

QC-Sort

User's Guide
by
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1. Introduction

QC-Sort is a stand-alone program used to quickly identify bad parts inspected on automatic inspection equipment. This program is not statistical but instead is used to sort good parts from bad parts. It assumes you have multiple parts fixtured on a stage or fixtured in rows and columns and you inspect the parts using the step and repeat method of the particular equipment you purchased. This multi-part configuration is usually run un-manned to save time while you inspect 100% of the parts looking to separate the good parts from the bad.

Because QC-Sort only works in conjunction with QC-CALC, as the inspection progresses, QC-CALC displays each feature of every part in raw graphical form. QC-Sort displays your parts just as the fixture is made so you can locate any bad part in the fixture easily. A part is considered bad when one or more features are out of tolerance. It does not matter how many features you inspect, if any feature on the part is bad, QC-Sort displays that part as red.

Most fixtures are designed in rows and columns so when the parts are loaded and inspected it becomes difficult to locate the bad part. QC-Sort shows your parts in the same pattern as the physical fixture so you can quickly identify the good from the bad.

1.1 Installation

QC-Sort is distributed via the Internet and must be installed in your PC.

1. Install QC-Sort in the computer.
2. The following screen is displayed on the first run.



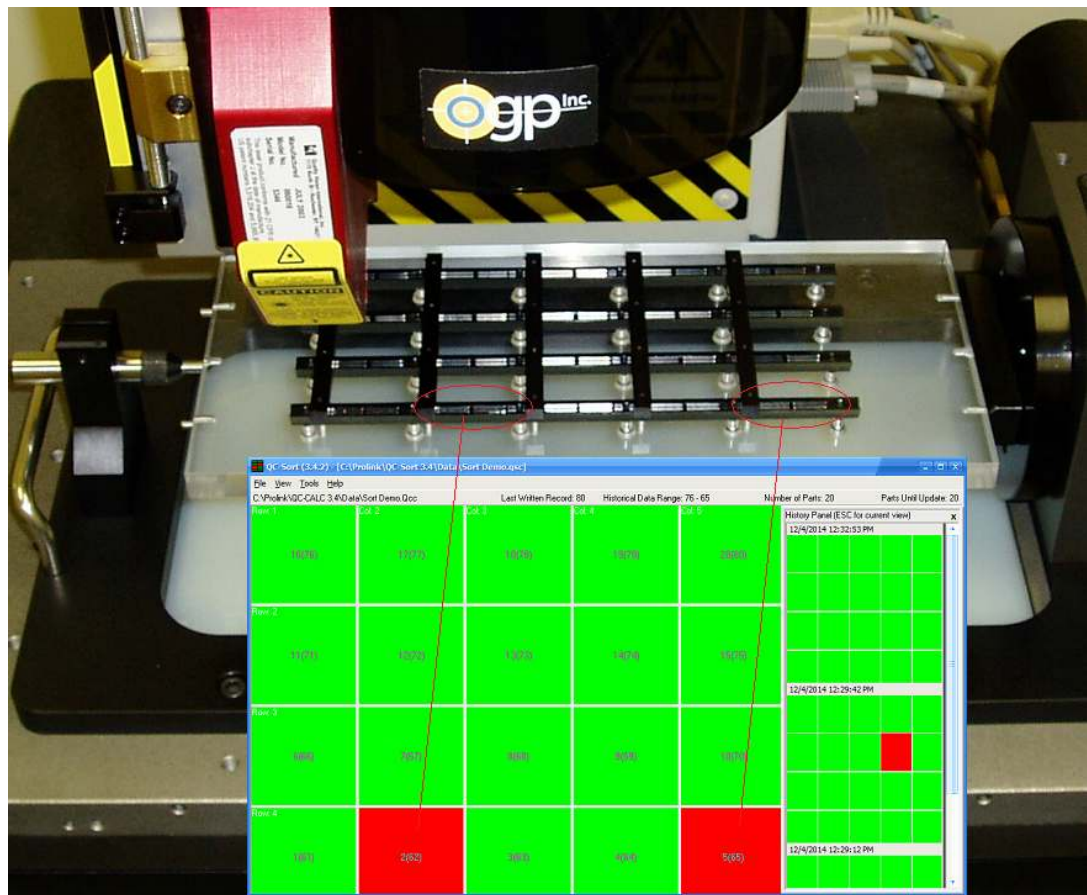
3. If you purchased the software, click the **Activate Software** button otherwise, click the **Begin Evaluation** button.
NOTE: You may activate your software at any time.
4. You are now ready to begin QC-Sort. If you already own QC-CALC you can begin creating your part layout plan.

