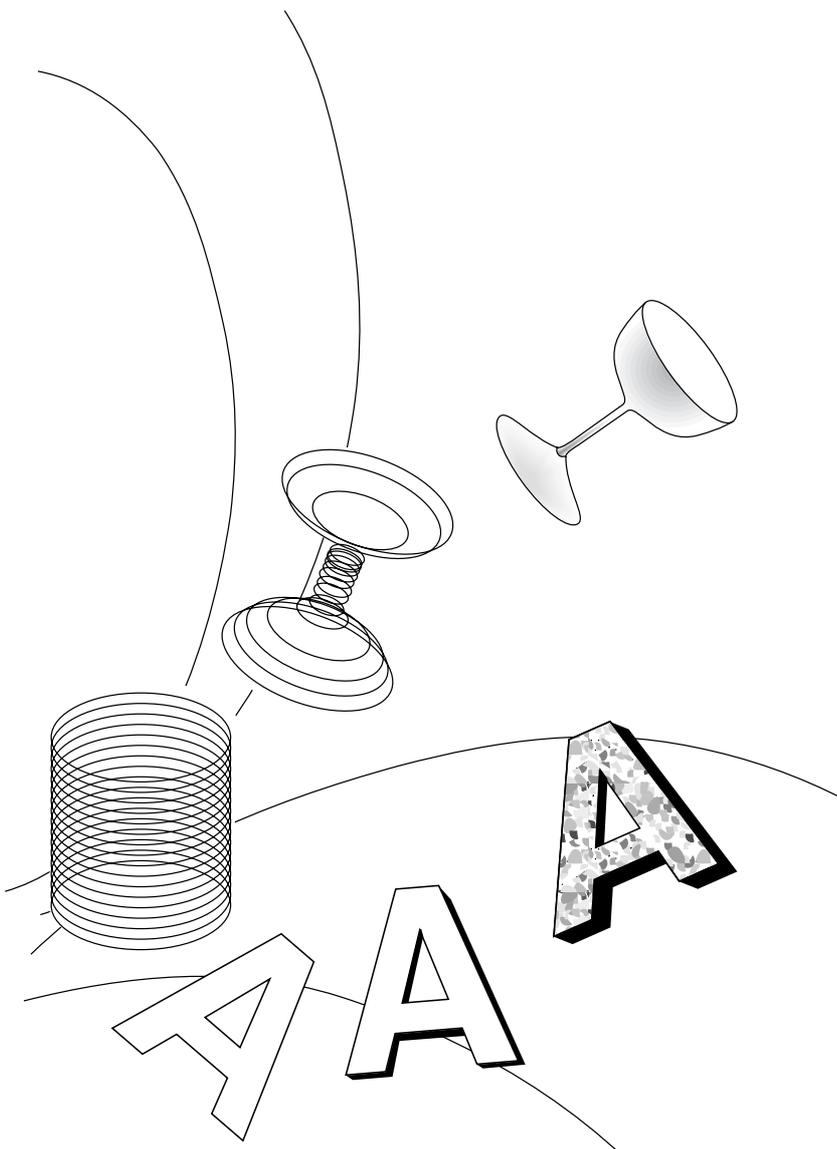# MODELA
3D PLOTTER

User's Manual for Included Software

Thank you very much for purchasing the MODELA.

• 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.

Included Software

● MODELA 3D DESIGN
● MODELA 3D TEXT
● MODELA PLAYER
● MODELA DRIVER for Windows® 95

Operating Environment

● Computer
  Personal computer with Windows 95 installed
● CPU
  i486SX or better (Pentium 100 MHz recommended)
● Memory
  8 Mbytes or more (16 Mbytes or more recommended)
● Hard disk
  A hard disk with at least 3 Mbytes of free space is required.
● Floppy-disk drive
  A floppy-disk drive that can read 2HD disks is required.
● Operating system
  Microsoft Windows 95
  (Windows 95 is not included on the installation disks. The correct version of Windows for the computer to be used must be obtained separately.)

Roland DG Corporation

Contents

1 Overview

Modela is a tool for operating three-dimensional data created on-screen using a computer.

■ MODELA 3D DESIGN

Cylinders, spheres, and other basic shapes can be used to create a wide variety of complex shapes.

| Data created with MODELA 3D DESIGN | → | Data converted with MODELA PLAYER | → | Finished article |

■ MODELA 3D TEXT

Three-dimensional text can be created simply and easily.

| Data created with MODELA 3D TEXT | → | Data converted with MODELA PLAYER | → | Finished article |

■ When using commercially available 3D application software

The included MODELA PLAYER can be used to perform cutting with the MDX-3.

| Data created with commercially available 3D application software | → | Data converted with MODELA PLAYER | → | Finished article |

■ When using commercially available 2D application software

The included MODELA DRIVER for Windows® 95 can be used to perform cutting with the MDX-3.

| Data created with commercially available 2D application software | → | Output by MODELA DRIVER for Windows 95 | → | Finished article |

2 Typographic Conventions

The explanations in this manual assume that you are already familiar with the basic operation of Windows 95.

The explanations in this manual may abbreviate the names of the included software as follows.

MODELA 3D DESIGN	3D DESIGN
MODELA 3D TEXT	3D TEXT
MODELA PLAYER	PLAYER
MODELA DRIVER for Windows® 95	DRIVER

The symbols used in this manual are as follows.

= An on-screen area to be clicked.

= After clicking, the next operation screen is displayed.

