



Virtual MODELA

USER'S MANUAL

Virtual MODELA is a program that simulates the movement of the tool on the screen.

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Part 1

Introduction

1-1 System Requirements

Computer

Personal computer running Windows 95, Windows 98, Windows Me, Windows NT 4.0, or Windows 2000

CPU

If you're using Windows 95 : i486SX or better (Pentium 100 MHz recommended)

If you're using Windows 98 : i486DX or better (Pentium 100 MHz recommended)

If you're using Windows Me : Pentium 150 MHz or better

If you're using Windows NT 4.0 : i486DX or better (Pentium 100 MHz recommended)

If you're using Windows 2000 : Pentium 133 MHz or better

System Memory

If you're using Windows 95 : 8 Mbyte or more (16 Mbyte or more recommended)

If you're using Windows 98 : 16 Mbyte or more (32 Mbyte or more recommended)

If you're using Windows Me : 32 Mbyte or more

If you're using Windows NT 4.0 : 16 Mbyte or more (32 Mbyte or more recommended)

If you're using Windows 2000 : 32 Mbyte or more

Hard Disk

5 MB or more of free space

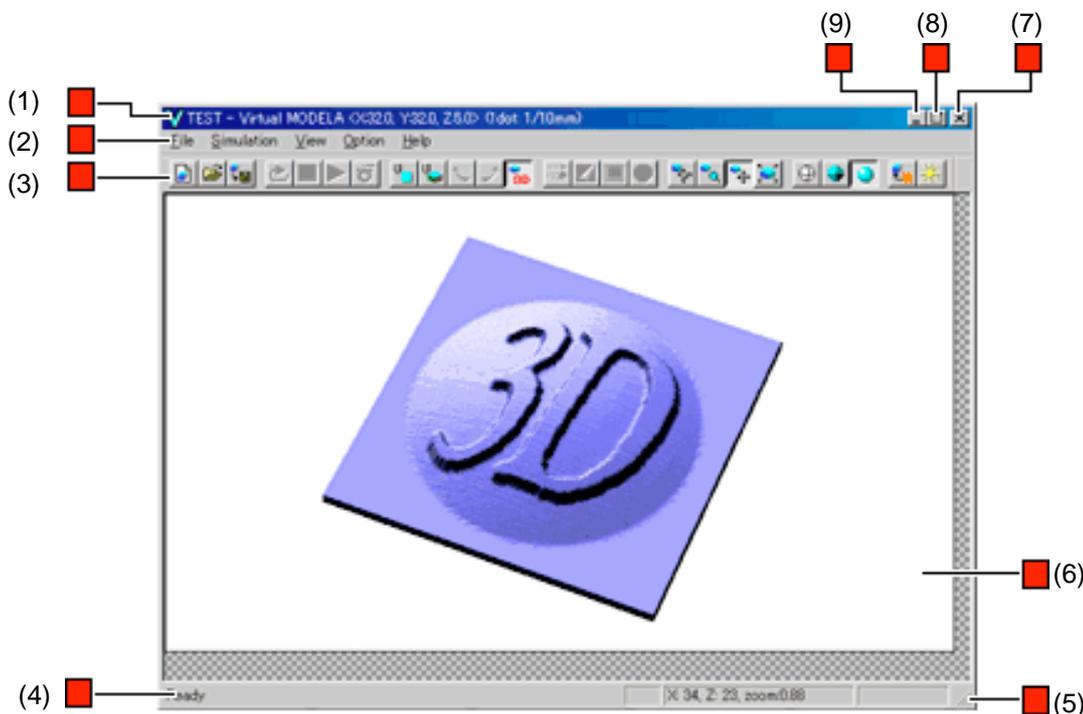
1-2 Overview of Virtual MODELA

Virtual MODELA is a program that accepts tool paths created using a cutting program from Roland DG Corp. (such as MODELA Player or 3D Engrave), and simulates the movement of the tool on the screen.

Main Features of Virtual MODELA

- You can display tool movement with animation.
You can view an animated display of what cutting of the workpiece will look like. You can choose a flat view (2D simulation) or even a three-dimensional view (3D simulation).
- You can verify the shape after cutting on the screen.
You can display a three-dimensional view of the shape after cutting and check it on the screen.
You can rotate the view to change the perspective, as well as zooming in and out.
- You can paste images on the surface of the workpiece.
You can paste images on the surface of the workpiece, as well as adding texture.
By pasting images of wood grain or images of metallic colors, you can make textures like those of actual materials.
- You can save on-screen images as files.

1-3 Names and Functions of Screen Items



(1) Title bar

This shows the file name, the program name, the size of the workpiece, and the resolution of the screen.

The window can be moved by dragging the title bar.

(2) Menu Bar

Runs the various commands for Virtual MODELA.

Related Topics [\[File\] menu](#)
 [\[Simulation\] menu](#)
 [\[View\] menu](#)
 [\[Option\] menu](#)
 [\[Help\] menu](#)

(3) Toolbar

The toolbar is provided with buttons for running Virtual MODELA commands such as [Open...] and [Save Cutting Configuration]. Moving the mouse pointer over a button displays a brief description of the button's function.

Related Topics [Toolbar buttons](#)

(4) Status Bar

This shows Virtual MODELA's state of operation and provides brief descriptions of commands.

It also shows the zoom ratio for the simulation area, the cursor location, and estimated cutting time.

(5)

When the mouse pointer is moved close to here, the pointer changes to a diagonal arrow. You can then change the window size by dragging.

(6) Drawing Area

This is the display area for 3D views. It limits the display area for the object.

Changing the size of the drawing area also changes the size of files saved with the Export command. To change the size of the drawing area, click [Option] - [Drawing Size] - [Fit to Window] or [Option] - [Drawing Size] - [Specify Size].

(7) Close button

This ends the program.

If changes made to the file being edited have not been saved, a dialog box asking if you wish to save the changes is displayed.

(8) Maximize button

This expands the window to fill the screen.

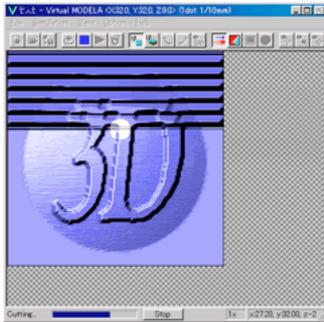
(9) Minimize button

This shrinks the window to a button on the taskbar.

