GAGEpack

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Welcome

Welcome

Thank you for choosing GAGEpack to meet your gage management needs! The purpose of this document is to explain in detail the many forms and features that can be found throughout the software. If you need more information or if you have any questions about GAGEpack, please feel free to contact us.

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What's new in GAGEpack 13

What's new in GAGEpack 13

To see the complete list of development notes documenting changes made to GAGEpack, go to ***Help*** > ***Documents*** > ***What's new***.

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About your GAGEpack documentation

About your GAGEpack documentation

GAGEpack documentation includes the following. Unless otherwise noted, these resources can be found in the ***Documents*** folder in the GAGEpack installation directory.

- ***GpUserGuide120.pdf*** - This is a PDF version of the GAGEpack user guide. It is located in the GAGEpack installation directory.
- ***Built-in Help*** - While using GAGEpack, you can press ***F1*** at any time to view the Help documentation for the screen you're currently using.
- ***Getting started with GAGEpack-SQL.docx*** – Step-by-step instructions for creating and connecting to the SQL Server database used by GAGEpack-SQL.
- ***Getting started with GAGEmail.docx*** – Step-by-step instructions for installing and configuring GAGEmail.
- ***Getting started with GAGEmobile.docx*** – Step-by-step instructions for installing and configuring GAGEmobile.
- ***GAGEpack Reporting Scheme130.doc*** – Explains the syntax used by GAGEpack's internal reporting engine. This document will be useful to anyone trying to learn how to modify or create GAGEpack reports or labels.
- ***Management Statistics in GAGEpack 13.0.doc*** – Explains the syntax used by the chart-rendering engine in GAGEpack's management statistics.
- ***Importing external calibrations into GAGEpack.doc*** – Explains how to use the ***Import external calibrations*** utility located under ***Utilities > Import > External calibrations***.

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About PQ Systems

About PQ Systems

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Software

SQCpack® combines powerful statistical process control techniques such as variables, attributes, and Pareto charting with flexibility and ease of use.

GAGEpack® builds a complete database of an unlimited number of measurement devices, instruments, and gages from which users can generate a variety of reports. It supports ISO 9000, QS-9000, ISO/TS 16949-2009, ISO/IEC 17025, and other standards.

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PQ Systems' consultants and trainers have extensive knowledge and experience in the areas of SPC, continuous improvement, ISO 9001, and trainer and leadership development in a wide variety of industries and organizations. In addition to customized in-house training, we offer public seminars.

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How to contact PQ Systems

How to contact PQ Systems

PQ Systems invites your questions and comments about our products and services.

Sales phone: 800-777-3020 or 937-885-2255

Sales email: sales@pqsystems.com

PQ Systems, Inc.

210 B East Spring Valley Road

Dayton, OH 45458

Call sales for:

- General information to help you decide to purchase or evaluate the software
- Place an order or to check the status of an order.

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

World Wide Web URL

http://www.pqsystems.com

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Technical support

Phone: 800-777-5060 or 937-885-2255

Email:support@pqsystems.com

Call PQ Systems' 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:

1. Have your license/serial number ready. It is listed in the ***About*** dialog box. You can access this dialog box by selecting ***Help*** > ***About*** from the menu.
2. Be at your computer, if possible.
3. Review the topic for which you have a question in the User's Guide and On-line Help.

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Maintenance support agreement

Maintenance support agreement

The product comes with an initial year of maintenance. After that, you must renew your product maintenance in order to ensure your continued access to the following great benefits:

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For additional details, go to:

http://www.pqsystems.com/support/MaintenanceSupportLicense.php

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Request for new features

Request for new features

PQ Systems wants to provide you with software that meets your quality needs. To do this, we need your input. If there is a feature, function, or operation that you would like to see in a future version of the software, please go to **Help > Feedback** or click here.

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Training and consulting services

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Getting started

Getting started

This chapter will discuss the initial setup of GAGEpack, including hardware and software requirements for installation, creating a new database, upgrading an existing database, and launching the software. In addition, we will examine the main menus and four main tabs to familiarize you with navigating within the program.

In this chapter

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Hardware and software requirements

Hardware and software requirements

In order to install GAGEpack, you must use a computer that is running an actively supported version of the Windows OS. For GAGEpack 13, this includes:

- Windows Vista
- Windows 7
- Windows 8.1
- Windows 10
- Windows Server 2008
- Windows Server 2012
- Windows Server 2016

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GAGEpack database overview

GAGEpack database overview

GAGEpack stores all gage information in a single database. In the standard version of the software, this is a Microsoft Access format database file with a .gpg extension. GAGEpack-SQL, on the other hand, uses a SQL Server database. In the following sections, we will be using the standard version of the software. For information about creating and using a SQL Server GAGEpack database, please see the document Getting Started with GAGEpack-SQL.

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Creating a new database

Creating a new database

To create a new GAGEpack database, go to ***File*** > ***New***. You will be prompted to browse to the location where the database should be saved, and to provide a name for the database.

Database files can be saved on any storage drive that your computer has access to. It is recommended that, if possible, the database be saved on a shared network storage drive. In most organizations, these drives are typically backed up on a regular basis. In addition, storing the database on a shared network drive will allow multiple users to interact with the database at the same time from different computers.

The database can be given any name that is a valid Windows system filename. Once you have provided the name, click ***Save***. GAGEpack will create the new database and immediately open it for your use.

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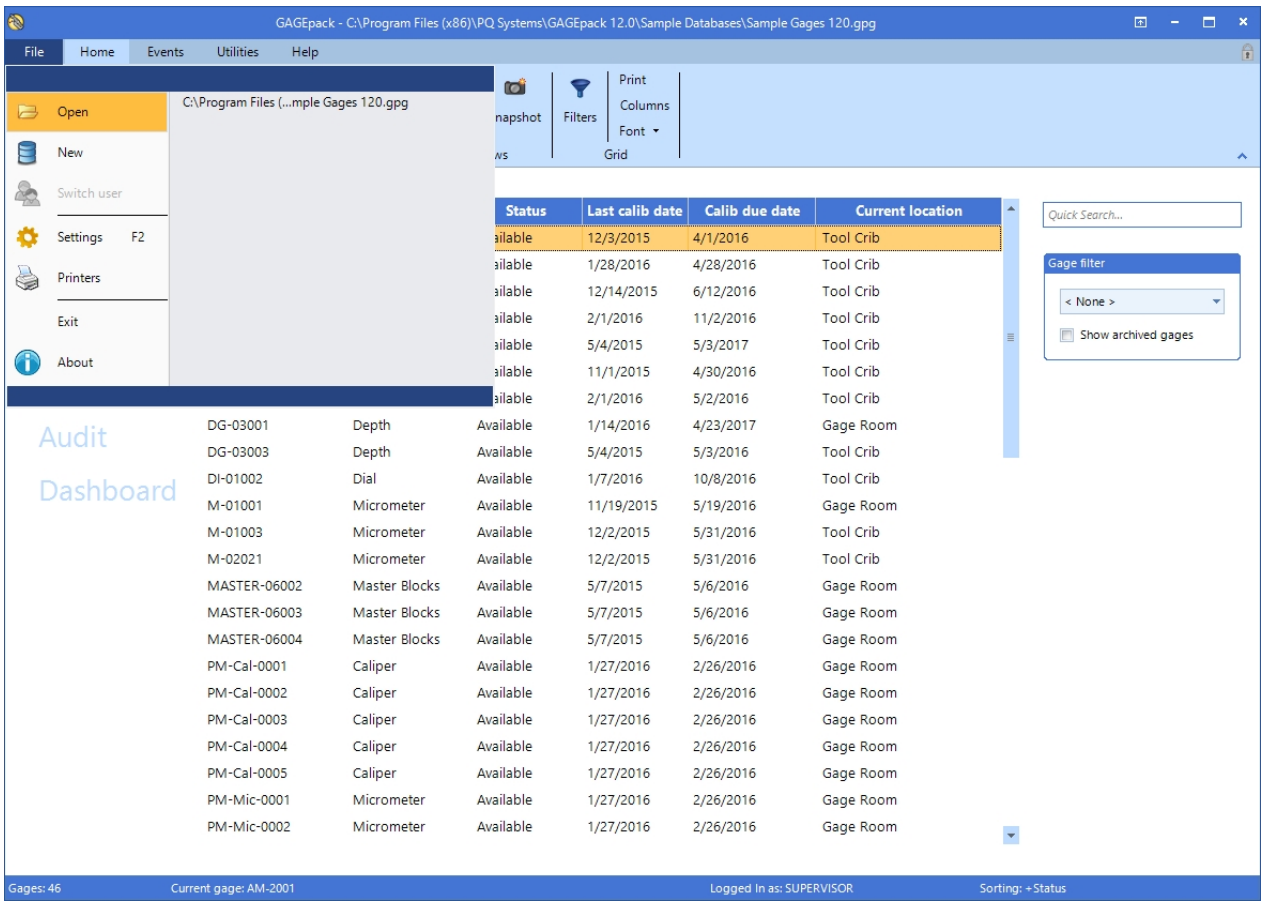
Upgrading an existing database

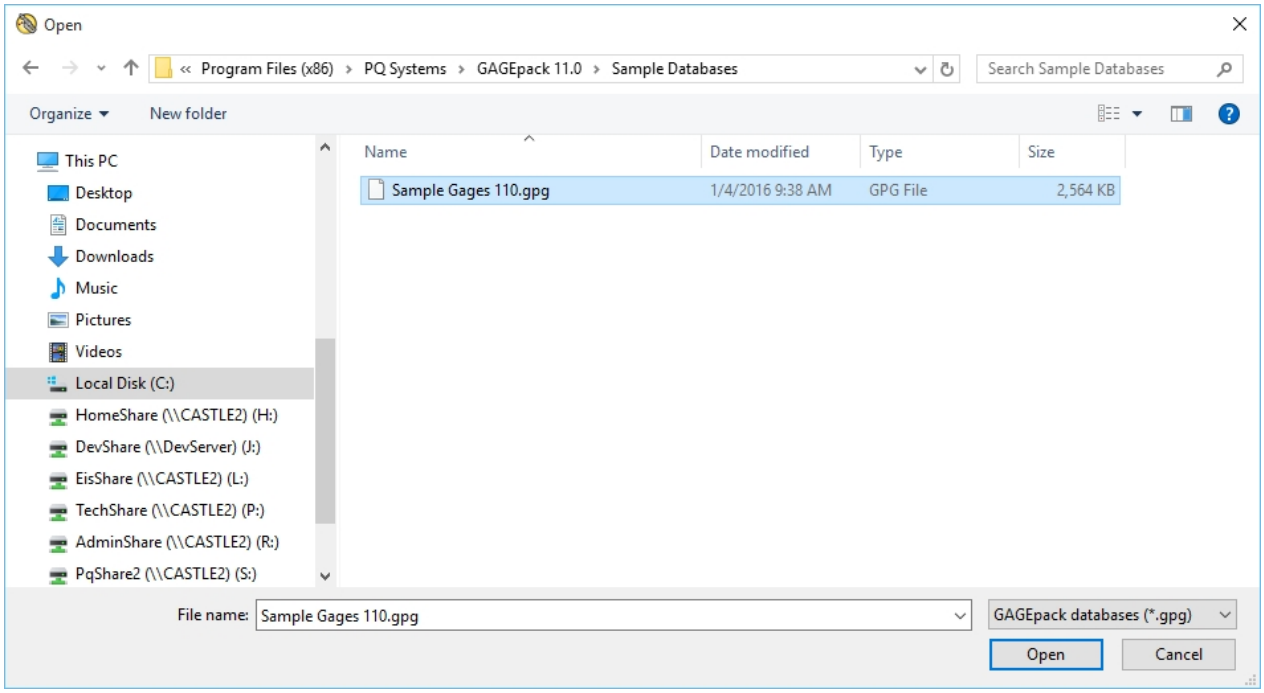
Upgrading an existing database

If you are upgrading to GAGEpack 13 from any version prior to v8.5, you must convert your database to v8.5 before continuing to v13. Please contact PQ Systems technical support if you need assistance with this.

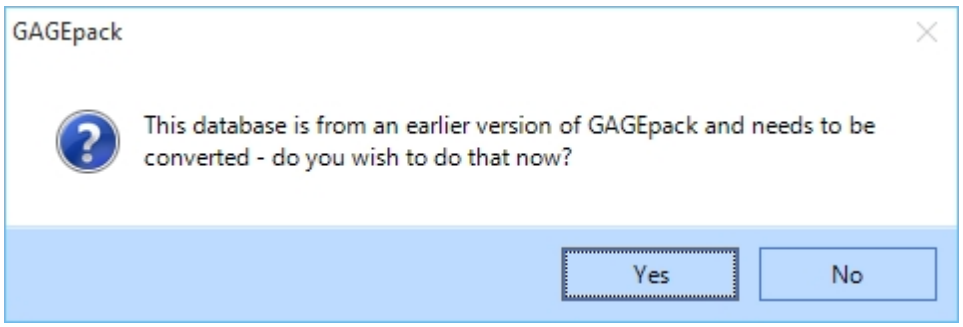
1. To convert a v8.5 or later database to v13, go to ***File*** > ***Open***.



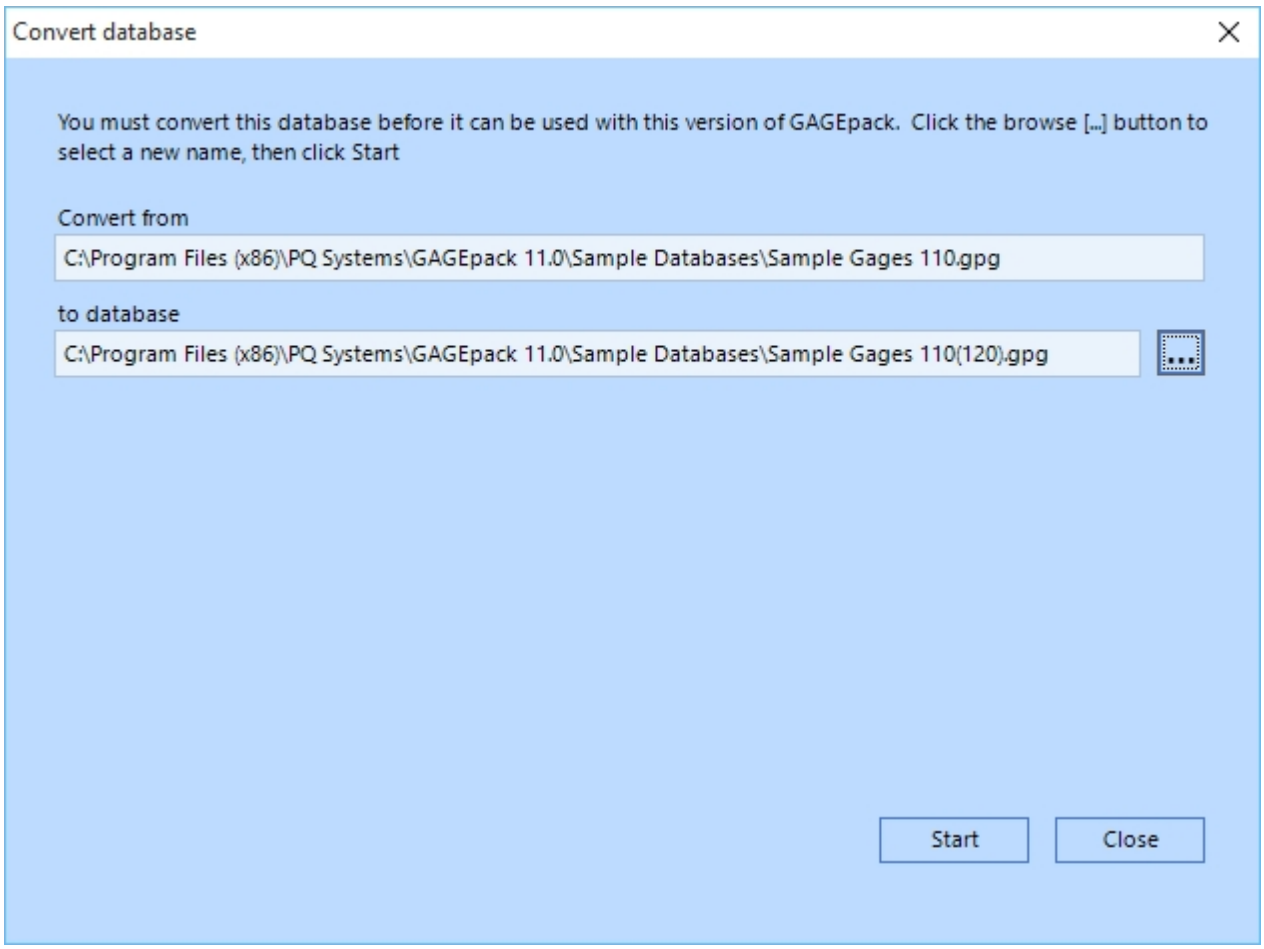
2. Browse to and select the database you would like to convert.



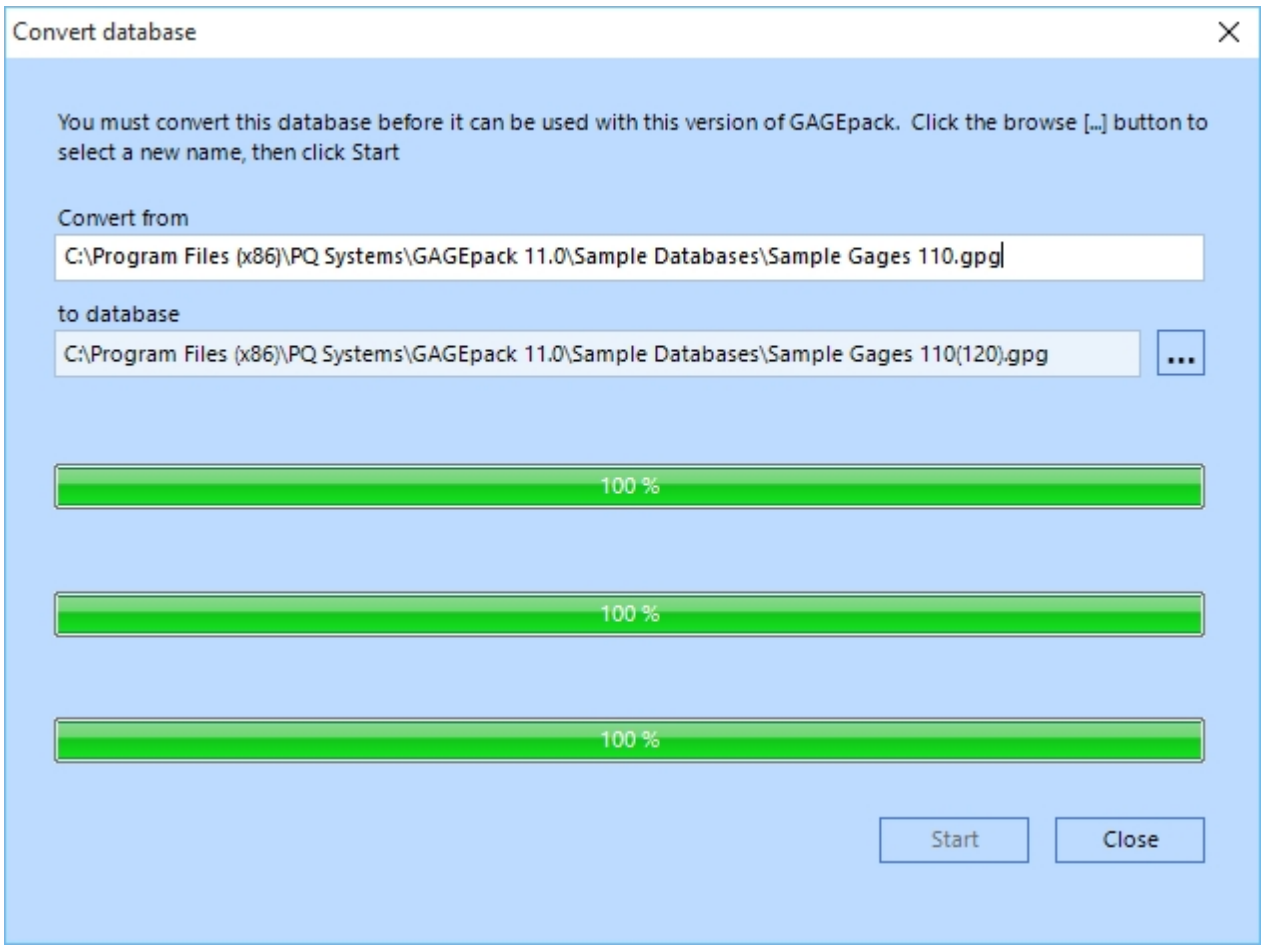
3. Click ***Yes*** to convert the database now.



4. Specify the target directory for the new database (if necessary).



5. Click ***Start***.



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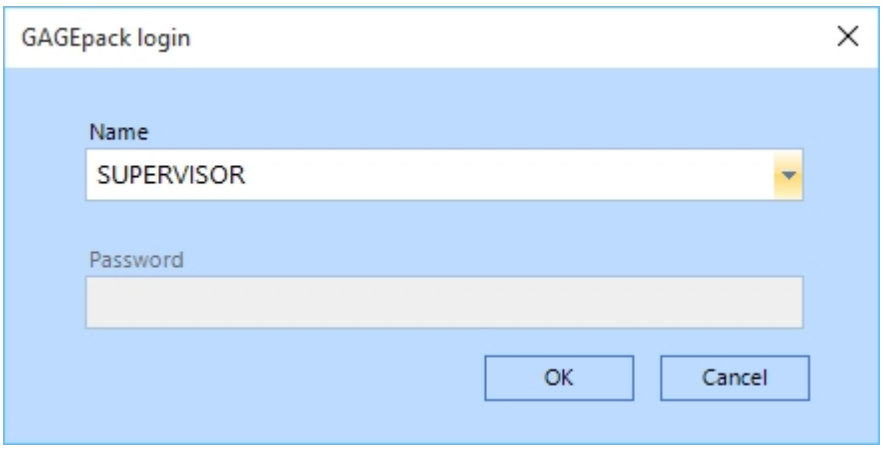
Starting GAGEpack

Starting GAGEpack

GAGEpack can be opened once it has been installed by double-clicking on the GAGEpack icon on the desktop, or by navigating to the GAGEpack folder from the Windows Start menu.

If the database GAGEpack is opening has security enabled, the first window to be displayed will be the login screen.



Enter your login credentials (if required) and click ***OK*** to continue.

Note: Please see Configuring GAGEpack for more details about user rights and database security.

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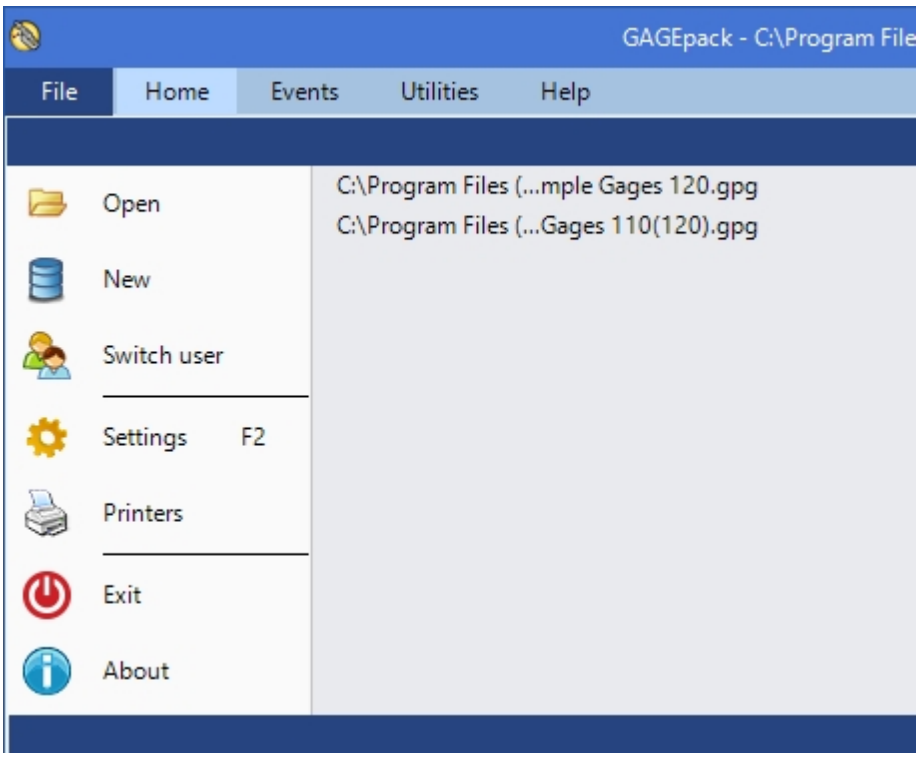
File menu

File menu



Open – Browse to and open a GAGEpack database. This action will close the current database, if there is one open already.

New– Create a new blank GAGEpack database.

Switch user – Log out and log in as a different user. This option is only available if database security is enabled.

Settings - Open the preferences window to configure GAGEpack options.

Printers – Specify which printer GAGEpack should use by default when printing documents or labels.

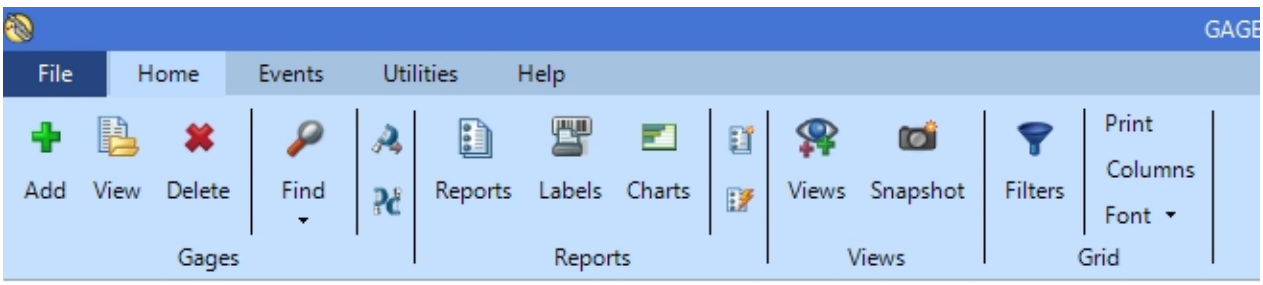
Exit – Close the program.

About - View system information, such as version and license numbers

The file menu also displays recently opened GAGEpack databases to allow quick navigation between several files.

Ribbon bar

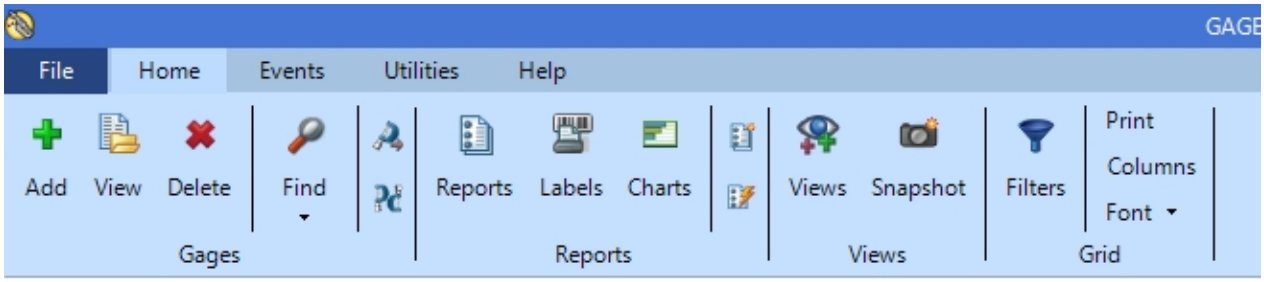
Ribbon bar



The ribbon bar at the top of the GAGEpack window contain functions that are available and useful from anywhere in the software. The tabs and buttons that are visible at any give time will change based on the current context.

Home

Home



Gages - The buttons in this section are used to interact with gage records. From here, gages can be added, viewed, edited, copied, found, or deleted.

Reports - These reporting tools are used to retrieve information from the database and display it in the given format.

Views - Used for creating and managing remembered states of the main form.

Grid - These controls are used to configure which rows and columns are available on the table showing on the current tab.

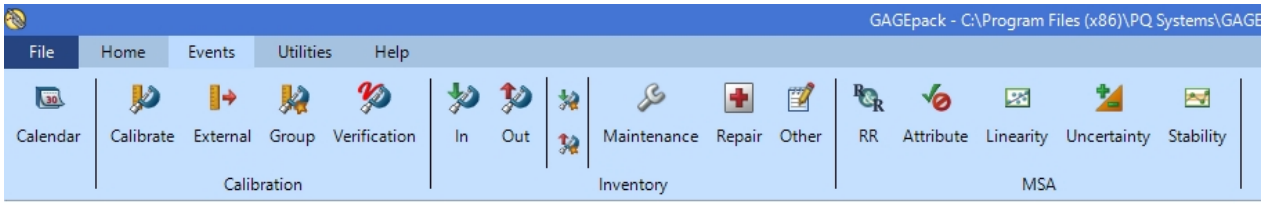
To do list - Tools used to share the content of the to-do list. This section is only visible on the Tasks tab.

History - Used to delete the selected gage event. This section is only visible on the History tab.

Dashboard - Used to print the dashboard. This section is only visible on the Dashboard tab.

Events

Events



The Events tab can be used to launch gage events. It is not visible on the Archive, Audit, or Dashboard tabs.

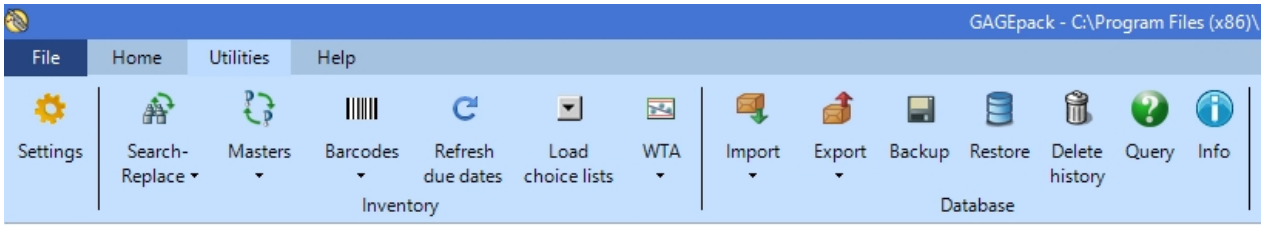
Calibration - Used to launch internal or external, single-gage or multi-gage calibrations.

Inventory - These are gage management events, such as check-ins, check-outs, maintenance, and repair events.

MSA - Measurement Systems Analysis. These studies can be used to determine the capability of your metrology practices.

Utilities

Utilities



The Utilities tab contains important but rarely used gage and database management tools.

Settings - Launches the Preferences window, which is used to configure GAGEpack's options.

Search and Replace - A set of utilities used for making a single change to many gages at once. Please see the associated section in the **Gage management** chapter for details.

Replace master gage - A utility which will search through the gage inventory and replace every reference to one master gage with a reference to a different master gage.

Master gage circular references - This utility will examine the master gages referenced on every master gage in the database to check for circular references, no matter how large the circle is.

Barcoding - From here, barcode labels can be created with the 1D or 2D wizard, printed, and scanned.

Refresh due dates - Forces GAGEpack to recalculate due dates for all active gages in the database. These calculations are normally done automatically, so this utility should rarely be needed.

Load choice lists - This utility automatically builds the system choice lists using the contents of existing gages.

WTA - Wear Trend Analysis - Utilities that examine the historical calibration results data for a gage to estimate when it will need to be replaced.

Import - A collection of utilities designed to bring raw data into the database from external sources.

Export - A collection of utilties designed to dump raw data to a universal format.

Backup - Used to manually create a backup copy of the current database.

Restore - Used to convert a previously created database backup into a full database.

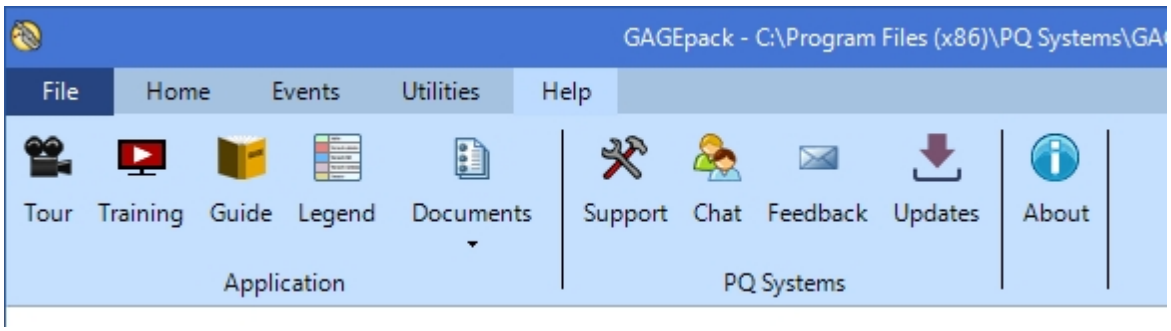
Delete history - This utility will erase all historical gage events that took place prior to a user-entered date.

Query - A utility for creating and managing custom SQL queries. Advanced users only.

Info - Displays the name and location of the current database file, along with a few statistics about the database.

Help

Help



The Help tab contains resources useful for learning how to use GAGEpack. They include training videos, the user guide, access to the PQ Systems support team, and technical documentation.

Tour - Launches a short introductory video for those just getting started with GAGEpack.

Training - Opens a web page with access to previously recorded webinar training videos.

Guide – A link to the user guide you are now reading

Legend - Shows the meaning of the color-coding being used on the current grid

Documents > Report scheme – This document explains the technical details of the reporting engine in GAGEpack

Documents > What's new – A complete list of all development notes from the recent upgrades and updates

Documents > Error log – Opens GAGEpack's error log in a text editor

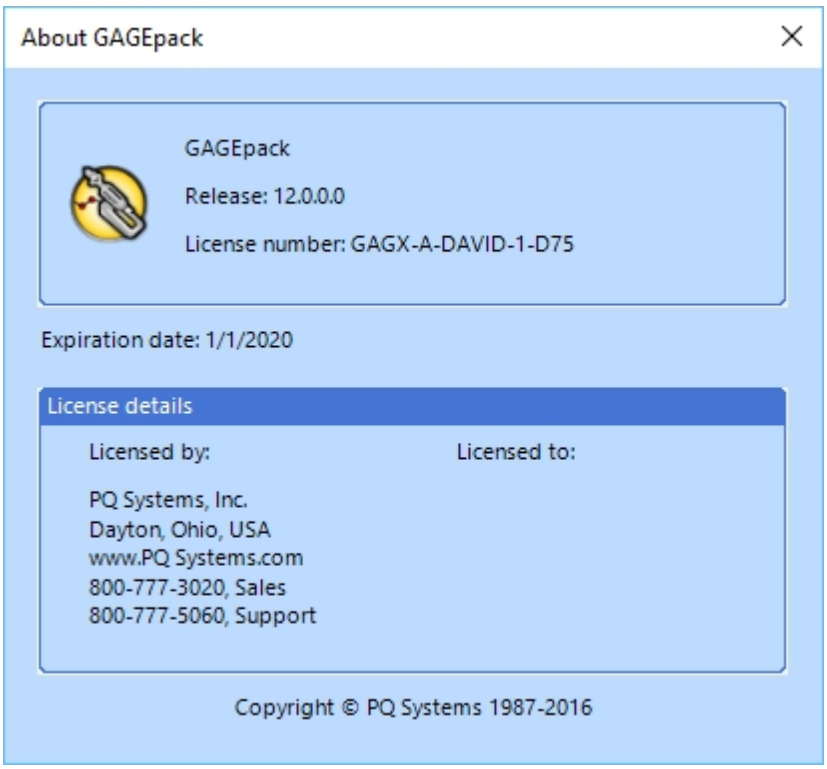
Support – Displays contact information for the PQ Systems technical support department

Chat – Launches an instant messaging chat interface with a PQ Systems representative.

Feedback – Allows the user to send a message directly to the GAGEpack development team with ideas for improving the software.

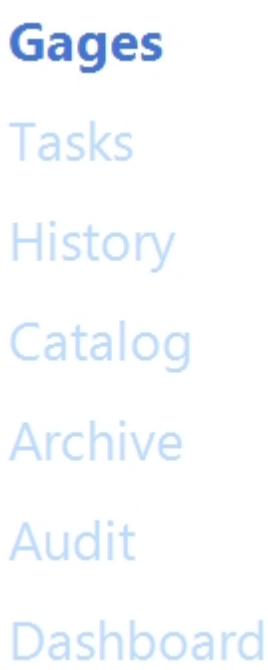
Updates – Opens a web page that will tell the user if there is a newer version of GAGEpack available for installation.

About - Displays the release number, license number, expiration date, and license details for this installation of GAGEpack.



Tabs

Tabs

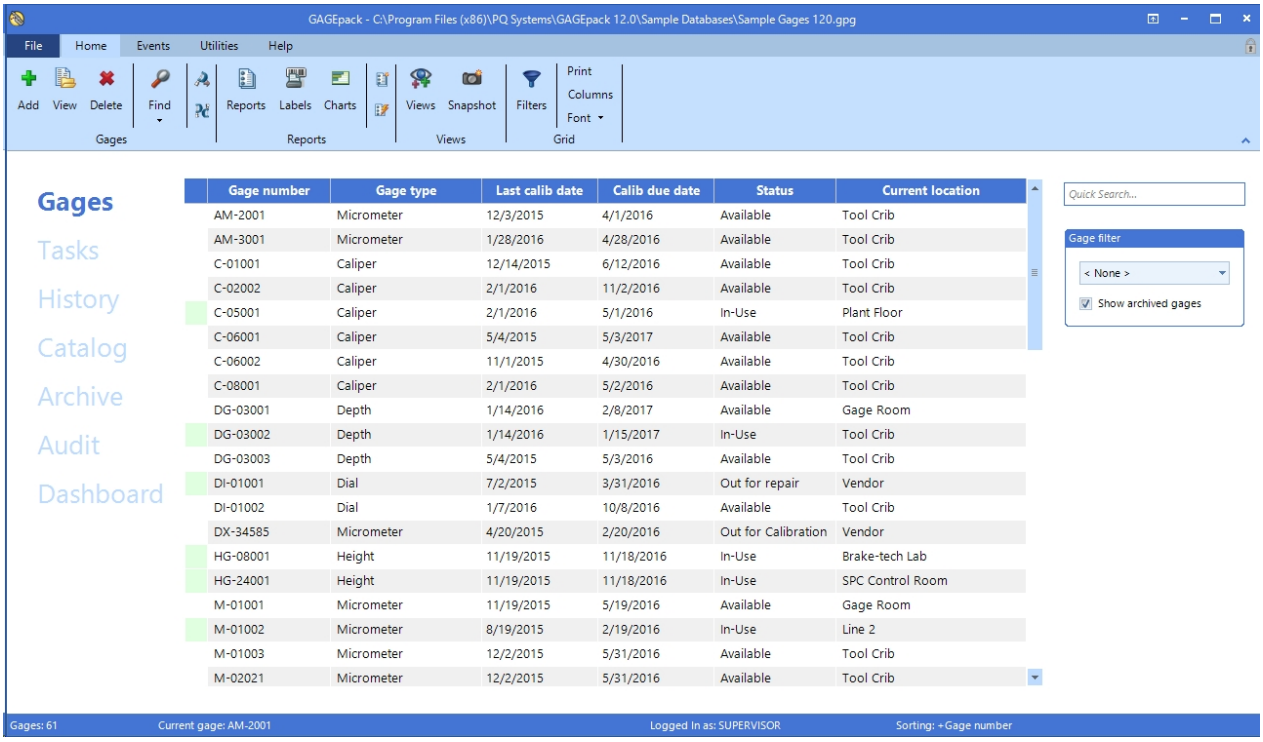


The main user interface in GAGEpack is divided into seven tabs. They are labeled and can be selected from the left side of the screen. This section will discuss the purpose and primary features of each of these four tabs.

In This Section	See Also
Tasks tab	Getting started
Inventory tab	Hardware and software requirements
History tab	GAGEpack database overview
Catalog tab	Creating a new database
	Upgrading an existing database
	Starting GAGEpack
	Menus

Gages

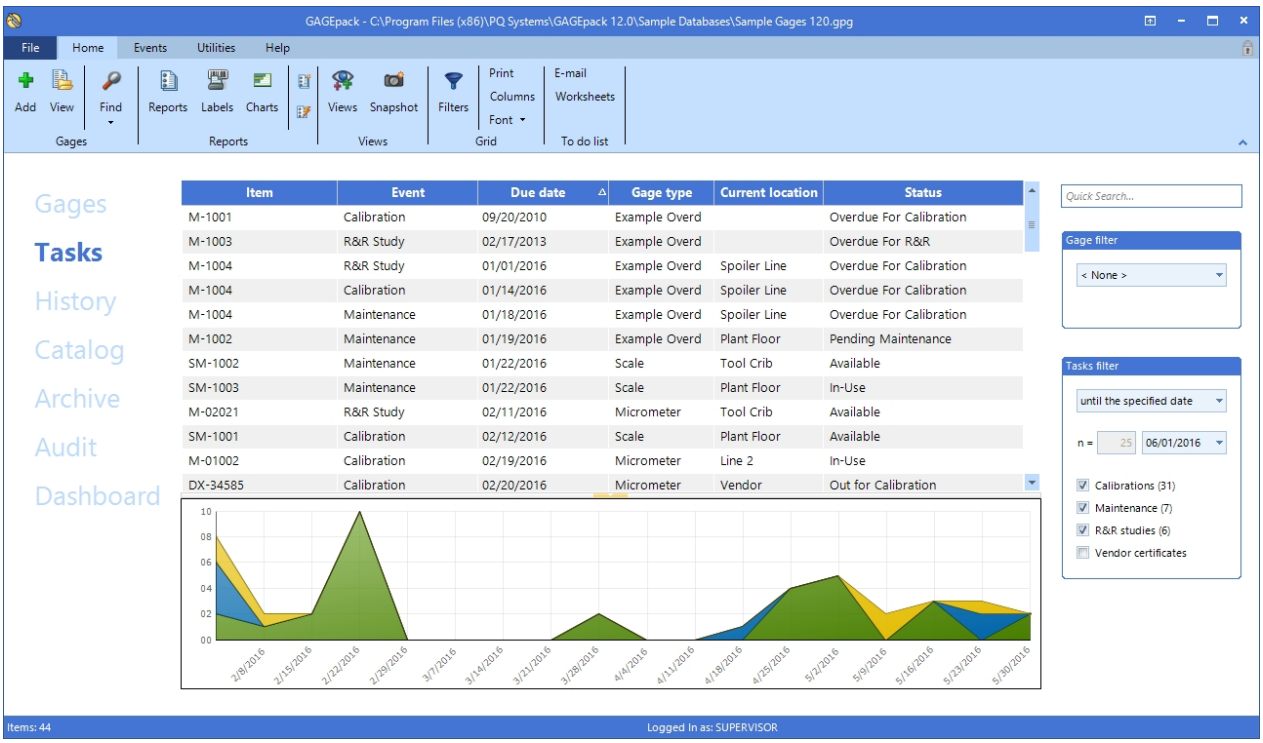
Gages



The **Gages** tab displays a list of every instrument that GAGEpack is currently tracking. Every row represents a single gage and can be double-clicked to view the gage card. By default, the grid shows only Active gages, but the **Show archived gages** box can be checked to include Archived gages as well.

