7 Operation Guide [Scanning Section]

Attach the Sensor Unit

NOTICE	Attach the sensor unit securely so that it does not come loose during cutting.
	Perform installation and removal of the sensor unit while the cover is attached. If the cover is not present, the probe may be damaged if the sensor unit should fall or be dropped.

Before attaching the spindle unit, make sure the power to the Modela is switched off.

1 If the spindle unit is installed on the carriage, then remove it. Do this by following the steps in "Attach the Spindle Unit" in reverse order.
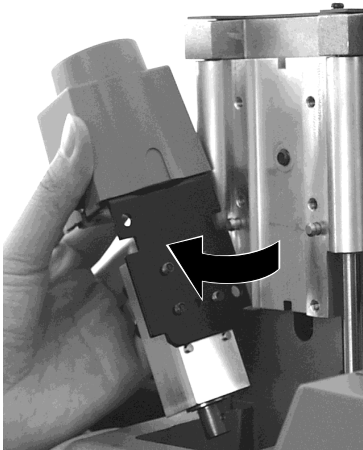

2 Engage the notch on the sensor unit with the area of the carriage shown in the figure, and press down gently with your hand.
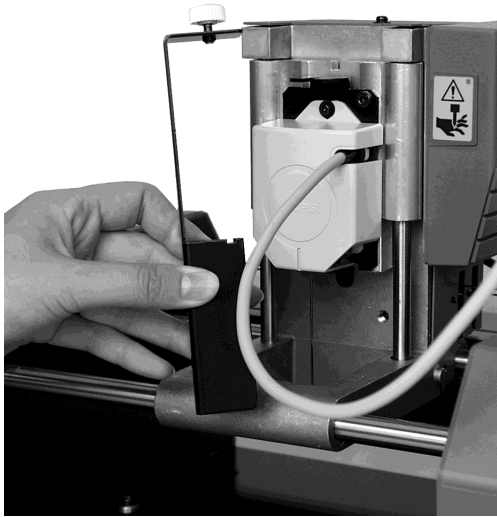

3 Insert the cap screws at the locations shown in the figure, and tighten them loosely using the included hexagonal wrench (size : 3 mm). After attaching all four screws in this way, tighten them securely.
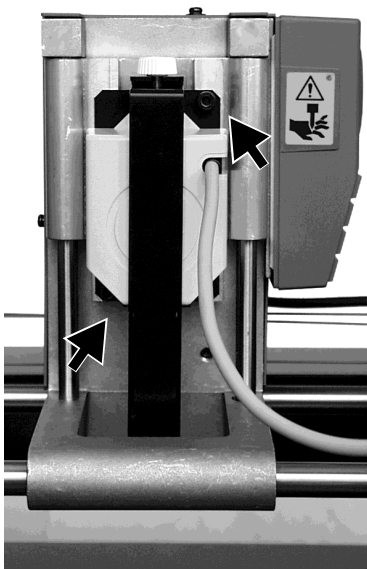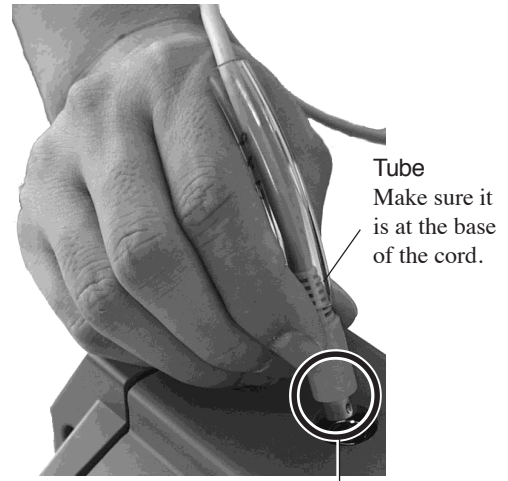

