Gerber ColorID is a fast, efficient, and accurate way to match a source color to another color. Now you can meet your customers’ expectations – reducing the gap between imagination and reality – by matching unique shades and corporate identification colors.

**Ways to set up ColorID**

The ColorID option is available as a software program only. If you already own a color measurement device called a Gerber ColorID Colorimeter you may use this with the ColorID software. Gerber Colorimeters are no longer available and ColorID software is not compatible with other colorimeters.

**Ways to use ColorID**

There are several ways to use ColorID.

- You can open ColorID from Composer, select the color you want to match, and automatically fill or assign the color back in Composer. This method closes the color matching/digital imaging loop by allowing you to match to a specific palette, and then print the job on a Gerber thermal printer.

- You can use the software program to manually match a vinyl, GerberColor Spectratone, Spectratone II, or PANTONE® color to another vinyl, foil, Spectratone, or PANTONE color.

- You can connect a Gerber colorimeter to a serial (COM) port on your computer. When you take a sample of a color, the color values (including vinyl, foil, Spectratone, or PANTONE colors) are automatically displayed in the ColorID program. After choosing the palette to use for matching the color, ColorID automatically finds the closest color match to the sample color.

This book is divided into the following chapters:

**Chapter 70: Using ColorID**, shows you how to use the software by itself, or with a colorimeter, to quickly and accurately match colors.

**Chapter 71: Using the Matching Color in Composer**, provides the procedures for using the color matches determined by ColorID when you are designing a job in Composer.

**Chapter 72: Additional ColorID Software Features**, explains additional features beyond those described in *Using ColorID*.

**Chapter 73: Introduction to Colorimeters**, provides a basic introduction to colorimeters.
Chapter 74: CP320 Colorimeter Operations, provides a description and directions for using the model CP30 colorimeter.
Chapter 70: Using ColorID

ColorID software is automatically installed with OMEGA CP. If you already own a colorimeter, you can set up ColorID as a combination software-hardware (colorimeter) option.

If you are installing ColorID as a combination software-hardware option, perform the steps for connecting and calibrating your colorimeter model in CP320 Colorimeter Operations.

Note: Gerber Colorimeters are no longer available for purchase. Follow the instructions for installing ColorID as a software/hardware combination only if you already own a Gerber Colorimeter.

This chapter describes how to use the ColorID software by itself or with a Gerber colorimeter.

Using ColorID alone

Using ColorID software by itself allows you to match a source color to the same color of many foils and vinyls. For example, suppose a customer brings you a color sample that is required in the job. You can use a PANTONE guide, such as a PANTONE color bridge™ or other printed PANTONE publication to visually match the color. In the ColorID program, you make PANTONE the Source Palette and use the Source Color drop-down list to choose the color. When you choose the Matching Target Palette – the foil or vinyl palette – ColorID automatically selects the PANTONE color to the nearest palette color.

You can also match material colors. For example, suppose you previously made a sign using dark blue Gerber 220 vinyl. Now your customer comes back and wants an EDGE-printed sign using the same color blue in part of the design. You would make Gerber 220 vinyl as the Source Palette, dark blue as the Source Color, and Gerber EDGE Process as the Matching Target Palette. ColorID automatically matches the vinyl color to the nearest EDGE process color.

Basic steps for using ColorID alone

The sequential steps for using ColorID alone to quickly and accurately match colors are:

♦ opening ColorID
♦ choosing the source of the color
♦ choosing the color
♦ choosing the matching palette
♦ selecting the matching color
♦ finding the color name
♦ using the matching color
Using ColorID with a colorimeter

One of the most accurate methods of matching colors is to use a colorimeter, especially when you are trying to match a color such as a customer’s unique shade or a corporate identification color. The colorimeter expresses colors numerically according to international standards. The numeric definition from the colorimeter is matched against the numeric definition databases in the ColorID software to provide the best possible color match.

Basic steps for using ColorID with a colorimeter

The sequential steps for using ColorID with a colorimeter to match colors are:

♦ opening the ColorID program
♦ assigning the colorimeter COM port
♦ choosing the source of the color
♦ choosing the matching palette
♦ calibrating the colorimeter
♦ taking the measurement
♦ matching the color

Opening ColorID

To obtain the best visual color matching on the screen, you should check your computer monitor color display. Before opening the ColorID program, set the Color Palette on the Windows Display Properties dialog box to High Color (16) or True Color.

Note: Either palette setting is fine, but the True Color display uses more memory. Also, when you change the setting from 256 Color, some applications (such as Paint) may not operate the same as before the change.

To open ColorID

Click Start > Programs > GSP OMEGA > Gerber ColorID to open Gerber ColorID.
Color matching concepts

Color matching is quick and easy when you understand the following concepts used on the Gerber ColorID dialog box:

♦ The word **source** refers to two elements – materials and colors.

♦ The **Source Palette/Device** is the material source of the original color that you want to match. The material sources of color (the palettes) are the vinyls, foils, and other materials displayed in the drop-down list.

♦ The **Source Color** is the color that you want to match.

♦ The **Matching Target Palette** is the material you are using to match the Source Color. The two material sources of colors (the palettes) are the vinyls and foils displayed in the drop-down list. Each source palette contains many colors that ColorID uses to match to the Source Color. In other words, you choose the palette and the program determines the color matches.