Introduction

1.2 Overview

More detail is needed to fully understand the QC-Sort concept. Here are the basic steps you must perform to obtain usable results:

- Create a fixture that holds parts in rows and columns. Let's assume for example you create a fixture that has 4 rows of 5 parts or 20 parts total.
- Write a part program to inspect the parts using a repeat statement
- Load the fixture with 20 parts
- Run the part program to inspect all 20 parts.
- As inspection occurs, QC-CALC displays the measurement results.
- At the completion of 20-part inspection, QC-Sort reads the data of newest 20 parts in the QC-CALC file and displays the good parts as green and the bad parts as red.
- Remove and separate the bad parts (red) based on their position in the fixture shown in QC-Sort's matching layout. The photograph below shows a fixture of 20 parts in 4 rows of 5 parts. QC-Sort displays 2 red blocks in row 1 indicate parts 2 and 5 are bad and all others are good.

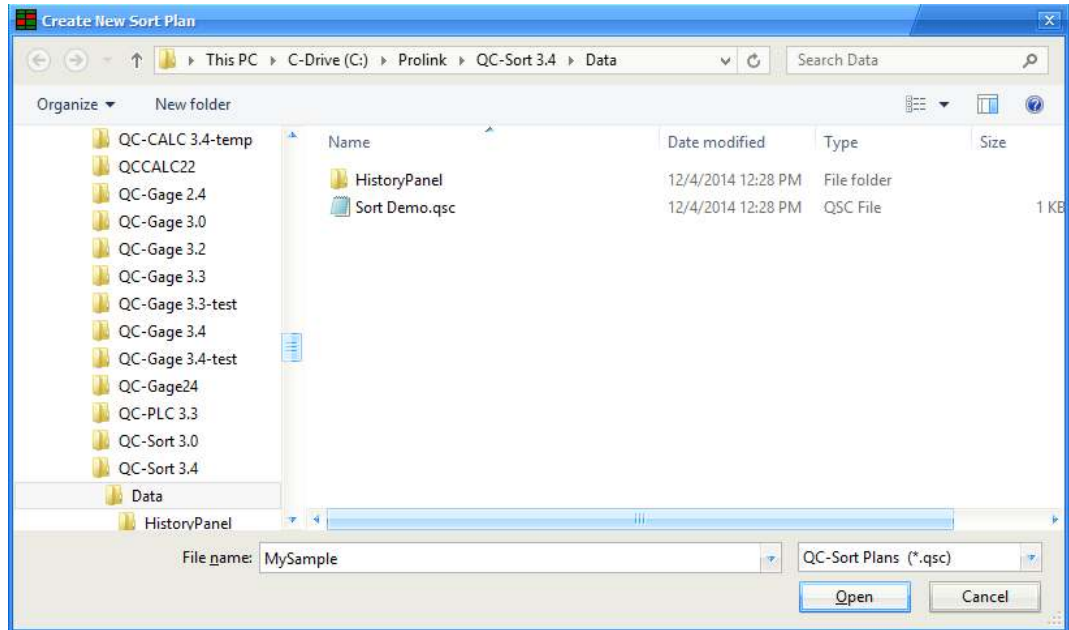


2. The Basics

QC-Sort is a self-contained program that communicates with QC-CALC databases. You must first setup QC-CALC to collect data and then setup QC-Sort to determine which file you wish to "watch".

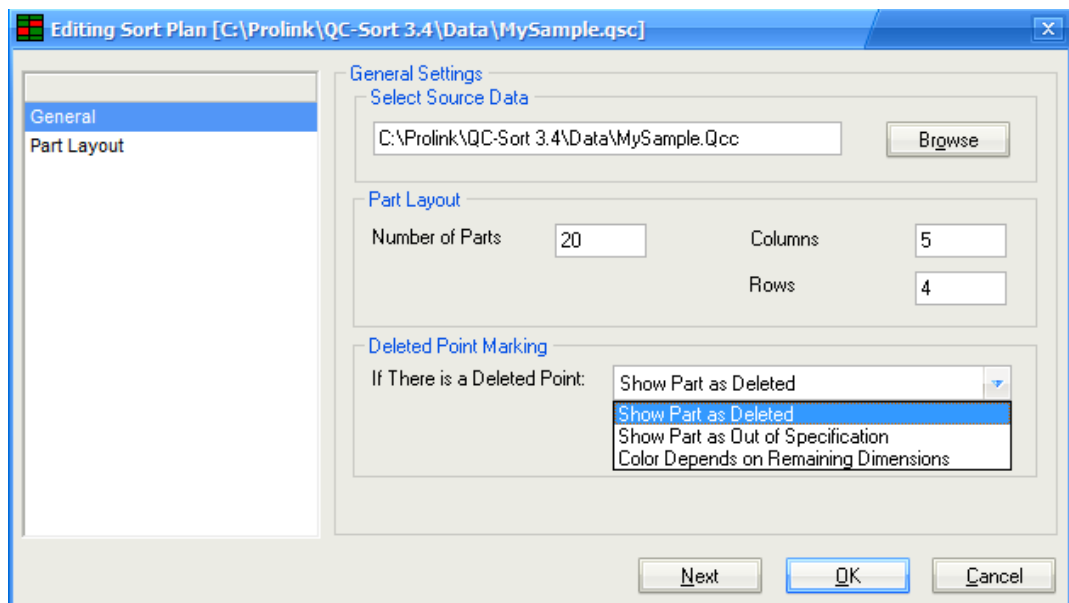
2.1 Create New Setup

You must first establish a configuration using the **File – New** menu of QC-Sort. Use the same file name as your part program.



