GMG ColorProof
Best Practices: Roland VersaCAMM VS Printer Series

Imprint

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1. Roland VersaCAMM VS Series

The **VersaCAMM VS** printer series, developed by **Roland**, enters the printing market with four powerful print and cut inkjet printers designed for high quality package **prototyping** and short-run production. With the capability to print **CMYK**, **Light Cyan**, **Light Magenta**, **White** and **Metallic** ink, at resolutions up to 1440 dpi, the **VersaCAMM VS** series allows for unmatched versatility and remarkably rich special effects, offering a whole new metallic color palette.

White and Metallic ink channels

The white and metallic ink are handled as **spot colors** in GMG ColorProof. You can fine-tune the behavior of each spot color channel by adjusting the **Area Coverage** or by using a spot color **gradation** (sfg) file. You can also control the color composition by defining the tonal value and opacity of each ink, for example defining the amount of Silver and Blended Silver used in a spot color.

See also:

- "Spot Colors" on page 10
- "Assigning Image Channels" on page 11

Contour cutting

With the integrated cutting technology, these printers offer a one-step operation which is also supported in GMG ColorProof. This way, you can create mockups already cut into shape.

See also:

- "About Contour Cutting" on page 12

Available Proof Standards and Calibration Sets

GMG proof standards and calibration sets for **VersaCAMM VS** printers are available for the following print media:

- Coated vinyl white self-adhesive foil: **Roland SCM-GVWG**
- Transparent PET film: **Solvent Clear Film**
- Coated Paper: **TriSolv Paper 3684**

If you want to use a different print medium, you first need to add the print medium in the **System** view (**System** > **Media**) and assign the printer to the medium. You can then proceed to the next step and create a calibration set and a proof standard for the new printer-medium combination. All these steps are explained step for step in our printer-specific **Starter Kits**.

Note Custom media should be thoroughly tested before use to ensure optimum quality. Though solvent ink printers can technically print to uncoated media, it is recommended to use specially treated media to enhance color and quality.

See also:

- GMG-ColorProof-5_Tutorial_StarterKit_Roland VersaCAMM VS_en.pdf

Printer maintenance

Due to the **Intelligent Ink Circulation System**, the white and metallic ink are circulated every eight hours to keep the tube system in the printer clean. The cartridges, however, still need to be **shaken** prior to use or when prompted by the printer to achieve homogeneous print results.

2. Best Practices for Roland VersaCAMM Printers

With a **Roland VS** printer, you can print single or multiple ink layers. The white ink can, for example, be used as an undercoat to increase the opacity of images when printing on a transparent media type. The metallic ink can be printed full tone or combined with CMYKLcLm to produce a wide range of metallic and pearlescent colors. Providing you with a **PANTONE Metallic coated** spot color set, GMG ColorProof enables easy-to-use and highly accurate spot color simulations including gold, silver and bronze colors.

In the following, you will learn how to set up jobs in GMG ColorProof for printing with white and metallic ink, followed by tips for accomplishing best print results.

2.1 Multiple Layers—Multiple Color Modes

Creating jobs in GMG ColorProof for printers with **white** and **metallic** ink works basically much the same as with any other printer. Multi-layered printing, however, requires attention in terms of selecting the correct **Printer Settings**, such as the **Color Mode** and **Resolution**.

These settings are **interdependent**, narrowing the choice to the technically feasible (and advisable) and are defined by the **Calibration Set**. Select a calibration set on the **Printer Settings** > **Printer** page and switch to the **Advanced** tab to see the parameters the calibration set is using. If you are using a custom calibration, you need to define all parameters on the **Advanced Printer Settings** page.

Note Depending on the selected calibration set, some ink channels might be switched off. Make sure to select a calibration set supporting all required ink channels. For example, when selecting a calibration set with the color mode **CMYK Only**, all white ink channel information in the job will be **ignored**. Only data referring to the selected calibration set will be sent to the printer, regardless of the channels displayed on the **Channels** page in the **Manual Job Manager** (**Image** > **Color Management** > **Channels**).

See the following table for a brief explanation of the different color modes within each calibration set. Each color mode defines a set number of ink channels that are used to print the job.