Assigning the colorimeter COM port

If you are using ColorID with a colorimeter, you must assign the same COM port in ColorID to which your colorimeter is physically connected.

To assign the colorimeter COM port

1. Click on the Settings button on the Gerber ColorID dialog box to display the Settings dialog box.

2. In the Port Assignment box choose the COM port to which the colorimeter is physically connected.

3. Set the Sample Readings to 1. For example:

4. Click OK.
Choosing the Source Palette

The Source Palette is the source of the color that you want to match, such as a vinyl or foil palette.

To choose the Source Palette

1. Click the down arrow in the Source Palette/Device box to display the drop-down list.

2. Choose the color source that you want to match.

3. If you choose a material continue with “Choosing a Source Color.”

4. If you choose CMYK Color or RGB Color the Color Edit dialog box displays.

5. Enter the CMYK or RGB color values and click OK to return to the main Gerber ColorID dialog box to choose the Matching Target Palette. You do not need to choose a Source Color as it was defined in the Color Edit dialog box.
Choosing the Source Color

The Source Color is the color that you want to match and is based on the Source Palette you chose. For example, if the Source Palette is Gerber 220 vinyl, all the colors in the Gerber 220 vinyl palette appear in the Source Color drop-down list.

Note: When the source of the color is the colorimeter, the Source Color list is unavailable because the color is determined by the measurements you take with the colorimeter.

Note: When the source of the color is CMYK or RGB values you do not need to choose a Source Color since it is defined in the Color Edit dialog box that displays when choose the Source Palette.

To choose the Source Color

1. Click the down arrow in the Source Color box to display the drop-down list.
2. Choose the color that you want to match. For example:

   ![Source Color example](image)

Choosing the matching palette

The Matching Target Palette is the material that you use to match the Source Color. You have three palette choices:

- **Foil palettes** The most common use of the ColorID program is to match colors for printing jobs on the EDGE. In this case, the target palette you would choose is a foil, such as GerberColor Series, Spectratone, or simulated PANTONE color palette. ColorID considers only the colors in the chosen foil palette when determining the matches.

- **Vinyl palettes** If your job is vinyl, you would choose a vinyl palette such as Gerber 220 vinyl. In this case, ColorID considers only the colors in the chosen vinyl palette when determining the matches.

- **All** When you choose All, ColorID considers all vinyl and foil palettes for the matches. For more information about the All choice, please refer to “Choosing the color match criteria.”

To choose the matching palette

1. Click the down arrow in the Matching Target Palette box to display the drop-down list.
2. Choose the palette material you want to use for the match. For example:

   ![Matching Target Palette example](image)
As soon as you make the choice, the color matches appear immediately in the display box (shown in “Selecting the matching color”).
Selecting the matching color

After ColorID determines the closest matches to the Source Color, you use the display box to select the best match to the Source Color by clicking on the color match boxes.

The middle column in the display box is the Source Color that you want to match. The two outer columns are the color matches. Click on a color match and note the identifying information displays in the ColorID dialog box. Each match has a color rank between 1 and 20 as shown in the lower left corner. #1 is the closest match #20 is the least close match. In addition to the color match rank, ColorID displays the color type (such as Spectraticone) and the Gerber short name (such as GCS-196).

Note: Click the Settings button to change the number of color matches displayed. The default number of matches is 10 (as shown in the illustration); the maximum number of matches that can be displayed is 20.

Viewing numeric definitions of the matching colors

As you click the matching color boxes, the numeric definition of the color appears in the Color Data group box. For example:
Clicking on either arrow in the group box toggles both the Measured (Source) and Select Match values among the three available numeric definition databases (called color spaces) – $L^a*b^*$, $L^C*h$, or XYZ. These numbers, by themselves, are not important.

What is important is the Delta E value – the quantitative difference between the numeric definition of the source color (the source color from the source palette) and the numeric definition of the selected matching color. ColorID calculates the Delta E and assumes that the closest color match to the source color is the smallest Delta E. Frequently it is. However, the final determination of the best match is the eye of the designer.

In addition:

- The Delta E value is based on the $L^a*b^*$ color space numeric definition only. If you toggle to a different color space, such as the $L^C*h$ color space, the Delta E does not change.
- The correct numeric definitions are displayed regardless of the source of the color. For example, if you are using a colorimeter that measures and defines color as XYZ, the ColorID program automatically converts these numbers to the correct $L^a*b^*$ and $L^C*h$ color space values.

### Finding the color name

Below the Color Data group box is the name of the target palette and the matching color you selected by clicking on the matching color box. In this example, the matching color is a Spectratone color.

![ColorID screen shot](image)

The first part of the line is the matching color box number (#1 in this example) followed by the short name (GCS-047/GCS-038). The remainder of the line displays the full name and palette identification number (if the color is a foil color). In the case of a Spectratone color, which is created by printing one foil over another, the overprint foil is listed first (Intense Blue GCS-047) followed by the base foil color (Purple GCS-038).

### Using the matching color

Once you have selected all your matching colors, you can use those colors in Composer to design and print your job. Please see “Using the matching color in Composer” for details.
Chapter 71: 
Using the Matching Color in Composer

There are two ways to use the matching color in Composer:

- Opening the ColorID program from Composer and automatically assigning the matching color to the job. This is the most common method.
- Choosing a matching color in the ColorID program and manually entering the color name in Composer.

