.  
Use a dry cloth to wipe away any grime, cap the blade, and put it away.  
• To keep pens from drying out, they should be capped when operations are finished.

**4** Switch off the power to the CAMM SCRIBE.

**5** Close the software application and switch off the computer.

**6** If engraving was performed, vacuum up any cuttings.

## 9 Maintenance

These are maintenance tasks that should be performed by the user.

### Cleaning the Unit

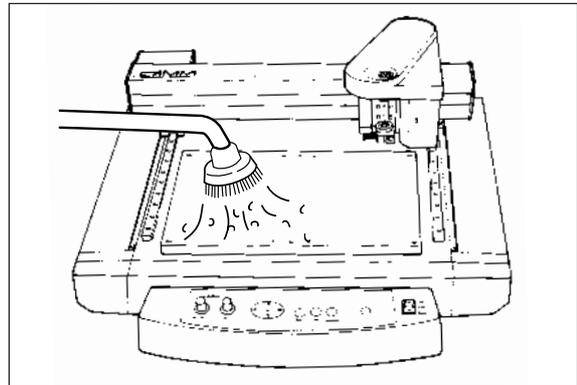
#### ⚠ CAUTION

Use a vacuum cleaner to remove cutting dust.  
Do not use any blower like airbrush. Otherwise, dust spread in the air may harm your health or damage this machine.

#### NOTICE

When cleaning the CAMM SCRIBE, make sure that the main unit's power OFF.

Use a dry cloth to clean the unit.  
When engraving has been performed, use a whisk broom or a vacuum cleaner to clean up any cuttings.

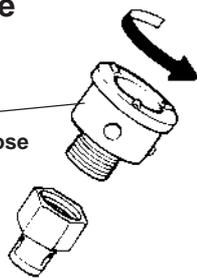


### Replacing the Bearing for the Depth Regulator Nose (Option: DRN-20)

When engraving is performed, cuttings may get inside the bearing, resulting in a strange noise. Because this can also degrade the quality of engraving, replacement of the bearing after every 100 hours of engraving is recommended. (New bearings can be purchased from your vendor.)

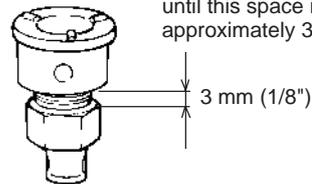
#### How to Remove the Bearing

Bearing for Depth regulator nose



#### How to Install the Bearing

Screw on the bearing for the depth regulator nose until this space is approximately 3 mm (1/8").



## Recommended Service Checking

Please be aware that the following maintenance tasks are charged, even when performed within the unit's warranty period.

### Replacement of spindle motor

The spindle motor is a part that will eventually wear out. After extended use, strange noises may be heard from the motor, or the motor may fail to turn.

As a guideline, the spindle motor should be replaced after every 2000 hours of use.

### Replacement of spindle belt

Like the motor, the belt is a part that wears out.

As a guideline, the spindle belt should be replaced after every 2000 hours of use.

---

## 10 If There's a Problem...

If operation the CAMM SCRIBE becomes abnormal, immediately switch off the power to the unit.

### No Power

Is the power cord plugged in correctly?

Make sure the power cord is plugged in securely.

Is the power switch set to ON?

Make sure the power is turned on.

### No Operation When Commands Are Sent from the Computer

Are the computer and the CAMM SCRIBE connected correctly?

Make sure the cable to the computer is securely connected.

Is the power switch set to ON?

Make sure the power is turned on.

Is the application software functioning correctly?

Check the state of the computer and software.

Are the computer (software) settings correct?

Refer to the documentation for the computer and software application to make the correct settings.

### The Material Is Not Cut Correctly

Is the blade broken?

Replace the blade with a new one.

Are there any cuttings or sheet scraps adhering to the blade tip?

Remove the blade and wipe the tip with a soft cloth.

Is the right combination of tool and material being used?

Refer to "**About Tools and Materials**" and choose the appropriate tool for the material to be cut or plotted.

Has the correct cutting and plotting mode been selected?

Check the **SELECT** setting on the operation panel.

Is the material secured in place so that it will not move or come loose?

Refer to "**Loading the Material**" and use the appropriate method for the material type to secure the material in place.

Is the tool securely tightened so that it will move or come loose?

Refer to "**Installing a Tool**" to install the tool securely.

### Output Results Are Shifted from the Desired Location

Has the origin point been set correctly?

Refer to "**Setting the Origin Point**" to set the material's origin point correctly.

If the material has been changed, is it positioned differently than before?

Check the position where the material is loaded.

## Appendix A List of Options

Item	Model number	Description	
Character cutter	ZEC-H2010	High speed steel	Cutter width 0.10 mm (0.00394")
	ZEC-H2032		Cutter width 0.32 mm (0.0126")
	ZEC-H2050		Cutter width 0.50 mm (0.0197")
	ZEC-H2075		Cutter width 0.75 mm (0.0295")
	ZEC-U2032	Cemented carbide	Cutter width 0.32 mm (0.0126")
	ZEC-U2050		Cutter width 0.50 mm (0.0197")
Flat cutter	ZHS-H2100	High speed steel	Cutter width 1.0 mm (0.0394")
	ZHS-H2150		Cutter width 1.5 mm (0.0591")
	ZHS-H2200		Cutter width 2.0 mm (0.0787")
Diamond scraper	ZDC-D2000	Diamond	
Blade for sheets	ZEC-U1005	High speed steel	5 pieces/set
	ZEC-U5025		5 pieces/set
	ZEC-U3075		5 pieces/set
Oil based fiber tipped pen	ST-5SPA-ON	0.3 mm (0.0118") 5 Black	
Bearing for the depth regulator nose	DRN-20	3 pieces	
Adhesive sheet for securing material	AS-10	210 x 140 mm (8-1/4" x 5-1/2") 10 sheets	
Cutting-use protective pad	CP-A3	A3 2 sheets	

## Appendix B Instruction Support Chart

The CAMM SCRIBE comes with CAMM-GL II, and supports the following commands.