Available Color Modes

Color Mode	*Description*	*Printing Method*
CMYKLcLm	Prints **only** CMYK, Light Cyan and Light Magenta. Combined with **White Only** or **Metallic Only**, this color mode is ideal for **front printing** on opaque media.	Front printing
CMYKLcLm | Reverse Print	Prints CMYK, Light Cyan, Light Magenta in one pass. This color mode has been designed for **reverse printing**. The job is automatically **mirrored** (vertically).	Reverse printing
CMYKLcLm | White	Prints CMYK, Light Cyan and Light Magenta covered with White ink in one pass. This color mode has been designed for **reverse printing** on transparent media. The job is automatically **mirrored** (vertically).	Reverse printing with split print head
White | CMYKLcLm	Prints White, CMYK, Light Cyan and Light Magenta in one pass. White is printed as undercoat, overprinted by CMYKLcLm.	Front printing with split print head
Metallic | CMYKLcLm	Prints Metallic ink, CMYK, Light Cyan and Light Magenta in one pass. The Metallic ink is printed as undercoat, overprinted by CMYKLcLm.	Front printing with split print head
CMYKLcLmMt (Blended)	Prints CMYK, Light Cyan and Light Magenta **blended** with Metallic ink in one pass (no metallic undercoat).	Front printing
White Only	Prints **only** white ink (ideal for printing an undercoat on transparent media in a low resolution to print high resolution CMYK on top of it). You can fine-tune the behavior of the White channel by adjusting the **Area Coverage** in percent or by using a spot color **gradation** (sfg) file.	Front printing
White Only Reverse Print	Prints **only** white ink (ideal for printing an undercoat on transparent media in a low resolution to print high resolution CMYK on top of it). Together with a **CMYK Reverse Print** color mode, this color mode can be used for **reverse printing** on transparent media. The job is automatically **mirrored** (vertically). You	Reverse printing

Color Mode	*Description*	*Printing Method*
	can fine-tune the behavior of the White channel by adjusting the **Area Coverage** in percent or by using a spot color **gradation** (sfg) file.	
Metallic Only	Prints **only** Metallic ink (ideal for printing an undercoat on transparent media in a low resolution to print high resolution CMYK on top of it). You can fine-tune the behavior of the spot color channel by adjusting the **Area Coverage** in percent or by using a spot color **gradation** (sfg) file.	Front printing

2.2 Printing Methods for Printing Special Inks

Printers such as the **Roland LEC/LEJ** and **Roland VersaCAMM VS** feature special inks which can be printed with CMYK in a single pass or in multiple passes.

Printing layers in a single pass or in multiple passes

Single-pass printing has the advantage that the print medium does not need to be pulled back and two layers can be printed simultaneously. Even when overprinting White or Metallic with CMYK, the inks can be applied in a single pass by using a **split print head**—one half of the print head prints one layer, the other half prints the second layer. Alternatively, you can print CMYK and a special ink in separate passes which requires a rewinding of the print medium after each layer.

Both methods have pros and cons:

- Printing with a split print head takes more time, because both layers must be printed with the same resolution and print mode even though some inks (such as white) do not require the same resolution as CMYK.
- On the other hand, this method avoids a potential misalignment of the print medium, as the medium does not have to be pulled back. So if you want to print a job with fine detail or a long print job, which requires a perfect alignment of the different layers, single-pass printing is the method of choice.

Printing layered or blended Metallic Silver

To print metallic effects, you can choose between printing Metallic Silver as a single ink in one layer (**Color Mode**: **Metallic Only**), with a split print head in two layers but one pass (**Color Mode**: **Metallic|CMYKLcLm**) or **mixed** with CMYK and printed together in one layer (**Color Mode**: **CMYKLcLmMt (Blended)**).

- **Layered**: Metallic Silver and CMYK are printed in two physically separate layers in one pass. When printing on transparent foil, one side of the print appears metallic and the other side appears colored.
- **Blended**: Metallic Silver and CMYK are mixed and printed together in a single layer. When printing on transparent foil, both sides of the print show the same mixed color tone.

2.3 Printing Multiple Layers with Special Inks

Instead of configuring separate jobs for each layer of white, metallic or clear ink, you can conveniently define print layers on the **Print Layers** tab (**Job** > **Printer Settings** > **Print Layers**). The print medium is automatically pulled back to its initial position after each layer to print the next layer. The order in which the layers are printed can be freely modified. All settings on the **Print Layers** tab are saved with each job and are restored for the next compatible job to reduce the configuration time.