3 Installing — Installing the 3D DESIGN, the 3D TEXT, the PLAYER
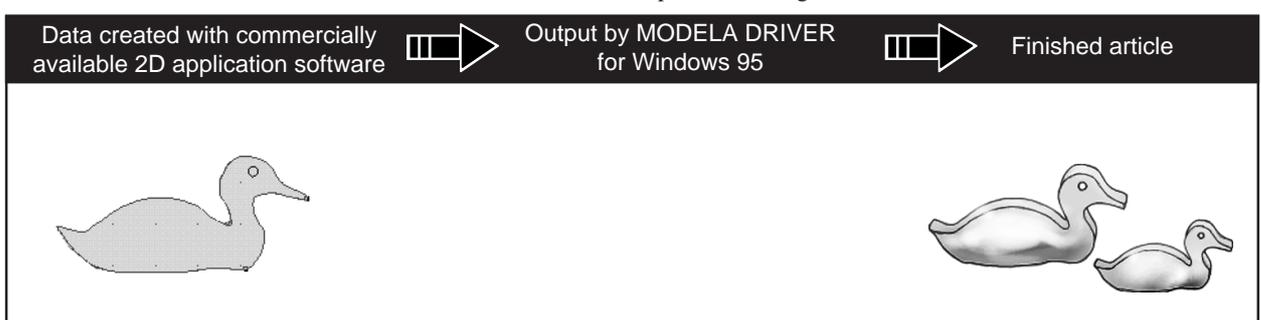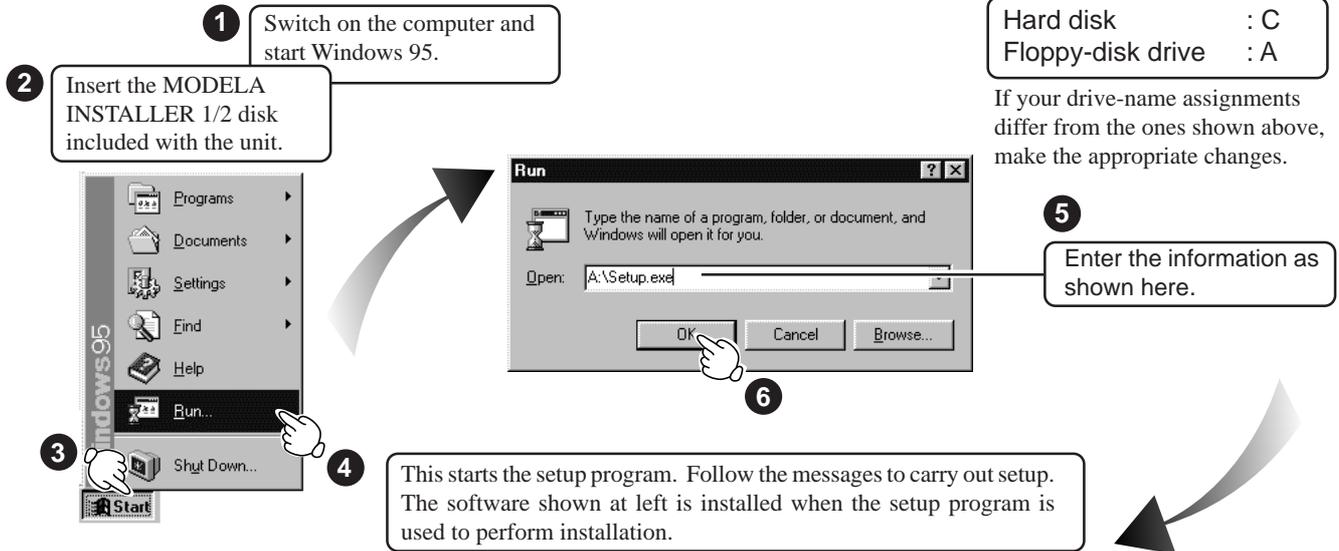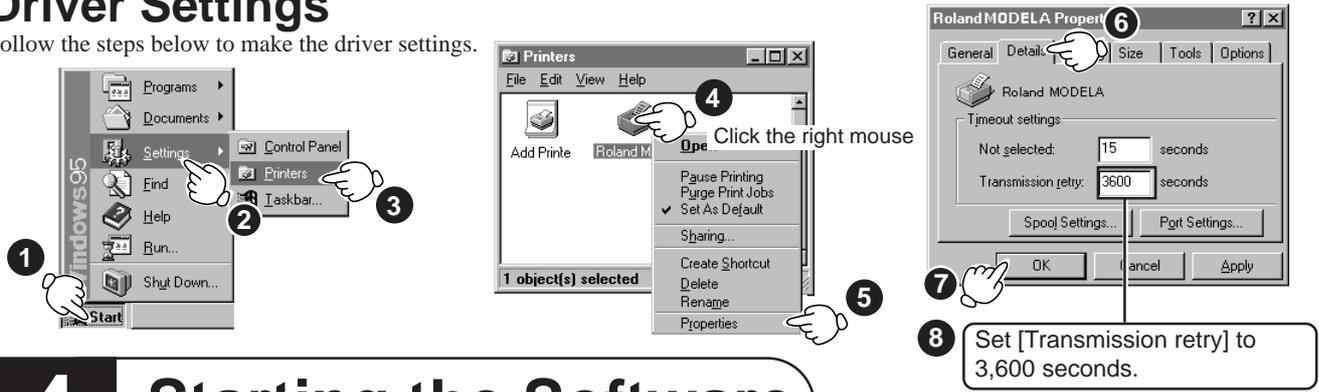
1 Switch on the computer and start Windows 95.
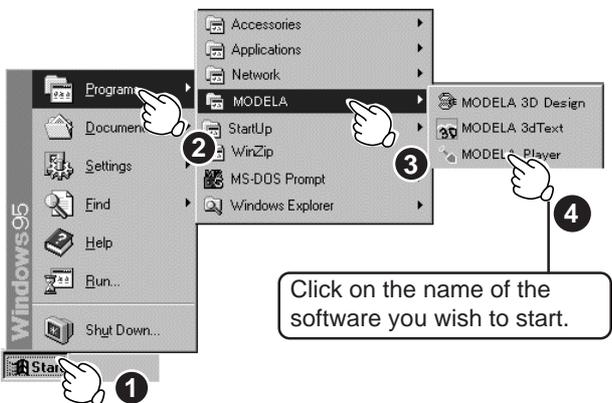
2 Insert the MODELA INSTALLER 1/2 disk included with the unit.

Hard disk	: C
Floppy-disk drive	: A

If your drive-name assignments differ from the ones shown above, make the appropriate changes.

Run

Type the name of a program, folder, or document, and Windows will open it for you.

Open: A:\Setup.exe

OK   Cancel   Browse...

5 Enter the information as shown here.

6

Programs
Documents
Settings
Find
Help
Run...
Shut Down...
Start

3 **4**

This starts the setup program. Follow the messages to carry out setup. The software shown at left is installed when the setup program is used to perform installation.

Installing the DRIVER

1 Insert the MODELA DRIVER for Windows® 95 disk included with the unit.

Add Printer Wizard

This wizard will help you to install your printer quickly and easily.

To begin installing your printer, click Next.

< Back   Next >   Cancel

5

Programs
Documents
Settings — Control Panel
Find — Printers
Help — Taskbar...
Run...
Shut Down...
Start

2 **3**

Printers
File Edit View Help

3 Printer   EPSON MJ-5000C

Generic / Text Only

1 object(s) selected

4 Double click

5 Printer name:
Roland MODELA

Do you want your Windows-based programs to use this printer as the default printer?
○ Yes
● No

Next >

12
Would you like to print a test page?
○ Yes (recommended)
● No

OK

The driver software has now been installed.

6
● Local printer
○ Network printer
Next >

7
Have Disk...
Next >

8
Copy manufacturer's files from:
A:\
OK

9
Printers:
Roland MODELA
Next >

10
Available ports:
COM1:	Communications Port
COM2:	Communications Port
FILE:	Creates a file on disk
LPT1:	Printer Port

Next >

Driver Settings

Follow the steps below to make the driver settings.

Roland MODELA Property

General | Details | Size | Tools | Options

Roland MODELA

Timeout settings

Not selected: 15 seconds

Transmission retry: 3600 seconds

Spool Settings... | Port Settings...

OK | Cancel | Apply

⑧ Set [Transmission retry] to 3,600 seconds.

Start menu:
- Programs
- Documents
- Settings → Control Panel / Printers / Taskbar...
- Find
- Help
- Run...
- Shut Down...

Printers window:

File Edit View Help

Add Printe | Roland M

Click the right mouse

Open
Pause Printing
Purge Print Jobs
✓ Set As Default
Sharing...
Create Shortcut
Delete
Rename
Properties

1 object(s) selected

---

4 Starting the Software

Starting the Software

Programs menu:
- Accessories
- Applications
- Network
- MODELA → MODELA 3D Design / MODELA 3dText / MODELA Player
- StartUp
- WinZip
- MS-DOS Prompt
- Windows Explorer

Start menu:
- Programs
- Documents
- Settings
- Find
- Help
- Run...
- Shut Down...
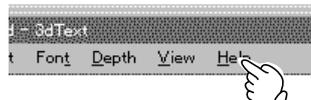
Click on the name of the software you wish to start.