4 While gently pressing down on the cover with one hand, loosen the screw shown in the figure.
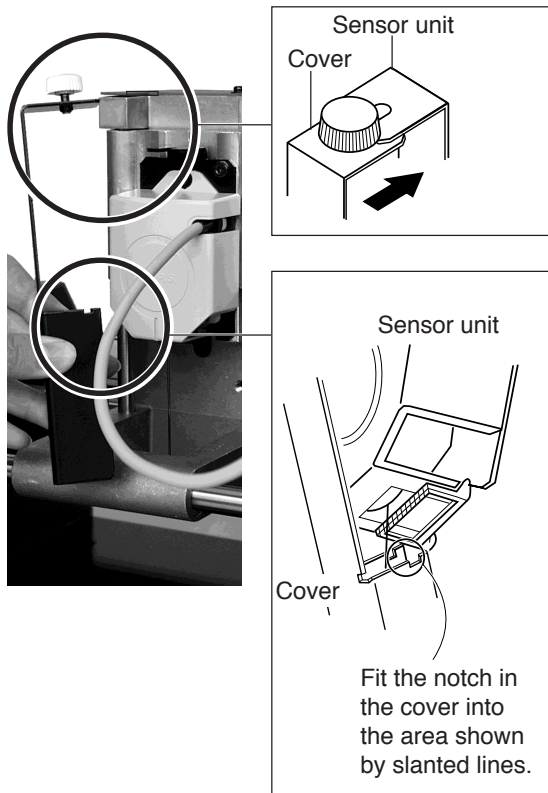
Screw
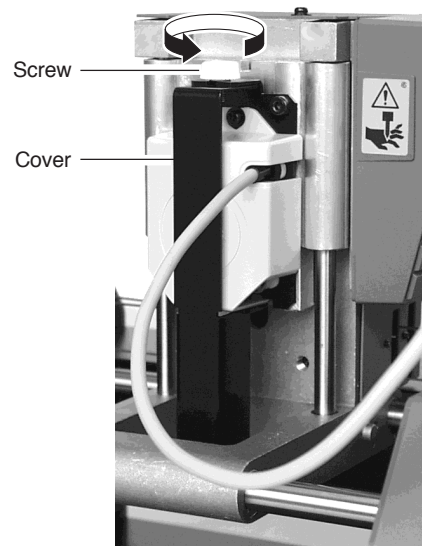
Cover

5 Pull the cover back to remove it.

6 Make sure the tube is at the position shown in the figure.
Insert the plug for the sensor unit into the jack.

Tube
Make sure it is at the base of the cord.

Position the connector so the arrow points to the back of the unit and insert.

Detaching the Sensor Unit

1 Fit the cover onto the sensor unit as shown in the figure.

Sensor unit

Cover

Sensor unit

Cover

Fit the notch in the cover into the area shown by slanted lines.

2 While gently pressing down on the cover with one hand, tighten the screw shown in the figure.
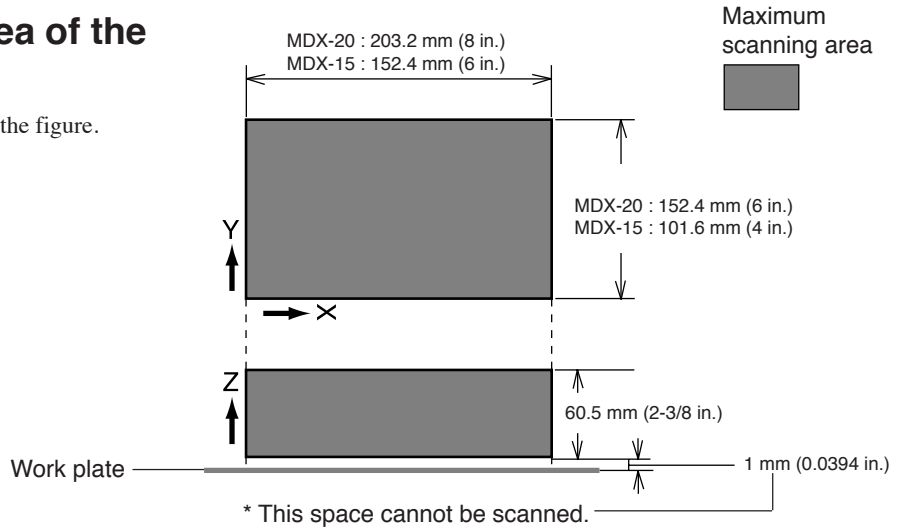
Screw