Examples for multi-layer printing:

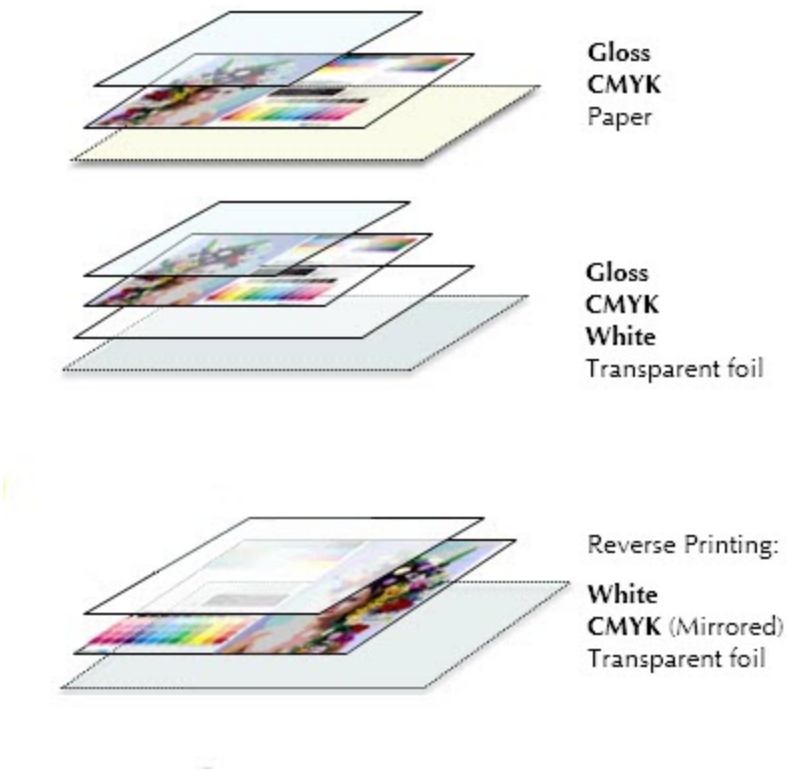

Fig. 1 Different print layers for special inks can be configured in a single job.

Note For more information on producing mockups with GMG ColorProof, please see our printer specific **Best Practices**.

Automated multi-layer printing

Let's assume you want to proof an image with 6 image channels: CMYK, white and metallic / clear ink. To view the channels of a selected image, you can click on the **Color Management** > **Channels** page. On the **Printer Settings** > **Printer** page, you can check the preselected calibration set. As for technical reasons white and metallic / clear ink cannot be printed at the same time, you need to either choose a calibration set with a **CMYK Only** color mode or include white and select a **W|CMYK** color mode instead. The remaining layers can be selected on the **Print Layers** tab, as shown on the following screenshot.
The **Main Job Layer** includes all colors covered by the selected calibration set on the **Printer** tab, in this case **CMYK**. In addition to the main layer, **White** and **Silver** will be printed in our example (1). The **Order** column (2) reflects the order in which the layers will be printed which can be changed by clicking the arrow buttons on the left. In our example, we want to print a white coating onto the print medium before applying metallic ink and finally CMYK. If a validator message prompts you to select a different color mode for a layer, click on the respective **Change Print Mode** buttons (3) to open the layer settings. The layer settings can also be used to change the **resolution** of a layer, for example, you can print some layers in a faster 360 dpi print mode. With **Number of Copies** and **Overprint** you can multiply the selected layer. When selecting several copies of a layer, this layer will be printed several times one layer after the other with drying in between, whereas when selecting overprint passes, the print head will print the same line several times right on top of each other.

Note The print sequence is **not** visualized in the job or image **preview** so that potential output issues (such as printing a white undercoat on top of CMYK) will not be shown in the preview.