Tasks

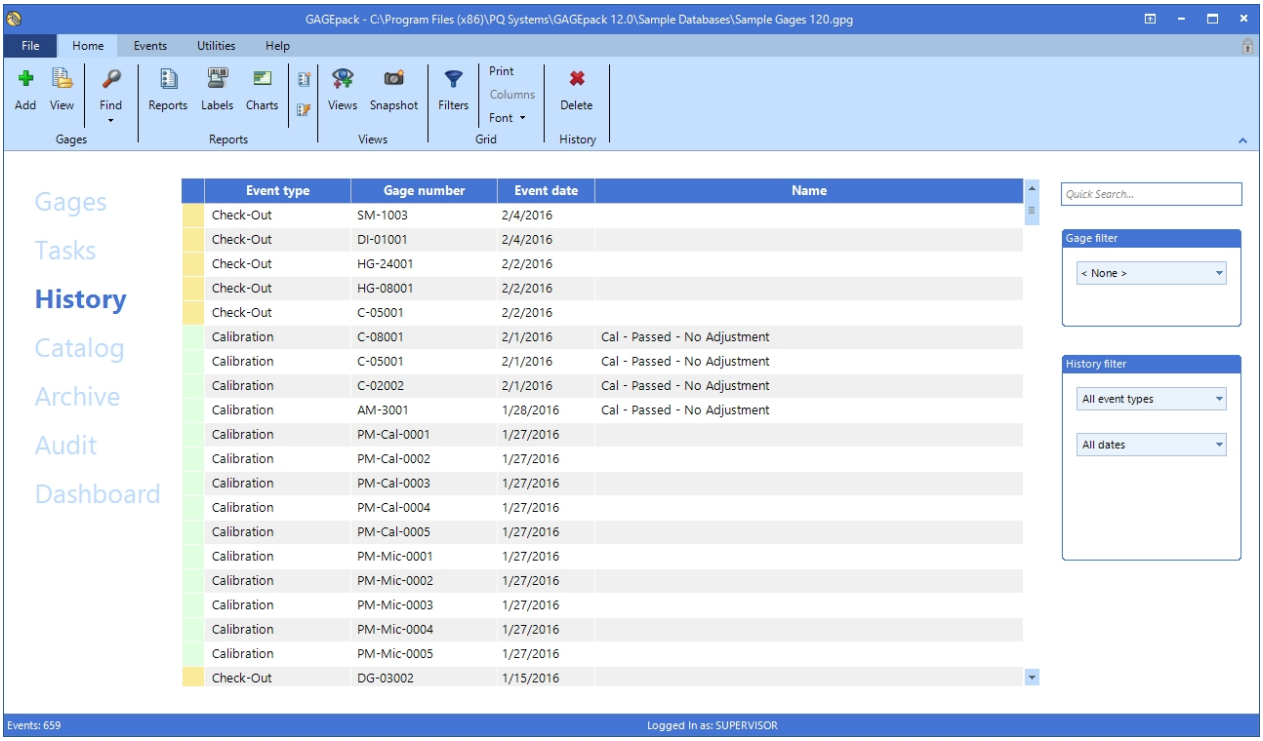
Tasks



The **Tasks** tab displays the list of upcoming gage servicing events. Double-clicking on any row in the grid will launch the associated event for completion. The chart at the bottom is used to visualize the distribution of the upcoming workload across the selected date range. The **Tasks filter** panel on the right allows the user to specifiy the date range and which types of events should be included on the list.

History

History

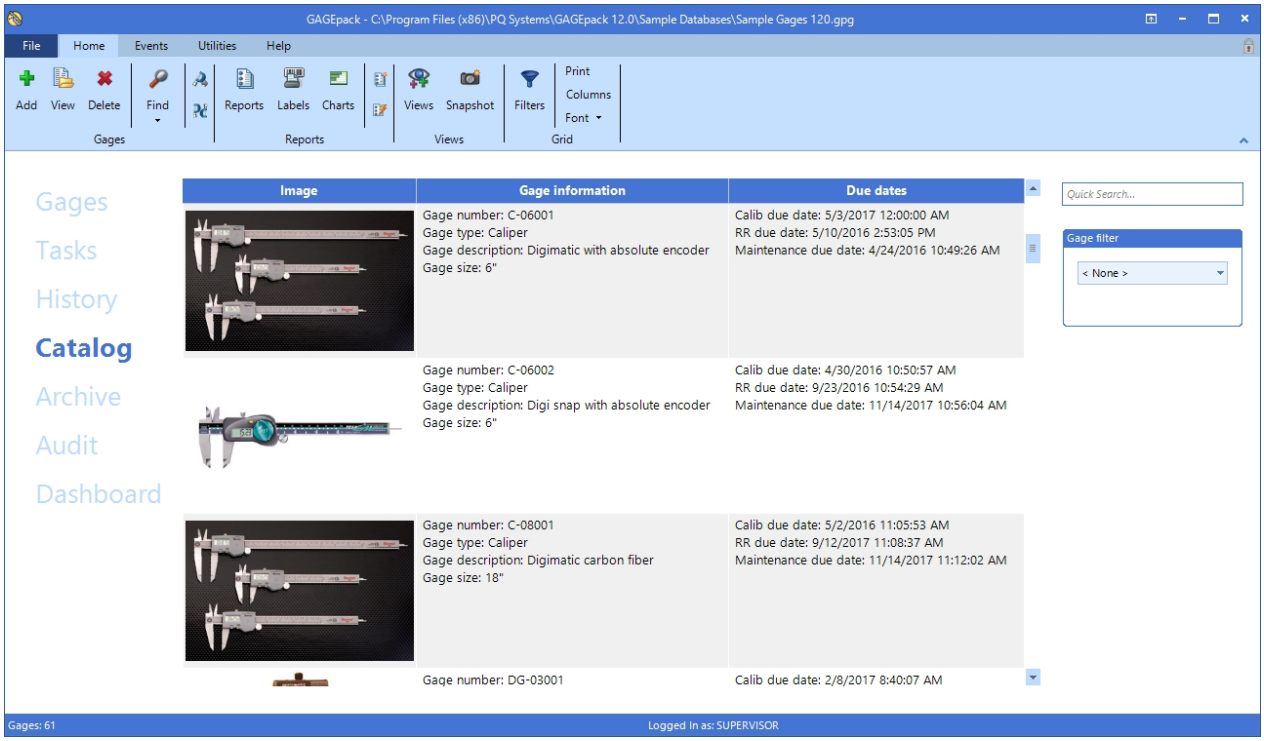


The history tab contains a complete record of every gage event stored in the database. These records are

color-coded by event type. Any event can be examined in more detail by double-clicking on the associated row. The dropdown controls in the filter panel on the right can be used to filter the list to show a specific event type and/or time frame.

Catalog

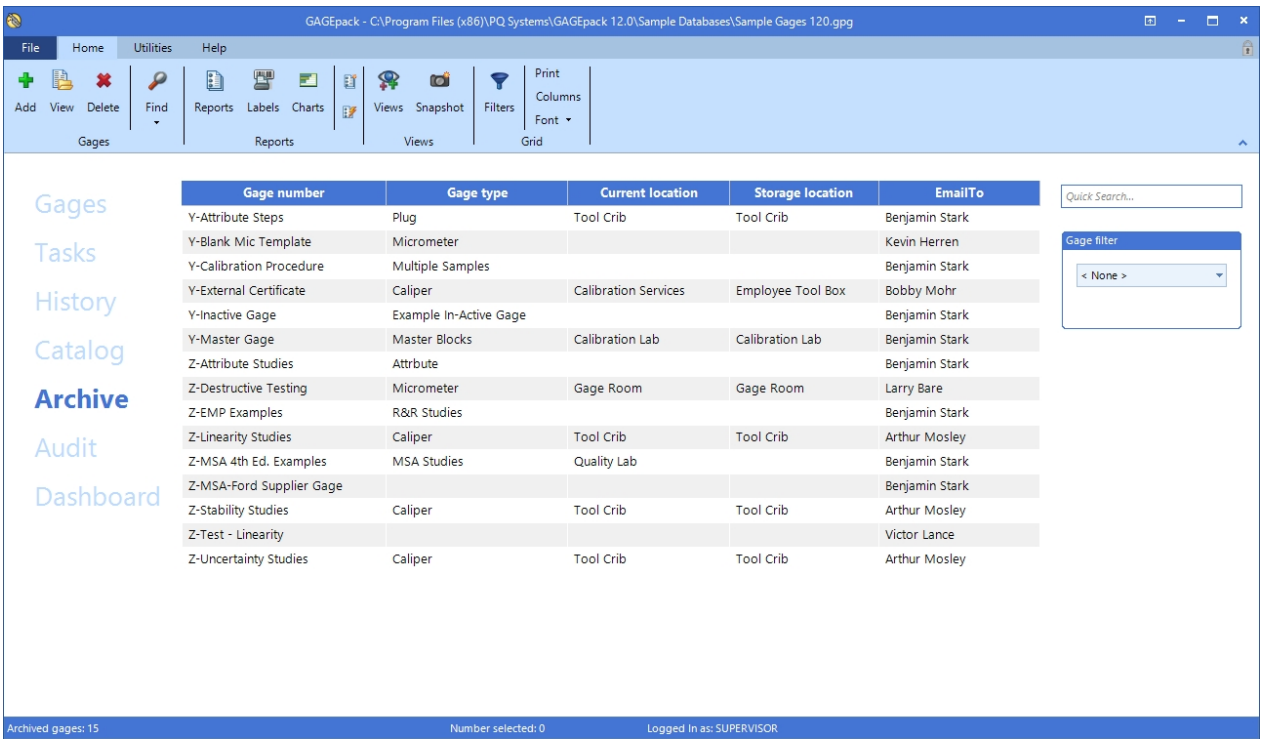
Catalog



The **Catalog** tab is similar to the inventory tab, in that it displays a complete list of your gages. The primary difference between the two is that the catalog tab also displays a digital image of the gage. The **Catalog** is hidden by default. To show/hide it, go to **Settings > Local settings > General**

Archive

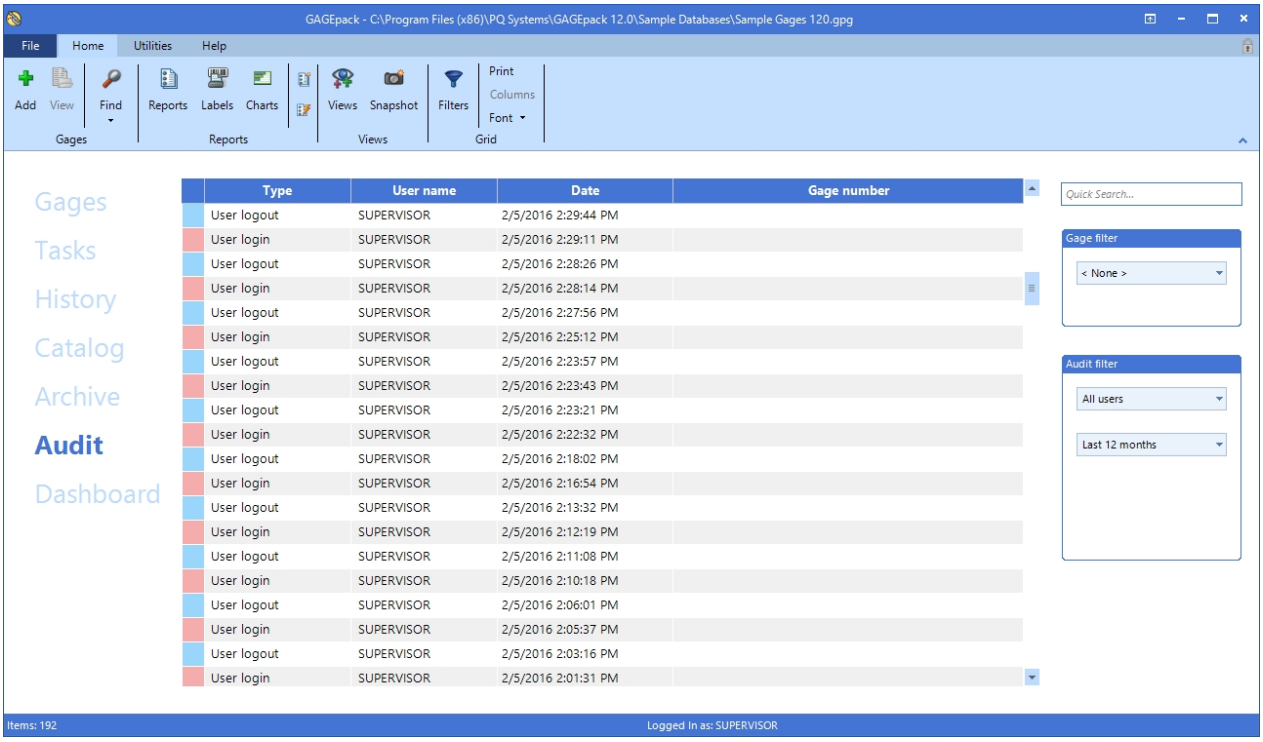
Archive



The **Archive** tab is a listing of all of the retired gages in the system. All information about archived gages, including historical events, calibration and study data, and audit records is preserved; this tab exists simply to move inactive records from the main **Gages** tab workspace and reduce clutter.

Audit

Audit

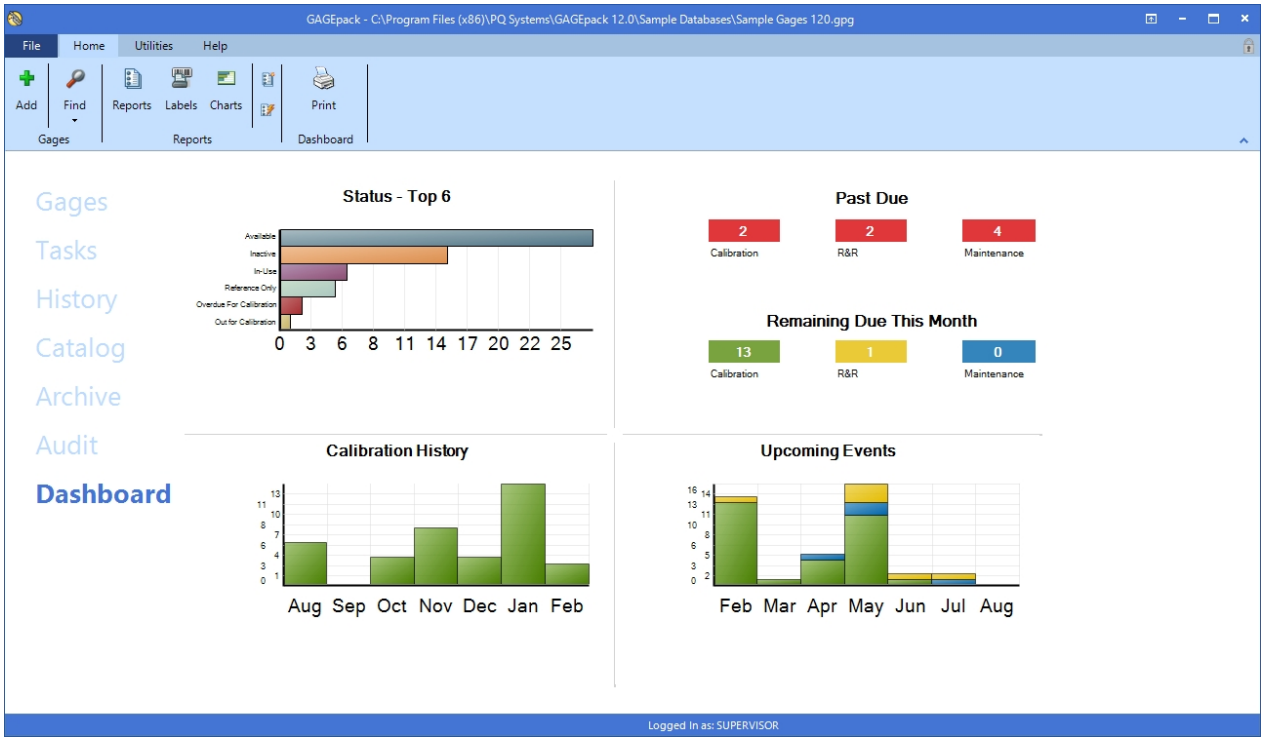


If auditing is enabled, the **Audit** tab will display a record of every trackable event in the specified time frame. Trackable events include users logging in and out, gages or gage events being added, edited, or

deleted, and more. The panel on the right side can be used to specify particular users or a date frame. This tab is only visible to users who have sufficient rights to review the audit trail.

Dashboard

Dashboard

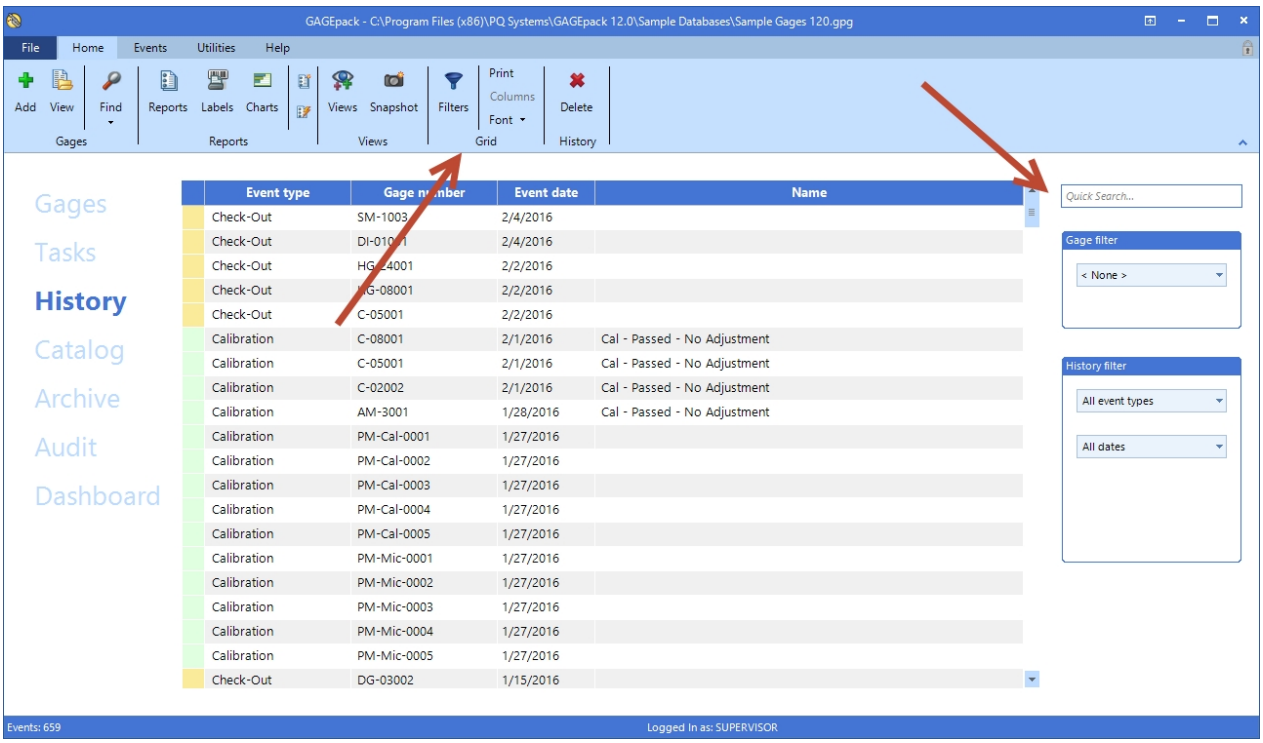


The **Dashboard** offers summary information about the gage inventory, historical calibration events, and upcoming gage events. Clicking on any button or bar on the dashboard will display a list of the relevant gages or events.

Grid controls

Grid controls

All tabs other than the Dashboard share a set of controls useful for interacting with the tab grids. These controls can be found on the **Home** tab of the ribbon bar and in the global filter panel on the right side of the main screen.



Filters - Can be used hide any gages that do no match a given criteria. Please see the **Gage management** chapter for details on how to use filters.

Print - Print the currently-visible grid, including all rows and columns being displayed.

Columns - Used to specify which columns should be visible on the grid. This option is not available on the History and Audit tabs.

Font - Sets the font size for all grids

Quick search - Typing in this box will hide all rows in the current grid that do not contain text that matches what was typed.

GAGEpack files and folders

GAGEpack files and folders

This chapter will examine the purpose and contents of the folders that are created in the GAGEpack directory during installation. It also discusses various files that GAGEpack interacts with during regular usage.

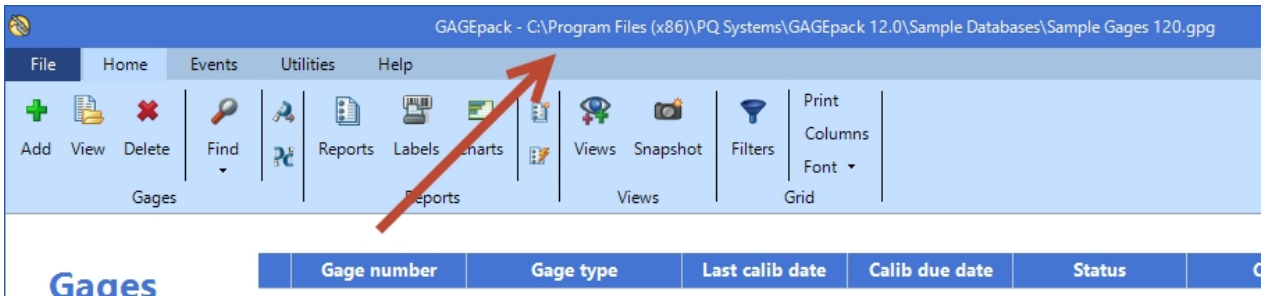
In this chapter
GAGEpack databases
Databases backups
Restoring gage databases from backup
Folders

GAGEpack databases

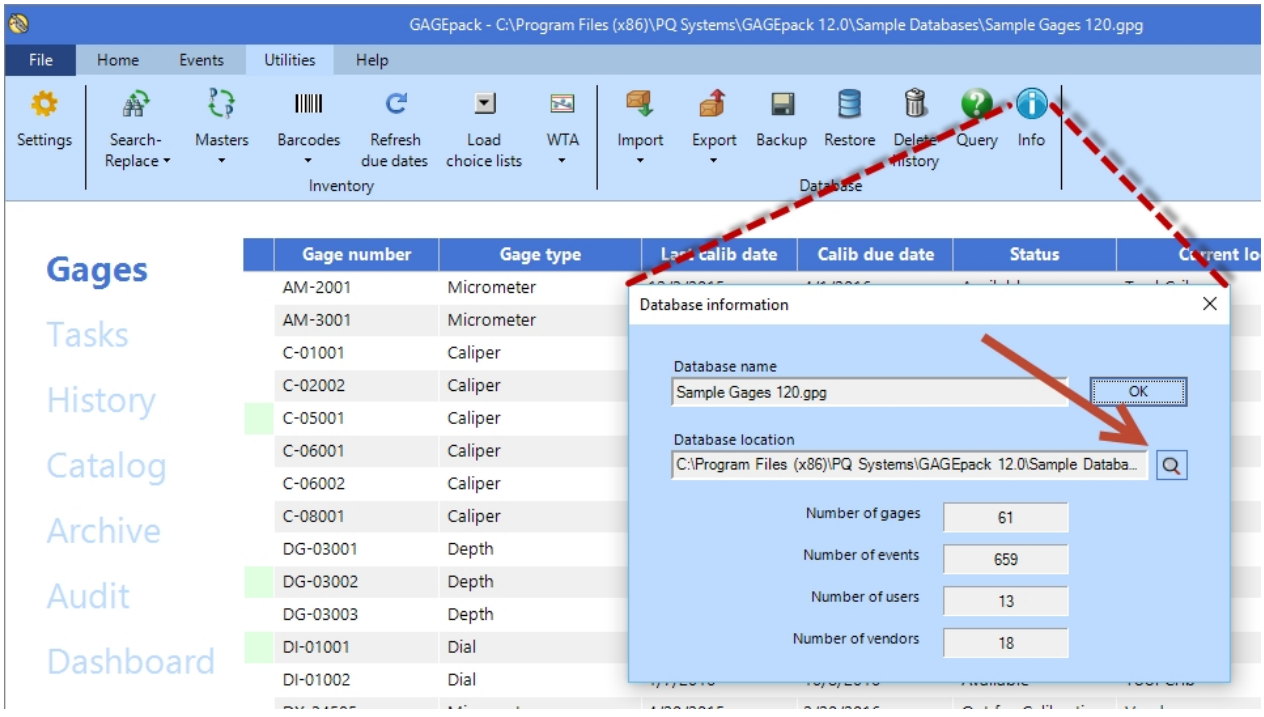
GAGEpack databases

All gage information, including peripheral content such as gage history, users, vendors, choice lists, parts, devices, etc, is stored in a single database file. The standard version of GAGEpack uses a Microsoft Access database with a .gpg extension, while GAGEpack Enterprise uses a SQL Server database.

The folder-path and filename of the currently open database is always displayed at the top of the GAGEpack window for easy reference.



To navigate quickly to the folder where the database is stored, go to ***Utilities > Info***, and click the ***View*** icon.



Note: GAGEpack Enterprise will display and link to the database connection file (.dbc) rather than the database itself. Please see the document 'Getting Started with GAGEpack Enterprise' for more details.

See Also

- GAGEpack files and folders
- Databases backups
- Restoring gage databases from backup
- Folders

Databases backups

Databases backups

In This Section	See Also
Backing up gage databases on exit	GAGEpack files and folders
Backing up an open gage database	GAGEpack databases
Setting the backup directory	Restoring gage databases from backup
Setting the number of backups to be made	Folders

Backing up gage databases on exit

Backing up gage databases on exit

GAGEpack can be set to create a backup of a database file when the program is closed. If there are multiple users and the database is in use (open) on another computer, a backup will not be made. When the last user exits with the database open, a backup of the database will be made with the same name as the database, except that the extension will be: .GB1. The default directory for the backup file is the directory labeled ***Backup***, which is created during the install. It resides under the GAGEpack directory on each individual computer where GAGEpack is installed.

To enable automatic database backups, go to ***Setup*** > ***Preferences*** > ***Local settings*** > File paths and set ***Number of automatic database backups to keep*** to a value greater than 0.

See Also
Databases backups
Backing up an open gage database
Setting the backup directory
Setting the number of backups to be made

Backing up an open gage database

Backing up an open gage database

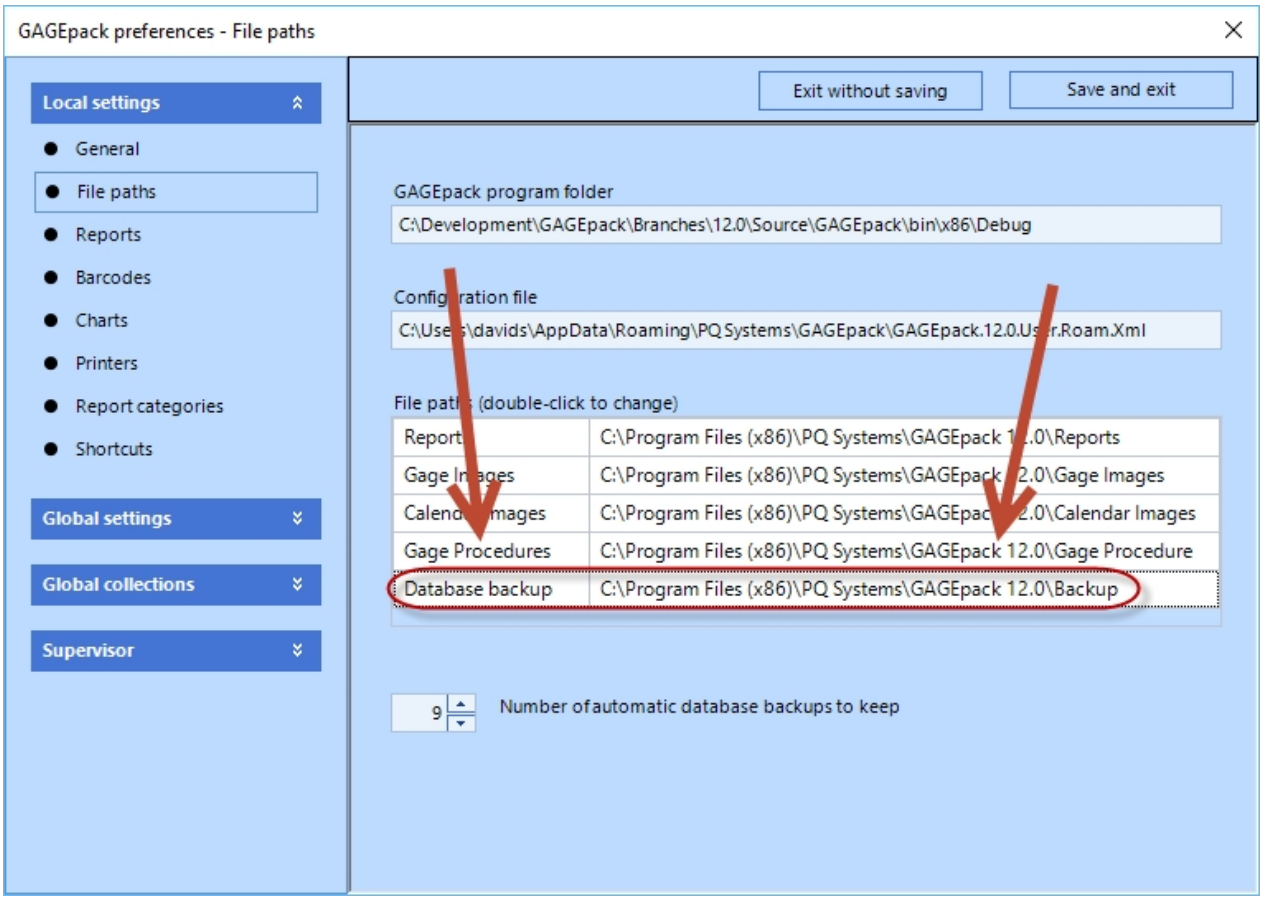
If the database is in use and the ***Backup*** icon is on the toolbar, the current database can be backed up by clicking on the ***Backup*** icon. However, this requires that the database is not open for any other users.

See Also
Databases backups
Backing up gage databases on exit
Setting the backup directory
Setting the number of backups to be made

Setting the backup directory

Setting the backup directory

The backup directory should be on a different drive from the drive used for gage database. To specify which folder should be used to store the database backups, go to ***Setup*** > ***Preferences*** > ***Local settings*** > ***File paths***, and double-click on the row for Database backup. Browse to the desired folder and click ***OK*** to save.



See Also

Databases backups

Backing up gage databases on exit

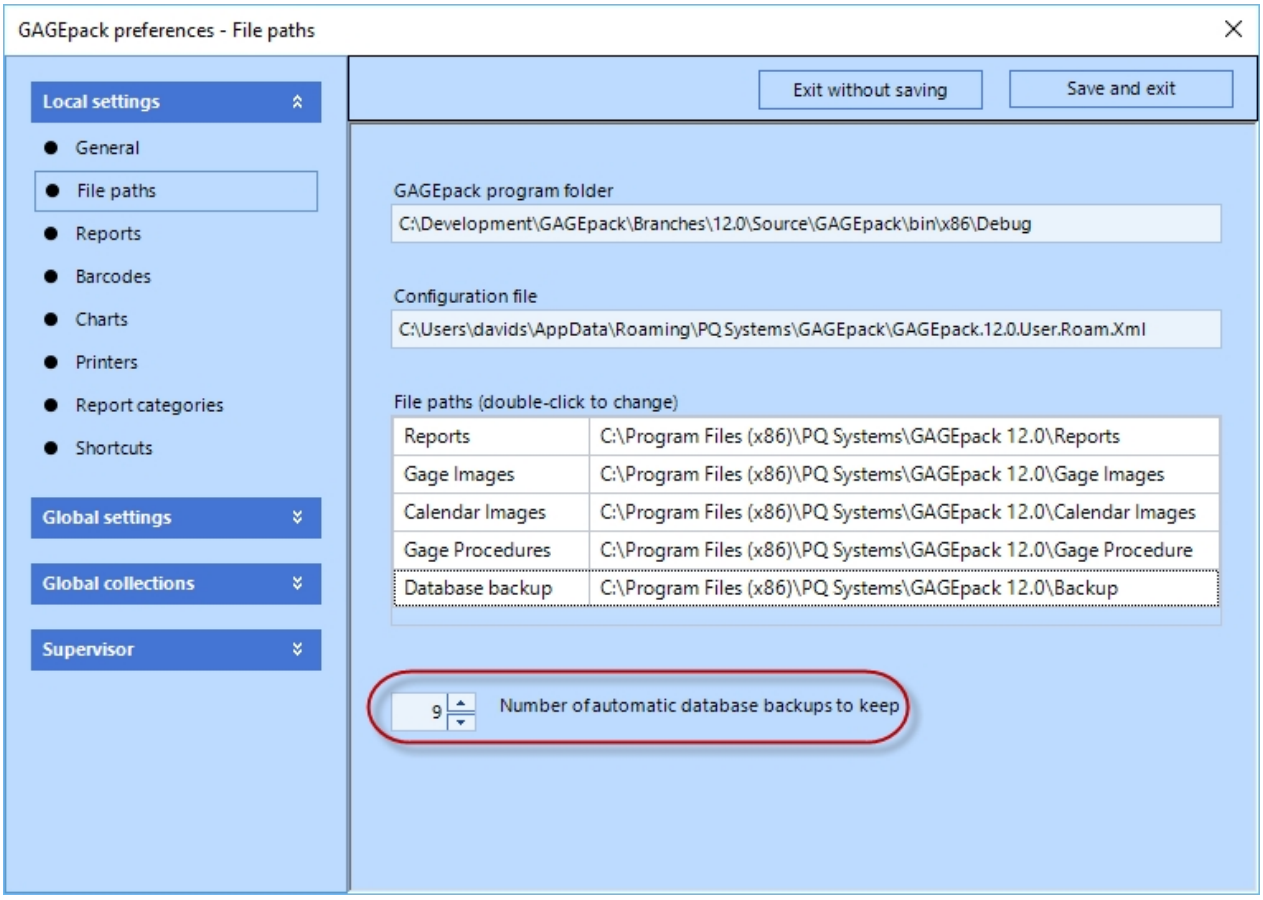
Backing up an open gage database

Setting the number of backups to be made

Setting the number of backups to be made

Setting the number of backups to be made

On the ***File paths*** window just below the database paths is a box for specifying the ***Number of automatic database backups to keep*** before discarding them. The numbers of backups can range from 0 to 9.



See Also

[Databases backups]

[Backing up gage databases on exit]

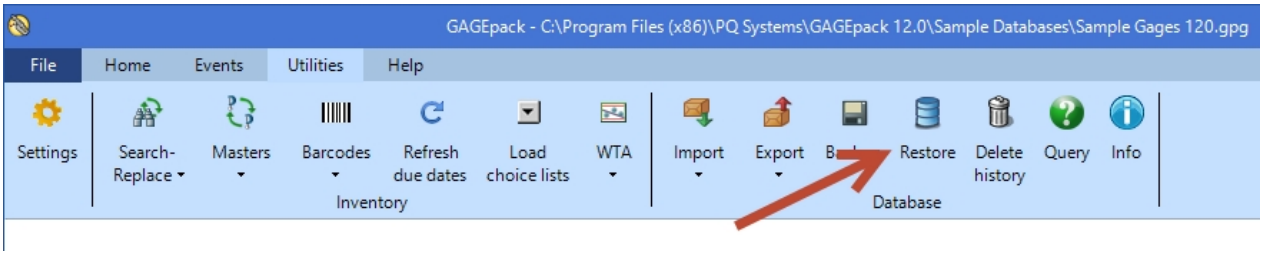
[Backing up an open gage database]

[Setting the backup directory]

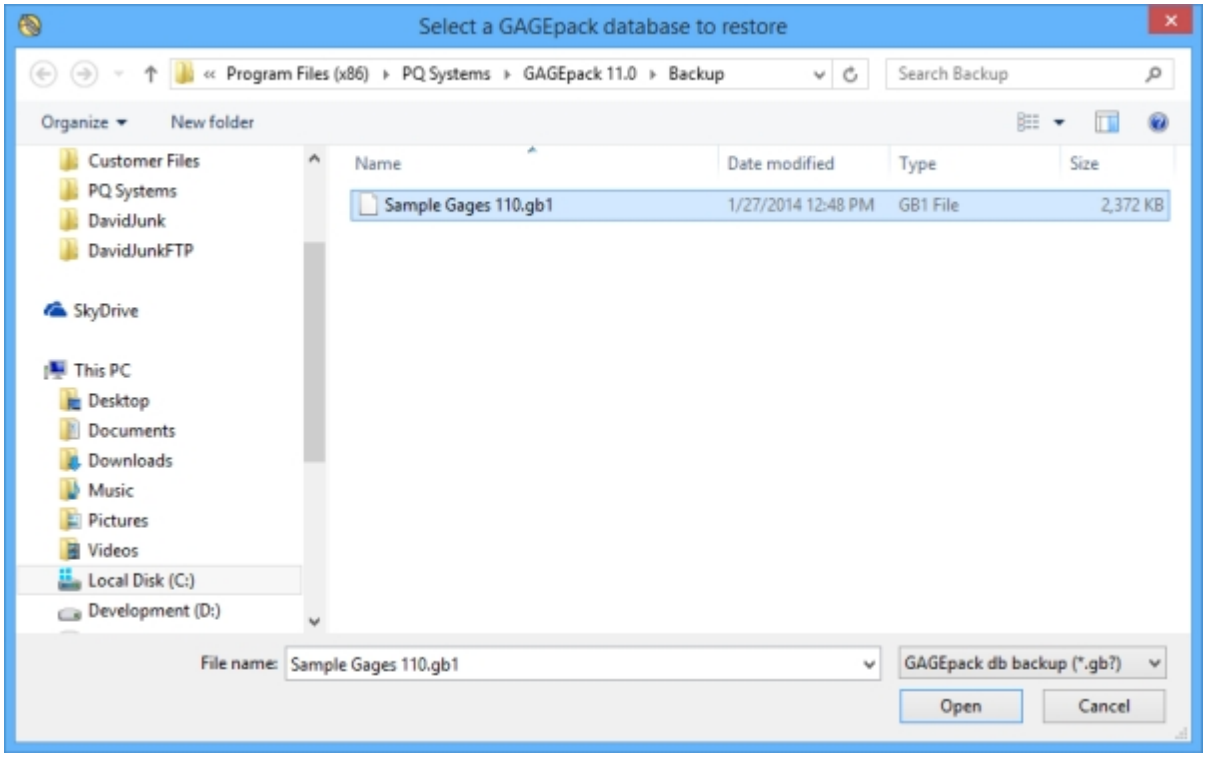
Restoring gage databases from backup

Restoring gage databases from backup

To restore a database backup, go to ***Utilities*** > ***Restore***.



Browse to the backup file you would like to restore and click ***Open***.



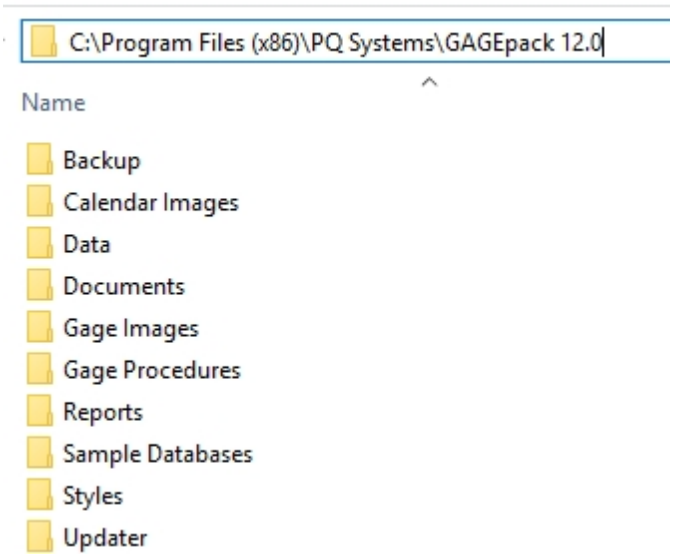
Navigate to the location where you would like to save the new database, give it a name, and click ***Save***.

See Also
GAGEpack files and folders
GAGEpack databases
Databases backups
Folders

Folders

Folders

When GAGEpack is installed, a series of folders is created in the installation directory.



Backup – This is where database backup files are stored by default.

Calendar Images – The pictures used on the GAGEpack calendar are stored here. Users can change which pictures are used by saving their own images in this folder and using the same file naming convention (01.jpg, 02.jpg, etc)

Data – An empty folder intended to be an optional place to store the gage database file.

Documents – This folder contains a series of Word documents relevant to the use and/or setup of GAGEpack.

Extras – This folder will be present only if GAGEmail or GAGEpack Remote are installed. The application files necessary to run those two programs are stored here.

Gage Images – Contains a collection of sample gage images that are used in the sample gage databases. Users can store their own gage images in this folder.

Gage Procedures – Contains a collection of sample gage calibration procedures that are used in the sample gage databases. Users can store their own procedures in this folder.

Reports – Every report, label, management statistic, and certificate in GAGEpack is created using one of the files in this folder. These files can be opened in any text editor.

Sample Databases – Contains two databases filled with example gage information. These databases are included to give users an idea of what a fully operational gage database looks like. These files also contain many example MSA study events for users to examine.

Styles - These .isl files contain the visual components that GAGEpack uses to render the user interface. They control the color, font, gradients, shading, etc that appear throughout the software. These files are not editable by users.

Updater – This folder contains the program PQ.Silent.Updater, which handles the automated minor version updates. There is no reason for a user to ever launch this program. In fact, it will do nothing if launched manually.

See Also
GAGEpack files and folders
GAGEpack databases
Databases backups

Restoring gage databases from backup

Configuring GAGEpack

Configuring GAGEpack

In this chapter we will examine the collection of customization options that are accessible under ***File > Settings***.

In this chapter
Local settings
Global settings
Global collections
Supervisor

Local settings

Local settings

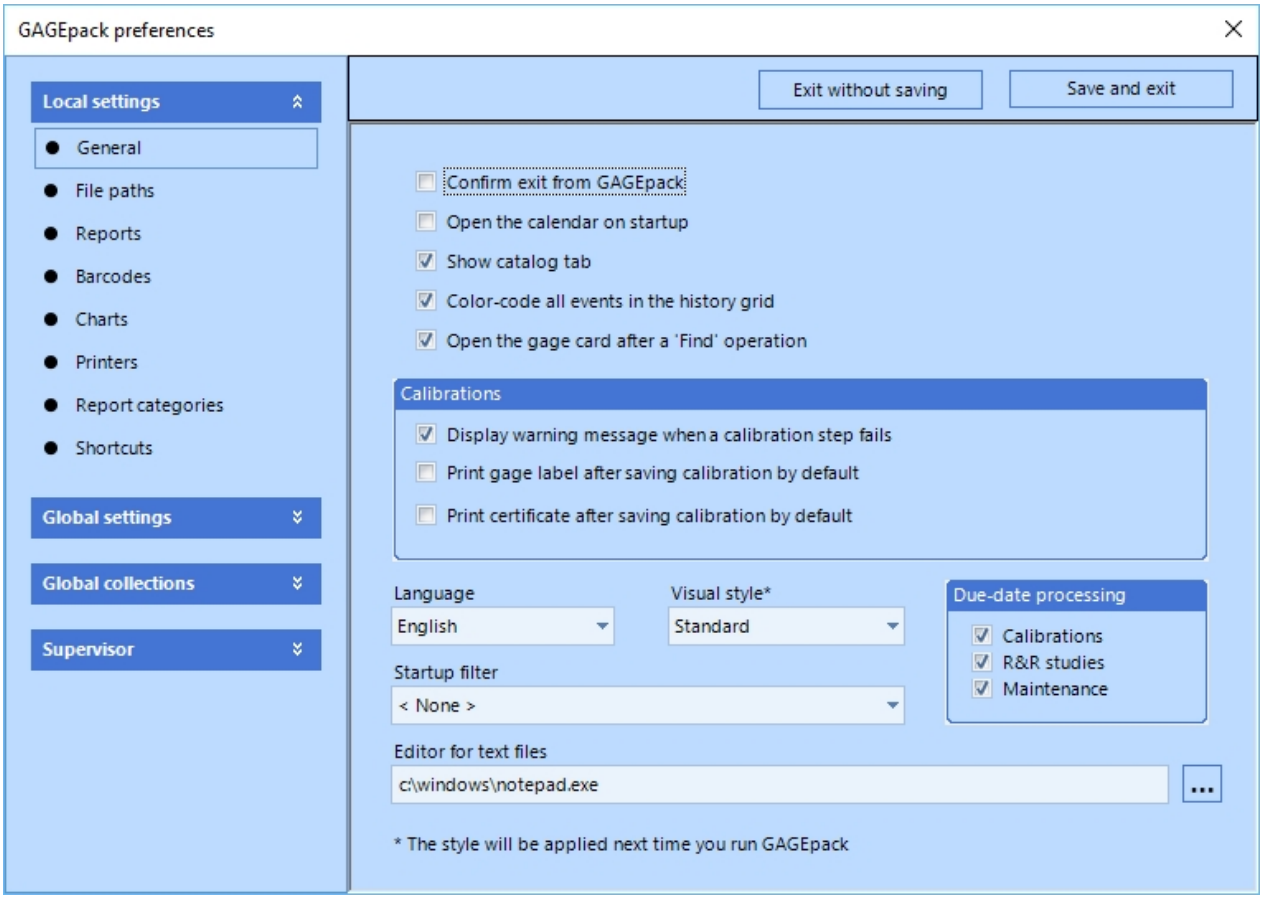
Any changes made to the settings in this section will only effect the current user.

In This Section	See Also
General	Configuring GAGEpack
File paths	Global settings
Reports	Global collections
Barcodes	Supervisor
Charts	
Printers	
Report categories	

General

General

This page contains an assortment of options that are not immediately related to each other, but that nonetheless belong in the 'Local settings' section. This page can be thought of as a collection of miscellaneous options.



Confirm exit from GAGEpack – If this box is checked, the user will be presented with an 'Are you sure you want to exit?' dialogue box when closing GAGEpack.