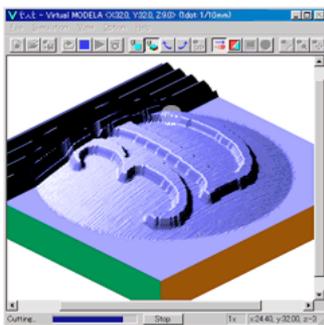
The preceding screen is for checking the shape of a cutting simulation (3D view). At this screen, you can rotate the object to change the perspective, or zoom in or out.

Virtual MODELA can also display other simulation screens: a flat view (2D simulation) and a three-dimensional view (3D simulation).

Flat view (2D simulation)



Three-dimensional view (3D simulation)



Part 2

**Operating
procedure**

Step 1: Get the tool path.

Send a tool path created using MODELA Player or 3D Engrave to Virtual MODELA.

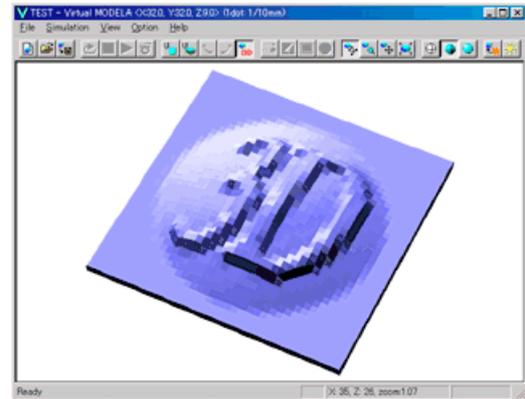
When you do this, the cutting parameters are also sent at the same time.

1. Use MODELA Player or 3D Engrave to make the settings for the cutting parameters and the process, and create the tool path.
2. Click [File] - [Output Preview].
Virtual MODELA starts and imports the tool path.
If Virtual MODELA is already running, the window does not automatically become active. To make the Virtual MODELA window active, click the taskbar in Windows.
3. At the same time that the tool path is received, the simulation starts.
To only get the tool path without starting the simulation, click [Simulation] - [Cutting-start Timing] - [Wait for Instructions].
4. To change the animation to a three-dimensional display, click .
To quit animating and make processing run faster, click  to cancel the selection.
5. If you want to check the movement of the tool again, click .

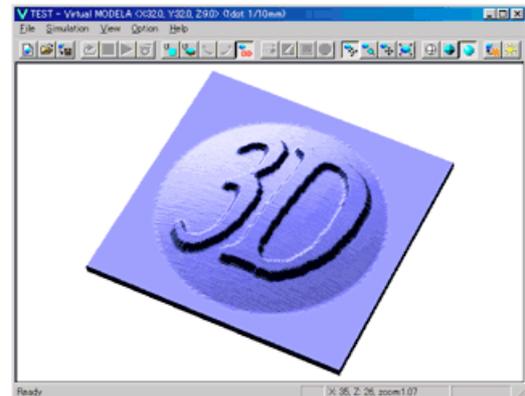
Step 2: Check the shape.

You can freely peruse the shape after the cutting simulation. You can rotate the object to change the perspective, zoom in or out, or move the display location.

1. Click  to select it.
This switches to the 3D view for checking the shape.



2. To rotate, click  and drag the object.
To zoom in or out, click  and drag up or down.
To change the display location, click  and drag to the destination.
3. To display detailed information about the image, click .

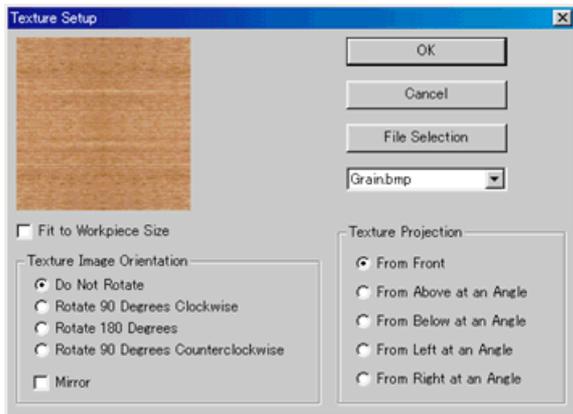


Step 3: Add color to the workpiece.

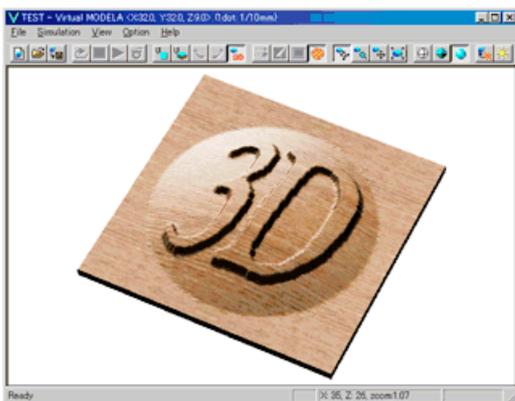
You can add color to the workpiece, making its shape easier to see or giving it a texture like the actual material.

This example describes how to paste an image on the surface of the workpiece. To make the setting for a single color, click [Option] - [Workpiece Color].

1. Click .
The [Texture Setup] dialog box appears.
2. Click [Select File].
The [Open] dialog box appears.
3. Select the drive and folder where the image file is saved.
4. Click the file to select it, then click [Open].
Alternatively, double-click the file.
5. The image you selected appears on the preview screen.
Check the image, then click [OK].



6. Click  to select it.
The image is pasted to the surface of the workpiece.



Step 4: View the time required for cutting.

You can check how much time cutting will take.

The time is an estimate calculated from the movement distances of the respective axes. Actual cutting time may vary.

1. Click  to cancel the selection.
The display returns to the simulation screen.
2. Click .
The [Cutting Data Information] dialog box appears.
3. Check the expected cutting time, then click [OK].

Step 5: Save the shape.

After simulating cutting, save the shape to a file.

The material color and the light-source location and brightness are saved along with the shape.

You can save the cut shapes for each process, such as up through draft cutting or up through finishing.

1. Click [File] - [Save Cutting Configuration].
The [Save As] dialog box appears.
2. Select the destination drive and folder for saving the file.
3. Enter the file name.
4. Click [Save].