Note: The following paragraphs assume that you are familiar with the basic use of the Assign Colors dialog box and the palettes. Specific features required to use ColorID with these dialog boxes are described in this chapter. For additional information, including selecting and editing colors, please refer to "Filling Objects with Colors for Printing."

Opening ColorID from Composer

You can open ColorID from the ColorID buttons on the three palettes or the Assign Colors dialog box.

To open ColorID from Composer using the Assign Colors dialog box

1. Create an object or design in Composer, then select it with the Color Selection pointer.
2. Click Fill tool in the Toolbox toolbar to display the Assign Colors dialog box.
3 Choose the Color Type and the Fill Type. In this example, it is a spot, solid fill.

4 Choose Spot or Process in Color Type.

5 Choose a palette from the available list of palettes. The palette you select becomes the Matching Target Palette when you open ColorID in the next step.

6 Click the Menu button and choose ColorID Match Color to open the ColorID program. The Matching Target Palette displays only those palettes that correspond to the palette you chose in step 5.

7 Use the colorimeter to take a measurement from a color source, download a measurement from the CP320 colorimeter, or choose a Source Color from the Source Palette/Device drop-down list.

8 Click OK in the ColorID program to return to the Composer Assign Colors dialog box. The matching color from the ColorID program displays in the Assign Colors sample fill box.

9 Click OK in the Assign Colors dialog box to assign the color to the selected objects.

**Notes on using ColorID from Composer**

Now that you understand the basics of opening and using ColorID from Composer, here is some information to refine and clarify the procedure:

♦ Matching vinyl colors in Composer is the same procedure.

♦ When you assign a vinyl matching color from ColorID, that material and color becomes the current vinyl color in Composer and all new shapes use that vinyl. You must assign the color immediately to an object or the object will not be filled with the matching color.

♦ If your original Select Palette choice in the Assign Colors dialog box was Spectratone and you choose a GerberColor series foil for the match, the Assign Colors dialog box automatically displays the spot fill palette selections.

♦ When using process fills, EDGE Match choices are from the EDGE Match charts.

♦ If you have linear or radial fills, when you Click ColorID in the Assign Colors dialog box, you have the choice of matching color A or color B.
Manually entering the color name in Composer

On some occasions, you may have ColorID determine a match for you, write down the match, and use it at a later date.

The basic sequence for filling a shape with the matching color is to select the palette in Composer that is the same as the Matching Target Palette chosen in ColorID, then enter the short name (for example, GCS-049) or PANTONE color number of the specified color. If you are filling a stroke, use the same technique for applying a fill.

To fill an object with a matching Spectratone color

1. In Composer, open the Assign Colors dialog box. In this example we are using a Spectratone fill. Choose Solid for the fill and Spot for the Color Type.
2. Choose the spot palette option, then click the scroll arrow to view the list of palettes.
3. Click the Gerber Spectratone Palette to select it.
4. Enter the short name for the Spectratone, for instance GCS-049/GCS-643 (Beige over Pink). The other information fills in automatically.

5. Click OK to fill the object and return to the Composer screen.

Note: Alternate methods are to type the full names in the Top and Base text boxes or scroll through the palette colors and choose the Top and Base colors. The other text boxes are automatically filled in.
Chapter 71: Using the Matching Color in Composer

To fill an object with a specified PANTONE color

1. Open Composer, create the design, select the object to fill, and open the Assign Colors dialog box. For a PANTONE color fill, choose Solid for the fill and Process for the Color Type.

2. Choose the process palette option, then click the scroll arrow to view the list of palettes.

3. Click a PANTONE color palette to select it.

4. Enter the PANTONE number for the color, for example 369 CV. The other information fills in automatically.

5. Click OK to fill the object and return to the Composer screen.

Adjusting for material availability

If you establish and maintain the inventory and have the Inventory Only check box turned off, ColorID automatically alerts you if you are out of stock of the required colors in the Match Target Palette. The matching color description appears as shown below.

This message tells you that you do have Purple in stock, but not Intense Blue. You have several choices:

- Click another color matching box. If you have the colors in stock, you can use the alternate color match.

- Change the Matching Target Palette, then click the #1 color matching box. For example, if the original choice was Gerber Spectratone, you might try the GerberColor Series foil palette to achieve a color match. If the original choice was Gerber 220 vinyl and you are out of that color, you might try to substitute Gerber 225 vinyl. Again, if the match is close enough and you have the color in stock; you can use the alternate color match.

- Order the foil or vinyl color from your distributor.

Matching and creating colors

You may need to match a vinyl, Spectratone, or simulate a PANTONE color to another Gerber vinyl, Spectratone, or PANTONE color simulation. For example, if you are out of Atomic Red vinyl and need that color for a job, you can use ColorID to determine the closest match so you can make Atomic Red vinyl with Spectratone.

To match and create colors

1. Set up your inventory. Make sure that you include all the Matching Target Palettes and colors that you have in stock.
2 For the Source Palette/Device choose the source of the color that you need to match. In the example above, you would choose Gerber 220 vinyl.