About Help

If you're unsure how perform an operation while you're working, taking a look at Help can find the answer. If you're using MODELA for the first time, please be sure to read the Help screens. You can call up Help from the software menus or by clicking on the [Help] button.
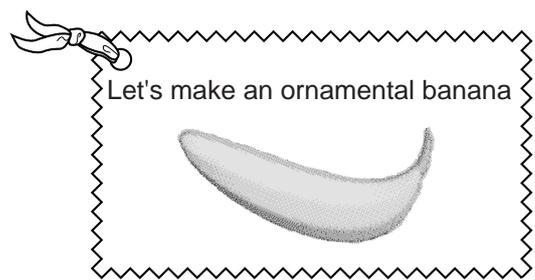
3D DESIGN

3D TEXT

PLAYER

d – 3dText

Font Depth View He

a$.dxf – MODELA Player

it View(V) Option... Help

---

5 How to Use the Included Software

Using MODELA 3D DESIGN

This section explains the steps for using MODELA 3D DESIGN to create data and cut material using the tool included with MODELA.
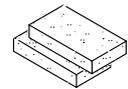
Let's make an ornamental banana

■ What to Have Ready

Tool included with MODELA

Material included with MODELA (100 x 150 x 15 mm : 2 pieces) (3-15/16" x 5-7/8" x 9/16")

Double sided tape included with MODELA

Commercially available adhesive for wood

The items shown below are required for finishing the ornament. If you just want to cut out the shape, then there is no need to have these items on hand.

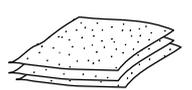Commercially available water-based acrylic paint

Commercially available Lacquer

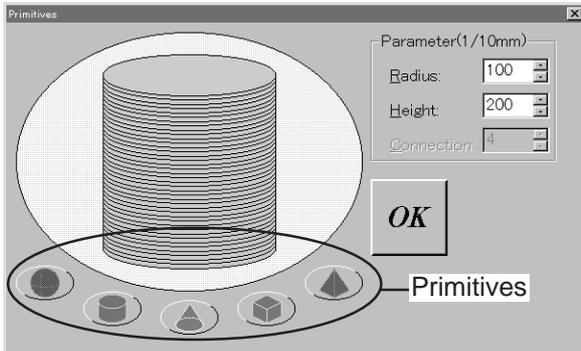Commercially available Brush

Commercially available Sandpaper

* Obtain paints which are suitable for the material used.

■ About the Operation Screens and Procedures

Follow the steps described under "3. Starting the Software" to start 3D DESIGN. Operation proceeds mainly along four screens.
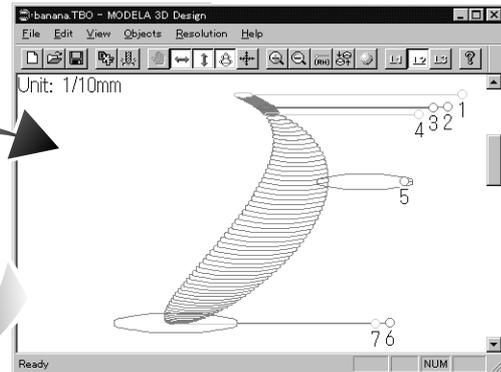
1. Select the primitive
Primitive Selection Screen

When 3D DESIGN is started, a cylinder is selected automatically, and operation advances to "2. Shape Design Screen" . If you want to work with some shape other than the cylinder, select [New] from the File menu and choose one of the five types of Primitives from the screen shown below.
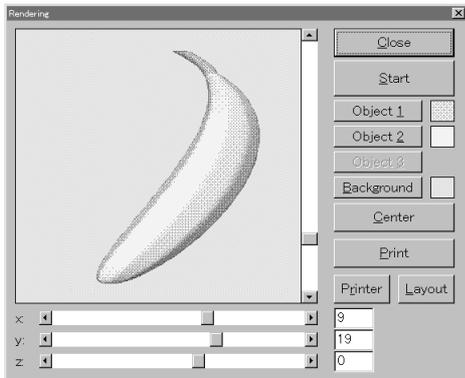
Primitives

2. Change the Primitive to the Desired Shape
Shape Design Screen

Work with the Primitive shown on-screen to change it into the shape you want.
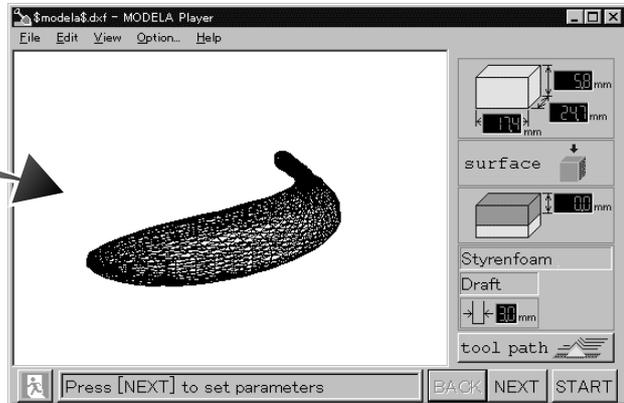
3. Perform Rendering and
Check the Final Shape
Rendering Screen

You can examine the shape you've created from a wide range of angles. This screen lets you check the details.
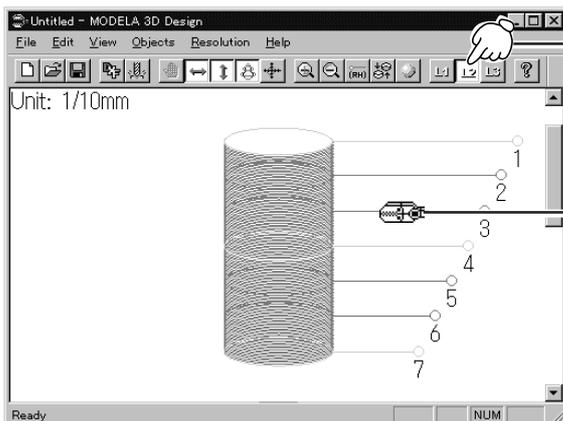
4. Perform Cutting
Cutting Condition Setting Screen

Set the conditions for cutting the data you've created.

■ Creating the Cutting Data for the Banana
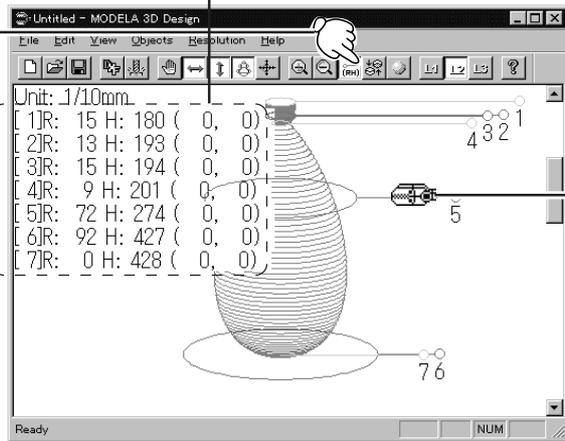
Setting the Positions for the Section

1 Select "Level2" and set seven reference lines.

2 You can see the shape of the object change when you drag any of the reference lines. Manipulate the reference lines to change the shape to the desired shape.