Cover
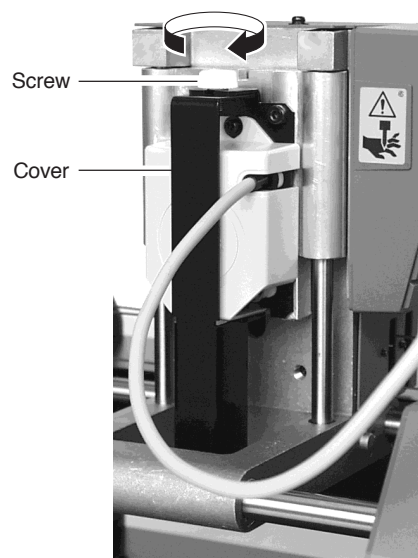
3 Remove the sensor unit by following steps 2, 3, and 6 of "Attach the Sensor Unit" in reverse order.
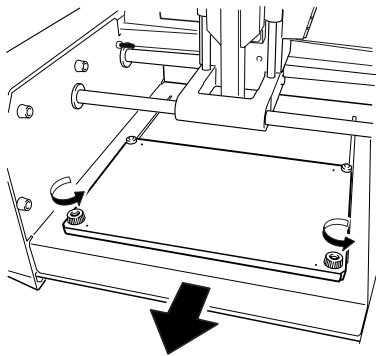
Load the Object to Be Scanned on the MODELA

The sensors for the MODELA are highly sensitive, and can even scan three-dimensional objects made out of clay.
You can usually perform scanning if the three-dimensional object is of a composition and configuration that can retain its shape.
However, the pressures that the sensors detect are from several grams to several tens of grams, so you cannot scan objects whose shape changes when touched by the sensors. (Pressure may fluctuate, depending on the composition of the object being scanned.)
For instance, it may not be possible to scan something like a fuzzy stuffed animal or rubber.
Depending on the shape you're scanning, a maximum error equal to the radius of the probe (0.5 mm) may occur.

Maximum scanning area of the MODELA

The maximum scanning area is shown in the figure.

Maximum scanning area

MDX-20 : 203.2 mm (8 in.)
MDX-15 : 152.4 mm (6 in.)

MDX-20 : 152.4 mm (6 in.)
MDX-15 : 101.6 mm (4 in.)

Y

X

Z

60.5 mm (2-3/8 in.)

Work plate

1 mm (0.0394 in.)

* This space cannot be scanned.

1 Remove the screws shown in the figure and detach the work plate.

3 Install the work plate on MODELA and tighten the screws.
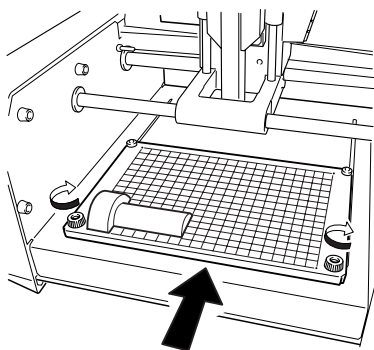
Press in all the way, until flush.

2 Orient so the surface with the grid faces up.
Mount the object to be scanned.
Secure the object to be scanned in place on the work plate for scanning.
Mount the object to scan securely in place so that it does not move during scanning.
The grid on the table serves as a guide for mounting the object to scan.
It does not indicate the scanning area for Dr. PICZA.
The scale is in 10 mm (3/8 in.) units.