3 For the Source Color choose the color you need to match. In the example above, you would choose Atomic Red.

4 Choose the Matching Target Palette. You should probably start by choosing Gerber Spectratone because it offers the widest variety of colors. When you choose the target palette, the color matches for that palette appear in the display box. If the match does not appear close enough, or you are out of the spot foils needed to create the color, your choices are to:
   ♦ Click another color matching box. If you have the colors in stock, you can use the alternate color match.
   ♦ Change the Matching Target Palette, then click the #1 color match box. For example, if the original choice was Gerber Spectratone, you might try the Spectratone II palette to achieve a color match. If the match is close enough and you have the colors in stock; you can use the alternate color match.
   ♦ Order the spot foil color or Atomic Red vinyl from your distributor.
Chapter 72:
Additional ColorID Software Features

This chapter provides information about additional features in the ColorID software beyond the basic operational features that are described in the chapter, Using ColorID. These features are:

♦ Setting up an inventory.
♦ Choosing the color match criteria.
♦ Verifying foil color matches.
♦ Using GerberColor Spectratone II colors.

Setting up an inventory

The inventory is the list of matching palettes (materials and colors) that you have in stock to match to the Source Color. This feature is included in ColorID so that when the program determines the color matches, it can also tell you if you have the vinyl or foil available to make the match. ColorID automatically alerts you if you do not have the proper colors in stock to create the match.

Note: You do not have to enter and maintain an inventory if you do not want to. In that case, ColorID assumes that you have all colors of all materials in stock and does not alert you to an inventory shortage. For related information about inventory matches, refer to the paragraph “Choosing the color match criteria.”

To set up your inventory

1 Click Start > Programs > GSP OMEGA > Gerber ColorID to display the Gerber ColorID dialog box.

2 Click the down arrow in the Matching Target Palette box to display the drop-down list and select the palette material (vinyl or foil) you will use. For example, choose the Gerber Spectratone palette.

Note: If you choose All as the Matching Target Palette, the Inventory button and Print Match features are not available.

3 Click the Inventory button to display the color inventory list for the palette you chose. The inventory appears with the colors in stock highlighted.
Chapter 72: Additional ColorID Software Features

4 To add a color to the inventory hold down the Ctrl key and click the color to select it.

5 To delete a color from the inventory hold down the Ctrl key and click a highlighted color to deselect it.

Note: If you do not hold down the Ctrl key when selecting or deselecting a color, all selections are erased. If you accidentally do this, immediately click Cancel to close the inventory list, then reopen the list by clicking on Inventory. All selected colors will still be selected.

Customizing the inventory

Gerber offers an extensive choice of Matching Target Palettes that you can use for matching colors. Some of these palettes you may use frequently, while others you may never, or seldom use.

To make choosing the target palette quicker, you can edit the Matching Target Palette inventory so that only those palettes you routinely use appear in the Matching Target Palette drop-down list.

To customize the inventory

1 Click Start > Programs > GSP OMEGA > Gerber ColorID to display the Gerber ColorID dialog box.

2 Click the Settings button to display the Settings dialog box. The right side of the dialog box lists the Target Palettes that you can add or remove from the Matching Target Palette drop-down list.
Click the palettes that you want to appear in the drop-down list so that a check mark appears next to the name. The next time you open the Matching Target Palette list, only the palettes you chose are included in the list.

Note: There are some Gerber Matching Target Palettes that always appear in the drop-down list, such as Gerber 220 and 225 vinyls and Spectratone foils. You cannot delete these from the Matching Target Palettes drop-down list.

Choosing the color match criteria

ColorID automatically determines the closest color matches to the source color and shows them in the display box.

The matches and displays are based on four factors:
- the inventory that you establish for the Matching Target Palette.
- your use of the Inventory Only check box.
- the All choice in the Matching Target Palette drop-down list.
- the number of matches you choose to display.

Setting an inventory for the Matching Target Palette

If you do not enter and maintain an inventory, ColorID assumes that you have all colors of the Matching Target Palette in stock and chooses from all the colors.
Using the Inventory Only check box

If you do establish and maintain an inventory and turn on the Inventory Only check box, then ColorID chooses color matches from your inventory stock only. If you do not turn on the Inventory Only check box, ColorID chooses from all colors in the Matching Target Palette.

Choosing All matching target palettes

The All choice in the Matching Target Palette drop-down list lets ColorID choose from all the vinyl and foil palettes in the inventory to determine the closest color matches. These matches are based on the smallest Delta E. Because all palettes are considered, the closest match may be Spectratone, followed by Gerber 220 Vinyl, then perhaps a GerberColor Series foil color.

If the closest color match is a vinyl and you plan to print the job on the EDGE, then you should change the Matching Target Palette to a foil, such as Spectratone, so that ColorID will consider only foil colors when determining the closest matches.

Setting the number of matches found

You can change the number of closest matches found from 10 (the default) to 20. Click the Settings button to open the Settings dialog box and change the Matches option from 10 to 20.

Verifying foil color matches

If the Matching Target Palette is a foil, such as Gerber Spectratone or a GerberColor Series, you can verify the color matches before using the fill in Composer by printing the matching color boxes and color names on the EDGE.

To verify foil color matches

1. Click Start > Programs > GSP OMEGA > Gerber ColorID to display the Gerber ColorID dialog box.
2. Click the Print Match button to display the Gerber ColorID Print Match dialog box.
Choose the number of the matches (from one to 20) for which you want to print samples.

To print the names in black, turn on the Print text as Black check box. If you do not turn on this check box, the color names print in the color of the matching color boxes. If the colors are very light, you may not be able to read the color names.

Click OK to open the GSPPlot program with the chosen number of matching color boxes and names as shown below.