Part 3

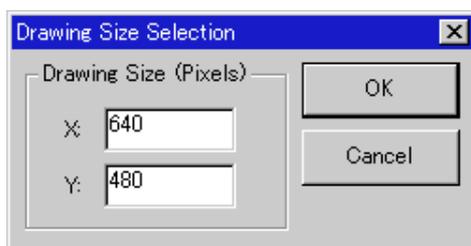
Hints and Tips

3-1 Saving the shape to an image file

This saves the on-screen image to a file.

Although you can also save 2D and 3D simulations to files, this example describes how to save a 3D view to a file. For this explanation, it is assumed that the 3D view is already displayed, and the explanation begins at that point.

1. Click [Option] - [Drawing Size] - [Specify Size]. The [\[Drawing Size Setup\] dialog box](#) appears.
2. At [Drawing Size], enter the size of the image to save to a file.



3. Click [OK].
4. To paste a texture image to the surface of the workpiece, click . To change the texture image, click . When you do this, the [\[Texture Setup\] dialog box](#) appears. For more on how to make the settings, see the explanation for the dialog box.
5. To change the color of the workpiece, [Option] - [Workpiece Color]. The [\[Color\] dialog box](#) appears. Select the color, then click [OK]. For more information, see the explanation for the dialog box.
6. To change the strength or direction of the light, click . The [\[Light-source Setup\] dialog box](#) appears. For more information, see the explanation for the dialog box.
7. Rotate the object to change the perspective, zoom in or out, or move the display location to decide on the image to save to a file. To rotate, click  and drag the object. To zoom in or out, click  and drag up or down. To change the display location, click  and drag to the destination.
8. Click [File] - [Export] - [BMP File]. The [\[Output to BMP File\] dialog box](#) appears.
9. Select the destination drive and folder for saving the file.
10. Enter the file name, then click [Save].

3-2 Increasing the speed of simulation

This explains the settings that shorten the time from the start to finish of a cutting simulation.

They select what can be omitted during simulation to optimize the processing. The following table shows setting items and values that are related to simulation speed.

Item	Fast	<---->	Slow
Animated view	Off	2D	3D
Texture mapping	Off		On
Cutting graph	Off		On
Reduced scale	1/100	<---->	1/1
Z-axis smoothing	Off		On

Animated view

When you don't want to check the movement of the tool during the simulation, you can turn off the animated view to speed up processing.

If there is no need to view three-dimensional animation, change the setting to 2D view.

Textures

When animation is on, you can turn off textures to speed up processing.

Textures are ordinarily pasted on the surfaces of completed shapes. When texture mapping is not needed for a workpiece that is in the process of being cut, turn it off.

Cutting graph

When you don't want to check the cutting volume or used blade length, you can turn off display of the graph to speed up processing.

Reduced scale

When creating a new workpiece, you can make the setting for the reduced scale (display scale) of the workpiece. A smaller reduced scale results in faster processing.

The reduced scale of the workpiece is determined automatically when the tool path is imported from MODELA Player or 3D Engrave. Therefore, to choose a reduced scale before starting simulation, make the following setting.

- At [\[Simulation\] - \[Cutting-start Timing\]](#), make the set for [\[Wait for Instructions\]](#).
- After importing the tool path, click [\[File\] - \[New Workpiece...\]](#) and choose a reduced scale.
- Click  to begin simulation.

Z-axis smoothing

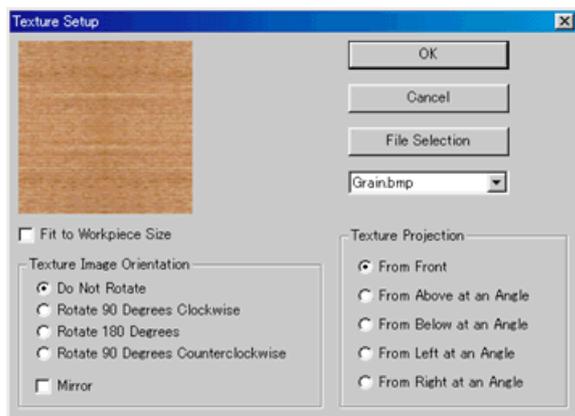
When processing for [Z-axis smoothing](#) is not needed, you can turn it off to speed up processing.

3-3 Make the workpiece look more realistic

Pasting an image on the surface of a workpiece

You can paste an image on a workpiece, making its shape easier to see or giving it a texture like the actual material. For instance, you can paste a metallic-color image to make the workpiece look like metal, or paste a wood-grain image to make it look like wood.

1. Click . The [Texture Setup] dialog box appears.
2. Click [Select File]. The [Open] dialog box appears.
3. Select the drive and folder where the image file is saved.
4. Click the file to select it, then click [Open]. Alternatively, double-click the file.
5. The image you selected appears on the preview screen. Check the image, then click [OK].



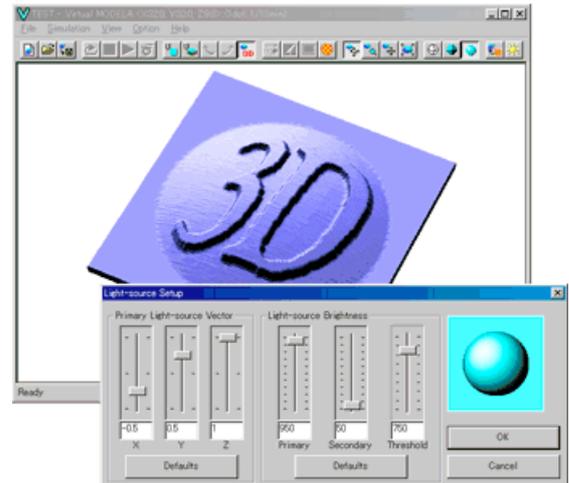
6. Click  to select it. The image is pasted to the surface of the workpiece.



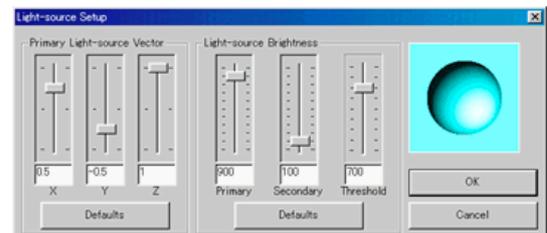
Changing the strength and direction of light

You can change the strength and direction of the light striking the workpiece to make rises and depressions easy to see and make the workpiece appear more three-dimensional.