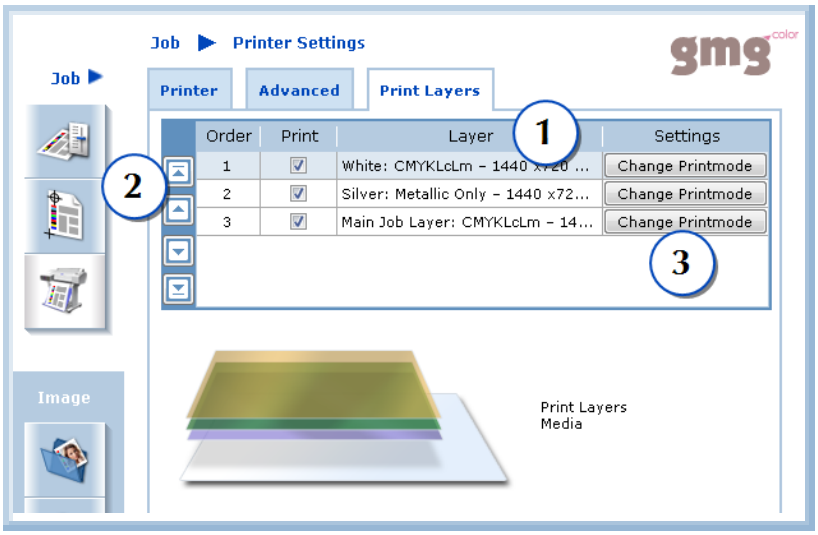

Fig. 2 Manual Job Manager: Automated multi-layer printing.

How does the spot color handling work?

Special inks are handled as spot colors in GMG ColorProof. A spot color can be defined with up to three special inks. If a spot color contains color data for multiple image channels, white takes precedence and the spot will be displayed on top of the **Channels** list (**Color Management** > **Channels**). The image channel order can be changed according to your requirements. If you, however, redefine a spot color after the channel list has once been arranged, it is not automatically updated accordingly.

Special inks are all printed in a separate layer except **Silver (Blended)** which is printed together with the CMYK layer. The spot color sets that simulate spot colors with special inks have been suffixed with the respective ink (for example **Silver** or **Silver Blended**). This way, the appropriate sets (**Printer** tab > **Spot Color Priority** list) can be easily recognized and the search sequence customized (see "Spot Colors" on page 10).

Manual multi-layer printing in separate jobs

If you want to **manually** define your layers or need a special layering not supported by the **Print Layers** functionality, you need to enable the option **Print Images on Top of Each Other** as shown on the following screenshot, so that the print medium is automatically pulled back to its initial position, ready to print the next layer.

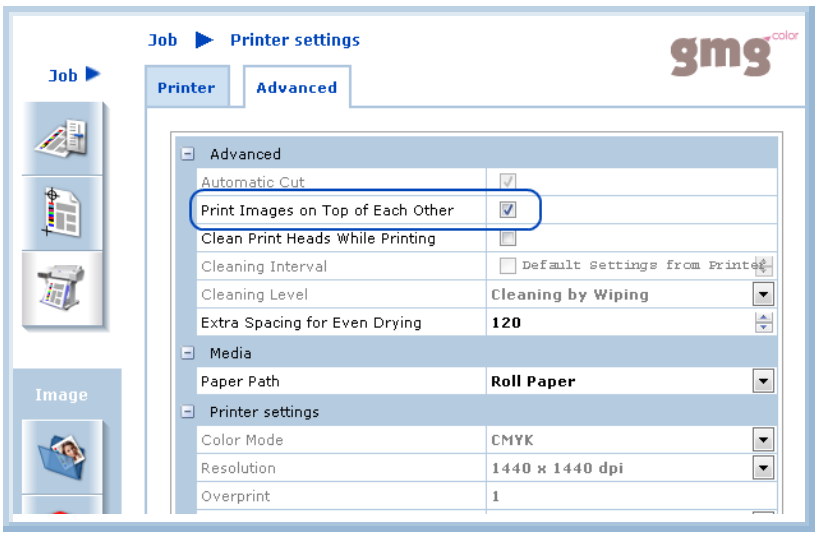

Fig. 3 Manual Job Manager: Printing Images on Top of Each Other.

2.4 Spot Colors

In a document, GMG ColorProof handles the channel names Cyan, Magenta, Yellow, Black (CMYK) and Red, Green, Blue (RGB) as **process colors**. All other channels are regarded as **spot colors**.

Process colors are color managed via **MX** or **standard** ICC proof profile. **Spot colors** are color managed via **spot color sets** or **multicolor** ICC profiles.