Click the Print to Device button in the toolbar to send the job to the thermal printer. You now have samples of the foil colors exactly as they will print so that you can verify the color matches.
Chapter 72: Additional ColorID Software Features

Using GerberColor Spectratone II colors

An exclusive feature of the ColorID program is the GerberColor Spectratone II palette. Spectratone II is a palette that creates colors by printing a solid foil color over a colored vinyl.

Note: Regular Spectratone creates colors by printing two different foils over white vinyl. Spectratone II prints only one foil over a colored vinyl.

The Spectratone II palette uses all available vinyl and foil colors and creates thousands of colors. You can customize the palette by creating a vinyl and foil inventory that matches your stock. This palette exists only in the ColorID program, but can be used in Composer to fill objects in the design.

To use Spectratone II as a fill

1. Create the design in Composer.
2. Select the shape that you will fill with a Spectratone II color.
3. Open the Fill Dialog box.
4. Choose Spot as the Color Type and Solid as the Fill Type.
5. Click the menu button and choose ColorID Match Color to open the program.
6. Choose Source Palette/Device and, if necessary, the Source Color.
7. In the Matching Target Palette drop-down list choose Spectratone II as the palette. ColorID automatically determines the closest Spectratone II match and displays the foil color and the vinyl color of the match.
8. Click OK to return to Composer. The current style display boxes reflect the Spectratone II match.

Note: Because the current style is now the vinyl and foil used for the Spectratone II match, if you add shapes to the job, they will use that vinyl and foil. If you do not want the additional shapes to use the Spectratone II match, you must change the current style.

Creating a custom Spectratone II palette

In Gerber Color ID, you can create a custom Spectratone II palette that includes only your stock of vinyl and foil.

To customize the Spectratone II inventory

1. In Composer, open the Assign Colors dialog box.
Choose Spot as the Color Type and Solid as the Fill Type.

Click Menu > and choose ColorID Match color to open the Gerber Color ID dialog box.

In the Matching Target Profile box choose Gerber 220 Spectratone II.

Click Inventory to open the Gerber ColorID Spectratone II Inventory Selection dialog box.

Click Gerber 220 Vinyl and click OK to open the Gerber ColorID Inventory dialog box. The list box displays all of the available Gerber 220 vinyl colors.
7 Click Unselect All to clear all the vinyls from the inventory.

8 Hold down the shift or Ctrl keys while clicking to select individual vinyls to include in your custom inventory.

9 Click OK. The Inventory Update dialog box displays while the custom inventory is built.

10 Ensure that Gerber 220 Spectratone II is still chosen in the Matching Target Profile box and click Inventory to reopen the Gerber ColorID Spectratone II Inventory Selection dialog box.

11 Click Gerber Spectratone 220 White and click OK to open the Gerber ColorID Inventory dialog box. The list box displays all of the available Gerber foils.

12 Click Unselect All to clear all the foils from the inventory.
13 Hold down the shift or Ctrl keys while clicking to select individual foils to include in your custom inventory.

14 Click OK. The Inventory Update dialog box displays while the custom inventory is built.

15 Click OK to return to the Assign Colors dialog box.
Chapter 73: 
Introduction to Colorimeters

One of the most accurate methods of matching colors is to use a color measurement device, especially when you are trying to match a color such as a customer’s unique shade or a corporate identification color.

Although no longer available for purchase, Gerber ColorID supports two measurement devices called colorimeters. A colorimeter expresses colors numerically according to international standards. This numeric definition from the colorimeter is matched against the numeric definition databases in the ColorID program to provide the best possible color match.

The following paragraphs provide a basic introduction to colorimeters in general. For specific information about the Gerber colorimeter, see CP320 Colorimeter Operations.

Note: Gerber ColorID supports only Gerber Colorimeters.

Theory of operation

The measuring tube on the side of the body contains photoelement sensors and measuring filters. A light built into the measuring tube provides consistent lighting for the sample.

When you press and release the green button on the colorimeter body, the light illuminates the source of the color and the sensors read the color. The colorimeter microcomputer then calculates the numeric definition of the color. Depending on the model of the colorimeter, these numbers are either immediately sent to the ColorID program or saved in the colorimeter for later use.

Factors contributing to the accuracy of the measurements are:

♦ the white standard.
♦ the source of illumination and cleanliness.
♦ measurement techniques.
Using the white standard

The white standard is a black piece of plastic with a white dot on it, as shown below.

The white standard has a serial number located on a label on the back. The serial number on the white standard must match the serial number on the colorimeter because initial factory calibration is based on the instrument’s reading of the white dot. Frequent calibration to the white standard is a key factor in measurement accuracy.

Calibrating the colorimeter to the white standard

You must calibrate the colorimeter to the white standard before each use. Any time you turn off the colorimeter, you must calibrate it when you turn it on by placing the measuring tube over the white dot, holding it firmly in place, and pressing and holding the green button or using the CALIBRATION menu option (depending on the model).

If you are making a long series of measurements – over a period of several hours, for example – even if you do not turn off the colorimeter, it is a good idea to calibrate it to the white standard every hour to ensure accurate readings.

Care of the white standard

The white standard should be stored in the plastic bag and kept clean. If it gets dirty, clean it with a glass cleaner and a soft, lint-free cloth.

