

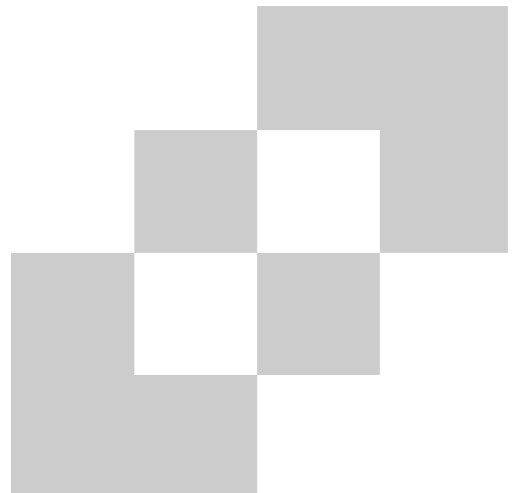
# OPS640

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**Cutting Master for Illustrator®/Win**

MANUAL NO. OPS640W-UM-157

**USER'S MANUAL**



**GRAPHTEC**

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# 1 Introduction

## 1.1 Introduction

Cutting Master is an output plug-in that enables the use of a Graphtec cutting plotter from within Adobe Illustrator on a Windows-based PC. It also allows object lines or character\* outlines in Illustrator documents to be output to a Graphtec cutting plotter. (\* Only objects that can be converted to outlines in Illustrator)

## 1.2 Features

Cutting Master includes the following features:

- Easy connection and high-speed data transfer via USB enabled.
- Smooth curves can be created using the plotter's Bezier-curve generation function.
- An origin can be specified in Illustrator for precise output positioning.
- Output using dotted or dashed lines enabled.
- Just the selected object can be output.
- Output in separate layers or separate colors can be specified.
- Output conditions can be automatically selected by layer name or color.
- Allows set details to be saved to a file and loaded as required.
- Supports a sorting function for controlling media movement.
- A Weed Border cutting function enables automatic output of a border to facilitate weeding of the cut media.
- Any drawing exceeding the plotter's Valid Area can be output in multiple pages using the Tiling function.
- Output conditions can be managed by media name.
- Multiple copies of a drawing can be output using the Matrix Copy function.
- Registration marks can be created in Illustrator documents using the Registration Mark function.
- FC5100A, CE3000Mk2 and FC7000 models: Registration mark unit settings and registration mark reading can be performed.
- FC5100A, CE3000Mk2 and FC7000 models: Printing and cutting in alignment can be performed.
- FC7000 model: Segment area correction can be performed.

## 1.3 System Requirements

Compatibility has been verified for the following operating environments:

- ◆ Applications: Adobe Illustrator (for Windows) 8.0.1, 9.0.2, 10.0.3, CS
- ◆ CPU, memory, operating system, monitor resolution/number of displayed colors:  
As with the Illustrator versions above
- ◆ Plotters: FC5100 series, FC5100A series, CE3000 series, others\*1

\*1: Please refer to the README.TXT file for the Graphtec plotters that can be used with Cutting Master.

\*: This plug-in outputs via the Graphtec Windows driver. Windows driver must be installed. Windows driver is included on the floppy disk or CD-ROM provided with Graphtec plotters, except for some older models. The latest driver version can also be downloaded from the Graphtec website.

## 1.4 Precautions

- ◆ This plug-in software is for outputting data to a cutting plotter. Cutting plotters can only handle "line" data, so this software outputs only exterior lines, even for objects that include polygonal "areas" created using Illustrator.
- ◆ This plug-in can only output text fonts that can be converted to outlines using the "Create Outlines" function in Illustrator.
- ◆ Properties in Illustrator documents such as Stroke, Weight, Line Type, and Line Color are not included in the output results. The line type output can be selected in the plug-in settings. Moreover, output conditions can be selected by line color.
- ◆ Do not use this plug-in in conjunction with other manufacturers' plug-in software.
- ◆ When using this plug-in software, set the plotter "Command settings" to "GP-GL."
- ◆ The drawing origin may shift about 1 mm in error depending on the settings.
- ◆ Line widths drawn using the "Brush tool" in Illustrator 8 may be irregular. If drawings created using the brush tool are not recognized by this plug-in software, reset the line width for the drawing using the Illustrator line-type window and restart the plug-in software.
- ◆ Drawings made using the Illustrator "Blend tool" cannot be output.
- ◆ If you use Illustrator's "Type" tool to draw text but do not convert the text to outlines (using the "Create Outlines" command), the text will not be output. Furthermore, there are times when the rectangular frame enclosing the text string may also be output.
- ◆ Even if you use the "Clipping Mask" (Illustrator 9, Illustrator 10 and Illustrator CS) or the "Mask" (Illustrator 8) function to hide part of or all of the drawing, the entire drawing, including the hidden lines, will still be output by the Cutting Master plug-in.

<When Using the FC3600>

- ◆ The FC3600 settings that have been pre-registered in the Media List are all conditions for use with the pen carriage. They cannot be used with the tool carriage.
- ◆ This software cannot be used to adjust the height of the tool carriage. Please make the height adjustment at the plotter control panel.
- ◆ When using this software to specify the cutting force for the FC3600, please note that the values that can be set differ according to whether the setting is for a pen or a tool. Refer to your plotter user's manual for the appropriate values before making the setting.
- ◆ If you wish to specify the cutting force separately for the X and Y axes, please make the settings at the plotter control panel. At this time, make sure that no cutting force or quality settings have been specified with the software.

# 2 Setup

## 2.1 Installing Plug-in Software

1. Start up Windows.
2. Install Adobe Illustrator if it is not already installed.
3. Insert the Cutting Master disk into the disk drive.
4. Select "Run..." from the Start button menu.
5. Enter the drive name and "SETUP.EXE" in "Name" in the "Run..." window.
6. Clicking [OK] after entering the details starts up the Cutting Master setup program. Follow the on-screen instructions to set up the plug-in.

Once the setup program finishes normally, "Cutting Master" is added to the "File" menu in Illustrator.

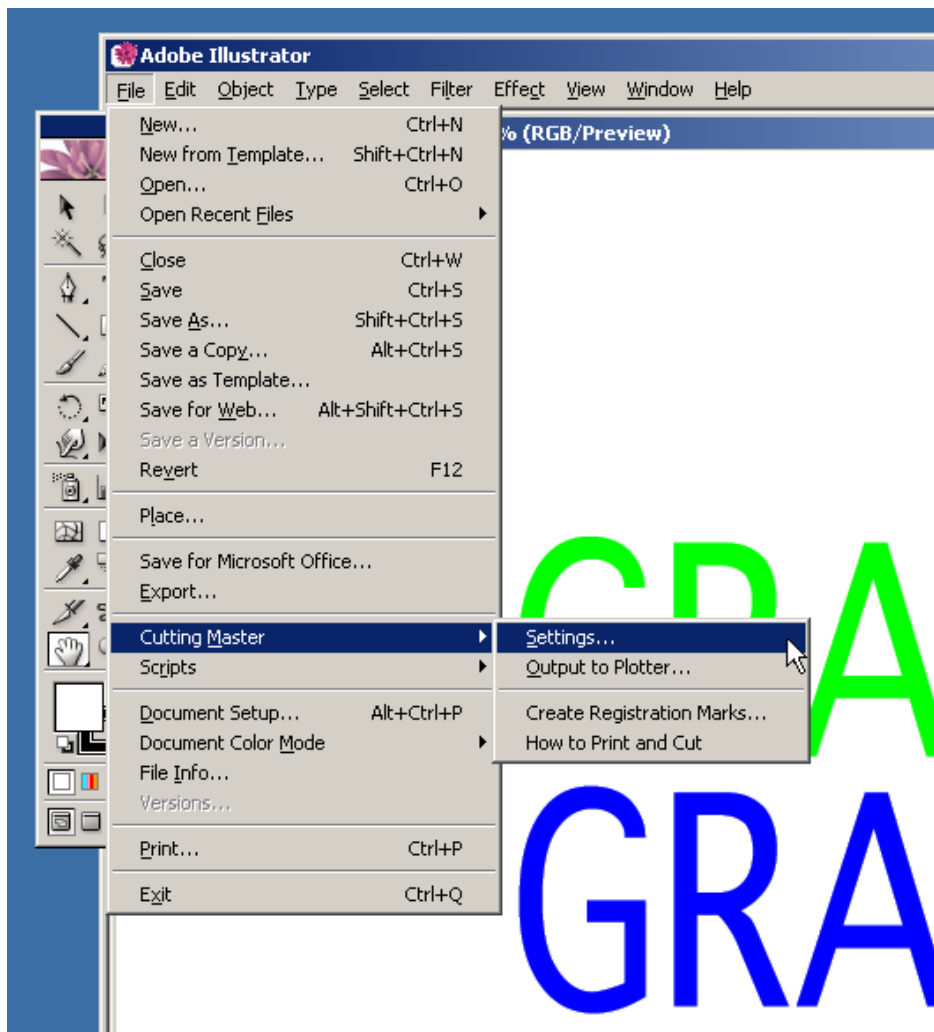
## 2.2 Installing the Windows Driver (OPS628 or OPS662)

Open "Add Printer" in "Printers" in the Windows "Control Panel," and install the driver using the Wizard. For details, refer to the Readme.txt file in the respective OS folder of the Windows driver.