However, these commands are not supported in mode 1.

A "CAMM-GL II Programmer's Manual" is available for separate purchase for those wishing to create their own programs for this machine. For further information, please contact the nearest Roland DG Corp. dealer or distributor.

### mode 2

Instru- ction	Compati- bility										
AA	○	DR	○	IP	○	OI	○	PU	○	SS	○
AR	○	DT	○	IW	○	OO	○	RA	○	TL	○
CA	○	EA	○	LB	○	OP	○	RR	○	UC	○
CC	○	ER	○	LT	○	OS	○	SA	○	YS	○
CI	○	ES	×	OA	○	OW	○	SC	○	WD	○
CP	○	EW	○	OC	○	PA	○	SI	○	WG	○
CS	○	FT	○	OE	○	PD	○	SL	○	XT	○
DF	○	IM	○	OF	○	PR	○	SM	○	YT	○
DI	○	IN	○	OH	○	PT	○	SR	○		

### Others

Instru- ction	Compati- bility	Instru- ction	Compati- bility	Instru- ction	Compati- bility
IYZ	○	IST	○	INR	○

Compatible. .... ○

Ignored. .... ●

Incompatible. .... ×

# Appendix C Specifications

Table	305 mm (X) x 205 mm (Y) (12" x 8-1/16")
Max. Operation area	305 mm (X) x 205 mm (Y) (12" x 8-1/16")
Feed rate	X,Y-axis: Max. 3.0 m (118-1/16")/min. (50 mm (1-15/16")/sec.)
Mechanical resolution	0.01 mm (0.000394")/step 0.00125 mm (0.0000492")/step ( micro-step control )
Software resolution	0.01 mm (0.000394")/step
Spindle motor	15 W ( DC motor )
Revolution speed	5,000 — 10,000 rpm.
Engraving tool mounting diameter	3.715 mm (0.125")
Number of tool up/down	1 per sec.
Cutting offset	0.25 mm (0.00984") / 0.75 mm (0.0295") (switchable)
Interface	Parallel (in compliance with the specification of Centronics) Serial (under RS-232C standard) Automatic switching
Buffer size	2 KB (expandable up to 2 MB)
Instruction system	CAMM-GL II mode2
LED	Operation indicators 2 (PAUSE/VIEW, ORIGIN POINT/SET ORIGIN POINT) Mode indicators 3 (ENGRAVER, PEN (SCROE), CUTTER )
Control keys	▲, ▼, ►, ◄, SET SURFACE / TEST, PAUSE / VIEW, ORIGIN POINT / SET ORIGIN POINT, SELECT
Source	0.6 A / 117 V 0.4 A / 220—230 V 0.4 A / 230—240 V
Acoustic noise level	Operation mode: 70 dB (A) or less Standby mode: 40 dB (A) or less (According to ISO 7779)
External dimensions	513 mm (W) x 491 mm (D) x 217 mm (H) (20-1/4"(W) x 19-3/8"(D) x 8-9/16" (H) )
Weight	15.5 kg (34.2 lb.)
Operation temperature	5 — 40 °C (41 — 104 °F)
Operation humidity	35 — 75% ( no condensation )
Accessories	Power cord: 1, Dust collector hose and duct: 1, Character cutter: 1, Blade for sheet: 1, Blade holder: 1, Oil-based fiber-tipped pen : 1, Tool adapter: 1, Hexagonal screw driver: 1, Spanner: 1 Test material: 1 set, Adhesive sheet for securing material: 1, CAMM SCRIBE DRIVER for Windows 95: 1, User's manual: 1

# Interface specification

[Parallel]	
Standard	In compliance with the specification of Centronics
Input signal	$\overline{\text{STROBE}}$ (1BIT), DATA(8BIT)
Output signal	BUSY(1BIT), $\overline{\text{ACK}}$ (1BIT)
I/O signal level	TTL level
Transmission method	Asynchronous
[Serial]	
Standard	RS-232C specification
Transmission method	Asynchronous, duplex data transmission
Transmission speed	9600
Parity check	None
Data bits	8 bits
Stop bits	1 bit
Handshake	Hardware

## Parallel connector (in compliance with specifications of Centronics)

Signal number	Terminal number	Signal number	Pin connection
NC	36	18	HIGH**
HIGH*	35	17	GND
NC	34	16	GND
GND	33	15	NC
HIGH*	32	14	NC
NC	31	13	HIGH*
GND	30	12	GND
GND	29	11	BUSY
	28	10	$\overline{\text{ACK}}$
	27	9	D7
	26	8	D6
	25	7	D5
	24	6	D4
	23	5	D3
	22	4	D2
	21	3	D1
	20	2	D0
	19	1	$\overline{\text{STROBE}}$

## Serial connector (RS-232C)

Signal number	Terminal number	Signal number	Pin connection
NC	25	13	NC
NC	24	12	NC
NC	23	11	NC
NC	22	10	NC
NC	21	9	NC
DTR	20	8	NC
NC	19	7	SG
NC	18	6	DSR
NC	17	5	CTS
NC	16	4	RTS
NC	15	3	RXD
NC	14	2	TXD
		1	FG

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 Roland

**CS-20**