Spot color mapping

GMG ColorProof tries to map a channel name in a document to a spot color name in a spot color set. The **Spot Color Priority** defines the order of sequence in which the spot color libraries are searched.

The first exact match is used. If no exact match exists, GMG ColorProof tries to map the channel name to a similar spot color name and uses the "best match". For example, a PANTONE **CVC** color will be mapped to a PANTONE **C** color. If the suffix specifying the media type (U = Uncoated, C = Coated, M = Matte) is missing, the spot color will be mapped to the best match color for coated media type (C). For example, a PANTONE **CV** color will be mapped to a PANTONE **C** color.

Note Using the "best match" increases the automation of GMG ColorProof. However, it could potentially lead to undesired effects and colorimetrically incorrect results. Please always check the spot color mapping. To do so, you can print the **Spot Color Information** in the label.

If no "best match" exists either, the job will not be printed. You will need to manually define the mapping in the **Manual Job Manager** > **Image** > **Color Management** > **Channels** page.

You have full flexibility to remap channels in the **Manual Job Manager**. You can even manually map a spot color channel to a process color and vice versa.

Overprinting spot color channels

The color channels list in the **Manual Job Manager** (**Image** > **Color Management** > **Channels**) visualizes the printing sequence: The **top** color is printed **first**, the next is second, and so on. The bottom color is the top color on the print medium.

The default order is as follows.

- White spot colors
- Process colors
- Spot colors

GMG ColorProof offers you full flexibility in defining the print sequence and blend mode for spot color channels. This allows you to simulate the overprinting behavior of spot colors with different technical properties on the press.

You can define the mode how overprinting spot color channels should be blended with underlying channels in the spot color database: You can either define an **Opacity** or select the option **Multiply Channels**. The two modes are mutually exclusive.

If you want to define a **custom** spot color in the **Manual Job Manager**, select **Define Spot Color** from the respective dropdown list in the **Color** column. To define the overprinting behavior of the spot color, use one of the **blend modes** described in the following table.

Blend modes

Note Spot colors overprinted by process colors (spots above process colors in the **Channels** list) are **always** blended in **Multiply Channels** mode.

Option	*Description*
Multiply Channels	Optimized algorithm for overprinting spot color channels. (This blend mode cannot be directly compared to the blend modes you might know from standard graphics programs.)

Option	*Description*
Opacity	As an alternative to the automated **Multiply Channels** algorithm, you can also define a custom **Opacity** in percent for a spot color channel. Note that when using the **Opacity** mode, the order of **print sequence** of spot and process color channels is very important for the resulting color impression. **Opacity** defines the blending of overprinting spot color channels with all **underlying** channels. For example, if spot A is printed with an opacity of 50% over spot B, spot B shows through spot A with an intensity of 50%. If spot C has an **Opacity** of 100%, it will knock out all underlying channels. An opacity of 100% can be useful, for example, for simulating very opaque spot colors such as metallic colors. If a spot color is printed **directly** onto the print medium (top channel in the list), the spot color channel is always printed with **100%** opacity, regardless of the **Opacity** value.

2.4.1 Assigning Image Channels

Note To be able to use a spot color set for the spot color mapping, you need to activate it in the **Active** column (**Job** > **Printer Settings** > **Printer** > **Spot Color Priority**).

If a spot color **cannot** be found in one of the selected spot color sets, an error message shows up at the bottom of the dialog and the job cannot be printed. In this case, you will have to **define** the spot color manually or **choose** the spot color from a **custom** spot color set.

How to assign an image channel to a spot color

The below screenshot shows the image channels of an image with CMYK and three spot colors: two PANTONE spot colors, which have been found in a selected spot color set, and one custom spot color (MetallicBlue) which needs to be defined manually. To define a spot color, click into the **Color** cell and select **Define Spot Color** from the drop-down list. Enter the tonal values and define all other parameters.

Tip You can also print spot color gradations in GMG ColorProof by assigning a **gradation correction** (sfg) file created in GMG SpotColor Editor to a spot color channel.