# 3 Basic Operations

Once the plug-in has been set up, "Cutting Master" is added to the "File" menu in Illustrator, allowing "Settings", "Output to Plotter", "Create Registration Marks" and "How to Print and Cut" to be selected from this submenu.

Most of the operations required for this plug-in are performed using these four menu items.



## <Settings>

Opens the plug-in setup window.

For details on these settings, see "4 Function Details."

## <Output to Plotter>

Outputs to the plotter in accordance with the settings selected.

## <Create Registration Marks>

Converts the selected rectangle in an Illustrator document into registration marks.

## <How to Print and Cut>

Registration marks are used to enable precise cutting of printed objects. Click this

menu item to display a PDF file that explains the procedure.

- **To output to the plotter**

Selecting "Cutting Master" > "Output to Plotter" in the Illustrator "File" menu outputs the drawing in the Illustrator document to the plotter. The output position will be to the right of and above the plotter origin.

The drawing is output so that if we imagine the smallest possible rectangle enclosing the entire drawing, the bottom left-hand point of the rectangle corresponds to the plotter origin. The output size will be the size of the drawing in the Illustrator document (provided that "Use Document Origin [Default: OFF]," "Rotate," or "Scaling" have not been altered).

- **To output alphanumeric characters**

Only alphanumeric characters that can be converted to outlines can be output using this plug-in, and only the outlines are output. Select the character to be output in the Illustrator document, and use "Create Outlines" in the Illustrator "Type" menu. The outlines created can be output in the same way as other objects.

- **To change the output position**

The output position can be changed by specifying the desired values in the "Offset" boxes on the Cutting Master window Options page. Note that drawings cannot be output to the left of or below the plotter origin. Even if negative offset values are specified, only the area of the figure to the right of and above the plotter origin will be output.

- **To change the output size**

The output size can be changed by entering different numeric values for the "Scaling" function available in the Cutting Master window.

- **To rotate the output**

The drawing to be output can be rotated by using the "Rotate" function available in the Cutting Master window. The rotated drawing will always be output to the right of and above the plotter origin. The drawing is output so that the bottom left-hand point of the rectangle enclosing the entire drawing after rotation corresponds to the plotter origin (provided "Use Document Origin" has not been altered).

- **To output outlines with thick lines**

Outlines with thick lines can be created using the following procedure. (Save the document first.)

1. In Illustrator, select the line to be output in the outline.
2. In the Illustrator "Color" window, set "Fill" to "/(None)."
3. Select "Object">"Path">"Outline Stroke" from the Illustrator menu. The outline will be created with thick lines.

The outline created can be output in the same way as other objects. (Note when saving that the document will be changed by this procedure.)

- **To output outlines of overlapping objects**

Overlapping objects can be combined using the following procedure. (Save the document first.)

1. Select all the objects to be identified as overlapping.
2. Select "Unite" in "Combine" in the Illustrator "Pathfinder" window. The overlapping objects are combined as a single object.

The outline is output when the combined object is output. (Note when saving that the document will be changed by this procedure.)

- **To output a drawing that exceeds the plotter width (Tiling)**

Character outline data can be output by cutting out and closing the shape of the boundary specified by the plotting area using the "Tiling/Overlap" functions in the Cutting Master window.

However, it may not be possible to close the shape if the data is extremely complex (e.g., data created by combining a number of objects or character outlines, data with curves edited using the Illustrator "Direct Selection" tool, and data with numerous overlapping objects or intersecting lines). In such cases, the Weed Border function should also be used. If divided drawings are output in conjunction with the Weed Border function, the boundaries of pages within the border are cut with straight lines. It is also possible to divide and output drawings using the Illustrator "Knife" tool.

- **To divide a drawing in Illustrator before output**

First of all, in the Cutting Master window Options page, set "Use Document Origin" to OFF and "Output Selected Object(s)" to ON. The following procedure divides the drawing. (Save the document first.)

1. Cancel the grouping for any grouped objects in the document.
2. Select "Knife" in the Illustrator toolbox, and divide the drawing into a width that can be output on the plotter. The knife can be used to specify divisions along straight lines by depressing the keyboard Alt key.

Select one part of the divided drawing to output. After outputting, replace the medium, and output the other part. The procedure is the same for dividing the drawing into three or more parts. (Note when saving that the document will be changed by this procedure.)

- **To print and then cut round the print**

Print & Cut applications involve a secondary process whereby a cutting plotter is used to cut round images or shapes output on a printer. A cutting plotter equipped with a registration mark reading unit is required for Print & Cut applications.

1. Creating registration marks

First of all, create registration marks around the printed image as follows. (Save the document first.)

- Draw a rectangle as a standard for creating the registration marks around the figure that is to be printed and cut.

- Select "Cutting Master" > "Create Registration Marks" in the "File" menu of Illustrator with only the rectangle selected.
- Press the "Create" button on the displayed window. Illustrator then creates registration marks. (Check the box for "Align Document Origin with Registration Marks.")

## 2. Printing

Print the document, including the registration marks created in the step above, with a printer.

## 3. Cutting

The following operation depends on the type of plotter you use.

<When using the FC5100A, CE3000Mk2 or FC7000>

- Select "Cutting Master" > "Settings" in the "File" menu of Illustrator.
- Check the box for "Use Registration Marks" on the "Registration Marks" page in the displayed Cutting Master window.
- Load the print created above ready in the plotter. Load the print in the direction indicated in the drawing of the plotter shown in the Cutting Master window.
- Move the pen (cutter) within the range where the bottom left of the registration mark is readable. The readable range is the green section in the drawing of the plotter in the Cutting Master window.
- When the document is output, the registration marks are read, and then the printout is cut. If the registration marks cannot be read, retry reading while pressing the "Correct Axis" button of the plotter. Cutting is started after the registration marks are successfully read.

<When using a different cutting plotter model>

- Select "Cutting Master" > "Settings" in the "File" menu of Illustrator.
- Make the following settings:  
Scaling: 100%; Rotate: None; Weed Border: OFF, Tiling: OFF; Matrix Copy (optional): OFF; Use Document Origin (optional): ON
- Compare the print with the Illustrator document. Load the print in the plotter so that the documents bottom left registration mark (Point 1, Origin) is at the plotter's bottom right when the plotter is viewed from the front.
- If the shape, length or thickness is inconsistent with any of the plotter settings, change the settings of the created registration marks to ensure consistency.
- Read the registration marks with the plotter.
- When requested by the plotter, enter the distance between the registration marks.
- Cutting starts when data is output from the Cutting Master.

## ● To print and cut in alignment

Printing and cutting in alignment means arranging multiple duplicated output images bounded by registration marks and cutting while reading the registration

marks sequentially. This process is used for the mass production of stickers and suchlike.

To print and cut in alignment, an FC5100A, CE3000Mk2, or FC7000 model is required.

### 1. Creating registration marks

Create registration marks around the printed images using the operation given in the previous section. (Save the document first.)

### 2. Printing in alignment

When using a RIP for printing, arrange the multiple printed images with registration marks by using the allotment function of the RIP before printing. If a RIP is not used, use the editing function of Illustrator to create multiple images with registration marks before printing. (Multiple figures can easily be created at equal intervals by selecting all the figures bounded by and including the registration marks, setting the travel distance in the window displayed when "Transform" > "Move" is selected in the Object menu of Illustrator, copying with the Copy button, and repeating the process by holding down the Ctrl key and pressing the D key.