Open the calendar on startup – If this box is checked, the calendar will automatically be displayed whenever GAGEpack is opened.

Show catalog tab – The catalog tab is hidden by default. It will be displayed if this box is checked.

Color-code all events in the history grid – This option refers to both the global history tab and the gage-specific history tab found on the gage viewing form. If this box is checked, this grid will be color-coded based on event type.

Open the gage edit form after a 'Find' operation – One of the buttons on the default toolbar is 'Find a specific gage.' This tool allows the user to type in a gage number to find it on the list. If this box is checked, the gage form for the specified instrument will open automatically once the find operation has been completed.

Display warning message when a calibration step fails – While completing a calibration event, if a user enters a value that is outside of the tolerance limits, he or she will be notified with a popup box.

Print gage label after saving calibration by default – There is a checkbox in the bottom left corner of every calibration event form labeled 'Print gage label after saving event.' If this option is enabled, the box on the event form will automatically be checked when the form is opened.

Print certificate after saving calibration by default – There is a checkbox in the bottom left corner of every calibration event form labeled 'Print certificate after saving event.' If this box is checked, that box will automatically be checked when a calibration form is opened.

Language – This dropdown box allows the user to switch between the different language translations available in GAGEpack.

Visual style – This dropdown box allows the user to choose the visual theme of the user interface that will be used throughout the software.

Startup filter – This dropdown will display a list of all the filters that are currently available in the active database. If a user selects a filter from this list, GAGEpack will automatically apply that filter to the inventory grid whenever GAGEpack is opened.

Editor for text files – This field allows the user to specify the folder path and filename for a text editing program. This is the program that Windows will launch whenever the user tells GAGEpack to open up a text file for editing. By default, GAGEpack will use Notepad.

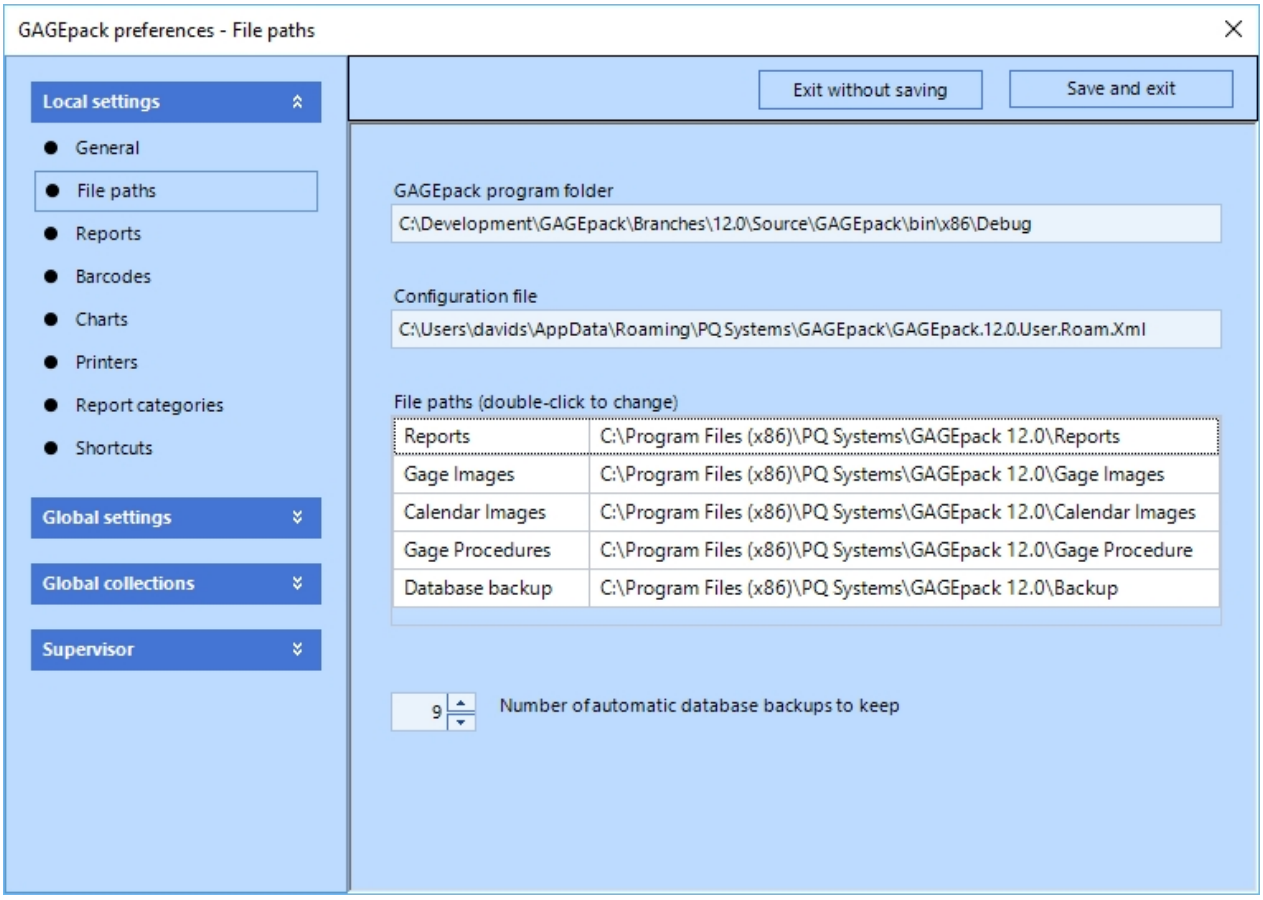
Due-date processing – This series of checkboxes allows the user to tell GAGEpack which types of recurring gage events to keep track of. Unchecking one of these events will hide the associated tabs on the gage form, stop calculation of due dates for these events, remove the relevant color-coding from the inventory grid, and remove the events from the to-do list, along with several other similar changes.

See Also
Local settings
File paths
Reports
Barcodes
Charts
Printers
Report categories

File paths

File paths

This page contains a collection of folder paths and filenames that represent the locations on the computer or the network where GAGEpack is storing and looking for certain files.



GAGEpack program folder – This is the directory where GAGEpack is installed.

Configuration file – This is the location and name of the file where GAGEpack stores most of the user-specific preferences. This file is accessed by GAGEpack every time the software is opened (to retrieve and apply the settings) and every time the software is closed (to save the settings). This file can be opened in any text editor.

File paths – This table displays and allows editing of the folders where GAGEpack stores the types of files shown in the first column. Any of these folder paths can be edited by double-clicking on the associated row.

Number of automatic database backups to keep – If the number shown in this box is greater than 0, GAGEpack will automatically make a backup copy of the database and store it in the folder listed under the 'File paths' table shown above. GAGEpack will now allow more than N backup copies to be saved in this folder, where N is the number displayed in the box. If saving a new backup file would result in too many database backups, the oldest backup will be deleted.

See Also

Local settings

General

Reports

Barcodes

Charts

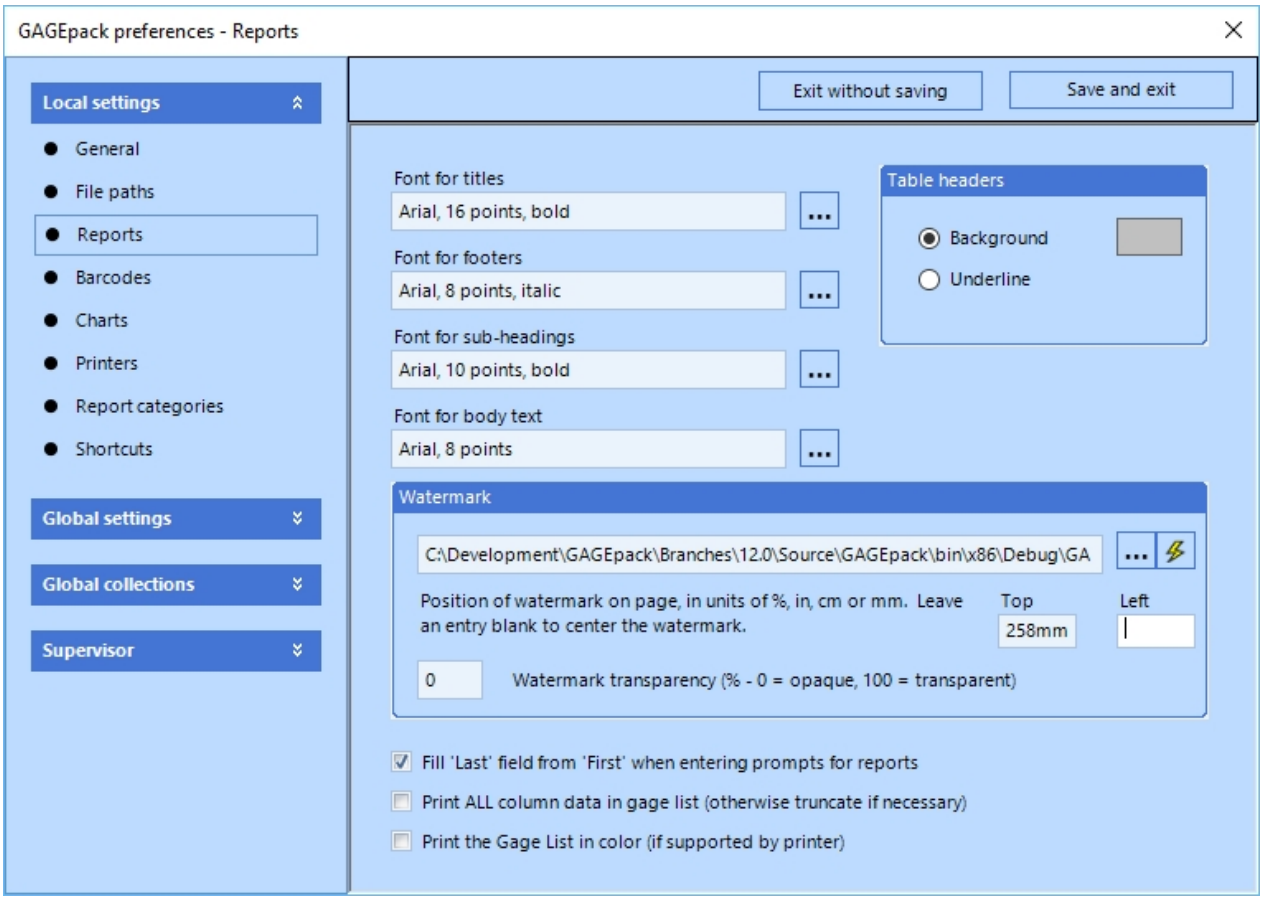
Printers

Report categories

Reports

Reports

This page allows the user to adjust certain visual aspects of the reports that are generated from within GAGEpack.



Font for - The buttons to the right of each of these four fields open a new window that can be used to change the font type, font size, and bold/italic states of the report text mentioned.

Table headers – Whenever a grid is generated on a report, the first row will contain column headers. This option can be used to change the background color of this row or replace the coloring with a simple underlining.

Watermark – The watermark is an image that will be displayed automatically on every report generated. This box can be used to adjust three aspects of the watermark: (1) which image should be used, (2) its position on the page, and (3) its transparency. To remove the watermark entirely, leave the first field blank by clicking the lightning bolt icon.

Fill 'Last' field from 'First' when entering prompts for reports – Several reports will prompt the user for some input before being displayed. These prompts typically take the form of a range, meaning the user must provide a 'From' value and a 'To' value. If this box is checked, the 'To' value will be automatically populated to match the 'From' value. The 'To' value can be edited if necessary.

Print ALL column data in Gage list (otherwise truncate if necessary) – This checkbox refers to the report that can be generated by right-clicking on the main inventory grid and selecting ***Print gage list***. If this box is checked, rows will be expanded so that the complete content of every cell is visible on the page. Otherwise, the content will be abbreviated so that all the columns can fit.

Print the Gage List in color (if supported by printer) – If the inventory tab is color coded and this box is

checked, those colors will be transferred to the report that is generated by right-clicking on the main inventory grid and selecting ***Print gage list***.

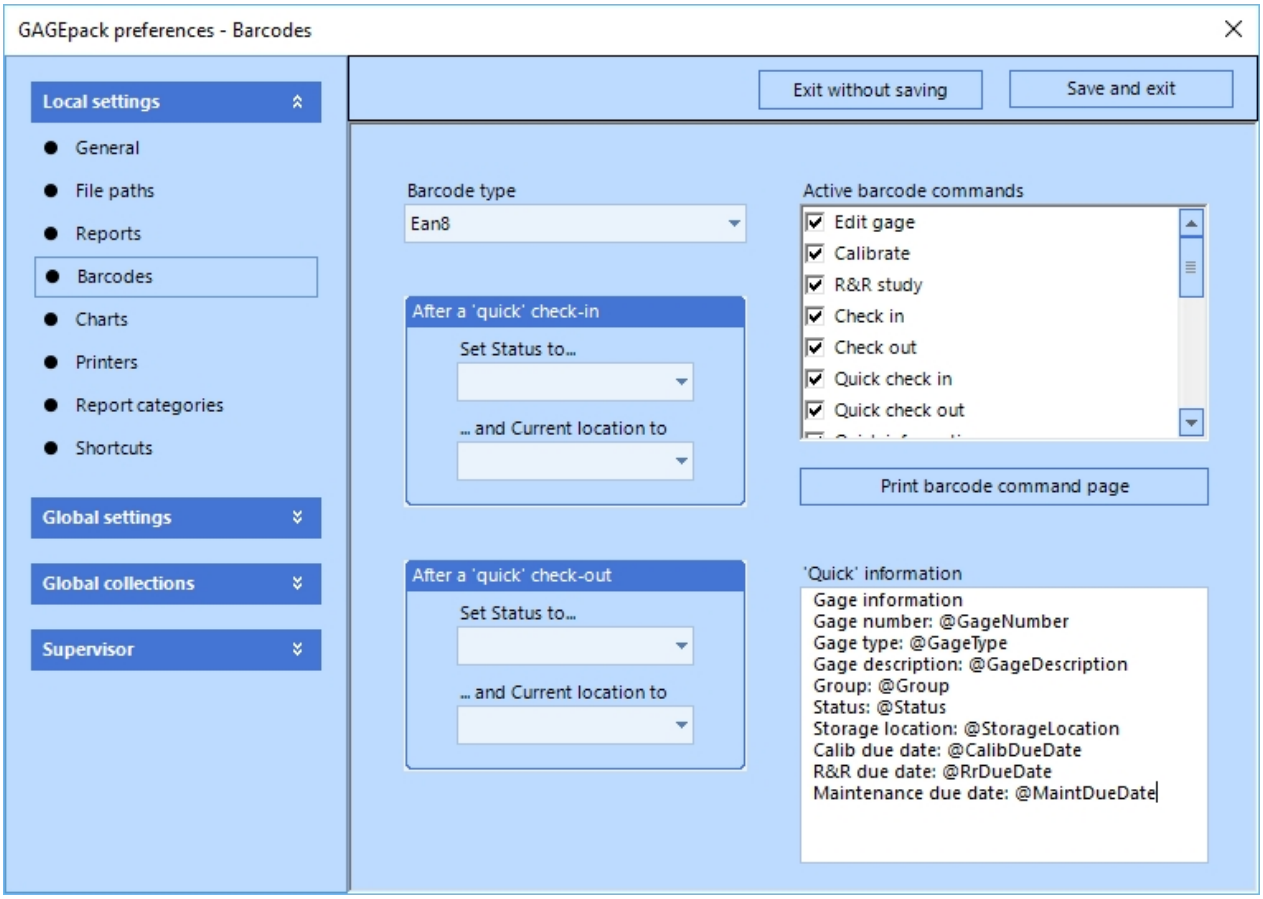
See Also

Local settings
General
File paths
Barcodes
Charts
Printers
Report categories

Barcodes

Barcodes

These settings primarily apply to barcode labels, including what type of barcode format to use, how to respond to certain events, and what barcoded events should be included on the command page.



Barcode type – This dropdown box contains a list of all of the barcode formats that GAGEpack recognizes. This should be configured before any gage labels or command pages are printed.

After a 'quick' check-in/out – A 'quick' check in/out is a special type of event whereby the user scans an event barcode and the gage barcode and the gage is checked in/out without having to provide any extra

information. These two options allow the user to specify the status and current location of any gage that passes through one of these events.

Active barcode commands – This contains a list of all of the event types that can be triggered with a barcode scan. Any event type that is checked on this list will be included on the command page when it is printed.

Print barcode command page – This button will generate a printable report that displays a barcoded representation of every event type that is checked on the 'Active barcode commands' list. This command page is used to initiate gage events using a barcode scanner.

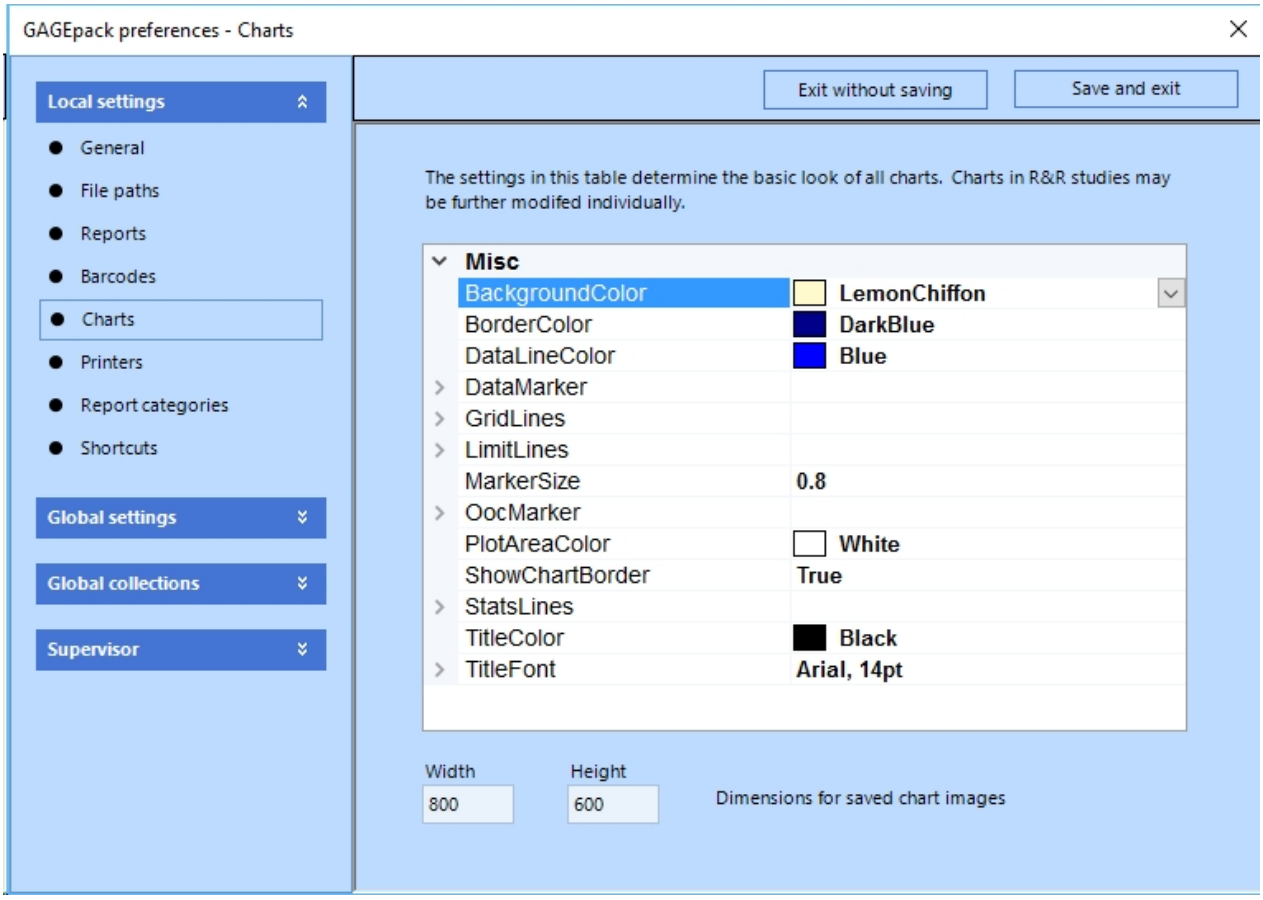
'Quick' information – One of the gage events that appears on the default command page is 'Quick information.' Scanning this event along with a gage barcode label will display a set of information about the gage. This editable text area allows the user to specify what information should be displayed, and in what order. The '@' symbol identifies a macro that will be replaced with the associated value from the gage. For example, '@GageNumber' will be replaced with the actual gage number when the quick information is displayed. To see a list of the database names that can be used to create @Macros, go to ***Setup*** > ***Field*** names and view the first column of the table shown there.

See Also
Local settings
General
File paths
Reports
Charts
Printers
Report categories

Charts

Charts

The settings contained on this page control the look and field of the charts generated throughout GAGEpack. The name of the setting to be adjusted appears in the left column. Settings can be edited by clicking in the right column. In addition, the default size (in pixels) of saved chart images can be set at the bottom of this screen.



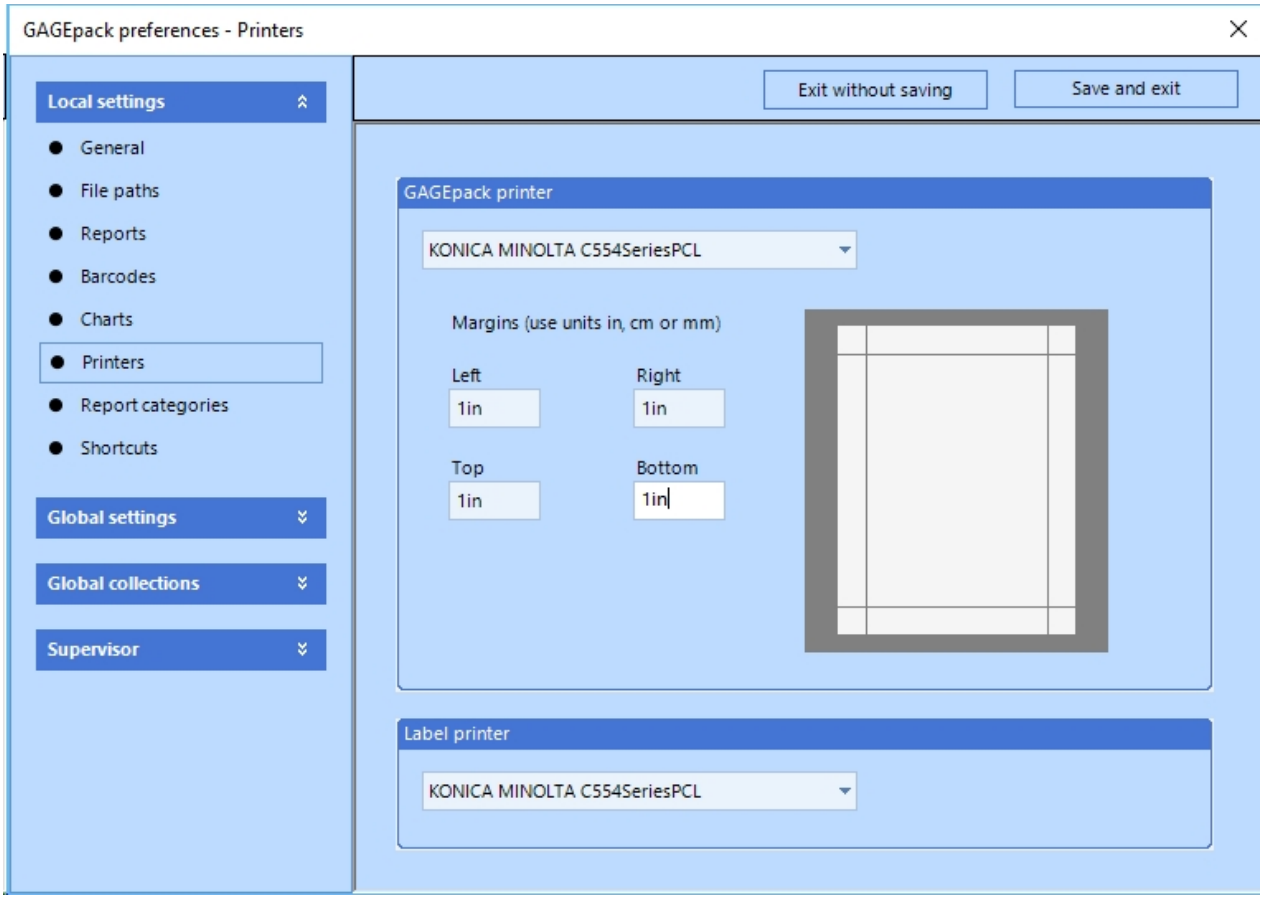
See Also

Local settings
General
File paths
Reports
Barcodes
Printers
Report categories

Printers

Printers

This screen is used to select which printer should be used by default for printing standard documents and which printer should be used by default for printing labels. The two lists of printers on this page are generated by Windows, not GAGEpack. To add a printer to this list, you must add it to the list of printers under Devices and Printers in Windows. This page can also be used to configure the margins to be used on a standard document.



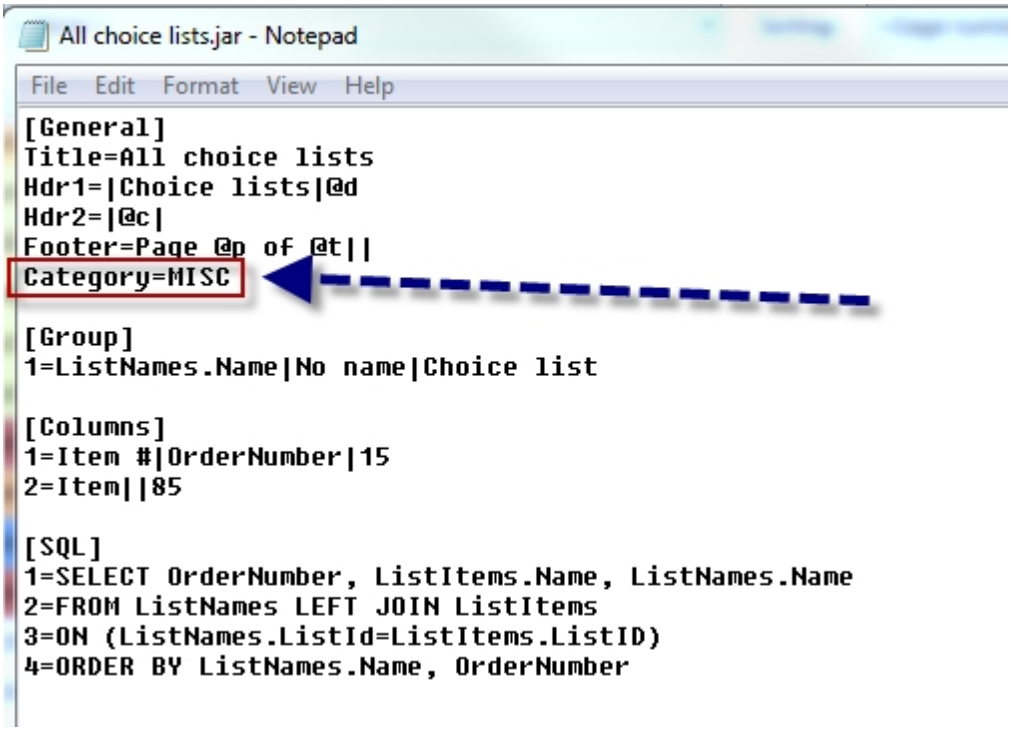
See Also

Local settings
General
File paths
Reports
Barcodes
Charts
Report categories

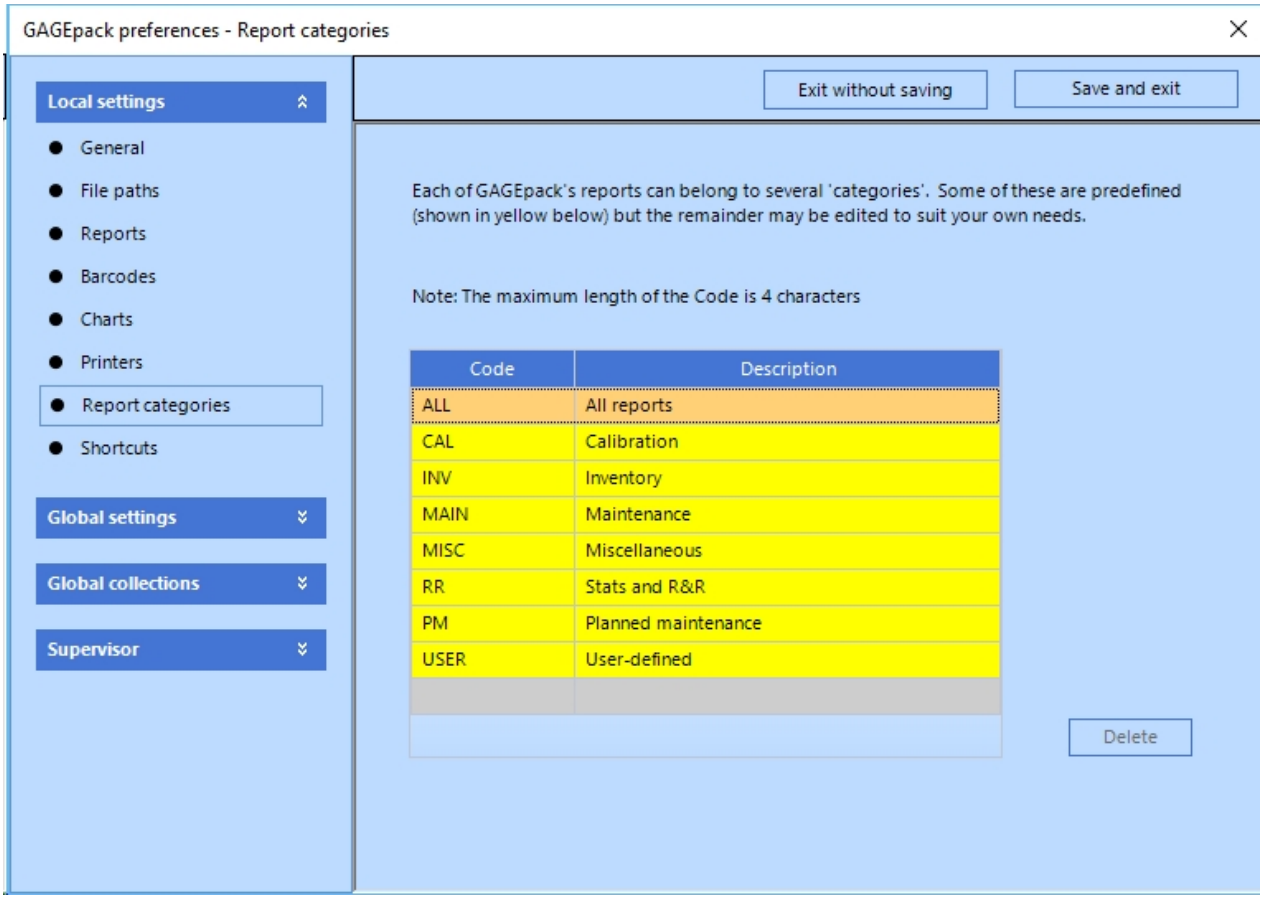
Report categories

Report categories

The reports list accessible from the inventory tab toolbar can be filtered by category using the dropdown box at the top of the window. Most of the default reports have a category specified. You can view the category of a report by selecting it from the list and clicking ***Edit***. This will open the report file in the default text editor. The first section (called [General]) might contain a line that says "Category=" This line identifies which category a report belongs to.



The Report categories page of the preferences allows users to view the default collection of categories and create/edit their own.



See Also

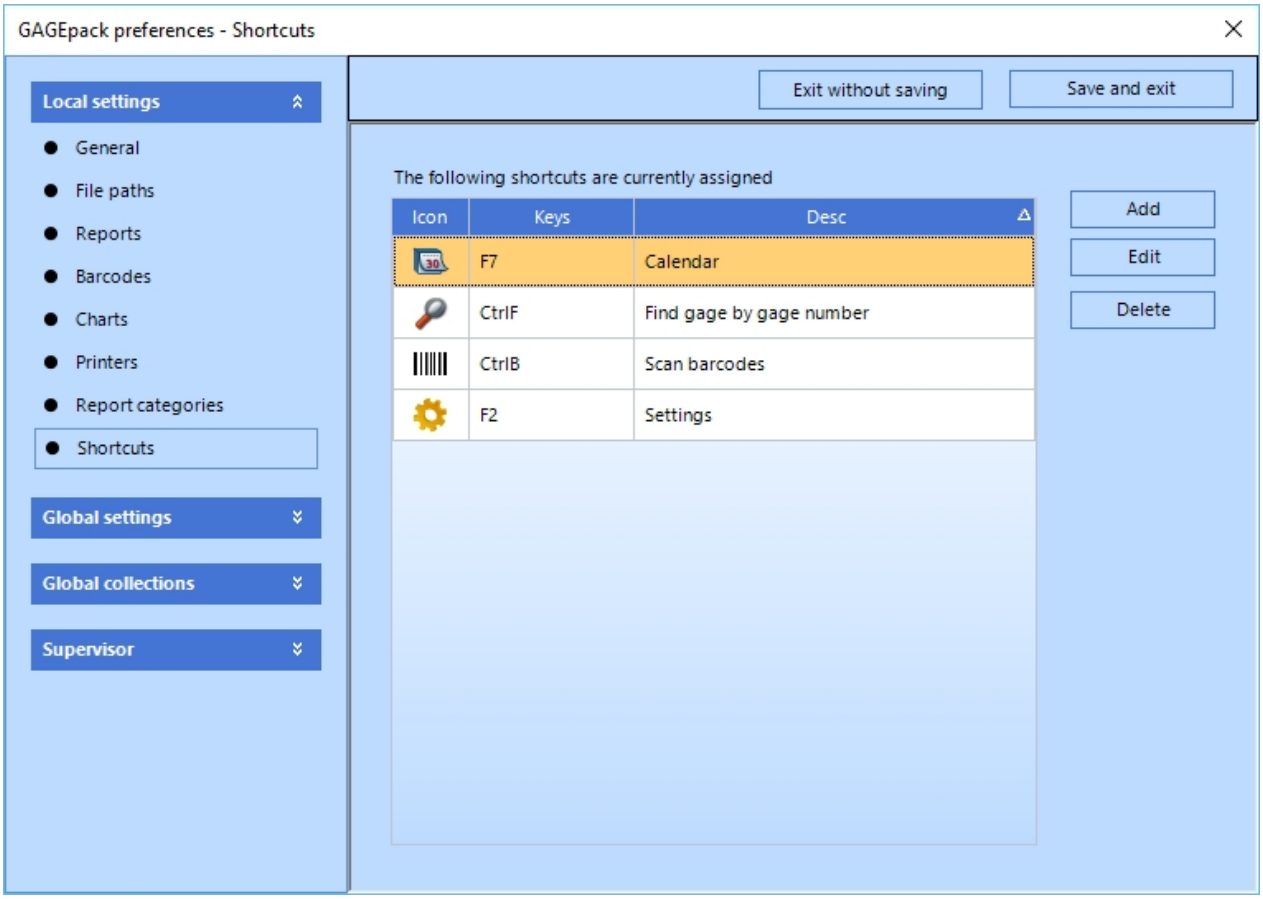
Local settings

General
File paths
Reports
Barcodes
Charts
Printers

Shortcuts

Shortcuts

This screen is used to manage the keyboard shortcuts used within GAGEpack.



Global settings

Global settings

The options contained in this section are database-wide, meaning any changes made will affect every person using this database file.

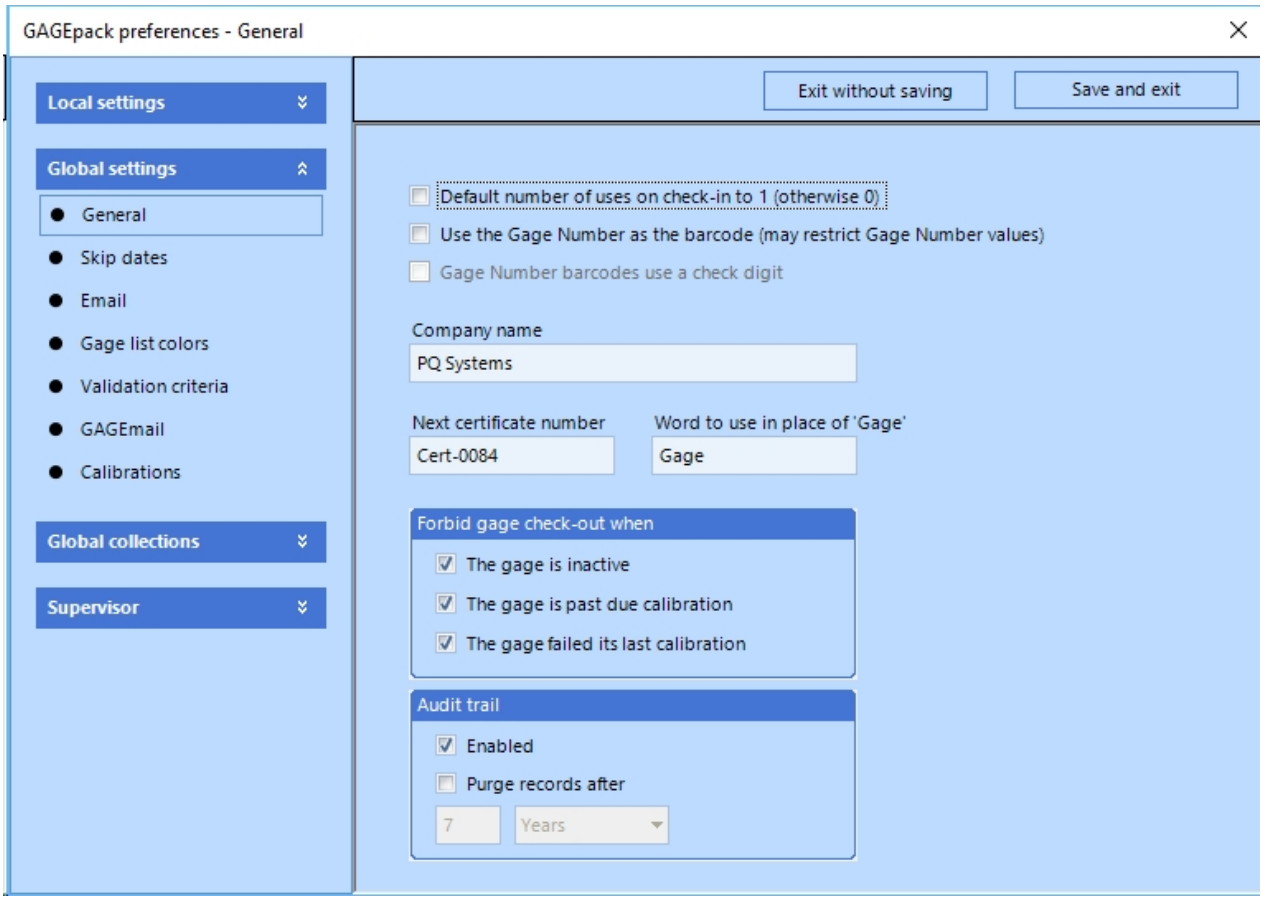
In This Section	See Also
General	Configuring GAGEpack
Skip dates	Local settings

Email
Gage list colors
Validation criteria
GAGEmail
Calibrations
Global collections
Supervisor

General

General

Much like the General screen under Local settings, this screen contains a collection of miscellaneous options. The primary difference is that these options are global in scope and will therefore make changes for everyone using the database.



Default number of uses on check-in to 1 (otherwise 0) – Gages that have a calibration interval that is based on number of uses depend on recording the number of times the gage was used whenever it is checked in. Some organizations prefer to simply count the number of times the gage was checked out/in rather than counting individual uses. These organizations can check this box to have GAGEpack count each check-in as 1 use by default. The number of uses can be edited on the check-in event if necessary, regardless of the state of this checkbox.

Use the Gage Number as the barcode (may restrict Gage Number values) – By default GAGEpack will encode the GageID value for a gage into the barcode labels that it generates. The GageID is a unique identifier created behind the scenes to identify a gage throughout the software. It is almost entirely hidden from the user because it is not relevant to most people. If this box is checked, GAGEpack will attempt to use the Gage Number for barcodes instead. The Gage Number is the unique identifier that users create

themselves and see whenever they interact with their gages. It is important to note that barcodes are restrictive in what characters they allow. The vast majority of barcode formats allow only numbers.

Gage Number barcodes use a check digit - Certain barcode formats use a checksum digits to validate the contents of the code. Check this box to handle these types.

Company name – There are several locations throughout the software where the company name will be displayed. Users can enter their company name in this field in order to make their own name show up in all of these places.

Next certificate number – This field gives users the ability to edit the prefix and serialization of their certificate numbers. When a new certificate is created, GAGEpack will increment this value by one while retaining whatever text prefix the users have defined.

Word to use in place of 'Gage' – The word 'gage' is used throughout the software, but many organizations prefer to call these 'instruments' or 'equipment' or 'items' or something else. By replacing the word 'gage' in this field with the desired word to use, the new word will show up throughout the software to refer to these items.

Forbid gage check-out when – This series of check boxes can be used to block any attempt to check out a gage that meets certain criteria. Depending on which boxes are checked, GAGEpack will not allow a check-out event to be completed if the gage is inactive, is past due for calibration, or has failed its last calibration.

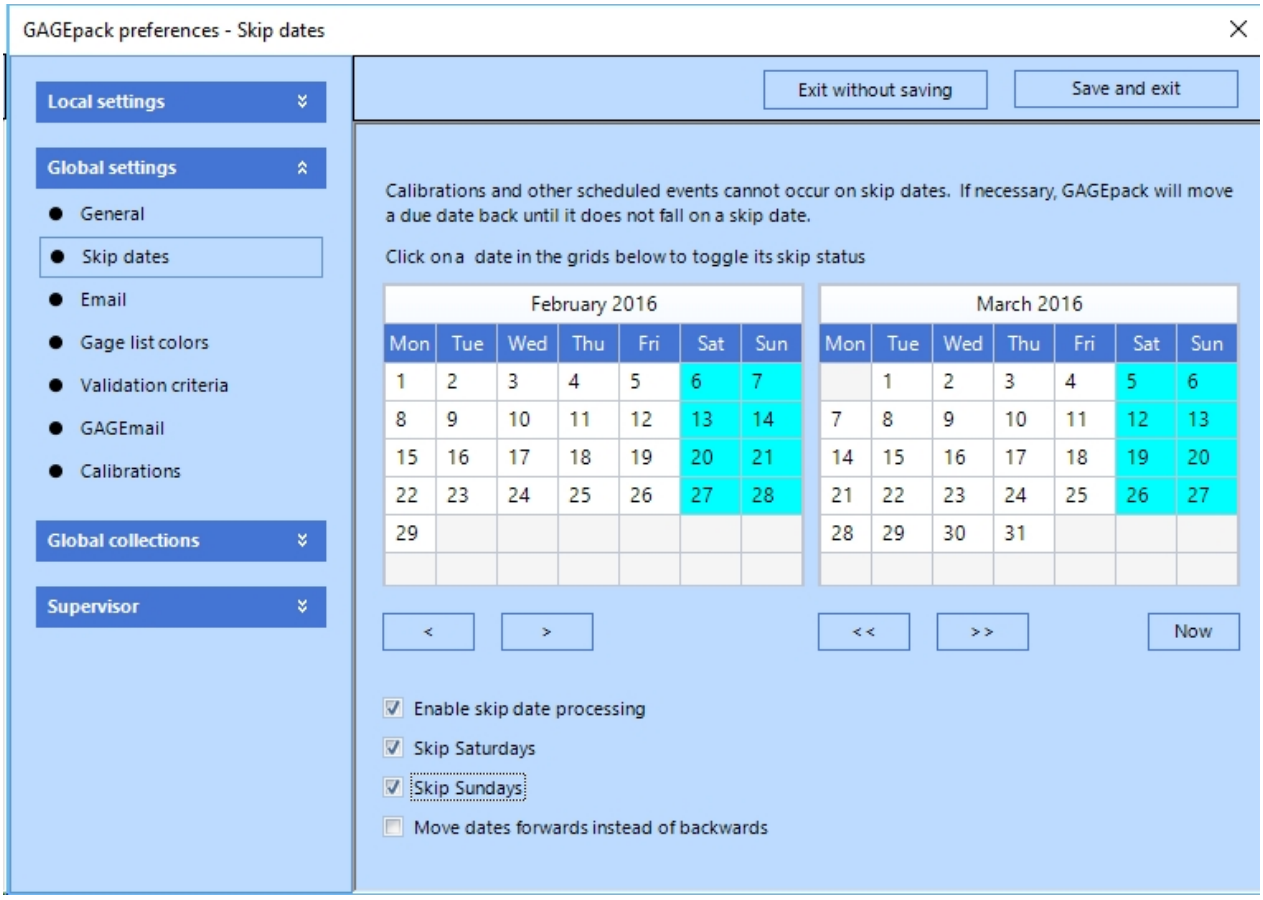
Audit trail – The audit trail records activity within the database. Whenever an event is completed or a record is edited or a user logs in/out or some other change has been made, the audit trail will make a note of it, including a timestamp, the name of the user who made the change, and the values before and after the change. The audit trail can be reviewed using the global audit tab or the history tab on the gage card. This box on the general tab can be used to turn the audit trail on or off and also to enable/configure the automatic purge of old audit records.