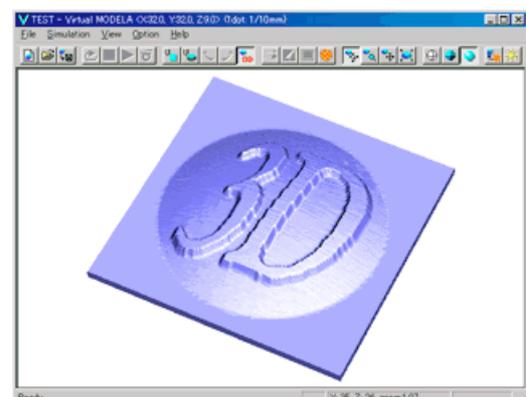
1. Click . The [Light-source Setup] dialog box appears.



2. To change the direction of the light, change the parameters for the light-source vector. While using preview to check the direction of the light, drag the X, Y, and Z sliders. You can also make changes by typing in numeric values. To go back to the initial values and start over, click [Defaults].
3. To change the strength (brightness) of the light, change the parameters for light-source brightness. While using preview to check the strength of the light, drag the [Primary], [Secondary], and [Threshold] sliders. You can also make changes by typing in numeric values. To go back to the initial values and start over, click [Defaults].



4. Click [OK].



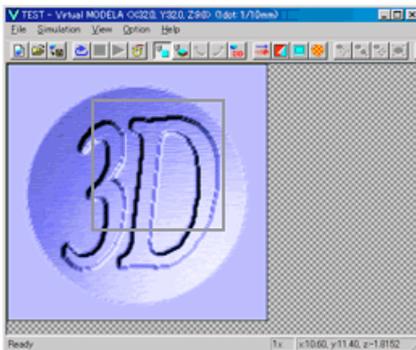
3-4 Redoing simulation for only a particular portion

You can choose the area where you want to perform a cutting simulation.

You can simulate cutting for just an area having detailed cutting. When you do this, the reduced scale changes.

This can use less memory and result in faster processing than enlarging the scale for the entire workpiece and displaying it in detail.

1. If a 3D view is shown, click  to switch to the 2D simulation screen.
2. If Set Effective Range is selected, click  to clear the selection.
3. Click [Simulation] - [Partial Zoom].
The area to enlarge is shown with a rectangle.



4. Align the rectangle with the area you want to enlarge, then click. (Right-clicking cancels partial zoom.)
Cutting simulation starts.



To cancel partial zoom, click [Simulation] - [Original Reduced Scale].

3-5 Changing the Measurement System for Numerical Values

The measurement system used for numerical values depends on the unit setting for Windows in effect when Virtual MODELA starts up. The settings for Windows can be changed with [Measurement System] on the [Number] tab under [Control Panel] - [Regional Setting].

If the measurement system has been changed, Virtual MODELA must be stopped and restarted for the new setting to take effect.

Part 4

Commands

4-1 Toolbar buttons

The toolbar is provided with buttons for running Virtual MODELA commands such as [Open...] and [Save Cutting Configuration]. Moving the mouse pointer over a button displays a brief description of the button's function.

The buttons provided on the toolbar are as shown below.



This creates a new, uncut workpiece.



This opens an existing cutting-configuration file.



This saves the shape of the present workpiece in a file.



This performs the cutting simulation over again, using the presently imported tool path.



This quits the simulation.

To resume, click .



This starts cutting.
If cutting was previously interrupted, it resumes cutting.



This displays a prediction of how much time cutting will take. The time is a general estimate.



This displays the simulation screen as a flat (two-dimensional) view.



This displays the simulation screen as a solid (three-dimensional) view.



This is for checking the shape after cutting simulation.



These change the perspective when displaying a simulation three-dimensionally.

Clicking rotates the object by 90 degrees in the direction of the arrow. You can control this even while animation is in progress.



Use these when the place being cut is hidden by the workpiece and difficult to see.

You can also change the perspective by pressing the left and right arrow keys.



This displays the movement of the tool with animation.



This switches between adding and not adding color to the surface of the workpiece.



This restricts the 3D view range.
It also determines the printing area when performing 2D simulation.



This pastes an image on the surface of the workpiece.

By pasting an image of wood or metal, you can make the workpiece look more realistic.



This rotates the object, changing the perspective. This is available only during 3D view.
Click this button to activate it, then drag the object in the direction you want to rotate it.



This zooms the view of an object in or out. This is available only during 3D view.
Click this button to activate it, then drag the object. Drag toward the top of the screen to zoom in or toward the bottom to zoom out.

 **Shortcut:** Hold down the [Shift] key and drag the object.



This changes an object's displayed location on the screen. This is available only during 3D view.
Click this button to activate it, then drag the object in the direction you want to move it.

 **Shortcut:** Hold down the [Ctrl] key and drag the object.



This enlarges or reduces what is displayed to fill the drawing size.



This displays the object using only lines. Choose this when display speed is a priority.



This applies color and shading to the object. This displays a coarser image than Detail Rendering.



This applies color and shading to the object. Choose this when image quality is a priority. Conversely, the display speed is slowest.
To paste an image on the object when Texture Mapping is on, select Precise Rendering to activate it.



This selects the image to paste on the surface of the workpiece.



This changes the direction and brightness of incident light, thereby changing the shading.

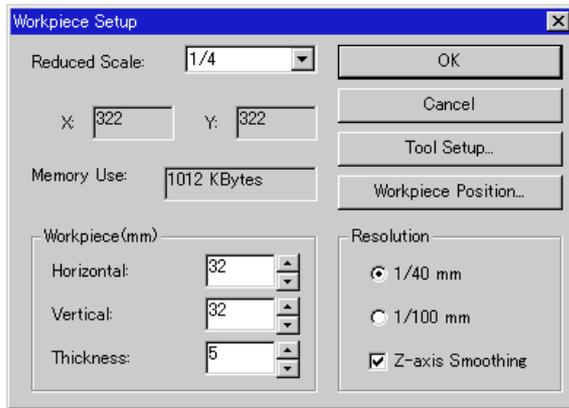
4-2 [File] menu

[File] - [New Workpiece...] command

This creates a new, uncut workpiece.
Running this command opens the [Workpiece Setup] dialog box.

