SQCpack 2000

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Contents

Welcome

Welcome to SQCpack 2000, the latest version of our popular statistical process control software. SQCpack 2000 combines powerful SQC techniques with flexibility and user-friendliness, making data analysis easier than ever. It allows you to create a variety of charts and reports, using system defaults or your own custom settings.

If you are new to SQCpack 2000, you may want to turn to Chapter 3, "Tutorial," for a quick, simple tutorial about using key features of the product.

What's new in SQCpack?

In version 4.6

❖ Summary reporting

❖ Chart annotation

❖ Statistics as chart titles

❖ Cusum charts

❖ Control chart and histogram combination button

❖ Expanded chart styles and new style editor

In version 4.5

❖ Real-time charting

❖ E-mail alarms for an out-of-control condition exists

❖ ClipCharts (for sharing charts with people who do not have SQCpack)

About your SQCpack documentation

SQCpack includes the following:

- ◆ *User Guide*   This document.

- ◆ On-line Help   This provides descriptions of the application's commands and windows. It appears when you select a help option from the Help Menu or press ⌑F1⌑. For more information, see "Getting Help" in Section 2, *Getting Started.*

- ◆ SQC Quality Advisor™   This provides an overview of using SQC tools. It explains SQC terminology and issues. The SQC Quality Advisor is an on-line help file that you can open from the Help Menu.

About PQ Systems

Productivity-Quality Systems, Inc. is a full-service firm dedicated to helping customers continuously improve their organizations. We offer a comprehensive network of products and services designed to improve quality, productivity, and competitive position for all industries. The full line of improvement products and services from PQ Systems includes:

CHARTrunner™ generates process performance charts and performs statistical analysis using data that is collected, stored, and managed by other applications. *CHARTrunner* eliminates the need for complex importing, time consuming exporting, and tedious data entry.

CHARTrunner-e™ is a web-based charting solution. It works with the desktop version of *CHARTrunner* to generate SPC and other process performance charts and performs statistical analysis using data that is collected, stored, and managed by other applications. It then makes those charts available for viewing through a standard web browser.

GAGEpack® *2000* is 32-bit gage calibration tracking software that manages a complete history of measurement devices, instruments, and gages. *GAGEpack 2000* helps organizations conform to ISO 9000, QS-9000 and other calibration standards. Features include comprehensive R&R studies, improved security, enhanced sorting, and flexible reports.

R&Rpack® **2000** provides users with a complete statistical and graphical analysis of their measurement systems. Its reports and charts meet AIAG standards and help organizations to conform to ISO and QS-9000 . requirements. Charts include gage performance curves, accuracy/deviation histograms, accuracy/linearity charts, control charts, intraclass correlation, interaction plots, and EMP charts.

DOEpack® **2000** is easy-to-use design of experiments software that guides you through a logical, step-by-step process for planning, designing, implementing, and interpreting effective experimental designs. It helps you to optimize responses and identify winning combinations so that you save time and money and produce higher quality products.

PORTspy™ **2000** transfers data easily from a wide variety of measuring devices into *SQCpack 2000* and other popular software programs. *PORTspy 2000* saves time, eliminates data input errors, guides users through setup with an easy-to-use wizard, and manages data from multiple devices simultaneously.

MEASUREspy™ bridges the communication gap between complex data from measurement devices and analysis software. *MEASUREspy* can easily find the important data in complicated, structured output, such as files from CMMs. *MEASUREspy* virtually eliminates keyboard or manual data entry, as well as the errors associated with these tasks. By working with the increasingly sophisticated devices used throughout manufacturing industries, it makes critical data immediately available for analysis with *SQCpack* or other software programs.

SPC Workout is an interactive multimedia-training course that provides effective step-by-step instruction on how to implement and use statistical process control. SPC Workout's three modules—a statistics primer, control chart basics, and advanced control charting—make it suitable for workers at all levels. On-line exercises, and end-of-unit tests document the learners' progress while the colorful graphics and full audio keep learners interested.

FMEA Investigator is an interactive multimedia-training course that provides effective instructions for conducting both design and process FMEAs as required by QS-9000. It teaches you how to customize rating scales for your specific design or process to assure meaningful information and results from the FMEA. In addition, you will learn how to link FMEAs to control plans and have access to worksheet and rating scales templates. The *FMEA Investigator* illustrates concepts with two case studies of companies that used FMEAs to improve their product design and manufacturing processes.

Gage Mentor is a step-by-step multimedia training course that provides effective instructions on how to take successful dimensional measurements. Gage Mentor consists of two modules: Using Gages and Managing Gages. Using Gages teaches how to properly use a wide variety of dimensional gages, how to read symbols on engineering drawings, and how to avoid common measurement errors. Managing Gages teaches proper gage management and measurement system analysis.

Six Sigma Start-Up is an introductory course on the principles and practices of Six Sigma. It is a computer-based interactive training system that teaches operators, engineers, supervisors, and managers the key concepts of six sigma so they will be better prepared to support a company's six sigma efforts.

Total Quality Transformation® offers step-by-step help in facilitating the quality transformation in organizations. Materials include *Foundations for Leaders, Team Skills, Alignment Guide, Improvement Guide, Strategic Quality Planning Guide, Improvement Tools, Total Quality Tools,* and *Total Quality Tools* for Windows. *TQT* is a part of the *Transformation of American Industry*® training project, which has been used in a variety of manufacturing and service organizations since 1984.

Consulting and Training Services are offered by PQ Systems for companies at all stages of their quality management programs. A staff of highly-qualified consultants brings practical experience from both industrial and academic environments. Seminars and on-site training programs are available to help companies implement successful quality management programs.

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Call Sales for:

❖ General information to help you decide to purchase or evaluate the software

❖ To place an order or check the status of an order

The E-mail address is:
❖ sales@pqsystems.com

Fax   **937-885-2252**
You can send a fax to either Sales or Technical Support. To ensure that your fax is delivered quickly to the right department, please send it to Attn: Sales or Attn: Technical Support.

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937-885-2255

Call our experienced technical support team. Our experts can answer
questions about software problems, data analysis, and applications.

Before You Call

Please follow these steps to help our technical advisors answer your
questions quickly:

❖ Have your license/serial number ready. It is listed in the About
   SQCpack dialog box. You can access this dialog box by selecting
   About from the Help Menu.

❖ Be at your computer, if possible.

❖ Review the topic for which you have a question in the *User Guide.*

The E-mail Address is:

❖ support@pqsystems.com

Section 1

Installing SQCpack 2000

1

In this section

This section looks at the following topics:

❖ Hardware and software requirements

❖ Using the README file

❖ Installing SQCpack

❖ Upgrading from a trial license

Hardware and software requirements

You need the following to run SQCpack:

❖ Pentium PC with at least 32 megabytes of memory; 64 megabytes of memory is recommended

❖ A hard drive with at least 30 megabytes of free space

❖ VGA or SVGA graphics adapters

❖ Windows 95, 98, 2000, or Windows NT

Using the installation README file

We strive to continuously improve our software and occasionally make changes that affect the look or use of SQCpack. We are not always able to include this information in the manual that you receive with the product. Instead, we include this information in a README file on the CD that contains the program files. This file has a separate icon in the SQCpack group or folder. To open the README file, double-click on this icon.

Installing SQCpack

To install SQCpack:

1. Put the Quality Suite CD in your CD drive and close the drive. The CD should launch automatically. If it does not:

    a. Open the Start Menu and select Run.

    b. In the Run form, type the letter of your CD drive, followed by colon, backslash, and setup. For example, if your Quality Suite CD is in your D drive, you would type D:\setup.

    c. Select ⟦ OK ⟧.

2. From the introduction screen, click on >> or press the ⟦PageDown⟧ key. From the Quality Suite Main Menu, select Install Products.

3. From the Quality Suite Software screen, click on SQCpack. Follow on-screen installation instructions to complete the install.

Converting a trial license

If you have purchased a license, you will need to update the license information in the trial version:

1. Start the program.

2. When the Registration form appears, click on Cancel. You will be asked if you want to enter license information. Select Yes.

3. Enter the Serial number, and Update code from your **License Certificate.** The License Certificate was shipped with your software.

    Note that 0 on your License Certificate is a zero.

If you did not receive this certification, contact your PQ Systems Sales Representative.

United States 1-800-777-3020.

Australia 03-9770-1960

England 01704 871465

To review the license agreement, please refer to page iii at the front of this *User Guide.*

Converting database files from older versions of SQCpack

If SQCpack 3.x is installed, SQCpack 2000 will prompt you to automatically convert SQCpack 3.x databases.

To convert an SQCpack 3.x database:

1. Open the File Menu and select Open SQCpack database or click on the Open database icon, 🛢.

2. Click on the down arrow in the Files of type field and select SQCpack 3 databases from the drop-down menu.
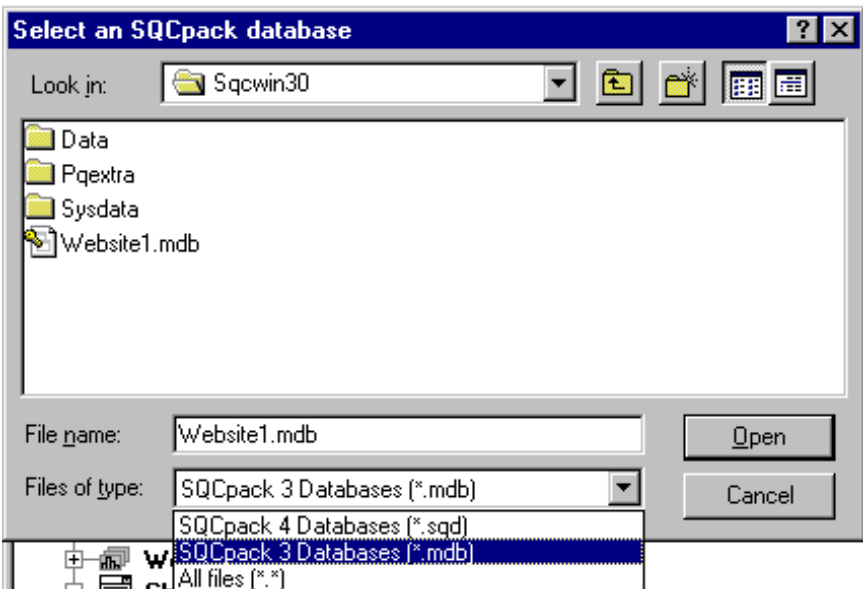
3. Select the SQCpack 3 database that you want to convert and click on Open.

4. Select the path for the converted database, for example, c:\Program Files\SQCpack 2000\data\.

SQCpack 2000 will convert the database as before opening it. Note that for a large database, this process may take several minutes. If any groups in the 3.x database are not successfully converted, SQCpack 2000 will create a log file during the conversion process.

For earlier versions of SQCpack, please contact the nearest PQ Systems Technical Support department:

United States: 1-800-777-5060 or support@pqsystems.com

Australia: 03-9770-1960 or support@pqsystems.com.au

England: 01704 871465 or tech@pqsys.demon.co.uk

Section 2

Getting Started

2

In this section

This section provides an overview of the software, illustrates key SQCpack forms, and provides information on program settings and navigating through the software. This section covers the following topics:

❖ Why SQCpack?

❖ The process

❖ Starting SQCpack

❖ The SQCpack Tree

❖ Key forms and tabs

❖ Exiting SQCpack

❖ Getting help

Why SQCpack?

SQCpack helps users take control of service and manufacturing processes. SQCpack makes statistical process control easy by automatically performing lengthy calculations and by quickly creating charts. Use it to monitor and improve systems throughout your organization from sales to production to customer service. SQCpack will help you find process problems quickly, and provides the tools for prioritizing them. It provides online answers to your SPC questions including chart selection and interpretation.

The process

The flow chart provides a brief overview of the steps needed to create a chart. For detailed information, please refer to sections and topics listed for each step. If you do not already have a database, begin by creating one.

To view a chart in SQCpack:

1. See the topic "Creating a group" in *Section 6, Working with Groups and characteristics.*

2. See the topic "Creating characteristic" in *Section 6, Working with Groups and characteristics.*

3. See the topic "Entering identifiers and data" in *Section 8, Entering and editing data.*

4. See the topic "Control limits" in *Section 10, Charts.* Skip this step for histograms, run charts and Pareto charts

5. See *Section 10, Charts.*

```
1. Create a group.
        |
        v
2. Create measurement,
count, and/or calculate
   characteristics.
        |
        v
3. Enter data.
        |
        v
4. Display chart.
        |
        v
5. Analyze chart and
   compute limits.
```
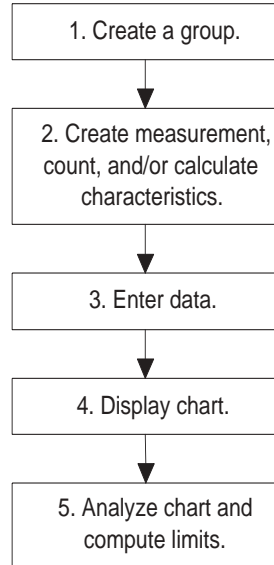
Starting SQCpack

To start SQCpack:

1. Click on the Start Menu and select SQCpack. This will likely be found under Start, Programs, PQ Systems, SQCpack. Or if the SQCpack 2000 icon was added to the desktop, simply double-click on the icon.

2. If SQCpack has been configured for users to log in, a login form will appear. Type your user and password and click Enter.

Logging in as a different user

To change the login without shutting down the program (this is available only if the User login required option is selected in the Supervisor user account):

1. Open the File Menu, and select Log in as a different user. The SQCpack login window will open.

2. Type your name and password. Press the [Tab⇆] key to move between fields. Press the [Enter↵] key or click on [OK] when you are finished.

Overview of key SQCpack forms

The SQCpack Tree

When you start SQCpack, the first form that you will see is the SQCpack Tree. This form shows the hierarchy of the open database(s).
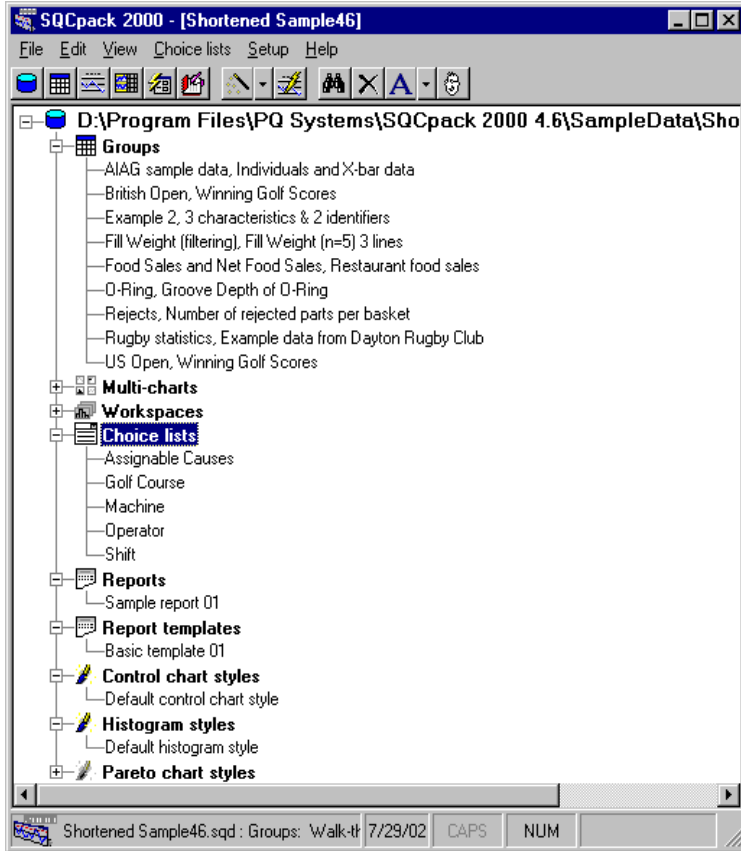
The top level of the hierarchy is the database. The second level consists of groups, Multi-charts, Workspaces, choice lists, and control chart, histogram, and Pareto styles. The third level of the hierarchy lists individual groups, Multi-charts, workspaces, choice lists, and chart styles that have been defined.

If there is another level to an item in the hierarchy, a plus sign will appear to the left of that item. Click on the + to expand it. If the sub-items are displayed, a minus sign will appear to the left of the level name. Click on the - to collapse the display.

Group Forms

The group form is displayed when you select create or modify group. This form is used to define groups and characteristics. There are two tabs on the group form; Identifiers/Characteristics and Miscellaneous.

Identifiers/Characteristics tab
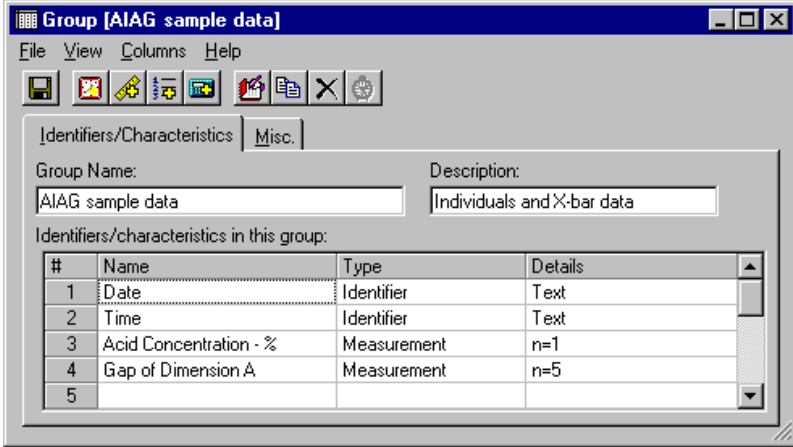
Use this tab to set up identifiers and characteristics for a group. Groups can include characteristics for measurement (variables) and count data (attributes or Pareto). Calculated characteristics can also be defined.

Miscellaneous tab

Use this tab to create group passwords, select choice lists, enter procedures, and create links to external media files.
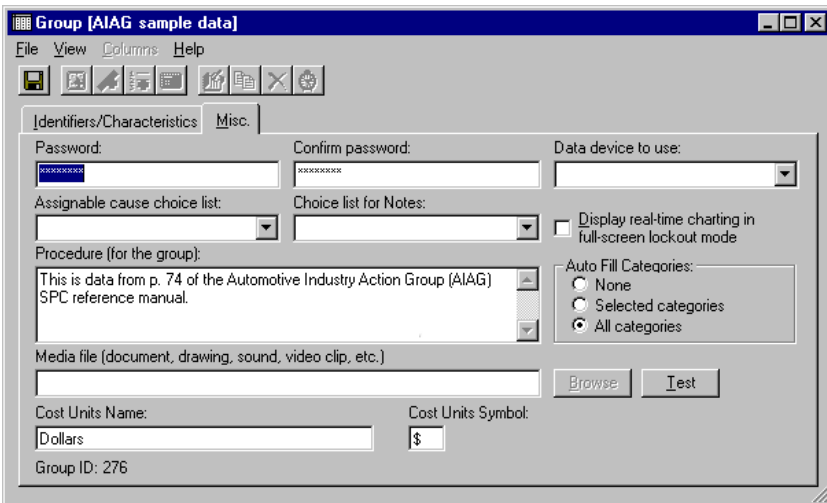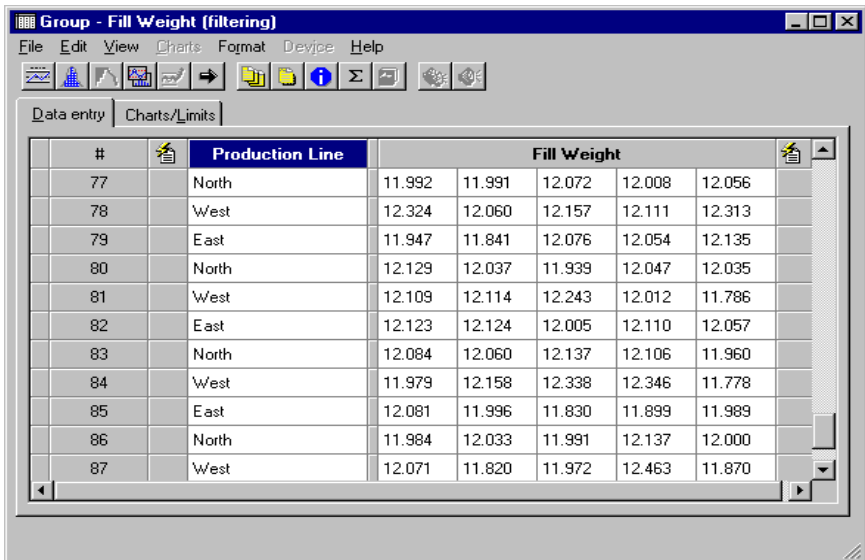
When you create and define a group, SQCpack creates a table that will be used to store data for that group.

Data entry form

The data entry form consists of two tabs, one for entering data and one for creating, modifying, and viewing charts.

Data entry tab

The data entry form is available from the Group Menu or the pop-up menu for an individual group. Enter data and identifiers for the group.