Illumination source and cleanliness

A significant aspect of measurement accuracy is the illumination source in the measuring tube. Consistent lighting is vital to accurate measurements. Make sure that the inside of the measuring tube is clean and free from dust and other contaminants. To clean it, spray the interior of the tube with canned air. The measuring head, where the sensors are located, is dust proof, so the air will not damage the light or sensors.

Measurement techniques

Measurement techniques depend on the material of the color source:

- If the color source is flexible, such as a piece of paper or vinyl, place it on a hard surface because a firm surface contributes to accuracy. Avoid placing several pieces of paper or vinyl on top of each other when you make the measurement so that the surface is firm.
♦ If the color source is porous, such as a piece of fabric or very thin paper, take the measurement on a white surface. For example, if you are taking a measurement of a yellow fabric on a brown surface – such as a desktop – the measurement will be distorted. Put a piece of white paper under the fabric, then take the measurement.

♦ If the color source is not a solid color or has apparent variations (such as a wall where part of it is in light and part in shadow), you may want to take more than one measurement of the surface. To take multiple samples, see “Taking multiple measurements with the colorimeter.”

♦ Put the measuring tube absolutely flat on the color source surface. If it is tilted even slightly so that the base of the measuring tube is not firmly against the surface, some of the illuminating light can “leak” out of the measuring tube and affect the accuracy of the measurement.
Chapter 74:  
CP320 Colorimeter Operations

The CP320 is a sophisticated and portable colorimeter (although it can be connected to the computer).

**CP320 features**

Features of the CP320 include:

- **Multiple samples.** The colorimeter is capable of storing 99 color samples. Because it is portable, you can take the CP320 to a customer’s location and take multiple samples for color matching in the ColorID program when you return to your shop. If you take more than 99 color samples, the first color samples are overwritten by the ones exceeding the maximum of 99 (for example, the 100 sample overwrites sample #1).

- **Multiple matches.** Each color sample can have 5, 10, 15, or even 20 color matches. You determine the number of color matches by making a choice in the menu mode.

- **Two resident palettes.** The CP320 is capable of storing two color-matching palettes in memory. One palette is always a Spectratone palette. The other palette is one that you choose to download from the ColorID program (the Gerber 220 vinyl palette, for example). You determine the palette (also called the active database) by making a choice in the menu mode. When you take a sample, the color matches for the chosen palette appear in the LCD display.

- **Menu mode.** The menu mode contains the controls for calibrating the colorimeter and clearing all the samples from memory. It also provides flexibility by allowing you to select and load palettes, choose the display language, and choose the number of matches for each sample. A final feature of the menu mode is a series of service displays to assist technicians in troubleshooting the colorimeter.

**CP320 description**

The CP320 has a green start button for taking measurements, four function keys, and an LCD display. The function keys permit the instrument to operate in two modes – color matching and menus. A charging pad is used to recharge the internal battery, and a removable data cable is provided for downloading data into the ColorID program and downloading palette databases into the colorimeter.
Connecting, charging, and turning on the CP320

The first time that you use the CP320, you must charge the battery. Charge the battery for at least 30 minutes. When fully charged (approximately four hours), the batteries allow more than 8,000 measurements and the LCD display shows C=100%. When the batteries are nearly discharged, the display shows LOW BATTERY. After charging for approximately 10 minutes, you can use the instrument again.

⚠️ CAUTION: If you do not use the colorimeter often, fully charge it at least once a month. Failure to maintain a charge can damage the battery, which may result in erratic operation.

Leave the charging pad plugged in and the colorimeter on the pad so that it is always ready for use. If you take the colorimeter off the pad, it will automatically shut off after about five minutes if you do not use it. Push the green start button to turn it on. If you have previously taken measurements, the last sample and match are displayed in the LCD window.

To connect, charge, and turn on the CP320

1. Connect the pin-plug end of the data cable to the colorimeter.
2. Connect the other end of the cable to a COM port on your computer.
3. Verify that the serial number of the charging pad (located on a label on the back) is the same as the serial number of the colorimeter (located on a label on the bottom of the instrument).
4. Install the correct power plug (U.S., English, or European) in the power pack connector receptacle.
5. Plug the power pack into a power source that has the same voltage shown on the identification plate of the power pack.
6. Put the instrument on the charging pad, seating the pins in the pad in the connector holes in the bottom of the instrument.
7. After observing the charging guidelines above, the colorimeter is now ready for calibration and use. To turn on the CP320, press the green start button.
Calibrating the CP320

Calibrate the colorimeter each time you charge it or turn it on. In addition, it is a good idea to calibrate it every hour when making a long series of measurements.

To calibrate the CP320

1. Remove the white standard from the plastic bag.
2. Verify that the white standard is clean.
3. Verify that the serial number of the white standard (located on a label on the back) is the same as the serial number of the colorimeter (located on a label on the bottom of the instrument).
4. Put the instrument on the white standard, seating the pins in the white standard in the connector holes in the bottom of the instrument.
5. Press the green start button to turn on the colorimeter.
6. Press the MENU function key. The word CALIBRATION appears in the LCD display with a menu choice symbol (>) to the left of it.
7. Press the ENTER function key. At the prompt FOR CALIBRATION PRESS ENTER, Press the ENTER function key again. The colorimeter is now calibrated and ready for use, and the LCD window returns to the previous operational display.

Using the CP320

General use of the CP320 comprises the following tasks:
	♦ Taking samples
	♦ Using the color-matching mode function keys
	♦ Using the menu mode function keys
	♦ Menu options

Taking samples with the CP320

You can take samples with the colorimeter using it as a portable or tethered device. The operation in either case is the same.