 Keyboard shortcut: [Ctrl]+[N]

[Workpiece Setup] dialog box



Reduced Scale

Choose a reduced scale for the workpiece.
Reducing the scale can speed up processing for simulation and display, but the object image becomes coarser.
Conversely, a scale that approaches 1 can make the image more detailed, but speed is slowed.
It may be best to use this according to which factor takes greater priority.
When the tool path is imported from MODELA Player or 3D Engrave, the reduced scale is selected automatically so as to become a size close to the present window size.

X, Y

These show the number of points needed to display the workpiece.
Changing the present reduced scale, the workpiece size, or the resolution makes these values change.

Memory Use

This shows an estimate of the amount of memory Virtual MODELA uses at the specified reduced scale, workpiece size, and **resolution**.
This is the memory used only by Virtual MODELA, and does not include the amount used by the operating system.
If the amount of memory actually installed in the computer is much less than this amount, the amount of disk space used by virtual memory increases, and operating speed may become slower as a result.

Workpiece

Enter the size of the workpiece.
Enter the size along the X axis in "Horizontal," the size along the Y axis in "Vertical," and the size along the Z axis in "Thickness."

Resolution

This sets the resolution for the modeling machine (that is, the program resolution).
Choose either 1/40 mm (0.025 mm) or 1/100 mm (0.01 mm).

Z-axis Smoothing

When reduced scale is set to 1 or 1/2, zooming in may make small jaggedness, or steps, visible on the surface of the workpiece. These steps are usually at a level that is not visible unless you use something like a loupe, and are difficult to see with the naked eye.
Also, these steps are produced by numerical calculation, and may vary from actual cutting results due to factors such as the rigidity of the modeling machine, the composition of the tool, and the composition of the workpiece.
When this setting is active, smoothing is performed to reduce such small steps. To make the on-screen display match what you see with the unaided eye, activate this setting.

Tool Setup... button

Enter the specifications for the tool that was selected when creating the tool path.
Simulation is carried out using this tool.
When the tool path is imported from MODELA Player or 3D Engrave, the tool specifications (blade shape, tool diameter, and so on) are also imported at the same time. This means there is normally no need to make these settings.
Clicking this button displays the [Tool Setup] dialog box.
To change the tool specifications after closing the dialog box, click [Simulation] - [Tool Setup...].

Workpiece Position... button

Enter the position of the workpiece loaded on the modeling machine.
Specify the lower-left point of the workpiece at the number of millimeters (or the number of inches) from the X- and Y-axis origin point.
Clicking this button displays the [Workpiece Loading Position] dialog box.
To change the loading position after closing the dialog box, click [Simulation] - [Workpiece Loading Position...].

[File] - [Open...] command

This opens an existing cutting-configuration file.
Running this command opens the [Open] dialog box.

 Keyboard shortcut: [Ctrl]+[O]



[File] - [Save Cutting Configuration] command

This saves the shape of the present workpiece in a file. You can save the cut shapes for each process, such as up through draft cutting or up through finishing. The material color and the light-source location and brightness are saved along with the shape. Running this command opens the [Save As] dialog box.

▶ Keyboard shortcut: [Ctrl]+[S]

[File] - [Export] - [BMP...] command

This saves the screen image of the scanned object as a file in **BMP** format. It saves the present perspective, workpiece color, light-source location, and size in the file without change. Before saving the file, make the settings for these items. The image **resolution** is 72 dpi, and the number of colors is the number set for the computer monitor.

[File] - [Export] - [Clipboard] command

This copies an image of the object to the **clipboard**. The contents of the clipboard are retained until you copy another image to the clipboard. To paste the contents of the clipboard, start an image-editing program or the like and run [PASTE].

▶ Keyboard shortcut: [Ctrl]+[C]

[File] - [Print...] command

This outputs the image shown in the drawing area to the printer. When you are at the 2D simulation screen, this outputs the image in the effective range. Running this command opens the [Print] dialog box. This screen is normally used to make settings for paper size, orientation, number of copies, and the like, but the available setting items will vary according to the printer.

▶ Keyboard shortcut: [Ctrl]+[P]

[File] - [Print Preview] command

This allows you to check the printing results on-screen before actually printing the data. Running this command makes the window change to the Preview screen.

<Preview screen commands>

Print...	This performs printing. The [Print] dialog box appears.
Page Setup...	This allows you to make settings for paper size, margins, and the like. The [Page Setup] dialog box appears.
Zoom In	This enlarges the view size of the print image.
Zoom Out	This reduces the view size of the print image.
Close	This closes the Preview screen for printing.

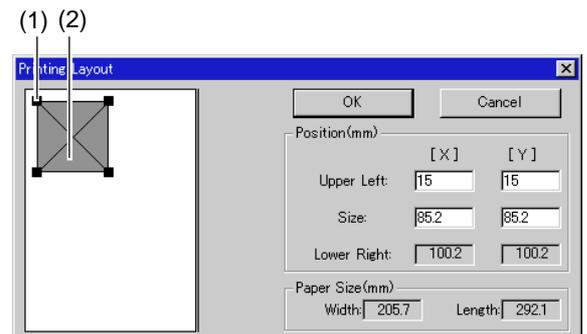
[File] - [Print Setup...] command

This is used to select the driver. The [Print Setup] dialog box appears. To output data, then for [Printer], click on the down-pointing arrow next to [Name], then click on the driver to be used for output.

[File] - [Printing Layout] command

This allows you to set the printing position and size. Running this command displays the [Printing Layout] dialog box.

[Printing Layout] dialog box



(1)
The mouse pointer changes to a diagonal double arrow when it is placed over the black rectangle. This can be dragged to change the size of the graphic on paper. The graphic's vertical and horizontal ratio is always maintained. When the size is varied, the values shown for [bottom] and [Right] for [Position] also change accordingly. This cannot be set larger than [Paper Size].

(2)

The gray squares indicate the size of the graphic when printed. The mouse pointer changes to a four-way arrow when it is placed over one of these.

This can be dragged to change the graphic's position on paper when printed. When the position is varied, the values shown for [Position] also change accordingly.