Inch:
```
Unit: 1/100inch
[ 1]R:   5 H:  70
[ 2]R:   4 H:  75
[ 3]R:   5 H:  76
[ 4]R:   3 H:  79
[ 5]R:  26 H: 107
[ 6]R:  33 H: 168
[ 7]R:   0 H: 168
```
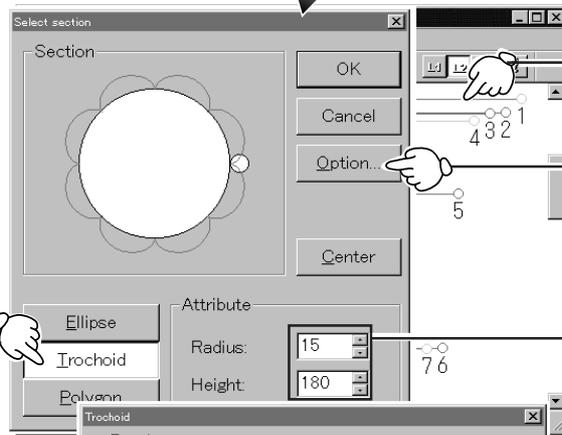
1

This displays the coordinate values.

Unit: 1/10mm
```
[ 1]R:  15 H: 180 (  0,   0)
[ 2]R:  13 H: 193 (  0,   0)
[ 3]R:  15 H: 194 (  0,   0)
[ 4]R:   9 H: 201 (  0,   0)
[ 5]R:  72 H: 274 (  0,   0)
[ 6]R:  92 H: 427 (  0,   0)
[ 7]R:   0 H: 428 (  0,   0)
```

2

Change the shape by dragging reference lines 1 through 7 until you get the same coordinates as the ones shown inside the broken lines on the left-hand side of the screen.

Setting the Shape of the Section
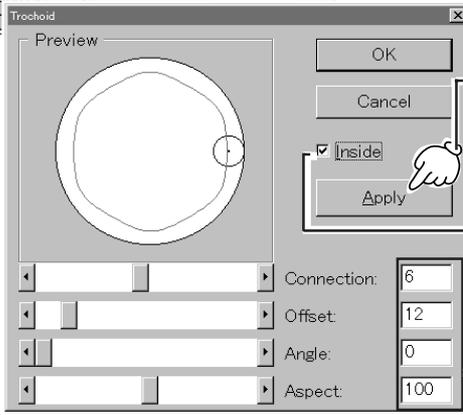
1

Click the right mouse button on reference line 1.

3

Click on the [Option] button.

2

Select "Trochoid".

The radius and height of the Section can also be entered directly as numerical values here.

Section
Ellipse
Trochoid
Polygon

Attribute
Radius: 15
Height: 180

6

Click on the [Apply] button.

4

Put a check-mark in the "Inside" check box.

5

Type in this value or use the scrollbar to make the setting.

Trochoid
Preview
☑ Inside
Apply

Connection: 6
Offset: 12
Angle: 0
Aspect: 100

10

Click [OK].

7

Click on the [Center] button.

8

Type in this value or use the mouse to move the red dot (●) and make the setting.

9

Click on the [Apply] button.

Shift Center
Center
OK
Cancel
Default
Apply
Offset
X: -10 Y: -1

inch
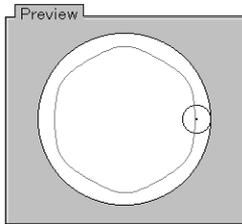X: -3 Y: 0

Inch:
X: -3 Y: 0

Select section
Section
OK
Cancel
Option...
Center
15
180

5

Using the same procedure that you followed to make the section settings for reference line 1, make the settings for the other section reference lines.

Reference line 2

Shape : Trochoid

Option...

Preview

Center

Trohcoid ✕
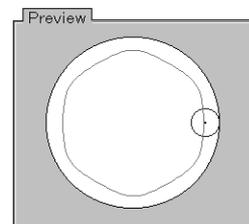
Connection: 6
Offset: 12
Angle: 0
Aspect: 100

Shift Center ✕

Offset
X: 15   Y: −1

inch
X: 6   Y: 0

Reference line 3

Shape : Trochoid

Option...

Preview

Center

Trohcoid ✕

Connection: 6
Offset: 12
Angle: 0
Aspect: 100

Shift Center ✕

Offset
X: 15   Y: −1

inch
X: 6   Y: 0

Reference line 4

Shape : Ellipse

Option...

Preview

Center

Ellipse ✕

Aspect: 100

Shift Center ✕

Offset
X: 21   Y: 0

inch
X: 8   Y: 0

Reference line 5

Shape : Trochoid

Option...

Preview

Center

Trohcoid ✕

Connection: 8
Offset: 18
Angle: 0
Aspect: 139

Shift Center ✕

Offset
X: 117   Y: 0

inch
X: 46   Y: 0

Reference line 6

Shape : Trochoid

Option...

Preview

Center

Trohcoid ✕

Connection: 8
Offset: 18
Angle: 0
Aspect: 139

Shift Center ✕

Offset
X: −80   Y: 0

inch
X: −30   Y: 0

Reference line 7

Shape : Trochoid

Option...

Preview

Center

Trohcoid ✕

Connection: 8
Offset: 44
Angle: 0
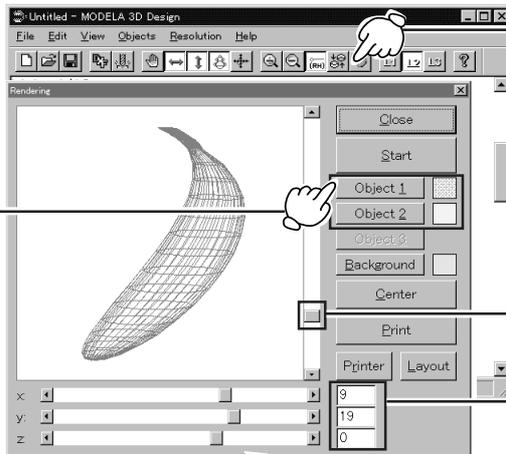Aspect: 100

Shift Center ✕

Offset
X: −80   Y: 0

inch
X: −30   Y: 0

You're done making the settings for the Section. Now let's perform rendering for this layered object.

Checking the Shape of the Object

1 Click on the "Rendering" Button

4 Color-coding as objects 1, 2, and 3 is performed for each stage of [Level]. Click to display the screen for the object's color settings. For the banana, the button for object 3 is not available.
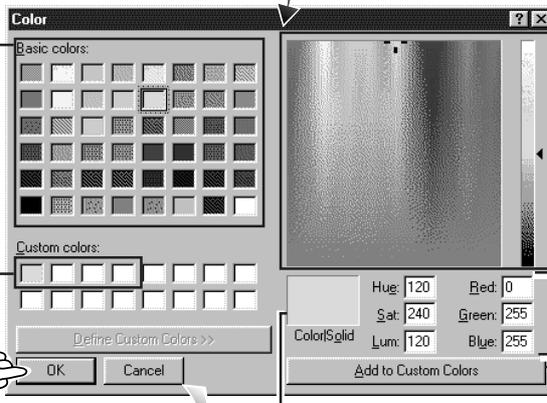
2 Use the scrollbar to adjust the size.

3 Use the numeric keypad to type in the values or use the scrollbar to set the position.

Choose the colors you have on hand.

The colors selected for objects 1, 2, and 3 and for the background are displayed.