2.2 General Settings

This screen is used to configure the .qsc file to monitor and how your fixture is setup.



2.2.1 Select Source Data

Select the .QCC file you wish to monitor in the **Select Source Data** area. We recommend that you use the same configuration name as the .qcc file name to avoid confusion later.

2.2.2 Part Layout

This is where you enter the information specific to the fixture being used for this part. The **Number of Parts** is the number of parts the fixture holds and the number of **Rows** and **Columns** in your fixture is a description of the actual layout of those parts.

2.2.3 Deleted Point Marking

Show Part as Deleted

With this choice the block representing the part with the deleted point will be shown using the **Deleted** color or graphic that was setup in the **Tools – Edit Plan Options – Display** area. Part 3 below is an example of what you will see.

2(141)	3(142)	4(143)	5(144)

Show Part as Out of Specification

With this choice the block representing the part with the deleted point will be shown using the **Out of Specification** color or graphic that was setup in the **Tools – Edit Plan Options – Display** area. Part 3 below is an example of what you will see.

2(141)	3(142)	4(143)	5(144)

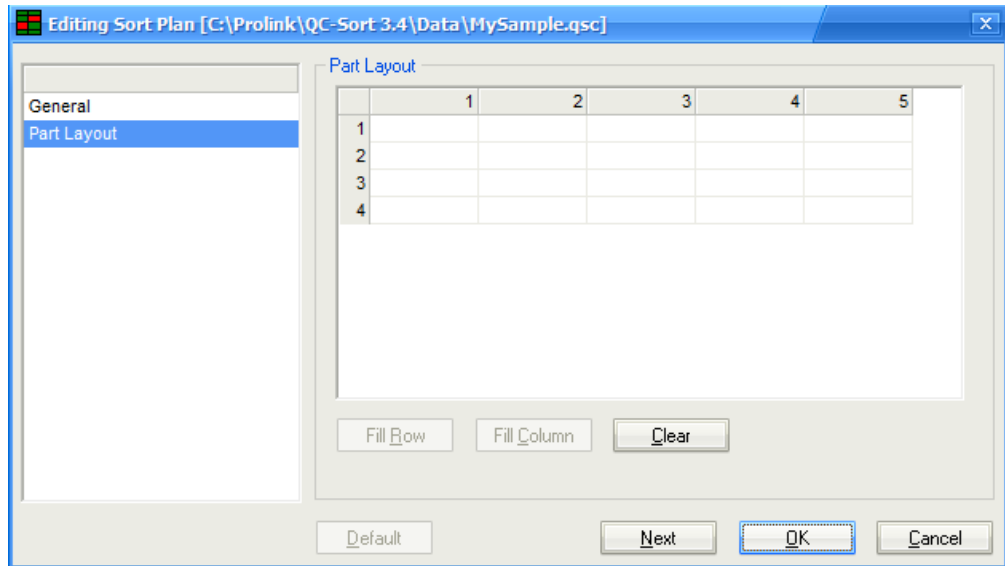
Color Depends on Remaining Dimensions

With this choice the deleted point will be ignored and the remaining data for that part will be used to decide the color or graphic representing the part. If all of the remaining features on that part are in specification then the **In Specification** color or graphic will be used, otherwise the **Out of Specification** color or graphic will be used.