When the shape has a flat bottom and is easy to secure in place
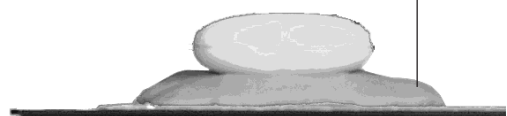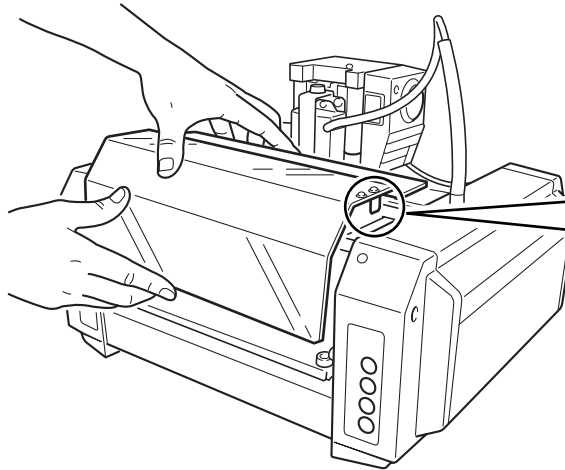
Secure in place with double-sided tape.

When the bottom is uneven and difficult to secure in place
When scanning as far as the bottom surface of the object to be scanned

Make a base using clay, and press the object into the clay base from above to secure it in place.
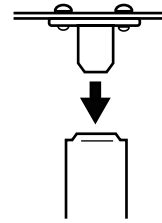
Attach the Front Cover

Attach the front cover.

Fit the cover plate into place from above so that it goes into the portion shown in the figure.

Powering ON

NOTICE   Before switching on the power to the MODELA, turn on the computer.

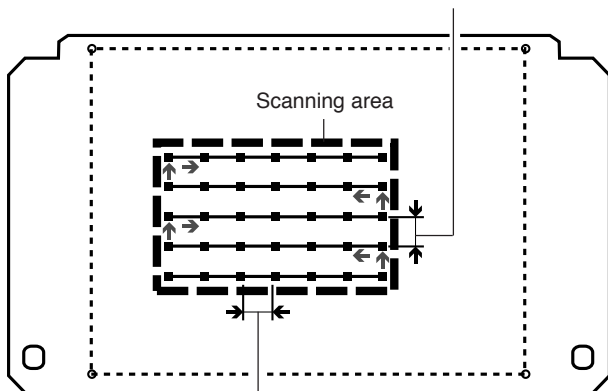**1** Press the STANDBY key.
The STANDBY LED lights up.

2 The unit performs initial operation and stops, and the SCANNING MODE LED lights up.

Setting Scanning Conditions and Starting Scanning

About scanning conditions and the scanning area

Y SCAN PITCH

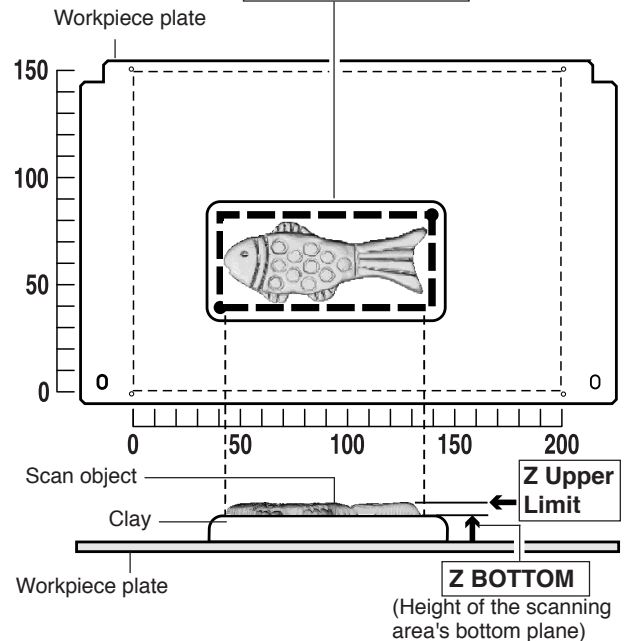(Spacing of adjacent scan points along the Y axis)

Scanning area

X SCAN PITCH

(Spacing of adjacent scan points along the X axis)

——— : Scan path (bidirectional scanning)

■ : Scan points

Scanning Area

Workpiece plate

150

100

50

0

0   50   100   150   200

Scan object

Clay

Workpiece plate

Z Upper Limit

Z BOTTOM

(Height of the scanning area's bottom plane)

* If you have made a clay base, the height of the clay is taken to be the Z-axis reference surface.
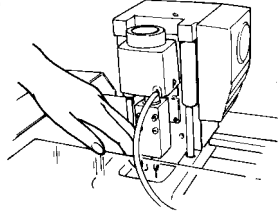
Setting scanning conditions and starting scanning

⚠CAUTION

🚫 **During cutting or scanning, keep hands away from the cutting tool and the probe.**
Doing so may result in injury.