Charts/Limits tab

This form appears when you click on the Charts/Limits tab in the data entry form. Use it to create, modify, display, or delete charts.
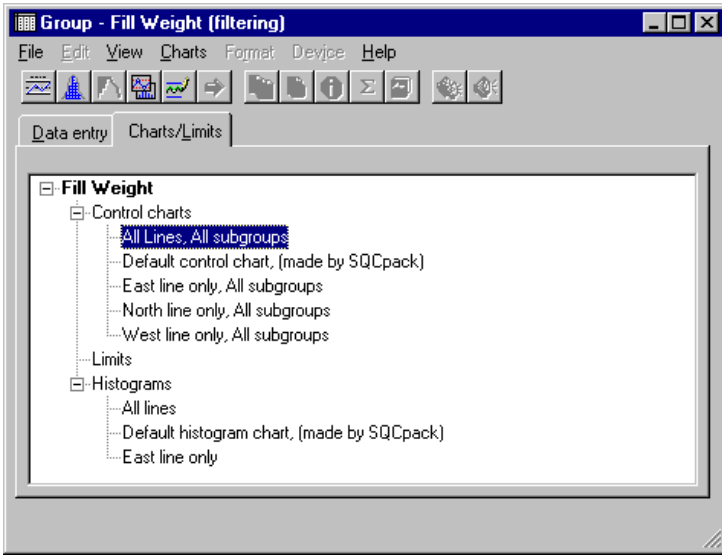
Chart definition forms

This form appears when you select New control chart or Modify from the chart pop-up menu. The histogram and Pareto chart definition forms are similar to the control chart definition form.
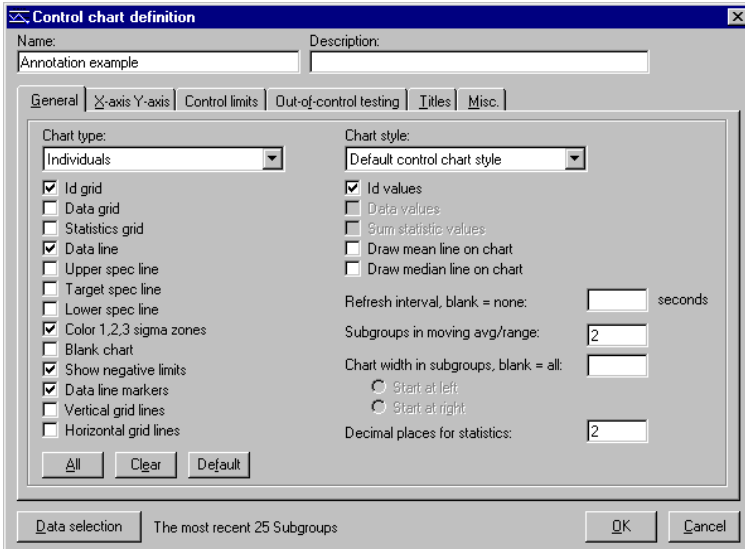
Chart browser form

This form appears when you click on the chart browser icon, ⛁. If the highlight (cursor) is on **Groups** or a database name when you click the chart icon, this form will list all charts in the database. If the highlight is on a specific group, only the charts in the group will be listed. Use this form to display, edit, copy, or delete a chart.
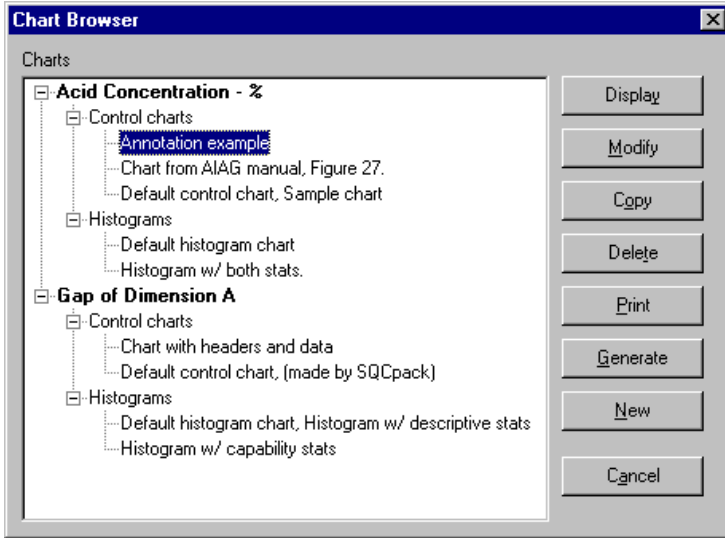
Chart display

This is chart display window. You can modify the chart setup and define limits through this window.
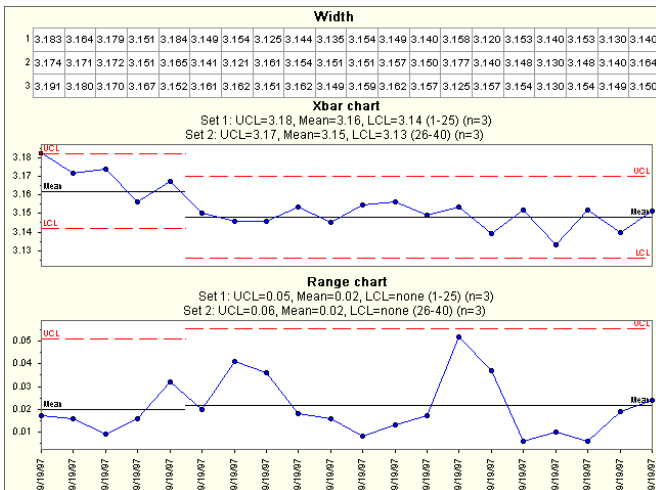
Multi-chart

The Multi-chart function lets you view several charts on a single page or screen. You can mix and match charts from different groups. Use this form to add, delete, modify, and arrange charts that will be displayed in a Multi-chart. Use the Misc tab to set image information and tiling.
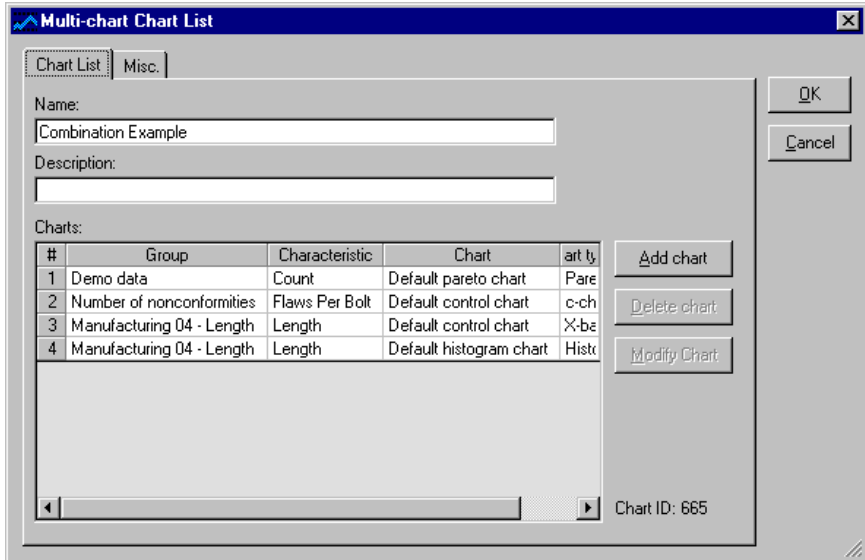
Workspace

A Workspace is a collection of two or more charts designed to be viewed or printed together however, each chart will appear in its own window or be printed on its own page. In earlier versions of SQCpack, this function was called Chart Board.

Use this form to add, delete, or modify charts that will be displayed in a Workspace.

#	Group	Characteristic	C
1	AIAG sample data	Acid Concentration - %	Default con
2	AIAG sample data	Gap of Dimension A	Default con
3	AIAG sample data	Acid Concentration - %	Default hist
4	AIAG sample data	Gap of Dimension A	Default hist
5	Fill Weight (filtering)	Fill Weight	All Lines
6	O-Ring	O-Ring	Default con
7	O-Ring	O-Ring	Default hist
8	Proportion of nonconforming	Inspection Rejections - Voids	Default con
9	Nonconformities per unit	Support Brace - All Defects	Default con
10	Rejects	Count	Vertical exa

Workspace Chart List

Chart List

Name: Monthly Production charts

Description:

Charts:

Add chart
Delete chart
Modify Chart

Chart ID: 666

OK
Cancel

Choice lists

This form is displayed when you right-click on Choice lists in the Tree or when you select New or Modify from the Choice List Menu.

Chart style form

This form is displayed when you select New or Modify chart style.
Depending on the chart type, you can use this form to set colors, data
markers, line styles, and fonts.
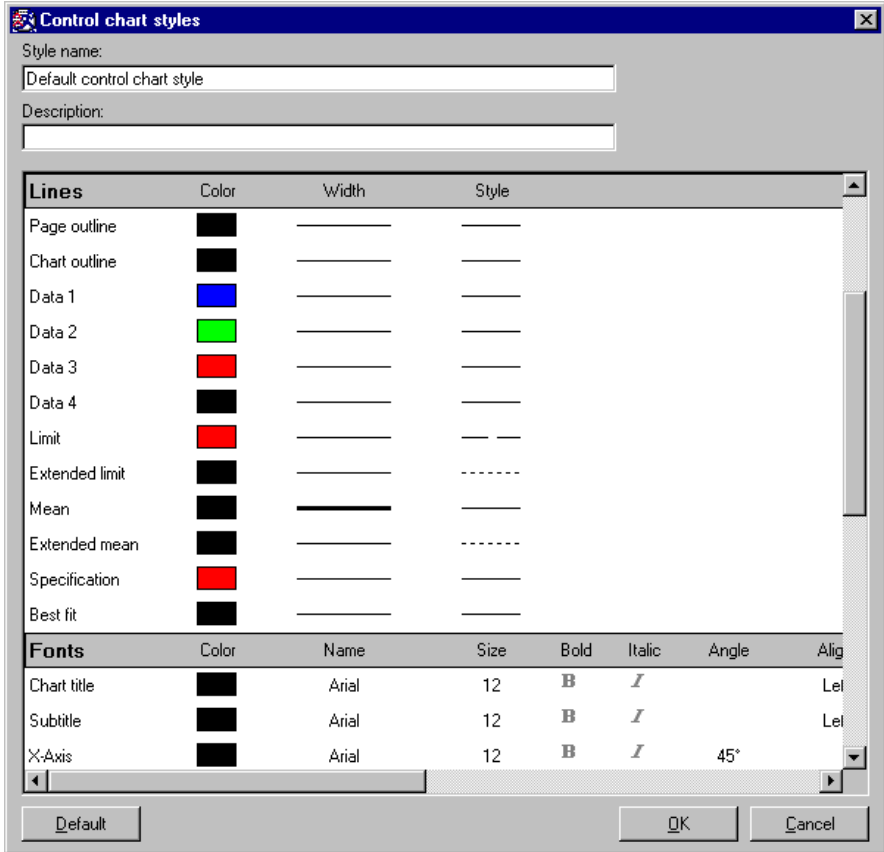
Report template style

This form is used to define report templates.

#	1	2	3	4	
Contents	Characteristic name	Mean	Minimum value	Maximum value	
Heading 1	Characteristic name	Mean	Minimum value	Maximum value	
Heading 2					
Heading 3					
Primary order					
Secondary order					
Order style					
Formula					
Width (% of page)	<default>	<default>	<default>	<default>	
Alignment	Left	Left	Left	Left	

Reports

This form is used to define individual reports.

Toolbar icons

To change the size of the toolbar icons, right-click on the Toolbar. Select Large icon or Small icons from the pop-up menu.

Tree icons

Icon	Name	Description
	Open database	Open the Select an SQCpack database form.
	Open group	Open an existing group. If no group is highlighted, this icon is grayed out.
	Chart browser	Launch the chart browser. If the highlight is on the name of a group, the chart list will show only the charts for the highlighted group. If the highlight is anywhere else, the chart list will show all the charts in every group.
	Real-time charting	Opens the group for real-time charting
	Create new group	Create a new group.
	Modify group	Edit the highlighted group. If no group is highlighted, this icon is grayed out.
	Select a Wizard	Access the import and new group Wizards. Click on the ▼ to the right of this icon to open the list of available Wizards.
	Automatic chart	Create a chart with data that is currently on the Clipboard.
	Find	Locate a group, Multi-chart, Workspace, style, or choice list in the Tree.
	Delete	Delete the item currently highlighted. This icon is grayed out if the highlighted item cannot be deleted.
	Set font/ background	Customize the program appearance. Click on the ▼ to the right of this icon to open the list of options.
	Quality Advisor	Launches the SQC Quality Advisor help file.

Group setup form icons

	Save	Save the group settings and close the form.
	New identifier	Create a new identifier.
	New measurement	Create a new measurement (variables) characteristic.
	New count	Create a new count (attributes or Pareto) characteristic.
	New calculated	Create a new calculated (variables) characteristic.
	Modify identifier/ characteristic	Edit the settings of the highlighted identifier or characteristic column.
	Copy identifier/ characteristic	Copy the highlighted identifier or characteristic column.
	Delete identifier/ characteristic	This icon deletes the highlighted identifier or characteristic column
	Real-time alarm	Opens the Real-time chart alarm settings form.

Data entry form icons

	Default control chart	Displays the default control chart for the current characteristic.
	Default histogram	Displays the default histogram for the current characteristic.
	Default Pareto chart	Displays the default Pareto chart for the current characteristic (if it is Pareto data).
	Default combination	Displays the default control chart and default histogram for the current characteristics.
	Move to next row/ Move to next column	The direction of the arrow determines the flow of data on the data entry screen. When the arrow points right, the cursor moves between characteristics. When the arrow points down, the cursor moves within the same characteristic.
	Display group procedure	Opens a pop-up window of group procedures.

	Display characteristic procedure	Opens a pop-up window of characteristic procedures.
	Display characteristic information	Opens a pop-up window of the characteristic name, type, and name of linked media file, if any.
Σ	Display subgroup statistics	Opens a pop-up window of the statistics for the currently highlighted subgroup.
	Display operational definition	Opens a pop-up window of the operational definition. Only available for category (Pareto) data if an operational definition exists.
	Display group media file	Runs the media file for the current group.
	Display characteristic media file	Runs media file for the current characteristic.

Charts/Limits form icon

	Display chart	Opens the chart display.

Accessing Menus

Some SQCpack functions are available when a database, group, Multi-chart, Workspace, or chart style is highlighted. To access these functions:

❖ Right-click on item to display the pop-up menu.

Or

❖ Highlight the name of a database, group, Multi-chart, Workspace, or chart style. The item specific menu will appear in the Menu bar at the top of SQCpack window. Click on this listing to open the Menu.

Getting Help

SQCpack offers several help options:

1. Online Help	Online help is a quick way to find answers to your questions about SQCpack while working in the program. To access help for a specific form within the program, press the **F1** key. For general help, open the **Help Menu** and select **Contents.**

2. Tool tips	If you hold the mouse pointer over an icon, a pop-up help message will appear. Move the mouse away from the icon to clear the message.
3. SQC Quality Advisor	The online SQC Quality Advisor provides answers to commonly-asked questions about SPC. To open the SQC Quality Advisor, open the Help menu and select Quality Advisor.
4. README file	This file contains updated information on SQCpack. It has a separate icon in the SQCpack folder.
5. Technical Support	SQCpack 2000 includes one year of technical support. Our technical support team will be happy to answer your questions. For technical support:
	In North and South America, contact our US office at:
	800-777-5060 or 937-885-2255 or support@pqsystems.com
	In Europe or Africa, contact our UK office at: 01704 871465 or tech@pqsys.demon.co.uk
	In Australia or Asia, contact our Australia office at: 03-9770-1960 or support@pqsystems.com.au
	Technical support information is also available online at: http://pqsystems.com/support/support.htm

Exiting SQCpack

To exit SQCpack:

❖ Press ⌊Alt⌋+⌊F4⌋ or open the **File Menu** and select **Exit.**

Section 3

Quick reference

In this section

3

This section is a quick reference for users who are already familiar with
SQCpack 2000. It provides a quick reference to key functions menu-by-
menu, screen-by-screen. It does not provide detail on using the functions.
For more detailed information, refer to the rest of the *User Guide.*

❖ Pop-up menus

❖ Menus available from the Tree

❖ Groups form menus

❖ Data entry form menus

❖ Charts/Limits form menus

Accessing Menus

Some SQCpack menus are available only when a database, group, Multi-
chart, Workspace, choice list, or chart style is highlighted. To access these
functions:

❖ Highlight Database, Group, Multi-chart, Workspace, Choice list, or
Chart style in the Tree. The item-specific menu will appear in the
Menu bar at the top of SQCpack window. Click on this listing to open
the Menu.

Pop-up Menu functions

Most of the menu functions described below are also available through
pop-up menus. Right-click on any item in the Tree to open a pop-up menu
listing functions available for that item.

Menus available from the main screen

File Menu

Open an SQCpack database

To open an existing database from the Tree:

1. Open the **File Menu** and select **Open an SQCpack database.** Or press Ctrl + O simultaneously.

2. Select a database and click **Open**.

Close current database

To close an open database from the Tree:

1. Move the highlight to the database that you want to close.

2. Open the **File Menu** and select **Close current database.** Or press Ctrl + F4 simultaneously.

Log in as a different user

If user logins are required, you can close all open databases and log in as a different user:

❖ Open the **File Menu** and select **Log in as a different user.**

This option will be grayed out if user logins are not required.

New SQCpack database

To create a new database from the Tree:

1. Open the **File Menu** and select **New SQCpack database**. Or press Ctrl + N simultaneously.

2. Enter a name for the database and click Save.

Import

To import data from the Tree:

1. Open the **File Menu** and select **Import.**

2. Select an option:
   ❖ Auto import
   ❖ Custom import
   ❖ Memorized import
   ❖ Edit memorized import

3. Follow on-screen instructions. For more information on importing data, please refer to Section 14, "Importing"

Utilities

Save a chart as a *CHARTrunner* file

If you use *CHARTrunner,* this function will create a .CRF file of a chart you select. This allows you to share SQCpack charts electronically with *CHARTrunner* users. If you have the web-enabled *CHARTrunner-e,* use this function to create chart definitions so that those without *SQCpack* or *CHARTrunner* can view charts that they need through their web browsers.

To save a chart as a CHARTrunner file:

1. Open the **File Menu** and select **Utilities**, Save a chart as a CHARTrunner file. The Chart browser form will open.

2. Highlight the chart you want and click on the **Select** button.

3. Name the .CRF file and click on ⬚ OK ⬚.

Save chart as a clipCHART

A clipCHART is a file format that allows you to send your SQCpack chart and the associated data to a colleague, customer, or supplier. Your colleague can view the data, change statistics or titles, and even select a different type of chart for the data. All the recipient needs is the CHARTrunner Viewer, which is included with SQCpack.

The clipCHART file has a file extension of .CCF. The file contains everything a person needs, in order to see the file.

To save a chart as a clipCHART:

1. Open the File Menu and select Utilities. Select Save a chart as a clipCHART. The Chart browser form will open.

2. Highlight the chart that you want to save and click on the Select button.

3. Enter a file name and click on Save.

Current user name

To check the current active user or user database:

❖ Open the **File Menu** and select **Utilities, Current user name.**

Click on ⬚ OK ⬚ to close the form.

Compact and repair

To repair a corrupted database or compress a database file from the Tree:

1. Open the Database that you want to repair or compact.

2. Open **Database Menu** and select **Compact and repair database** or right-click on the Database name and select Compact and repair database from the pop-up menu.

Convert an SQCpack 3.x data database

To convert an SQCpack 3.x data database to SQCpack 2000 format:

1. Open the **File Menu** and select **Utilities**, **Convert an SQCpack 3.x data.**

2. In the Select an SQCpack database form, enter the path and name of a database or select a database from a folder.

3. Click on the Open button.

Convert an SQCpack 3.x user database

To convert an SQCpack 3.x user database to SQCpack 2000 format:

1. Open the **File Menu** and select **Utilities**, **Convert an SQCpack 3.x user database.**

2. In the select SQCpack 3.x user database to convert field, enter the path and name of a user database or click on the Browse button to open the Select form and choose the user database.

3. Select the method for converting the database. Options are:

   ❖ Add users to a new global user database
   Select this to create a new global user database for the 3.x users.

   ❖ Add users to the current global user database
   Select this if you want the 3.x user accounts to be stored in the current global user database.

   ❖ Add users to SQC database
   Select this to include users in the same database as your data.

4. In the Database to add users field, enter the path and name of a user database. For an existing database, click on the Browse button to open the Select form and choose the user database. Click [OK] to close the Select form. Click [OK] to complete the conversion.

New global user database

To create a new global user database:

1. Open the **File Menu** and select **Utilities, New global user database.**

2. Enter a name and location for the global user database and click on **Save.**

3. Enter your login name and password. You must have access rights to create a global user database.

For more information on global database, security, and access rights, refer to Section 13, "Configuring SQCpack."

Purge groups marked for deletion

When you delete a group from the database, the group is not permanently deleted until you run the Compact and repair utility or select this utility. To purge deleted groups:

❖ Open the **File Menu** and select **Utilities, Purge groups marked of deletion.** You will be prompted to confirm the purge. Select **Yes** to permanently delete the groups, No to cancel the deletion.

Recall selected groups

When you delete a group from the database, the group is not permanently deleted until you run the Compact and repair utility or purge deleted groups utilities. Groups that have not been permanently deleted can be restored. To do this.

1. Open the **File Menu** and select **Utilities, Recall selected groups.** The Recall groups marked for deletion form will open.

2. Uncheck a group that you want to restore. Groups with a check will remain marked for deletion.

3. Click on the **Recall** button.

SQCpack printers

To set a default printer for SQCpack 2000:

1. Open the **File Menu** and select **SQCpack printers.** The Select printer for SQCpack form will open.

2. Select a printer from the drop down menu. If the printer that you want is not listed, set it up through the Printer control panel (Windows Start Menu, Settings, Printers).

3. Enter the page margins in the Print margins fields. Margin measurements are shown in inches.

Most recent databases

SQCpack lists the most-recently-opened databases on the File Menu. The default number of databases in this list is 4. This can be changed through the Setup Preferences form.

To open an recently used database:

❖ Open the File Menu and select the name of the database that you want to open.

Exit

To exit SQCpack from the Tree:

❖ Open the **File Menu** and select **Exit.**

Edit Menu

Delete

To an delete item currently highlighted in the Tree:

1. Move the highlight to the item that you want to delete.

2. Open the **Edit Menu** and select **Delete**. Or press the ⌨Delete key.

3. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete.

Find

To locate an item in the Tree:

1. Open the **Edit Menu** and select **Find.** Or press ⌨Ctrl + ⌨F simultaneously. The Find form will open.

2. Enter the search term in the **Find What** field and click on the **Find** button.

Find next

To repeat the Find item:

❖ Open the **Edit Menu** and select **Find Next**. Or press ⌨F3 .

View Menu

Toolbar

To display or turn off the toolbar icons:

❖ Open the **View Menu** and select **Toolbar.**

Tool Tips

To turn the tool tips on or off:

❖ Open the **View Menu** and select **Tool tips.**

Tool tips are the small fields that pop up when the cursor rests on an icon.

Go to >

Use this option to move the highlight to quickly find a section of the SQCpack Tree.

1. Open the **View Menu** and select **Go to.** A submenu will open.

2. Select the section that you want to find. The highlight and display will jump to that section.

Refresh Tree

To refresh the Tree display:

❖ Open the **View Menu** and select **Refresh Tree.** Or press ⌐F5⌐.

Database Menu

For more information on using the databases, see Section 5, "The SQCpack database."

To make the Database Menu appear in the Menu bar:

❖ In the Tree, move the highlight to the name of a database.

Open

To open an existing database from the Tree:

1. Open the **Database Menu** and select **Open.**

2. Select a database and click **Open.**

Close

To close an open database from the Tree:

1. Move the highlight to the database that you want to close.

2. Open the **Database Menu** and select **Close.**

New

To create a new database from the Tree:

1. Open the **Database Menu** and select **New.**

2. Enter a name for the database and click **Save.**

Compact and repair

To repair a corrupted database or compress a database file from the Tree:

1. Open the Database that you want to repair or compact.

2. Open **Database Menu** and select **Compact and repair database** or right-click on the Database name and select Compact and repair database from the pop-up menu.

Backup

To back up a database file from the Tree:

1. Highlight the database that you want to back up.

2. Open the **Database Menu** and select **Backup.**

Properties

To enable database security:

1. Open the **Database Menu** and select **Properties.**

2. Select the security options for the current database and click on ⬚ OK ⬚. For more information, see the topic "Security" in Section 15, "Configuring SQCpack 2000."

Groups Menu

For more information on groups, see Section 6, "Working with groups and characteristics."

To make the Groups Menu appear in the Menu bar:

❖   In the Tree, move the highlight to Groups.

New group

To create a new group:

❖   Open the **Groups Menu** and select **New group.** The Group form will open.

For more information on creating groups, see Section 6, "Working with groups and characteristics."