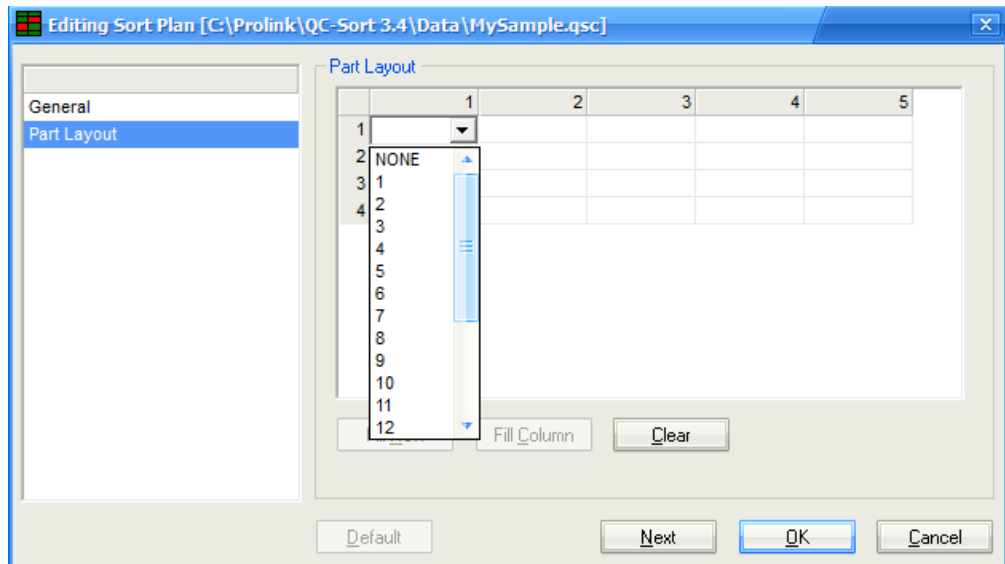
When everything has been filled in, click the **Next** button.

2.3 Part Layout

The physical layout is now understood but the direction of inspection is also required. The next screen shows your layout in a grid but everything is blank. Place yourself in front of the machine and picture the parts layed out in these 20 positions.



Now manually fill in the numbers in the direction of inspection. Start with part #1 and fill the grid with numbers that represent the order the CMM will travel from part 1 to 20 (in this case). QC-Sort maintains a list of valid numbers and will not let you enter the same number twice.



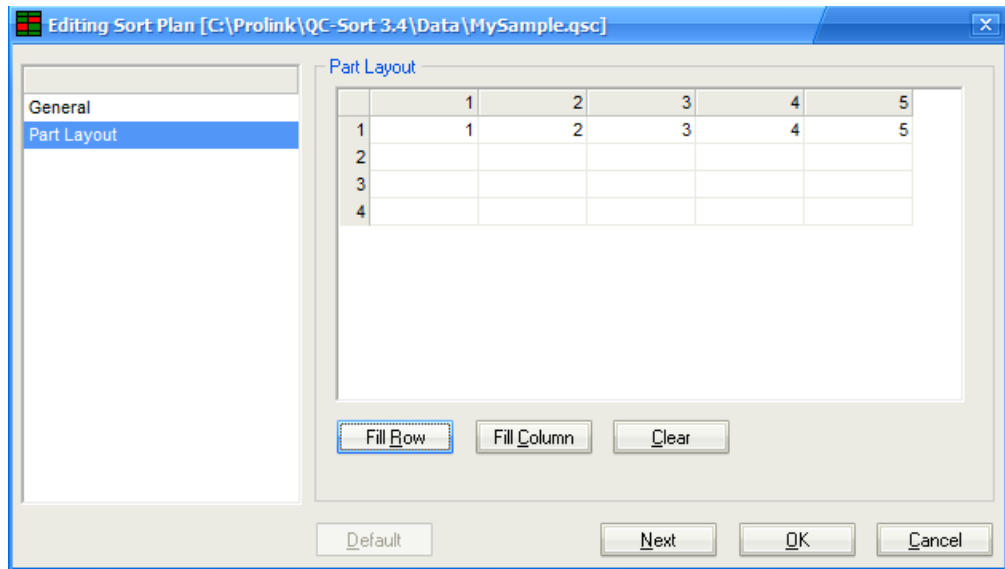
2.3.1 Fill Row and Column

If the inspection sequence starts in the upper left corner of the CMM stage and moves left to right, click the upper left cell and an empty list box is displayed. Now click the **Fill Row** button and all numbers are entered automatically for you from left to right. Clicking in any of the border cells (shown in blue – gray) allows you to automatically fill:

- A row from left to right or from right to left

The Basics

- A column from top to bottom or from bottom to top



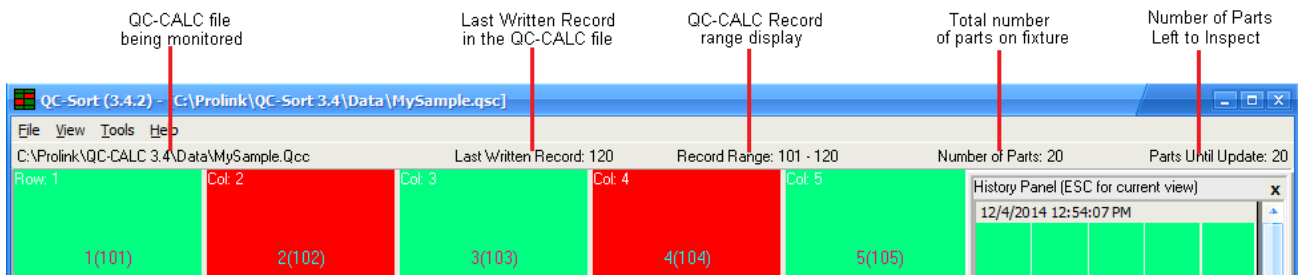
Should you click in the cell at Row 4, Column 5 and click the **Fill Row** button, the row is automatically filled in reverse.