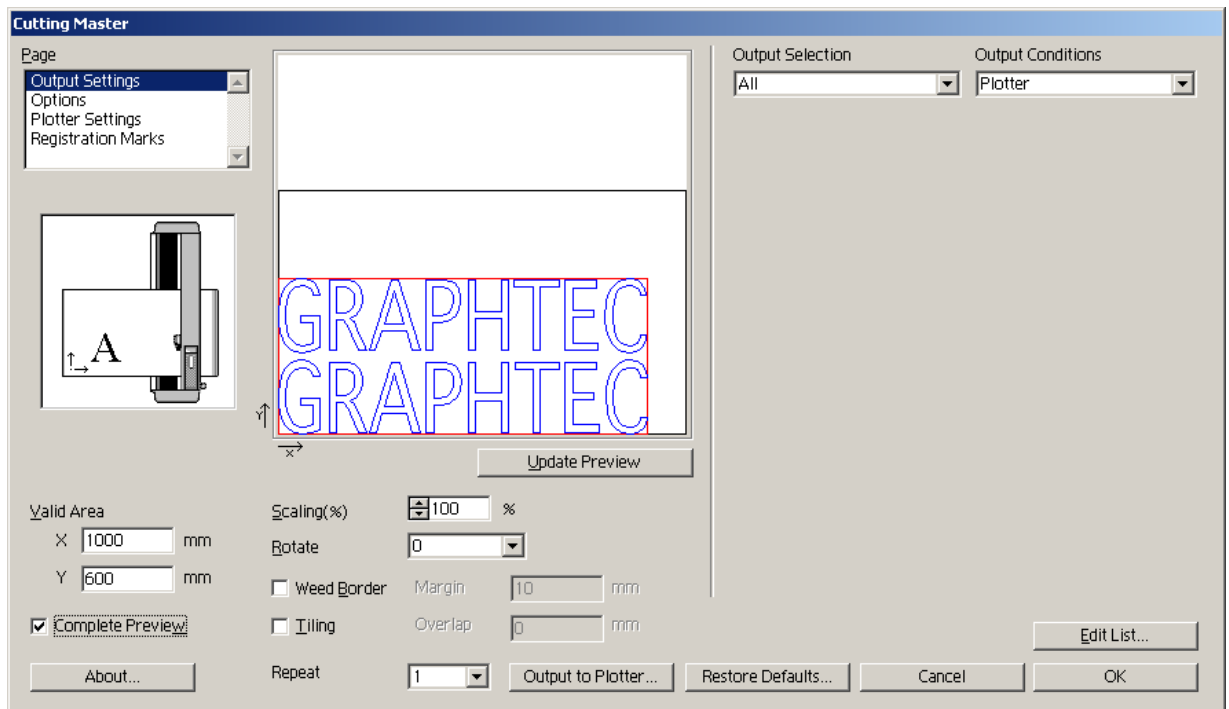
### 3. Cutting

- Activate Cutting Master by selecting "Cutting Master" > "Settings" in the "File" menu of Illustrator. When copying a figure in Illustrator, before activation, select only the one block that is surrounded by registration marks and used as the original for copying.
- Check the box for "Output Selected Object(s)" on the "Options" page of the displayed Cutting Master window.
- Check the box for "Use Registration Marks" in the "Registration Marks" page.
- Load the print created above in the plotter. Load the print in the direction indicated in the drawing of the plotter shown in the Cutting Master window.
- Move the pen (cutter) within the range where the bottom left registration mark is readable in the bottom left end of the block. The readable range is the green section in the drawing of the plotter in the Cutting Master window.
- Check the box for "Align" in the "Registration Marks" page of the Cutting Master window.
- Specify the number of blocks to be printed in the Align text boxes. "x" indicates the number of blocks in the horizontal direction of the Illustrator document, and "y" the number of blocks in the vertical direction. The distance between the blocks is the length of a blank area between the blocks.
- When the document is output, the registration marks are read, and then the print is cut. When the output is complete for one block, the system reads the registration marks for the next block and cuts the print. If the registration marks cannot be read, follow the instructions displayed the plotter panel.

# 4 Function Details

## 4.1 Cutting Master Window

This window is displayed by choosing "Cutting Master," then "Settings" from the [File] menu of Illustrator.



(Changing pages)

The items shown in the upper-left section of the window allow you to change pages. You can choose "Output Settings," "Options," "Plotter Settings," or "Registration Marks". When you change selections, the items on the right side of the Cutting Master window change to match what you've selected.

### 4.1.1 Cutting Master Window (Items Always Displayed)

#### **Valid Area**

Specifies the size of the black frame displayed in the preview window. Use this size as an approximate guide to determine the output size. This setting does not affect other functions or plotter operations except tiled output, or when using Matrix Copy. When entering numeric values here, use the [Update Preview] button to update the preview.

#### **Complete Preview**

Changes the method by which the preview window is displayed. Normally leave this item selected while in use.

Deselect this item if dialog box response slows down to update the preview window as when outputting drawings in fine detail.

### **Preview Window**

Displays an outline of the drawing or text to be output using blue lines.

A black border encloses the range specified in "Valid Area." The lower-left position of the black border is always the origin specified by the plotter.

The blue lines and red borders change display position or size as offset and scaling settings change. Use the [Update Preview] button to update the preview for confirmation.

### **Update Preview**

Updates the preview window as you set.

### **Scaling**

Enlarges or reduces the document drawing size within a range of 25% to 400%. The value specified is applied equally in both horizontal and vertical directions. Thus, for 25%, the area will be reduced to 1/16th. This setting is also reflected in the preview window. When entering numeric values here, update the preview using the [Update Preview] button.

### **Rotate**

Rotates the area enclosing the drawing to be output.

If "Use Document Origin" is checked, the area enclosing the drawing to be output and the origin of the Illustrator document is rotated.

- . Note that the output origin may be about 0.5 to 1 mm out of position when rotated.
- . This setting is also reflected in the plotter image and preview window.

### **Weed Border /Margin**

Outputs a frame to facilitate the weeding of cut media. Using this function eliminates the need to create a frame in Illustrator documents.

When "Weed Border" is selected, a frame is output along with the drawing when you output the drawing to the plotter.

The "frame" here refers to a rectangular shape representing the area that encloses the drawing to be output. The frame is expanded in the vertical and horizontal directions by an amount equal to the size specified for Margin. When multiple drawings are to be output, a large frame is output that includes all the drawings, and not just individual drawings. This setting is also reflected in the preview window. When changing numeric values, use the [Update Preview] button to update the preview.

- . When using this function, the drawing is output so that the lower-left position of the frame overlaps the plotter origin. Therefore, note that the drawing output position differs from when no frames are specified.
- . Selecting "Assign by Layer" or "Assign by Color" as an output condition outputs the frame with "default\*" settings.

When you use framing along with "Use document origin," consider the frame margins in Illustrator documents when specifying the origin. If the frame protrudes leftward or downward from the origin, the protruding portion is not plotted.

### **Tiling/Overlap**

Use the Tiling function to separately output a large drawing or text (outline) which exceeds the medium you are using on multiple pages. When Tiling is selected, Valid Area is used as the page size. Any part of the drawing that exceeds that area is output to the next page.

A dialog box is displayed during output, prompting you to set media over again for each page. In this dialog box, verify the media resetting and origin position.

Specifying other than 0 for "Overlap" overlaps pages by an amount equal to the specified width at output. Use this function to create overlapping portions for positioning purposes while cutting.

When multiple pages are output, multiple black frames representing the valid area are displayed in the preview window. Moreover, specifying any value other than 0 for "Overlap" displays the overlapping valid areas by an amount equal to the specified width. When changing numeric values, use the [Update Preview] button to update the preview.

If the Weed Border function is turned off, all the shapes on each page are closed. The closing operation is performed taking into account the inclusion relationship. Note that if objects to be output on Illustrator documents have an outer border, this will be closed as outline data if divided before outputting. Objects will not be closed if they are not closed before dividing. Similarly, it may not be possible to close a shape correctly if the data contains numerous overlapping objects or intersecting lines.

If the Weed Border function is turned on, sections adjoining the page will be cut using straight lines.

A drawing output separately on multiple pages is output sequentially toward the top of the preview window, with the page that includes the origin considered page 1. Any pages on the right side are also output sequentially from the bottom page upward after the plotter has output the top page in the column that includes the origin.

The "Tiling/Overlap" functions cannot be used simultaneously with the Matrix Copy function.

When using divided output, select "Plotter" or "Set now" for the Output Conditions.

### **About**

Displays the version and copyright information for the plug-in.

### **Repeat**

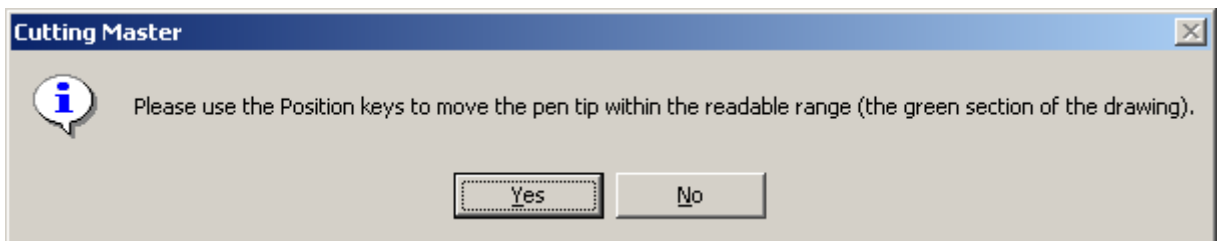
Specifies the number of cuts to be made at the same location. Depending on the type of material, cutting it once may not be sufficient. Use this function to specify additional cuts if required.