Group Menu

For more information on groups, see Section 6, "Working with groups and characteristics."

To make the Group Menu appear in the Menu bar:

❖ In the Tree, move the highlight to the name of a group.

Open (data entry)

To open the Data entry form for the highlighted group:

❖ Open the **Group Menu** and select **Open (data entry).**

For more information on entering data, see Section 8, "Entering and editing data."

Modify

To edit the highlighted group:

1. Open the **Group Menu** and select **Modify.**

2. Make desired changes and click on the **Save** icon.

Copy

To copy the highlighted group:

❖ Open the **Group Menu** and select **Copy.**

Delete

To delete the highlighted group:

1. Open the **Group Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete.

Rename

To rename the highlighted group:

1. Open the **Group Menu** and select **Rename.**

2. Type a new name and press the ⟨Enter ↵⟩ key.

Open (real-time charting)

To open the Data entry form for the highlighted group:

❖ Open the **Group Menu** and select **Open (real-time charting).**

For more information on entering data, see Section 9, "Real-time charting."

Print data

To print data from the highlighted group:

1. Open the **Group Menu** and select **Print data.**

2. Select **Print.**

3. Select the items that you want to print.

4. Press OK .

Export data

To export data from the highlighted group:

1. Open the **Group Menu** and select **Export data.**

2. Select **Export.**

3. Select the items that you want to export.

4. Press OK .

New group

To create a new group:

❖ Open the **Group Menu** and select **New.** The Group form will open.

For more information, see Section 6, "Working with groups and characteristics."

Information

To view group information including name, description, date created, last modified date, identifiers, and characteristics:

1. Highlight a group in the Tree.

2. Open the **Group Menu** and select **Information.**

Click on OK to close the Information window.

Copy to database

If you have more than one database open, this option will appear in the Group Menu. To copy a group to a different (open) database:

1. Highlight the group that you want to copy.

2. Open the **Group Menu** and select **Copy to database**.

3. Select the database to which you want to copy the group.

4. If you want the data to be copied along with the group setup, select **Yes** when prompted.

Multi-chart Menu

For more information, see Section 11, "Multi-charts."

To make the Multi-chart Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Multi-chart or the name of a Multi-chart.

New Multi-chart

To define a new Multi-chart:

1. Open the **Multi-chart Menu** and select **New Multi-chart.** The Chart list form will open.

2. Add the charts you want to include in this Multi-chart.

3. Click OK .

For more information, see "Creating Multi-charts" in Section 10, "Multi-charts."

Display

To display the highlighted Multi-chart:

❖ Open the Multi-chart Menu and select Display. The Multi-chart will open.

Modify

To edit the highlighted Multi-chart:

1. Open the **Multi-chart Menu** and select **Modify.**

2. Make desired changes and click on OK .

Copy

To copy the charts in the Multi-chart:

❖ Open the **Multi-chart Menu** and select **Copy.**

Delete

To delete the highlighted Multi-chart:

1. Open the **Multi-chart Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete.

Rename

To rename the highlighted Multi-chart:

1. Open the **Multi-chart Menu** and select **Rename.**

2. Type a new name and press the [Enter ↵] key.

Print chart (1 page)

To print all the charts in the Multi-chart on one page:

❖ Open the **Multi-chart Menu** and select **Print chart (1 page).**

Print chart (1 page per chart)

To print all the charts in the Multi-chart with one chart per page:

❖ Open the **Multi-chart Menu** and select **Print chart (1 page per chart).**

Generate chart image file

To save the Multi-chart as a graphic file:

1. Highlight the Multi-chart that you want to save.

2. Open the Multi-chart Menu and select Generate chart image file.

3. Select the file type, size, name and folder.

4. Click on [OK].

Information

To view information including name, description, date created, last modified date, and a list of charts within the Multi-chart:

1. Highlight a group in the Tree.

2. Open the **Multi-chart Menu** and select **Information.**

Click on [OK] to close the Information window.

Workspace Menu

To make the Workspace Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Workspaces or to the name of a Workspace.

New Workspace

To define a new Workspace:

1. Open the **Workspace Menu** and select **New Workspace.** The Chart list form will open.

2. Add the charts you want to include in this Workspace.

3. Click [OK].

Display

To display the highlighted Workspace:

❖ Open the Workspace Menu and select Display. The Workspace will open.

Modify

To edit the highlighted Workspace:

1. Open the **Workspace Menu** and select **Modify.**

2. Make desired changes and click on [OK].

Copy

To copy the charts in the Workspace:

❖ Open the **Workspace Menu** and select **Copy.**

Delete

To delete the highlighted Workspace:

1. Open the **Workspace Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete.

Rename

To rename the highlighted Workspace:

1. Open the **Workspace Menu** and select **Rename.**

2. Type a new name and press the [Enter ←] key.

Print all charts in Workspace

To print all the charts in the Workspace:

❖ Open the **Workspace Menu** and select **Print all.**

Save all chart images

SQCpack allows you to save all charts in the Workspace as image files. Save all chart images allows you to generate image files for a number of charts with a single command. To save all chart images:

1. Highlight a Workspace.

2. Open the Workspace Menu and select either Save all chart images to default folder or Save all chart images to specified folder. The former saves images into the default folder specified in the Chart definition form for each chart in the Workspace. The latter allows you to select a folder for all of the images.

Information

To view group information including name, description, date created, last modified date, and a list of charts within the Workspace:

1. Highlight a Workspace in the Tree.

2. Open the **Workspace Menu** and select **Information.**

Click on ⌐ OK ⌐ to close the Information window.

Choice list Menu

To make the Choice lists Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Choice lists or the name of a Choice list.

New choice list

To define a new choice list:

1. Open the **Choice list Menu** and select **New.** The Choice list form will open.

2. Enter a name for the choice list and enter choices.

3. Click ⌐ OK ⌐.

For more information on choice lists, see Section 6, "Working with groups and characteristics."

Modify

To edit the highlighted choice list:

1. Open the **Choice list Menu** and select **Modify**.

2. Make desired changes and click on [OK].

Copy

To copy the highlighted choice list:

❖ Open the **Choice list Menu** and select **Copy.**

Delete

To delete the highlighted choice list:

1. Open the **Choice list Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete

Rename

To rename the highlighted choice list:

1. Open the **Choice list Menu** and select **Rename.**

2. Type a new name and press the [Enter ↵] key.

Information

To view group information including name, description, date created, last modified date, and a list of charts within the Choice list:

1. Highlight a group in the Tree.

2. Open the **Choice list Menu** and select **Information.**

Click on [OK] to close the Information window.

Reports

For more information on reports, see Section 13, "Reports."

To make the Reports Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Reports.

New report

To create a new report:

❖ Open the **Reports Menu** and select **New report.** The Report definition form will open.

For more information on creating Reports, see Section 13, "Reports."

Report

To make the Report Menu appear in the Menu bar:

❖ In the Tree, move the highlight to the name of a report.

For more information, see Section 13, "Reports."

Modify

To edit the highlighted report:

1. Open the **Report Menu** and select **Modify.**

2. Make desired changes and click on $\boxed{\text{OK}}$.

Copy

To copy the highlighted report:

1. Open the **Report Menu** and select **Copy.**

2. Enter a name for the report copy and click on $\boxed{\text{OK}}$.

Delete

To delete the highlighted report:

1. Open the **Report Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the report. Select No to cancel the delete.

Rename

To rename the highlighted report:

1. Open the **Report Menu** and select **Rename.**

2. Type a new name and press the $\boxed{\text{OK}}$ button.

Preview

To preview the highlighted report:

❖ Open the **Report Menu** and select **Preview.**

Print

To print the highlighted report:

1. Open the **Report Menu** and select **Print.**

2. Click on the Printer icon.

Save to file

To save the highlighted report to a file:

1. Open the **Report Menu** and select **Save to file.**

2. Select the File type and Printer orientation.

3. Enter a path and file name for the chart image file.

4. Click on the ⌈ OK ⌉ button to save the file.

Report templates

For more information on report templates, see Section 13, "Reports."

To make the Report Template Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Report templates.

New report template

To create a new report:

1. Open the **Reports Template Menu** and select **New report template.** The Report template form will open.

2. Enter a report name (required) and description (optional).

3. Select the items that you want to include in the report.

4. Click on ⌈ OK ⌉.

For more information on creating Report templates, see Section 13, "Reports."

Delete

To delete the highlighted report template:

1. Open the **Report Template Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the report template. Select No to cancel the delete.

Modify

To edit the highlighted report template:

1. Open the **Report Template Menu** and select **Modify.**

2. Make desired changes and click on ⬚ OK ⬚.

Copy

To copy the highlighted report template:

1. Open the **Report Template Menu** and select **Copy.**

2. Enter a name for the template copy and click on ⬚ OK ⬚.

Rename

To rename the highlighted report:

1. Open the **Report Template Menu** and select **Rename.**

2. Type a new name and press the ⬚ OK ⬚ button.

Chart Style Menus

There are Chart style menus for Control Charts, Histograms, and Pareto charts. The options for these menus are the same.

To make the Chart style Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Control chart style, Histogram styles, Pareto chart style, or the name of a Chart style.

New chart (histogram, Pareto) style

To create a new chart style:

1. Move the cursor to Control chart style, Histogram chart style, or Pareto chart style.

2. Open the **Chart style Menu** and select **New.**

3. Name the chart style and set up the chart style options.

4. Click on ⬚ OK ⬚.

For more information on chart styles, see the topic "Chart styles" in Section 15, "Configuring SQCpack 2000."

Modify

To edit the highlighted chart style:

1. Open the **Chart Style Menu** and select **Modify.**

2. Make desired changes and click on [OK].

Copy

To copy the highlighted chart style:

❖ Open the **Chart Style Menu** and select **Copy.**

Delete

To delete the highlighted chart style:

1. Open the **Chart Style Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete

Rename

To rename the highlighted chart style:

1. Open the **Chart Style Menu** and select **Rename.**

2. Type a new name and press the [Enter ↵] key.

User Menu

To make the User Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Users or the name of a User.

If User does not appear in the Tree, the option has not been enabled for the current database. For more information, see the topic "Security" in Section 15, "Configuring SQCpack 2000."

New user

To set up a new user account:

1. Move the highlight to User. Open the **User Menu** and select **New user.** The User form will open.

2. Type a user name in the Name field. If the login option is enabled, you will need to enter a password for the user.

3. Set the access rights for this user.

4. Click on ⬚ OK ⬚.

For more information, see the topic "Security" in Section 1, "Configuring SQCpack 2000."

Modify

To modify the highlighted user account:

1. Open the **User Menu** and select **Modify.**

2. Make desired changes and click on ⬚ OK ⬚.

Delete

To delete the highlighted user:

1. Open the **User Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete.

Copy

To copy the highlighted User:

1. Open the **User Menu** and select **Copy.**

2. Change the user name and select ⬚ OK ⬚.

Information

To view information for the highlighted user account:

❖   Open the **User Menu** and select **Information.**

Click on ⬚ OK ⬚ to close the Information window.

Setup Menu functions

Out-of-control tests

To add, edit, or delete out-of-control test parameters:

1. Open the **Setup Menu** and select **Out-of-control.**

2. Make desired changes and select ⬚ OK ⬚.

For more information, see the topic "Out-of-control test" in Section 15, "Configuring SQCpack 2000."

Change current user password

To change your password:

1. Open the **Setup Menu** and select **Change current password.** The Password form will open.

2. Enter the new password and confirm it.

3. Click on [OK].

Preferences

To set program preferences :

1. Open the **Setup Menu** and select **Preferences.**

2. Make desired changes and select [OK].

For more information, see the topic "Setting preferences" in Section 15, "Configuring SQCpack 2000."

Data Devices

To configure a device for direct data input:

1. Open the **Setup Menu** and select **Data devices.**

2. Click on the **Add** button.

3. Set up device parameters.

4. Click on [OK].

For more information, see the topic "Direct data input" in Section 8, "Entering and editing data."

Default control chart

To edit the default control chart:

1. Open the **Setup Menu** and select **Default control chart.**

2. Make desired changes and click on [OK].

For more information, see the topic "Default charts" in Section 15, "Configuring SQCpack 2000."

Default histogram

To edit the default histogram:

1. Open the **Setup Menu** and select **Default histogram.**

2. Make desired changes and click on ☐ OK ☐.

For more information, see the topic "Default charts" in Section 15, "Configuring SQCpack 2000."

Default Pareto chart

To edit the default Pareto chart:

1. Open the **Setup Menu** and select **Default Pareto chart.**

2. Make desired changes and click on ☐ OK ☐.

For more information, see the topic "Default charts" in Section 15, "Configuring SQCpack 2000."

Language

To change SQCpack language, if you have an LLD language file:

1. Copy the translation file (such as 0410_Italiano.LLD) into the SQCpack folder.

2. Open the Setup Menu and select Language. The Language options form will open.

3. Click on Select the following language and highlight the language in the list.

4. Click on ☐ OK ☐.

Help Menu functions

Contents

To launch the help file:

❖ Open the **Help Menu** and select **Contents.**

Tutorial

For help getting started with SQCpack 2000:

❖ Open the **Help Menu** and select **Tutorial.**

SQC Quality Advisor™

For help selecting or interpreting charts*:*

❖ Open the **Help Menu** and select *Quality Advisor*

Formula reference

To view the formulas used by SQCpack 2000:

❖ Open the **Help Menu** and select **Formula reference.**

Obtaining Technical Support

For information on contacting PQ Systems' Technical Support:

❖ Open the **Help Menu** and select **Obtain Technical Support.**

New User

If you are new to SQCpack, you can contact PQ Systems for a guided tour of the software. This option provides contact information for PQ Systems.

❖ Open the **Help Menu** and select **New user.**

PQ Systems on the Web

To see if you have the the latest version of SQCpack:

1. Open the **Help Menu** and select **PQ Systems on the Web.**

2. Select **Check for Updates.**

To launch your web browser and visit PQ Systems' home page:

1. Open the **Help Menu** and select **PQ Systems on the Web.**

2. Select **PQ Systems Home.**

To launch your web browser and visit PQ Systems' Technical Support on the Web:

1. Open the **Help Menu** and select **PQ Systems on the Web.**

2. Select **PQ Systems Technical Support.**

About

To view version or system information, or to enter a license certificate information or upgrade code:

1. Open the **Help Menu** and select **About.**

2. Select [OK] to close the About window.

Groups setup form

These menus are available from the Groups setup form. To access these forms, click on the Create new group icon, ⚡⬚, or the Modify group icon, ⬚. For more information on setting up groups, see Section 6 "Working with Groups and Characteristics."

Group setup form File Menu functions

Save

To save the group setup:

❖ Open the **File Menu** and select **Save.**

Cancel

To cancel changes to the group setup:

❖ Open the **File Menu** and select **Cancel.**

View Menu functions

Toolbar

To display or turn off the toolbar icons:

❖ Open the **View Menu** and select **Toolbar.**

Columns Menu functions

New identifier

To create a new identifier:

❖ Open the **Columns Menu** and select **New identifier.**

For more information on identifiers, see Section 6, "Working with groups and characteristics."

New measurement

To create a new measurement characteristic:

❖ Open the **Columns Menu** and select **New measurement.**

For more information on measurement characteristics, see Section 6, "Working with groups and characteristics."

New count

To create a new count characteristic:

❖ Open the **Columns Menu** and select **New count.**

For more information on count characteristics, see Section 6, "Working with groups and characteristics."

New calculated

To create a new calculated characteristic:

❖ Open the **Columns Menu** and select **New calculated.**

For more information on calculated characteristics, see Section 5, "Working with groups and characteristics."

Modify

To modify an identifier or characteristic:

1. Move the highlight to the identifier or characteristic that you want to edit.

2. Open the **Columns Menu** and select Modify.

3. Make desired changes and select [OK].

Copy

To copy an identifier or characteristic:

1. Move the highlight to the identifier or characteristic that you want to copy.

2. Open the **Columns Menu** and select **Copy.**

Delete

To delete an identifier or characteristic:

1. Move the highlight to the identifier or characteristic that you want to delete.

2. Open the **Columns Menu** and select **Delete.**

3. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete.

Refresh

To refresh the columns:

❖ Open the **Columns Menu** and select **Refresh.**

Data entry tab menus

These menus are available from the Data entry tab. For more information, see Section 8, "Entering and editing data."

File Menu

Close

To close the data entry form:

❖ Open the **File Menu** and select **Close.**

Edit Menu

Cut

To cut data and copy it to the Clipboard:

1. Highlight the data that you want to cut.

2. Open the **Edit Menu** and select **Cut.**

Copy

To copy data to the Clipboard:

1. Highlight the data that you want to copy.

2. Open the **Edit Menu** and select **Copy.**

Paste

To paste data that has been copied to the Clipboard:

1. Move the cursor to the position in which you want to copy the data.

2. Open the **Edit Menu** and select **Paste.**

Select all

To highlight all the data:

❖ Open the **Edit Menu** and select **Select all.**

Notes and causes

1. Move the cursor to the subgroup to which you want to add a note or cause.

2. Open the **Edit Menu** and select **Notes and causes.**

3. Enter the note or cause and click on ⬚ OK ⬚.

For more information, refer to the topic, "Entering notes and assignable causes" in Section 8, "Entering and editing data"

Duplicate previous

To duplicate the previous entry into the current cell:

❖ Open the **Edit Menu** and select **Duplicate previous.**

Block delete

To delete a block of data:

1. Highlight the data that you want to delete. This will delete only the data in the highlighted cells.

2. Open the Edit Menu and select Block delete.

To delete entire rows of data:

1. Click on the field to the left of the subgroup number, as shown above, and drag to select the rows you want to delete.

2. Open the Edit Menu and select Block delete.

Delete row

To delete a row of data:

1. Move the cursor to the data that you want to delete.

2. Press Ctrl + Delete.

Insert row

To insert a row:

1. Move the cursor to the place where you want to insert the row. The row will be inserted in the cursor position, moving the current row down one.

2. Open the **Edit Menu** and select **Insert row** or use the shortcut keys ⇧ Shift + Insert.

Move one cell to the right

This toggle allows you to set the direction of the cursor. If it is selected, the cursor will move between characteristics. If it is not selected, the cursor will move within one characteristic. If a characteristic has a sample size larger than one, the cursor will move to the next observation until the subgroup is complete and then move down to the next row.

To toggle this option on or off:

❖ Open the **Edit Menu** and select **Move one cell to the right.** Or click on the Move to next row or Move to next column icon.

Refresh

To refresh the currently displayed chart:

❖ Open the **Edit Menu** and select **Refresh.**

Go to row

To move the cursor to a different row:

1. Open the **Edit Menu** and select **Go to row.**

2. Enter the row number and click on the ⬚OK⬚ button.

View Menu

Toolbar

To display or turn off the toolbar icons:

❖ Open the **View Menu** and select **Toolbar.**

Characteristic

To view information for the currently highlighted characteristic:

1. Open the **View Menu** and select **Characteristic.**

2. Then select one of the following:
    ❖ Procedure
    ❖ Media file
    ❖ Information

Group

To view information for the currently highlighted group:

1. Open the **View Menu** and select **Group.**

2. Then select one of the following:

    ❖ Procedure

    ❖ Media file

Operational definition

This function is available only for Pareto groups that have operational definitions. To view operational definitions:

❖ Open the **View Menu** and select **Operational defintion.**

Subgroup statistics

To view statistics for the currently highlighted subgroup:

❖ Open the **View Menu** and select **Subgroup statistics.**

Lock identifiers

If you have a group with a large number of characteristics, this option will display identifiers while scrolling through the characteristics. To lock identifiers:

❖ Open the **View Menu** and select **Lock identifiers.**

Format Menu

Font

To set the font for the data entry grid:

1. Open the **Format Menu** and select **Font.**

2. Make desired changes to the font settings and click on ⌗ OK ⌗.

Autosize column

To have SQCpack automatically resize the data grid columns to fit the data:

❖ Open the **Format Menu an**d select **Autosize column.**

Device Menu

To enable data entry through a device:

❖ Open the **Device Menu** and select **Enable data input from a device.**

If this option is grayed out, check the group setup to determine if a device has been assigned to this group.

Charts/Limits tab

The menus available from the Charts/Limits tab. Other menus available on this tab are covered under the Data entry tab. For more information, see Section 10, "Charts."

Charts Menu functions

Display
To display the highlighted chart:

❖ Open the **Chart Menu** and select **Display.**

Modify
To edit the highlighted chart:

1. Open the **Chart Menu** and select **Modify.**

2. Make desired changes and select [OK].

Copy
To copy the highlighted chart:

❖ Open the **Chart Menu** and select **Copy.**

Delete
To delete the highlighted chart:

1. Open the **Chart Menu** and select **Delete.**

2. You will be prompted to confirm the action. Select **Yes** to delete the item. Select No to cancel the delete

Generate chart image file
To generate an image file of the highlighted chart:

1. Open the **Chart Menu** and select **Generate chart image file.** The Chart image information form will open.

2. Select the Image type, Image size in pixels, and enter a file name.

3. Click [OK].

New control chart
To create a new chart:

1. Open the **Chart Menu** and select **New Control chart.**

2. Define the chart and select ❑ OK ❑.

For more information on creating control charts, see the topic "Creating charts" in Section 10, "Charts."

New histogram

To create a new histogram:

1. Open the **Chart Menu** and select **New histogram.**

2. Define the histogram and select ❑ OK ❑.

This option is only available with variables data. For more information on creating histograms, see the topic "Creating charts" in Section 10, "Charts."

New Pareto chart

To create a new Pareto chart:

1. Open the **Chart Menu** and select **New Pareto chart.**

2. Define the Pareto chart and select ❑ OK ❑.

This option is only available for Pareto data. For more information on creating Pareto charts, see the topic "Creating charts" in Section 10, "Charts."

Chart display menus

When a Chart is displayed, these menus are available through the display window.

File Menu functions

Save chart image

To save the chart as a BMP, WMF, PNG or JPG graphics file:

1. Open the **File Menu** and select **Save chart image.**

2. Name the file and select a file type.

3. Click on **Save.**

Print

To print the chart:

1. Open the **File Menu** and select **Print.**

2. Click on ❑ OK ❑.

Close

To close the chart:

❖   Open the **File Menu** and select **Close.**

Close all charts

If you have multiple charts open, such as with a Workspace, this function
will close all the chart windows.

❖   Open the **File Menu** and select **Close** all charts.

Edit Menu functions

Copy chart to Clipboard

To copy a chart:

1. Open the **Edit Menu** and select **Copy chart to Clipboard.**

2. Select either **As Windows metafile graphic** or **As Windows bitmap
    graphic.**

Refresh chart

To redraw the chart with current data:

❖   Open the **Edit Menu** and select **Refresh chart.**

Chart definition

To edit the chart from the display window:

1. Open the **Edit Menu** and select **Chart definition.**

2. Make desired changes and click on ⬚ OK ⬚.

Section 4

Tutorial

This tutorial introduces you to a few of the key features of SQCpack. It is designed to walk you through the basics of creating a database, setting up groups, entering data, drawing charts, and more.