2.3.2 Clear

If you fill the grid incorrectly and want to start over, press the **Clear** button and the grid is emptied allowing you to start over. This makes all numbers available again. Remember, you can only use each number once.

2.4 About QC-Sort's Status Area

Now that you've programmed the options and are running QC-Sort, some screen detail explanation is needed. QC-Sort has several areas of information you should understand. The status bar under the menu contains useful information to help you understand how the program is running and its current state.



2.4.1 Active QC-CALC File

This shows the QC-CALC file that your plan is monitoring. This ensures you are monitoring what you think you setup. If the screens do not update check to be sure this is the correct file name

2.4.2 Last Written Record

The **Last Written Record** is a special pointer in the QC-CALC database that tells you the record number of the last inspected part.

2.4.3 Record Range

This shows the actual record numbers from the QC-CALC file being displayed in the main part of the screen.

2.4.4 Number of Parts

This shows the number of parts for the current configuration.

2.4.5 Parts Until Update

This is a count-down value to show you how many parts must be inspected before QC-Sort updates the screen. In our example, this number will start at 20 and drop to 0. When 0 is hit, the screen is updated with all part status.

3. The Menus

3.1 File Menu

3.1.1 New Sort Plan

This menu is used to create a new sort plan. You will be asked to give the new plan a name (we recommend you use the same name as the .qcc file you will be monitoring), then the **Tools – Edit Sort Plan** screen will automatically be shown to allow you to setup the new plan. See [General Settings](#) on page 3 for more details.

3.1.2 Open

This menu is used to open an existing Sort Plan.

3.1.3 Close

This menu is used to close the currently open Sort Plan.

3.1.4 Save As

This menu is used to save the currently open Sort Plan as a different name and re-open the Sort Plan under that name. If you use the same fixture setup for multiple parts you can save the Sort Plan with a different part name, then use the **Tools – Edit Sort Plan** menu to change the .qcc file being used for the plan.

3.1.5 Print

This menu choice takes an image of the screen, sizes it for the default printer, and creates a report. The file name and date and time are included in the report to clearly identify the contents of each report.

3.1.6 Auto Print

With this menu checked, every time the screen updates to show the next Fixture the same report generated by the **File – Print** menu is automatically triggered. If the **File – Print Preview** menu is checked, this report will be shown on the screen. If the **Print Preview** menu is unchecked the report will go directly to the printer specified in the **File – Printer Setup** menu.

3.1.7 Print Preview

With the **Print Preview** option enabled the manual or automatic report will appear on the screen. Once the Preview is on the screen you can choose to print it to a printer by using the **Print** button. This is an example of the **Print Preview** screen:

C:\Prolink\QC-CALC 3.4\Data\MySample.qcc				11/17/2014
Rec Range: 81 - 100				4:57:29 PM
Row: 1				Col: 5
1(81)	2(82)	3(83)	4(84)	5(85)
6(86)	7(87)	8(88)	9(89)	10(90)
11(91)	12(92)	13(93)	14(94)	15(95)
16(96)	17(97)	18(98)	19(99)	20(100)
<input type="button" value="Print"/>				<input type="button" value="Cancel"/>

3.1.8 Printer Setup

This menu allows you to choose which printer to use for printing the report and the paper orientation (Portrait or Landscape). Depending on the orientation used, QC-Sort will use the available space and size the boxes accordingly.

3.1.9 Exit

The **File – Exit** menu item shuts down QC-Sort. All items are remembered so QC-Sort will start in the same position it was left.

3.2 View Menu

3.2.1 History Panel

The History Panel (shown in the right below) allows you to see the previous results that had been shown in the main QC-Sort screen.



These pictures of the previous results are shown without detail, but clicking one of the history pictures will display those results in the main screen with the full detail showing. The ESC key will return the main display to the recent results.



3.3 Tools Menu

3.3.1 Edit Sort Plan

The **Tools – Edit Sort Plan** menu will show the same settings as **File – New**. For more information about each screen within the **Edit Plan Options** area please see the [General Settings](#) section on page 3.

3.3.2 Reset Part Counter

This menu item found in **Tools – Reset Part Counter** is used to reset the QC-Sort counter. When QC-Sort is started, the last active plan is loaded and the part counter is set to the total number of parts in the fixture. QC-Sort then reads back through the QC-CALC database and populates its screen with the last known run. You will see red and green squares.

If you inspect several parts and realize you want to start over, selecting this menu will set the counter to the maximum number of parts as if the QC-Sort was just launched.