See Also
Global settings
Skip dates
Email
Gage list colors
Validation criteria
GAGEmail
Calibrations

Skip dates

Skip dates

Skip dates are a mechanism designed to prevent gage events from being scheduled on days when the facility is closed or no gage work is being completed for some other reason. When a due date calculation is being performed, if the gage is scheduled for an event on a skip date, the date is moved backwards to the next available date.



The two grids on this page each display one month at a time. Clicking on any day in the grid will toggle that day's status as a skip day. Skip days are highlighted in teal. Users can scroll forward and backward in time using the arrow buttons under the two grids. Clicking ***Now*** will display this month in the left grid and next month in the right grid.

Enable skip date processing – GAGEpack will take skip dates into account only while calculating due dates if this box is checked.

Skip Saturdays – Check this box to mark every Saturday a skip day.

Skip Sundays - Check this box to mark every Sunday a skip day.

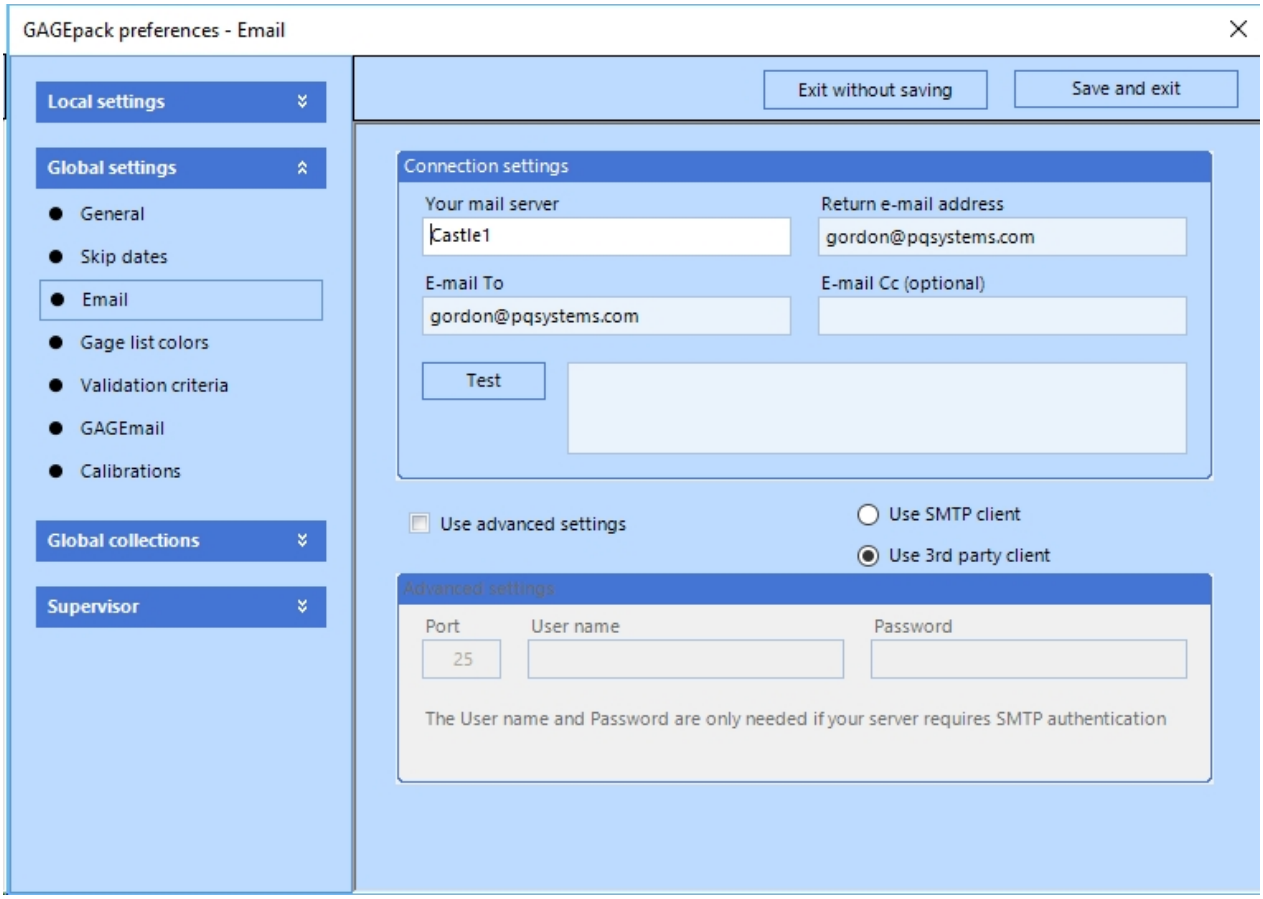
Move dates forward instead of backward – By default, due dates that fall on skip dates are moved backwards to the next available date. This is to prevent gage events from coming due after their original due date. If this box is checked, dates will be moved into the future instead.

See Also
Global settings
General
Email
Gage list colors
Validation criteria
GAGEmail
Calibrations

Email

Email

This page must be filled out in order for GAGEpack and GAGEmail to send emails. These settings tell GAGEpack how to communicate with your mail server.



Your mail server – This is the name of the computer that handles your email traffic. If you don't know the name of the mail server, ask your IT department.

Return e-mail address – This address will be displayed in the 'From' box of the message whenever GAGEpack sends an email. This doesn't have to be a real email address.

E-mail To – This address will be used by default when GAGEpack sends a message. However, every form that sends messages offers the option to change the recipient.

Use advanced settings – Some mail servers have security settings in place that require applications to provide valid credentials before they are given permission to send messages. If your mail server has such security, check this box so that you can enter the username and password below. If you don't have a set of credentials to use here, consult your IT department.

Port – This field stores the port number that GAGEpack will try to communicate through when it talks to the server to send emails. It is important that GAGEpack talks through the same port that SMTP is listening to on the server.

Username/Password – If applications must provide the server with credentials in order to send an email, enter them here.

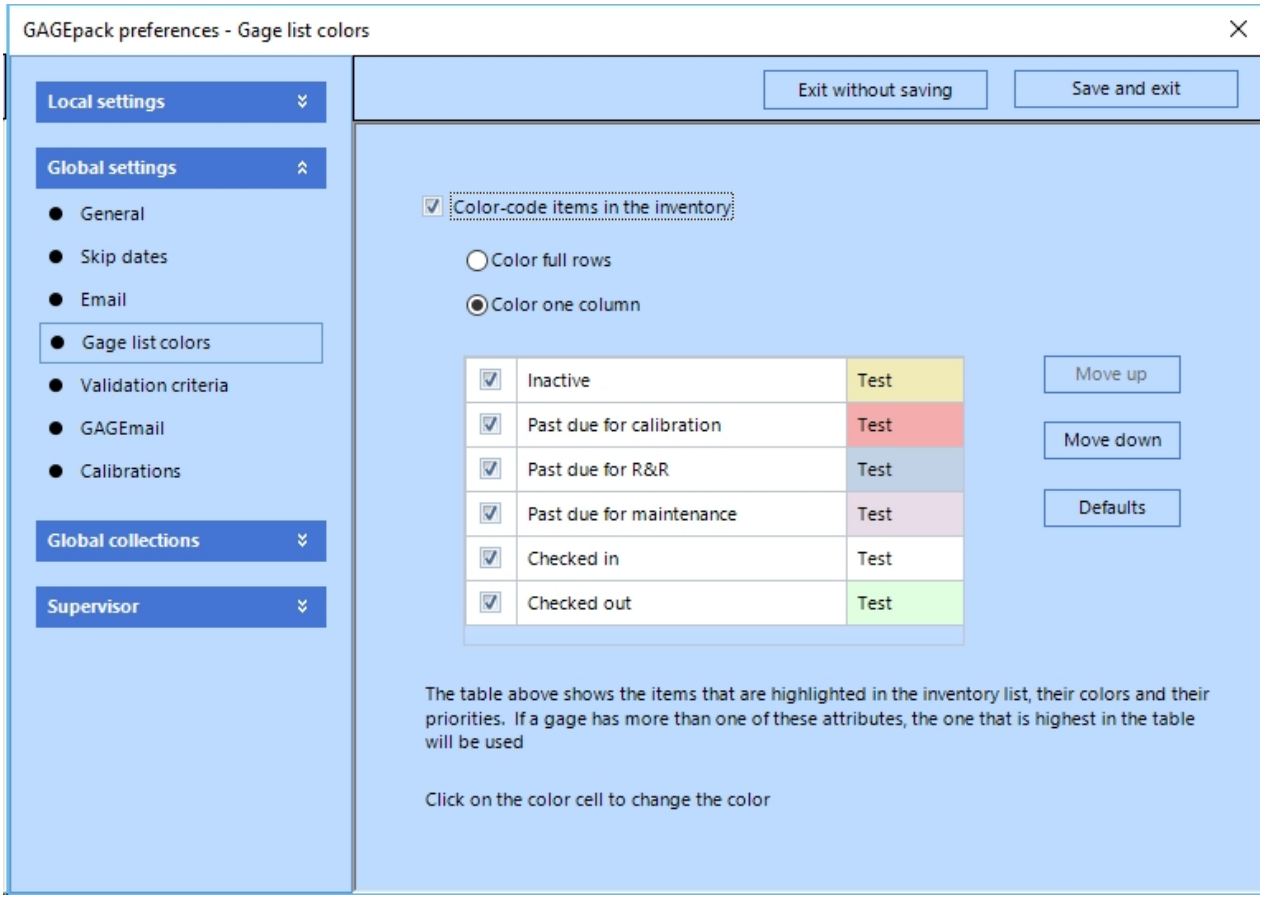
See Also

Global settings
General
Skip dates
Gage list colors
Validation criteria
GAGEmail
Calibrations

Gage list colors

Gage list colors

This page controls the color-coding used on the inventory grid.



The grid on this page has three main purposes. First, the checkboxes in the first column are used to turn the color coding for individual gage statuses on and off. Second, the ordering of the rows on this table resolves priority conflicts for gages that match more than one criterion. For example, using the settings in the screenshot above, if a gage were checked out and past due for calibration, it would be colored red rather than green, because past due for calibration is higher on the list. Third and finally, the last column is used to change the color for the status. Click on a color to change it.

Color-code items in the inventory – The inventory grid will use the color-coding system only if this box is checked.

Color full rows/one column - These radio buttons are used to toggle between coloring the entire row on

the grid and coloring only a single column on the left side of the grid.

Move up/down - These two buttons are used to adjust the priority of the color-coding grid.

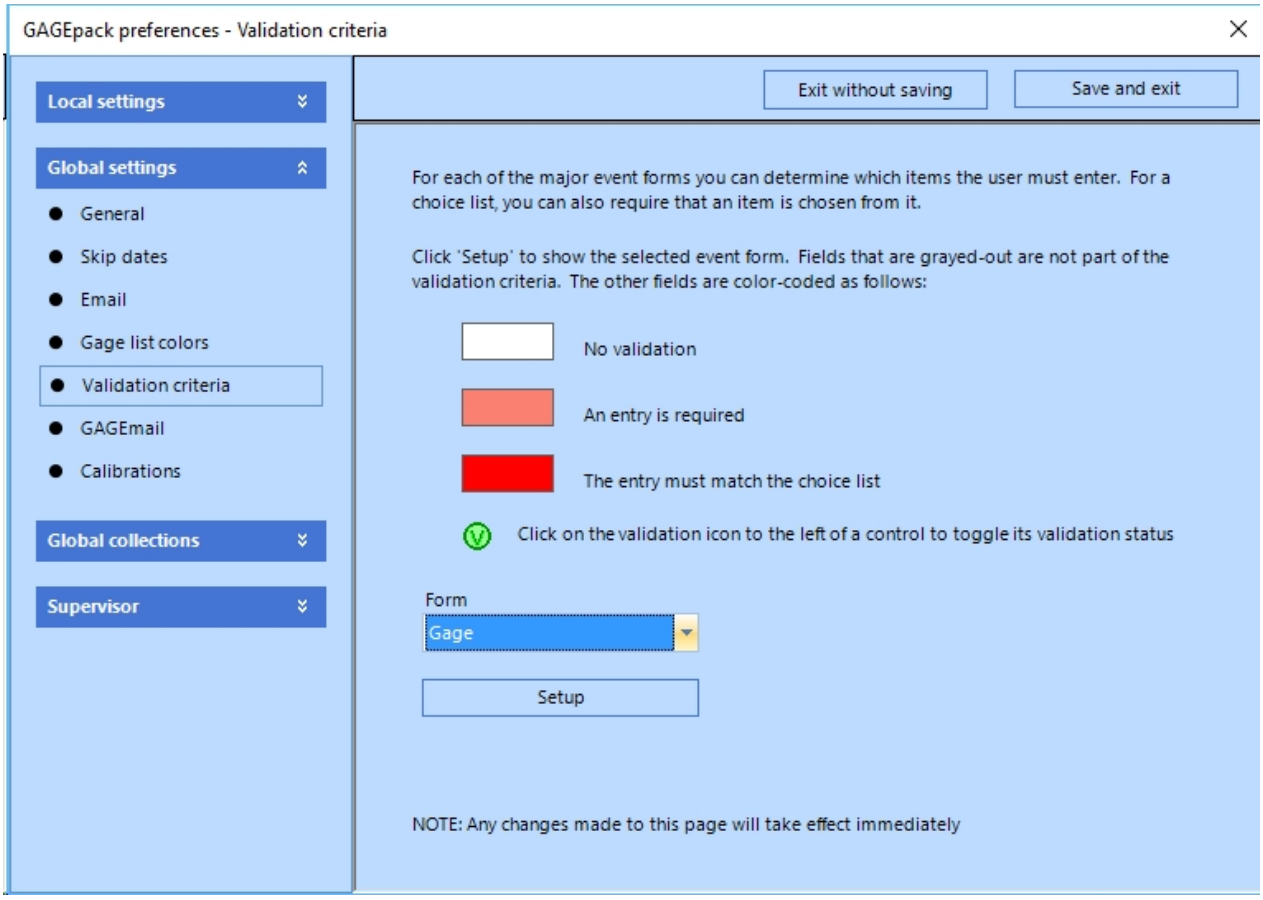
Defaults – This button will restore the color selection and priority order to their original settings.

See Also
Global settings
General
Skip dates
Email
Validation criteria
GAGEmail
Calibrations

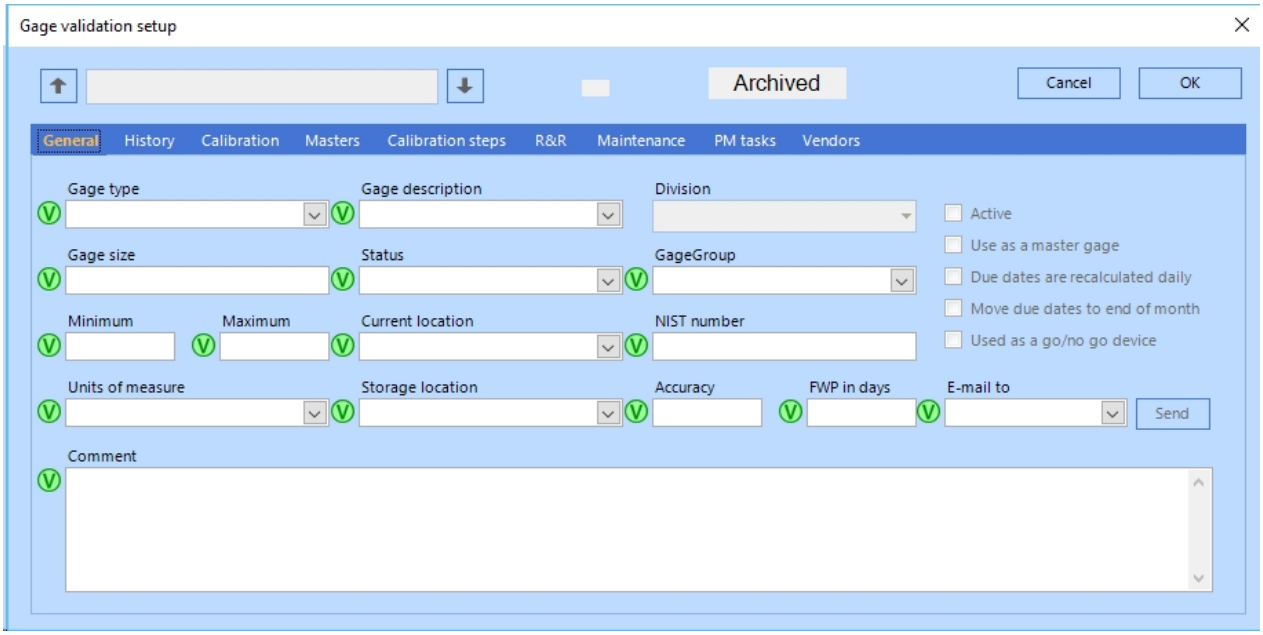
Validation criteria

Validation criteria

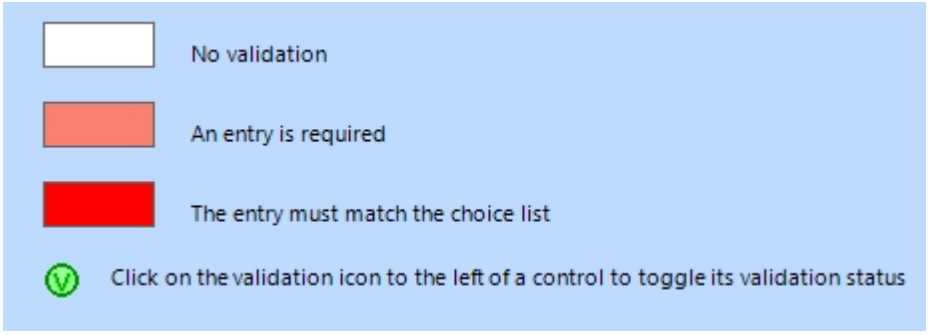
Validation criteria are designed to ensure that end-users enter all required information on a form before saving the record to the database.



To set up validation criteria, select the form you would like to configure from the dropdown list and push ***Setup***. This will open a blank copy of the form with green 'V' icons next to all of the securable fields.



To enable validation criteria for an individual field, click on the green 'V' icon until the field is colored to match the setting you would like to apply to the field. The three validation criteria settings are shown on the main form:



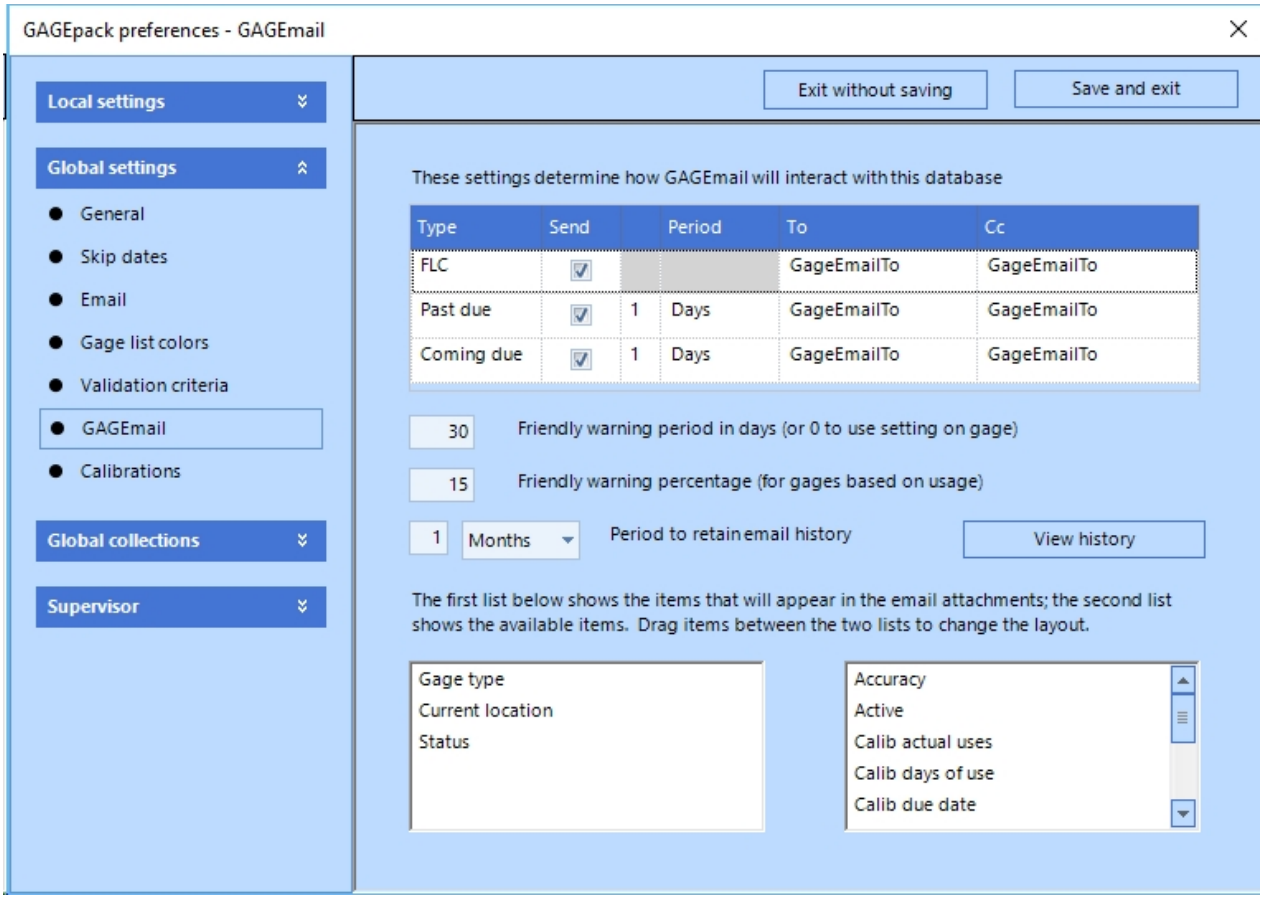
See Also

Global settings
General
Skip dates
Email
Gage list colors
GAGEmail
Calibrations

GAGEmail

GAGEmail

The settings on this page determine how GAGEmail will behave when interacting with this database. While GAGEmail is running, it will examine the database once every hour.



The table at the top of the page determines which types of messages should be sent, how frequently they should be sent, and who should receive them.

Type – There are three types of GAGEmail messages. FLC (Failed Last Calibration) messages are sent whenever a calibration event is recorded where the overall result was 'Fail.' Past due messages show a list of all gage events that have not been completed and are late. Coming due messages show a list of all gage events that are within their friendly warning period, meaning they are due soon.

Send – Each message type will only be sent if the associated Send box is checked.

Period – These two columns are used together to define how frequently these messages should be sent. FLC messages are always sent as soon as GAGEmail is aware of them.

To/Cc – These fields determine who will receive the messages. The dropdown lists contain the collection of email addresses found under ***Setup*** > ***Email addresses*** plus one more option labeled 'GageEmailTo.' If this option is selected the email messages will go to the person or group whose name appears in the 'EmailTo' field on the general tab of the gage viewing form. Each person will receive an email that shows only his or her own gages.

Friendly warning period in days (or 0 to use setting on gage) – This field is used to determine what qualifies as 'coming due.' In the screenshot above, GAGEmail will send coming due notices for all gages that are due for calibration in 30 days or less. If this value is set to 0, GAGEmail will use the FWP value found on the general tab of the gage viewing form to determine if a gage is coming due.

Friendly warning percentage (for gages based on usage) – This field determines the uses percentage threshold below which a gage will be flagged as coming due. In the above screenshot, GAGEmail will send coming due notices for all gages that have less than 15% of their uses remaining.

Period to retain email history – Whenever GAGEmail interacts with the database, it will leave time-stamped records of everything that it does. This history is stored in the database for the duration specified

by these fields.

View history – This button will display a new window showing all GAGEmail activity currently stored in the database.

The two lists at the bottom of the page combine to contain every gage characteristic in GAGEpack. The list on the left shows the information that will be included in the GAGEmail messages. The list on the right shows the other available characteristics. Users can specify the information to be included in the emails by dragging and dropping characteristics between these two lists.

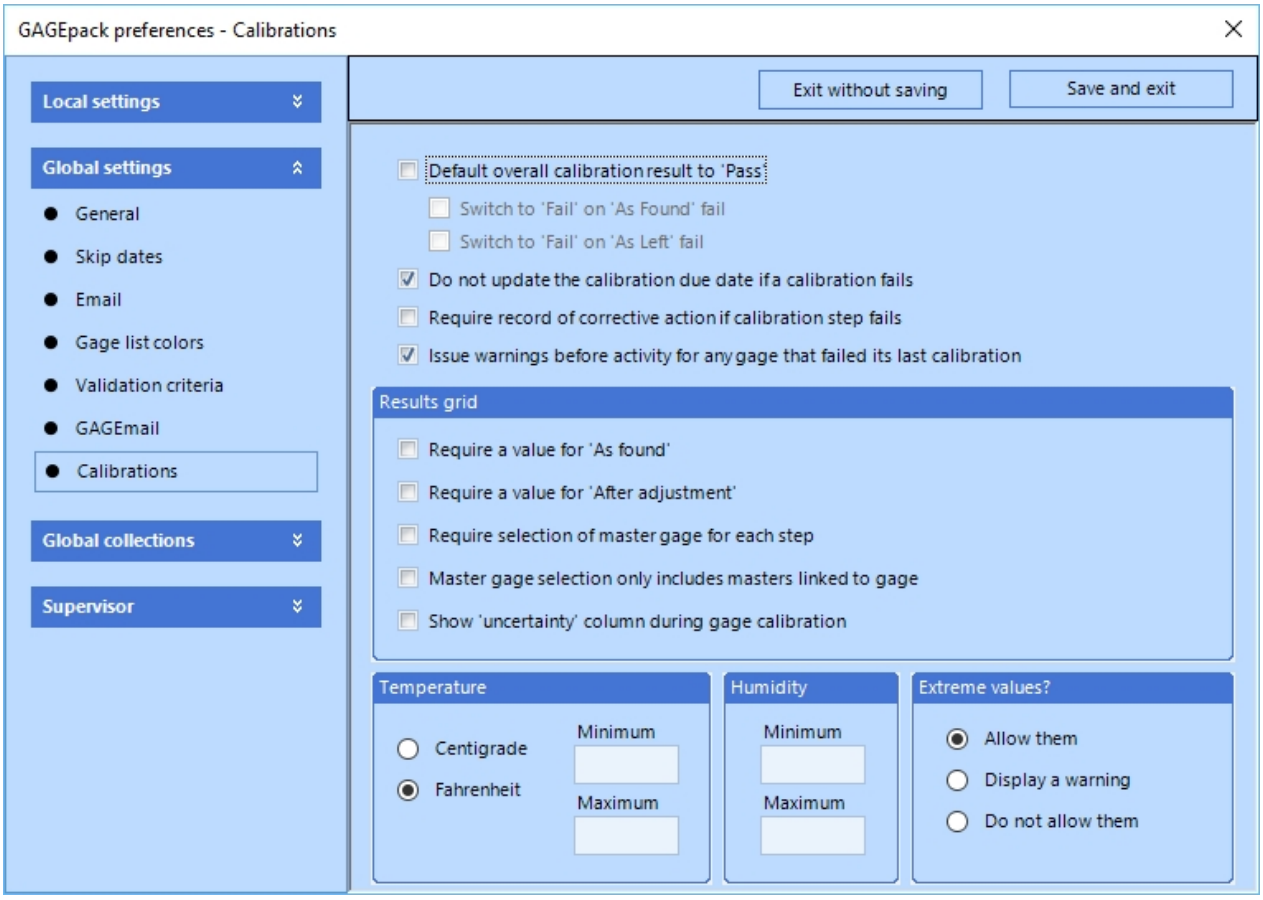
For more information about GAGEmail, please refer to the file 'Getting Started with GAGEmail' found in the 'Documents' folder in the GAGEpack installation directory.

See Also
Global settings
General
Skip dates
Email
Gage list colors
Validation criteria
Calibrations

Calibrations

Calibrations

This form contains most of the options pertaining to any calibrations completed in this database. It is also used to define the acceptable temperature and humidity ranges for calibration events.



Default overall calibration result to 'Pass' – The calibration event form has a dropdown box at the top labeled 'Overall result.' The event cannot be saved until this box contains either 'Pass' or 'Fail.' If this option is unchecked, that dropdown box will default to being empty. If this box is checked, the dropdown will default to 'Pass.'

Switch to 'Fail' on 'As Found/Left' fail - Checking these boxes will cause GAGEpack to automatically set the overall result of a calibration based on the contents of the results grid.

Do not update the calibration due date if a calibration fails – Usually when a calibration event is completed, GAGEpack will automatically calculate the next due date based on the calibration interval of the gage. If this box is checked and the calibration fails, the due date is not updated but remains the same as it was prior to the calibration.

Require record of corrective action if calibration step fails – If this box is checked, a third tab will be added to the calibration event form. The tab is labeled 'Actions' and must be filled out if any of the 'As found' measurements taken during this calibration failed or if the overall calibration failed.

Issue warnings before activity for any gage that failed its last calibration – If this box is checked, GAGEpack will display a warning message whenever the user attempts to complete some event (such as a check-out) for a gage that failed its last calibration. After acknowledging the warning, the user will be able to continue with the event.

Require a value for 'As found' – If this box is checked, a user cannot finish completing a calibration event until they have entered a reading in the 'Result as found' column for every step on the calibration results grid.

Require a value for 'After adjustment' - If this box is checked, a user cannot finish completing a calibration event until they have entered a reading in the 'Result after adj' column for every step on the calibration results grid.

Require selection of master gage for each step – If this box is checked, a user cannot finish completing a calibration event until they have specified a master gage for every step on the calibration results grid.

Master gage selection only includes masters linked to gage – If this box is checked, the master gage dropdown list that appears on the calibration steps/results grid will only include master gages that are specified on the 'Masters' tab of the gage.

Show 'uncertainty' column during gage calibration – Some regulatory agencies require that calibration tables display a column to record the uncertainty value of the associated step. By default this column is hidden but checking this box will cause the column to appear on the 'Calibration steps' tab of the gage form and the 'Calibration results' tab of the calibration event form.

Temperature – The toggle is used to choose between Centigrade (Celsius) and Fahrenheit. The min and max fields define the lower and upper limits of the allowable temperature range, respectively.

Humidity - The min and max fields define the lower and upper limits of the allowable humidity range, respectively.

Extreme values? – When a temperature or humidity value that is beyond the allowable range is entered into a calibration event form, GAGEpack will respond in one of these three ways.

See Also
Global settings
General
Skip dates
Email
Gage list colors
Validation criteria
GAGEmail

Global collections

Global collections

This area of the preferences interface contains "lists of things." Every page allows the manipulation (add/edit/delete) of the contents of the list associated with that page.

In This Section	See Also
Parts	Configuring GAGEpack
Users	Local settings
Vendors	Global settings
Devices	Supervisor
Choice lists	
Field names	
Email addresses	
Event userfields	
User-defined fields	

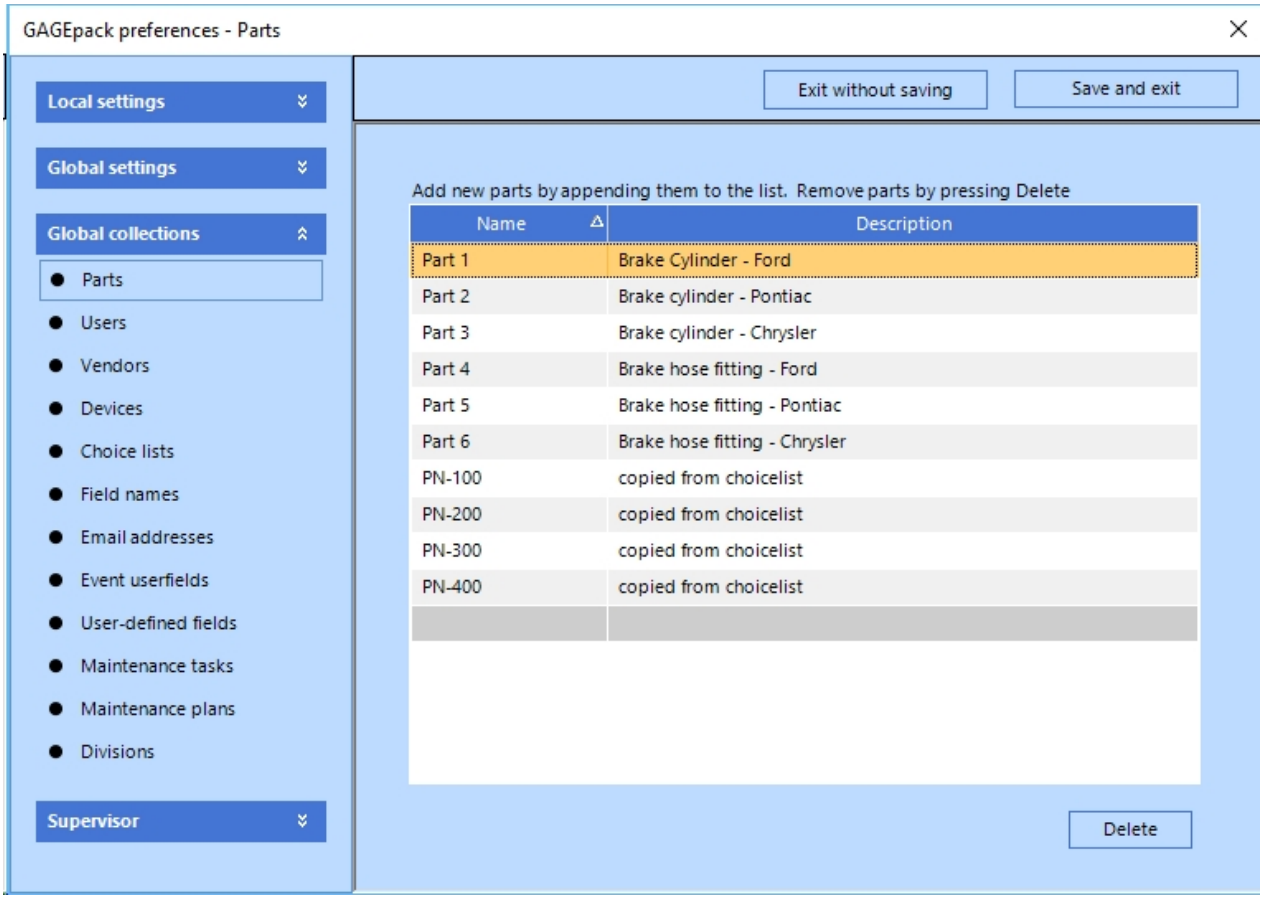
Maintenance tasks
Maintenance plans
Divisions

Parts

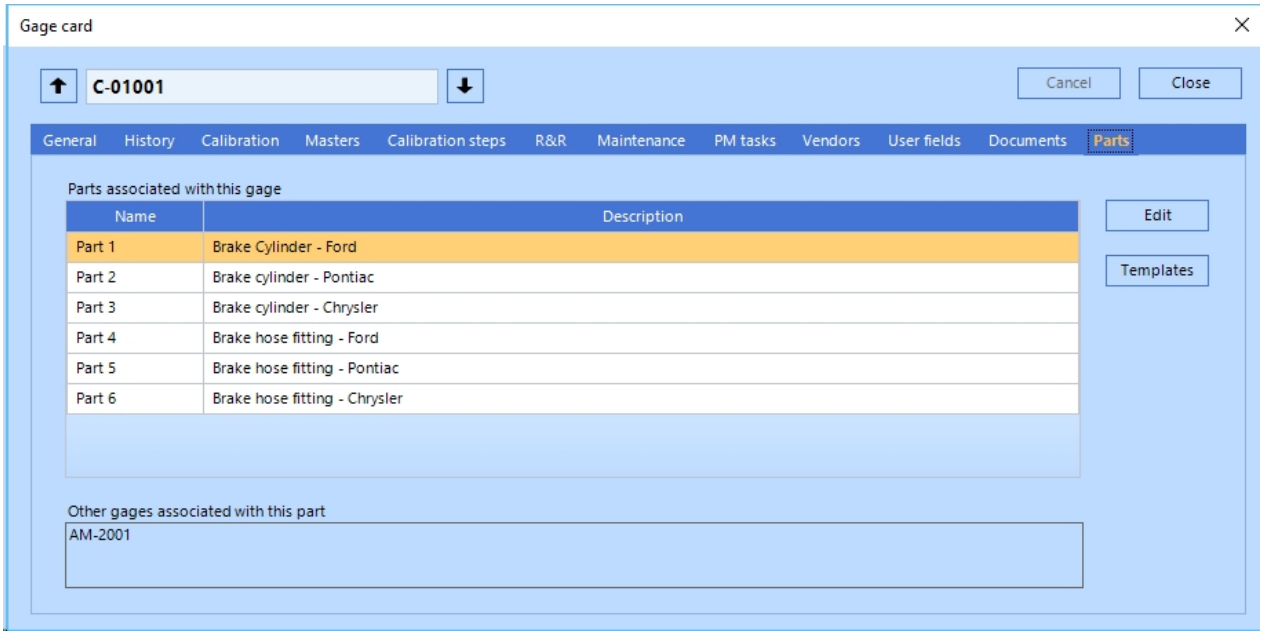
Parts

GAGEpack allows each gage to be associated with a collection of parts (those parts for which it is used to measure). Each part may need a number of gages to measure it. To manage this situation, GAGEpack maintains a matrix to cross-reference gages with parts. Access to this matrix is through the ***Parts*** tab on the ***Gage editing*** window.

This page in the preferences window manages the list of parts on which gages in the database might be used. Parts must be added to this list before they can be referred to by gages.

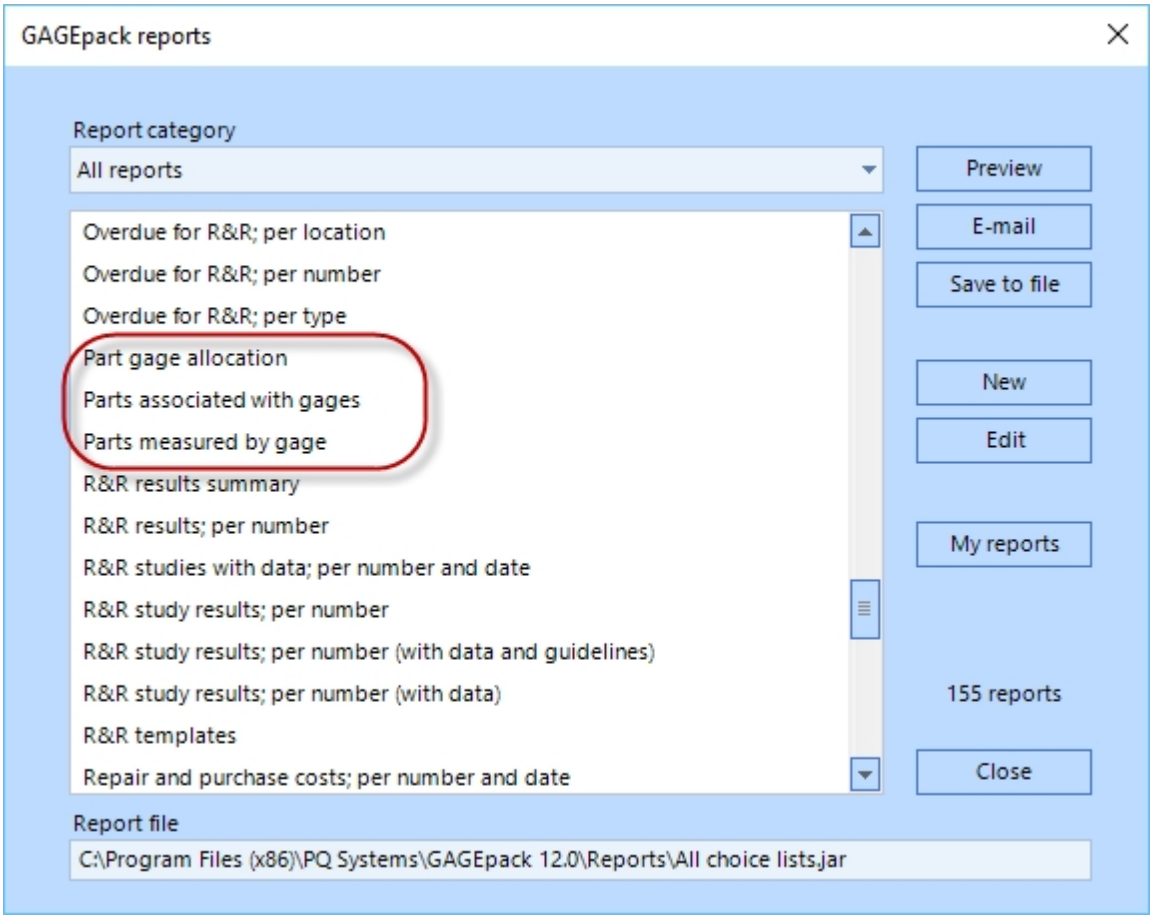


These parts can be referred to on the parts tab of the gage viewing form or on check in/out events.



As you navigate the list of parts, you may notice that a list of gages appears in the box marked ***Other gages associated with this part***. These are the gages that can be used as substitutes for that job if a gage is in use or otherwise unavailable.

Three default reports are concerned with parts in the database.