See also:

- "Printing Spot Colors with a Gradation Correction" on page 11

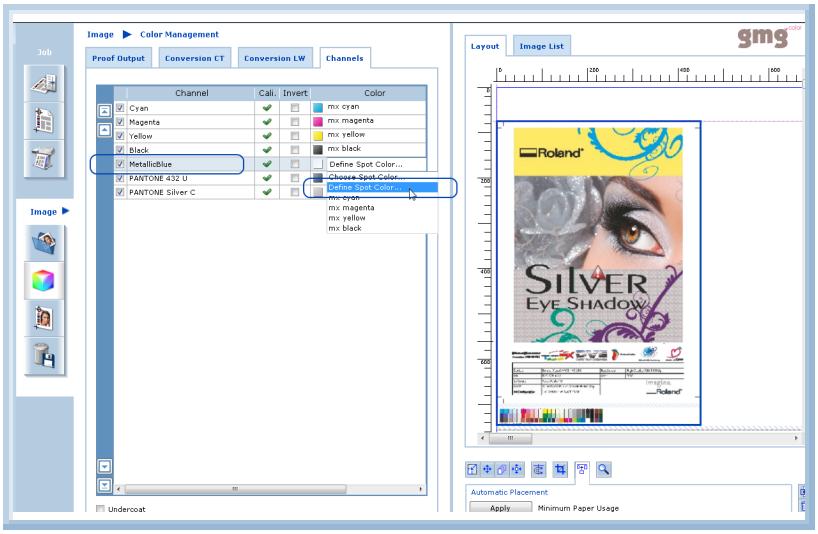

Fig. 4 Image with three spot color channels in **Manual Job Manager**.

2.4.2 Printing Spot Colors with a Gradation Correction

For most spot color applications, it is only required to print the spot color as full-tone (100%) color. You can, however, create spot color gradations (*.sfg) in GMG SpotColor Editor which can be applied to a spot color in two ways, as described in the following.

- Link the sfg file to one or multiple **spot colors** in the db3 spot color database (using GMG SpotColor Editor). For more information on how to do this, please see the separate documentation available for GMG SpotColor Editor.
- Link the sfg file to a **spot color set** if you prefer flexibility, applying one gradation correction per GMG ColorProof **workflow**. You can load a gradation correction (sfg file) in the **Workflow** dialog box. A gradation correction loaded in the workflow takes precedence over gradation files that might be linked to spot colors in the spot color set.

How to a link a gradation correction to a spot color set in a workflow

1. On the navigation panel on the left of the main window, click **Workflows**.
2. Open a workflow.
3. On the navigation panel of the **Workflow Properties** dialog box, click **Print Settings**.
4. Select a spot color set on the **Spot Color Priority** list and click **Choose Gradation File** on the **Gradation** list.
5. Close the **Workflow Properties** dialog box. The gradation file is now used for all jobs created by this workflow that use spot colors from this spot color set. A conflicting gradation linked to any spot color from this set in the spot color database will be **ignored**.

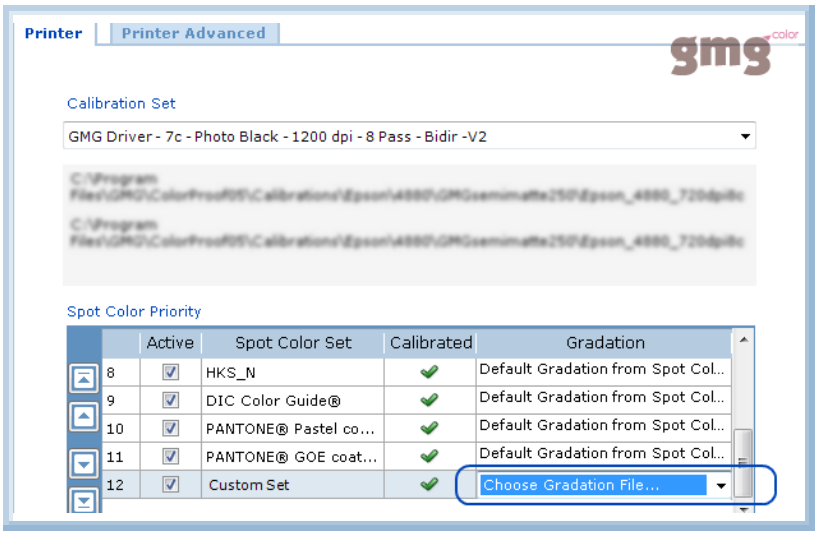

Fig. 5 Assigning a gradation file in a workflow.