### [Output to Plotter]

Displays a dialog box prompting confirmation and outputs the drawing to the plotter under the conditions you set.



If your cutting plotter is an FC5100A, CE3000Mk2 or FC7000 model, the "Use Registration Marks" function on the Registration Marks Page can be used. When the check box has been selected, a window similar to the following is displayed.



When this window is displayed, check the location of the green section in the drawing of a plotter shown in the Cutting Master window, and then move the blade tip within this area as instructed. When using registration marks, also refer to the description in subsection 4.1.5, "Cutting Master Window (Registration Marks Page)".

### [Restore Defaults]

Displays a dialog box prompting confirmation. Click [OK] to initialize all settings then displayed.

### [Cancel]

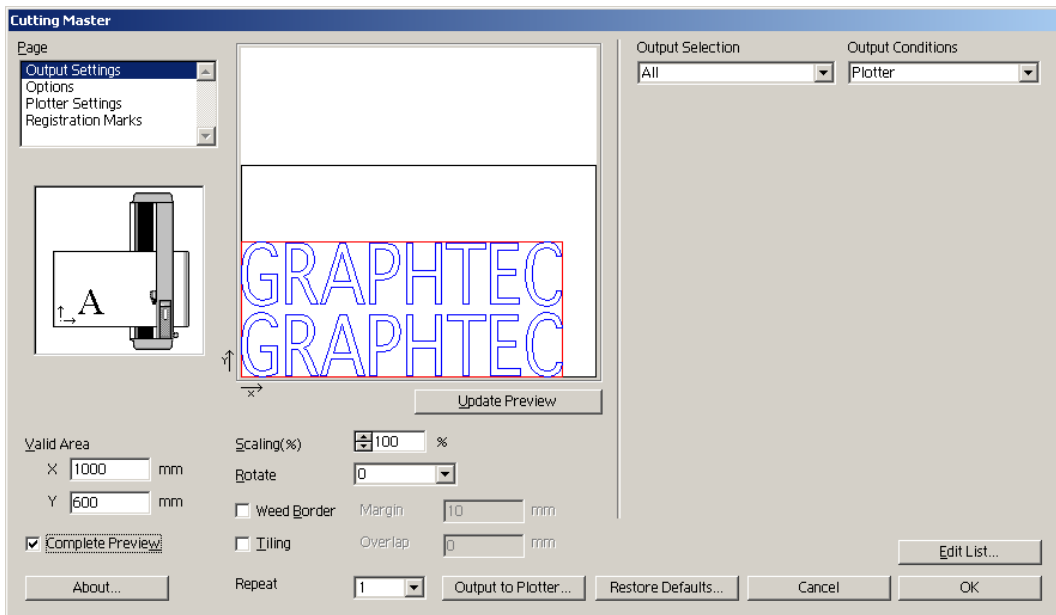
Discards all that you've set and exits the Cutting Master window.

### [OK]

Saves what you've set and exits the Cutting Master window.

## 4.1.2 Cutting Master Window (Output Settings Page)

Choosing "Output Settings" in the upper-left section of the Cutting Master window displays the items shown below on the right side of the window.



### Output Selection

In this item, set the target to be output. You can choose "All," "Select by Layer," or "Select by Color."

"All"

All objects are output regardless of the layer and object colors in the current document.

"Select by Layer"

You can specify whether to output each layer in the current document.

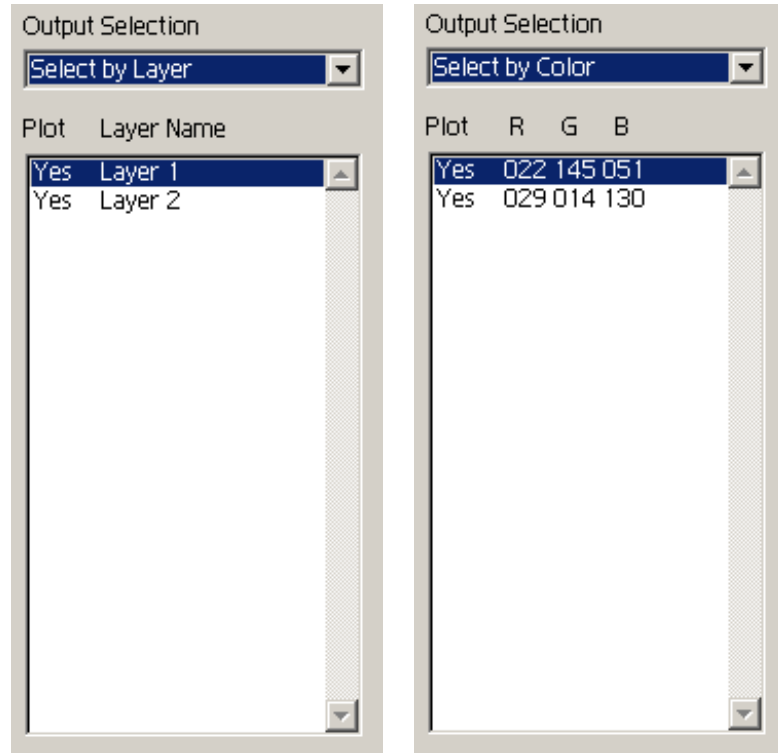
"Select by Color"

You can specify whether to output each object (line) color in the current document.

Choosing "Select by Layer" or "Select by Color" allows you to specify whether to output each instance double clicked in the list.

- The current document refers to the one positioned at the top of the currently open Illustrator documents immediately before invoking this plug-in software.
- Choosing "Select by Color" allows selections to be made with respect to the outline colors of objects in the current document. Objects whose outline colors are unspecified are not displayed in the list and excluded from the target to be output. The "fill" colors of objects are ignored.
- When creating a new document in Illustrator 9, 10 and CS, you are asked to determine whether the object colors should be handled in RGB or CMYK. In this plug-in software, the outline colors of objects are displayed in the list according to that specification. Regardless of whether you choose "Convert to RGB" or "Convert to CMYK" from the Illustrator menu, your specification is not reflected in this plug-in software.

- . All Illustrator 8 documents are handled in RGB.
- . With Illustrator 8, color information for drawings not selected may appear in the Output Selection: Select by Color color lists, but this may be ignored, as it does not affect the preview or output.



### Output Conditions

In this item, you set output conditions. You can choose "Plotter", "Set now", "Assign by Layer", or "Assign by Color."

#### "Plotter"

All drawings are output under the conditions set in the plotter.

#### "Set now"

Specify Cond. No., Speed, Force, Quality, Line Type, and Pitch Size before you output drawings.

Regardless of the layer and object colors in the current document, all target objects to be output are output under the conditions set here.

- . For details about Cond. No., Speed, Force, Quality, Line Type, and Pitch Size, see Section 4.3, "Media Settings."

- . You can do without specifying Speed, Force, or Quality. In such case, set the value 0 for these parameters. What is then set on the plotter side is applied.

Output Conditions

Set now

Cond. No.  
1

Speed  
20 cm/s

Force  
15

Quality  
3

Line Type  
1. Solid

Pitch Size  
10 mm

Load...

Add to List...

"Assign by Layer," "Assign by Color"

"Assign by Layer" allows you to assign media files (one for each layer). "Assign by Color" allows you to assign media files (one for each color in the drawing). Initially, all media files are assigned "" to indicate that drawings are output under the media file conditions specified in "Default" media type. Use the [Assign Media Type] button to change assignments.

- . "Assign by Layer" can only be used when "Select by Layer" is specified for the target to be output.
- . "Assign by Color" can only be used when "Select by Color" is specified for the target to be output.
- . Media files are setup files in which such standard parameters such as Cond. No., Speed, Force, and Quality are assigned for each type of media.
- . When using divided output, select "Plotter" or "Set now" for the Output Conditions.

Output Selection:       Output Conditions:

Plot	Layer Name	Media Type Name
Yes	Layer 1	FC5100 Clear film
Yes	Layer 2	*(Default)

     Default Media Type (\*):

Output Selection:       Output Conditions:

Plot	R	G	B	Media Type Name
Yes	022	145	051	FC5100 Clear film
Yes	029	014	130	*(Default)

     Default Media Type (\*):

**[Load]**

This button is displayed only when you chose "Set now" as an output condition. A media list is displayed. Select a media from this list and click [OK]. The Cond. No., Speed, Force, Quality, Line Type, and Pitch Size parameters are loaded from the media file in which the parameters were saved.

. You cannot edit the media list that is loaded here.

**[Add to List]**

This button is displayed only when you chose "Set now" as an output condition. A dialog box is displayed allowing you to specify a file name. When you specify a file name, the Cond. No., Speed, Force, Quality, Line Type, and Pitch Size parameters that you set are saved to a media file.