See Also

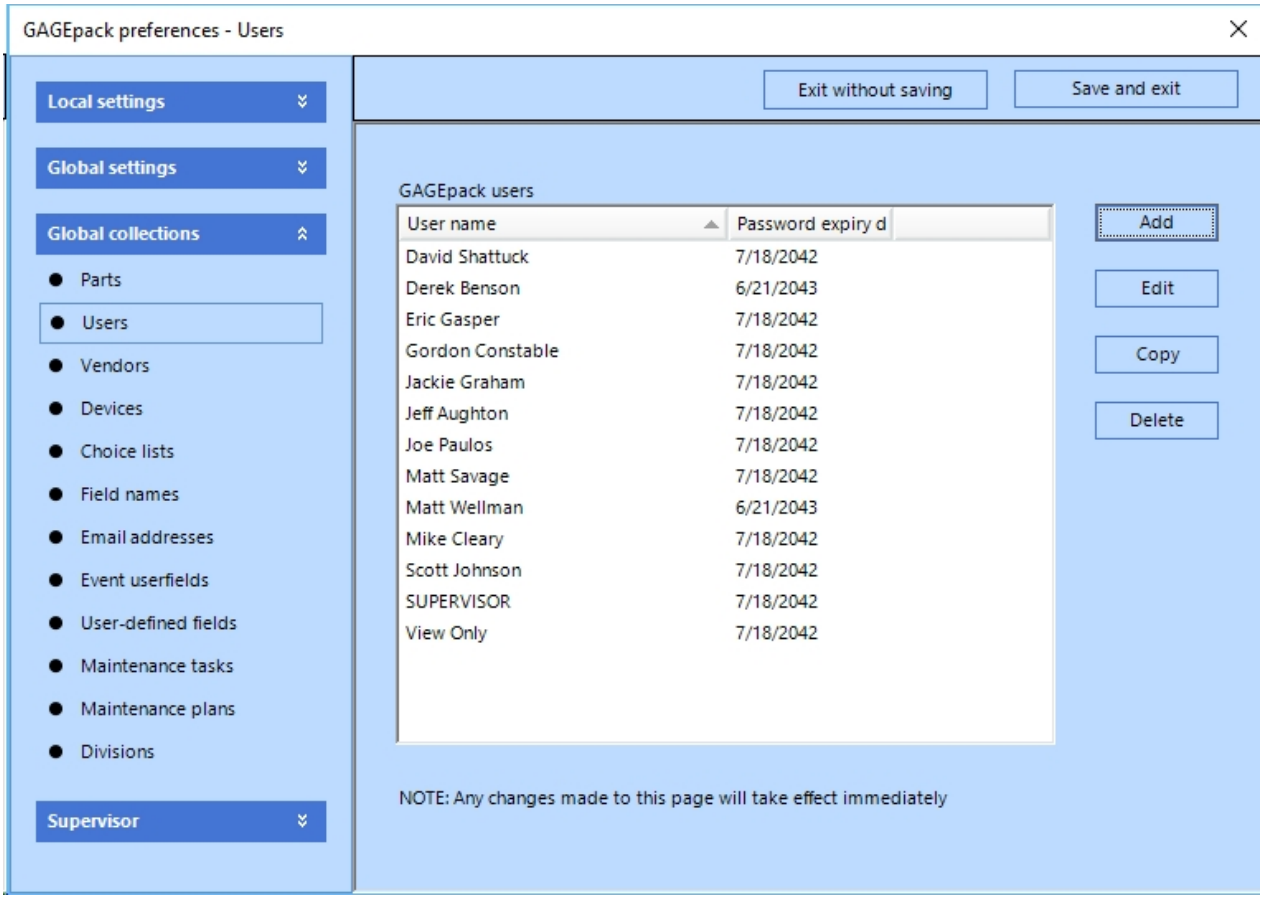
Global collections

Users
Vendors
Devices
Choice lists
Field names
Email addresses
Event userfields
User-defined fields
Maintenance tasks
Maintenance plans
Divisions

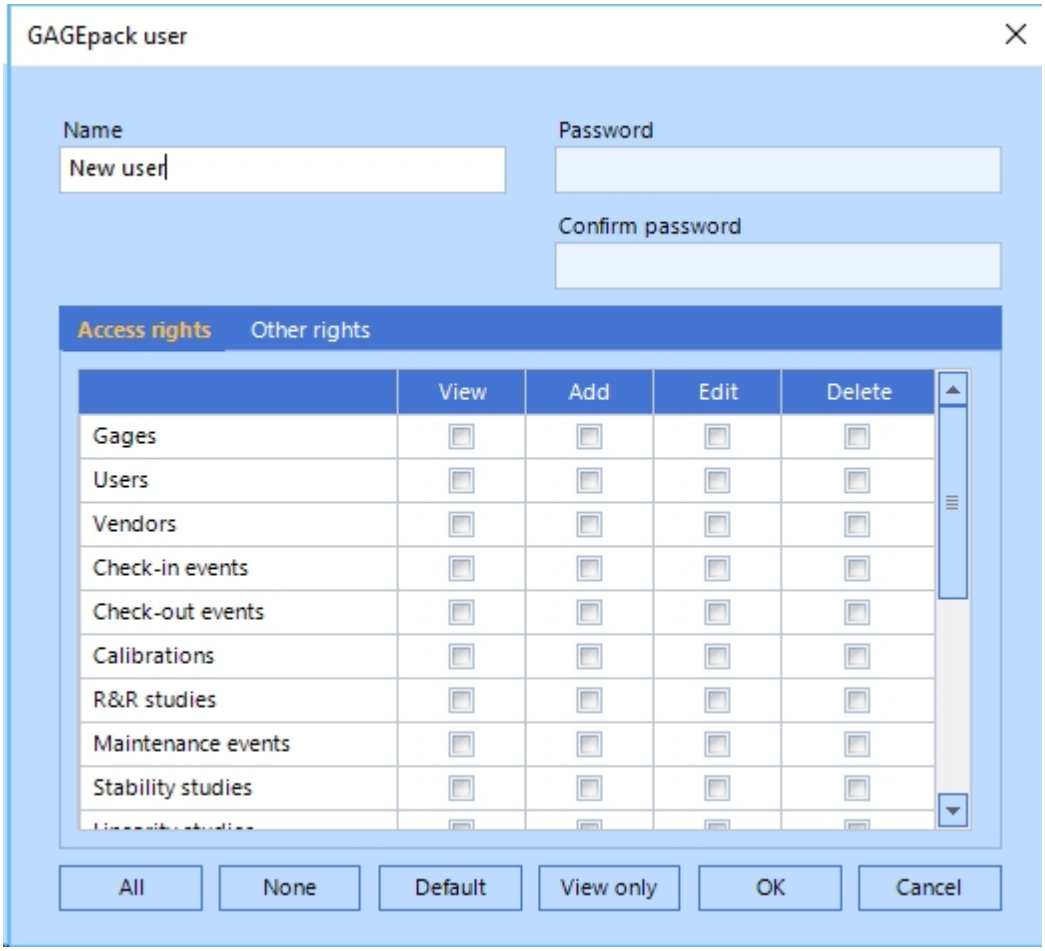
Users

Users

This page is used to manage the set of usernames that GAGEpack recognizes as having access to the database. (Note that this list is relevant only if the database security level is set to ***Username login*** only or ***Full login required***. For more information about this, see the section 'Login options' below.) Before users can select their name (and provide a password depending on the security level) from the initial login screen, they must be added to this list of users.



Add – This button will open a window that allows for the creation of a new user.



The ***Name*** and ***Password*** of the new user are entered in the provided fields at the top of the form.

The two"rights" tabs on this form contain checkboxes that enable or forbid this new user from performing the specified actions within the database. The ***Access rights*** tab is concerned with the user's ability to View/Add/Edit/Delete certain GAGEpack objects (such as gages, vendors, events, etc). The ***Other rights*** tab deals with the user's ability to interact with certain utilities and options throughout the software. The Divisions tab is used to add/remove this user to/from existing partitions of the database. All of these can be enabled or disabled on an individual basis by checking/unchecking the appropriate boxes.

The form contains a series of buttons along the bottom that are useful for quickly assigning a user to a common configuration of access privileges:

All – Checks every box on both tabs. This user will have the rights to do everything except manipulate the security level of the database.

None – Un-checks every boxy on both tabs. This user will be able to do little more than open the database and view the main lists (without the ability to open any items).

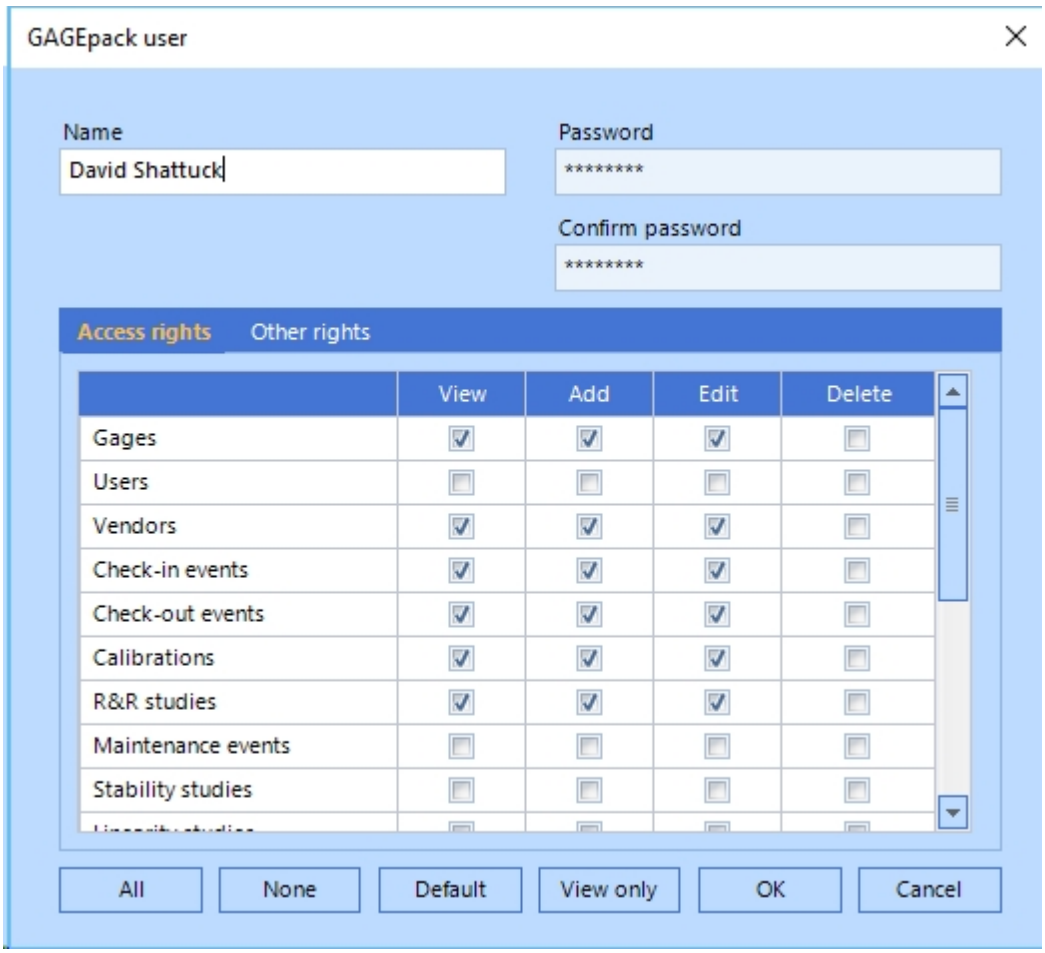
Default – This user will be able to view, add, and edit all objects except Users, and unable to delete anything. The user will also not have rights to any utilities other than viewing and printing reports.

View only – This user can examine everything in the database, but cannot add, edit, or delete anything.

Note: These four buttons switch the check-boxes to only these pre-defined states. Afterward, any of the boxes can be checked or unchecked as necessary.

Once the username and password have been entered and the rights have been defined, click OK to save this new user to the database.

Edit – Selecting a user and clicking this button will open a window that displays the current access privileges enjoyed by this user. From here these privileges can be adjusted as necessary and any changes will be saved by clicking OK.



Copy – Selecting a user and clicking this button will create a new user that is an exact replica of the originally selected user except for the name and password.

Delete – Selecting a user and clicking this button will remove the user from the list of active users in the database.

Note: A deleted username still exists in the database; it is just hidden. This is to maintain the integrity of historical records that might refer to the user. Since that is the case, it is not possible to create a new user who has the same name as a previously deleted user. It is therefore recommended that users are created with a first and last name to avoid naming conflicts.

Note: It is possible to 'un-delete' a user. Please contact PQ Systems tech support for assistance.

See Also

Global collections

Parts

Vendors

Devices

Choice lists

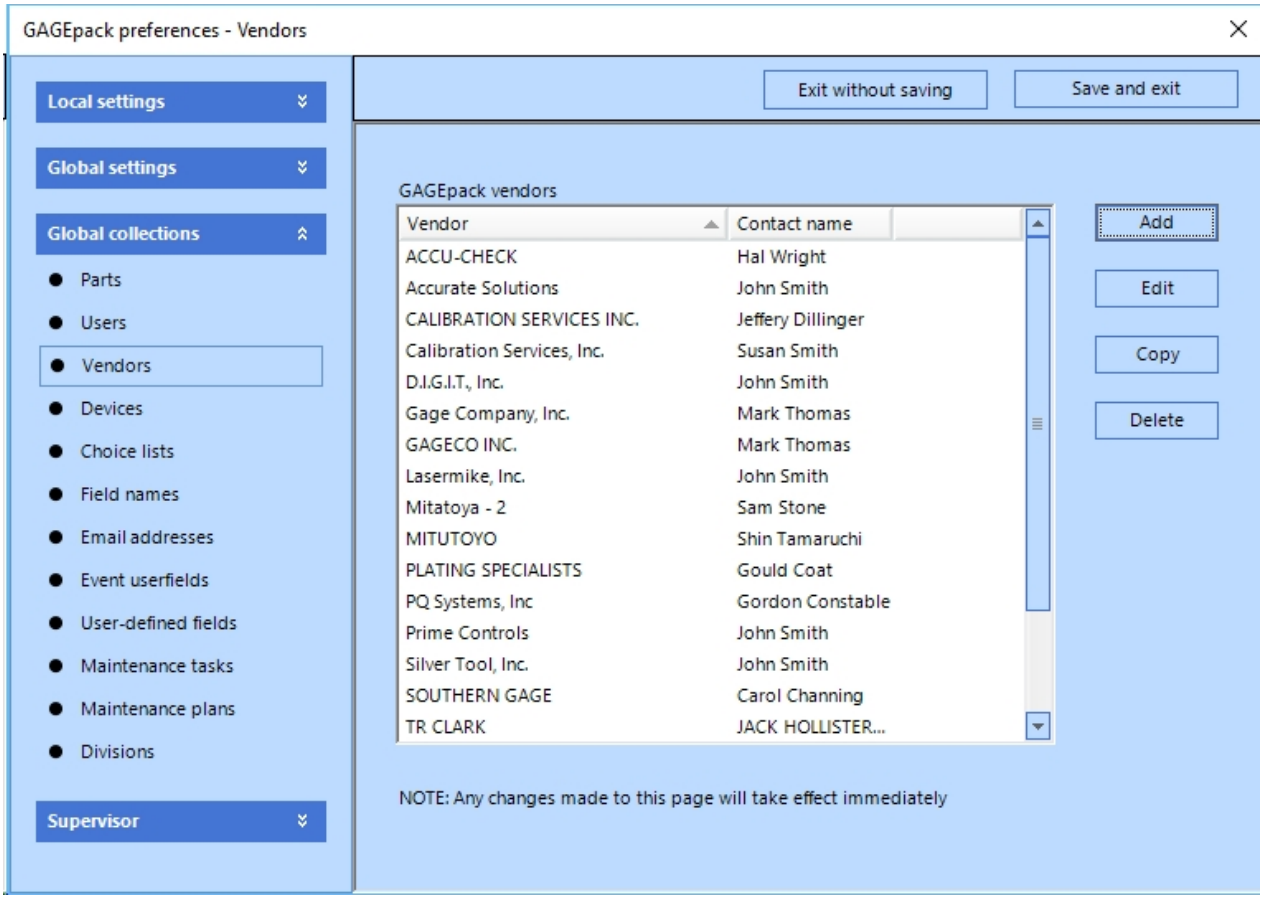
Field names

Email addresses
Event userfields
User-defined fields
Maintenance tasks
Maintenance plans
Divisions

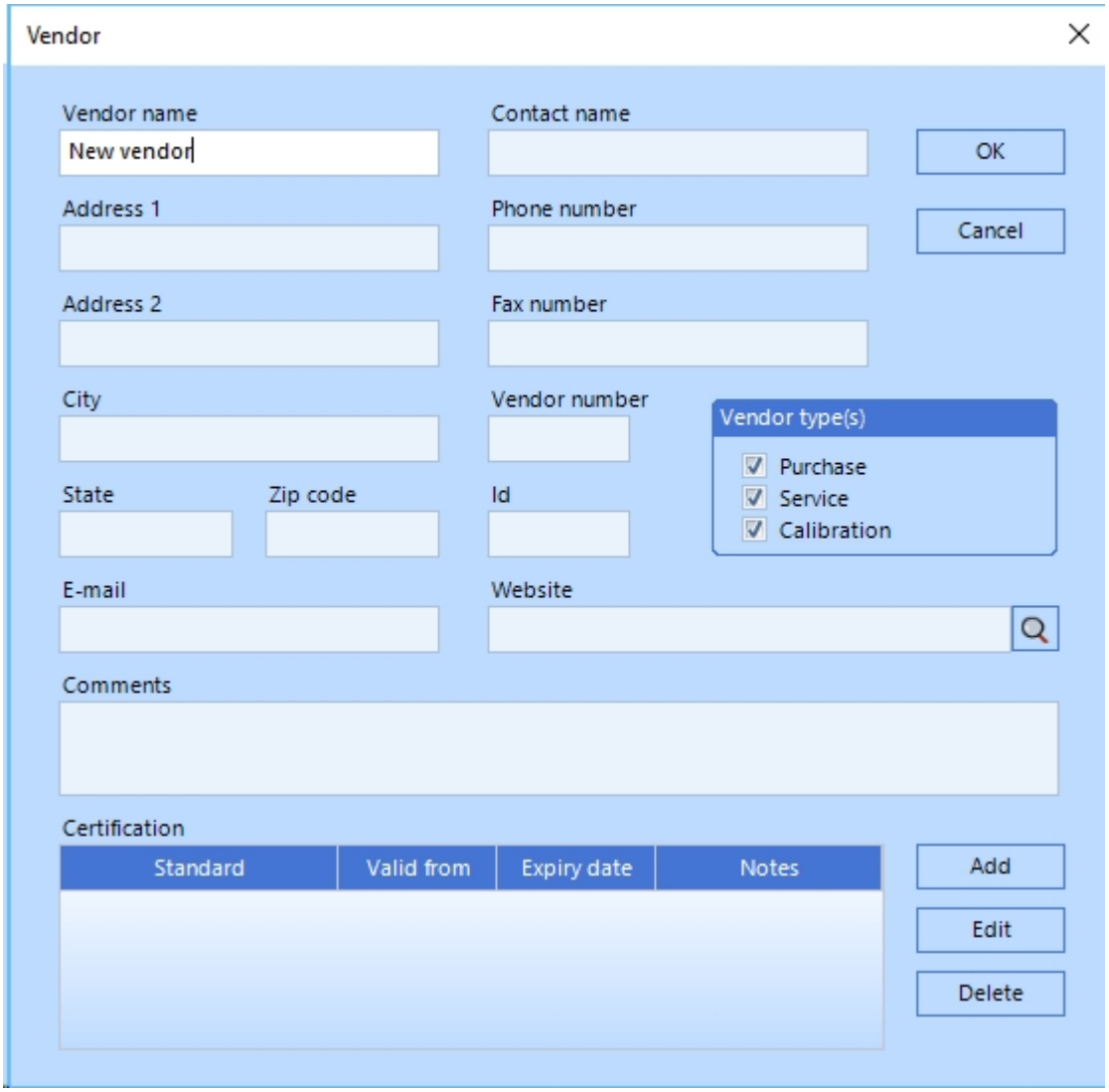
Vendors

Vendors

This collection stores the names and contact information for third party companies that are somehow associated with the gages in the database. This page of the preferences window is used to add, edit, or delete vendors.



Add – This button will open a window that allows for the creation of a new vendor.



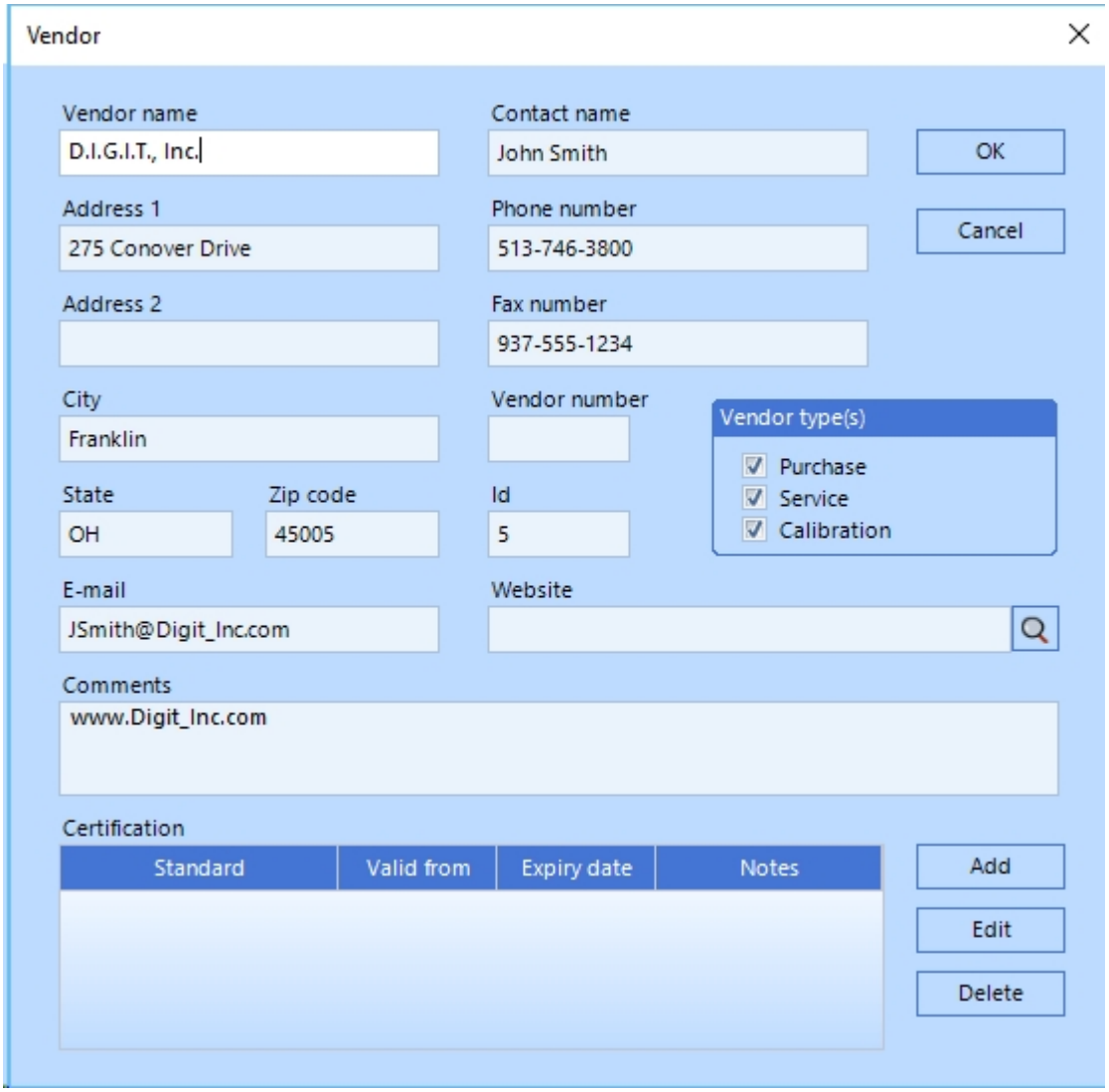
To create a new vendor, simply fill out this form with all available information and click ***OK*** to save. Most of the fields on this form are pretty straightforward. However, there are a few that warrant further explanation.

Id – This field is not editable by the user. It refers to the unique identifier that GAGEpack assigns to this vendor once it has been created, and is here because there are a few (albeit not many and not prominent) places where vendors must be referred to by their vendor Id number. This field will be blank while the vendor is being created, but will be populated as soon as this form is saved.

Vendor type(s) – Throughout the software there are three different types of vendor dropdowns that appear. These types are Purchase, Service, and Calibration. These checkboxes can be used to put a vendor on only the vendor lists where they belong.

Certification – This table is used to keep track of the vendor's certified compliance with industry standards. Once the standards have been added to this list, the to-do list on the tasks tab will remind users when vendor certifications are due to expire.

Edit – Selecting a vendor and clicking this button will open a window that displays the current contact information and settings for the vendor. This information can be adjusted as necessary and any changes will be saved by clicking ***OK***.



Copy – Selecting a vendor and clicking this button will create a new vendor that is an exact replica of the originally selected vendor except for the name.

Delete – Selecting a vendor and clicking this button will remove the vendor from the list of active vendors in the database.

See Also

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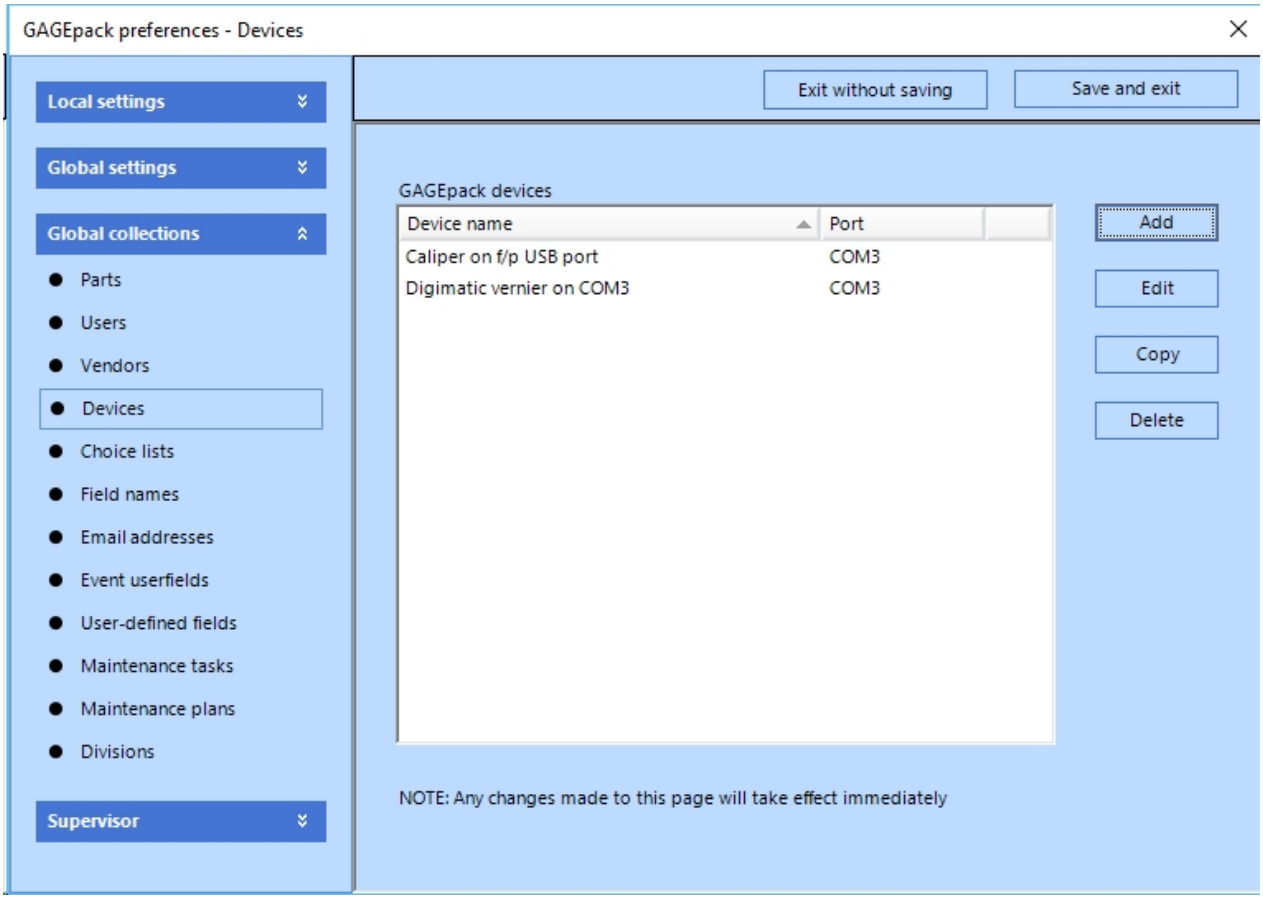
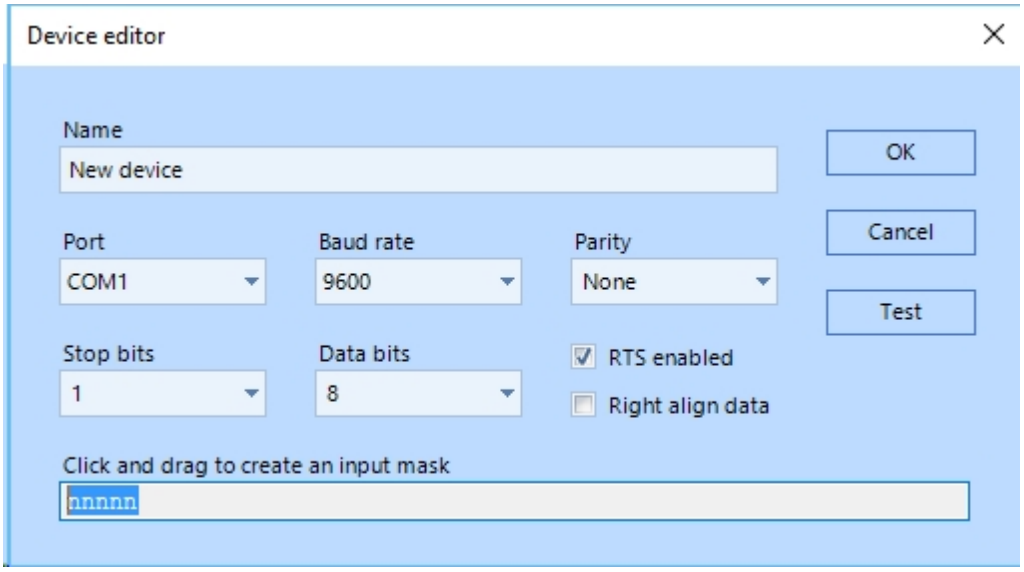
Devices

Devices

GAGEpack has the ability to capture gage data directly from a device connected to the computer's COM port (or a USB configured as a virtual COM port). This mechanism can be used with any event that uses gage data (calibration, R&R study, linearity, uncertainty, and stability). This page of the preferences window is used to manage the collection of devices that will be feeding data into GAGEpack using this mechanism.



Add – This button will open a window that allows for the creation of a new device.



To add a device, give it a meaningful name and select the appropriate options from the dropdown boxes. This connection information should be provided in the documentation included with your gage. If not, please contact the gage manufacturer.

Once the connection information has been entered, click ***Test*** on this form and the ***Send*** button on the gage. The ***Click and drag to create an input mask*** field should display a readout of the signal sent from the gage. Use the mouse to highlight the section of the readout that contains the meaningful measurement.

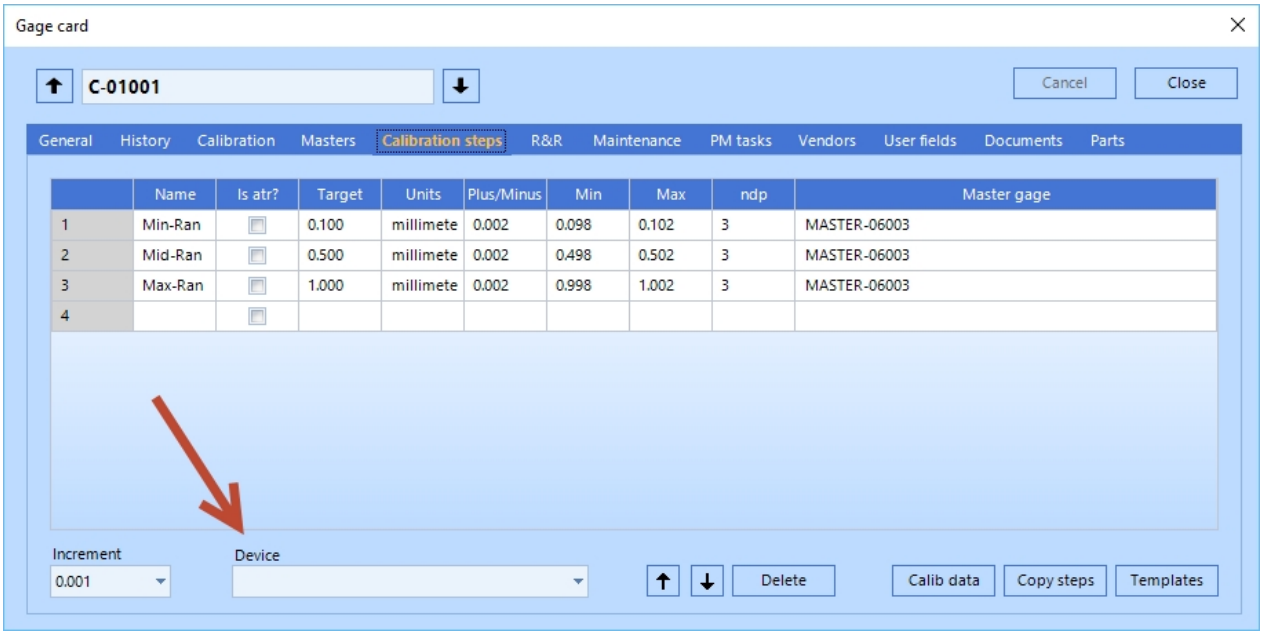
Click ***OK*** to save.

Edit – Selecting a device and clicking this button will open a window that displays the current settings for the device. This information can be adjusted as necessary and any changes will be saved by clicking ***OK***.

Copy – Selecting a device and clicking this button will create a new device that is an exact replica of the originally selected device, except for the name.

Delete – Selecting a device and clicking this button will remove the device from the list of active devices in the database.

To associate a gage with a device, open the gage form for the gage and go to the ***Calibration steps*** tab. Select the device from the dropdown list at the bottom of the tab.



Once the device has been created and associated with a gage record in the database, it can be used during any supported event involving this gage. Simply click in the field on the event where you would like the value recorded and click the ***Send*** button on the device.

See Also

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Maintenance tasks
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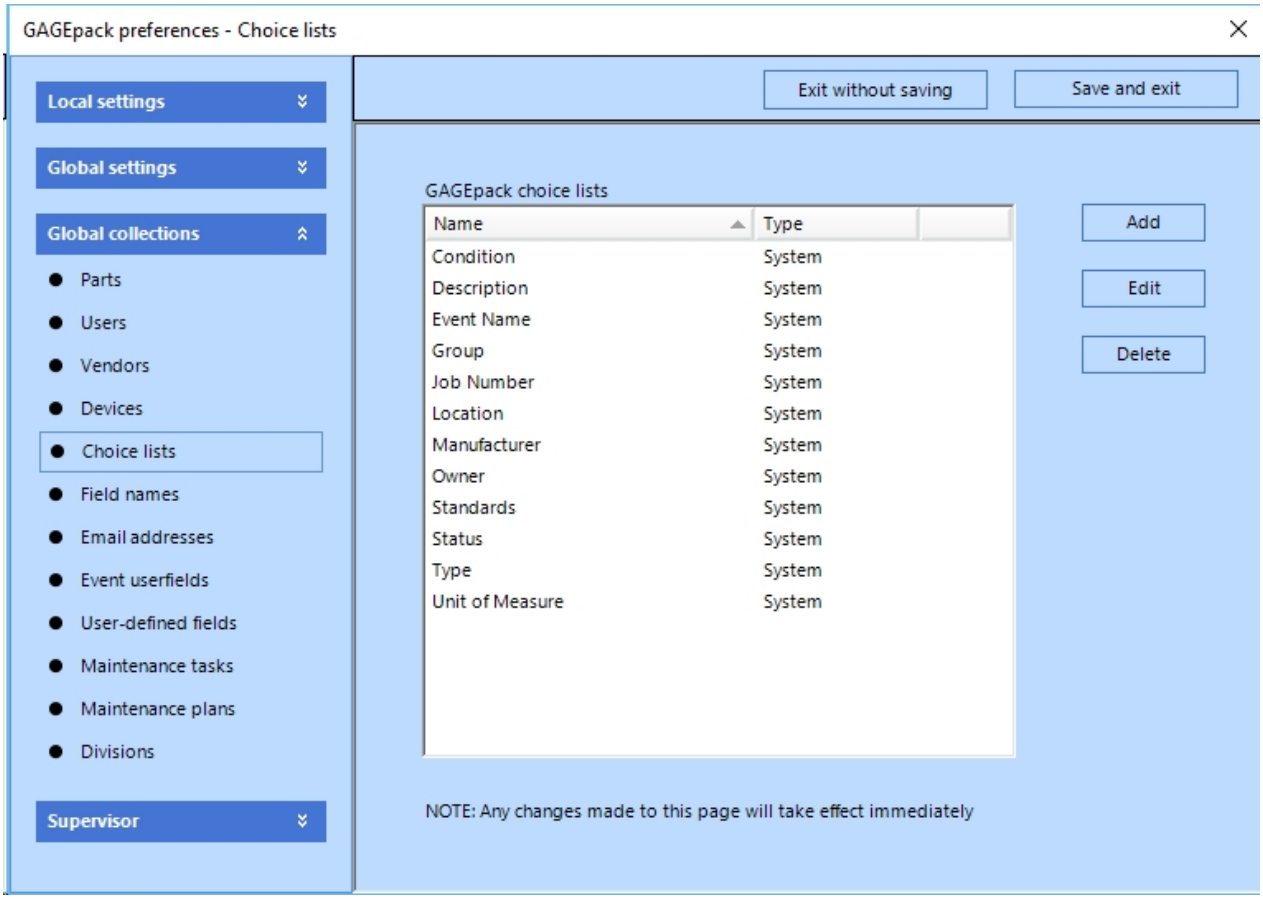
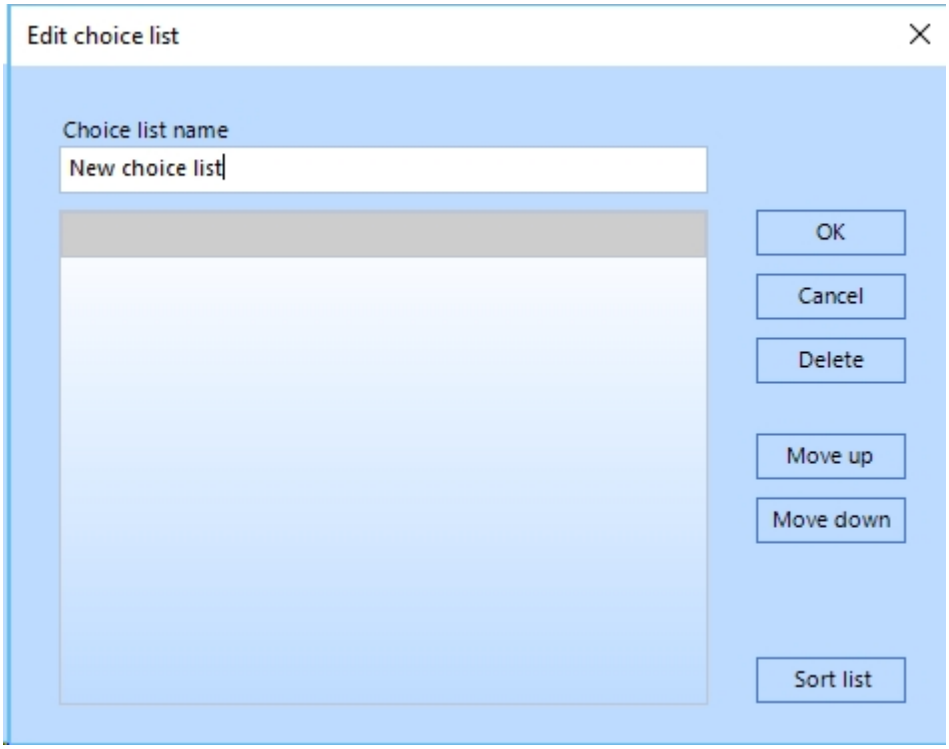
Choice lists

Choice lists

Choice lists contain the content of many of the dropdown windows that appear throughout the software. This page provides the ability to manage these lists.



Add – This button will open a window that allows for the creation of a new choice list. User-created choice lists can be used to add dropdown content to user-defined fields and event user fields.



Edit – Selecting a choice list and clicking this button will open a window that displays the current contents of the list. The list can be adjusted as necessary and any changes will be saved by clicking ***OK***.

Delete – Selecting a choice list and clicking this button will remove the choice list from the list of active choice lists in the database. Note that 'System' choice lists cannot be deleted.

Note: Please see the utility ***Load choice lists from gages*** for an easy way to build choice lists based on the contents of the gages.

See Also
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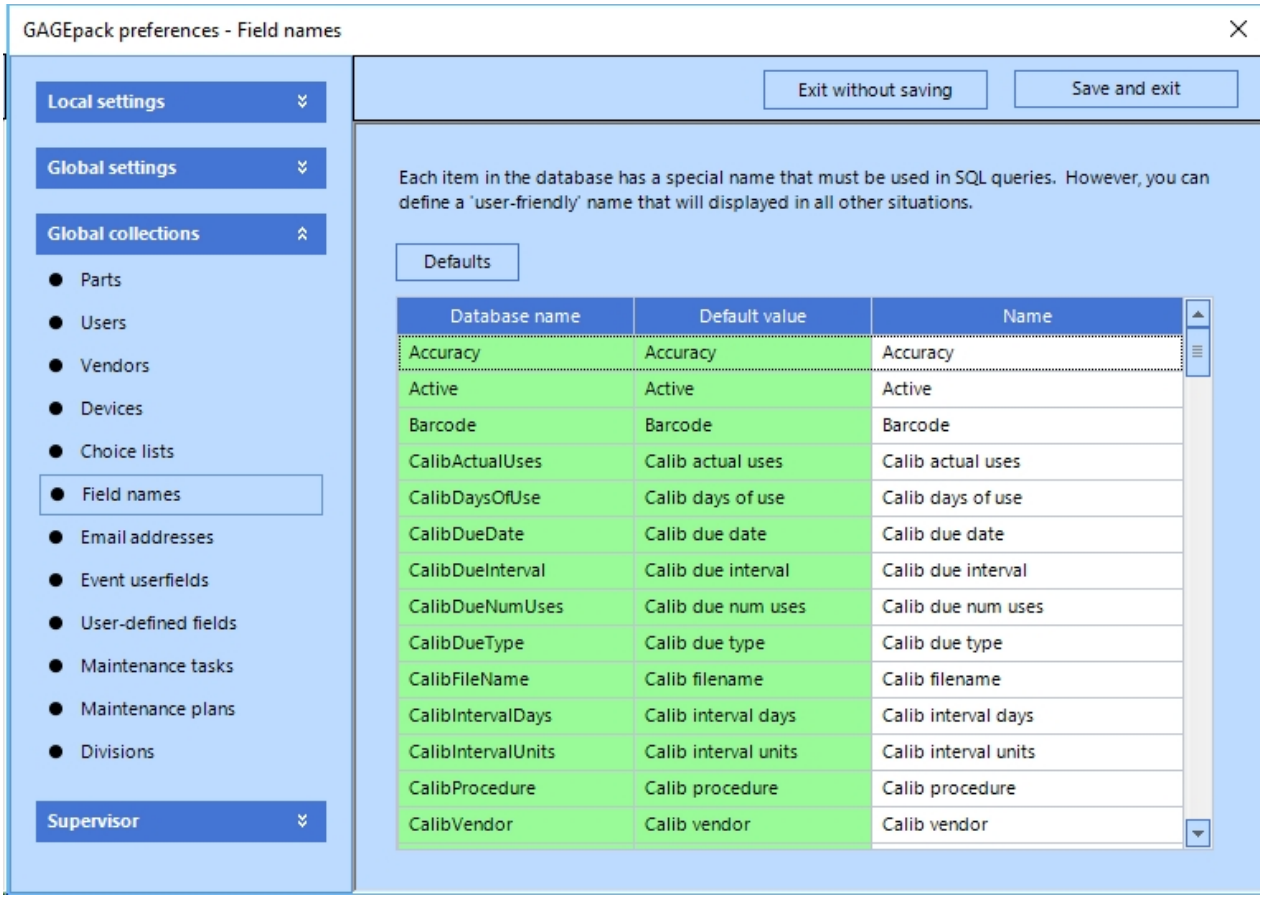
Field names

Field names

All of the gage characteristics can be renamed to better suit the needs of an organization. This page is used to make these changes. Whenever a gage characteristic has been renamed, the new name will immediately appear throughout the software where the old name used to be.



The grid on this page has three columns:

Database name – Most users will have no need of this column whatsoever. It shows the name of the field as it appears in the database behind the scenes. This is useful for writing custom queries, but has little application for a typical user. This column is read-only.

Default value – This column shows the name that this field uses in its original state. This column is also read-only.

Name – This column displays the name of the characteristic that will appear throughout the software. This column can be edited by the user. To rename a column, simply erase the previous name and type in a new one.

Defaults – This button will cause the ***Name*** column to match the ***Default value*** column exactly.