To get started with SQCpack 2000, work through Lessons 1-3 in order. Lessons 4-9 cover more advanced topics. Complete these lessons if and when you need them. They can be completed in any order.

Lessons include:

Lesson 1 Create database, variables group, and identifiers
Lesson 2 Enter data
Lesson 3 Create and display charts, filter data, draw control limits

Advanced topics:

Lesson 4 Multi-charts and Workspaces
Lesson 5 Creating new chart styles
Lesson 6 Working with attributes data
Lesson 7 Working with Pareto data
Lesson 8 Choice lists
Lesson 9 Working with calculated characteristics

Lesson 1 Group setup

In this lesson, you will create a new database, a group with two identifiers and two characteristics.

1.1 Creating new database files

Note, if you do not have user rights for creating a database, open the Sample46.sqd database and skip to Step 1.2.

1. Open the File Menu and select New SQCpack database.

2. Type **Tutorial** in the Filename field and click Save. The tutorial database will open and appear in the Tree.

For more information about SQCpack databases, see Section 5, "The SQCpack 2000 database."
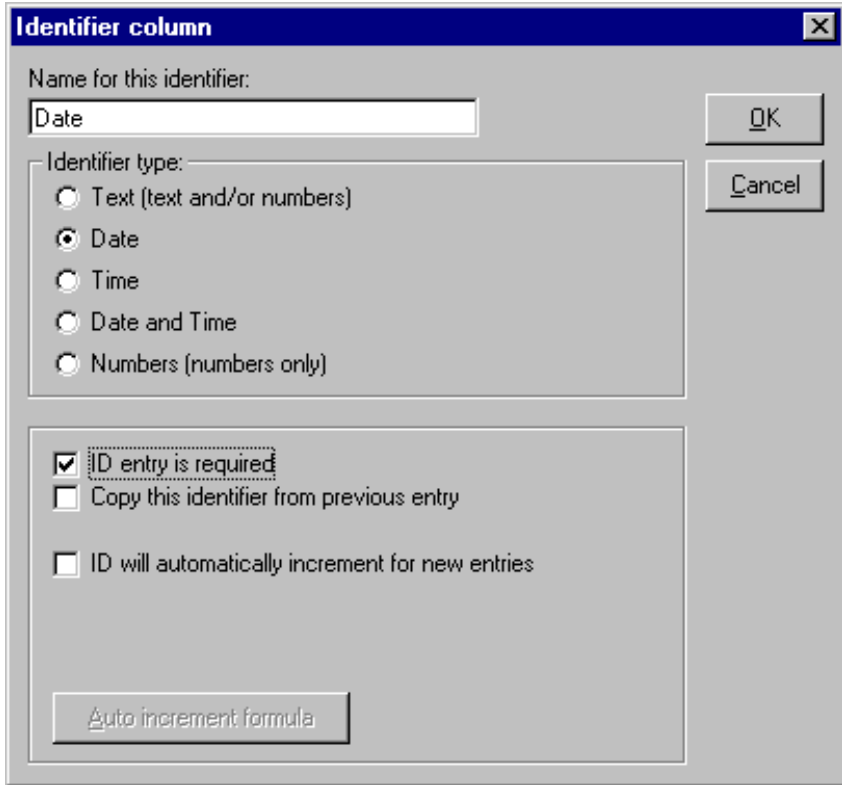
1.2 Creating a new group

1. Move the highlight to the Tutorial database that you have just created. Click on the New group icon, ⊞, or open the Groups Menu and select New group. The Group form will open. The Identifiers/Characteristics tab will be displayed.

2. Enter **Practice Group** in the Group name field.

3. In the Description field, type **Tutorial.**

To complete the group, you will need to define identifiers and characteristics.

1.3 Create identifiers

1. To set up the first identifier, click on the New identifier icon, ▣, or open the Columns Menu and select New identifier. The Identifier column form will open.

2. Type Date in the Name field. Set the identifier type as Date.

3. Select **ID entry is required** and click on ⬚ OK ⬚.

4. Click on the New identifier icon again.

5. Type Operator in the Name field and set the identifier type as Text. Click on ⬚ OK ⬚.

1.4 Creating measurement characteristics

1. Click on the New measurement icon, ✦, or open the Columns Menu and select New measurement. The Measurement definition form will open. The Measurement tab will be displayed.

2. Enter **Length** in the Name field.

3. Enter **3** in the Subgroup size field.

4. Enter specifications and data entry format as shown in the illustration below. Then click [OK].

5. Create a second measurement characteristic, Width, with the settings shown in the illustration on the next page. Then click [OK].

6. Click on the Save icon, 🖫, to save the group setup.

7. When prompted to enter data now, click on No.

Note that in SQCpack 2000, characteristics for variables, attributes, and Pareto data can be in the same group.

For more information on creating groups, characteristics, and identifiers, see Section 6, "Working with groups and characteristics."

This concludes Lesson 1. To enter and edit data, proceed to Lesson 2.

Lesson 2 Data entry

In this lesson, you will enter data into the group created in Lesson 1, and add notes and assignable causes.

2.1 Entering data

1. Right-click on **Practice Group** and select **Open (data entry)** from the pop-up menu. Or highlight Practice Group and click on the Open group icon, ▦.

2. Type the following data.

    You may find it easier to enter data in one characteristic before moving to the next. If so, click on the Move to next cell icon, ➡, so that it points down, ⬇.
    To duplicate data, for example to repeat a date identifier several times, click on Ctrl + D.

	Date	Operator	Length			Width		
			1	2	3	1	2	3
1	8/12/02	Chris	30.05	30.09	30.11	5.00	5.06	4.99
2	8/12/02	Amy	30.00	30.10	30.11	4.98	5.08	5.05
3	8/12/02	Emma	30.08	29.95	30.00	5.00	4.95	5.05
4	8/12/02	James	29.95	30.10	30.15	5.02	5.10	5.07
5	8/12/02	Chris	30.08	29.90	30.06	5.05	5.03	5.00
6	8/13/02	Marie	30.00	30.05	29.95	5.02	5.15	5.08
7	8/13/02	Will	30.11	30.02	30.05	5.04	5.07	5.10
8	8/13/02	Brian	30.12	29.95	29.99	4.95	5.05	4.95
9	8/13/02	Emma	30.05	29.98	29.97	4.95	5.06	4.98
10	8/13/02	Amy	29.92	29.89	29.85	4.92	4.97	4.91

2.2 Adding notes and assignable causes

1. Highlight Subgroup 10.

2. Press [Ctrl] + [N].

3. Select **Length** from the drop-down menu.

4. Enter notes and causes as shown in the illustration below and click on [OK]. You will see an note/cause indicator in the notes column.
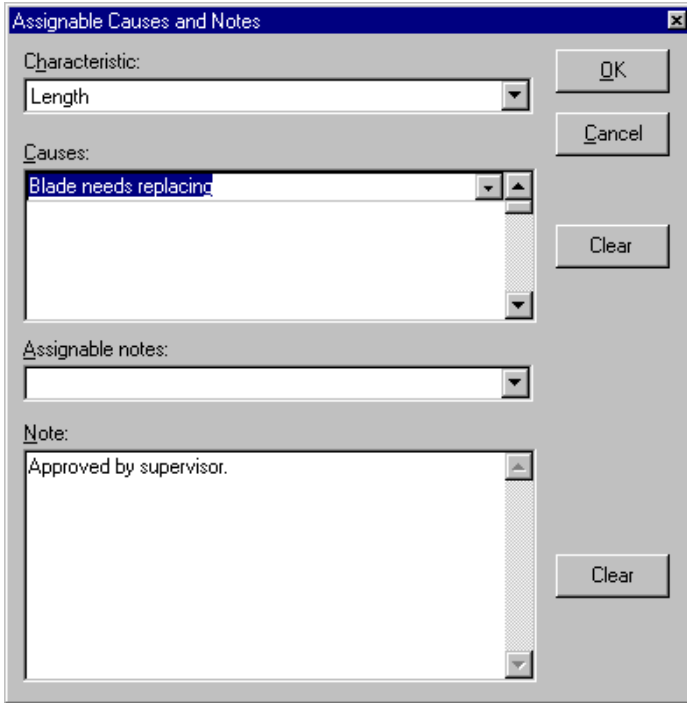
For more information on entering data, notes, and causes, see Section 8, "Entering and editing data."

This concludes Lesson 2. If you are continuing to Lesson 3, click on the Charts/Limits tab. If not, press the Escape key to close the data editor.

Lesson 3 Charts, limits, and filters

3.1 Create and display a control chart.

1. If you are at the Charts/Limits tab, skip to Step 2. If not, from the Tree, right-click on Practice Group and select Open (data entry) or highlight Practice Group and click on the Open group icon, 🗁. Then, click on the Charts/Limits tab.

2. Under the Length characteristic, right-click on Control charts. Select New control chart from the pop-up menu. The control chart definition form will open.

3. Enter **Length** in the name field. Leave the chart type at the default of **X-bar/range.**

4. Select the options shown below.

5. Click on the X-axis Y-axis tab.

6. In the **Label x-axis with** drop-down menu, select Numbers. Leave the **Label every subgroup** setting.

7. Set Causes to **Display abbreviated text.**

8. Click on the Out-of-control testing tab.

9. **Perform out-of-control tests** should be selected. Click to select **Out-of-control test numbers.**

10. Click on ⬚ OK ⬚ to save the settings and return to the Charts/Limits tab.

11. With the highlight on the Length chart that you just created, click on the Chart icon, ⬚, to display the chart. You can also right-click on the chart name and select Display from the pop-up menu.

3.2 Draw control limits

SQCpack allows you to draw control limits through the chart display. To do this:

1. Click on Subgroup 1, hold down the mouse button, and drag the mouse pointer to Subgroup 5.

Length [X-bar/range]

File Edit Help

Length

#	1	2	3	4	5	6	7	8	9	10
Date	8/12/02	8/12/02	8/12/02	8/12/02	8/12/02	8/13/02	8/13/02	8/13/02	8/13/02	8/13/02
Operator	Chris	Amy	Emma	James	Chris	Marie	Will	Brian	Emma	Amy
Avg	30.08	30.07	30.01	30.07	30.01	30.00	30.07	30.02	30.00	29.89
Range	0.06	0.11	0.13	0.20	0.18	0.10	0.06	0.17	0.08	0.07

Xbar chart
Temporary: UCL=30.16, Mean=30.04, LCL=29.91 (n=3)

Range chart
Temporary: UCL=0.31, Mean=0.12, LCL=none (n=3)

2. Right-click on the selected area. From the pop-up menu, select Compute limits. The Control limits form will open.

3. Select Standard as the method for computing limits.

    The **Subgroups included** field reflects the subgroups that are highlighted. If 1 to 5 does not appear in these fields, you can edit the range here.

4. Select **Extend limits** to extend the control limits to all subgroups.

5. Click on ⬚ OK ⬚ to close the Control limit form.

    Note that for the first 5 subgroups, the control limit lines are solid and for the last 5 they are dotted. Unless you change the chart style (Lesson 5), solid lines illustrate the data used in the control limit calculation and dotted lines indicate that the limits have been extended.

3.3 Annotating the displayed chart

1. Right-click anywhere on the Chart display window and select Add annotation from the pop-up menu. The chart annotation form will open.

2. Type "Look at this!" in the Annotation text field.

3. Set the parameters for lines, text, box, and position. If you reposition the annotation form, you can see how the parameter changes affect the annotation.

4. Select [OK] to save your changes.

5. Close the chart by opening the File Menu and selecting Close. You will be prompted to save changes. Select Yes.

3.4 Histogram

1. On the Charts/Limits tab to right-click on Length. Select New histogram from the pop-up menu. The Histogram definition form will open. Enter **Length Stats** in the Name field.

2. On the General tab, click on Custom. Enter **29.8** in the Cell start field. Enter **6** in the number of cells field.

3. Click on the Descriptive stats tab. Set descriptive statistics as shown in the following illustration:

4. Click on the Capability stats tab. Select the capability statistics as show in the following illustration.
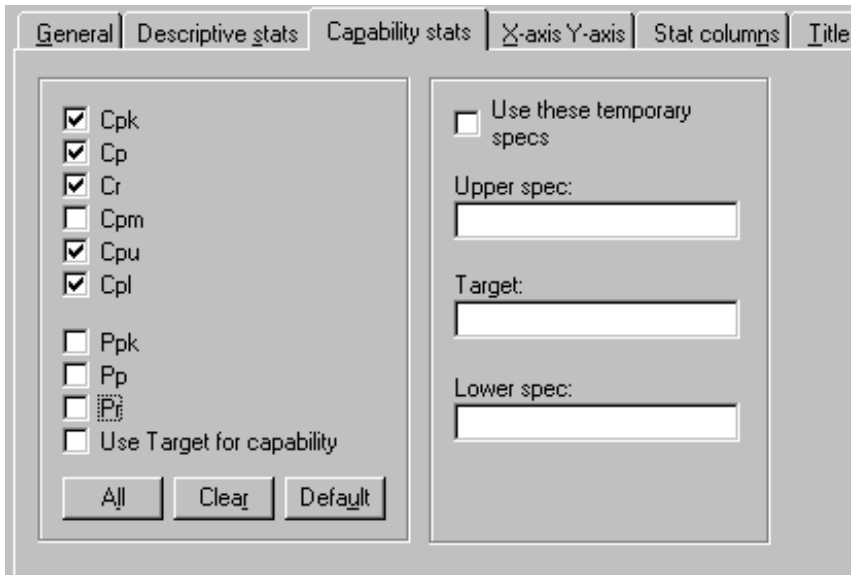
5. Click on `OK` to save the settings. Then right-click on the Length Stats histogram and select Display from the pop-up menu. Close the chart when you are done.

3.5   Filtering data

1. Right-click on Control charts under either characteristic in the Practice Group and select New control chart.

2. Enter **Filtered data** in the Name field.

3. Click on the Data selection button at the bottom of the form.

4. Click on the Edit Filter button. The Filter for selecting rows from the data table form will open.

5. Set the Filter as shown in the illustration on the next page.

NOTE ☞ This will filter the data to show just the subgroups by Chris, Amy, and Will. Note that the first top two rows are only used for date or time based filters. Since the filter we are creating is not using date or time, skip these fields.

Filter for selecting rows from data table

S̲elect data where the date/time in THIS column:

[_____ ▼]

Is B̲etween: and:

[_____]   [_____]   ☐ I̲nclusive

A̲ND (

[Operator ▼] [= ▼] [Chris]

[OR ▼]

[Operator ▼] [= ▼] [Amy]

[OR ▼]

[Operator ▼] [= ▼] [Will]

) [▼] (Additional Conditions)   [W̲here clause]

Additional C̲onditions:

[_____ ▼]

[Help]   [Clear a̲ll]   [O̲K]   [C̲ancel]

6. Click on [OK] to close the Filter form. Click [OK] again to close the Data selection form. Do not close the Control chart definition form.

3.6   Set the chart title

1. Click on the Titles tab.

2. The default **@CN** will display the chart name on the chart. Move the cursor to the cell below this.

3. Double-click to open the Editing top titles form. Type **Chris, Amy, and Will** in this field and click on Save.

4. Click on [OK] to save the chart setup.

5. Highlight the Filtered data chart and click on the Chart icon, 🗠. The chart shows the filtered data. Close the chart.

To conclude Lesson 3, close the Charts/Limits form to return to the SQCpack Tree. To do this, click on [Ctrl]+[F4].

Lesson 4 Multi-charts and Workspaces

For this lesson we will open the Sample database as well as create a Multi-chart and a Workspace.

4.1 Open an existing database

To open the sample database:

❖ Click on the Database icon, 🗄, and select **Sample46.sqd** from the SampleData folder.

4.2 Multi-charts

The Multi-chart function lets you view several charts on a single page or screen. You can mix and match charts from different groups.

To create a new Multi-chart:

1. Under the Sample46.sqd database, right-click on Multi-charts and select **New Multi-chart** from the pop-up menu. The Multi-chart form will open.

2. Enter **Tutorial** as the name for this Multi-chart .

3. Click on the **Add chart** button. The Chart browser form will open.

4. Open the listing for AIAG sample data. Open the Acid Concentration - % and Control charts. Highlight the Annotation example.

5. Click Select.

6. Repeat Steps 3-5 to add the following charts:

Group	Characteristic	Chart
AIAG sample data	Acid Concentration - %	Histogram w/ both stats
Number of nonconforming	Spot Welds-Undersize	Chart w/o headers, data
Lost items, medical center	Count	Default Pareto chart, Simple Example

Multi-chart Chart List

Chart List | Misc.

Name:
Combination Example

Description:

Charts:

#	Group	Characteristic	Chart	art ty
1	Demo data	Count	Default pareto chart	Pare
2	Number of nonconformities	Flaws Per Bolt	Default control chart	c-ch
3	Manufacturing 04 - Length	Length	Default control chart	X-ba
4	Manufacturing 04 - Length	Length	Default histogram chart	Histo

Add chart

Delete chart

Modify Chart

OK

Cancel

Chart ID: 665
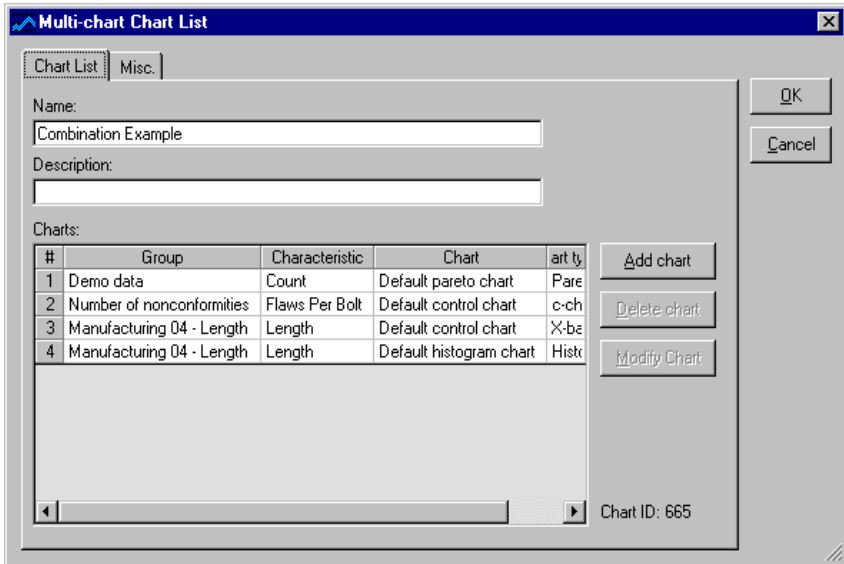
7.   Click on the Misc tab. Select the chart tiling as Horizontal. Enter 2 in both the Rows and Columns fields.

Chart List | Misc.

Chart image information:

○ JPG - JPG bitmap
◉ BMP - Windows bitmap
○ EMF - Windows enhanced metafile

Width of image (pixels):
640

Height of image (pixels):
480

Default filename to use when saving chart image file:
D:\Program Files\PQ Systems\SQCpack 2000\Tutorial.bmp   Browse

Chart tiling:
◉ Horizontal   ○ Vertical
Rows: 2   Columns: 2

Default print orientation:
◉ Portrait
○ Landscape
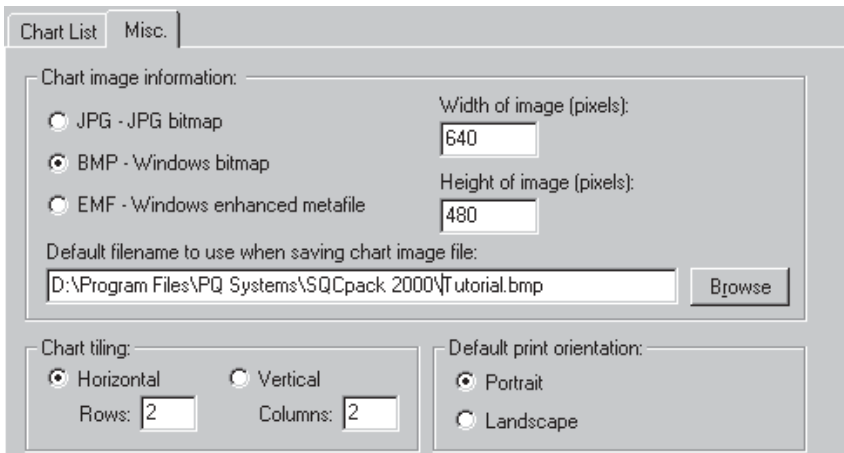
8.   Click [OK] to save your multi-chart definition.

9.   To display the multi-chart, right-click on the Tutorial multi-chart and select Display. To zoom in on one chart, right-click on the chart and select Zoom in. To return to the multi-chart view, right-click on the chart and select Zoom out. Close the chart when you are done.

4.3 Workspace

A Workspace is a collection of two or more charts designed to be viewed or printed together however, each chart will appear in its own window or be printed on its own page. In earlier versions of SQCpack, this function was called Chart Board.

To create a new Workspace:

1. Right-click on Workspaces in the SQCpack Tree and select New Workspace from the pop-up menu. The Chart form will open.

2. **Tutorial Workspace** in the Name field.

3. Click on the **Add chart** button. The Select a chart form will open.

4. Open the listing for AIAG sample data. Open the Acid Concentration - % and Control charts. Highlight the Annotation example.

5. Click on the Select button.

6. Repeat Steps 3-5 to add the following charts:

Group	Characteristic	Chart
AIAG sample data	Acid Concentration - %	Histogram w/ both stats
Number of nonconforming	Spot Welds-Undersize	Chart w/o headers, data
Lost items, medical center	Count	Default Pareto chart, Simple Example

7. When you have finished adding charts, click ⬚ OK ⬚ to save your Workspace definition.

8. To print all the charts in the Workspace, right-click on the Tutorial Workspace. Select Print all charts in Workspace from the pop-up menu.

This concludes Lesson 4.

Lesson 5 Chart styles

The chart styles option allows you to set sizes, colors, and other chart parameters. You can create unique chart styles for each department, client, product, service, production line, shift, etc.
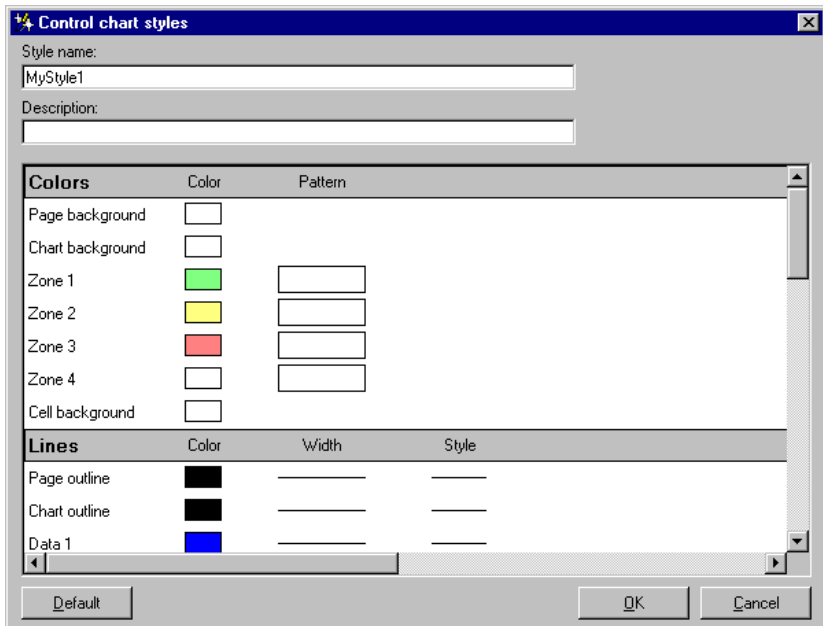
This lesson requires user access rights for adding a chart style.