**[Assign Media Type]**

This button is displayed only when you chose "Assign by Layer" or "Assign by Color" as an output condition.

It allows you to change media file assignments. First, select the layer or color whose assignment you want to change from the assignment list. Next, press this button to display a media list. Select the media you want to change from this list and click [OK]. To restore assignments to the default settings, select "Default\*" media type from the media list.

. You cannot edit the media list that is loaded here.

**Default Media Type (\*)**

This button is displayed only when you chose "Assign by Layer" or "Assign by Color" as an output condition.

The layers and colors marked "\*" in the assignment list are output according to the media file settings selected here.

. If there are no media files in the media list, a "Not set" message is displayed. In such case, all drawings are output under the conditions set on the plotter side.

. For details about the media list, see Section 4.2, "Media Type List."

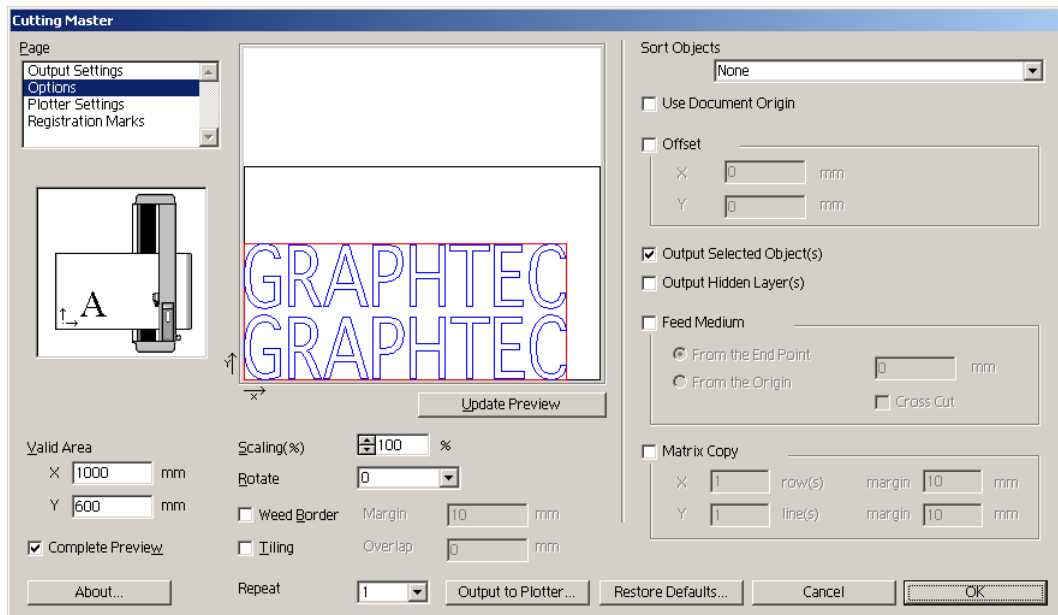
**[Edit List]**

Loads a media list.

In the media list loaded here, you can add to, delete from, or edit the list. For details about the media list, see Section 4.2, "Media Type List."

### 4.1.3 Cutting Master Window (Options Page)

Choosing "Options" in the upper-left section of the Cutting Master window displays the items shown below on the right side of the window.



#### Sort Objects

Sets the order in which objects are output. The display varies depending on whether you choose "Flatbed Type" or "Friction Feed Type" on the plotter setup page of the Cutting Master window.

For Friction Feed Type, you can use all choices available. For Flatbed Type, you can use "None," "Speed priority (by layer)," or "Speed priority (All)".

Irrespective of the settings you make below, objects whose end points coincide are sorted for plotting with one stroke of a pen as much as possible.

#### "None"

The output order is not changed.

#### "Speed priority (by layer)"

By recognizing the layers to which each target object belongs, objects are sorted in order of pen movements in each layer, beginning with the object with the least pen movement. Each layer is output in order of Illustrator's layer palettes.

#### "Speed priority (All)"

By ignoring layers, all target objects to be output are sorted in order of pen movements, beginning with the object with the least pen movement, and are then output.

#### "Restrict media movement (by layer)"

By recognizing the layers to which each target object belongs, objects are sorted in order of media movements in each layer, beginning with the object with the least media movement. Each layer is output in order of Illustrator's layer palettes.

### "Restrict media movement (All)"

By ignoring layers, all target objects to be output are sorted in order of media movements, beginning with the object with the least media movement.

### **Use Document Origin**

When unchecked, the drawing is output so that the bottom left-hand point of the area enclosing the drawing corresponds to the plotter origin. When checked, the drawing is output so that the origin of the Illustrator document corresponds to the plotter origin (maintaining the actual position of the drawing from the document origin). Note that areas to the left of or below the plotter origin will not be output.

Here, "Document Origin" refers to the "Ruler origin" in the Illustrator document.

### **Offset**

Specify to output with an offset from the origin specified for the plotter. Negative values can be specified, but areas to the left of or below the plotter origin will not be output. When changing numeric values, use the [Update Preview] button to update the preview.

### **Output Selected Object(s)**

When checked with any object selected in an Illustrator document, only that object becomes the target to be output. When no objects are selected, all displayed objects become targets to be output.

When unchecked, all displayed objects become targets to be output regardless of whether any object is selected in an Illustrator document.

This setting overrides "Output Selection" settings made in the Cutting Master Window (Output Settings Page). The objects not meeting the conditions of this setting are not displayed in the "Output Selection" list of the Cutting Master Window (Output Settings Page).

### **Output Hidden Layer(s)**

When checked, objects on hidden layers are output in addition to those on layers displayed in the Illustrator document. Note that objects on hidden layers will all be treated as not selected, so they will not be output if there are objects selected with "Output selected object(s)" checked.

This setting overrides "Output Selection" settings made in the Cutting Master Window (Output Settings Page). The objects not meeting the conditions of this setting are not displayed in the "Output Selection" list of the Cutting Master Window (Output Settings Page).

### **Feed Medium**

Sets how the media should be handled after the plotter has completed output. The display varies depending on whether you choose "Flatbed Type" or "Friction Feed Type" in the Cutting Master Window (Plotter Settings Page).

<For Friction Feed Type>

If the Feed Medium check box has been selected, you can choose "From the End Point" or "From the Origin" and specify the feed length. You can also choose to perform cross cutting by selecting the Cross Cut check box.

The "From the End Point"/"From the Origin" selection and the feed length specification are only effective when using roll paper.

If you select the Feed Medium check box when using roll paper, the plotter operates in the manner described below.

"From the End Point"

Paper is fed by the specified length with respect to the maximum X position used at output, and the origin is moved to the X position at which the plotter completed the feed operation. The Y position of the origin is not moved.

"From the Origin"

Paper is fed by the specified length with respect to the origin, and the origin is moved to the X position at which the plotter completed the feed operation. The Y position of the origin is not moved.

### **Cross Cut**

If the Cross Cut check box is selected, the paper is cut off from the roll after it has been fed. (This setting will be ignored for models that do not have a built-in cross cutter).

If you select the Feed Medium check box when using sheet (cut) paper, the pen carriage is moved to the standby position after the plotter has output all the drawings, and the plotter prompts you to change media after feeding the paper through to the end.

<For Flatbed Type>

Only the Feed Medium check box is displayed.

When this check box is selected, the pen carriage is moved to the standby position after the plotter has output all the drawings, and the plotter prompts you to change media.

### **Matrix Copy**

Check the box to do an output of an arrangement of multiple figures.

When this check box is selected, the target drawing to be output is copied for x rows in the horizontal direction (rightward) and y lines in the vertical direction (upward) before being output. You can specify arrangement intervals in both the horizontal and vertical directions.