See Also

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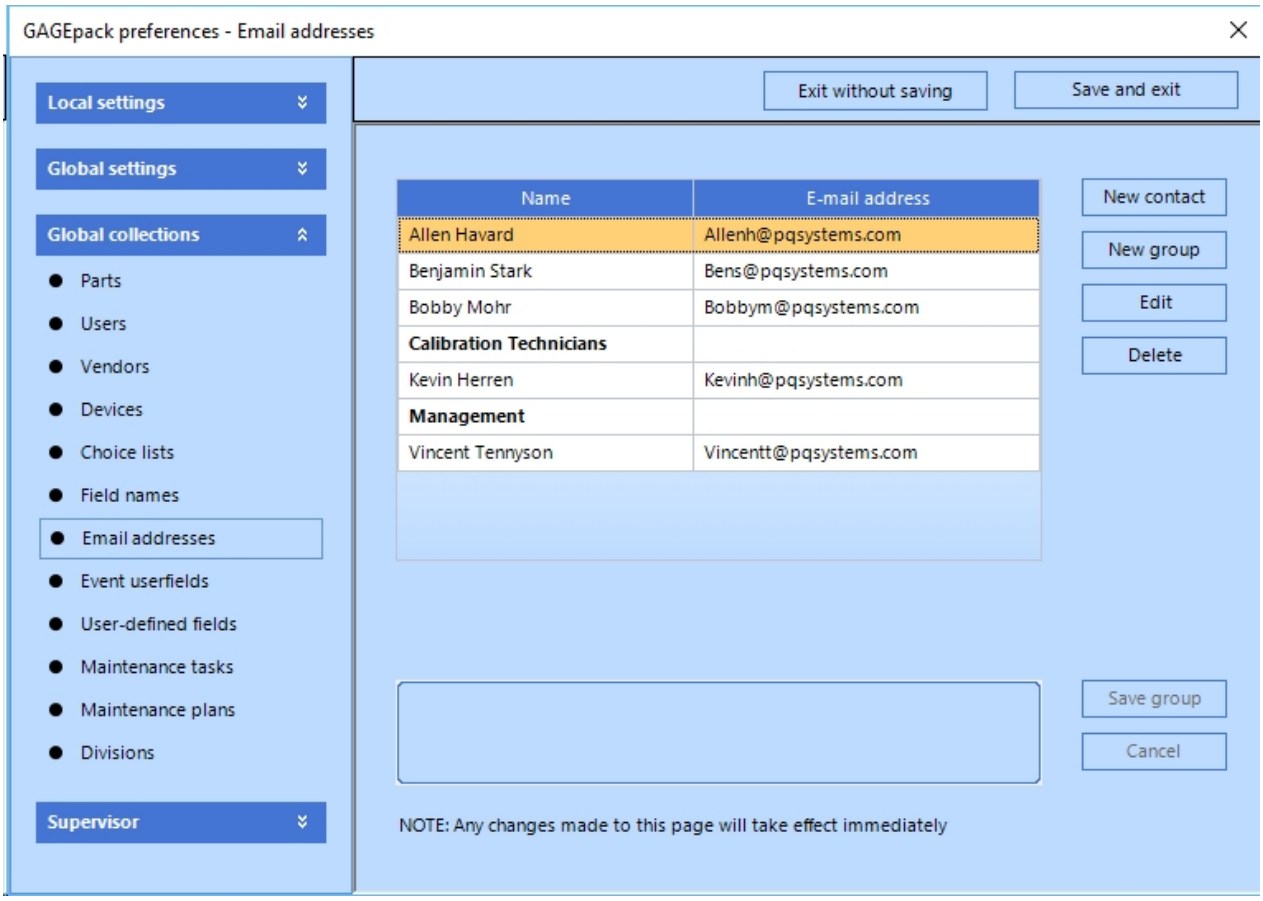
Email addresses

Email addresses

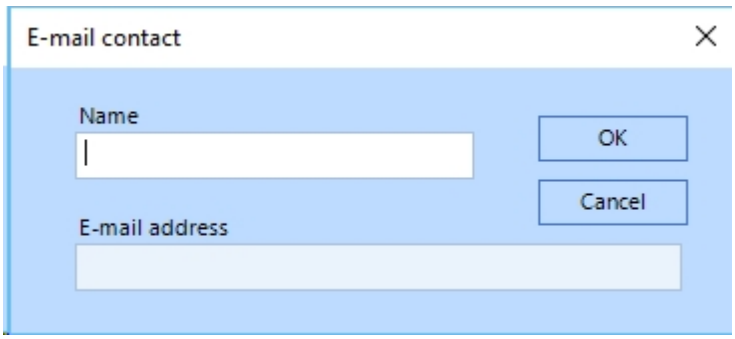
Emails can be sent from several locations in GAGEpack. GAGEmail also retrieves email addresses from the database. This page is used to define the list of email contacts that are available for use in these locations.



There are two types of objects managed on this page. The first type is a 'contact,' which is a single name and associated email address. The second is a 'group,' which is a collection of contacts clumped together for the purpose of sending a single message to a whole bunch of people.

Both of these types of objects can be used as recipients for GAGEpack and GAGEmail emails, and both can be created, edited, and deleted using this interface.

New contact – To create a new email contact, click this button and enter the name and email address of the contact when prompted. Click ***OK*** to save.



New group – To create a new email group, click this button. The section at the bottom of the page will unlock to allow contacts or groups to be dragged from the main table into it. Once all desired contacts have been dragged into the group, click ***Save group*** and give the group a name.

Edit – Selecting an email contact or group and clicking this button will allow changes to be made to it.

Delete – Selecting an email contact or group and clicking this button will remove it from the list.

See Also
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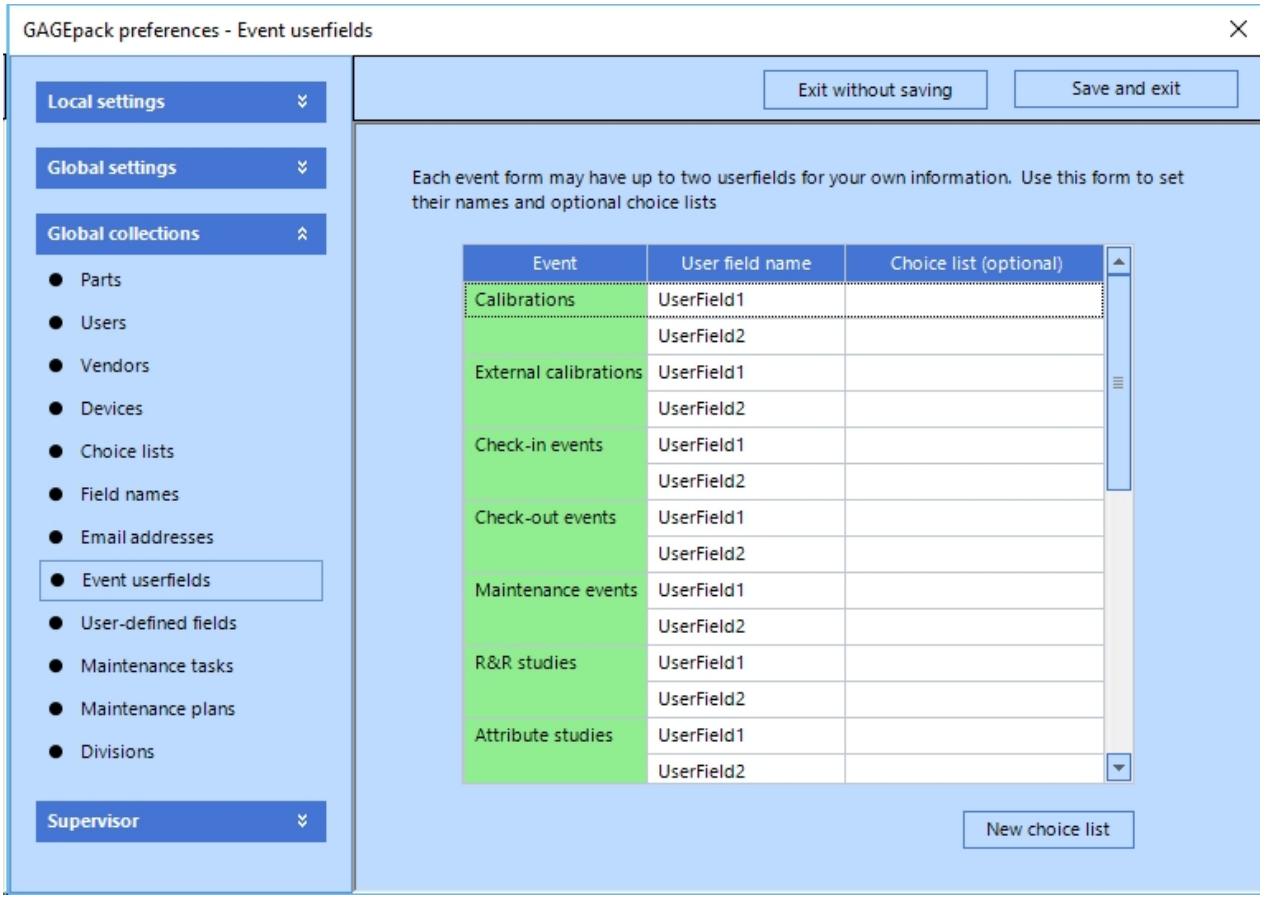
Event userfields

Event userfields

Every type of gage event form contains two UserFields. These provide users with a place to store information about the event that doesn't already have a field dedicated to it. This page of the preferences window allows these fields to be renamed and linked to choice lists.



The grid on this page has three columns.

Event – This column identifies which gage event type is associated with the two user fields that appear on the same block of two rows. This field is not editable.

User field name – This column displays the current label being used on the event user fields. Users can re-label these fields by simply deleting the existing text and typing in something else.

Choice list (optional) – Each of these fields has the ability to offer the user options in the form of dropdown lists. This column contains a dropdown list that shows all of the available choice lists in the database. Users can associate a choice list with a user field by simply selecting the desired choice list from this dropdown. In addition, new choice lists can be created from this screen by clicking ***New choice list***.

See Also

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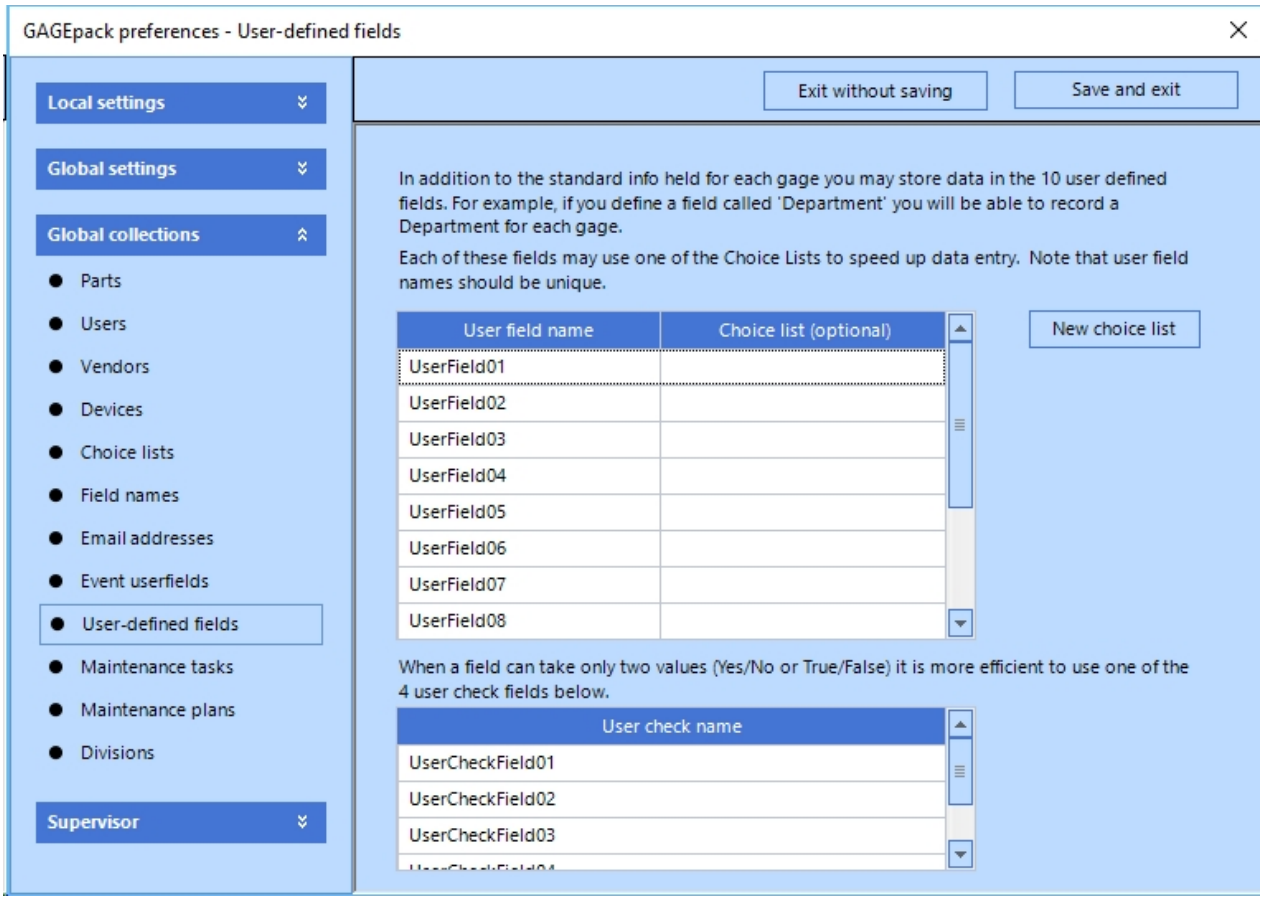
User-defined fields

User-defined fields

Fourteen gage characteristic fields have been intentionally left ambiguous. These exist to allow users to store gage information that does not already have a field dedicated to it. This page of the preferences window allows these fields to be renamed and linked to choice lists.



User field name – This column displays the current label being used on the user fields. Users can re-label these fields by simply deleting the existing text and typing in something else.

Choice list (optional) – Each of these fields has the ability to offer the user options in the form of dropdown lists. This column contains a dropdown list that shows all of the available choice lists in the database. Users can associate a choice list with a user field by simply selecting the desired choice list from this dropdown. In addition, new choice lists can be created from this screen by clicking ***New choice list***.

See Also

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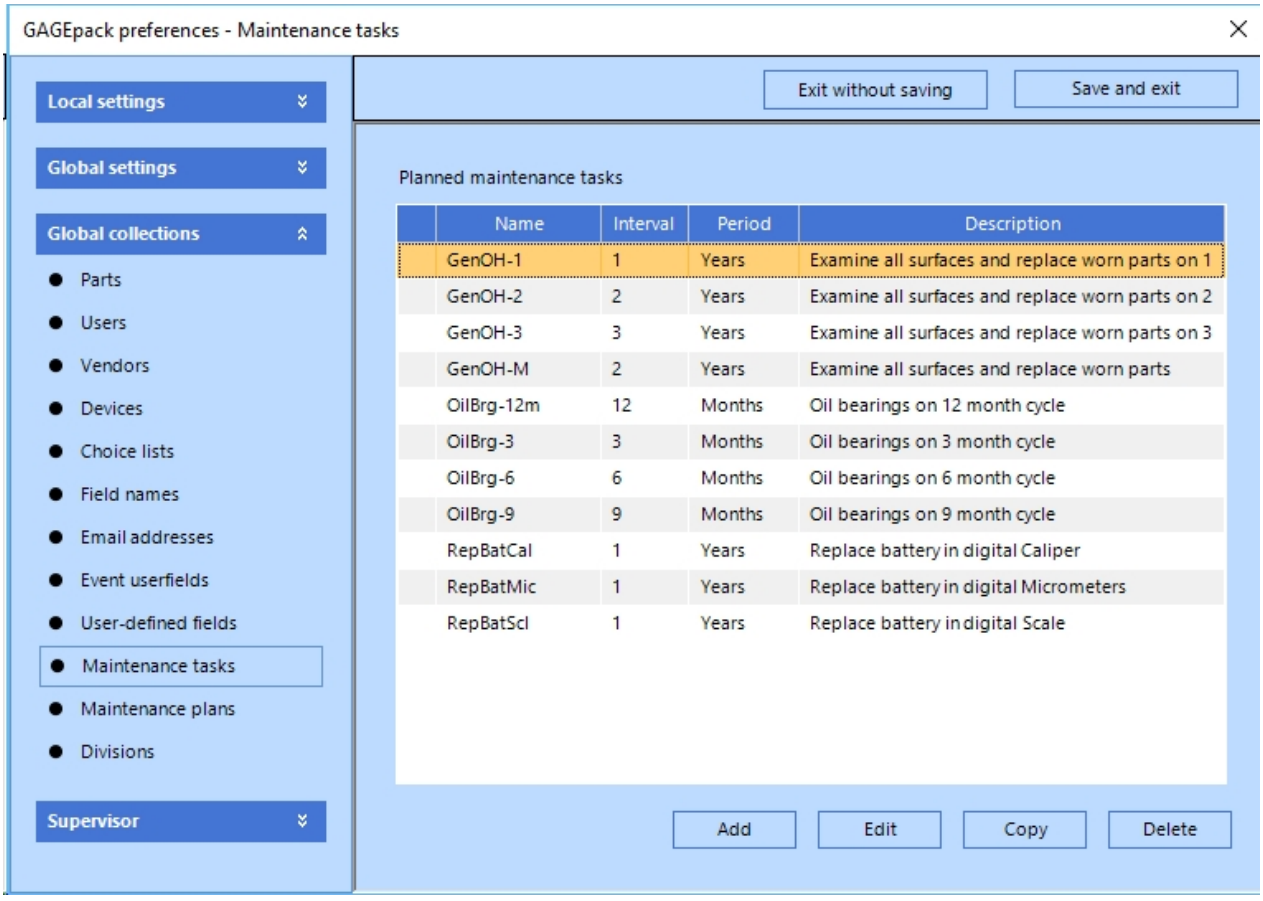
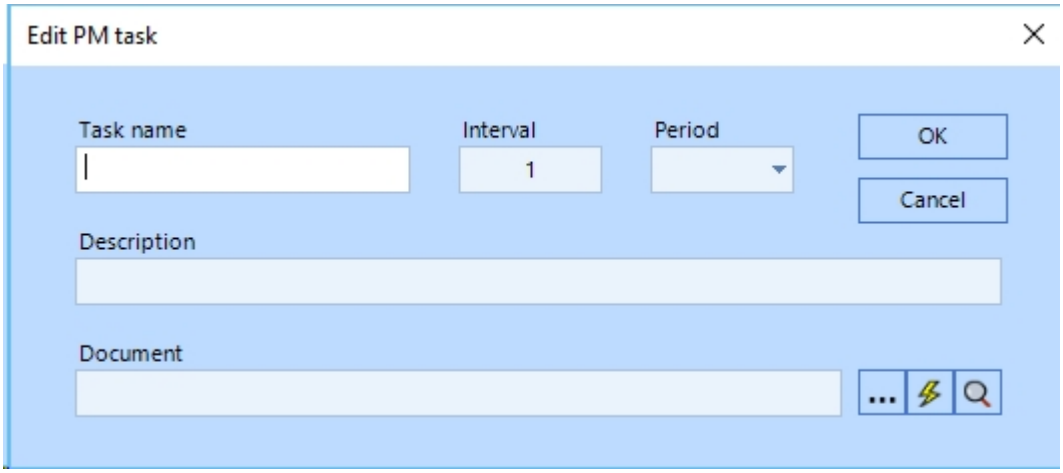
Maintenance tasks

Maintenance tasks

Gages can be scheduled for routine active maintenance events by adding tasks to their PM tasks list (found on the gage viewing form). This page of the preferences allows for the management of the list of tasks that are available to be used on the gages.



Add – This button will open a window that allows for the creation of a new maintenance task.



To add a task, give it a meaningful name and description and define the frequency with which it should be completed. Attached a document to the task if necessary. Click ***OK*** to save.

Edit – Selecting a task and clicking this button will open a window that displays the current settings for the task. This information can be adjusted as necessary and any changes will be saved by clicking ***OK***.

Copy – Selecting a task and clicking this button will create a new task that is an exact replica of the originally selected task except for the name.

Delete – Selecting a task and clicking this button will remove the task from the list of active tasks in the database.

See Also
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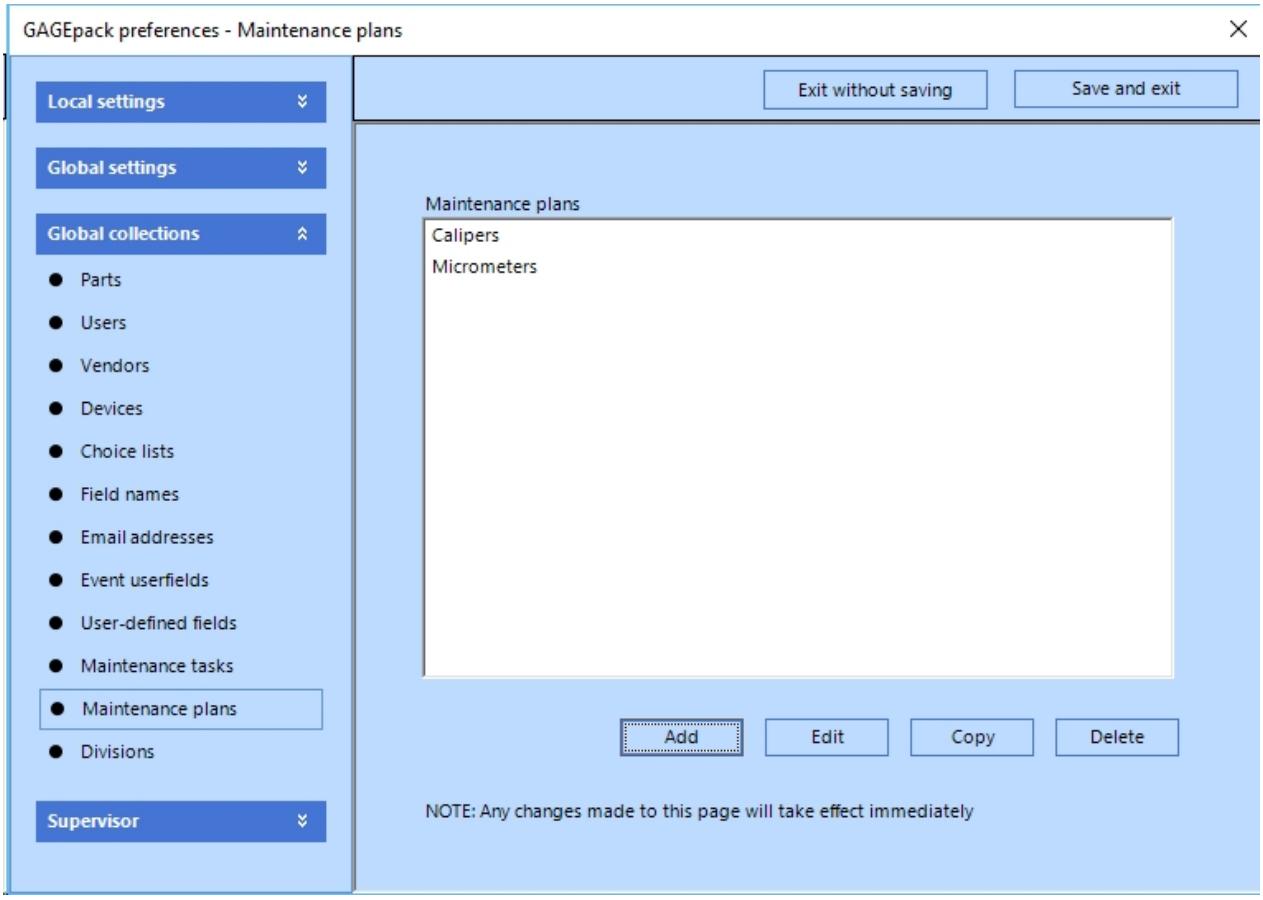
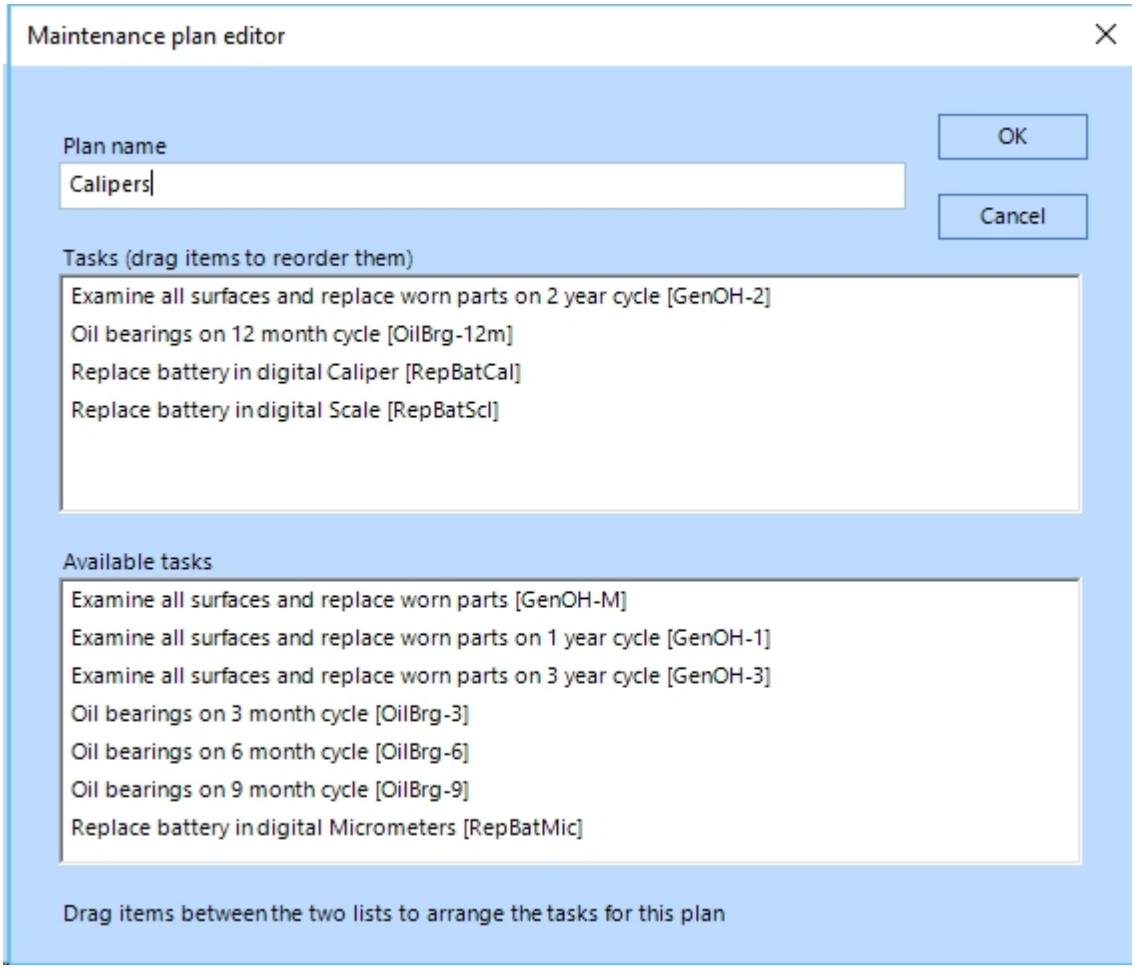
Maintenance plans

Maintenance plans

Maintenance plans exist to make it easy to attach many maintenance tasks to a gage at once. A maintenance plan is simply a collection of maintenance tasks that have been clumped together for easy deployment. This allows for the management of the collection of maintenance plans.



Add – This button will open a window that allows for the creation of a new maintenance plan.



To add a plan, give it a meaningful name and drag all desired maintenance tasks from the list on the bottom to the space at the top. Click OK to save.

Edit – Selecting a plan and clicking this button will open a window that displays the current tasks associated with this plan. This information can be adjusted as necessary and any changes will be saved by clicking OK.

Copy – Selecting a plan and clicking this button will create a new plan that is an exact replica of the originally selected plan except for the name.

Delete – Selecting a plan and clicking this button will remove the plan from the list of active plans in the database. The tasks associated with the plan will not be deleted.

See Also
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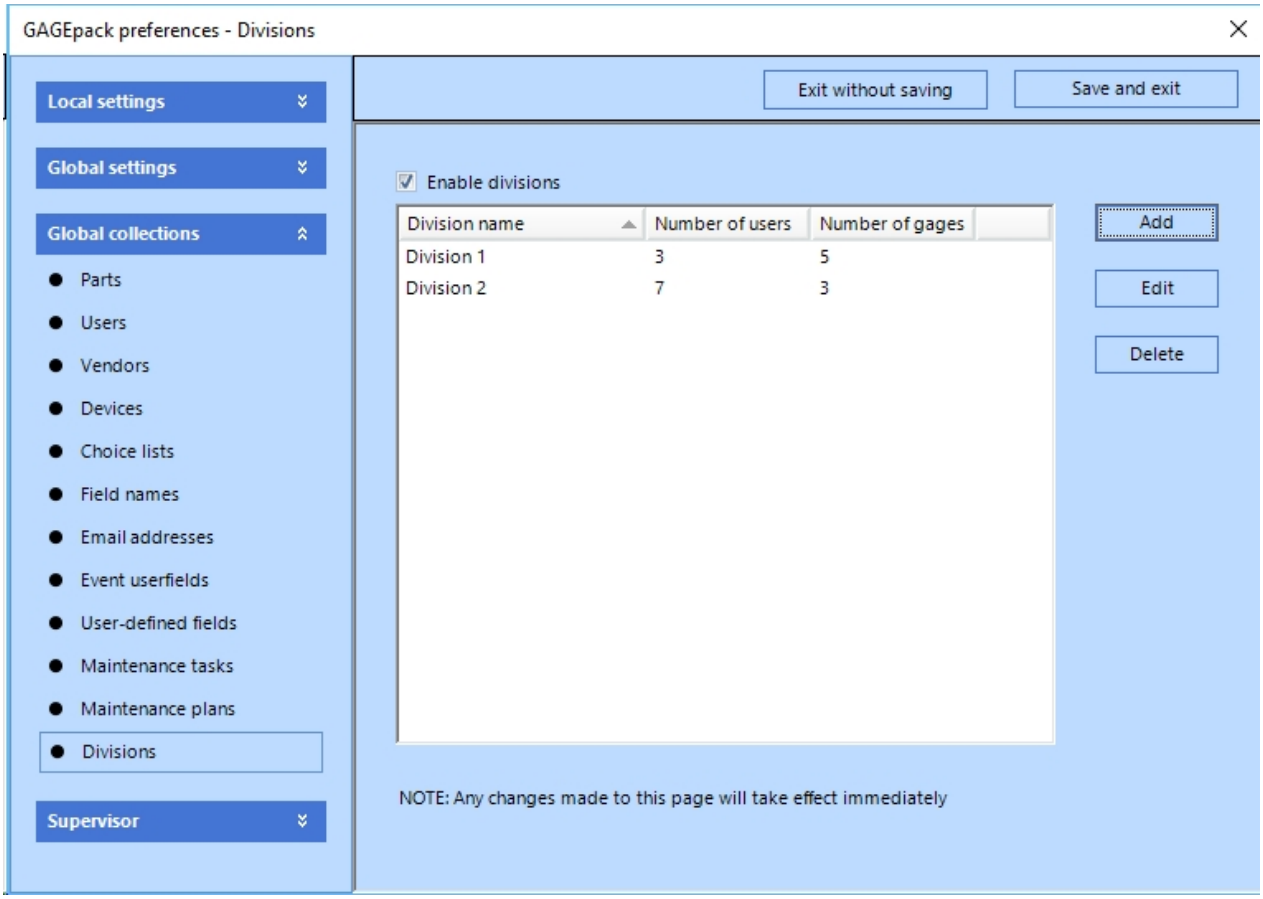
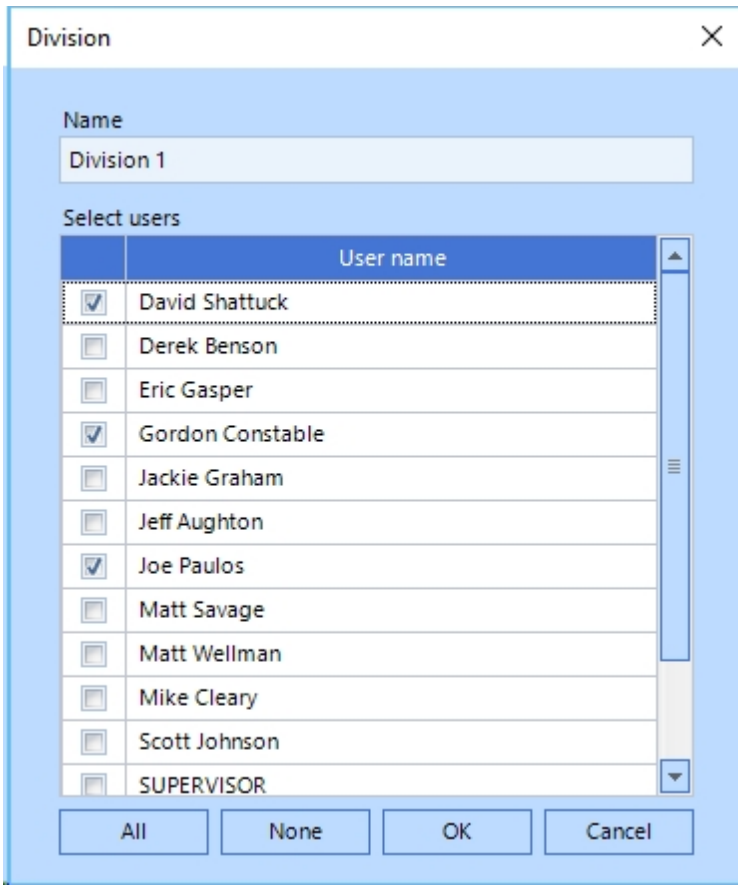
Divisions

Divisions

Divisions give the GAGEpack database administrator the ability to break up the organization's gage inventory into logical segments based on department, geographical location, or any other attribute. These logical segments are called "Divisions." Users and gages can both be added to divisions. In any database where Divisions are enabled, any user that logs into the system will be able to see and interact only with the gages that belong to the same divisions that the user belongs to as well.



Add – This button will open a window that allows for the creation of a new division.

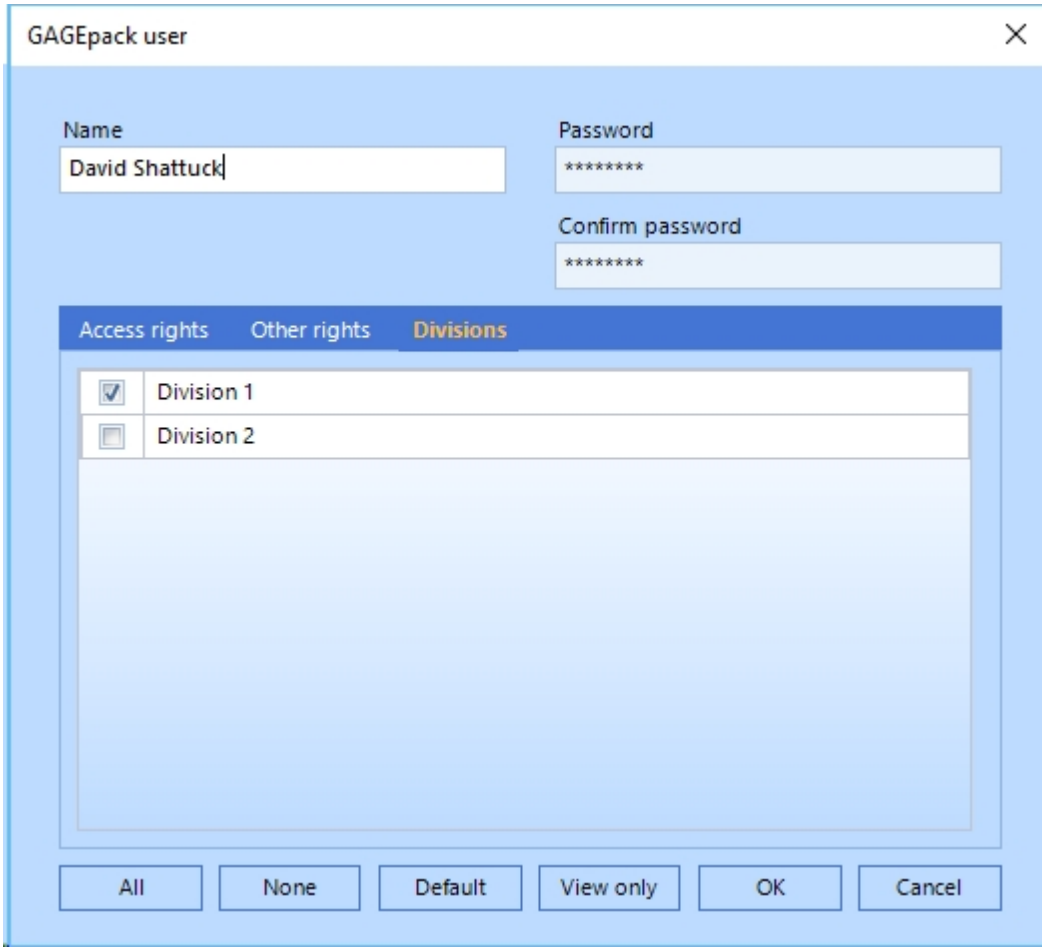


To create a new division, enter a name and check the boxes next to the users that will be associated with it.

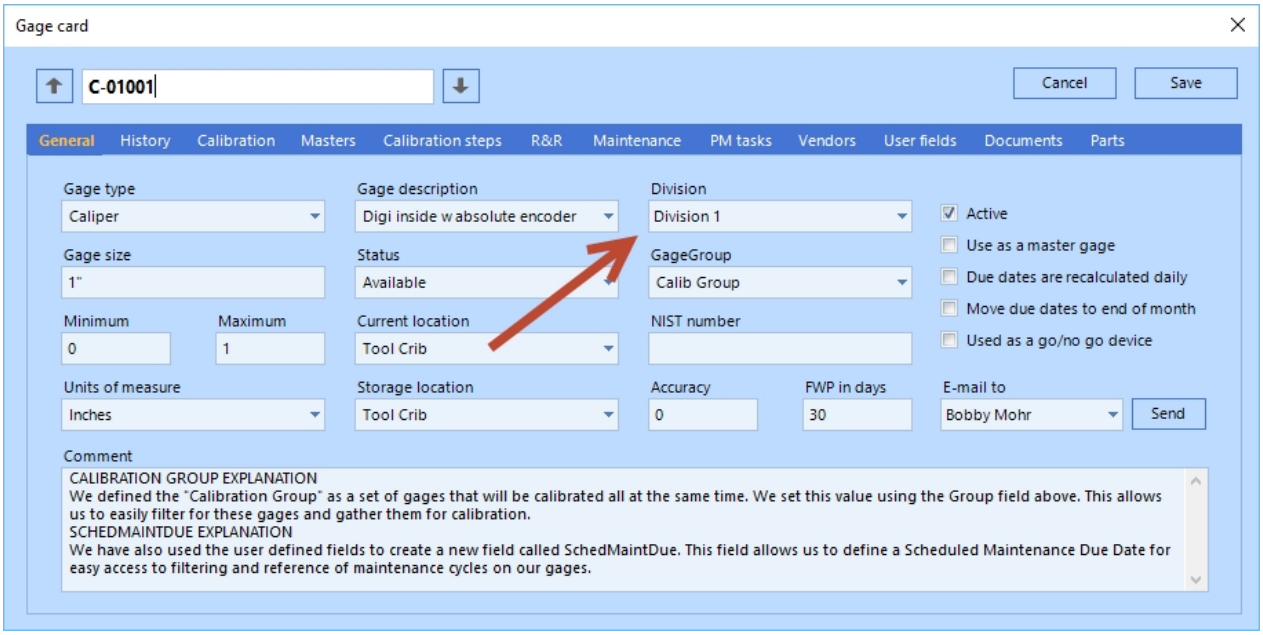
Edit – This button will open the selected division so the name or the member users can be changed.

Delete – This button will delete the selected division. Gages currently in this division will revert to a state of not belonging to any division, and so will be visible by every user.

Users can also be added to divisions from the user-edit window.



Gages can be added to divisions from the General tab of the gage form.



See Also

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Supervisor

Supervisor

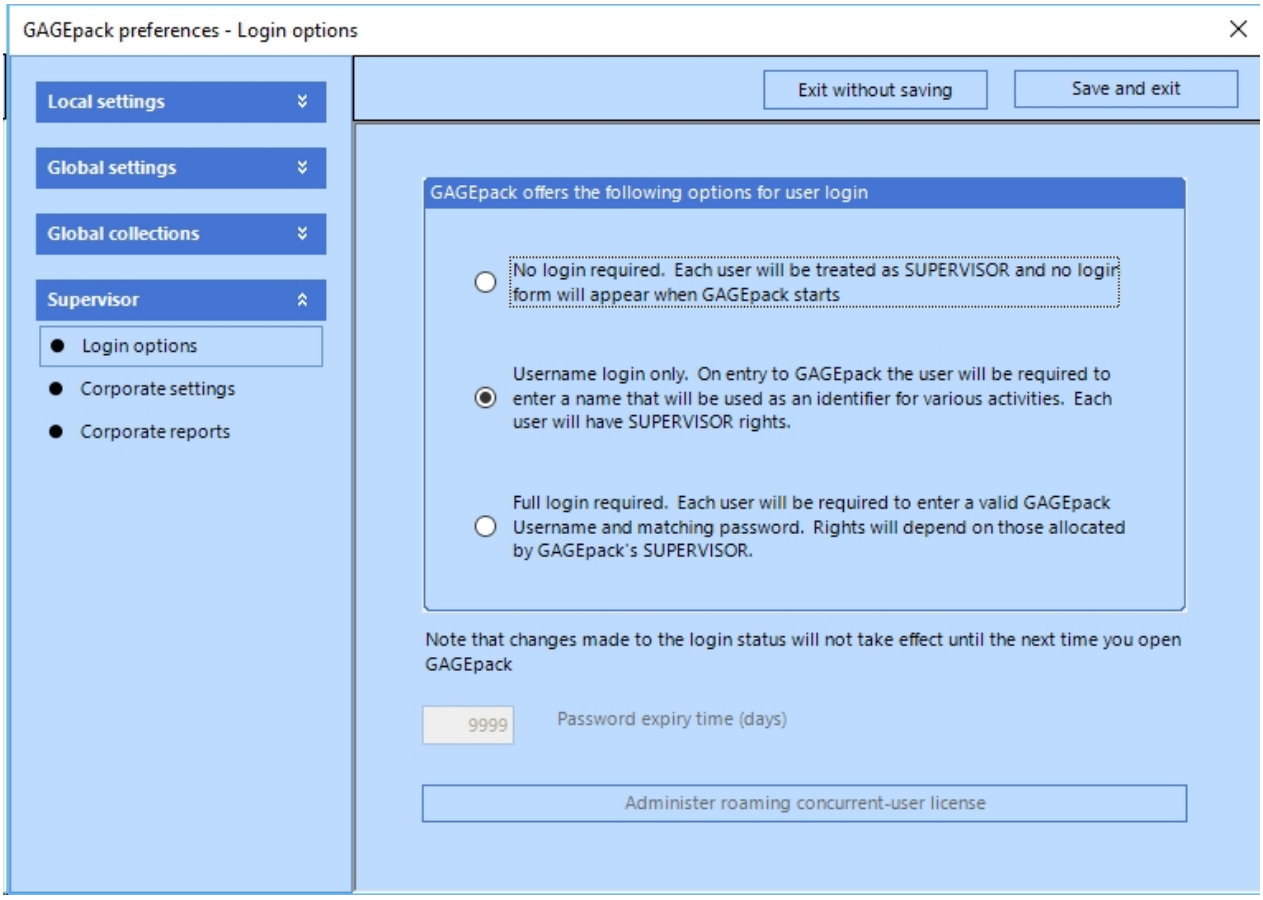
This section of the preferences window is visible ONLY while logged in using the account called SUPERVISOR. No other users, even those with all rights enabled, can see this area.

In This Section	See Also
Login options	Configuring GAGEpack
Corporate settings	Local settings
Corporate reports	Global settings
	Global collections

Login options

Login options

This page controls the security level being used in the current database. There are three distinct levels of security.



No login required. Each user will be treated as SUPERVISOR, and no login form will appear when GAGEpack starts.

Username login only. On entry to GAGEpack, the user will be required to enter a name that will be used as an identifier for various activities. Each user will have SUPERVISOR rights.

Full login required. Each user will be required to enter a valid GAGEpack username and matching password. Rights will depend on those allocated by GAGEpack's SUPERVISOR.

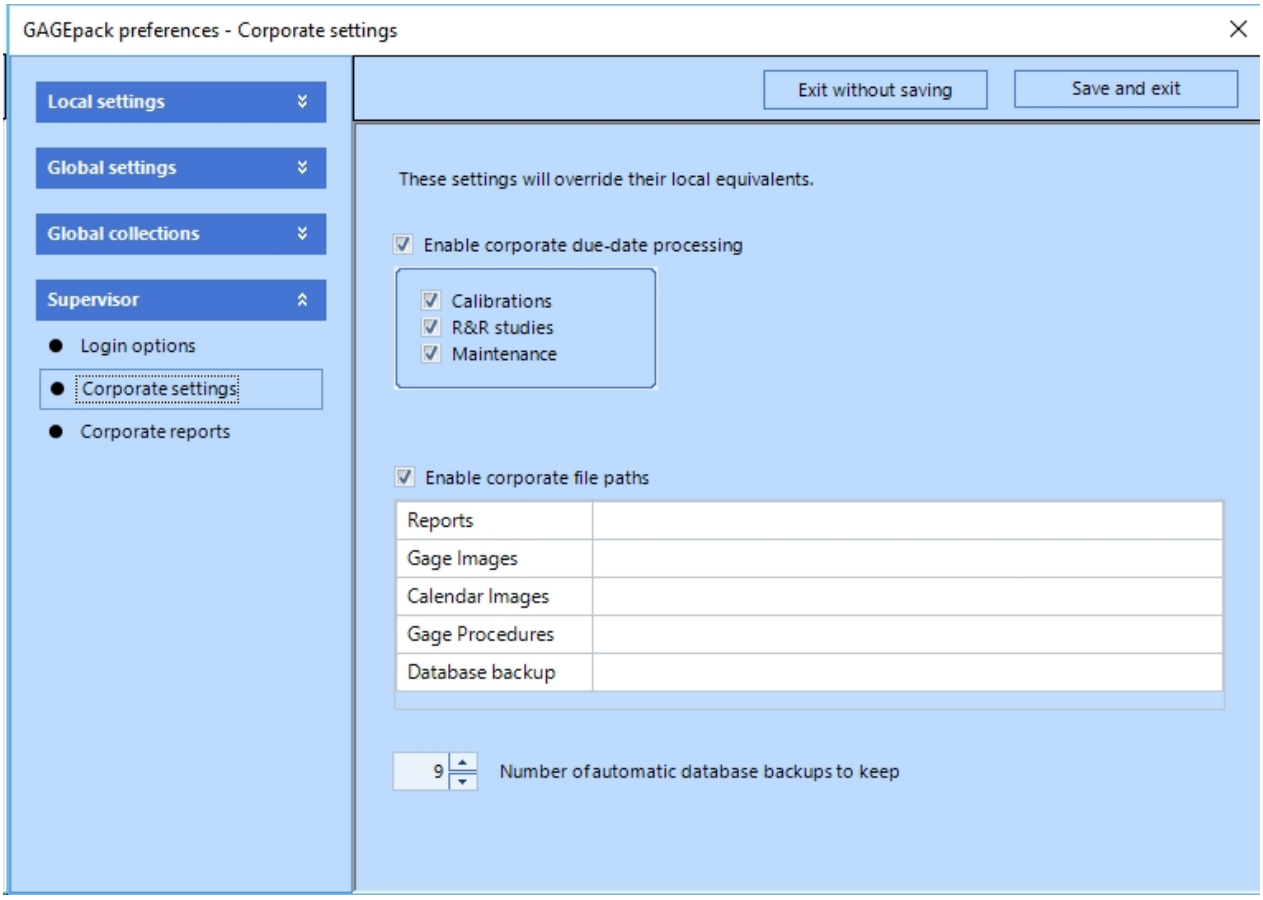
Password expiry time (days) – This field is used to define how long a password is valid before it has to be changed.