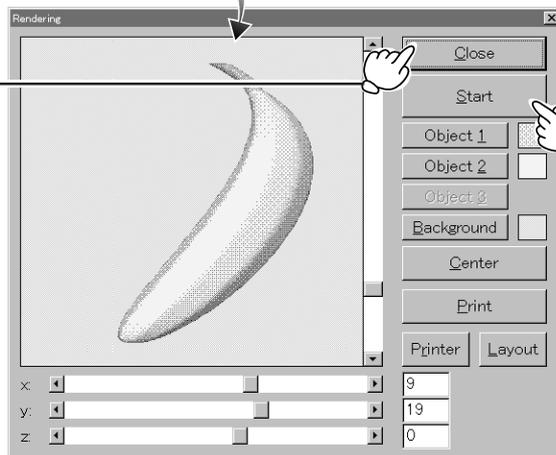**5** Once you've decided on the color, click [OK].

Choose a color from the scratch pad or type in the values to obtain the desired color.

This is not available.

The currently selected color is shown here.

7 Click this to return to the Shape Design screen.

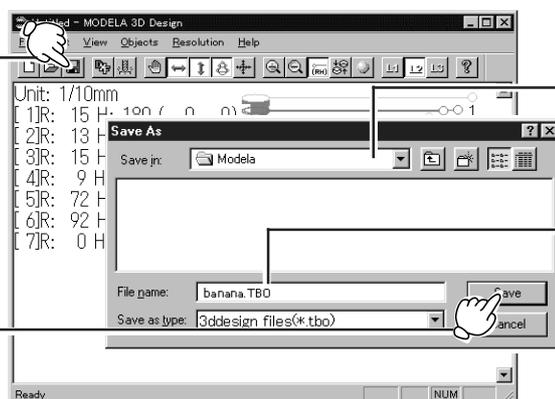**6** Click on this button to color the object you've created.
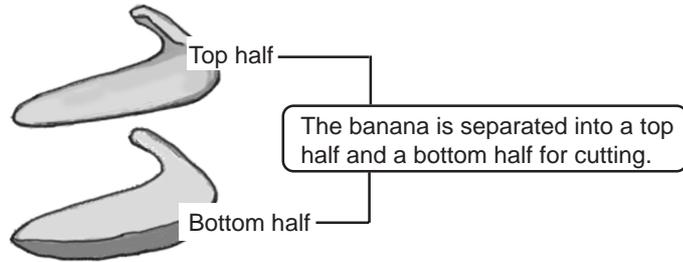
Saving Your Data

1 Click on the [Save] button.

2 Select where the file is to be saved.

3 Type in the file name. Files created with 3D DESIGN have ".TBO" as the extension.

4 Click on the [Save] button.

Now you're finished with creating the cutting data. Next let's set the cutting conditions with PLAYER.

■ Set the Cutting Conditions for the Banana

Top half

The banana is separated into a top half and a bottom half for cutting.

Bottom half

To cut the bottom half, first follow the steps on the next page to finish cutting the top half, make the settings, then repeat the steps from "-Getting Ready for MDX-3" to "- Sending Cutting Data from the Computer" to cut the bottom half.

To cut the Top half

1 Click the start button for PLAYER.

2 The PLAYER setting screen is displayed.

Set the direction of object
This surface is taken to be the top surface.

Select the direction of object

Object rotation
This is used to check the rotation of the object.

Rotate

Direction

Styrenefoam

Draft

Tool path

Start cutting by [START] button   BACK   NEXT   START

Clicking this button makes the settings sequentially from "Set the direction of object" to "Cutting Method Setting".

This displayed the path the tool takes during cutting.

Set the Dimension
Use the mouse to spin the dial or click on a numerical value to set this value.

Set the dimension
Height
30.0 mm
Length
90.7 mm
Width
128.3 mm
Resize

Inch
Height
1.181 inch
Length
3.570 inch
Width
5.047 inch

Tool Width Setting
Use the mouse to spin the dial or click on a numerical value to set the width of the tool included with MODELA.
When using a tool with a diameter of 1/8", set tool diameter to "0.125 inch or 3.17 mm."

Inch
0.125 inch
Tool dia.
3.0 mm

Material Type Setting
Set the type of the included material.

Material
Styrenefoam

Cutting Method Setting
Set "Draft" for the first pass and "Finish" for the second pass.

Finish
Draft

Set the maximum cutting depth
The value shown at right is only a guide. Make the setting for the thickness of the included material by using the mouse to change the displayed value with the spin boxes, or by clicking on the number and inputting a new value.

Set the maximum cutting depth
Depth
15.0 mm
Left
15.0 mm
Center

Inch
Depth
0.591 inch
Left
0.591 inch

To cut the Bottom half

The settings for everything except the cutting surface are the same as the conditions for cutting the top half.

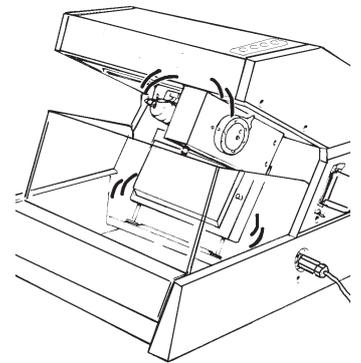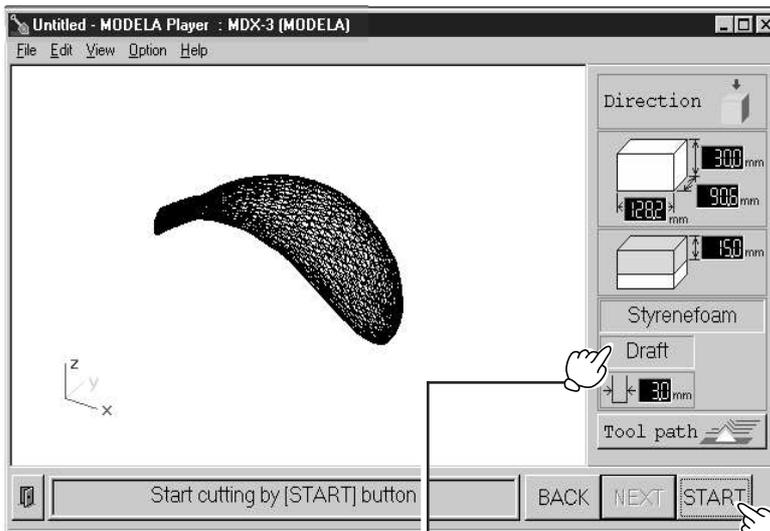Select the direction of object

☑ Rotate

This surface is taken to be the bottom surface.

■ Getting Ready for MDX-3

Load the included material and install the included tool. The steps for doing this are described in the "MODELA (MDX-3) Main unit User's Manual".

■ Sending Cutting Data from the Computer

Untitled - MODELA Player : MDX-3 (MODELA)

File Edit View Option Help

Direction

30.0 mm

128.2 mm   90.6 mm

15.0 mm

Styrenefoam

Draft

3.0 mm

Tool path

Start cutting by [START] button

BACK   NEXT   START

Cutting starts.

2

When the sending of the data for "Draft" has finished, then change the setting to "Finish" and click on the [START] button again.

1

Click on the [START] button.

■ What to Do After Cutting Ends

Remove the material that has been cut from the MDX-3. Follow the steps below to complete the object.

Use the wood adhesive to glue the top in the bottom halves together.