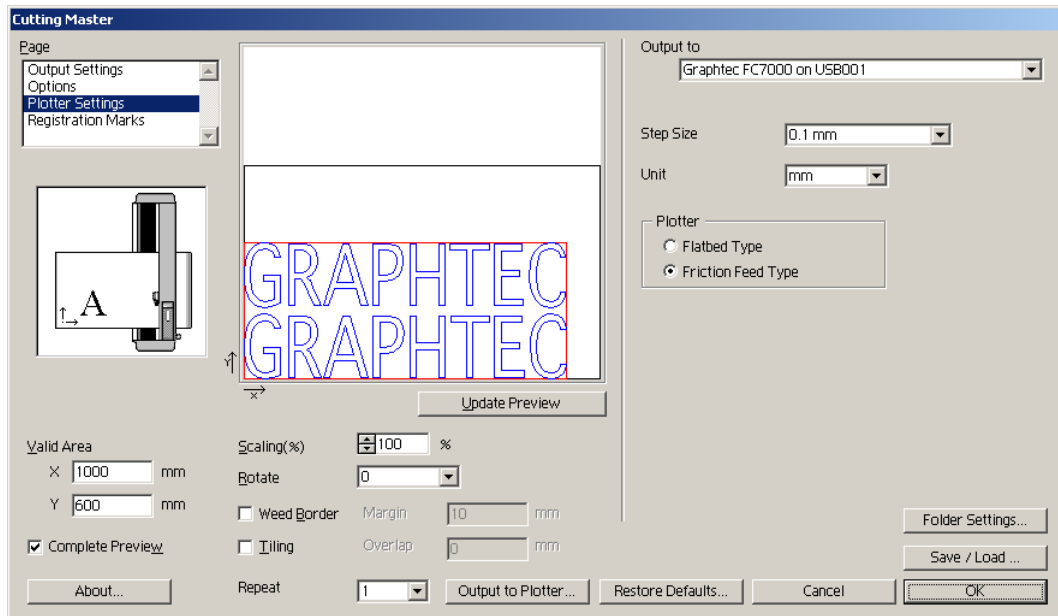
The range specified for Valid Area (i.e., black frame in preview window) limits the total output size derived from copying.

Multiple copies of the target drawing to be output are also displayed in the preview window according to this setting. When changing numeric values, use the [Update Preview] button to update the preview.

The Matrix Copy function cannot be used simultaneously with the Tiling/Overlap functions.

#### 4.1.4 Cutting Master Window (Plotter Settings Page)

Choosing "Plotter Settings" in the upper-left section (changing pages) of the Cutting Master window displays the items shown below on the right side of the window.



##### **Output to**

Select the Graphtec Windows driver to be used from among those installed in the system. The "Port" set for the driver selected is used as the output destination. If the Graphtec Windows driver has not been installed in the system, "Graphtec driver not found" will be displayed and the "Output to Plotter" button will be disabled. If this occurs, install the Windows driver.

- The Windows driver is included on the floppy disk or CD-ROM provided with the plotter. The latest driver version can also be downloaded from the Graphtec website. For details on installing the Windows driver, refer to the Readme.txt file in the respective OS folder for the Windows driver.

##### **Step Size**

Specifies the unit size (GDU) for the position data sent to the plotter.

- This setting must match the plotter setting. The plotter setting must also be changed if this setting is changed. For details on plotter operations, see the plotter's user's manual.

##### **Unit**

Select mm or inch. The unit you set here is applied to the "Offset," "Step Size," "Feed Length," "Valid Area," "Pitch Size" for line type, "Margin" for framing, Overlap for Tiling, and "Margins" for Matrix Copy setup items.

**Flatbed Type/Friction Feed Type**

Selects the type of cutting plotter to be used.

**[Folder Settings]**

Displays a Folder Settings dialog box, allowing you to set up the folder to manage the media list.

For details about the Folder Settings dialog box, see Section 4.4, "Folder Settings."

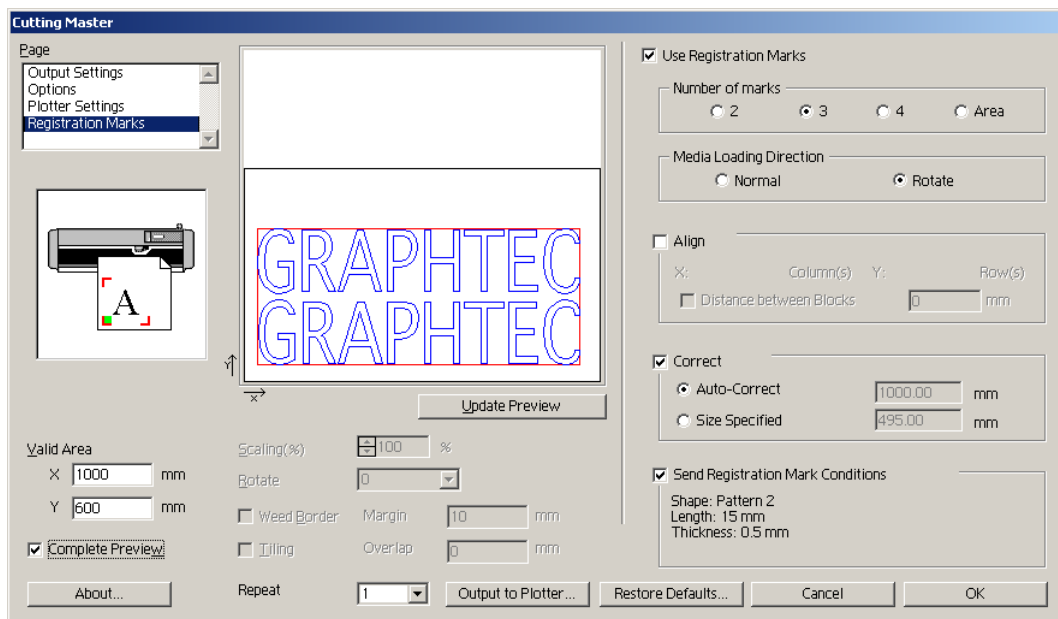
**[Save/Load]**

This button lets you save settings you've made in this plug-in software to a file and load those settings from the file when necessary.

## 4.1.5 Cutting Master Window (Registration Marks Page)

All the items in the Registration Marks Page are functions that control the registration mark reading unit in the plotter. A registration mark is the alignment mark that is used to align the cutting positions on a plotter with the printed output of a printer.

Note: The functions on this page are only effective for an FC5100A, CE3000Mk2 or FC7000 model that is fitted with a registration mark reading unit. For all other cutting plotters, ensure that the "Use Registration Marks" checkbox is unchecked. When "Registration Marks" is selected in the page switching box at the top left corner of the Cutting Master window, the following items are displayed on the right side of the window.



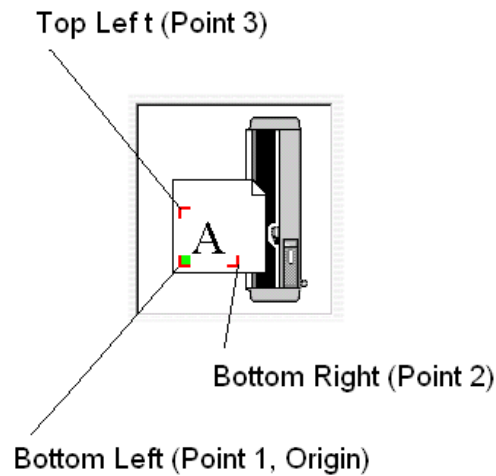
### Use Registration Marks

Check this box to enable the functions of the registration marks page. However, the items that are normally displayed are disabled and cannot be changed. These items include Scaling, Rotate, Weed Border, Tiling, and the optional Matrix Copy. Optional items, such as Use Document Origin, remain enabled.

When "Use Registration Marks" is selected, before clicking the Output to Plotter button, move the pen within the readable range of the bottom left registration mark on the plotter medium. The bottom left registration mark is the mark that is located at the bottom left on the Illustrator document. The readable range is the green section shown in the drawing of the plotter displayed in the Cutting Master window.

### Number of marks

Set the mode for reading the registration marks.



For 2, or two registration marks, the bottom left and bottom right registration marks of the document are read.

For 3, or three registration marks, the bottom left, bottom right and top left registration marks of the document are read.

For 4, or four registration marks, the bottom left, bottom right, top left and top right registration marks of the document are read.

For Area, the bottom left, bottom right, top left and top right registration marks of the document are read. The "Align/Distance between Blocks" function cannot be used when "Area" has been specified.

Specifying a small number of registration marks speeds up the registration mark reading operation, while the reading of several marks enables a higher degree of correction.

### Media Loading Direction

Select Normal or Rotate. Load the medium by referring to the drawing of a plotter shown in the Cutting Master window.

### Align/Distance between Blocks

When multiple images bounded by registration marks have been printed, the reading of registration marks and the cutting operation are repeated according to the number specified in this item. "x" indicates the number of blocks in the horizontal direction of the Illustrator document, and "y" the number of blocks in the vertical direction.

The distance between blocks refers to the travel distance to the next block, ignoring registration marks.

This function cannot be used when "Area" has been specified for "Number of marks".

### Correct

This function controls all of the alignment functions using registration marks. Set the distance between the registration marks on the Illustrator document in the associated

box for entering numerical values. The set numerical values are sent to the plotter at output. Keep this function enabled in normal operation.

If this function is disabled, the registration marks are only used for positioning and axis alignment.

When this function is enabled, the following correction is carried out using the registration marks.