To take samples with the CP320

1. Put the measuring tube on the color source surface and hold it firmly on the surface.
2. Press and release the green start button. The LCD displays the sample as shown in the following example.

#1     M1     dE= 4.5
GCS-010/GCT-614

#1 indicates sample #1, M1 is the closest color match, and dE is the Delta E (the numeric difference between the color sample and the matching color in the chosen palette). The second line is the name of the nearest color match in the chosen palette. In
the above example, GCS-010/GCT-614 is the short name of the foils that Spectratone is using to create the match. If the chosen palette were Gerber 220 vinyl, the second line would be the name of the vinyl (in this case, Palm Oyster).

Note: To determine which color match palette (the active database) is chosen, press and hold the green start button.

If the colorimeter is connected to the computer with the data cable, the color sample measurement data is immediately sent to the ColorID program and displayed in the Color Data group. If the colorimeter is being used as a portable device, download the data to ColorID using the SEND button as described on the next page.

Tip: It is important to keep a record of the samples you take, especially if you are at a customer’s location and plan to use the samples later at your shop. For example, if you take ten samples in the field—several each of the customer’s truck and logo—you have no way of knowing which sample is which unless you keep a written record. You might make notations such as, “Sample #1: light blue truck fender, sample #2: dark blue contrast on truck, sample #3: red circle in the center of the logo,” and so forth.

Taking multiple measurements with the colorimeter

When using the colorimeter, you may want to take more than one measurement (sample reading) of the color source. For instance, if the color source is not a solid color or has apparent variations (such as an ad in a magazine where the color is halftoned), you may want to take more than one measurement of the surface. To enter the number of readings (from one to 20), use the arrows in the Sample Readings box. Gerber suggests that you take three readings in different locations on the same colored object. ColorID automatically averages the sample readings and displays the average in the Color Data box after the final measurement is taken.

The sample readings feature works with the CP300 colorimeter and the CP320 colorimeter when it is connected to the computer.

To take multiple readings using the CP320 as a portable device

1 Take the number of measurements on the same colored object (three, for example) in the field.

2 Make a note of the sample numbers of the measurements (for instance, “Samples #12, #13, and #14: blue in magazine ad multiple measurements”).

3 When you return to your shop, plug the data cable into the colorimeter and computer.

4 Click Start > Programs > GSP OMEGA > Gerber ColorID to display the Gerber ColorID dialog box.

5 Press the Settings button to display the Settings dialog box and change the number of Sample Readings to three.

6 Choose the first of the multiple samples (in this example, #12) using the colorimeter SAMPLE function key, then press SEND to download that sample into the ColorID program. Repeat this step for the other samples (#13 and #14). As soon as the third sample is sent to the colorimeter, the program displays the average of the three samples.
Using the color matching mode function keys

When you turn on the CP320, it is in the color-matching mode. The top row of labels under the keys (SAMPLE, MATCH, and SEND) describe the color-matching mode operations. When you press the last key in the row (MENU), the colorimeter enters the menu mode (the bottom row of labels − ENTER, UP ARROW, DOWN ARROW, and ESC). The following paragraphs explain the use of the function keys in both modes.

**SAMPLE function key**

The **SAMPLE** function key scrolls through the samples stored in the CP320 memory. When you press the key, the display incrementally shows the next sample. For example, if you have three samples and repeatedly press the key, the display shows sample #1, then #2, then #3, and then #1 again.

An additional feature of the SAMPLE function key is the ability to scroll backward through the samples. Press and hold the key to rapidly scroll backward through the samples. This is a valuable feature, especially if you have a lot of samples. For example, suppose you have 90 samples and need sample #80. Instead of scrolling forward from sample #1 to sample #80, press and hold the key to scroll backward from #90 to #80 (thereby scrolling through only 10 samples instead of 80).

**Note**: If the color shown in the sample box in the program is different from the color source, you may have inadvertently recalibrated the colorimeter to a color other than the white standard. If the color in the sample box is different from what you expect to see, recalibrate the colorimeter to the white standard.

**MATCH function key**

The **MATCH** function key scrolls through the color matches of the chosen palette. Each color sample can have up to 20 color matches (determined in the menu mode). When you press the key, the display incrementally shows the next-closest match to the color sample measurement in the chosen palette. After the last match (5, 10, 15, or 20), the display shows match one again.

**SEND function key**

Pressing the **SEND** function key downloads an individual sample and its color matches to the computer. If you are using the colorimeter as a tethered device (connected to the computer), the sample data is automatically sent to the ColorID program when the sample is taken. In this case, you do not need to use the SEND function key. If you take samples using the colorimeter as a portable device, plug the data cable into the colorimeter and computer when you return to your shop, choose a sample using the SAMPLE function key, then press SEND to download the sample data into the ColorID program.
Using the menu mode function keys

Pressing the MENU function key changes the operation of the SAMPLE, MATCH, and SEND keys and displays the menu options in the LCD window. If you are in the menu mode, pressing the key again activates the ESC function key, which returns the LCD window to the previous operational display.

The following paragraphs describe the new use of the SAMPLE, MATCH, and SEND keys as indicated by the bottom row of labels. The “Menu options” paragraph details the menu options.