After the wood adhesive dries and the two halves are securely bonded together, use the sandpaper to smooth the surface.
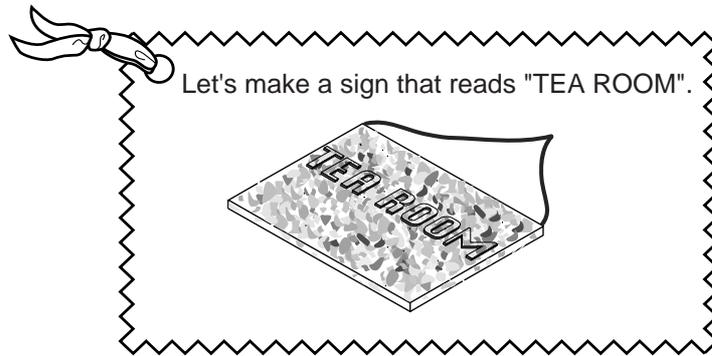
Use the water-based acrylic paints to apply a base coat. After the base coat dries, mix and apply the lacquer colors.

You're done!

Using MODELA 3D TEXT

This section provides an overview of the MODELA 3D TEXT menu and explains the steps for creating data.
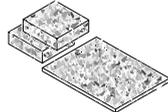
Let's make a sign that reads "TEA ROOM".

■ What to Have Ready

Tool included with MODELA

Commercially available corkboard and cork blocks (4 x 40 x 140 mm :2 pieces 3/16" x 1-9/16" x 5-9/16")

Double sided tape included with MODELA

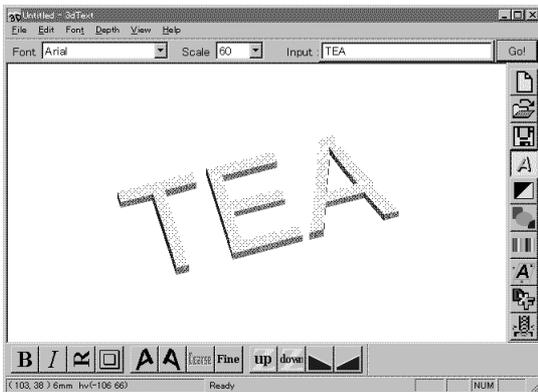Commercially available Sandpaper

Commercially available adhesive for wood

■ About the Operation Screens and Procedures

Follow the steps described under "3. Starting the Software" to start 3D TEXT. Operation proceeds mainly along three screens.
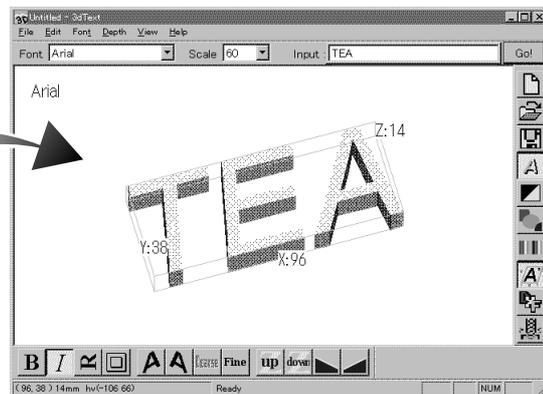
1. Type In the Text

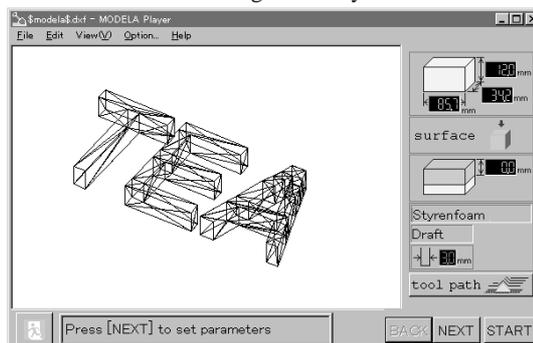Use the keyboard to enter the text to be cut.

2. Design the Text

While watching the screen, set the type and style for the text.

3. Perform Cutting
Cutting Condition Setting Screen
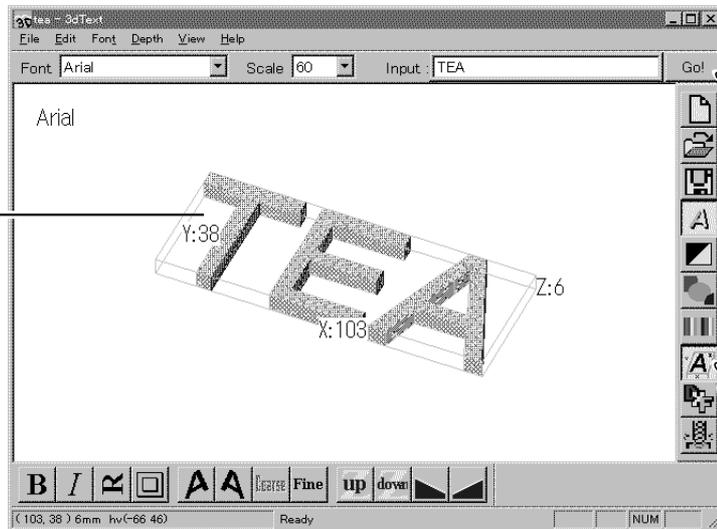
Set the conditions for cutting the data you've created.

■ Creating the Cutting Data for the Sign

Because this sign has many letters, we'll create data separated into two parts -- "TEA" and "ROOM".

Type In the Text

2 Move the mouse to the middle of the text, then drag. The text you have entered moves as you drag the mouse. Check the overall shape.

1 Type in the letters "TEA" and click the [GO] button.

3 Click here to display the size of the entire text.

Set the Text Font
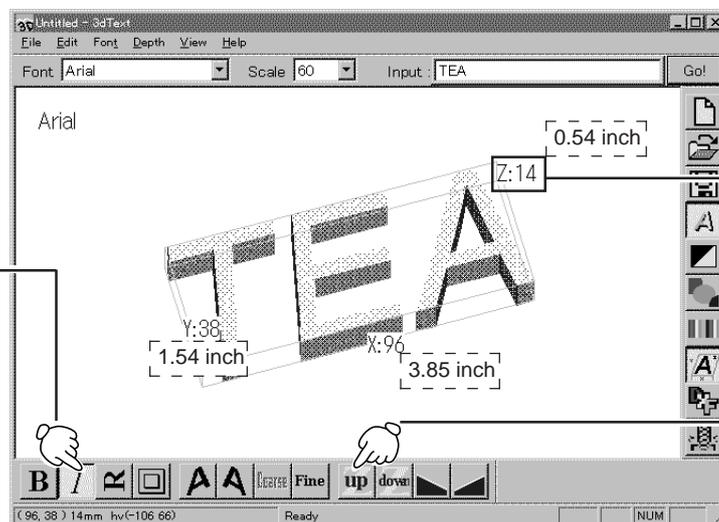
Click on " ▼ " to select "Ariel".

Click on " ▼ " or type in a value directly to set the size.