A Word of Caution: Be careful to keep QC-Sort synchronized with your inspection. If you are unsure whether or not everything is synchronized, wait until the inspection is complete and then use the **Reset Part Count** option.

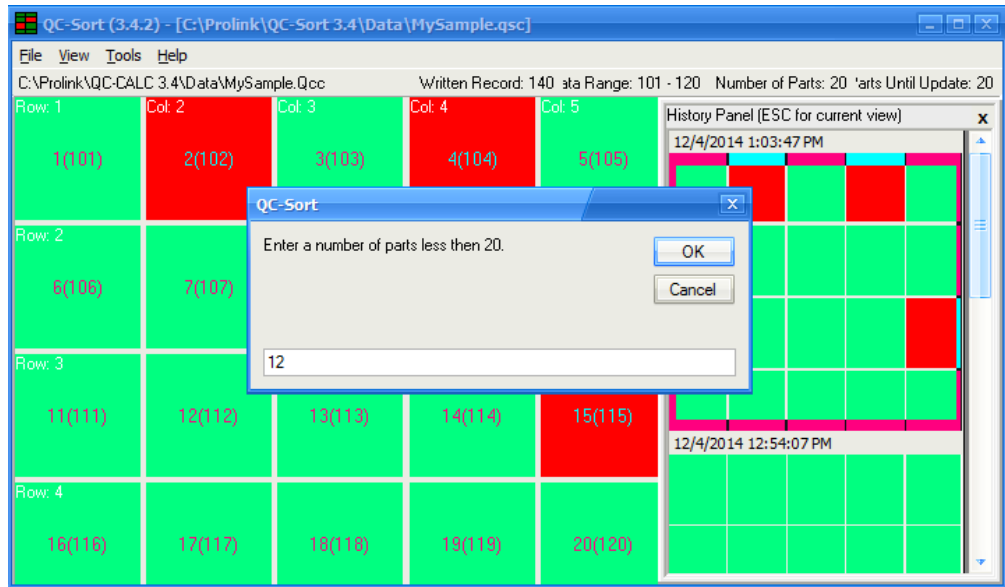
3.3.3 Partial Run

When you use a fixture to hold many parts on the inspection stage, it can be difficult to inspect a partially filled fixture. QC-Sort knows how many parts to expect since you setup the total number of parts, the number of rows, and the number of columns on your fixture. In our example, we chose 20 parts in 4 rows of 5. QC-Sort watches parts being added to the QC-CALC file you selected in your configuration. When a full fixture is detected, QC-Sort updates the screen showing the status of each part using red and green colors.

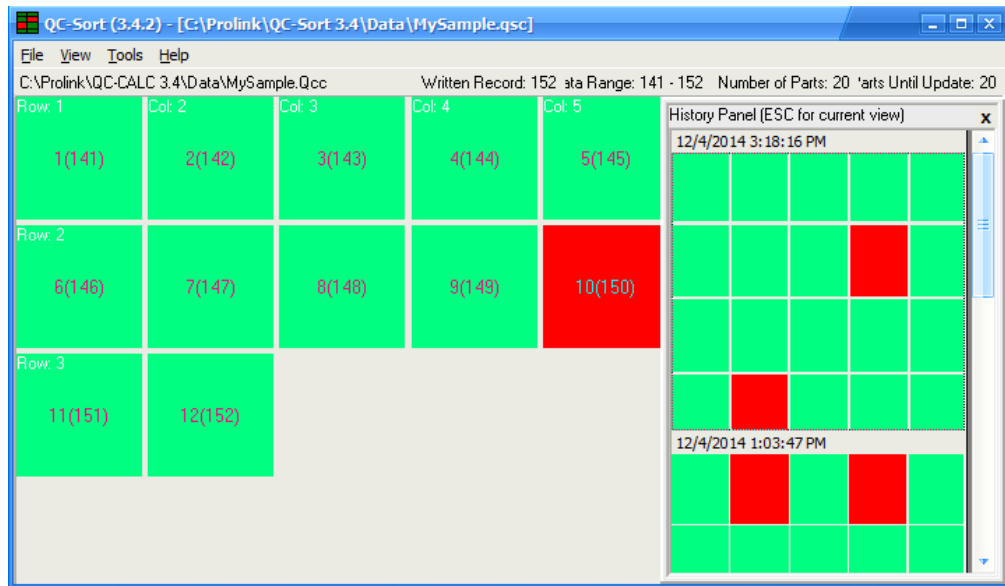
Let's assume you have 1012 parts to inspect on a fixture that holds 20 parts. Clearly, there are 12 parts left over after running 50 full fixtures of 20. The **Tools – Partial Run** menu allows you to enter 12 parts as the final run and QC-Sort updates its screen early showing only 12 parts in red and green and graying out the other 8 positions on the stage. This setting is temporary and is only remembered once.