See Also
Supervisor
Corporate settings
Corporate reports

Corporate settings

Corporate settings

Corporate settings are global (database-wide) configuration options which, if enabled, will override their local equivalents. For example, if an administrator wants every GAGEpack user to utilize a shared Reports folder on a network drive, he needs to enable corporate file paths and select the folder. This will override any folder selection that users make at the local level.



See Also

Supervisor

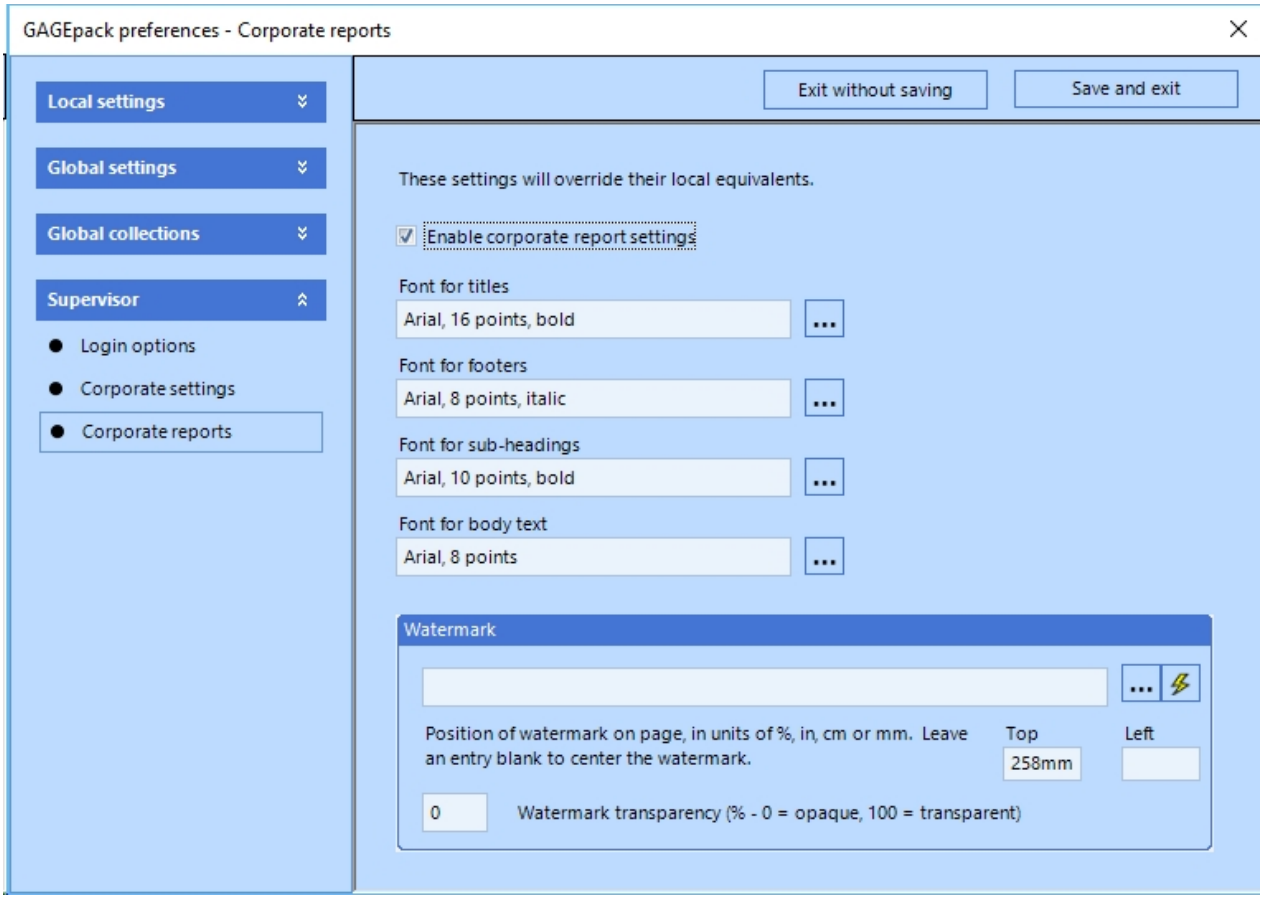
Login options

Corporate reports

Corporate reports

Corporate reports

If enabled, these report settings will override the report settings for all users of this database.



See Also

Supervisor

Login options

Corporate settings

Gage management

Gage management

This chapter covers the various ways to view, add to, edit, manipulate, and organize the collection of gages stored in a GAGEpack database.

In this chapter

Gage form

Adding a gage

Editing a gage

Deleting a gage

Copying a gage

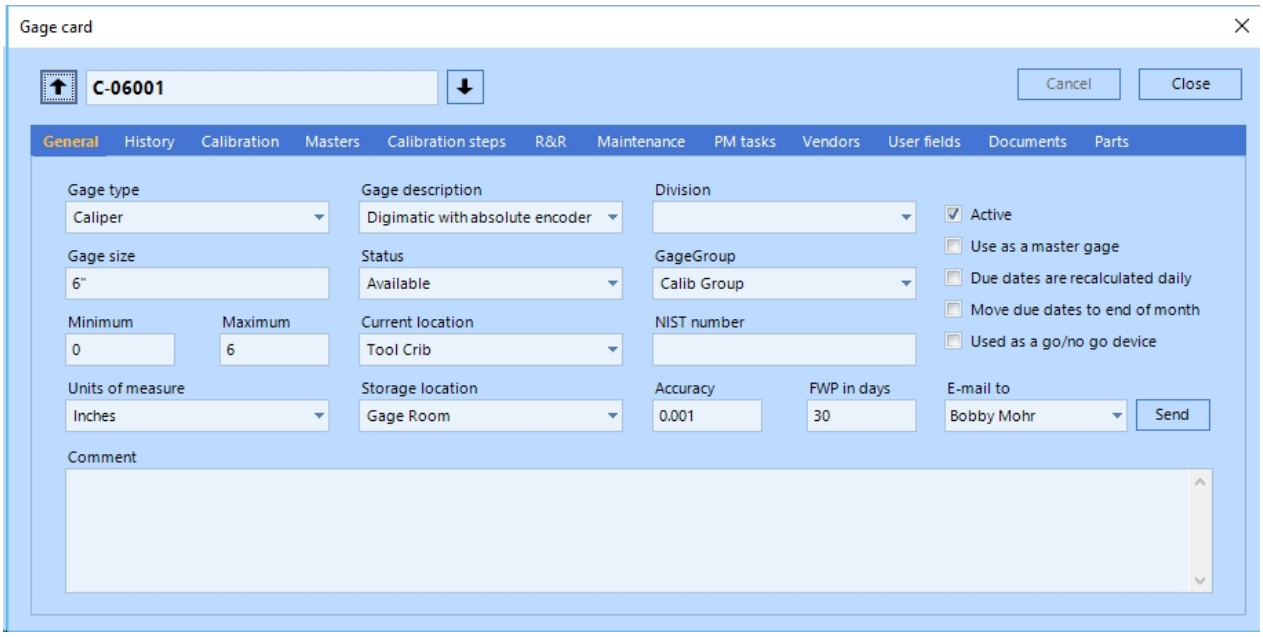
Cloning a gage

Finding a specific gage

Search and replace
Filters
Reports
Views

Gage form

Gage form



The ***Gage editing*** form is used to view and edit information about a specific gage. To access this form, double-click on a gage from the ***Gages*** tab. This form has several tabs that represent different categories of gage information:

- The ***General*** tab is used to record basic information about the gage.
- The ***History*** tab is a record of past events and activities for the gage.
- The ***Calibration*** tab is used to set the frequency at which calibration events are scheduled for the gage. This tab also contains the calibration procedure.
- The ***Masters*** tab displays the collection of master gages associated with this gage
- Use the ***Calibration steps*** tab to define the target and allowable variance for each of your calibration ranges.
- The ***R&R*** tab sets the frequency at which R&R study events are scheduled for the gage. This tab also contains the R&R procedure.
- The ***Maintenance*** tab sets the frequency at which maintenance events are scheduled for the gage. This tab also contains the maintenance procedure.
- The ***PM tasks*** tab defines which preventative maintenance procedures must be performed on the gage during a maintenance event.
- Use the ***Vendors*** tab to enter information about the vendor(s) that sold, services, or calibrates the gage.
- The ***User fields*** tab is used to enter data in fields defined by your organization.
- The ***Documents*** tab references any external file from within the gage. This tab also stores the location of a gage image file.
- The ***Parts*** tab can be used to enter part names (or any other designation desired such as job

number) that the gage is used on. There are reports that summarize the parts assigned to a gage and the gages assigned to a part.

See Also
Gage management
Adding a gage
Editing a gage
Deleting a gage
Copying a gage
Cloning a gage
Finding a specific gage
Search and replace
Filters
Reports
Views

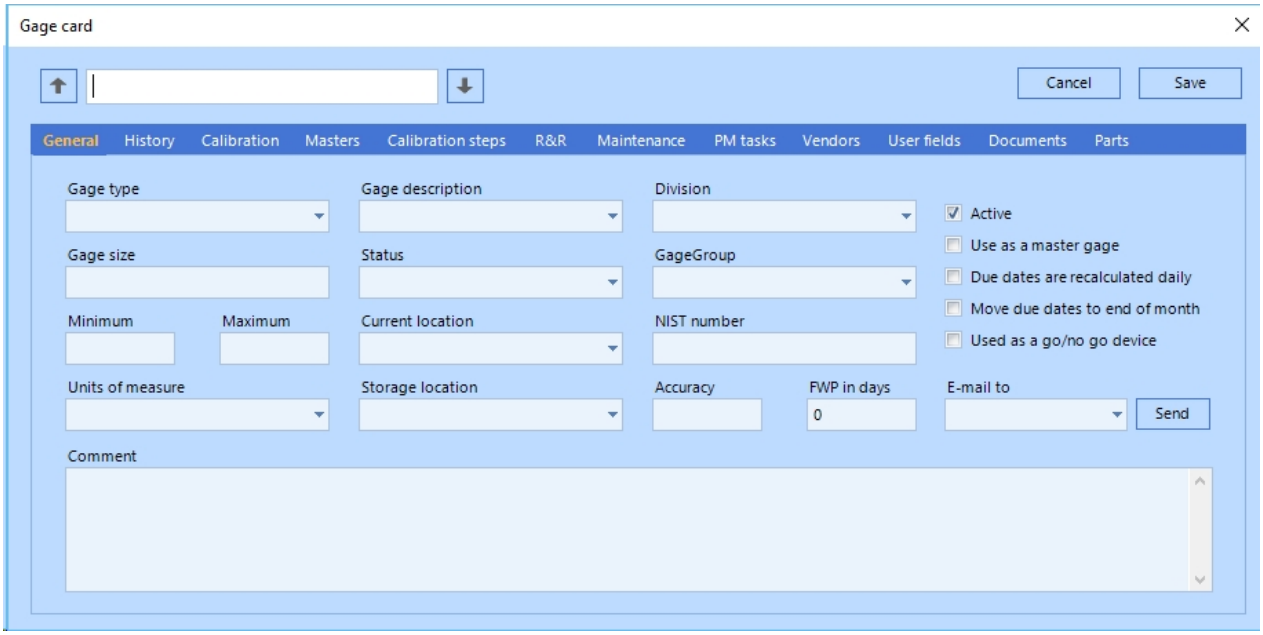
Adding a gage

Adding a gage

To add a new gage:

1. Click on the ***Add gage*** icon on the ***Inventory*** toolbar. You can also right-click on the gage list and select ***Add gage*** from the pop-up menu. The ***Gage editing*** form will open.
2. In the top left corner, replace "New number" with a name/number for the new gage. This will be the gage number that distinguishes gages from each other, so no two gages can share the same number.
3. Enter as much information as is available into the gage form tabs. All of the fields are optional. Only the gage number must be entered for a device to exist in the database. The topics that follow provide more information on each of the tabs' fields.

NOTE: If several gages have similar settings, the user may find it advantageous to copy the gage, create a template that can be copied repeatedly, or clone an existing gage. These features are discussed later in this chapter.

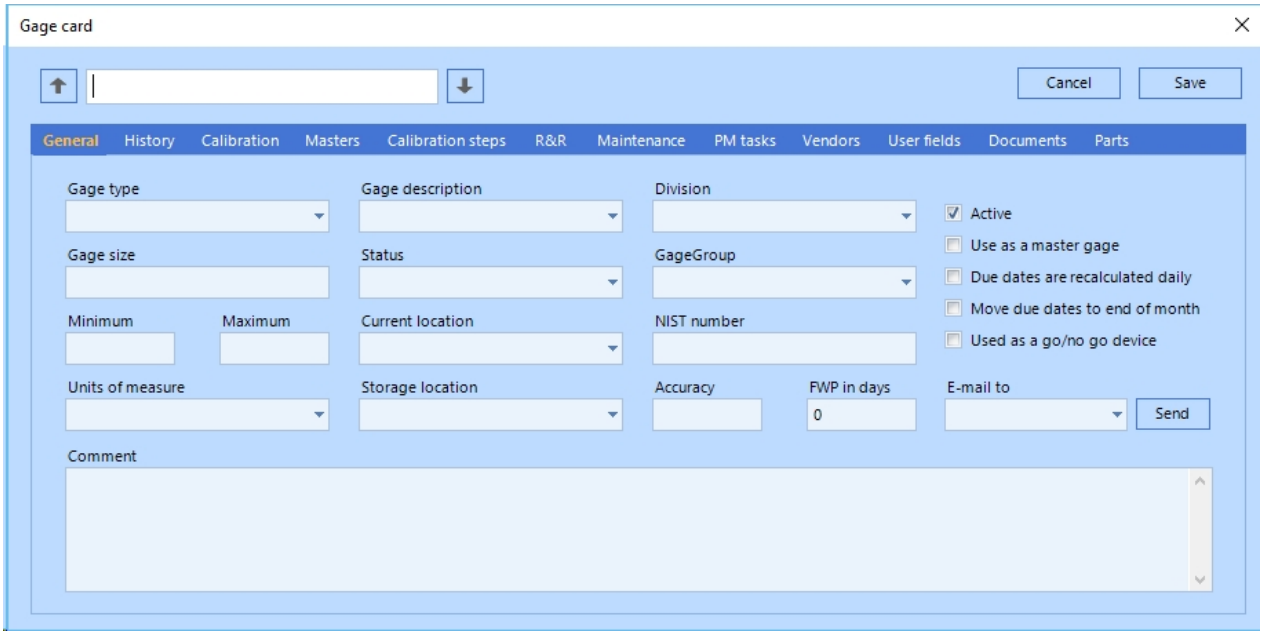


In This Section	See Also
General	Gage management
History	Gage form
Calibration	Editing a gage
Masters	Deleting a gage
Calibration steps	Copying a gage
R&R	Cloning a gage
Maintenance	Finding a specific gage
PM tasks	Search and replace
Vendors	Filters
User fields	Reports
Documents	Views
Parts	

General

General

The following descriptive fields are available through the ***General*** tab. Several fields have choice lists associated with them. These drop-down options can be edited by double-clicking on the drop-down button. All of the fields on the ***General*** tab are customizable. For more information about editing choice lists and field names, please see Configuring GAGEpack.



- ***Gage type:*** Enter the type of device in this field. Type in the gage type or select a gage from the drop-down menu choice list.
- ***Gage size:*** Type the gage size in this field.
- ***Minimum:*** Enter the minimum value of the gage's measuring range.
- ***Maximum:*** Enter the maximum value of the gage's measuring range.
- ***Units of measure:*** Enter the units of measure for the gage into this field.
- ***Gage description:*** Type a description of the device in this field.

Status: Enter the status of this gage into the field.

Current location: Enter the current location of the gage into this field.

Storage location: Enter the storage location of the gage into this field.

- ***Division:*** Gage databases can be broken up into logical segments called "divisions." Once divisions have been created and enabled (Setup > Preferences > Global collections > Divisions), this dropdown can be used to assign a gage to a division.
- ***Group:*** Gages can be grouped together to allow related gages to be easily accessed via filters and reports. A group of gages can also be checked in or checked out with a single event. Use this field to assign the gage to a specific group.
- ***NIST number:*** Use this field to record National Institute of Standards and Technology numbers.

Accuracy: The value entered is generally based on the smallest increment that can be read on the gage (for example, 0.00001, 0.0001, or 0.001).

FWP in days: Friendly Warning Period - Use this field to set how far in advance of an event a warning should be dispatched. Use "0" to deactivate the warning.

- ***Active:*** If a gage is active, put a check in this box. An active device is one that is currently in circulation, although not necessarily currently in use. An inactive device is one that is out of use indefinitely, but could be reactivated.

Use as a master gage: Check this box if this is a master gage. A master gage is a device used to calibrate other devices. Also known as a company standard, AIAG refers to this as a primary or secondary standard.

Due dates are recalculated daily: Check this box if you want the amount of time remaining until the next due date to count down only while the gage is checked out. A "checked-in" gage with this box checked will not be moving towards its next due date.

- ***Move due dates to end of month:*** If this box is checked, calibration, maintenance, and R&R study due dates will be moved to the last available day of the month in which the due date would otherwise be scheduled.
- ***Used as a go/no go device:*** Check this box if this device returns a go/no go result rather than a measurement.
- ***E-mail to:*** Use this field to set which person should receive e-mail alerts concerning the gage.
- ***Comment:*** Enter general notes about the gage into this field.

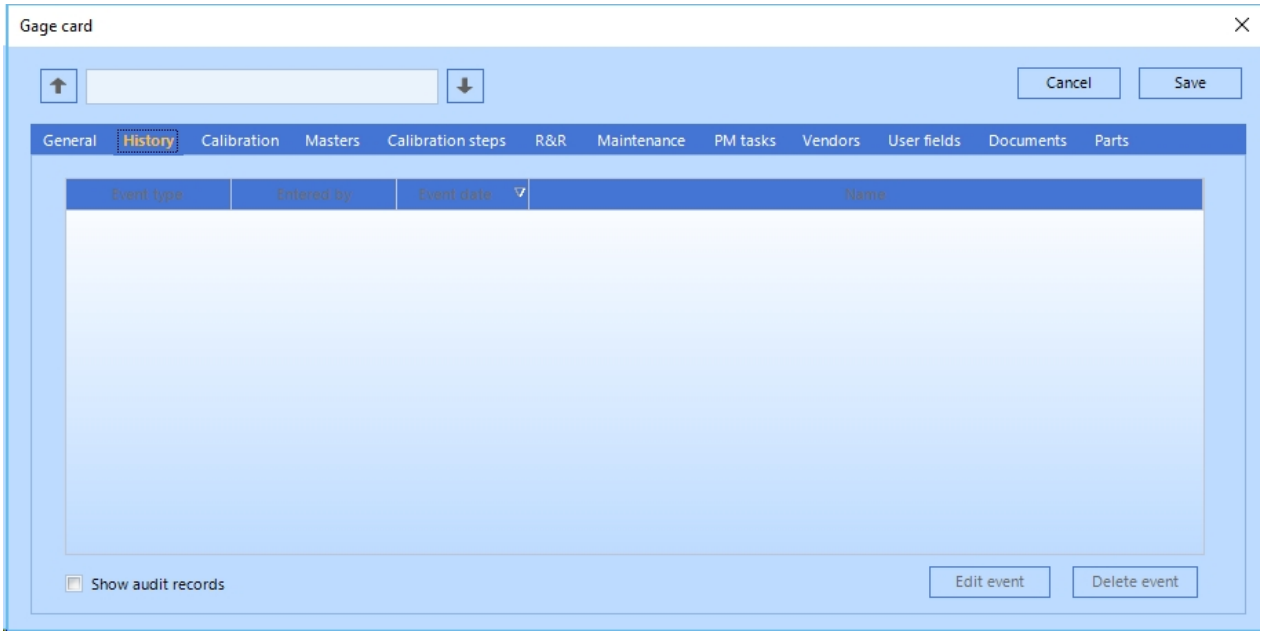
See Also

Adding a gage
History
Calibration
Masters
Calibration steps
R&R
Maintenance
PM tasks
Vendors
User fields
Documents
Parts

History

History

This tab displays every event in the database that is associated with this gage. For a new gage, it will be empty. Nothing needs to be done on this tab while adding a gage. The tab will be populated with events throughout the gage's life. Users with appropriate privileges can add, edit, or delete events from this screen.



See Also
Adding a gage
General
Calibration
Masters
Calibration steps
R&R
Maintenance
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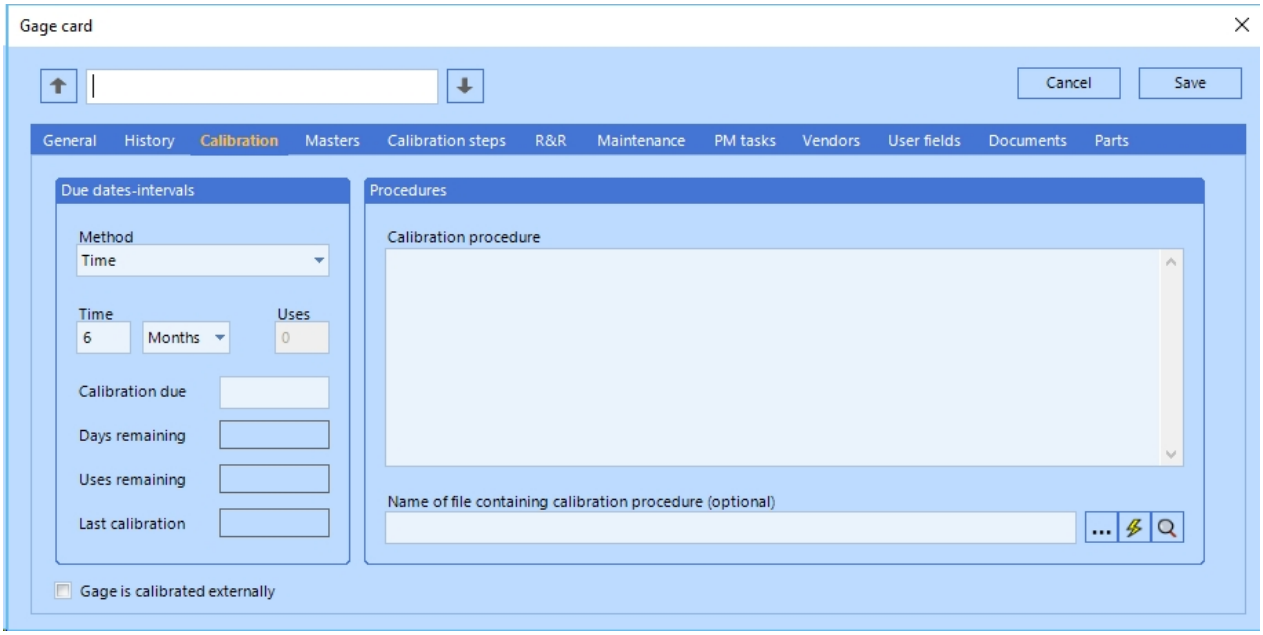
Calibration

Calibration

Use this tab to set frequency of calibration for this gage. The interval can be based on time, number of uses, a combination of both, or a date entered manually. A brief explanation of each method is given below.



- ***Time:*** Use this option to set how much time can elapse between calibration events. Note that the ***Due dates are recalculated daily*** option on the ***General*** tab can effect this, if enabled.
- ***Uses:*** With this method, due dates are calculated by comparing the number of times that the gage has been used to the target number of uses. When the number of uses equals or exceeds the target count, then the due date will be today. If the number of uses is less than the target count, the next due date is not specified. You can enter the number of times a gage has been used when you check a gage in or by using an Other event.
- ***Time and uses:*** Using this method, the due date will be the earlier of the ***Time*** date and the ***Uses*** date. The due date will be based on time unless the number of uses is exceeded before the time has

expired.

- ***Manual:*** No calculations are performed using this method. The due date is simply entered by the user.
- ***Calibration procedure:*** Instructions for calibrating this gage may be typed or copied into the ***Calibration procedure*** field. Since this field may be edited and any changes made must be done on this screen, the user may prefer to designate a file that can be used by more than one gage and cannot be readily changed. Files containing calibration procedures may be accessed by entering the file name and path into the ***Name of file containing calibration procedure***. This field is optional. These files and the typed in procedure may be displayed when calibrating a gage.
- ***Gage is calibrated externally:*** Select this option to designate the gage as calibrated externally. If this option is selected, the ***Calibration steps*** tab will be disabled.

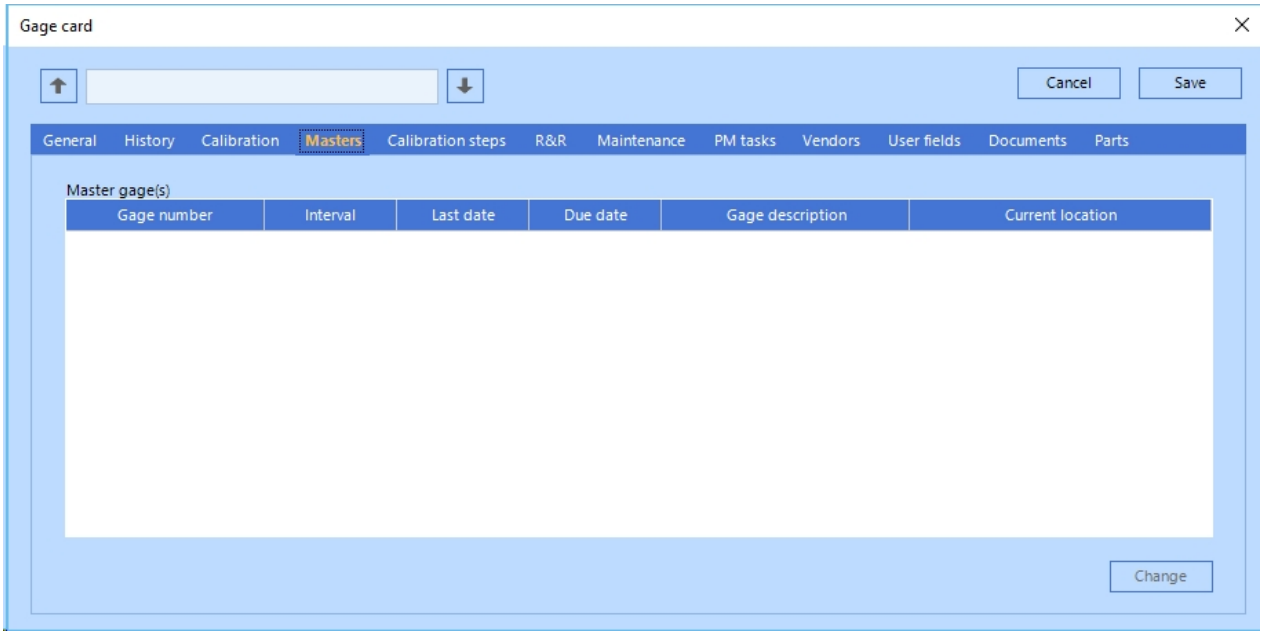
See Also

Adding a gage
General
History
Masters
Calibration steps
R&R
Maintenance
PM tasks
Vendors
User fields
Documents
Parts

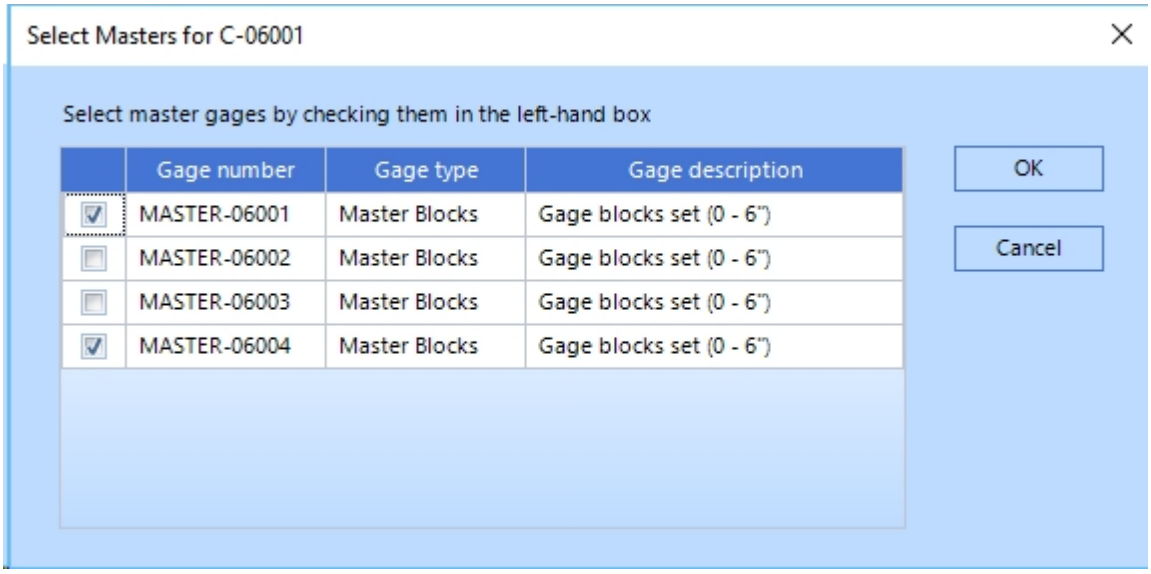
Masters

Masters

Use this tab to specify the collection of master gages associated with this gage.



To edit the list, click ***Change***. Check the boxes next to the master gages that should be included.



See Also

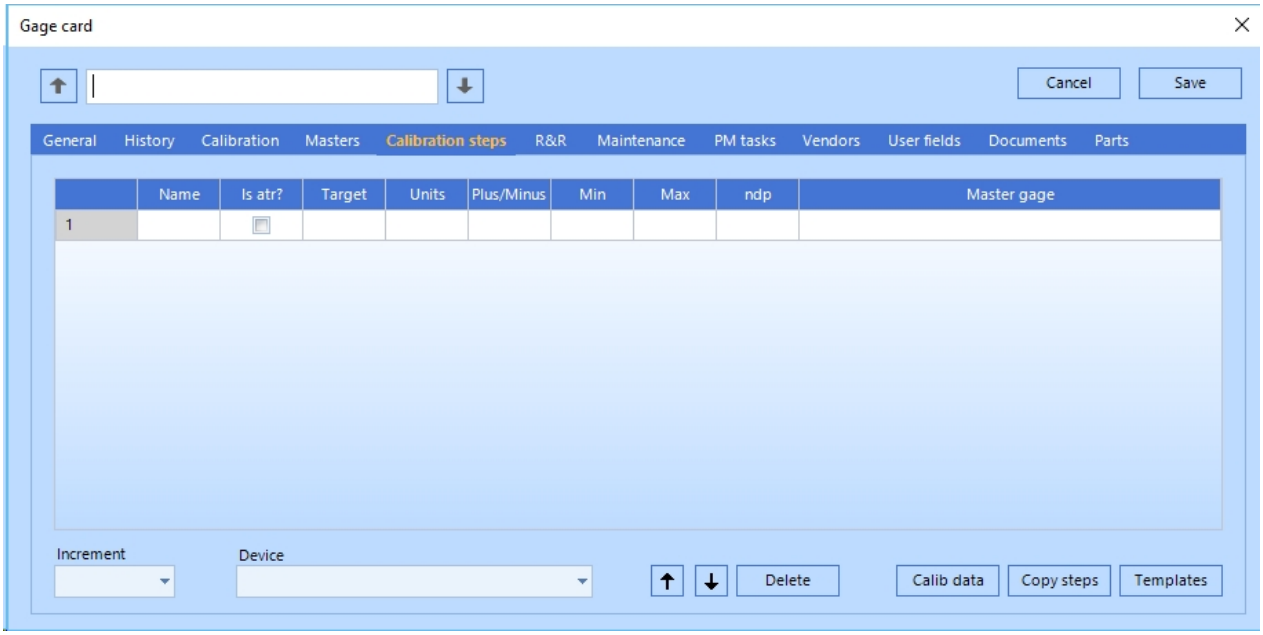
- Adding a gage
- General
- History
- Calibration
- Calibration steps
- R&R
- Maintenance
- PM tasks
- Vendors
- User fields

Documents
Parts

Calibration steps

Calibration steps

Use this tab to enter the steps required for calibrating the gage.



In This Section	See Also
Adding calibration steps	Adding a gage
Deleting calibration steps	General
Reordering calibration steps	History
Entering data coding values	Calibration
Selecting a device	Masters
Copying calibration steps	R&R
Creating a calibration steps template	Maintenance
	PM tasks
	Vendors
	User fields
	Documents
	Parts

Adding calibration steps

Adding calibration steps

To enter calibration steps:

1. Select the ***Calibration steps*** tab on the gage form for which the calibration steps are to be entered.
2. Enter a name for the step in the ***Name*** column.
3. If the step is to evaluate attributes data, put a check in the ***Is atr*** column.
4. Enter the target value for this step in the ***Target*** column. If you entered Yes in the ***Is atr*** field, you can enter text (such as Pass or Yes) in the ***Target*** field. If you type the target value in during a calibration event, it will Pass if it matches and Fail if it doesn't.
5. Enter the units used in the measurements. (optional)
6. If the specification limits are equidistant from the target, enter the allowable variance in the ***Plus/Minus*** field and GAGEpack will determine the ***Max*** and ***Min*** values for you. If not, you can enter the acceptance values for this gage in the ***Max*** and ***Min*** fields. See steps 7 and 8.
7. In the ***Max*** field, enter the highest acceptance value for this gage.
8. In the ***Min*** field, enter the lowest acceptance value for this gage.
9. In the ***ndp*** field, enter how many significant digits should be displayed after the decimal point. ndp stands for Number of Decimal Places.
10. In the ***Master gage*** field, a master gage can be selected for each step from a choice list of all designated masters if desired. (optional)
11. Repeat steps 2 through 10 until all of the steps have been entered.

See Also

Calibration steps

Deleting calibration steps

Reordering calibration steps

Entering data coding values

Selecting a device

Copying calibration steps

Creating a calibration steps template

Deleting calibration steps

Deleting calibration steps

To delete a calibration step:

1. Highlight the step to be deleted.
2. Click ***Delete*** and the step will disappear without asking for confirmation.

See Also

Calibration steps

Adding calibration steps

Reordering calibration steps

Entering data coding values

Selecting a device

Copying calibration steps

Creating a calibration steps template

Reordering calibration steps

Reordering calibration steps

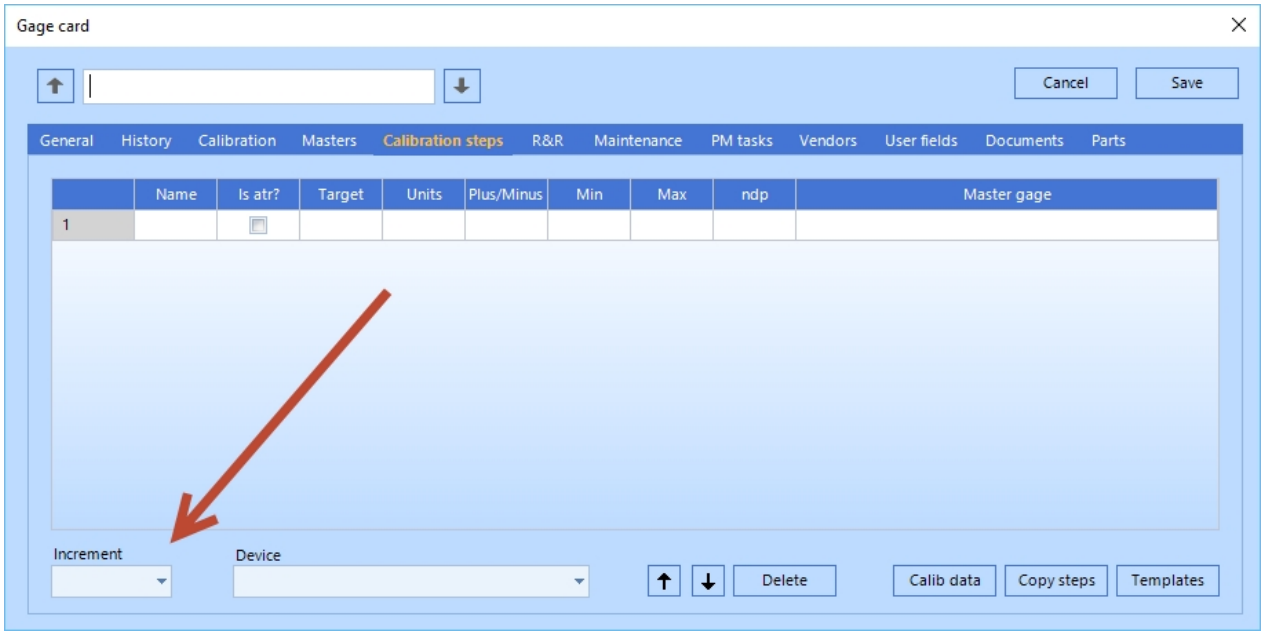
To change the order of the calibration steps, select the step to be moved by clicking on it, then use the up/down arrows at the bottom of the page to move it.

See Also

Calibration steps
Adding calibration steps
Deleting calibration steps
Entering data coding values
Selecting a device
Copying calibration steps
Creating a calibration steps template

Entering data coding values

Entering data coding values



Once you have entered the target value and a plus/minus or acceptable high or low values, you can enter a data coding value. This feature is based on the gage increment; it simplifies the data entry process.

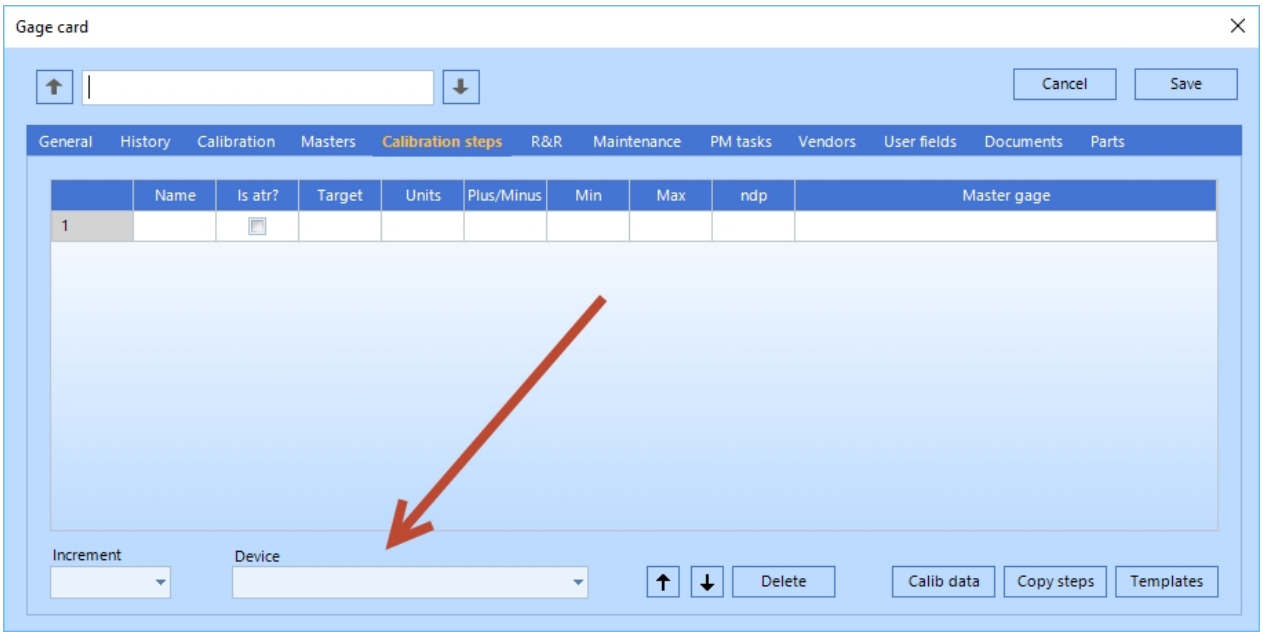
1. Click on the down arrow in the ***Increment*** box and a list of increment values will appear.
2. Select the appropriate increment value given the target and gage increment.
3. The selected value will appear in the ***Increment*** box ready for use when doing a calibration on this gage.

See Also

Calibration steps
Adding calibration steps
Deleting calibration steps
Reordering calibration steps
Selecting a device
Copying calibration steps
Creating a calibration steps template

Selecting a device

Selecting a device



This dropdown will display a list of all of the devices currently configured under ***Setup*** > ***Preferences*** > ***Global collections*** > ***Devices***. Use it to associate one of those devices with this gage.

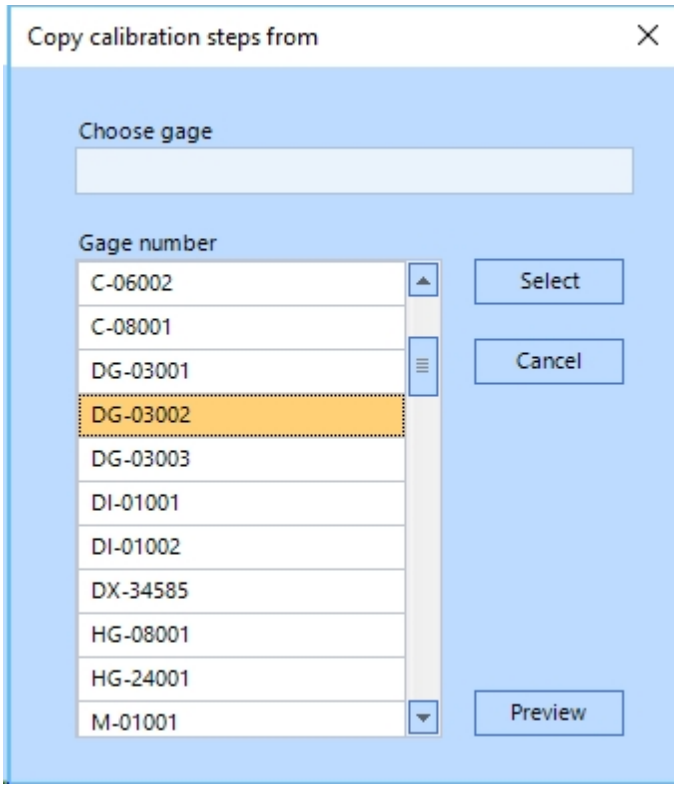
See Also

Calibration steps
Adding calibration steps
Deleting calibration steps
Reordering calibration steps
Entering data coding values
Copying calibration steps
Creating a calibration steps template

Copying calibration steps

Copying calibration steps

1. Make sure that you have the ***Calibration steps*** tab displayed for the gage to which you want to copy the steps.
2. Click ***Copy steps***. The ***Copy calibration steps from*** window will open.
3. Highlight the number of the gage from which you want to copy the calibration steps.
4. Double-click on this gage number or click ***Select*** to copy the steps to the current gage.



See Also
Calibration steps
Adding calibration steps
Deleting calibration steps
Reordering calibration steps
Entering data coding values
Selecting a device
Creating a calibration steps template

Creating a calibration steps template

Creating a calibration steps template

The copy steps function allows the user to copy calibration steps to a selected gage from another gage. The template provides the same copy feature without using a gage. The advantage is that the template name can be descriptive of what gages the steps are suited for. In general, a template is made from steps that have been entered for an existing gage.