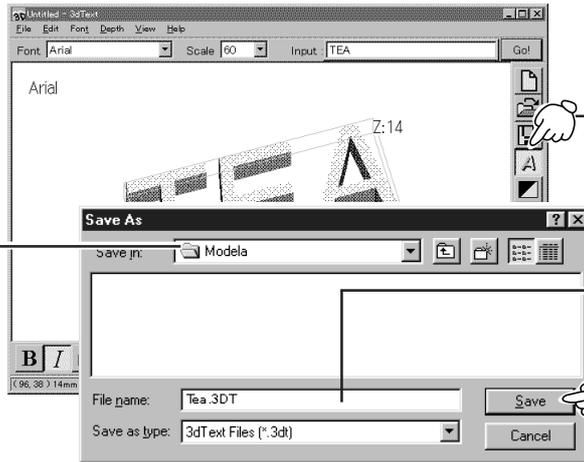Make the setting for "60" (unit:inch " 2.4") .

Editing the Text

Click this button for slanted text.

0.54 inch

1.54 inch

3.85 inch

Set the depth by clicking the button until this value is reached.

① Click on the [Save] button.

② Select where the file is to be saved.

Save As

Save in: Modela

③ Type in the file name. Files created with 3D TEXT have ".3dt" as the extension.

File name: Tea.3DT

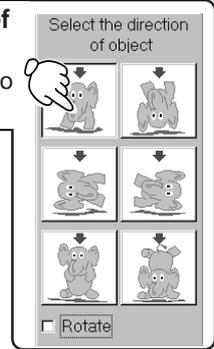Save as type: 3dText Files (*.3dt)

Save   Cancel

④ Click on the [Save] button.

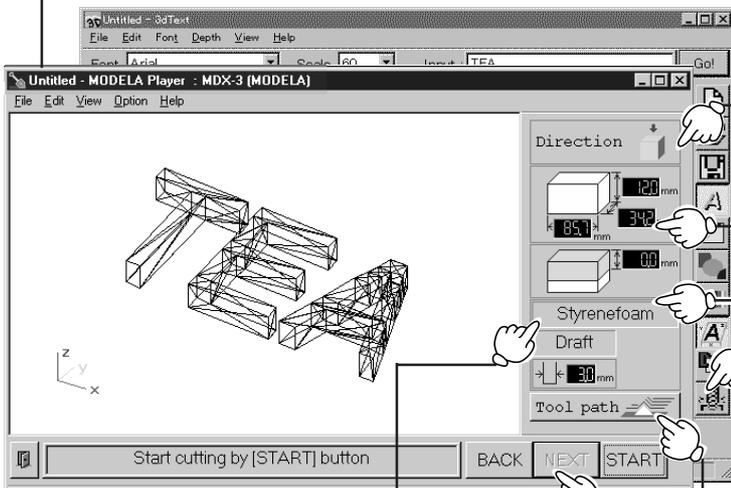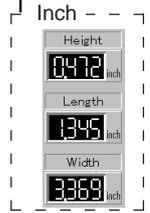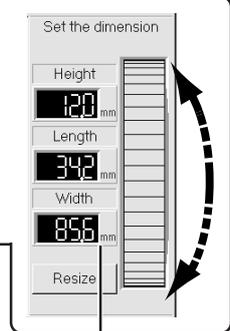# ■ Set the Cutting Conditions for the "TEA" portion

① The PLAYER setting screen is displayed.

② Click the start button for PLAYER.

Set the direction of object
This surface is taken to be the top surface.

Select the direction of object

☐ Rotate

Untitled - MODELA Player : MDX-3 (MODELA)

File Edit View Option Help

Direction

120 mm
85.1 mm   342 mm
0.0 mm

Styrenefoam

Draft
→ ← 30 mm

Tool path

Start cutting by [START] button   BACK NEXT START

Set the Dimension
Use the mouse to spin the dial or click on a numerical value to set this value. When cutting the "ROOM" portion, set only the height to 11 mm (0.433").

Set the dimension

Height
120 mm
Length
342 mm
Width
856 mm

Resize

Tool Width Setting
Use the mouse to spin the dial or click on a numerical value to set the width of the tool included with MODELA.
When using a tool with a diameter of 1/8", set tool diameter to "0.125 inch or 3.17 mm."

Clicking this button makes the settings sequentially from "Set the direction of object" to "Cutting Method Setting".
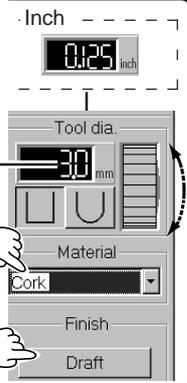
This displayed the path the tool takes during cutting.

Inch
Height
0.472 inch
Length
13.45 inch
Width
33.69 inch

Inch
0.125 inch

Tool dia.

Material Type Setting
Set to match the type of material.

3.0 mm

Cutting Method Setting
Set "Draft" for the first pass and "Finish" for the second pass.

Material
Cork

Finish

Draft

Set the maximum cutting depth
Use the mouse to spin the dial or click on a numerical value to set this value.

Set the maximum cutting depth

Depth
4.0 mm
Left
8.0 mm

Inch
Depth   Left
0.157 inch   0.315 inch

Center

When you've finished making the settings described above, follow the steps from " ■ Getting Ready for MDX-3" to " ■ Sending Cutting Data from the Computer" on page 8 to cut the "TEA" portion. When the cutting for the "TEA" portion has finished, follow the same steps to cut the "ROOM" portion.

■ What to Do After Cutting Ends

After the text has been cut, use sandpaper to smooth the cut letters and glue them to the corkboard with wood adhesive.

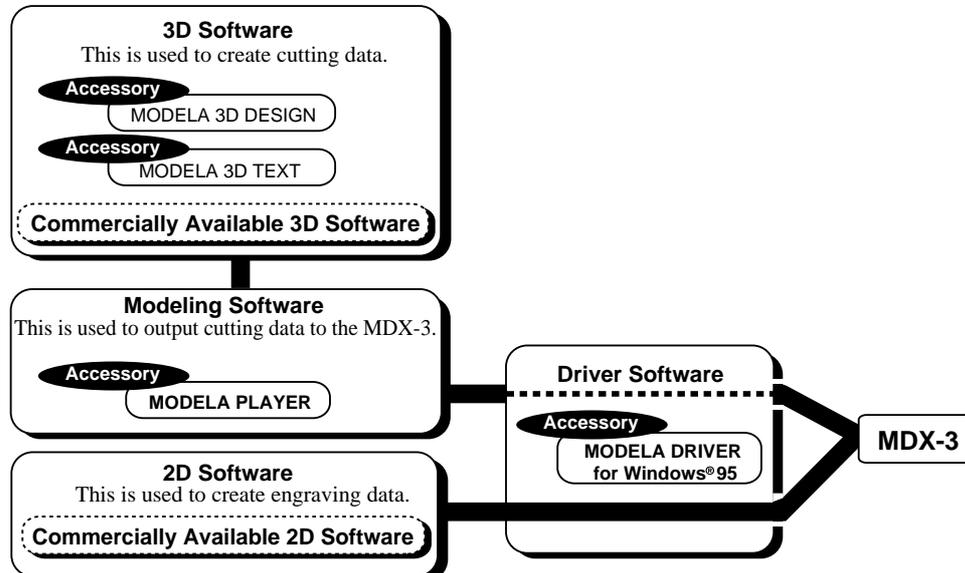# 6 When Using Commercially Available Software for Output to MODELA

There are a total of four types of software included with MODELA. These can be used and combined with other commercially available applications as shown below.

3D Software
This is used to create cutting data.