The printing position cannot be set at a location beyond the edges of the paper.

Position

This displays, as numerical values, the graphic's printing position on the paper.

The values show the graphic's distance in millimeters (or inches) from the paper's upper-left edge.

The printing position can also be set by typing in numerical values directly in the text box.

 Related Topics [Changing the Measurement System for Numerical Values](#)

Paper Size

This displays the paper's printing area without margins. To change the paper size, click [Printer Setup...].

 Related Topics [Changing the Measurement System for Numerical Values](#)

[File] - [Exit] command

This ends the program.

If changes made to the file being edited have not been saved, a dialog box asking if you wish to save the changes is displayed.

 Shortcut:



Click the button for closing the application window.

4-3 [Simulation] menu

[Simulation] - [Redo Cutting] command

This performs the cutting simulation over again, using the presently imported tool path.

Use this when you want to check the movement of the tool again.

[Simulation] - [Start/Resume Cutting] command

This starts cutting.

If cutting was previously interrupted, it resumes cutting.

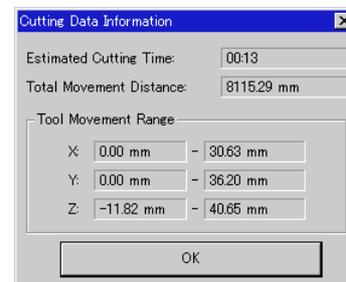
[Simulation] - [Estimate Cutting Time...] command

This displays a prediction of how much time cutting will take. The time is a general estimate.

In addition to the time, you can also verify the tool movement distance and movement range.

Running this command displays the [Cutting Data Information] dialog box.

[Cutting Data Information] dialog box



Estimated Cutting Time

This displays a prediction of how much time cutting will take. The time is a general estimate.

Because the time until reaching the specified speed varies from one modeling machine to another, the displayed time is not necessarily accurate. Please consider it only a general estimate.

Total Movement Distance

This shows the movement distance of the tool.

 Related Topics [Changing the Measurement System for Numerical Values](#)

Tool Movement Range

This shows the movement range of the tool for each axis. When the tool-path file is open, you can estimate the size of the workpiece to prepare.

 Related Topics [Changing the Measurement System for Numerical Values](#)

[Simulation] - [Partial Zoom] command

This zooms in on a portion of the workpiece and does simulation of the selected place over again. Use this when you want to see only a detailed portion of the cutting. If you want to see the entire workpiece in detail, without restriction to just one portion, put the reduced scale closer to 1/1. However, this requires much more memory than partial view.

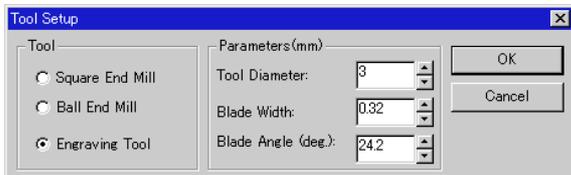
[Simulation] - [Original Reduced Scale] command

When performing a simulation that zooms in on a portion of the workpiece, this cancels the simulation.

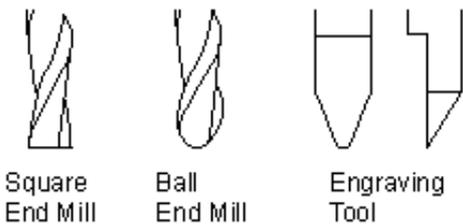
[Simulation] - [Tool Setup...] command

This makes the settings for the tool used in simulation. When the tool path is imported from MODEL A Player or 3D Engrave, the tool specifications (blade shape, tool diameter, and so on) are also imported at the same time. This means there is normally no need to make these settings. Running this command displays the [Tool Setup] dialog box.

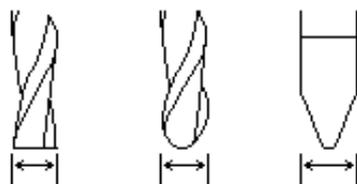
[Tool Setup] dialog box



Tool
This selects the configuration of the tool tip.



Blade Diameter (Tool Diameter)
Enter the diameter of the tool blade. For an engraving tool, enter the diameter of the tool.



Related Topics [Changing the Measurement System for Numerical Values](#)

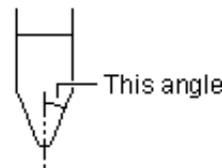
Blade Width
Enter the width of the blade for the engraving tool.



Setting range: 0.01 to tool diameter (mm)
(0.001 to tool diameter [inch])

Related Topics [Changing the Measurement System for Numerical Values](#)

Blade Angle
Enter the angle of the blade for the engraving tool.



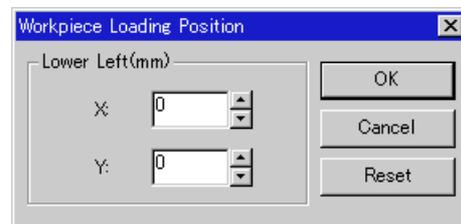
Setting range: 1 to 60 degrees

If you're using an engraving tool from Roland DG Corp., enter 24.2.

[Simulation] - [Workpiece Loading Position...] command

Enter the position of the workpiece loaded on the modeling machine. Specify the lower-left point of the workpiece at the number of millimeters (or the number of inches) from the X- and Y-axis origin point. Running this command displays the [Workpiece Loading Position] dialog box.

[Workpiece Loading Position] dialog box



Lower Left
Specify the lower-left point of the workpiece at the number of millimeters (or the number of inches) from the X- and Y-axis origin point.

Related Topics [Changing the Measurement System for Numerical Values](#)

Reset button
This resets the position of the lower-left point to X=0, Y=0.

[Simulation] - [Z-axis Smoothing] command

When reduced scale is set to 1 or 1/2, zooming in may make small jaggedness, or steps, visible on the surface of the workpiece. These steps are usually at a level that is not visible unless you use something like a loupe, and are difficult to see with the naked eye.

Also, these steps are produced by numerical calculation, and may vary from actual cutting results due to factors such as the rigidity of the modeling machine, the composition of the tool, and the composition of the workpiece.

When this setting is active, smoothing is performed to reduce such small steps. To make the on-screen display match what you see with the unaided eye, activate this setting.