The Menus – Tools Menu

Selecting **Tools – Partial Run** yields the following question:



As inspection continues, the screen update occurs but only the partial positions on the fixture are updated after the 12 parts are received. The extra 8 positions are grayed out indicating a partially filled fixture.



3.3.4 Refresh Screen

The Refresh menu will reopen the QC-CALC file and read the same records from the file again. This is needed if you have changed some values in the .qcc file since the screen was initially populated. This will **not** read any new records that have been received, unless all parts necessary for the complete layout have been collected. For example, if the current part layout shows parts 61 – 80 and the Refresh menu is used, records 61 – 80 will be read again even though there are now 85 records in the file.

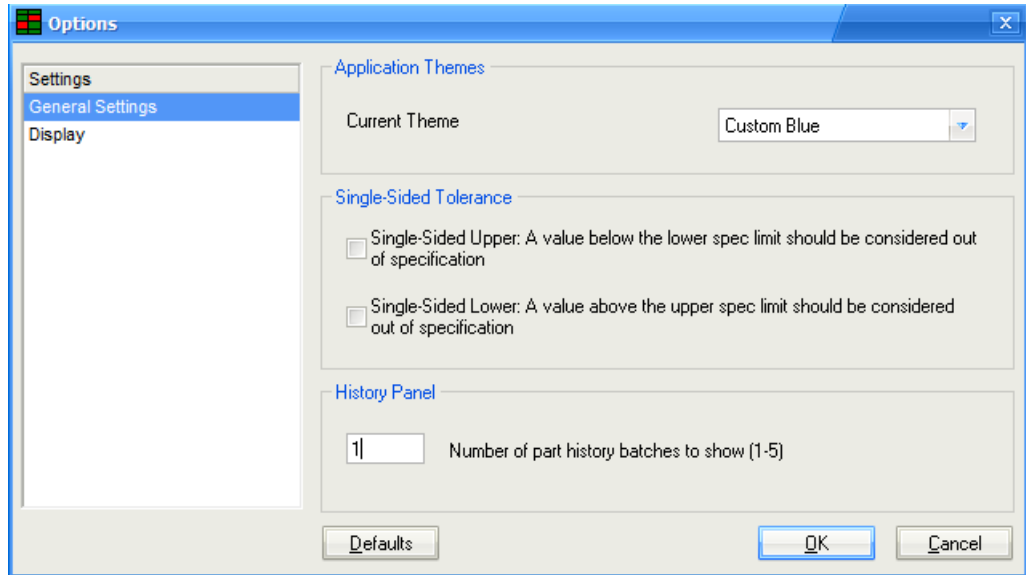
3.3.5 Always on Top

This menu option will keep the QC-Sort window on top of any other windows on the screen making the program always visible to the operators.

3.4 Tools – Options

3.4.1 General Settings

Any general settings available within all of QC-Sort are controlled here.



Application Themes

You can change the look and feel of the screens within QC-Sort with this option. Choosing "None" will remove any theme and the current Windows style will be used.

Single-Sided Tolerances

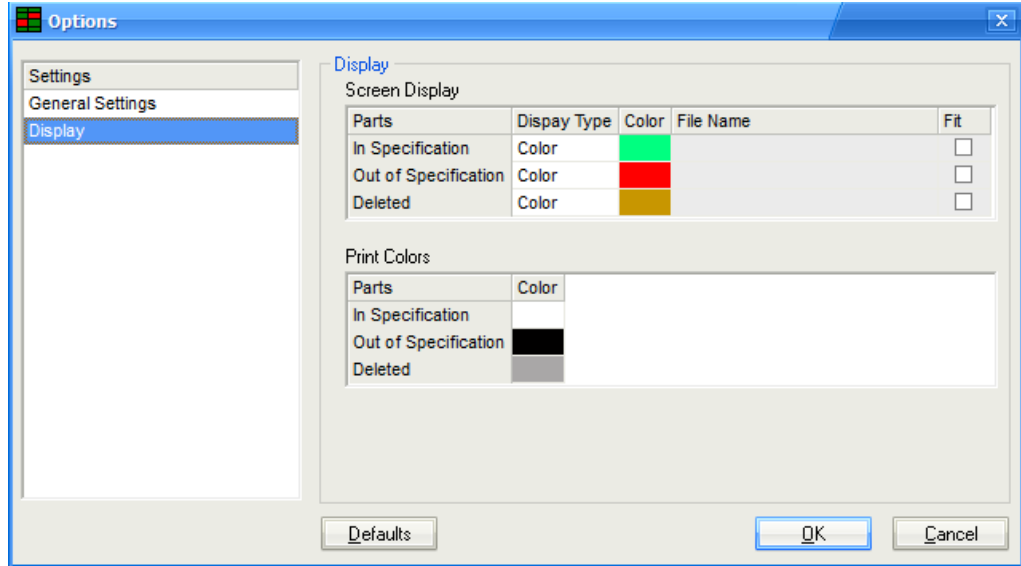
The options for Single-Sided Tolerances are include to give you control over how the values that fall below the Nominal/Lower Spec Limit (in the Single-Sided Upper case) are treated. Some prefer to ignore any values that actually fall below the Lower Spec Limit, but others believe that those values should be treated as Out of Specification. Checking either of these options will treat the values as Out of Spec and cause that part to be shown as bad.