ENTER function key

The ENTER function key activates and confirms menu selections. For example, to clear all the samples from memory scroll through the menu options until you get to the option CLEAR SAMPLES. When you press ENTER, the LCD window displays TO CLEAR ALL PRESS ENTER. Press ENTER a second time to confirm the menu selection and delete all samples from the colorimeter memory.

UP ARROW function key

The UP ARROW function key scrolls upward through the menu options.

DOWN ARROW function key

The DOWN ARROW function key scrolls downward through the menu options.

Menu options

When you press the MENU function key, the menu options list appears in the LCD window. Because the LCD window displays only two lines of text at a time, use the UP and DOWN ARROW function keys to scroll through the list. As you scroll through the list, the option that is selected is indicated by a menu choice symbol (>). The following paragraphs describe the options in the order they appear in the list.

Calibrating the CP320

The first menu option is CALIBRATION, detailed in the paragraph “Calibrating the CP320.”

Deleting all sample measurements from colorimeter memory

The CLEAR SAMPLES option deletes all samples from the colorimeter memory.

To clear all sample data from memory

1. Press the MENU function key and scroll through the list so that the menu choice symbol is to the left of the words CLEAR SAMPLES.
Press the ENTER function key. At the prompt *TO CLEAR ALL PRESS ENTER*, press the ENTER function key again. All sample data is deleted from memory and the LCD window returns to the previous operational display.

Selecting, loading, and updating palette databases

The DATABASE option has three purposes: to select the palette that will provide the matching color, to load a different palette database, and to update the Spectratone palette database.

**To select the palette database**

1. Press the MENU function key and scroll through the list so that the menu choice symbol is to the left of the word *DATABASE*.
2. Press the ENTER function key. If necessary, scroll through the list so that the menu choice symbol is to the left of the words *SELECT DATABASE*.
3. Press the ENTER function key again. The two available palette databases (one will always be Spectratone) appear in the LCD window.
4. Press the UP or DOWN ARROW function keys so that the menu choice symbol is to the left of the palette database you want to use, then press ENTER. The new palette database is initialized into memory and the LCD window returns to the previous operational display.

When you load a palette database you have the choice of loading the entire database into the colorimeter or loading only the colors that you have in inventory (as described in “Setting up an inventory” in *Additional ColorID Software Features*). Loading the database according to the inventory is the most accurate way to load the CP320 because when you take a sample, the closest color matches will be ones that you can actually make from materials in stock.

*Note: Gerber is constantly adding new foils and new materials and thus the Spectratone database is quite large and will no longer fit on the colorimeter in its entirety. You must set up an inventory in order to reduce the size of the database so that you can download it to the colorimeter.*

**To load and update the palette database**

1. Connect the colorimeter data cable between the computer COM port and the colorimeter data cable connector, then turn on the CP320.
2. Press the MENU function key and scroll through the list so that the menu choice symbol is to the left of the word *DATABASE*.
3. Press the ENTER function key. If necessary, scroll through the list so that the menu choice symbol is to the left of the words *LOAD DATABASE*.
4. Press the ENTER function key again. The prompt *READY FOR DOWNLOAD* appears in the LCD window.
5. Click Start > Programs > OMEGA > Gerber ColorID to display the Gerber ColorID dialog box.
6. Click the Settings button to display the Settings dialog box.
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7 Click the Download button to display the Gerber ColorID Device Download dialog box.

8 Choose the Inventory Only check box to download only what you have in stock.

9 Choose the name of the palette database you want to download into the CP320. If you are updating the Spectratone database, choose Gerber Spectratone.

10 Click the Download button to load the database into the colorimeter. The colorimeter automatically selects the just-downloaded database as the active database.

Note: To stop downloading the database, press ESC.

Changing the LCD display language

The LANGUAGE option allows you to choose the display language in the LCD window.

To change the display language

1 Press the MENU function key and scroll through the list so that the menu choice symbol is to the left of the word LANGUAGE.

2 Press the ENTER function key. The list of available languages appears.

3 Scroll through the list until the menu choice symbol is to the left of the language you want to appear in the display.

4 Press the ENTER function key again. The LCD window returns to the previous operational display.

Choosing the number of matches for each sample

The # OF MATCHES option allows you to choose the number of matches for each sample. The range is 5, 10, 15, or 20, and the default is 10.

To change the number of matches

1 Press the MENU function key and scroll through the list so that the menu choice symbol is to the left of the words # OF MATCHES.

2 Press the ENTER function key. The words # OF MATCHES: 10 appears in the LCD window.

3 Use the scroll arrows to change the number of matches to 5, 10, 15, or 20.

4 Press the ENTER function key again. The LCD window returns to the previous operational display.
Displaying service information

The SERVICE option provides a series of service displays to assist technicians in troubleshooting the colorimeter. If you require assistance, call the Gerber Technical Systems Support Department at the number listed in “Where to get help.”

To display service information

1. Press the MENU function key and scroll through the list so that the menu choice symbol is to the left of the word SERVICE.

2. Press the ENTER function key. The SERVICE submenu appears in the LCD window and consists of the following options: VERSION, REF VALUES, EXAMINE VALUES, REMOTE, VOLTAGE CHECK, and RESET CP320.

3. When the technician asks for the information from a submenu option, scroll through the list so that the menu choice symbol is to the left of the option and click the ENTER function key.

4. To return the LCD window to the previous operational display press ESC.