[Simulation] - [Cutting-start Timing] command

Select the operation performed when the tool path is imported.

- Start Cutting Immediately
This starts simulation at the same time when the tool path is imported.
- Cut Uncut Material Immediately
This starts simulation automatically when there is new material that has not been cut yet.
- Wait for Instructions
Nothing is done until you click .

4-4 [View] menu

[View] - [Screen] - [2D Simulation] command

This displays the simulation screen as a flat (two-dimensional) view.

The status bar shows the coordinates of the point that the pointer indicates.

To make the indicated point easier to see, cancel the effective range setting and click the object. The pointer changes to a cross. You can then use the keyboard arrow keys to move the pointer.

To change to a solid (three-dimensional) view, click  or press the up or down arrow key.

To view the shape in detail after cutting simulation, click .

[View] - [Screen] - [3D Simulation] command

This displays the simulation screen as a solid (three-dimensional) view.

To view from a different perspective, click  or , or press the left or right arrow key.

To change to a flat (two-dimensional) view, click  or press the up or down arrow key.

To view the shape in detail after cutting simulation, click .

[View] - [Screen] - [3D View] command

This is for checking the shape after cutting simulation.

To rotate, click  and drag the object.

To zoom in or out, click  and drag up or down.

To change the display location, click  and drag to the destination.

Right-drag to change the location of the light source.

[View] - [Animate] command

This displays the movement of the tool with animation.

There are two types of animation views: a flat view (2D simulation) and a three-dimensional view (3D simulation).

To choose the flat view, click . To choose the three-dimensional view, click .

[View] - [Show Grid] command

This toggles the display of the grid on or off.

**[View] - [Color Surface] command**

This switches between adding and not adding color to the surface of the workpiece.

To specify a color, click [Option] - [Surface Color].

By specifying a color other than the color of the workpiece, you can check areas where the tool has not cut.

**[View] - [Set Effective Range] command**

This restricts the 3D view range.

It also determines the printing area when performing 2D simulation.

Restricting the range makes 3D view faster than when displaying the entire workpiece.

**[View] - [Texture Mapping] command**

This pastes an image on the surface of the workpiece.

By pasting an image of wood or metal, you can make the workpiece look more realistic.

To select the image to paste, click [Option] - [Texture Setup].

You can paste an image only when performing detailed rendering with 3D view.

[View] - [256-color Palette] command

When the computer monitor is set for 256 colors, use this to display colors as attractively as possible.

- Do Not Use
Choose this when the computer can display more than 256 colors.
- Halftone
Choose this when you use Texture to paste an image or pattern on the surface of the workpiece.
- Optimize Workpiece Colors
Choose this when you specify a single color for the workpiece color, without using Texture.

**[View] - [Fit to Screen] command**

This enlarges or reduces what is displayed to fill the drawing size.

To change the drawing size, click [Option] - [Drawing Size].

[View] - [Draw While Moving] command

This selects how the object is displayed on the 3D screen during rotation, zooming in or out, or movement.

- Wire Frame
This displays the object using only lines. Choose this when display speed is a priority.
- Quick Rendering
This applies color and shading to the object. This displays a coarser image than Detail Rendering.

[View] - [Confirmation Drawing] command

This selects how the object is displayed when on the 3D screen when not performing any operation.

**Wire Frame**

This displays the object using only lines. Choose this when display speed is a priority.

**Quick Rendering**

This applies color and shading to the object. This displays a coarser image than Detail Rendering.

**Detail Rendering**

This applies color and shading to the object.

Choose this when image quality is a priority. Conversely, the display speed is slowest.

To paste an image on the object when Texture Mapping is on, select Precise Rendering to activate it.

[View] - [Toolbar] command

This toggles the display of the toolbar on or off.

The toolbar is provided with buttons for running Virtual MODELA commands such as [Open...] and [Save Cutting Configuration]. Moving the mouse pointer over a button displays the button's name.

Toggling off the display of the toolbar enlarges the area of the edit screen.



Related Topics

[Toolbar buttons](#)

4-5 [Option] menu

[Option] - [Texture Setup...] command

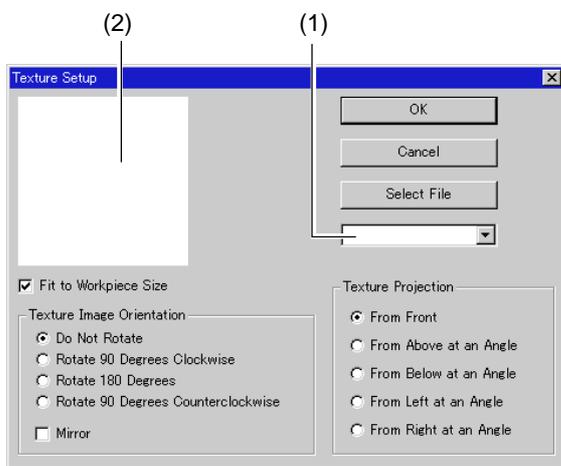
This selects the image to paste on the surface of the workpiece.

To paste a selected image on the workpiece, click  to activate it.

You can paste an image only when performing detailed rendering with 3D view.

Running this command displays the [Texture Setup] dialog box.

[Texture Setup] dialog box



Select File

This selects the image to paste on the surface of the workpiece.

Clicking it displays the [Open] dialog box.

The image to be specified must be a file in bitmap (BMP) format.

(1)

This selects a pattern to paste on the surface of the workpiece from among patterns (image files) that you have specified previously.

Click the drop-down arrow to display the list of image files. Click the image file you want.

To choose the file you want, click [Select File].

(2)

This displays the image file you selected.

Fit to Workpiece Size

This resizes the image to fit the size of the object displayed with 3D view.

Texture Image Orientation

This changes the orientation of the image.

You can rotate it in steps of 90 degrees.

To mirror the image (reversing it from left to right), click [Mirror].

Texture Projection

This selects the direction for projecting the image onto the object.

Depending on the shape of the curved surfaces, choose the orientation that produces the most natural appearance.

[Option] - [Workpiece Color...] command

This specifies the color of the workpiece.

Running this command displays the [Color] dialog box.

[Option] - [Surface Color...] command

This specifies the block surface color for uncut material.

To color the surfaces of the workpiece, select [View] - [Add Color] to activate it.