How to a link a gradation correction to a spot color in a manual job

1. On the navigation panel on the left of the main window, click **Jobs** and create a new job.
2. On the navigation panel of the **Manual Job Manager** dialog box, click **Color Management**.
3. Click the **Channels** tab.
4. Select a spot color channel and click **Choose Gradation File** in the **Gradation** list.
5. Browse for the *.sfg file you want to use and click **Open** to load the file.
   A conflicting gradation linked to the same spot color in the spot color database will be **ignored**.

2.5 About Contour Cutting

How do I use the cutting functionality?

To begin with, you need to open your PDF/PS file in a vector graphics editor such as Adobe Illustrator and set a cut path. After saving the cut path as a **spot color** channel, you open the file in the **Manual Job Manager** in GMG ColorProof and define the **Cutting Settings**, as described in the following.

When processing the job, GMG ColorProof extracts the cut path information from each PDF/PS page and generates a cutting processing step which is automatically started after printing.

How to create cut paths in Adobe Illustrator

In the following, you will learn how to add a cut path as a vector graphic to a document, using Adobe Illustrator CS4.

After adding the cut path to the document, you will assign a **spot color** to it which is required to allow GMG ColorProof to recognize the path and determine where the cutter is applied. For help on creating paths for more complex graphics, please refer to the Adobe Illustrator Help.

Note The cut path should have no open ends, but form a **closed contour**. If you, for example, draw a half circle, the cutter would not only cut along the half circle line, but also close the gap, returning to the start point.

Note A cut path is automatically created as **vector** object in Adobe Illustrator. Take care **not** to convert the vector object, for example by ripping the file in another software, because GMG ColorProof needs vector information for the cutting functionality.

1. Open your document in Adobe Illustrator.
2. **Draw** a vector object as cut path by using the drawing or shape tools shown on the **Tools** panel on the left.
   (If the **Tools** panel is not displayed, select **Tools** from the **Windows** menu.)
3. On the **Windows** menu, select **Swatches**.
   The **Swatches** panel is displayed.
4. On the **Windows** menu, click **Color** and select the **Stroke** button to be able to assign a spot color to your path in the following steps.
5. Click the **New Swatch** button on the bottom of the **Swatches** panel to create a new swatch.
   The **New Swatch** dialog is displayed.
6. Enter any name for the swatch.
   (The exact name is not relevant for GMG ColorProof.)
7. Under **Color Type**, select **Spot Color**.
   (Just as with the name, the color is not relevant. GMG ColorProof only needs a spot color assignment to recognize the cut path.)
8. Click **OK** to confirm your changes.
9. **Save** the file.
   The file is now ready for print and cut processing in GMG ColorProof.

How to define the Cutting Settings in GMG ColorProof

Note The **Cutting Settings** apply to **all** images in a job. If you define different **Cutting Settings** for different spot color channels with cutting information, you will overwrite the settings each time you change a cutting parameter for a different spot color channel.

1. Open a file with cutting information in the **Manual Job Manager**.
2. Click the **Color Management** button on the navigation panel on the left and select the **Channels** tab.
3. In the **Color/Processing** column of the spot color channel with the cutting information, select **Define Cutting** from the drop-down list.
   The **Define Cutting** dialog is displayed.
4. Define the cutting parameters such as the **Blade Pressure** or **Cutting Speed**.
5. Click **OK** to confirm your choice.
6. Optional: Repeat step 3 and 4 for each spot color channel with cutting information.

7. **Print** the job.
   The job is printed according to the selected parameters. After printing, cutting starts automatically. The cutter uses the vector cut paths within a spot color channel as a contour line for cutting.

2.6 Further Recommendations

Drying times

Though the **Roland ECO solvent inks** have a fast drying time, they cannot be regarded as 100% stable and color-accurate just after being printed.

When **calibrating** your printer, it is recommended to allow the test charts to dry for about **15 minutes**. The same applies for printing test charts for full gamut files. When creating a **profile**, the test charts should be left drying for **30 minutes** before measuring to ensure accurate results.

Measurement Type	*Drying Time*
Measuring a control strip	15 min
Recalibrating (GMG AutoCali Wizard)	15 min
Measuring a Full Gamut test chart	15 min
Measuring a Gamut test chart	30 min
Optimizing an MX4 Profile	30 min