For Number of marks 2:

Scale the coordinate system on the plotter up or down so that the distance between the bottom left and bottom right registration marks (which are read with the registration mark reading unit) is aligned with the numerical value of x in this item. (Correction of the horizontal distance)

For Number of marks 3:

Scale the coordinate system on the plotter up or down so that the distance between the bottom left and bottom right registration marks is aligned with the numerical value of x in this item, and so that the distance between the bottom left and top left registration marks is aligned with the numerical value of y in this item. The distances are read with the registration mark reading unit. (Correction of the vertical and horizontal distances)

For Number of marks 4:

Correct the coordinate system within the range between all of the positions (bottom left, bottom right, top left and top right) read with a registration mark reading unit and all the positions (bottom left, bottom right, top left and top right) in the data calculated based on the numerical values of x and y in this item, taking account of distortion. (Correction at four points)

For Number of marks: Area:

This setting is effective when cutting a design that is extremely long in the media feed direction (as a guideline, a design that is longer than 3 m). Intermediate registration marks are used as boundary points for dividing the design up into multiple areas. 4-point correction is then performed for each area. This function enables even more accurate correction of media skew or other alignment problems that occurred when the design was printed (segment area correction).

- . Load the design in the plotter so that the intermediate registration marks are in the plotter's media feed direction. Intermediate registration marks in the cutter movement direction will not be read.
- . Unlike drafting units, few printer types guarantee precision in the dimensions for the printing position. Distance correction and correction at the four points are operations that adjust the coordinate system of the plotter according to the printed results so that the printing positions and cutting positions are as closely aligned as possible. These operations usually improve the cutting positions. To ensure higher precision when adjusting the cutting positions, it is recommended that you use a precision-guaranteed ink-jet plotter or suchlike instead of a printer.
- . Generally, laser printers are less precise than ink-jet printers. In particular, distortion may occur when using sheet paper with a laser printer due to paper skew. Accordingly, it is difficult to obtain good results when using such a device for printing and cutting.

#### "Auto-Correct"

When registration marks are created with the registration mark creation function provided with Cutting Master, the distance between the created registration marks is automatically set as the distance in the data in the box for entering numerical values.

#### "Size Specified"

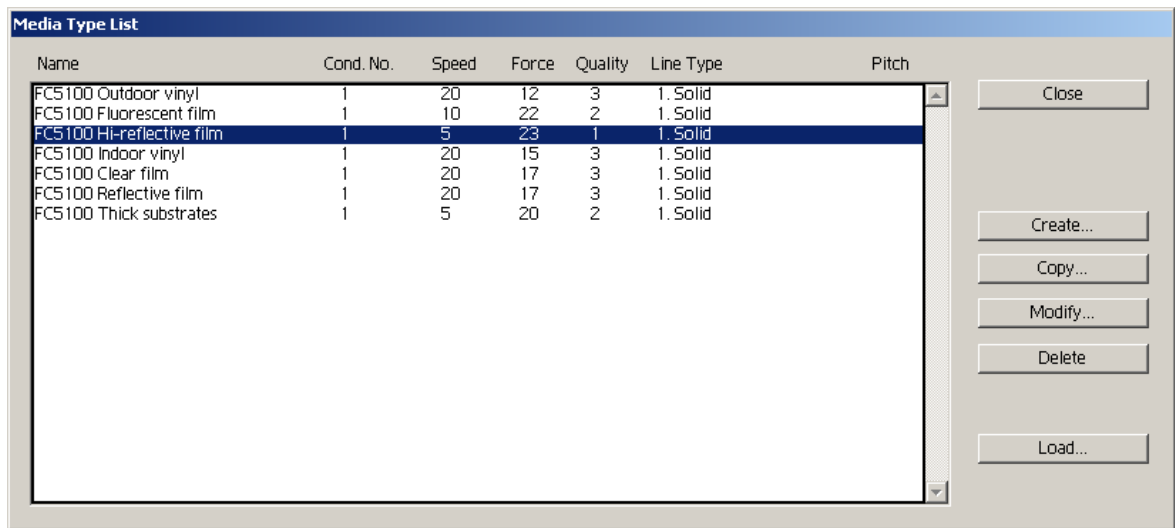
Manually enter the distance between the registration marks in the document in the numerical value input box. This function should be used when registration marks are not created using the registration mark creation function in Cutting Master, or when you wish to change the distance between the registration marks.

#### **Send Registration Mark Conditions**

When registration marks are created using the registration mark creation function in the Cutting Master, the shape, length and thickness of the created registration marks are sent to the plotter. This function should be enabled in normal operation.

## 4.2 Media Type List

Use this list to manage the media files in which you saved the output conditions.



### Settings list

Media names (media file names) and the settings saved in those files are displayed in list format.

The media files initially displayed in the setting list after setups are provided as an approximate guide for your reference. The settings displayed here are not guaranteed to be appropriate. The actual optimum settings differ with the make, type, and purpose of use of each media used. The settings also change due to abrasion of the cutter blade and other changing conditions. Determine optimum settings by using the trial plotting function available on the plotter, then modify settings in or add settings to the list.

### [Create]

Launches a Media Settings dialog box allowing you to make media settings. Click [OK] to exit the Media Settings dialog box. A new media file is then created.

You cannot create media using an existing media name in the setting list.

For details about the Media Settings dialog box, see Section 4.3, "Media Settings."

### [Copy]

Pressing this button after selecting a medium from the setting list opens a Media Settings dialog box using the settings for the medium selected. Change the media name in this dialog box and save it. A new media name is then created.

For details about the Media Settings dialog box, see Section 4.3, "Media Settings."

### [Modify]

Pressing this button after selecting a medium from the setting list opens a Media Settings dialog box.

For details about the Media Settings dialog box, see Section 4.3, "Media Settings."

**[Delete]**

Deletes the media selected in the setting list.

**[Load]**

Loads a media settings file in which the standard settings (for each type of plotter used and each purpose of media use) are saved. This file is added to the media list.

## 4.3 Media Settings

Create or modify the output conditions for each media type.

The image shows a 'Modify' dialog box with the following fields and options:

- Name:** FC5100 Outdoor vinyl
- Cond. No.:** 1
- Speed:** 20 cm/s
- Force:** 12
- Quality:** 3
- Line Type:** Radio buttons 1 through 9, with radio button 1 selected.
- Pitch Size:** 10 mm
- Buttons:** Restore Defaults..., OK, Cancel

### **Name**

The current media name is displayed here. Any desired media name can be specified.

Media names of up to 27 characters (single-byte characters) can be entered.

### **Cond. No.**

Specifies the plotter condition setting number. Valid numbers range from 1 to 8, but numbers that cannot be set on the plotter should not be specified. (Some plotters cannot specify numbers 5 to 8.)

### **Speed**

Specifies the pen speed on the medium for cutting or plotting. Available speeds range from 0 to 100, but the optimum setting will vary depending on the media and pen type. Likewise, the values that can be set will vary depending on the plotter. For details, see the plotter's user's manual. Specifying "0" deselects the setting, and the speed for the "Cond. No." specified above is used.

### **Force**

Specifies the force applied to the pen for cutting or plotting. This setting is only valid when specified together with "Quality." The value for Force can be set from 0 to 100, but the optimum setting will vary depending on the media and pen type. Likewise, the values that can be set will vary depending on the plotter. For details, see the plotter's user's manual. Specifying "0" deselects the setting, and the force for the "Cond. No." specified above is used.

**Quality**

Specifies the pen acceleration for cutting or plotting. Specifying lower values increases the quality. This setting is only valid when specified together with "Force." Valid Quality settings range from 0 to 10, but the optimum setting will vary depending on the media and pen type. Likewise, the values that can be set will vary depending on the plotter. For details, see the plotter's user's manual. Specifying "0" deselects the setting, and the quality for the "Condition No." specified above is used.

**Line Type**

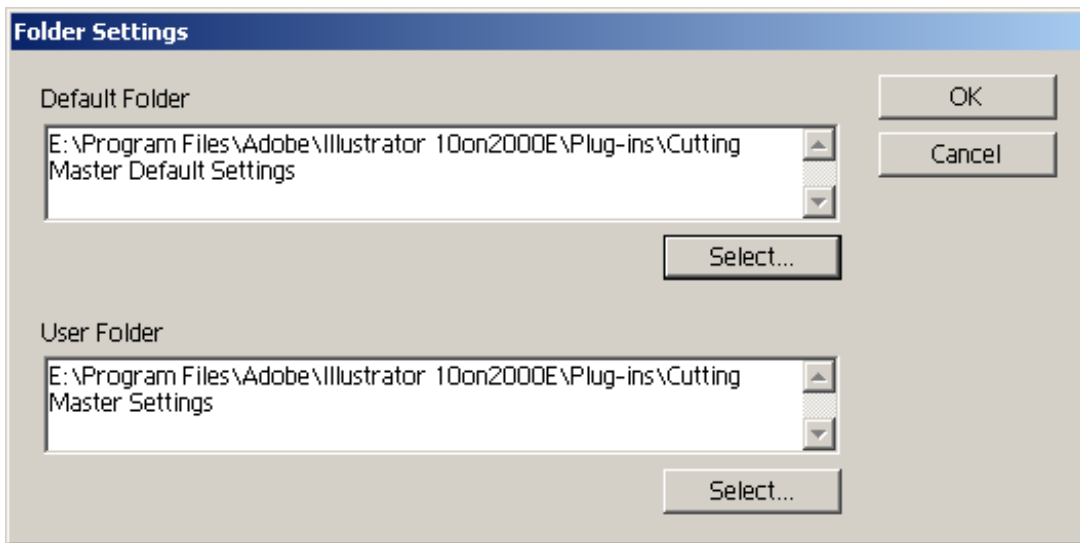
The line type to be output can be selected from the list of solid lines, dotted lines, dashed lines (3 types), dotted/dashed lines (2 types), and double-dotted/dashed lines (2 types). Solid lines should be used for normal cutting.