This lesson will use control chart styles, however, the steps for changing fonts, colors, and lines are the same for all chart types.

5.1 Create a style

For this lesson, use the Sample 46.sqd database. If this is not open, click on the Database icon, ⬛, and select Sample 46.sqd from the SampleData folder.

1. Right-click on Control chart styles and select New chart style. The Control chart styles form will open. There are four sections on this form: Colors, Lines, Fonts, and Markers. Each section lists a chart element on the left and style options for that element to the right.

2. Enter MyStyle1 in the Name field.

3. Click on Color box to the right of Page Background under the Color list or click on the box for this item. The Format color form will open.
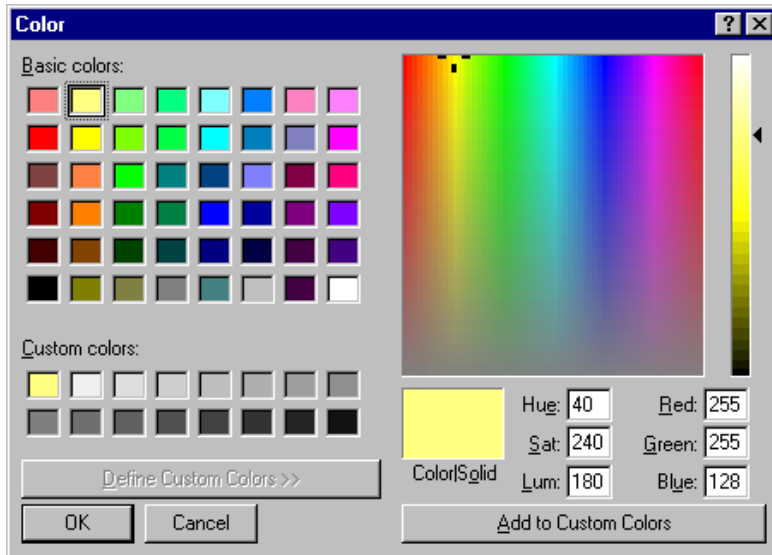
4. Pick a color for the page background and click on [OK].

5. Scroll down to the Lines section. Click on the Width line for Data 1 to open the line width pop-up menu. Select the middle thickness option.

6. Scroll down on the Chart style form to the Font section. Click on the Name field for the Chart title.
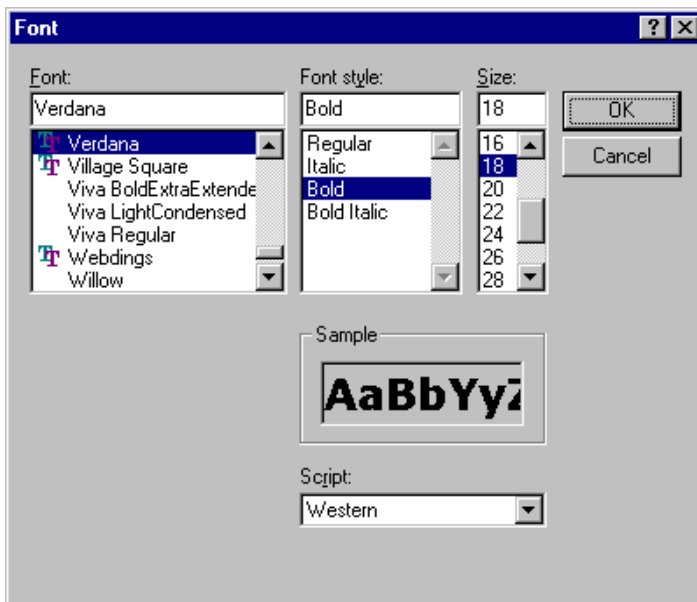
7. Select a different font and change the size to 20. Click on [OK] to save.

8. Scroll down to the Data marker section of the tree. Click on the Style market for Data 1 to open the marker style pop-up menu. Select a different marker style.

9. Click on `OK` again to save your style.

5.2   Attach a style to the chart.

1. From the Tree, click on the Charts icon, , to open the Chart browser.

2. Select any default control chart and click on Modify to open the Control chart definition form.

3. Select MyStyle1 from the chart style drop-down menu and click on `OK`.

4. Display the chart to view the new style. Close the chart when you are done.

 This concludes Lesson 5 .

Lesson 6 Working with Attributes data

In this lesson, you will create an group and characteristic for attributes, enter data, and draw a chart.

6.1   Create a count characteristic
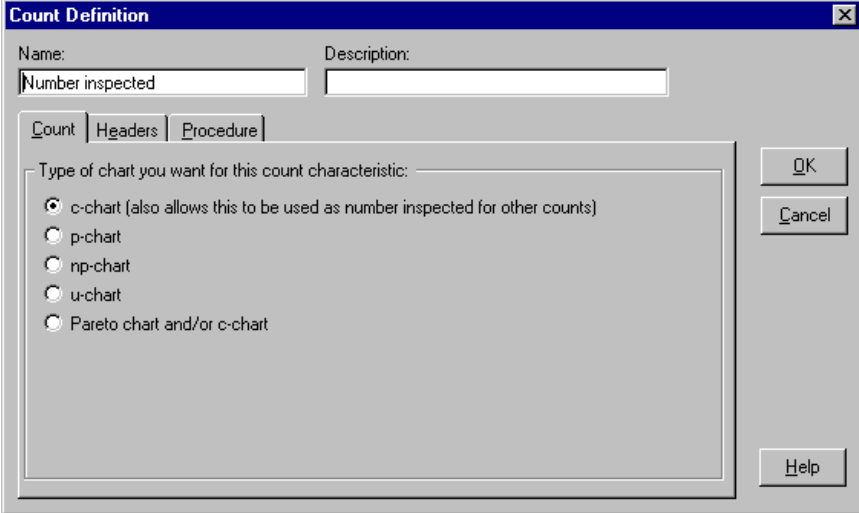
6.1.1 New group

1. Click on the New group icon, , or open the Groups Menu and select New group. The Group form will open. The Identifiers/Characteristics tab will be displayed.

2. Enter **Attributes Group** in the Group name field.

3. In the Description field, type **Tutorial.**

6.1.2 Number inspected column

1. Click on the New count icon, 📊 , or open the Columns Menu and select New count. The Count definition form will open. The Count tab will be displayed.

2. Enter **Number inspected** in the Name field and leave the default setting of c-chart (select this option to set up a number inspected field for p- or u-charts). Click on ⌐ OK ¬.

Count Definition ☒

Name: | Description:
Number inspected |

Count | Headers | Procedure

Type of chart you want for this count characteristic:

- ⦿ c-chart (also allows this to be used as number inspected for other counts)
- ○ p-chart
- ○ np-chart
- ○ u-chart
- ○ Pareto chart and/or c-chart

OK

Cancel

Help

6.1.3 Count column

1. Open the Count definition form again. Set up the form as shown in the illustration as shown below. Then, click ⌐ OK ¬. This creates the count characteristic.

Count Definition

Name:
Defects per unit

Description:

Count | Headers | Procedure

Type of chart you want for this count characteristic:

○ c-chart (also allows this to be used as number inspected for other counts)
○ p-chart
○ np-chart
● u-chart
○ Pareto chart and/or c-chart

Get number inspected from this column:
Number inspected

Use this as a constant number inspected:

OK
Cancel
Help

2.   Click on the Save icon, 💾, to save the group.

6.2   Enter attributes data

1.   You will be prompted to enter data in the new group. Select **Yes**.

2.   Type the following data.

	Inspected	Defects
1	1	3
2	1	4
3	1	1
4	1	0
5	1	2
6	1	5
7	1	3
8	1	6
9	1	2
10	1	7

6.3 Attributes control chart

1. Click on the Charts/Limits tab. Right-click on **Control charts** under Defects per unit and select **New control chart** from the pop-up menu.

2. Enter **Defects per unit** in the Name field. Leave the other options set at the default value.

3. Click on [OK].

4. With the highlight on the chart that you just created, click on the Chart icon, ⟨icon⟩, to display the chart.

This concludes Lesson 6.

Lesson 7 Working with Pareto data

In this lesson, you will create a group with a characteristic for Pareto data, enter data, and draw a chart.

7.1 Create a Pareto characteristic

7.1.1 New group

1. Click on the New group icon, ⟨icon⟩, or open the Groups Menu and select New group. The Group form will open. The Identifiers/Characteristics tab will be displayed.

2. Enter Pareto Group in the Group name field.

3. In the Description field, type Tutorial.

7.1.2 Pareto count characteristic

1. Open the Count definition form by clicking on the New count characteristic icon, ⟨icon⟩.

2. Set up the form as shown in the next illustration.
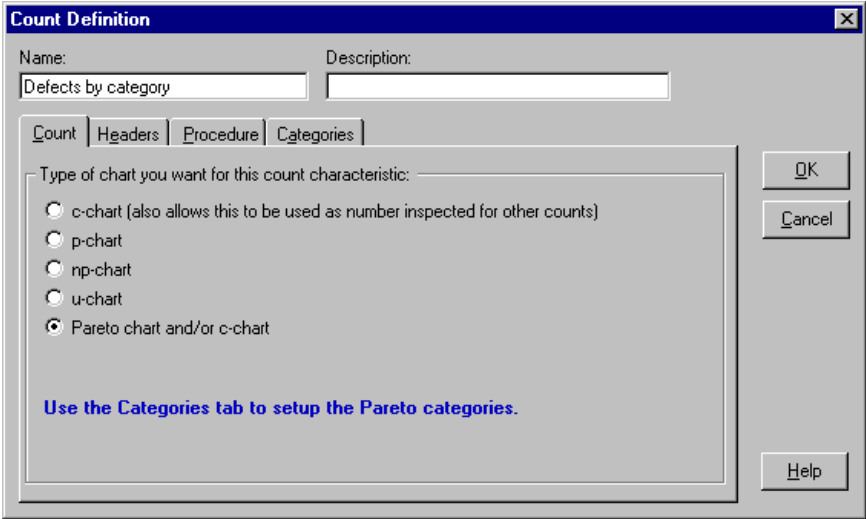
3. Click on the Categories tab. Set up the categories as shown in the illustration below.
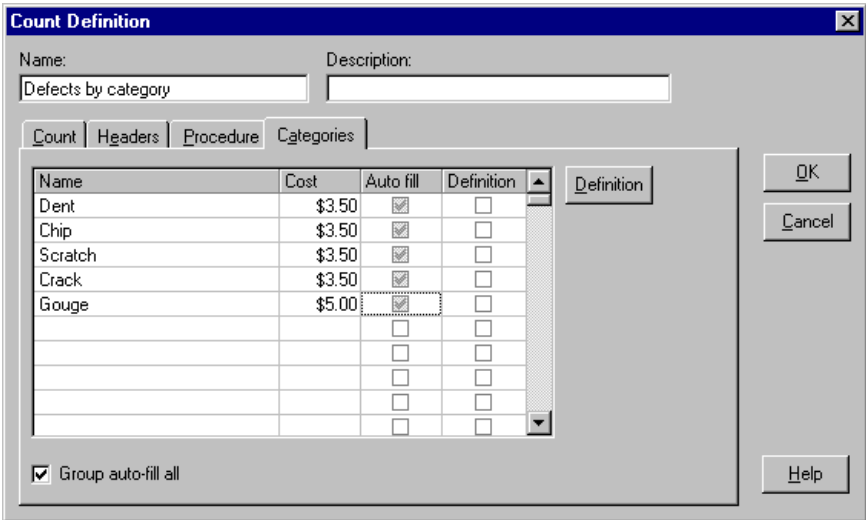
4. Click on ⎡ OK ⎤ to save the characteristic settings. Click on the Save icon, 🖫, to save the group.

7.2 Enter Pareto data

1. You will be prompted to enter data in the new group. Click on **Yes.**

2. Type the following data. Press the enter key to move to the next category. SQCpack will calculate the total for the entry.

	Dent	Chip	Scratch	Crack	Gouge
1	2	0	1	0	0
2	1	1	0	2	0
3	0	1	0	0	
4	0	0	0	0	0
5	0	0	2	0	0

7.3 Draw a Pareto chart

1. Click on the Charts/Limits tab

2. Right-click on Pareto chart under Defects by category. Select New Pareto chart from the pop-up menu.

3. In the Pareto bar options, select Label with count and Label with percents.

4. In the Order options, select Order by values.

5. Click on ⬚ OK ⬚ to save your settings.

6. With the highlight on the chart that you just created, click on the Chart icon, 📈, to display the chart.

Lesson 8 Choice lists

SQCpack allows you to create choice lists for identifiers, causes, and notes. Choice lists help to reduce data entry errors, and ensure consistency.

8.1 Create an assignable cause choice list

For this lesson, use the Sample 46.sqd database.

1. Open the **Sample46.sqd** database if it is not already open. To do this click on the Database icon, 🛢️, and select Sample 46.sqd from the SampleData folder.

2. From the SQCpack tree, right-click on Choice List and select New choice list.

3. Setup the form as shown below and click on ⬚ OK ⬚.

8.2 Attach the choice list to a group

1. Right-click on any group and select Modify from the pop-up menu.

2. Click on the Miscellaneous tab.

3. Select **Downtime Causes** from the Assignable cause choice list drop-down menu and click on the Save icon.

8.3 Enter data from a choice list.

1. Highlight the group to which you attached the choice list. Click on the Open group icon, ⊞.

2. Move the cell to a row and press [Ctrl]+[N].

3. Click on the arrow in the Causes field and select a cause. Then, click on ⬚ OK ⬚.
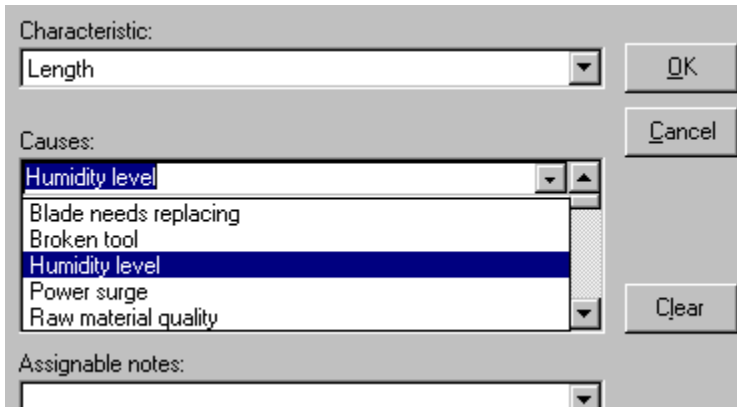
This concludes Lesson 8.

Lesson 9 Working with calculated characteristics

In this lesson you will create a simple calculated characteristic. Again, use the Sample 46.sqd database for this lesson. If this is not open, click on the Database icon, 🗄, and select Sample 46.sqd from the SampleData folder.

1. Right-click on the "Example 2, 3 chars, 2 ids, procedures" group and select **Copy** from the pop-up menu. When prompted, select Yes to copy the~ data also. This will appear in the list as "Copy of Example 2, 3 chars, 2 ids, procedures." Highlight the copy and click on the Modify group icon, 📝. The group form will open.

2. Type **Example 2, with calculated** in the Group name field.

3. Click on the New calculated icon, 📊, or open the Columns Menu and select New calculated. The Calculated value definition form will open. The Calculated value tab will be displayed.

4. Enter **Area** in the Name field.

5. Enter a subgroup size of n=**3.**

6. Enter #####.**!!** as the Display format.

7. Select **{Length}** from the drop-down menu.

8. Enter an asterisk (*), then select **{Width}** from the drop-down menu.

9. Click on **Apply template to create observation formulas below.** An illustration of the completed form is shown on the next page.

10. Click on ⬜ OK ⬜. Because this modifies the structure of an existing group, you will be prompted to back up the group.

11. Right-click on the "Example 2, with calculated" group and select Open from the pop-up menu. The Area characteristic appears on the right. Because this group had data, SQCpack automatically calculated the data for this characteristic. Note that these columns are grayed out. Since SQCpack is generating this data, it cannot be edited directly. To edit this data, edit the data used in the calculations.

This concludes Lesson 9, the final lesson in the Tutorial.

Section 5

The SQCpack 2000 Database

In this section

This section provides a quick reference to functions that are available through the menus.

- ❖ Organizing data in SQCpack

- ❖ Creating new database files

- ❖ Opening database files

- ❖ Multiple database access

- ❖ Managing database files

- ❖ User databases

Organizing data in SQCpack

SQCpack stores data in **database** files. Each database can contain several data **groups,** which are collections of one or more characteristics that you want to monitor. A **characteristic** is an element of a product or process, such as length, color, or temperature. For example, if you are monitoring a process that makes coffee mugs, you might create a group with characteristics for height, diameter, thickness, and kiln temperature.

Think of the SQCpack database as a file cabinet. Individual drawers are the groups, and the files in a drawer are the characteristics for that group.

How you define a database, groups, and characteristics is up to you. You could define a database for the organization, for each shift, each customer, an entire product, a part, a process, a production line, or a department, and then set up groups to represent related characteristics.
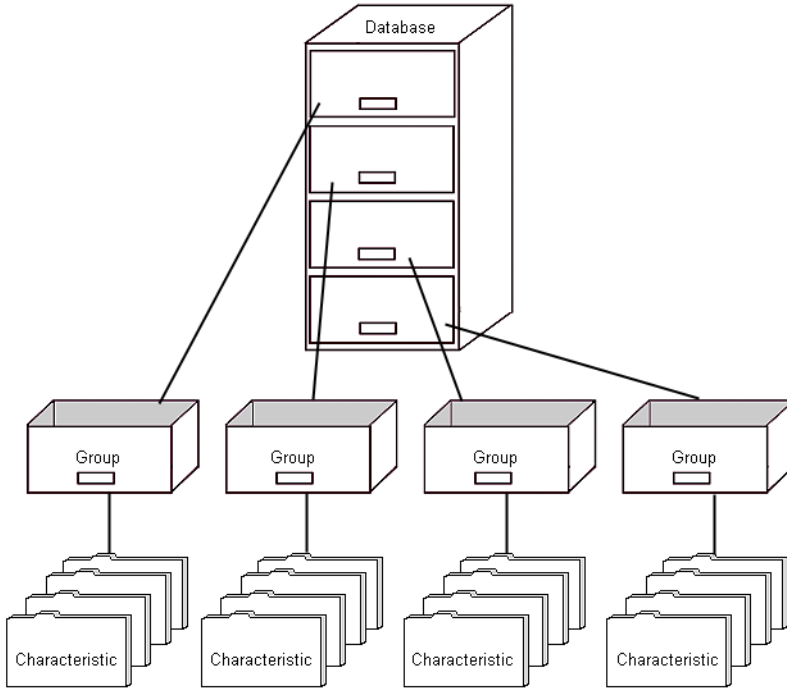
Database Menu

To access the Database Menu:

❖ Right-click on the name of a database

Or

❖ Highlight the name of a database. Database will appear in the Menu bar at the top of SQCpack window.

Creating new database files

To create a new database:

1. Open the File Menu and select New SQCpack database.

Specify name and location of NEW database	? X

Save in: Data

- Accounting.sqd
- Admin.sqd
- Production1.sqd
- Production2.sqd
- Production3.sqd
- Sales.sqd
- Shipping.sqd
- Website1.sqd

File name: *.sqd   Save

Save as type: SQCpack 2000 databases (*.sqd)   Cancel
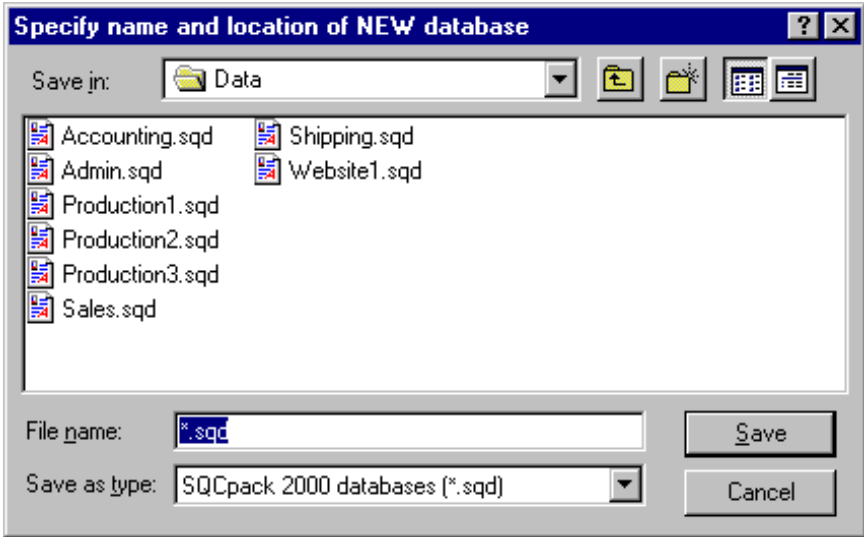
2. Enter a name for the database and click Save.

The database will open when it has been saved. SQCpack 2000 databases use a file extension of SQD.

If the highlight is on the name of an existing database, you can access the New database function through the database menu.

Opening database files

To open a database:

1. Open the File Menu and select Open SQCpack database or click on the Open database icon, ⬤.
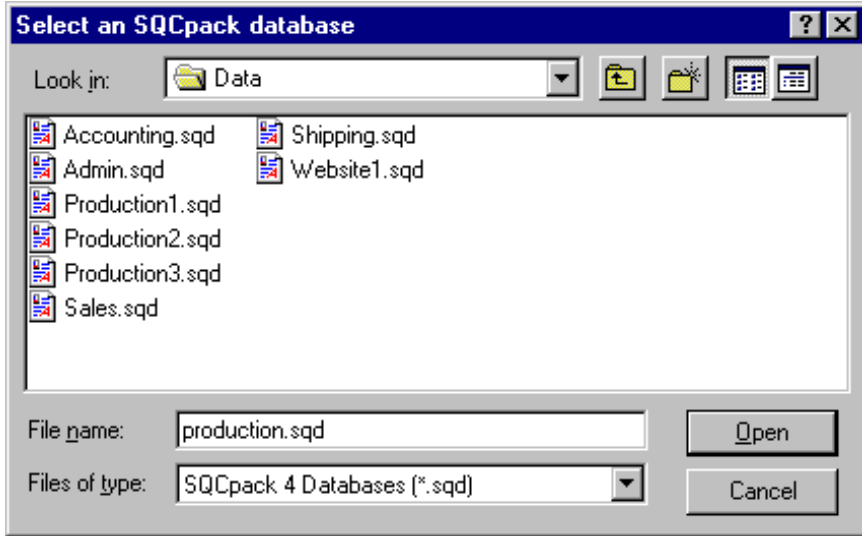
2. Enter a name for the database and click Open.