Running this command displays the [Color] dialog box.

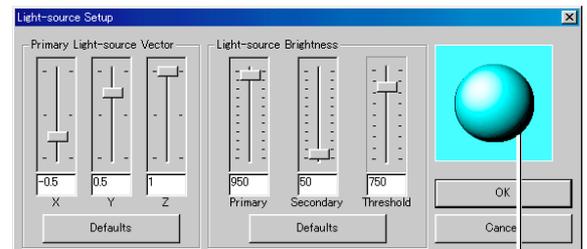


[Option] - [Light-source Setup...] command

This changes the direction and brightness of incident light, thereby changing the shading.

Running this command displays the [Light-source Setup] dialog box.

[Light-source Setup] dialog box



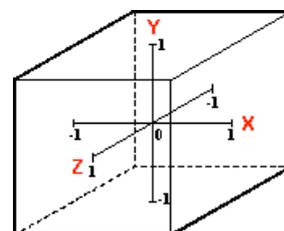
(1)

Primary Light-source Vector - X, Y, Z

Virtual MODELA offers two light sources: primary and secondary.

This sets the direction of the primary light source, changing the orientation of the light striking the object. You cannot change the direction of the secondary light source.

Specify the direction of the light source by specifying its coordinates in an imaginary cube whose length on a side is 2.



Defaults - Primary Light-source Vector

This returns the direction of the primary light source to its default value.

The default is X=-0.5, Y=0.5, Z=1.

Light-source Brightness - Primary

This adjusts the brightness of the primary light source.

The primary light source is at infinite distance in the direction specified by the primary light-source vector. Larger values make it brighter, and smaller values make it dimmer.

Setting range: 0 to 1000

Light-source Brightness - Secondary

This adjusts the brightness of the secondary light source.

The secondary light source is at infinite distance on the Z axis. You cannot change the direction of the light. Larger values make it brighter, and smaller values make it dimmer.

Setting range: 0 to 1000

Light-source Brightness - Threshold

This changes the luster of the object.

Larger values make it less glossy, and smaller values make it glossier.

Setting range: 100 to 900

Default - Light-source Brightness

This returns the brightness of the light source to its default value.

The default is Primary=950, Secondary=50, Threshold=750.

(1)

Changing the primary light source vector and the light-source brightness alters the displayed image.

This lets you check the general results before you confirm the settings.

[Option] - [Cutting Graph] - [Cutting Volume] command

This displays a bar graph showing the volume of material cut by the tool per second.

The graph's horizontal axis is time, and the vertical axis is volume.

To change the range of the vertical axis, click the spin box in the upper-right area of the graph. To change the range of the horizontal axis, click [Option] - [Cutting Graph] - [Update Interval] and choose one of the selections.

[Option] - [Cutting Graph] - [Used Blade Length] command

This displays a bar graph showing the length of the tool cutting into the workpiece.

The graph's horizontal axis is time, and the vertical axis is length.

To change the range of the vertical axis, click the spin box in the upper-right area of the graph. To change the range of the horizontal axis, click [Option] - [Cutting Graph] - [Update Interval] and choose one of the selections.

[Option] - [Cutting Graph] - [Update Interval] command

This selects the update interval for the graphs of cutting volume and used blade length.

[Option] - [Drawing Size] - [Fit to Window] command

This resizes the drawing area during 3D view to the same as the window size.

Changing the size of the drawing area also changes the size of files saved with the Export command. To specify the size you want for the drawing area, click [Option] - [Drawing Size] - [Specify Size].

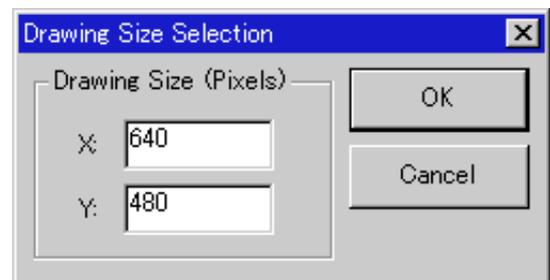
[Option] - [Drawing Size] - [Specify Size...] command

This sets the size of the drawing area during 3D view to the size you want.

Changing the size of the drawing area also changes the size of files saved with the Export command.

Running this command displays the [Drawing Size Setup] dialog box.

[Drawing Size Setup] dialog box



Drawing Size

Enter the drawing size.

The units are in pixels.

4-6 [Help] menu

[Help] - [Contents] command

This displays the contents page for online help.

[Help] - [About...] command

This displays the version number and copyright information for Virtual MODELA.

Part 5

**If You Think
There's a
Problem...**

5-1 If You Think There's a Problem...

Virtual MODELA doesn't function.

- Does the computer you're using provide the correct operating environment for Virtual MODELA?
Check the conditions for the Virtual MODELA operating environment and make sure that the computer offers a suitable environment.
- Was the software installed using the setup program?
The setup program puts the files for Virtual MODELA in the necessary locations to enable the software to be used under Windows.

Printing doesn't work.

- Was the correct port selected for the printer driver?
The data-output port is set with the printer driver.
Open the driver's properties, and on the [Details] tab, check the setting for [Print to the following port:].
- Is the cable connected?
Switch off the power to the computer and the printer, and use an interface cable to connect the two devices.
- Is the correct type of cable used?
The type of interface 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 printer are both switched off before attempting to attach or disconnect the interface cable.

5-2 Error Messages

- Insufficient memory. Continue?
Virtual MODELA is using more memory than is installed in the computer.
Continuing processing without change results in more frequent use of virtual memory on the hard disk, which may cause processing to take more time.
To reduce the amount of memory that Virtual MODELA uses, make the scale of the workpiece smaller.
- Could not perform 3D display.
The amount of memory required for 3D view was not available.
To reduce the amount of memory that 3D view consumes, make the drawing size smaller.



Appendixes

Glossary

BMP

Bitmap data is a data format that represents images (text and shapes) as a collection of dots. Most paint-type software applications show images as bitmaps.

Resolution

This is a scale that indicates the precision of images displayed on screen, printed on the printer, or acquired with the scanner. The larger the number, the more detailed and attractive is the image it represents.

Clipboard

The clipboard is used to hold data temporarily when it is being copied or cut. The clipboard is a standard feature of Windows.

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