Start Dr. PICZA and make the settings for scanning resolution, the lower limit for the height of the surface to scan, and the scanning quality.
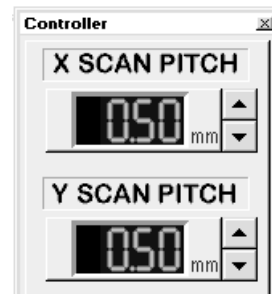
1 Click ⊞ on the Dr. PICZA.

The Controller window opens.
When Dr. PICZA is started, the Controller window is already open.

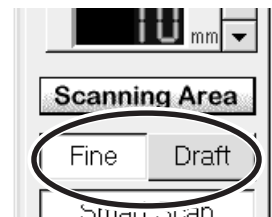**2** Make the settings for X scan pitch and Y scan pitch.

3 Make the setting for Z bottom.
If you have made a clay base, the height of the clay is taken to be the Z-axis reference surface.

4 Make the selection for scanning quality.

5 Select [Smart Scan]. When this is selected, MODELA identifies and limits the scanning area before performing scanning (X and Y directions only).
To specify the scanning area manually, deselect [Smart Scan], then click [Set Scanning Area]. For more information on how to specify this, see "Setting the Scanning Area" in the next section.

For detailed description of the available Controller buttons, please refer to the help screens for Dr. PICZA.

6 Click [SCAN] .
Scanning starts.
(During scanning, the sensor may emit a transmission sound, but this is normal.)

If You're Using Windows NT4.0/2000/XP

If the printer port for the Windows driver and the communication port for Dr. PICZA are set to the same port, you cannot use Dr. PICZA. To perform scanning, you need to temporarily set the Windows driver printer port to a different port. After you finish scanning, return the setting for the Windows driver to its original value.

Use the following examples as a guide to determine the amount of computer memory required to perform scanning.

* The figures shown below are the amounts used by Dr. PICZA alone. They do not take into account the amounts used by the operating system or other programs.

Example: Required memory when scanning a 100 mm x 100 mm (3-15/16 in. x 3-15/16 in.) area

- Scanning at a pitch of 0.05 mm x 0.05 mm (0.002 in. x 0.002 in.) : Approx. 2 GB
- Scanning at a pitch of 0.1 mm x 0.1 mm (0.004 in. x 0.004 in.) : Approx. 500 MB
- Scanning at a pitch of 0.5 mm x 0.5 mm (0.020 in. x 0.020 in.) : Approx. 20 MB

Setting the scanning area

If you wish to limit the scanning area, such as in cases where you wish to scan only a portion of an object, make the settings as described below.

1 Click [Scanning Area] in the Controller window. The [Scanning Area] dialog box appears.

3 Click [Begin Area Test].
The sensor moves to a position above an outer point on the scanning area that has been set. Make sure the scan object that has been secured in place lies within the area.
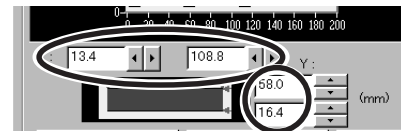

2 Make the settings for the scanning area.
Make the settings to match the location where the scan object is secured in place.
Either of the following two methods can be used to make the settings.

- Use the mouse to move the blue frame on screen.
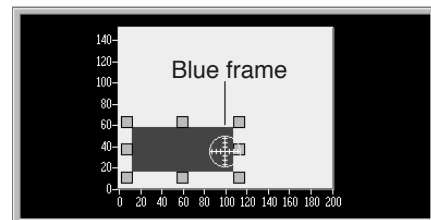
- Enter the numerical values for the upper-right and lower-left points.