If the highlight is on the name of an existing database, you can access the Open database function through the database menu.

Converting database files from older versions of SQCpack

To convert an SQCpack 3.x database:

1. Open the File Menu and select Open SQCpack database or click on the Open database icon, ⬤.

2. Click on the down arrow in the Files of type field and select SQCpack 3.x databases (*.MDB) from the drop-down menu.
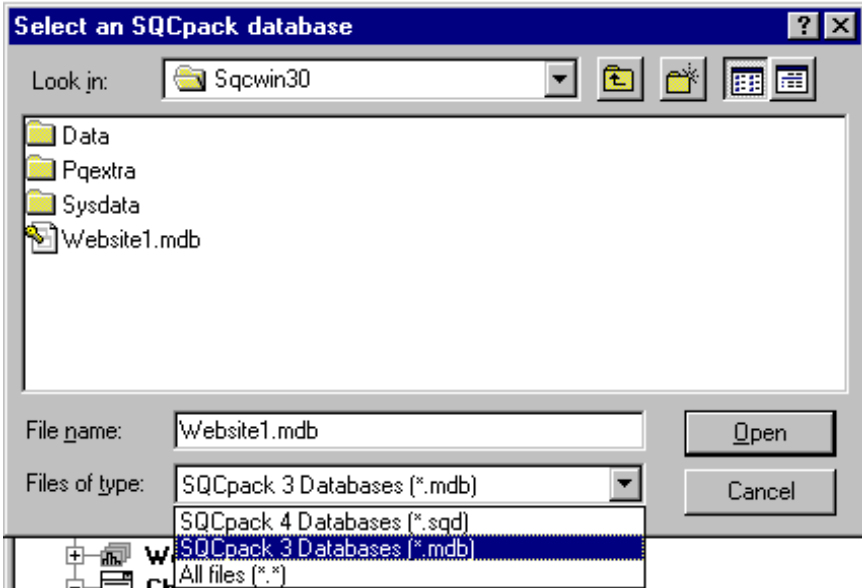
3. Select the SQCpack 3 database that you want to convert and click on Open.

4. Select the path for the converted database; for example, c:\Program Files\SQCpack 2000\data\.

SQCpack 2000 will convert the database before opening it. Note that for a large database, this process may take several minutes. If any groups in the 3.x database are not successfully converted, SQCpack 2000 will create a log file during the conversion process

For earlier versions of SQCpack, please contact the nearest PQ Systems Technical Support department:

United States: 1-800-777-5060 or support@pqsystems.com

Australia: 03-9770-1960 or support@pqsystems.com.au

England: 01704 871465 or tech@pqsys.demon.co.uk

NOTE ☞ SQCpack 2000 does not convert groups definitions with ODBC links. These groups cannot be converted to SQCpack 2000 due to 16-bit vs 32-bit incompatibilities in external applications. *CHARTrunner*, also a product of PQ Systems, charts data from virtually any external data source. For more information on *CHARTrunner,* visit http://www.chartrunner.com.

Multiple database access

SQCpack 2000 allows you to have several databases open simultaneously. Each database will appear in the Tree with its own set of groups, Multi-charts, Workspaces, choice lists, chart styles, and users. Open databases will be shown in alphabetical order.

NOTE ☞ SQCpack uses the out-of-control tests that are in memory when the program is started. If you open other databases that use different sets of out-of-control test criteria, you will need to close the first database.

Closing a database

To close a database:

1. Move the highlight to the database you want to close.

2. Open the File Menu and select Close current database. Also, You can access the Close database function through the database menu.

or

❖   Right-click on the database name and select Close through the pop-up menu as shown above.

Managing database files

Compact and repair

To repair a corrupted database or compress a database file from the Tree:

1. Open the Database that you want to repair or compact.

2. Open Database Menu and select Compact and repair database or right-click on the Database name and select Compact and repair database from the pop-up menu. Or open the File Menu, select Utilities, then Compact and repair database.

Backup

To back up a database file from the Tree:

1. Highlight the database that you want to back up.

2. Open the Database Menu and select Backup.

Properties

To enable database security:

1. Open the Database Menu and select Properties.
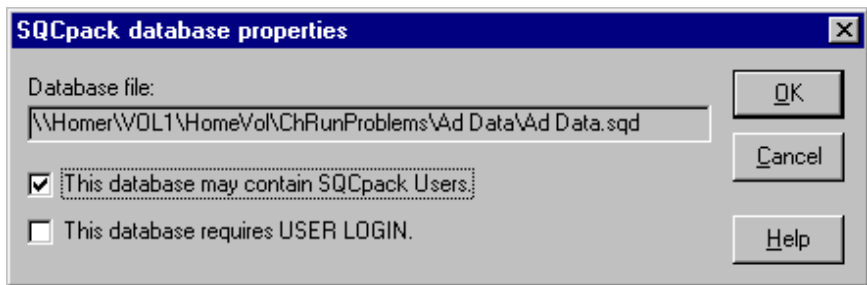
2. To store user information in the current database (rather than in a separate global user database), select the option, **This database may contain SQCpack users.**

3. To require that users log in to access this database, select **This database requires user login.**

4. Click on OK to save your settings.

See "Security" in Section 15, "Configuring SQCpack 2000" for more information.

Global user databases

There are two ways to set up user accounts: in a global user database or within the data database. Both options are discussed in more detail in Section 13, "Configuring SQCpack 2000."

To create a new global user database:

1. Open the **File Menu** and select **Utilities, New global user database.**

2. Enter a name and location for the global user database and click on **Save.**

3. Enter your login name and password. You must have access rights to create a global user database.

To use a global user database:

1. Open the **Setup Menu** and select **Preferences.**

2. Select the **Manage user access and security with a global shared database**. There will be a check in the checkbox if the option is selected.

3. Click on the **Browse** button to open the Select a global user database form.

4. Select the global user database and click on **Open.**

5. Click on OK .

Converting a global user database from SQCpack 3.x

To convert an SQCpack 3.x user database to SQCpack 2000 format:

1. Open the **File Menu** and select **Utilities, Convert an SQCpack 3.x user database.**

2. In the select SQCpack 3.x user database to convert field, enter the path and name of a user database or click on the Browse button to open the Select form and choose the user database.

3. Select the method for converting the database. Options are:

❖ Add users to a new global user database.
Select this to create a new global user database for the 3.x users.

❖ Add users to the current global user database.
Select this if you want the 3.x user accounts to be stored in the current global user database.

❖ Add users to SQC database.
Select this to include users in the same database as your data.

4. In the Database to add users field, enter the path and name of a user database. For an existing database, click on the Browse button to open the Select form and choose the user database. Click OK to close the Select form. Click [OK] to complete the conversion.

Section 6

Working with groups and characteristics

In this section

❖ Creating a group

❖ Creating group identifiers

❖ Creating characteristics

❖ Editing group & characteristic information

❖ Copying groups & characteristics

❖ Deleting groups & characteristics

❖ Group information

❖ Printing data

6

Creating a group

The flowchart below illustrates the steps used to set up a group. Refer to the text that follows for more detailed instructions.

```
┌─────────────────────────────────────┐
│ 1. Create a group.                  │
└─────────────────────────────────────┘
                 │
┌─────────────────────────────────────┐
│ 2. Name the group and enter a description. │
└─────────────────────────────────────┘
                 │
           ╱ 3. Does  ╲      Yes    ┌──────────────────────────────┐
          ╱ this group ╲────────────│ 3.1 Set up group identifiers │
          ╲ have       ╱            └──────────────────────────────┘
           ╲identifiers?╱                        │
                 │ No                            │
┌─────────────────────────────────────┐◄─────────┘
│ 4. Create the characteristics       │
└─────────────────────────────────────┘
                 │
           ╱ 5. Does  ╲      Yes    ┌──────────────────────────────────┐
          ╱ this group ╲────────────│ 5.1 Setup and confirm group password. │
          ╲ require a  ╱            └──────────────────────────────────┘
           ╲password? ╱                          │
                 │ No ◄────────────────────────────
           ╱ 6. Does  ╲      Yes    ┌──────────────────────────────────────────┐
          ╱ this group ╲────────────│ 6.1 Set the assignable cause and/or note choice lists. │
          ╲ have note  ╱            └──────────────────────────────────────────┘
           ╲or assignable                         │
            cause choice                          │
            lists?  ╱                             │
                 │ No ◄────────────────────────────
           ╱ 7. Are there╲   Yes    ┌──────────────────────────────┐
          ╱ procedures for╲─────────│ 7.1 Enter group procedures.  │
          ╲ the group?  ╱           └──────────────────────────────┘
                 │ No ◄────────────────────────────
┌─────────────────────────────────────┐
│ 8. Enter data. See Section 8.       │
└─────────────────────────────────────┘
                 │
┌─────────────────────────────────────┐
│ 9. Draw chart. See Section 10.      │
└─────────────────────────────────────┘
```

To make the Groups Menu appear in the Menu bar:

❖ In the Tree, move the highlight to Groups.

Create a New group with the New group Wizard
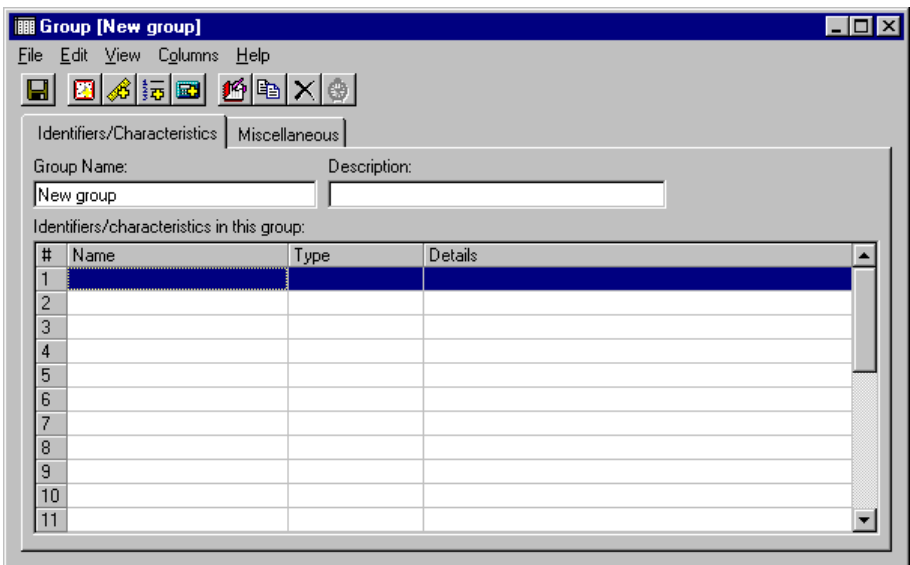
To create a new group using the New group Wizard:

1. Click on the arrow for the Wizard icon, [icon], and select New group. The New group Wizard will open.

2. Follow the on-screen instructions.

Create a new group (without using the Wizard)

To create a new group:

1. Click on the New group icon, [icon], or open the Groups Menu and select New group. The Group form will open. The Identifiers/ Characteristics tab will be displayed.

2. Enter a name in the Group name field.

3. Enter a group description in the Description field. This field is optional.

4. Set up group identifiers and characteristics. See the next topics, "Creating group identifiers" and "Creating characteristics," for more information.

5. If this group will be used for real-time data entry and you want to set up alarms, click on the Real-time chart alarm settings button. For more information, see the topic "Alarms."

6. Click on the Miscellaneous tab.
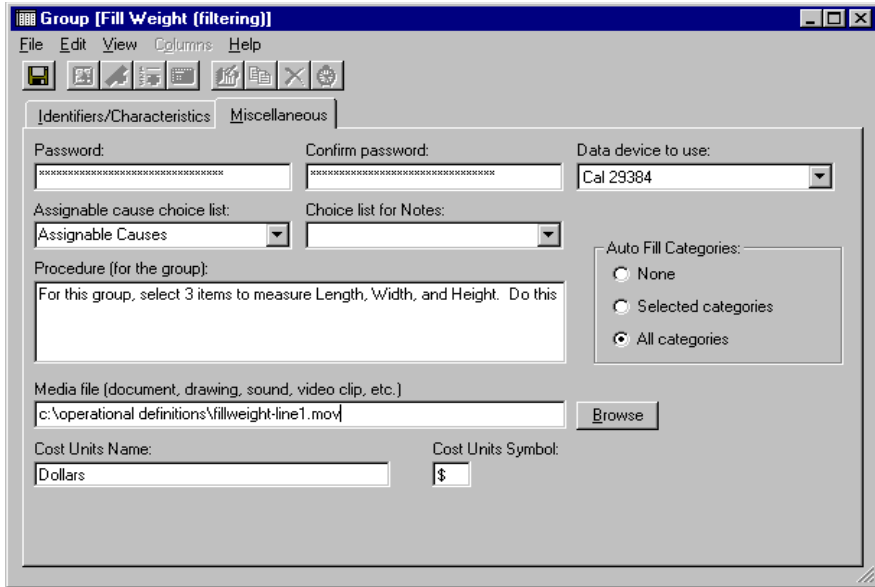
7. If you want to assign a password for this group, enter a password in the Password field and repeat it in the Confirm password field. For more information, see the topic, "Group passwords," in Section 15, "Configuring SQCpack 2000."

8. If you will be using a device for data entry, select a device from the drop-down menu in the Data device to use field. If nothing appears in this menu, you will need to configure a device. For information on configuring a device for direct input, refer to the topic, "Data devices," in Section 15, "Configuring SQCpack 2000."

9. If you want operators to use a choice list to select assignable causes or notes, select an existing choice list from the Choice list drop-down menus for Assignable cause choice list or Assignable notes choice list. For information on creating and editing choice lists, see the topic "Choice lists," in Section 15, "Configuring SQCpack 2000."

10. The **group procedures** option allows you to record operational definitions, measurement instructions, corrective actions, preventative actions, and other information that will help you comply with ISO 9000, QS-9000, and other industry standards. Users can display

this information during data entry. To enter a procedure, type it into the Procedures field. (You can set up procedures for individual characteristics also.)
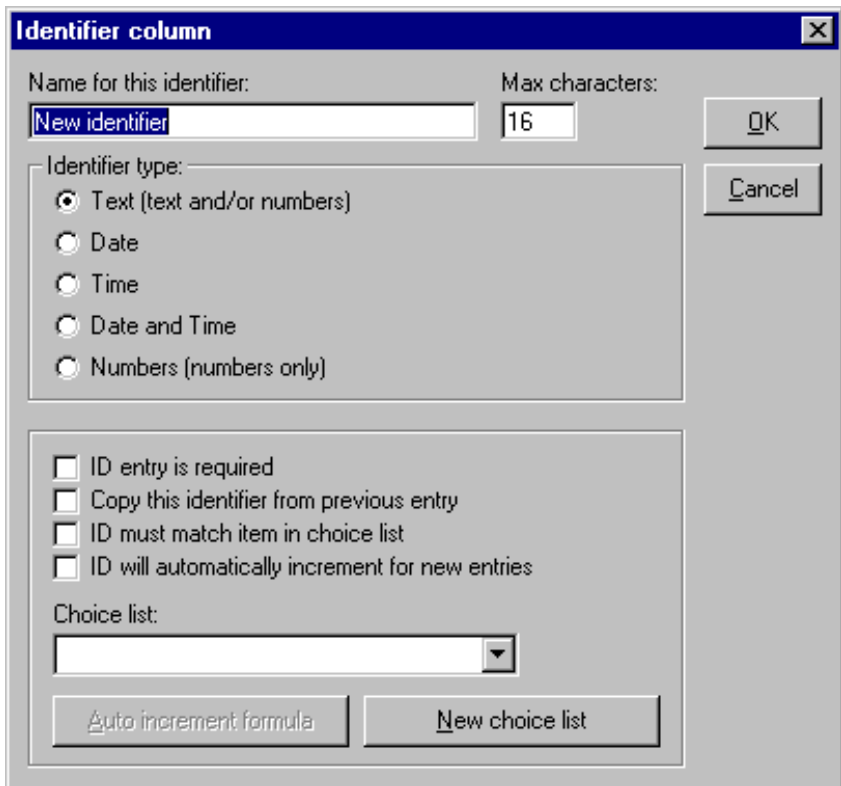
If your procedures are stored in a document, a drawing, sound file, or video file, use the Media file field to link this file to the group. To do this, click on Browse. Select the path and file name of the media file and click on Open.

11. Click on the Save icon, 🖫, to save the group setup.

Creating group identifiers

To create identifiers:

1. Click on the New identifier icon, 🞤, or open the Columns Menu and select New identifier. The Identifier column form will open.

2. Enter a name in the Name for this identifier field.

3. Enter a maximum number of characters for this identifier in the Max characters field. The default value is 16.

4. Select the type of identifier. Options are:
   ❖ Date
   ❖ Text (text and/or numbers)
   ❖ Time
   ❖ Date and time
   ❖ Numbers (numbers only)

5. Is this identifier mandatory? If yes, select the **ID entry is required** option.

6. Do you want to allow users to duplicate a previous identifier entry? If yes, select the **Copy this identifier from previous entry** option.

7. Do you want the identifier to automatically increment? If yes, select the **ID will automatically increment for new entries** option.

   To enter a formula for the automatic increment, click on the Auto increment formula button.

Enter the formula and click on $\boxed{\text{OK}}$. The form, shown above, includes example formulas. To view an example, select a formula from the drop-down menu. The formula will appear in the Formula field.

8. If this is a text or numbers identifier, do you want to use a choice list? Select a choice list from the Choice list drop-down menu. To create a new choice list, click on the Choice list button. Setup the choice list and click on $\boxed{\text{OK}}$. For information on creating and editing choice lists, see the topic "Choice lists," in Section 15, "Configuring SQCpack 2000."

    If you specify a choice list for this identifier, must the entry match the choice list? If yes, select the **ID must match item in the choice list** option.

9. Select $\boxed{\text{OK}}$ to save the identifier.

Creating characteristics

There are three types of characteristics: measurement, count, and calculated.

Measurement   Create a measurement characteristic for variables data.

Count   Count characteristics are used for attributes or Pareto data. You will need to setup a separate count characteristic column to record the number inspected.

Calculated   Set up a calculated characteristic to calculate data based on measurement characteristics data. For example, create a calculated characteristic of Area by multiplying a measurement characteristic of Length x a measurement characteristic of Width.

For more information on data types, please refer to Section 7, "Data and chart types."

Measurement characteristics

To create a measurement (variables) characteristic:

1. Click on the New measurement icon or open the Columns Menu and select New measurement. The Measurement definition form will open. The Measurement tab will be displayed.

Measurement Definition

Name: New measurement

Description:

Measurement | Headers | Procedure

Subgroup size (1 to 40): 5

Upper spec:

Target: Typical number (optional):

Lower spec: Data entry format: ?

☐ Warn on entries beyond specifications

Max value to be entered:

Min value to be entered:

○ Do not allow invalid entries
● Warn user (but allow) invalid entries
○ Ignore invalid entries

OK
Cancel
Help

2.   Enter a name for the characteristic.

3.   Enter a description in the Description field. This field is optional.

4.   Type the number of observations you want to enter for each sample (data point on a chart). For information on how to select a sample size, please refer to the SQC Quality Advisor. This field is required.

5.   All other fields are optional. See below for descriptions.

6.   To save the characteristic, click on ⌷ OK ⌷.

Optional characteristics fields:

Upper spec, Target, Lower spec
Although these fields are optional, you will need to enter values in the upper and/or lower specification (tolerance) fields in order to perform capability analysis. Type specifications in these fields.

NOTE ☞   If you have only one specification value, leave the other field blank.

Warn on entries beyond specifications
Select this option if you want to alert user when an observation falls outside specifications during data entry.

Data entry format

Use the Data entry format field to set up the format for incoming data. When you enter the format, use the following symbols:

This field can contain up to 16 characters. When you enter the format, use the following symbols:

Use this:	To represent this:
#	a digit, will not replace a blank with zero
0-9	pre-type/auto type digits
@	a decimal automatically included
.	a decimal that the user types
!	a digit placeholder, if nothing is typed, 0 will be inserted

Both the # and the ! are considered as 'digit place holders.' They are different in one respect. If no digit is typed where an exclamation mark appears (in the format), a zero will be placed there automatically. For the #, if no digit is typed, none will be displayed. For example, if the data entry format is .12!! and you do not enter a value, SQCpack will leave the cell empty. If you type 0, SQCpack will write the data as .1200.

Use the @ sign if you want a decimal to be typed automatically. In terms of formatting the number this symbol acts just like a decimal. When a user comes to this 'position' while typing, a decimal will be entered automatically. For example, if you enter a format of #@##, you can type 258 and the program will enter the data as 2.58.

If you want to use a typing prefix, you can set it up in this field. For example, if all the data values for this characteristic fall between 2.52 and 2.59, you can enter a data format of 2.5###. The 2.5 would be automatically entered for each observation and users must enter only the additional values. To enter 2.5873, for example, you would type only the 873. The typing prefix can be overwritten if data falls outside the prefix range.

Hard digits that appear starting at the left of the format (1, 2, 3, 4, 5, 6, 7, 8, 9) will be automatically typed for users as they move from cell to cell. As soon as a non-hard digit is encountered, the auto typing stops. For example, the format: 12.##4## will pre-type only the 12. (the 4 is treated like a #).

Data entry format	Value entered	Value displayed	Value stored
##.	21	21.	21
##.0	21	21.0	21
2#.!	1	21.0	21
21.#	1	21.1	21.1
###	21.1	21	21.1
000	21.1	021	21.1
00@0	211	21.1	21.1
.0!!	.1	.100	.1
.00	.034	.03	.034
.00	.036	.04	.036
#.00	-.1	-.10	-.1
#.00	.1	.10	.1
#00.00	99.9	99.90	99.9
#00.00	100	100.00	100
.12!!			
.12!!	0	.1200	.120

The program stores the complete number entered, regardless of the data entry format. If the display shows 2 places after the decimal, but you are entering 3 numbers after the decimal, you will not lose any data. If you want to display this last digit, you can modify the data entry format.

Max value to be entered, Min value to be entered
Use these fields to enter the largest and smallest numbers you can enter for an observation. You can enter a value in both, one, or neither of these fields.

If you set a minimum and/or maximum value, press ⎄Tab⎄ and use ↑ or ↓ to set the parameters. Options are:

❖ Do not allow invalid entries

❖ Warn user (but allow) invalid entries

❖ Ignore invalid entries

Headers

Click on the Headers tab to setup header information for this characteristic.

#	Name	Value
1	Operation	Pickle Line
2	Characteristic	@CN
3	Sample size	n=1
4	Sample Frequency	One every 2 hrs.
5		
6		
7		
8		
9		
10		
11		
12		

Measurement Definition — Name: Acid Concentration - % — Description: — Tabs: Measurement, Headers, Procedure — OK, Cancel, Help — Real-time chart alarm settings

Headers are fields that can be displayed at the top of a control chart. They can include descriptive information about the system or identify the process by shift, facility, etc. In the Name column, enter titles for each header. In the Values column, enter the data for the header. For example, for a header named Department, you might enter a value of Accounting. For information on displaying headers on the chart, see the topic "Titles" in Section 10, "Charts."