**Pitch Size**

This is only available when a line type other than solid is selected. Lines other than solid are formed from the repeated specified patterns. Pitch size specifies the length of the pattern.

## 4.4 Folder Settings

Set up folders to manage the media setting files used in the media list, etc.



### **Default Folder**

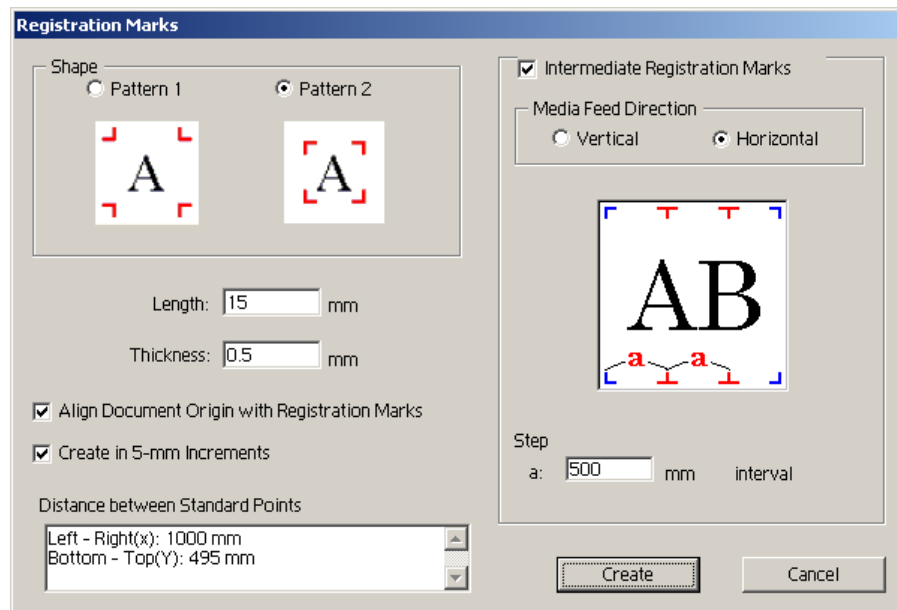
Set the folder here containing the media setting files that are displayed by pressing the [Load] button in the Media List dialog box. Press the [Select] button to choose a folder from the ensuing list. You normally need not modify the default media folder.

### **User Folder**

Set the folder here containing the settings of the Media List dialog box. Press the [Select] button to choose a folder from the ensuing list. Use User Folder to differentiate the media list for each purpose of use. You normally need not modify the user folder.

## 4.5 Registration Marks

This window is displayed when "Cutting Master" > "Create Registration Marks" is selected from the "File" menu in Illustrator while a rectangle is selected in an Illustrator document. Registration marks are marks for alignment that are used to align the printed results of a printer with the cutting positions by a plotter. When you click the Create button in this window, registration marks are created based on the selected rectangle and the rectangle is deleted. The registration marks are created in a new layer.



### Shape

Select the pattern for the registration marks. The registration marks are created so that the four corners of a standard rectangle are aligned with the standard points (angles) of the registration marks, regardless of the pattern selected.

### Length

Set the distance from the standard point (angle) to the end of the line for the registration marks.

### Thickness

Set the thickness of the lines used for the registration marks.

### Align Document Origin with Registration Marks

Align the origin of the ruler in the Illustrator document with the standard point of the bottom left registration mark. Keep this function enabled in normal operation.

If registration marks were created when this function was disabled (the box was not checked), move the origin of the ruler in the Illustrator document so that it is aligned with the standard point of the bottom left registration mark before performing a cutting operation.

**Create in 5-mm Increments**

When the size of the standard rectangle is not a multiple of 5 mm, creates the registration marks after increasing the size of the rectangle until it becomes a multiple of 5 mm.

**Distance between Standard Points**

Displays the distance between the registration marks when the registration marks are created with the current settings.

**Intermediate Registration Mark**

Creates intermediate registration marks for use during segment area correction. Use this function when cutting extremely long designs (as a guideline, designs that are longer than 3 m). If "Area" has been specified for "Number of marks" in the Cutting Master "Registration Marks Page", segment area correction is performed during the cutting operation.

**Media Feed Direction**

Using the Illustrator document design as a reference, specify the direction in which the media is going to move for cutting. The registration marks are created in the specified direction.

**Step**

Specifies the interval at which the intermediate registration marks are placed. The optimal value varies according to factors such as the quality of the media and the media feed accuracy of the device used to print the design. Normally, specify an interval of at least 1 m in length. In general, if the specified value is smaller than the width of the medium in the cutter movement direction, the accuracy will not be improved. Moreover, the larger the number of intermediate registration marks, the longer it will take for registration mark reading when cutting is performed.

**[Create]**

Creates the registration marks based on the settings and erases the standard rectangle. The registration marks are created in a new layer and are locked.

**CAUTION**

Do not move the Illustrator document origin after registration marks have been created.

# 5 Error Messages

- ◆ No output objects found.
  - No vector data exists in the document (including when text is not outlined).
    - Convert a graphic object containing text into outline format.
  - The "Output selection" setting in the Cutting Master window (Output page) is set to "Select by Layer" or "Select by Color," and no layers or colors are set to be output (Plot: No).
    - Set the layers or colors to be output to "Plot: Yes."
  - Deselecting the Output Hidden Layer(s) check box of Cutting Master hides all layers in Illustrator.
    - Turn on the display of the layers to be output.
  
- ◆ A Graphtec Plotter Driver could not be found.
  - The Windows driver has not been installed.
    - This plug-in software outputs via the Windows driver. Windows driver must be installed.
      - \* Windows driver is included on the floppy disk or CD-ROM provided with Graphtec plotters, except for some older models. The latest driver version can also be downloaded from the Graphtec website. For details on installing Windows driver, refer to the Readme.txt file in the respective OS folder for Windows driver.
  
- ◆ The specified Graphtec Plotter Driver could not be found.
  - The Windows driver used previously has been deleted.
    - This plug-in software outputs via the Windows driver. Reselect the output destination for "Output to" in the Cutting Master window (Plotter Setup page). Install Windows driver if it is not already installed in the system.
      - \* Windows driver is included on the floppy disk or CD-ROM provided with Graphtec plotters, except for some older models. The latest driver version can also be downloaded from the Graphtec website. For details on installing Windows driver, refer to the Readme.txt file in the respective OS folder for Windows driver.
  
- ◆ No media files could be found.
  - The media list has been completely deleted.
  - The default media folder or media folder in the Folder Setup window has been changed to a folder containing no media files.
    - No problems will be caused if "Assign by Layer" and "Assign by Color" are not used in Output Conditions.
      - If "Assign by Layer" or "Assign by Color" is used, either create or add media in the media list. Alternatively, change the Default Folder or User Folder to the original folder used when Cutting Master was first installed in the Folder Setup window.

- ◆ The selected media type name already exists. Overwrite?
  - A media type name saved previously was selected when a media type was added to the media list.
    - Selecting "Yes" overwrites the selected data saved in the media list. Selecting "No" changes the data to be added before it is saved in the media list.
    - Selecting "Cancel" aborts the adding of the media type name.
  
- ◆ The file type does not match. This file could not be loaded.
  - An attempt was made to load an incorrect settings registration file.
    - Only settings registration files saved using this plug-in can be used. Specify a file saved using this plug-in software.
  
- ◆ Too large. Please re-specify the Matrix Copy plotting area.
  - Matrix Copy is improperly set.
    - Matrix Copy can only be used in a specified plotting area (Valid Area).  
Confirm that the settings you made are correct.
  
- ◆ A file operating error has occurred.
  - An attempt was made to output to or save settings over the file currently being used by another application.
    - Assign the file another name before you output or save it.

The specifications, etc., in this manual are  
subject to change without notice.

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**GRAPHTEC CORPORATION**

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