History Panel

This **History Panel** is an area shown in the right of the screen that allows you to see previous screen results. The setting here is used to control how many record groups will be saved and displayed. Up to 5 previous screen results can be saved and the History Panel can be turned off by using the **View – History Panel** menu.

3.4.2 Display

The Display area is used to select the colors of the cells that represent good and bad parts. There are settings for what will be shown on the screen and different settings for what will appear in the report. The settings in this area are set once and used for all part sort plans.



Screen Display:

These are the settings that control what will be shown on the screen. The defaults are green, red, and gold (to match the defaults in QC-CALC) but you can select any combination. Caution: Do **NOT** select the same colors for multiple items! Color is the only method of distinguishing the difference between good, bad, and deleted parts!!

Display Type

You can choose to use different **Colors** or **Pictures** to differentiate between In Spec, Out of Spec, and Deleted parts.

Color

This column is only available if you choose **Color** as the **Display Type**. Clicking the ... button that appears will show the **Pick a Color** dialog box. Choose the color to represent the specified part condition.

File Name

This column is only available if you choose **Picture** as the **Display Type**. Use the ... button to choose the picture (.bmp, .jpg, .gif, .wmf, .emf, .ico, or .cur) you want to be displayed for the specified part condition.

Fit

This column is only available if you choose **Picture** as the **Display Type**. Checking the **Fit** box will either shrink or stretch the original picture to best fit the box size on the QC-Sort screen.

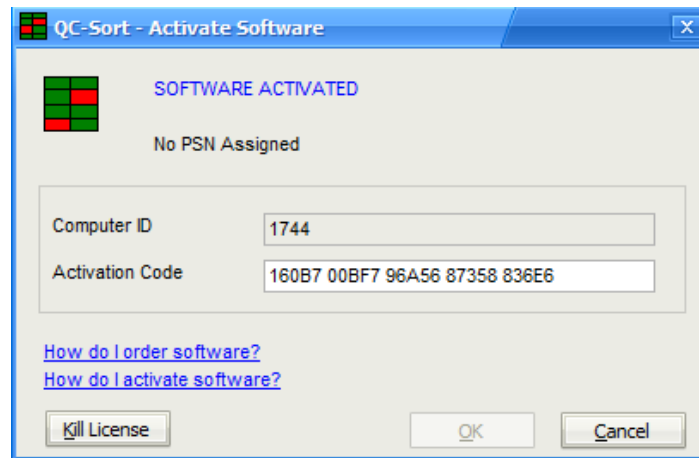
Print Colors:

These are the settings that control what will be shown in the report. The defaults are white, black, and gray (because most printers are not color printers) but you can select any combination. Caution: Do **NOT** select the same colors for multiple items! Color is the only method of distinguishing the difference between good, bad, and deleted parts!!

3.5 Help Menu

3.5.1 Activate Software

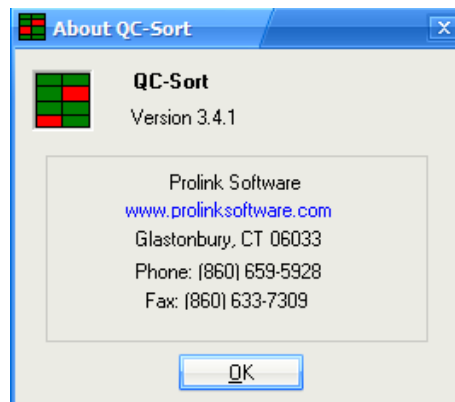
This menu is used in conjunction with the website to activate QC-Sort. From the **My Account** area of the website, click the **Activate** link for the copy of QC-Sort you want to unlock, then follow the directions for generating an **Activation Code**. You will need to enter the **Computer ID** shown shown in the **Activate Software** screen then click **OK**.



The **Kill License** button deletes the current license for QC-Sort. If this is done by mistake another **Activation Code** for the same computer can be generated by using the **Details** link listed for this copy of QC-Sort on the **My Account** page of the website. If the **Computer ID** listed on the website does not match what is shown in the **Activate Software** screen please contact Prolink.

3.5.2 About QC-Sort

This screen shows the revision of QC-Sort you are using along with the basic information about Prolink.



--- End of QC-Sort Document ---