Accessory
MODELA 3D DESIGN

Accessory
MODELA 3D TEXT

Commercially Available 3D Software

Modeling Software
This is used to output cutting data to the MDX-3.

Accessory
MODELA PLAYER

2D Software
This is used to create engraving data.

Commercially Available 2D Software

Driver Software

Accessory
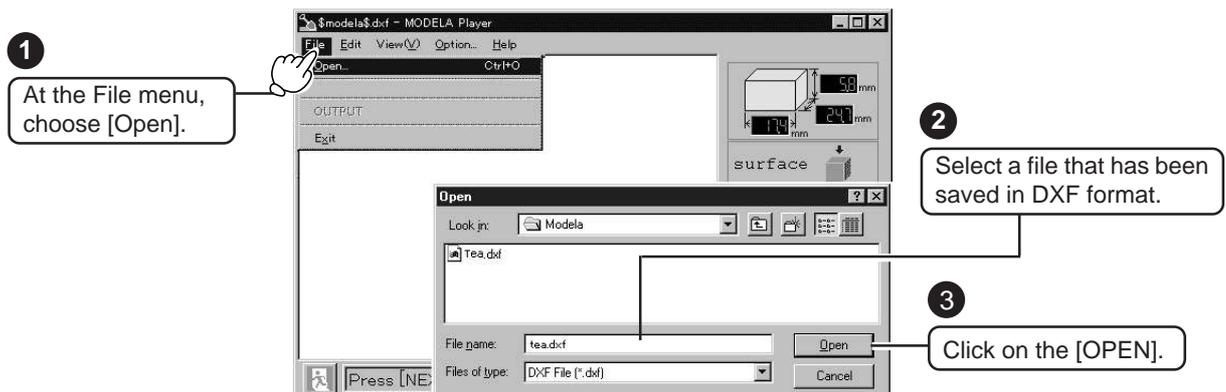MODELA DRIVER
for Windows® 95

MDX-3

MODELA PLAYER can be called up directly from the MODELA 3D DESIGN and MODELA 3D TEXT screens.
MODELA PLAYER does not use the MODELA DRIVER for Windows® 95, but it makes no difference if the setting for "Default Printer" on the computer is set to [MODELA DRIVER for Windows® 95].

When Using Commercially Available 3D Software for Output to MODELA

MODELA PLAYER can only open files in DXF format. When using commercially available software, be sure to use software that can save files in DXF format, and be sure to select DXF as the format for saving the files you work with. However, this is not necessary when MODELA PLAYER is launched directly from MODELA 3D DESIGN or MODELA 3D TEXT.

Importing Cutting Data

① At the File menu, choose [Open].

② Select a file that has been saved in DXF format.

③ Click on the [OPEN].

Setting the Cutting Conditions

After importing the file, set the conditions to match the shape of the data to be cut. For information on how to make these settings, see page 8 or page 12.

When Using Commercially Available 2D Software for Output to MODELA

The MODELA DRIVER for Windows® 95 is used when you wish to output data created with commercially available engraving software on the MDX-3.

Sending Output to the MDX-3

In the 2D software that was used to create the data, select the "Print" command to display the "Print" dialog box shown below for the data created with your 2D software. (The configuration of the dialog box may differing according to the software used.)

1 Select ROLAND MODELA as the printer to be used.

2

Make the settings to match the conditions for engraving. The methods use to load material and install a tool on the MDX-3 are the same as for three-dimensional cutting. Refer to Help for information on available commands.

7 | What to do if...

● I can't open a file.

There is not enough memory available for processing.
Close all other applications, or restart Windows. Also, Windows normally uses a portion of the hard disk for virtual memory, and it may be that there is not enough space left on the hard disk. If this is the case, free up space on the hard disk by deleting unneeded files or moving them to another disk. If the messages about insufficient memory still appears after doing this, it is recommended that you increase the amount of memory in your computer.

Make sure the file you want to open is a MODELA 3D DESIGN file.
Files which have been written using the [File] - [Output in DXF Format] command cannot be opened.

● The included software doesn't function.

- Does the computer you're using provide the correct operating environment for the included software?
Check the conditions for the included software operating environment printed on the front cover of this manual and make sure that the computer offers a suitable environment.

- Was the software installed using the setup program?
Be sure to use the setup program when installing the included software.
The setup program puts the files for each software package in the necessary locations to enable the software to be used under Windows 95.

● The MDX-3 doesn't function.

Is the STANDBY LED not flashing?
The LED flashes slowly (every 0.5 sec)
An excessive load has been placed on the tool. Switch off the power and check the combination of tool and material.

The LED flashes rapidly (every 0.1 sec)
A communication error has occurred. Switch off the power and check the cable connections and port settings for the drivers.

- Is the VIEW LED dark?
Cutting data cannot be received when the MDX-3 is in the VIEW mode. Press the VIEW key to cancel the VIEW mode.

- Was the correct port selected for the printer driver?
The port for data output is set using the printer driver (i.e., the driver selected for "Default Printer"). To make the settings for the driver's output port, see "Installing MODELA DRIVER for Windows® 95" on page 2 of this manual.

- Is the dust tray not full of cuttings?
If the dust tray is more than half-full of cuttings, press the VIEW key to stop cutting, then pull out the dust tray and empty it.

- Is the cable connected?
Switch off the power to the computer and the MDX-3, and use a parallel cable to connect the two devices.

- Is the correct type of cable used?
The type of parallel cable (printer cable) may vary according to the computer model. Make the connection with the correct type of cable for the computer. Be sure the computer and the MDX-3 are both switched off before attempting to attach or disconnect the parallel cable (printer cable).

- During cutting, the tool strikes an uncut area of the material.

Do not use a piece of material that is unnecessarily large in comparison with the object to be cut.

The material should be about 3 mm (1/8") larger than the object to be cut.
Check the Measurement system setting on the Number tab under [Control Panel] - [Regional Setting], and set this to 3 mm when the measurement system is to "Metric" or to 1/8" when the measurement system is "U.S."

- The workpiece plate is cut.

Check the setting for cutting depth. Do not set a depth that is greater than the thickness of the loaded material.
If the workpiece plate is not severely damaged, there is no problem. However, if the damage prevents the plate from gripping the material securely, it should be replaced with a new plate.

- The shape is incomplete.

- Is material of appropriate size loaded?
The loaded material should be about 3 mm (1/8") larger than the object to be cut.
If material of the same size as the object to be cut has been loaded (with no margin), the material should be positioned 3 mm (1/8") inward from the normal loading position. Check the Measurement system setting on the Number tab under [Control Panel] - [Regional Setting], and set this to 3 mm when the measurement system is to "Metric" or to 1/8" when the measurement system is "U.S."

- Is the size of the object within the cutting range for the MDX-3?
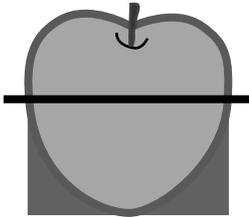Set the size of the object to a value within the cutting range for the MDX-3.

- Is the setting for the cutting surface correct?
Because the tool moves only up and down, side areas which are angled inward cannot be cut. Choose the cutting surface appropriately to avoid attempting to cut such portions.

Example:
When seen of the top, the bottom half of the apple is angled inward, and so it cannot be cut from above. The portion below the line is not cut.

In such cases, the apple should be cut as separate top and bottom halves which are then glued together.

Cutting from above

Cutting from below

Roland