Characteristics procedures

Click on the Procedures tab to enter procedures for this characteristic.

The characteristic procedures option allows you to record operational definitions, measurement instructions, corrective actions, preventive actions, and other information that will help you comply with ISO 9000, QS-9000, and other industry standards. Users can display this information during data entry. To enter a procedure, type it in Procedures field. (You can set up general procedures for the group also.)

If your procedures are stored in a document, a drawing, sound file, or video file, use the Media file field to link this file to the group. To do this, click on Browse. Select the path and file name of the media file and click on Open.

Count characteristics

To create a count (attributes or Pareto) characteristic:

1. Click on the New count icon or open the Columns Menu and select New count. The Count definition form will open. The Count tab will be displayed.

2. Enter a name for the characteristic.

3. Enter a description in the Description field. This field is optional.

Count Definition

Name:
Defects per unit

Description:

Count | Headers | Procedure

Type of chart you want for this count characteristic:

○ c-chart (also allows this to be used as number inspected for other counts)
○ p-chart
○ np-chart
● u-chart
○ Pareto chart and/or c-chart

Get number inspected from this column:
Number inspected

Use this as a constant number inspected:

OK

Cancel

Help

---

4.   Select the type of count. There are four options:

> **NOTE ☞** If you are setting up characteristic for attributes data, you will need to define two count characteristics. One count is the number inspected. The second is a count of defective units or defects per unit.

4.1   c-chart (select this option to set up a number inspected field for p- or u-charts)
This option creates a simple count characteristic. Select this option to create a characteristic for the number of nonconformities or to create a number inspected column for p- or u-charts if the sample size varies.

4.2   p-charts
When you select the p-chart option, two fields will appear on this form. If your sample size is constant, enter the sample size in the **Use this as a constant number inspected** field. If the sample size varies, you will need to define a number inspected field before selecting p-chart (see Step 4.1). Then, select the number inspected column from the drop down menu in the **Get number inspected from this column** field.

4.3   np-chart.
If you select this option, enter the sample size in the **Use this as a constant number inspected** field.

4.4 u-chart
When you select the u-chart option, two fields will appear on this form. If your sample size is constant, enter the sample size in the **Use this as a constant number inspected** field. If the sample size varies, you will need to define a number inspected field before selecting u-chart (see Step 4.1). Then, select the number inspected column from the drop down menu in the **Get number inspected from this column** field.

4.5 Pareto and/or c-chart.
If you select this option, a Categories tab will appear on this form. Click on this tab to set up the categories. See the next topic, "Categories data," for more information.

5. Set up headers and procedures, if desired. For more information, see the topics, "Headers" and "Characteristics procedures" earlier in this Section.

6. To save the characteristic, click on [OK].

Categories data

To set up categories:

1. Type a name for the category in the Name field.

2. If you are doing cost Pareto analysis, enter the cost for this category. If you are not doing cost Pareto analysis, leave this field blank.

3. If you have a large number of categories with only a few that appear consistently, select Auto fill.

For example, if you track 70 defects overall, you might have 10 that appear frequently. You would set up these 10 as Auto Fill. Also, set the options to Automatically fill only auto fill categories. (This appears under the Options tab.) When you enter data, the auto fill categories will be displayed in the data editor.

4. A check in the **Definition** column indicates that the category has an operational definition. Operational definitions entered here can be viewed during data entry. To enter an operational definition for the category:

   a. Click on the Definition button.

   b. Type in the operational definition for category.

   c. Select [OK] to save the definition and return. A Yes will automatically be displayed in this column.

   d. If a check does not appear in the Definitions? check box for this category, click on the check box to add it.

Calculated characteristics

SQCpack allows you to calculate data from measurement characteristics. To create a calculated (variables) characteristic:

1. Click on the New calculated icon or open the Columns Menu and select New calculated. The Measurement definition form will open. The Calculated value tab will be displayed.

2. Enter a name for the characteristic.

3. Enter a description in the Description field. This field is optional.

4. Enter the subgroup size in the Subgroup size field.

5. Enter specifications in the Upper spec, Target value, and Lower spec fields. These fields are optional.

6. Setup the Formula in the Formula template.

    To select a variables characteristic, use the Variables drop-down menu. The variable you select will appear in the Formula template field.

Function	Use this character
Addition	+
Subtraction	-
Multiplication	*
Division	/

    For example, for a calculated characteristic "Area," you might enter a formula using measurement characteristics of "Length" and "Width." The formula for this would appear as: {Length} * {Width}.

    A calculated characteristic can have several steps. In the above example, if the subgroup size of Length and Width is n=3, you can calculate Area with n=3 also. SQCpack numbers the observations in the Variables drop-down menu. If n=3, this example would require three formulas:

    $$\{Length[1]\} *\{Width[1]\}$$
    $$\{Length[2]\} *\{Width[2]\}$$
    $$\{Length[3]\} *\{Width[3]\}$$

    More examples of calculated characteristics appear at the end of this topic.

    Click on Apply template. The current formula will appear in the bottom field. Click on Edit row to make changes. Make changes and click ⬚ OK ⬚ to close the Observation formula form.

7. Set up headers and procedures, if desired. For more information, see the topics, "Headers" and "Characteristics procedures" earlier in this Section.

8. To save the characteristic, click on ⬚ OK ⬚.

Examples of calculated characteristics

Tear strength:

Converting data collected as inches into centimeters:

Making the X-bar a single measurement characteristic:

Calculated value

Name:
Length mean

Description:
The mean of the Length as individuals moving range

Calculated value | Headers | Procedure

Subgroup size
1

Upper spec:

Target:

Lower spec:

Display format:
[?]

Select from this list to help create a template:
MEAN({Length})

Template:
MEAN({Length})

[Clear]

[Apply template to create observation formulas below]

#	Formula
1	MEAN({Length[1]},{Length[2]},{Length[3]})

[Edit]

[OK]
[Cancel]
[Help]

Outside Diameter - Inside Diameter:

Calculated value

Name:
Thickness

Description:

Calculated value | Headers | Procedure

Subgroup size
1

Upper spec:

Target:

Lower spec:

Display format:
[?]

Select from this list to help create a template:
{Inside diameter}

Template:
{Outside diameter}-{Inside diameter}

[Clear]

[Apply template to create observation formulas below]

#	Formula
1	{Outside diameter[1]}-{Inside diameter[1]}

[Edit]

[OK]
[Cancel]
[Help]

Modify groups, characteristics, and identifiers

To modify a group, characteristic, and/or identifier setup:

1. In the Tree, move the highlight to the group you want to edit.

2. Open the Group Menu or right-click on the group. Select Modify from the menu, or click on the Edit identifier or characteristic icon.

3. Make desired changes to the group settings.

4. Move the highlight to the identifier or characteristic that you want to edit. Open the Columns Menu and select Modify.

5. Make desired changes and click on ⟦ OK ⟧.

6. Click on the Save icon to save the changes and close the Group form.

Copying groups, characteristics, and identifiers

To copy a group:

1. Move the highlight to the group you want to copy.

2. Open the Group Menu or right-click on the group. Select Copy from the menu.

To copy a characteristic or identifiers:

1. In the Tree, move the highlight to the group you want edit.

2. Open the Group Menu or right-click on the group. Select Modify from the menu. Or click on the Copy identifier or characteristic icon.

3. Move the highlight to the characteristic or identifier that you want to edit.

4. Open the Columns Menu and select Copy.

Deleting groups, characteristics, and identifiers

To delete a group:

1. Move the highlight to the group you want to delete.

2. Open the Group Menu or right-click on the group. Select Delete from the menu. You will be prompted to confirm the delete. Click on Yes to delete or No to cancel the deletion.

To delete a characteristic or identifiers:

1. In the Tree, move the highlight to the group you want to delete.

2. Open the Group Menu or right-click on the group. Select Modify from the menu.

3. Move the highlight to the characteristic or identifier that you want to delete.

4. Open the Columns Menu and select Delete. You will be prompted to confirm the delete. Click on Yes to delete or No to cancel the deletion.

Purge groups marked for deletion

When you delete a group from the database, the group is not permanently deleted until you run the Compact and repair utility or select this utility. To purge deleted groups:

❖ Open the **File Menu** and select **Utilities, Purge groups marked for deletion.** You will be prompted to confirm the purge. Select **Yes** to permanently delete the groups, No to cancel the deletion.

Recall selected groups

When you delete a group from the database, the group is not permanently deleted until you run the Compact and repair utility or purge deleted groups utilities. Groups that have not been permanently deleted can be restored. To do this:

1. Open the **File Menu** and select **Utilities, Recall selected groups.** The Recall groups marked for deletion form will open.

2. Uncheck any group that you want to restore. Groups with a check will remain marked for deletion.

3. Click on the **Recall** button.

Information

To view group information including name, description, date created, last modified date, identifiers, and characteristics:

1. Highlight a group in the Tree.

2. Open the Group Menu and select Information.

3. Click on [OK] to close the Information window.

Print data

To print or export data from the highlighted group:

1. Open the **Group Menu** and select **Print data.**

2. Select **Print.**

3. Select the items that you want to print.

4. Press [OK].

Export data

To export data from the highlighted group:

1. Open the **Group Menu** and select **Export data.**

2. Select **Export.**

3. Select the items that you want to export.

4. Press [OK].

Section 7

Data and chart types

In this section

SQCpack provides tools for analyzing variables, attributes, and Pareto data. This chapter examines key data types and analytical tools so that you can select the best one for your data. Note, however, that this chapter does not describe all possible applications of SQCpack's charts.

This section covers:

❖   Variables data
   - What is variables data
   - What charts are used for analyzing variables data
   - X-bar and R charts
   - X-bar and S charts
   - Median charts
   - Individuals and moving range charts (X-MR)
   - Moving average and moving range
   - Run charts
   - Histograms
   - Capability analysis
   - Cusum
❖   Attributes data
   - What is attributes data
   - What charts are used for analyzing attributes data
   - np-charts
   - p-charts
   - c-charts
   - u-charts
❖   Pareto data
   - What is Pareto data
   - What charts are used to analyze Pareto data (Pareto diagrams)
   - Bar & column charts
   - Pie charts

The online *SQC Quality Advisor*™ provides more detail for each of these charts and data types. You can access this through the Help Menu.

Variables Data

What is variables data?

Variables data is data that is collected through measurements, such as length, time, diameter, strength, weight, temperature, density, thickness, or height. Variables data offers the advantage of choice in the degree of accuracy required. For example, you can measure an item to the nearest centimeter, millimeter, or micron.

## What charts are used for analyzing variables data?

SQCpack offers control charts, histograms, trend charts, scatter diagrams, and run charts for analyzing variables data. Use variables control charts to determine if a process is predictable or to see how changes affect the process. Use histograms to analyze the distribution of data from a stable process. Use histograms with capability analysis to determine the capability and/or performance of the system. Use run charts for a quick look at a system's direction or when you do not have enough data for conventional control chart analysis.

Variables Control Charts

Variables data is usually analyzed in pairs of charts that present data in terms of location or central tendency and spread. Location, usually the top chart, shows data in relation to the process average. It is presented in X-bar or individuals charts. Spread, usually reflected in the bottom chart, looks at piece-by-piece variation. Range (R), sigma (s), or moving range charts are used to illustrate process spread. Because the median chart shows each observation, it illustrates both process spread and location. Another aspect of these variables control charts is that the subgroup size is typically constant.

X-bar and R Charts

X-bar and R (range) charts create a picture of a process over time. This chart pair is used with data that has a subgroup size of two or more. The X-bar chart, on top, illustrates variation between subgroups. Each data point on the X-bar chart shows the average of each subgroup of data. The range chart, on the bottom, illustrates variation within a subgroup. Data points on the range chart show the range for each subgroup.
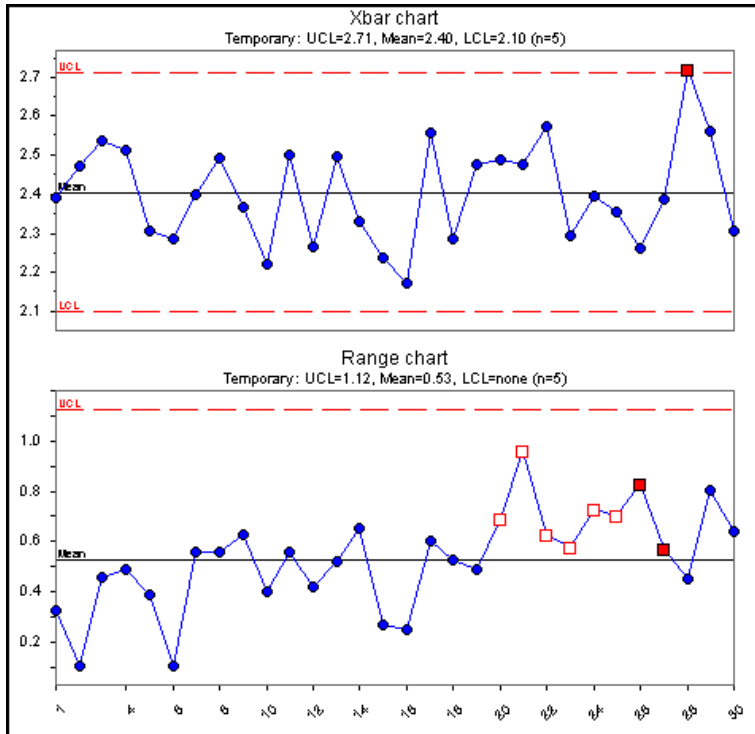
When do you use X-bar and R charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how planned change affects the process

❖ When the time order of the subgroups is preserved

❖ When you have collected data in subgroups larger than one

X-bar and Sigma Charts

The X-bar and sigma chart is a variation of the X-bar and R chart. Again, the X-bar chart (top) shows the average or mean of each subgroup of data. Instead of range, however, the lower chart shows the standard deviation of each subgroup. This chart combination is generally used when the subgroup size is large; for example, eleven or more observations per subgroup.
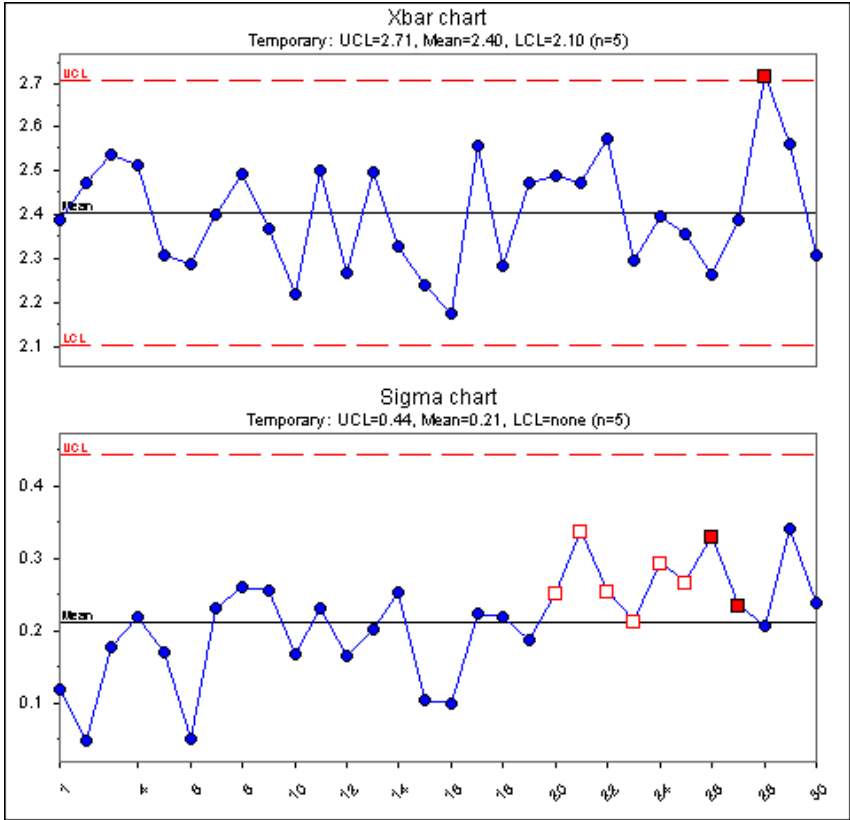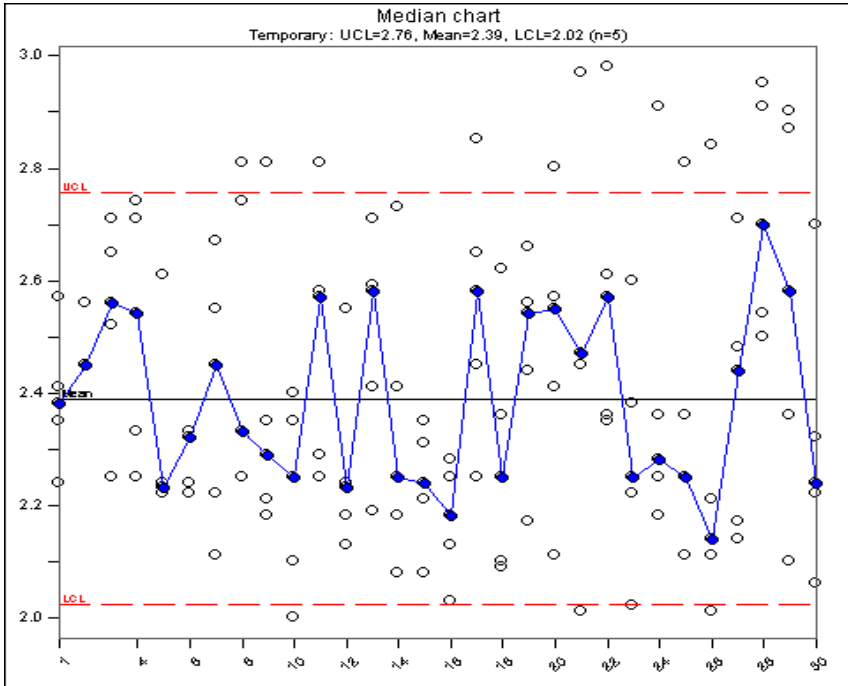

When do you use X-bar and s charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how planned change affects the process

❖ When the time order of the subgroups is preserved

❖ When you have collected data with a subgroup size of eleven or more

Median

A median chart is a special purpose variation of the X-bar chart. It uses the median or middle value of a subgroup to show the system's central location. It shows all the individual observations of each subgroup.

Median chart
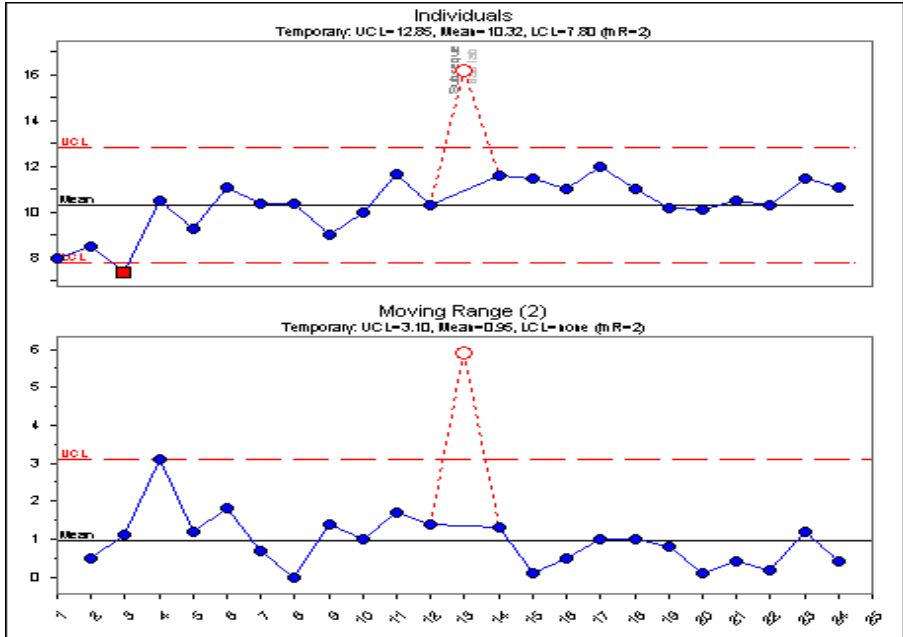Temporary: UCL=2.76, Mean=2.39, LCL=2.02 (n=5)

When do you use median charts?

❖   When you want to see if a process is stable and predictable

❖   When you want to see how planned change affects the process

❖   When the time order of the subgroups is preserved

❖   When you want to see all the individual data points on the chart

❖   When you have collected data in subgroups larger than one

Individuals and Moving Range

Individuals (X) and moving range (MR) chart combination is a variation of the X-bar and R chart. It is used with subgroups containing one reading. The X chart, on top, shows individual data values. The MR chart, on the bottom, creates ranges by finding the difference between consecutive data values. It uses absolute values, thus avoiding negative moving range values.