The size of the on-screen scanning area (shown in blue) changes to match the values that are entered.

4 Click [Z Upper Limit].

The cursor ⊕ is displayed on the Z upper-limit setting on screen.

Specify the highest position of the scan object.

Clicking [Apply] or double-clicking on the target lowers the sensors to the target's center position.

If the target is displaced, redo the settings.

* Set the Z upper limit to the highest position on the object to be scanned. During scanning, if the sensor detects a position higher than the Z upper-limit setting, the setting is cleared and scanning continues with the greatest scan height of Dr. PICZA as the Z upper limit.
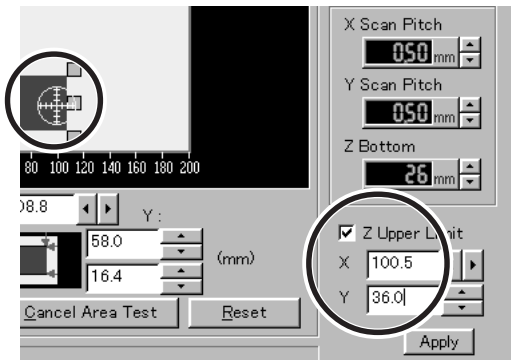
5 After determining the scanning area, click [OK].

6 Check the scanning conditions in the Controller window one more time, then click [SCAN]. Scanning starts. (During scanning, the sensor may emit a transmission sound, but this is normal.)

- For the scanning area and Z upper limit, please refer to "7 Operation Guide [scanning section] About scanning conditions and the scanning area".
- For detailed description of the available Controller buttons, please refer to the help screens for Dr. PICZA.

Cancels scanning/Pauses scanning

Cancels scanning. Any data scanned before being canceled remains in memory.

Scanning pauses and the table moves toward the front of the unit.
Click [VIEW] again to resume scanning.

Saving Scanned Data

1 Click [icon] and choose [Save].

The [Save As] dialog box appears.

2 Choose the desired location for saving the file, enter a file name, and click [SAVE].

The extension ".pix" is appended to the file name.

If you want to export the data as a file in DXF or VRML format, please refer to the help screens for Dr. PICZA.

Edit the Scanned Data

The shape of an object can be edited. It is possible to vary the height, adjust the slant, or perform concave/convex inversion (height inversion) for a desired surface.

You can use the toolbar button or select [Edit] on the menu bar.

Please refer to the help screens for Dr. PICZA for detailed explanations of the various functions that are available.

Be sure to save the scanned data before starting to edit.

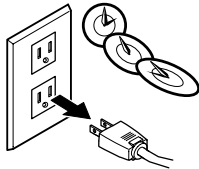When you're done editing, be sure to save your file.

When Scanning Is Finished

⚠CAUTION

When not in use for several hours, unplug the power-cord plug from the electrical outlet.

Failure to do so may result in danger of shock, electrocution, or fire due to deterioration of the electrical insulation.

1 Press the STANDBY key to switch off the power.

2 Remove the scan object from the table.

When not in use

- Remove any clay from table, and store the clay so that it will not dry out.
- Unplug the power-cord plug from the electrical outlet.

Dr.PICZA

For information on how to use Dr. PICZA, see "7 Operation Guide [Scanning Section]."
This section describes the controls for Dr. PICZA.

This unhides and hides the controller window. At the controller window, you can make the settings for the various scanning parameters.

These choose how an object moves when dragged.

This displays the top surface of an object.

These zoom the view of an object in or out.

This displays the object, filling the view area.

These choose how an object is drawn.

These adjust the slant of an object.

These display the coordinates of the point chosen with the mouse pointer.
Clicking a start point and an end point shows you the distance between the two points.

This undoes the very last operation.

These color a surface of the object.

These specify the edit area for three-dimensional data.

This specifies the range to rescan.

These edit three-dimensional data.

This deletes data in the selected range.

This saves data in various file formats.

This starts MODELA Player.