When do you use individuals and moving range charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how planned change affects the process

❖ When the time order of the subgroups is preserved

❖ When you have collected data in subgroups of one

Individuals and Moving Sigma

Individuals (X) and moving sigma (MS) chart combination is a variation of the X-bar and sigma chart. It is used with subgroups containing one observation. The individuals chart, on top, shows individual data points. The MS chart, on the bottom, calculates sigma using the standard deviation between consecutive data values.
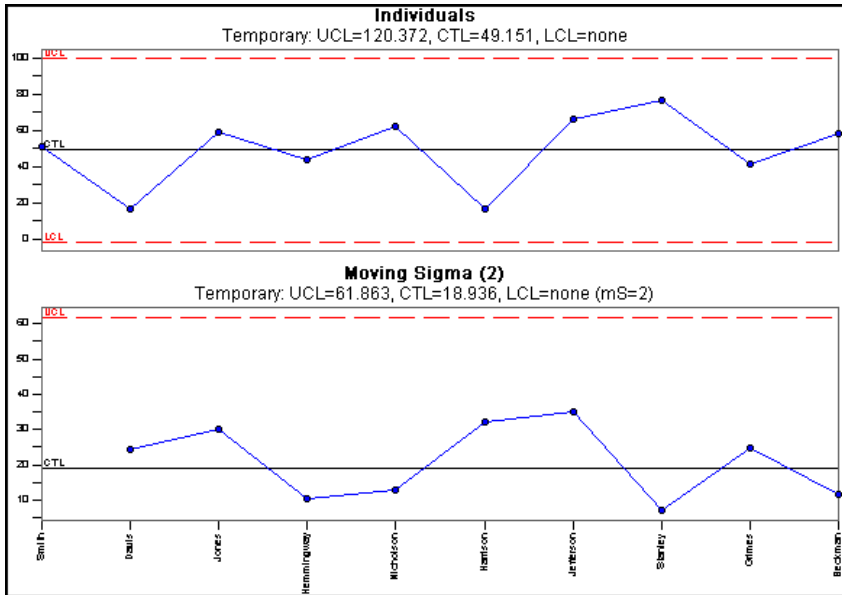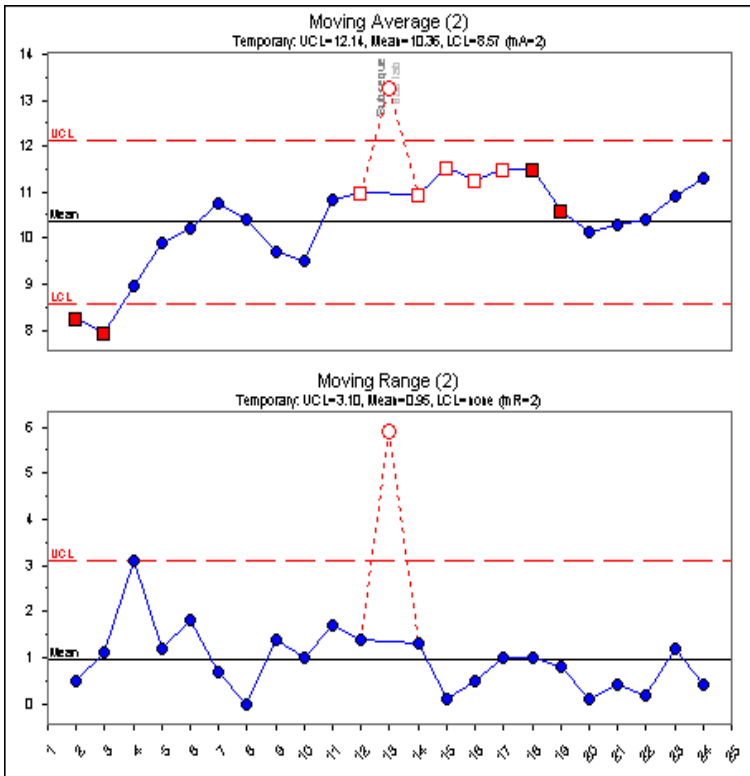

When do you use individuals and moving sigma charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how planned change affects the process

❖ When the time order of the subgroups is preserved

❖ When you have collected data in subgroups of one

Moving Average and Moving Range

Moving average is a smoothing technique for time series data that averages out the short term fluctuations in the system and concentrates on long-term trends. Moving averages work much the same as moving ranges do, on the individuals and moving range chart. These charts are used with subgroups containing one observation but, instead of plotting the individual values, you plot an average of two or more observations. This hides minor (yet frequent) variation between individual readings and shows how the system is running over time.

When do you use moving average and moving range charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how planned change affects the process

❖ When the time order of the subgroups is preserved

❖ When you have collected data in subgroups of one

❖ When the process changes slowly relative to how often samples are collected

❖ When the individual data values are subject to considerable variation

Run Chart

Run charts are line graphs of individual data points plotted over time. They are used to look for patterns or trends in the data.
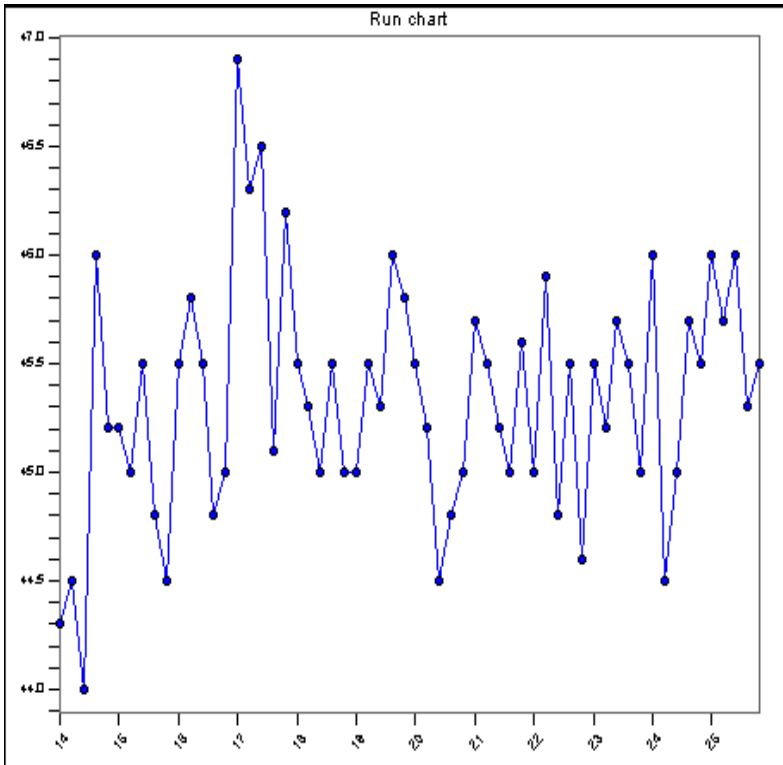
## When do you use run charts?

❖ When data is collected over time

❖ When the time order has been preserved

❖ When you want a quick test of process performance

❖ When you do not have enough data for conventional control chart analysis

Histogram

Histograms are bar charts that show how raw data is distributed. They show basic information such as central location (mean), width of spread (range or standard deviation), and shape. SQCpack allows you to select descriptive statistics, such as skewness and kurtosis, for histograms.
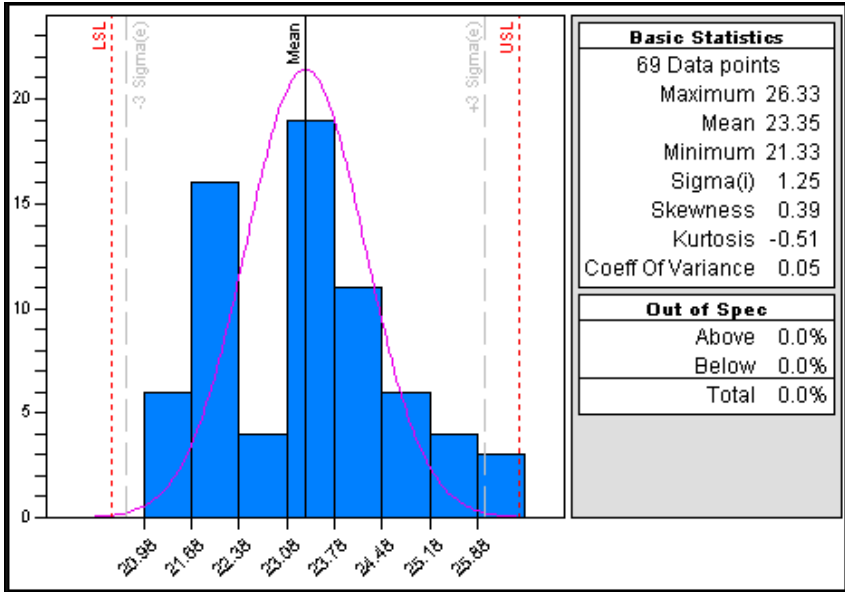
When do you use a histogram?

❖ When you want to visualize the central location, shape, and spread of data

❖ When the process is stable, and you want to predict future behavior

Capability Analysis

Capability analysis is a set of statistical calculations performed on a set of data in order to determine the capability of the system. The capability of the system refers to the ability of the system to perform with respect to its specification limits. A system is said to be capable if it is producing 100 percent within specification limits.

SQCpack offers the following capability indices. Please refer to the Quality Advisor for a detailed description of each index and what you can learn from it. You can also refer to Appendix A for the formulas. SQCpack capability indices include:

Cp	Cpm	Pp
Cpk	Cpu	Ppk
Cr	Cpl	Pr

When do you use capability analysis?

❖ When the system is stable

❖ When the individual values of the variables data are normally distributed. (If the system does not follow the normal distribution, you may want to choose "assume the distribution is non-normal" when creating a histogram in SQCpack.)

❖ When you want to know how the system performs in relation to the specification limits

Cusum

Cusum is an advanced analysis that uses current and historical data to detect small shifts in the process average. Cusum stands for cumulative sum of deviations from the target. It treats past and present data equally. Studying cumulative sums rather than subgroup averages emphasizes ongoing changes in the process mean.

Camshaft Bearing Diameters
Cusum chart, Target = 48.0
Risk: Producer = 2E-37, Consumer = 2E-37
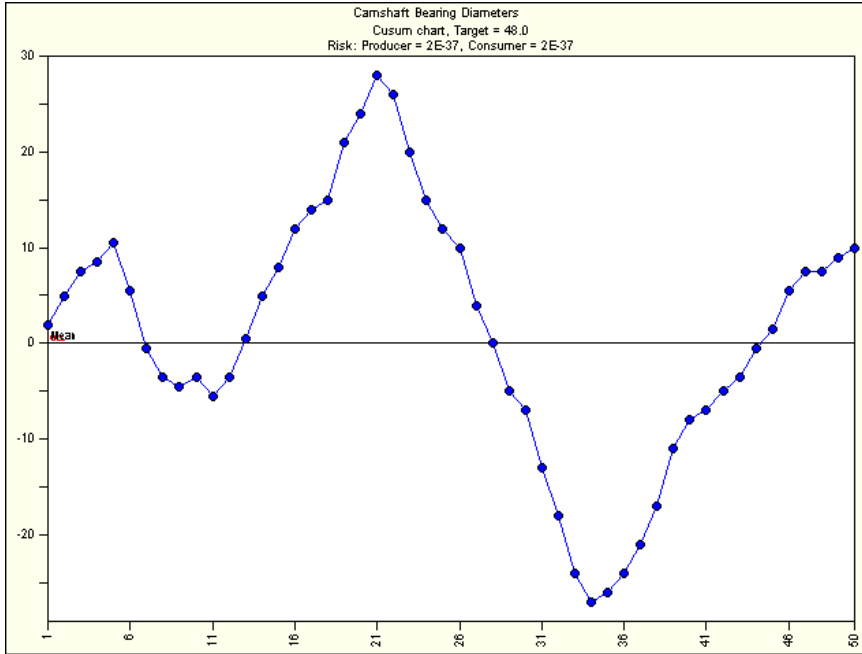
When do you use a cusum chart?

❖ When you want to see if your process is stable and predictable

❖ When even a slight variation can result in waste and product deficiency

❖ When you want to see how a planned change affects the process

❖ When the time order is preserved

Attributes Data

What is attributes data?

Attributes data is data that can be classified and counted. There are two types of attributes data: nonconformities and nonconforming.

Nonconformities data refers to defects or occurrences that should not be present but are. It also refers to any characteristics that should be present but are not. Dents, scratches, bubbles, and missing buttons are examples of nonconformities.

Nonconforming data is a count of defective units. It is often described as go/no go, pass/fail, or yes/no, since there are only two possible outcomes to any given check. It also refers to a count of defectives or rejects. For example, a light bulb either works or it does not. You can track either the number failing or the number passing.

What charts are used to analyze attributes data?

SQCpack offers two control charts for each type of attributes data. For nonconforming units, these are p-charts and np-charts. For nonconformities, these are u-charts and c-charts.

np-charts

An np-chart is an attributes control chart used with data collected in subgroups that are the same size. Np-charts show how the process, measured by the number of nonconforming items it produces, changes over time. The process attribute (or characteristic) is always described in a yes/no, pass/fail, or go/no go form. For example, the number of incomplete accident reports in a constant daily sample of five would be analyzed on an np-chart. Np-charts are used to determine if the process is stable and predictable, as well as to monitor the effects of process improvement theories.
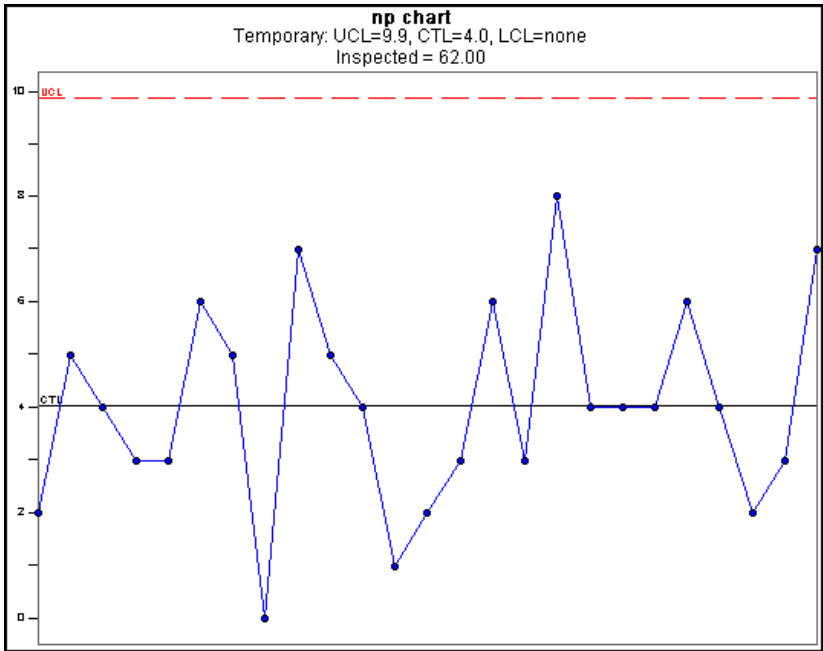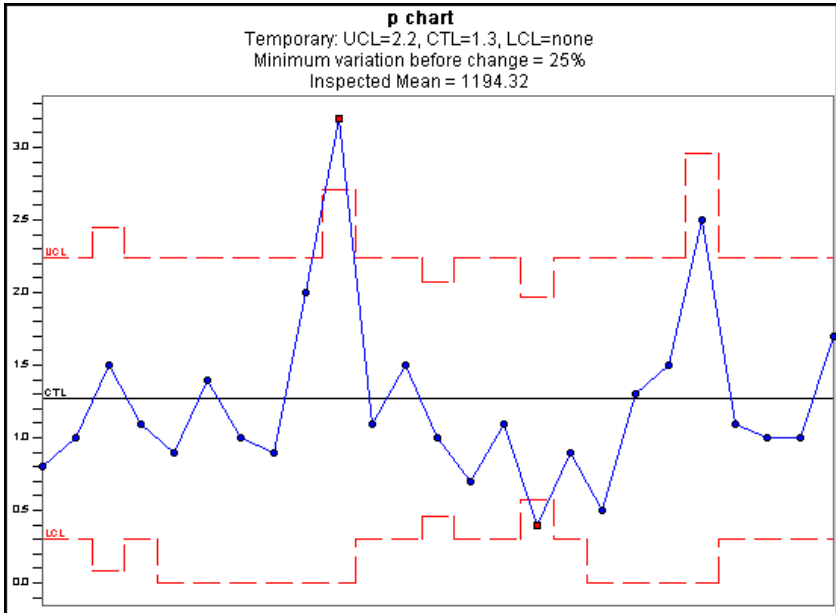

When do you use np-charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how a planned change affects the process

❖ When you are counting nonconforming units

❖ When the time order of the subgroups is preserved

❖ When the subgroup size is constant

p-charts

A p-chart shows how a process changes over time. However, instead of using the actual count of nonconforming units, p-charts use a proportion of the nonconforming items, since the subgroup size may vary. Subgroup sizes that vary more than 25 percent from the average subgroup size may require special handling of the control limits. SQCpack can perform special calculations to adjust the control limits accordingly and then plot the proportions.
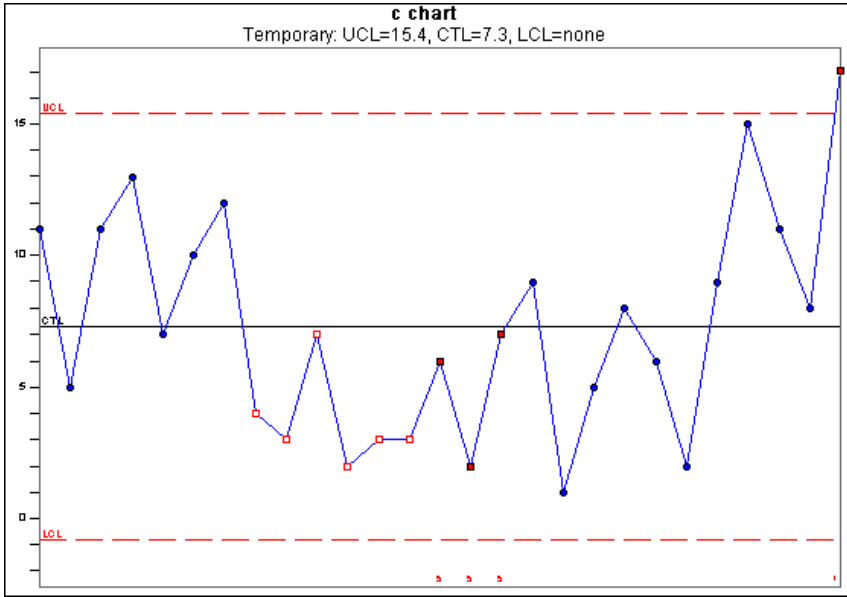

When do you use p-charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how a planned change affects the process

❖ When you are counting nonconforming units

❖ When the time order of the subgroups is preserved

❖ When the subgroup size can vary

c-charts

C-charts show process changes over time by looking at the number of nonconformities the process produces. For c-charts, the subgroup size must be constant. C-charts show the actual number of nonconformities per subgroup.
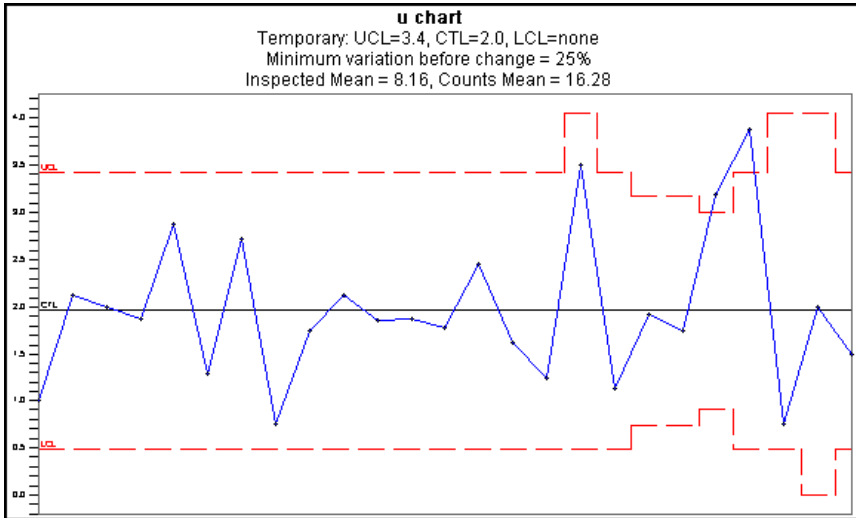

When do you use c-charts?

❖ When you want to see if your process is stable and predictable

❖ When you want to see how a planned change affects the process

❖ When the data is a count of nonconformities

❖ When the time order of the subgroups is preserved

❖ When the subgroup size is constant

u-charts

U-charts show process changes over time by looking at the number of nonconformities the process produces. The subgroup size can vary; therefore, u-charts show the number of nonconformities in proportion to the subgroup size. Subgroups that vary more than 25 percent from the average subgroup size may require special handling of the control limits. SQCpack can perform special calculations to adjust the control limits accordingly and then plot the proportions for you.

When do you use u-charts?

❖ When you want to see if a process is stable and predictable

❖ When you want to see how a planned change affects the process

❖ When the data is a count of nonconformities

❖ When the time order of the subgroups is preserved
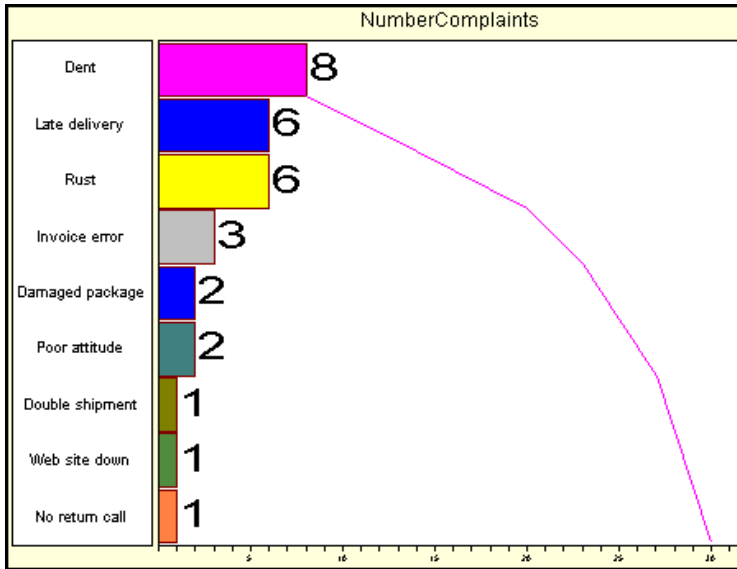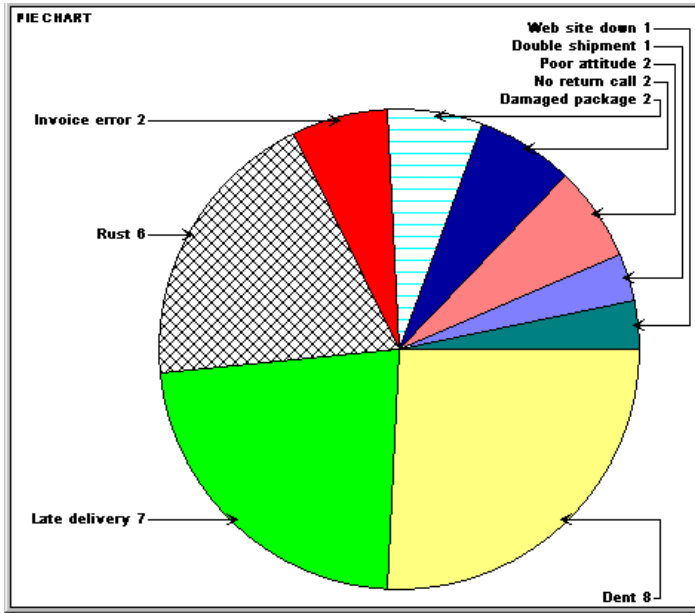
❖ When the subgroup size can vary

Pareto Data

What is Pareto data?

Pareto data counts items in various categories. It is used to rank the categories in decreasing order of occurrence. Based on the nineteenth century principle developed by Italian economist Vilfredo Pareto, it is the law of the significant few versus the trivial many. The significant few items cause 80 percent of the problems, while the trivial many make up about 20 percent of problems.

What charts are used to analyze Pareto data?

Pareto diagrams are used to analyze Pareto data. Usually a Pareto diagram is a simple bar chart. However, SQCpack also allows you to display count data in a pie chart.

PIE CHART

Web site down 1
Double shipment 1
Poor attitude 2
No return call 2
Damaged package 2

Invoice error 2

Rust 6

Late delivery 7

Dent 8

When do you use Pareto charts?

❖ When your data can be arranged into categories.

❖ When the rank of each category is important.

PQ Systems' *TQT Practical Tools for Continuous Improvement* handbook provides more details about the types of data and tools for analysis. It also gives detailed information on tools for problem-solving and inter-preting control charts. Contact the PQ Sales Group about this product.