In This Section	See Also
Creating a calibration template from an existing gage	Calibration steps

Loading a calibration template
Deleting a calibration template

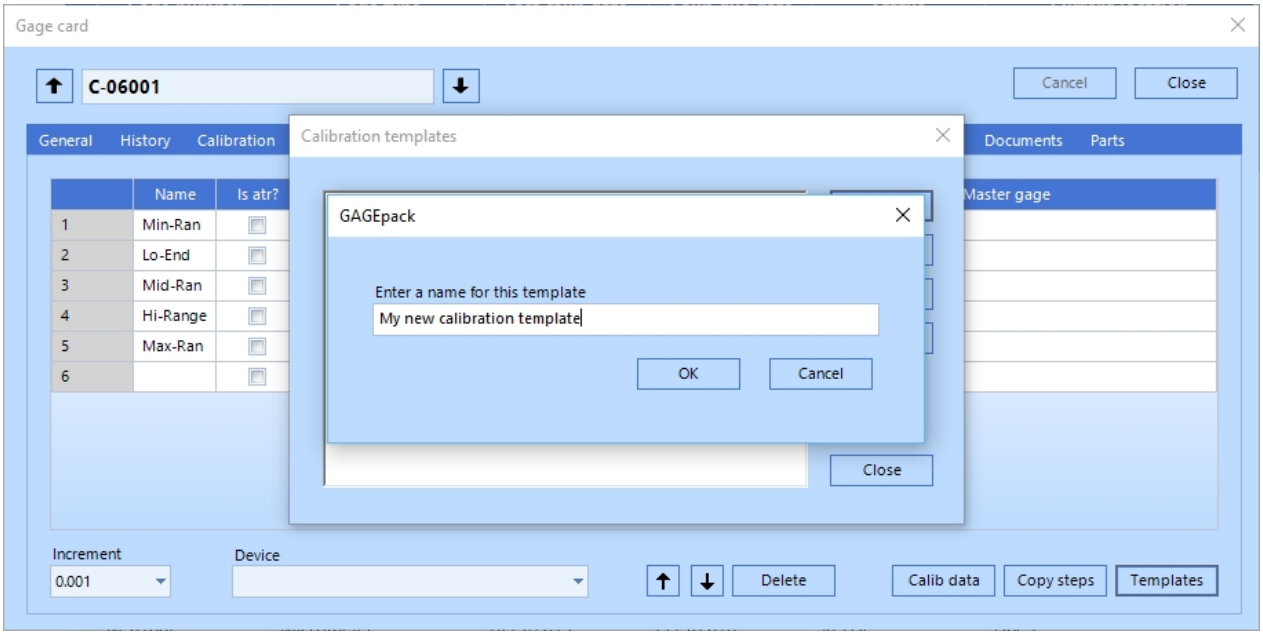
Adding calibration steps
Deleting calibration steps
Reordering calibration steps
Entering data coding values
Selecting a device
Copying calibration steps

Creating a calibration template from an existing gage

Creating a calibration template from an existing gage

To create a calibration template from an existing gage:

1. Open the gage form for the gage you want to use to make a template.
2. Click on the ***Calibration steps*** tab to display the steps you want to make into a template.
3. Click ***Templates,*** and the ***Calibration templates*** dialog box will be displayed.
4. Click ***Save,*** and the ***Template name*** dialog box will be displayed.
5. Enter the name for the template.
6. Click ***OK,*** and the ***Template name*** dialog box will close saving the template
7. Click ***Close*** to close the ***Calibration templates*** dialog box.



See Also

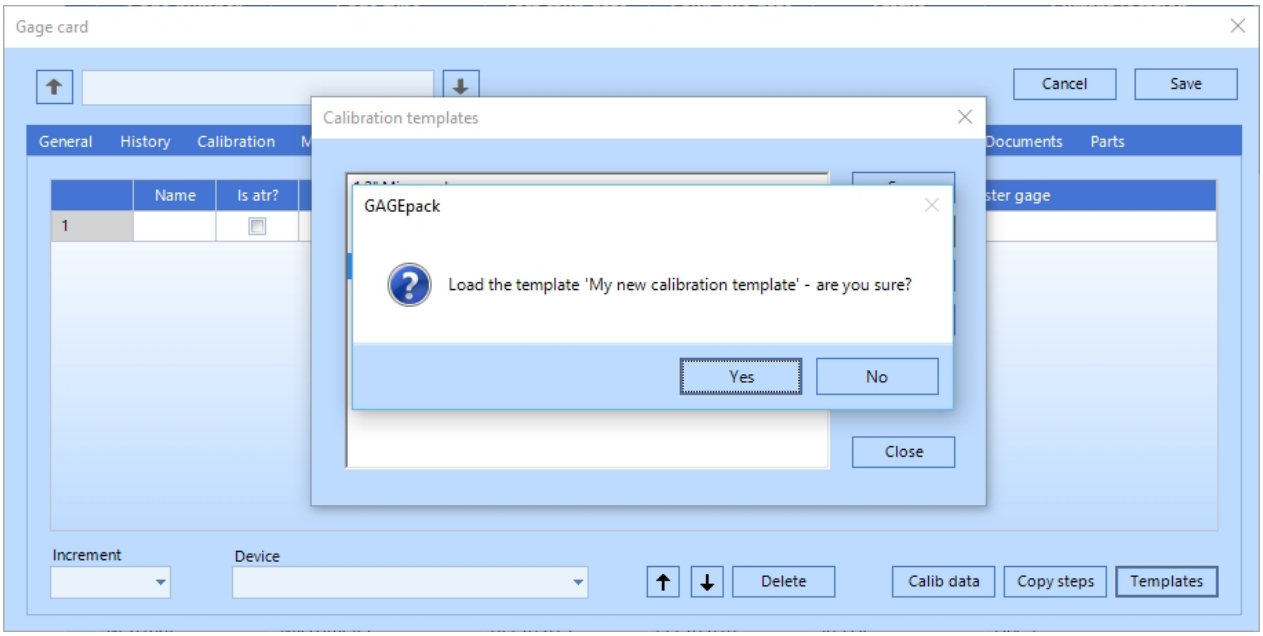
Creating a calibration steps template
Loading a calibration template
Deleting a calibration template

Loading a calibration template

Loading a calibration template

To load a calibration template:

1. Open the gage form for the gage you want to apply the calibration template.
2. Click the ***Calibration steps*** tab.
3. Click ***Templates,*** and the ***Calibration templates*** dialog box will be displayed.
4. Select the calibration template to be used for this gage.
5. Click ***Load,*** and the confirmation dialog box will be displayed.
6. Click ***Yes*** and the calibration steps will be copied to the gage.



See Also

Creating a calibration steps template

Creating a calibration template from an existing gage

Deleting a calibration template

Deleting a calibration template

Deleting a calibration template

To delete a calibration template:

1. Open a gage form and select the ***Calibration steps*** tab.
2. Click ***Templates,*** and the ***Calibration templates*** dialog box will be displayed.
3. Select the calibration template to be deleted.
4. Click ***Delete,*** and the confirmation dialog box will be displayed.
5. Click ***Yes,*** and the calibration steps will be deleted.

See Also

Creating a calibration steps template

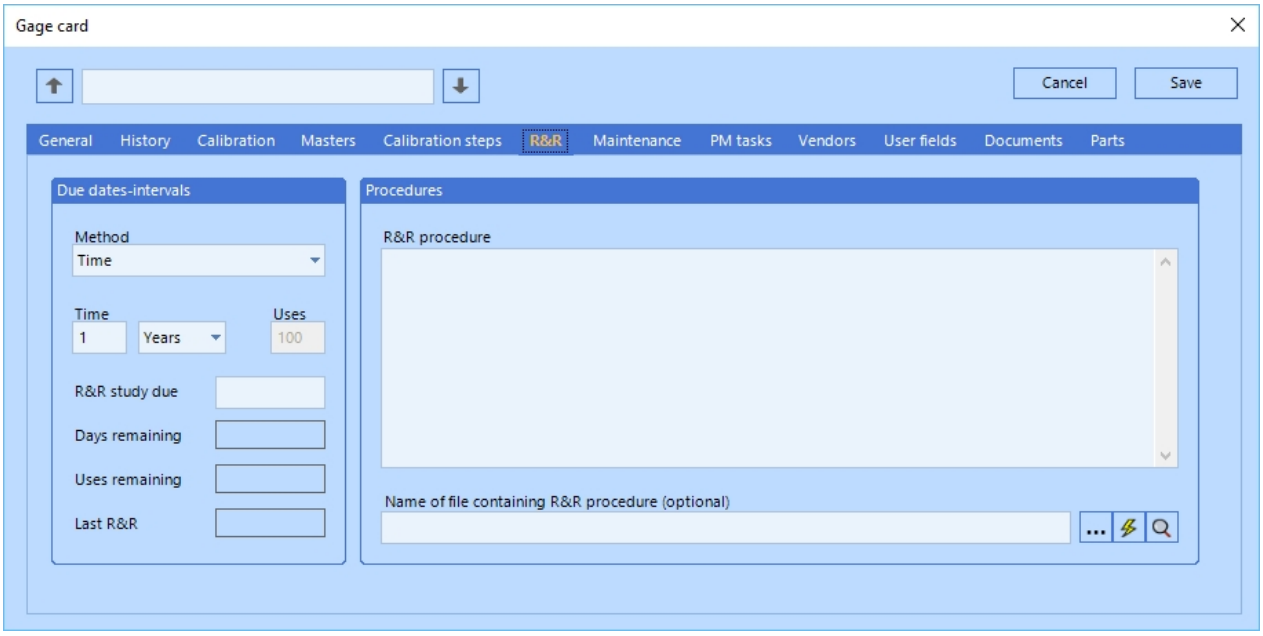
Creating a calibration template from an existing gage

Loading a calibration template

R&R

R&R

The ***R&R*** tab is almost identical to the ***Calibration*** tab in form and function. The only difference is that it contains the interval and procedure for R&R studies instead of calibration events.



See Also

Adding a gage

General

History

Calibration

Masters

Calibration steps

Maintenance

PM tasks

Vendors

User fields

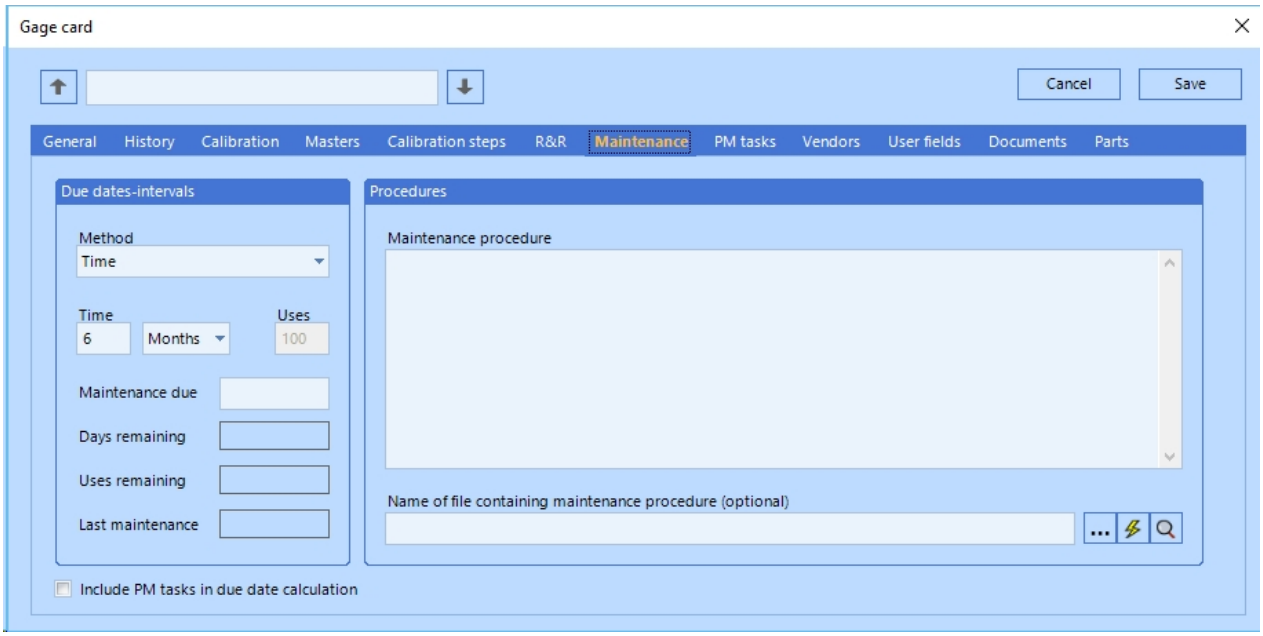
Documents

Parts

Maintenance

Maintenance

The ***Maintenance*** tab is almost identical to the ***Calibration*** tab in form and function, but it contains the interval and procedure for maintenance events instead of calibration events.



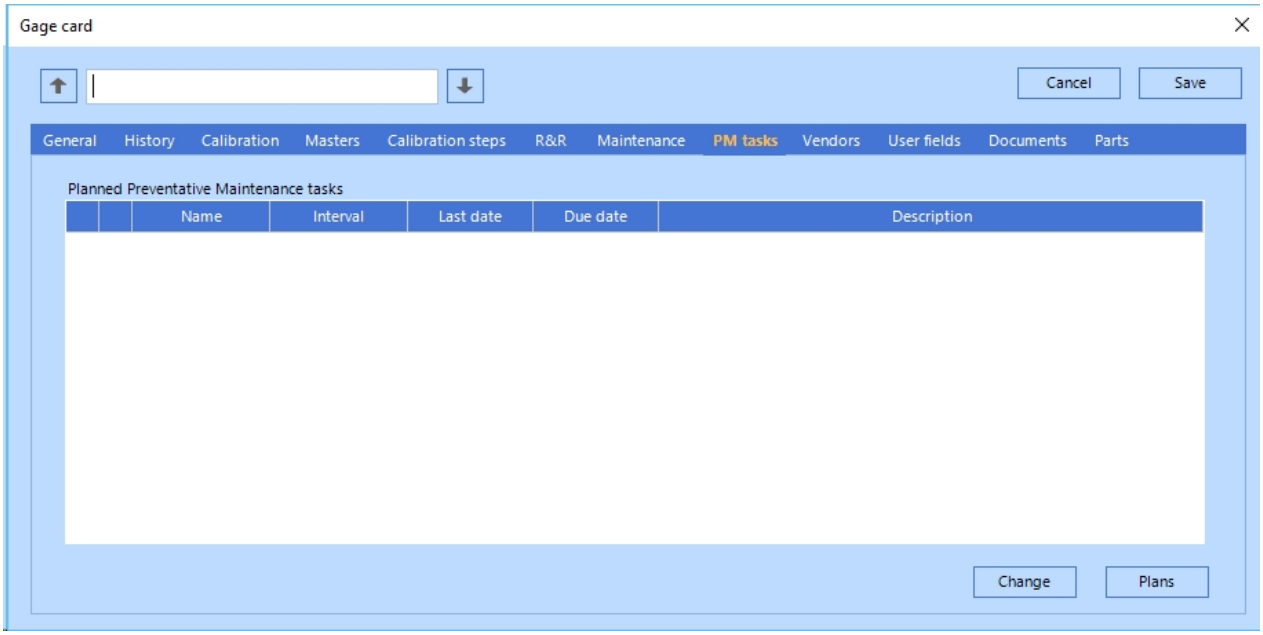
See Also

[Adding a gage]
[General]
[History]
[Calibration]
[Masters]
[Calibration steps]
[R&R]
[PM tasks]
[Vendors]
[User fields]
[Documents]
[Parts]

PM tasks

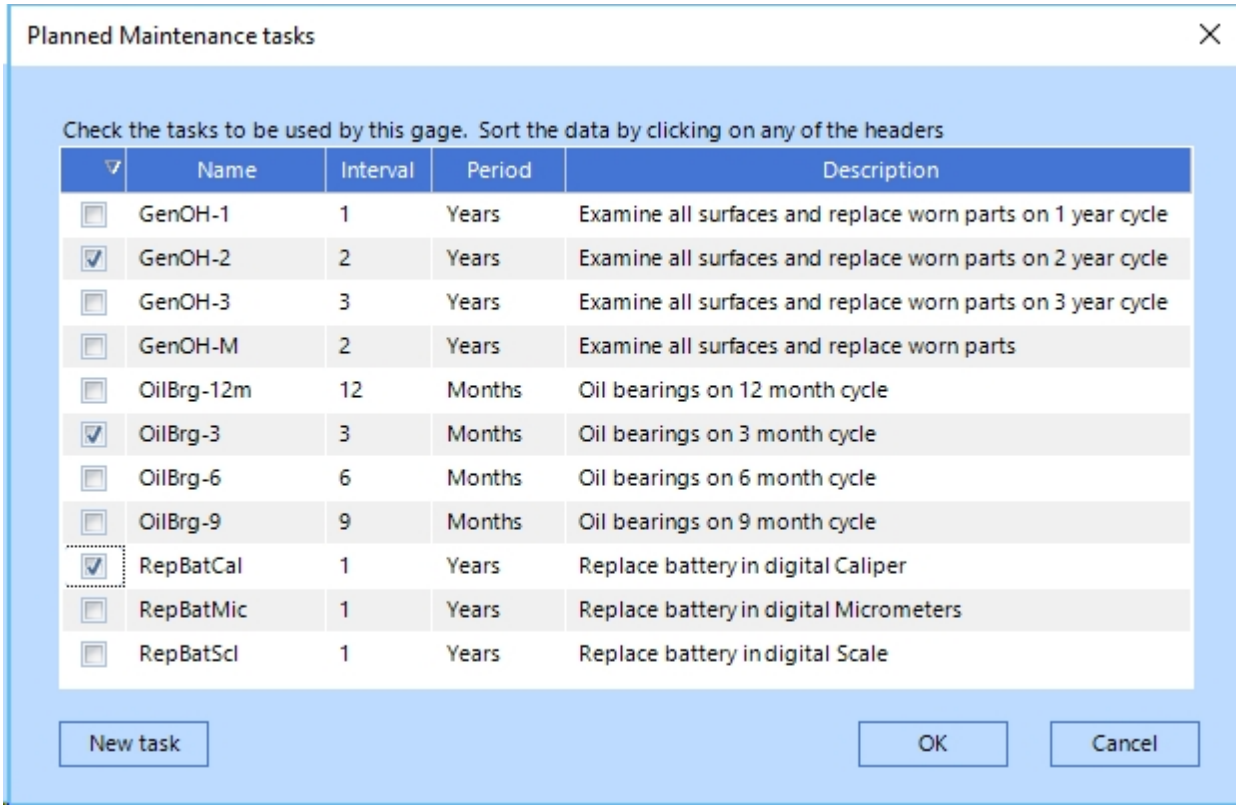
PM tasks

This tab can be used to schedule and track any number of individual maintenance actions for the gage. This feature is independent of the existing preventive maintenance system.

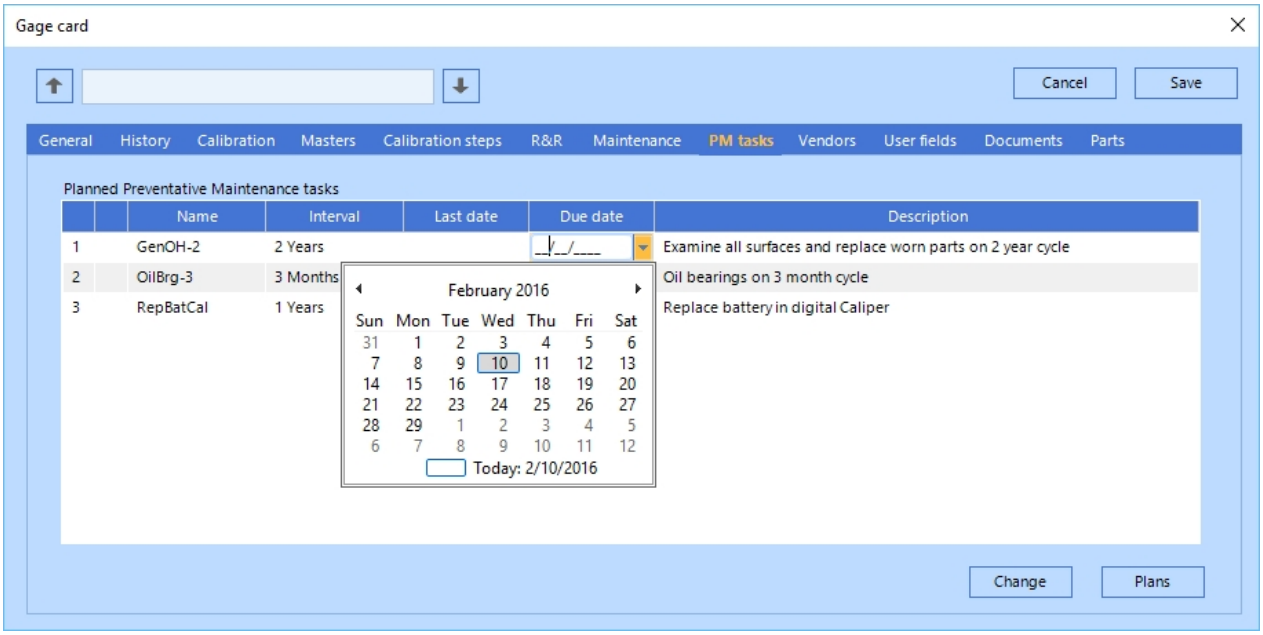


To add PM tasks to a gage:

1. Click ***Change*** in the bottom right corner.
2. Check the boxes associated with the tasks you would like to add to this gage, then click ***OK***.



3. The tasks will be added to the gage. Use the calendar dropdown in the ***Due date*** column to specify when the first occurrence of this task should take place.



See Also

Adding a gage

General

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Masters

Calibration steps

R&R

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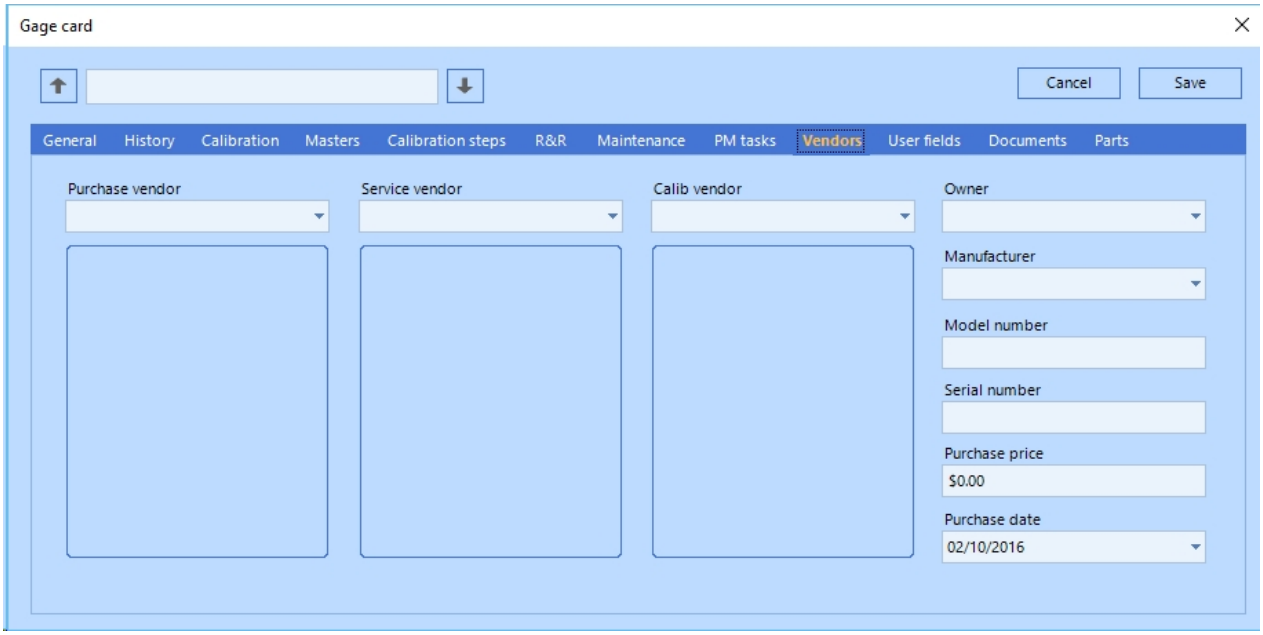
Vendors

Vendors

The ***Vendors*** tab is used to enter information about the vendor(s) that sell, service, and/or calibrate the gage. All of the fields on this tab are optional. Vendors can be added to the drop-down lists by going to ***File > Settings > Global collections > Vendors***.



See Also

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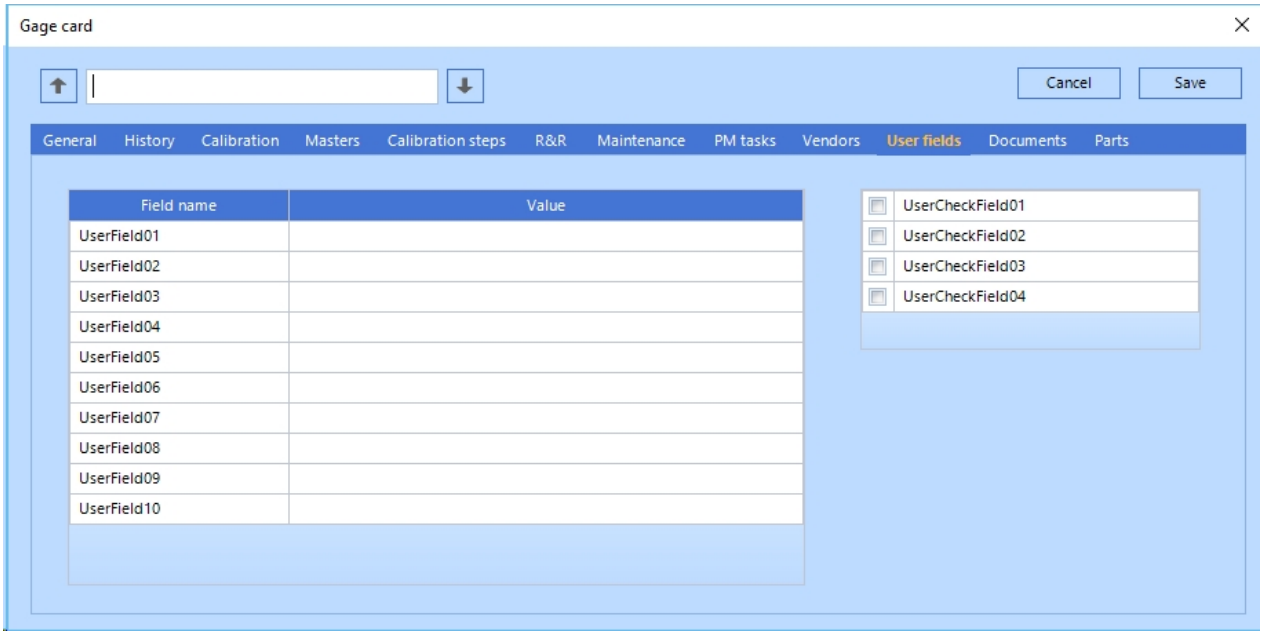
User fields

User fields

User fields allow the user to create and save up to fourteen additional pieces of information about the gage (ten text fields and four Boolean fields). The user fields themselves are set up elsewhere in the program (see ***Setup*** > ***User defined fields***), but this tab is used to populate the fields for this particular gage.



See Also

Adding a gage
General
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Documents

Documents

The ***Documents*** tab is used to associate an image and/or any external file with the gage. If an image file is selected, it will be displayed on this form.

See Also

Adding a gage
General
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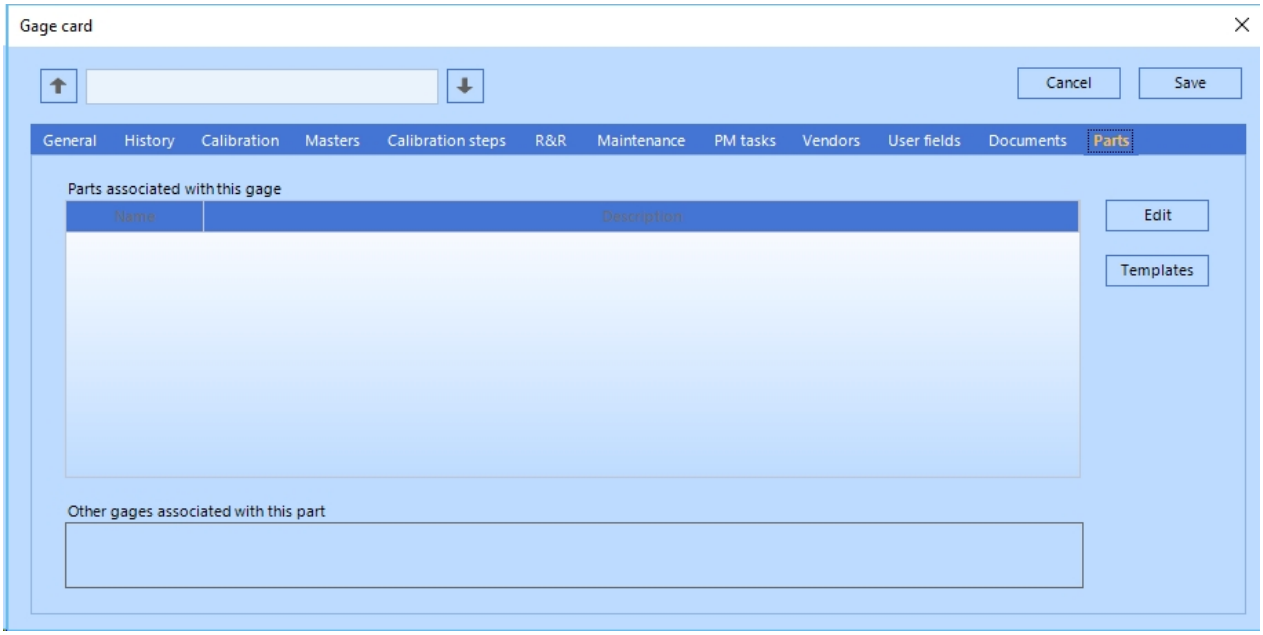
Parts

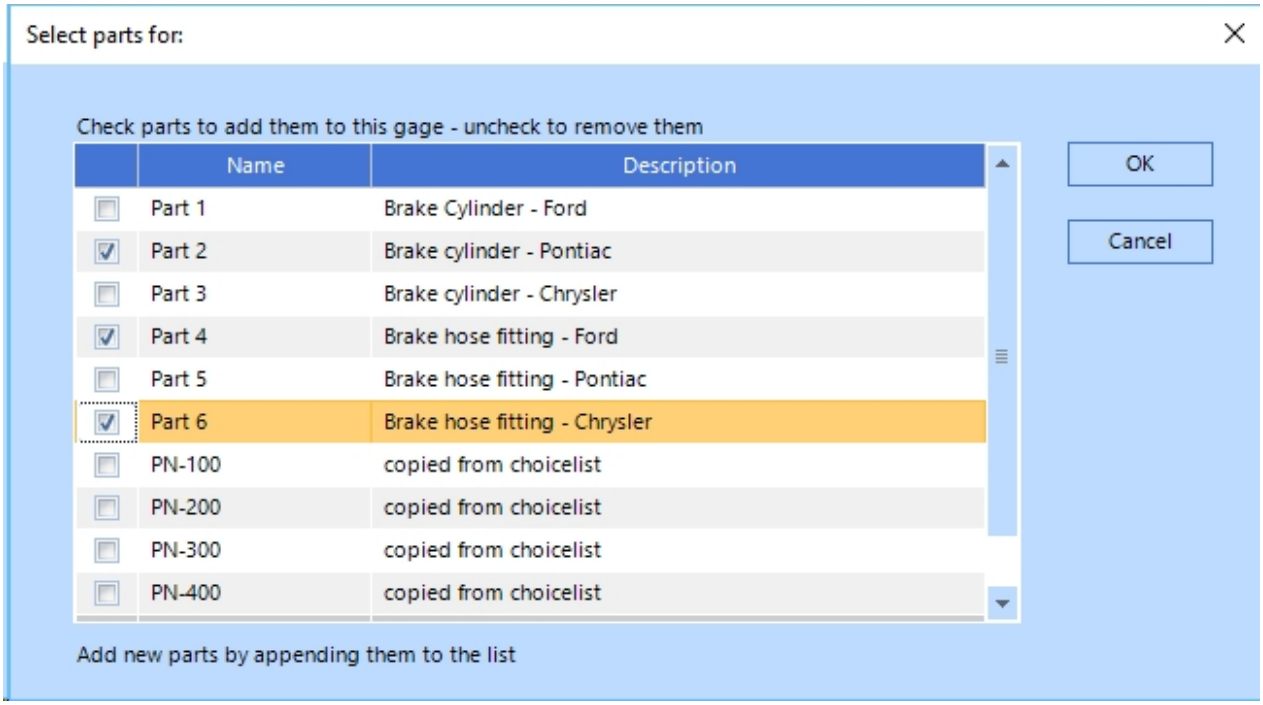
Parts

Parts

This tab is used to identify which parts this gage is used to measure. For information about creating the list of parts in the database, please see Configuring GAGEpack.



To associate parts with this gage, click ***Edit*** and then check the boxes for the appropriate parts. Click ***OK*** to save.



See Also

Adding a gage

General

History

Calibration

Masters

Calibration steps

R&R

Maintenance

PM tasks

Vendors

User fields

Documents

Editing a gage

Editing a gage

To edit a gage, double-click on the gage from the inventory tab to open the gage form. If you have sufficient user rights, you can make any necessary changes to the fields on the form. Click ***OK*** to save.

See Also

Gage management

Gage form

Adding a gage

Deleting a gage

Copying a gage

Cloning a gage

Finding a specific gage

Search and replace

Filters

Reports

Views

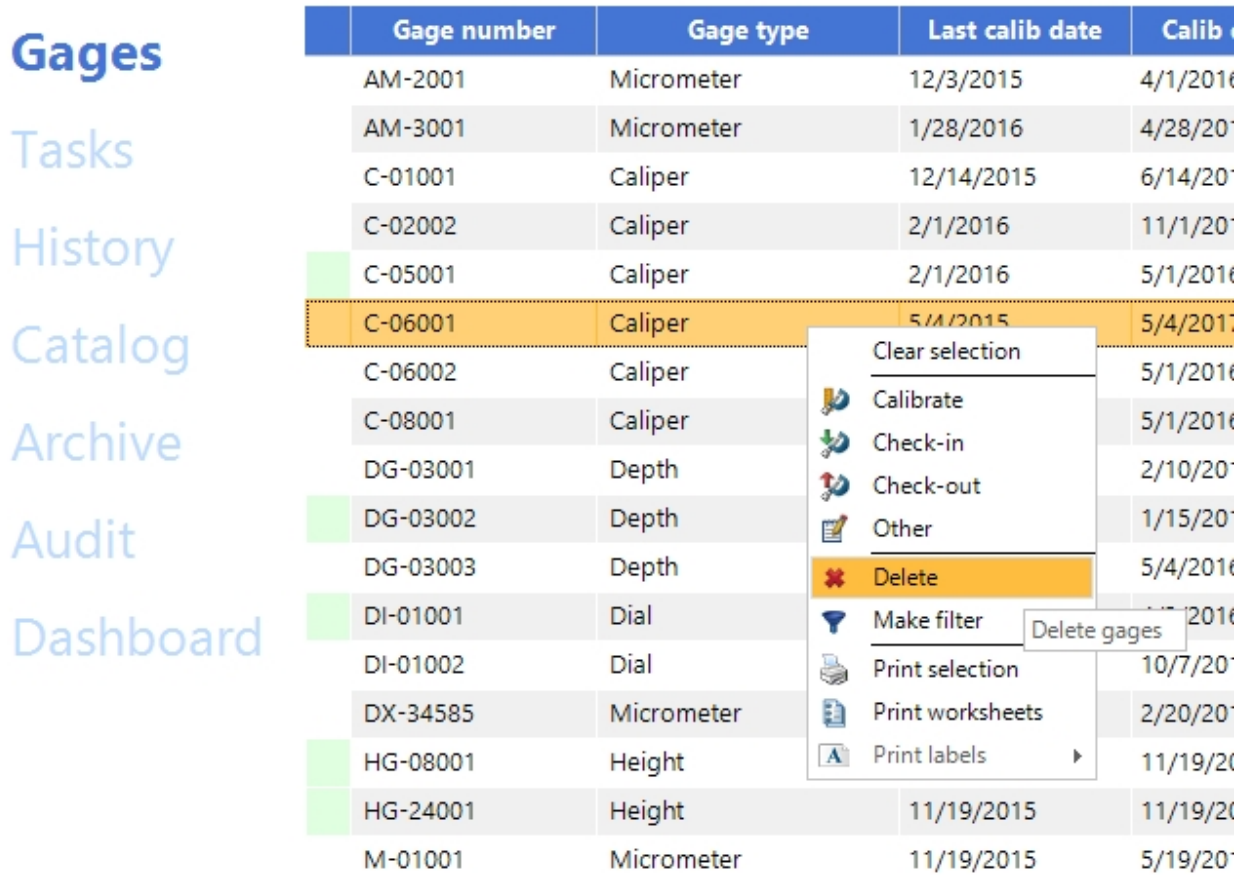
Deleting a gage

Deleting a gage

To delete a gage listing:

NOTE: When you delete a gage from the gage list, you delete all information related to that gage. There is no "undo" function or second chance to recover the gage. Make a backup of the gage database before you delete a gage.

1. Highlight the gage that you want to delete.
2. Right-click on the gage list and select ***Delete gage*** to delete the highlighted gage. Or click **Delete** in the ribbon bar.



3. You will be asked to confirm the deletion. Select ***Yes*** to delete or ***No*** to cancel.

To delete multiple gages, click and drag to highlight all of the gages to be deleted, then right-click and select ***Delete***.

See Also
Gage management
Gage form
Adding a gage
Editing a gage
Copying a gage
Cloning a gage
Finding a specific gage
Search and replace
Filters
Reports
Views

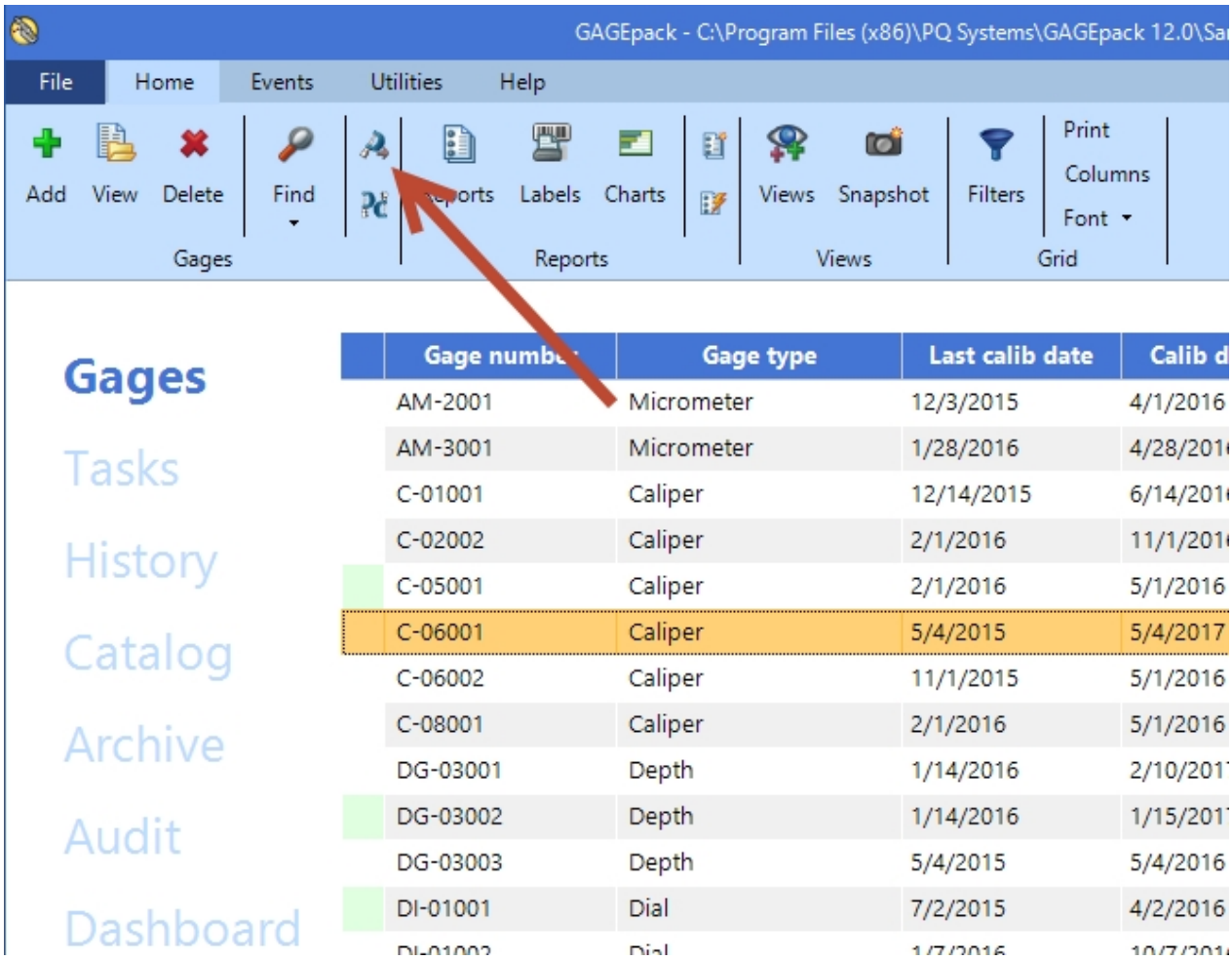
Copying a gage

Copying a gage

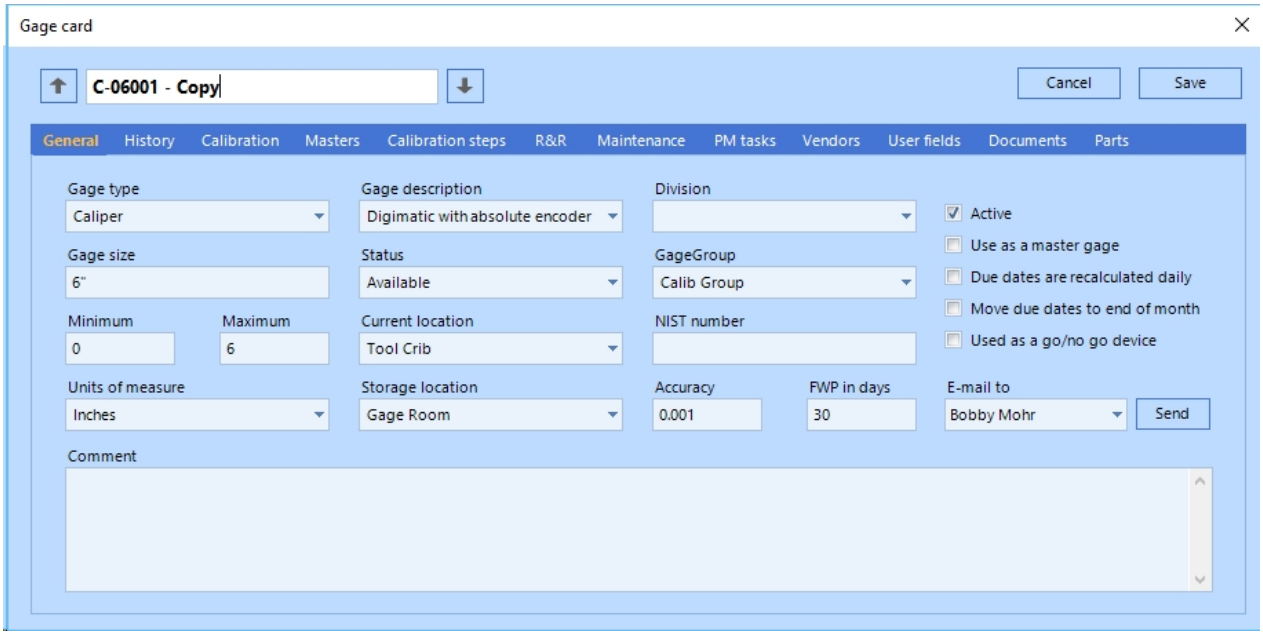
This function creates a new gage that is an exact duplicate of an existing gage. The new gage will share all of the characteristics of the gage that is copied, except for history events.

To copy a gage:

1. Highlight the gage on the gage list and click **Copy gage** from the ribbon bar.



2. The ***Gage editing*** form will open and you will be prompted to enter a name for the gage.



3. Enter the appropriate gage number.
4. Make any desired changes.
5. Click ***OK***.

See Also

Gage management
Gage form
Adding a gage
Editing a gage
Deleting a gage
Cloning a gage
Finding a specific gage
Search and replace
Filters
Reports
Views

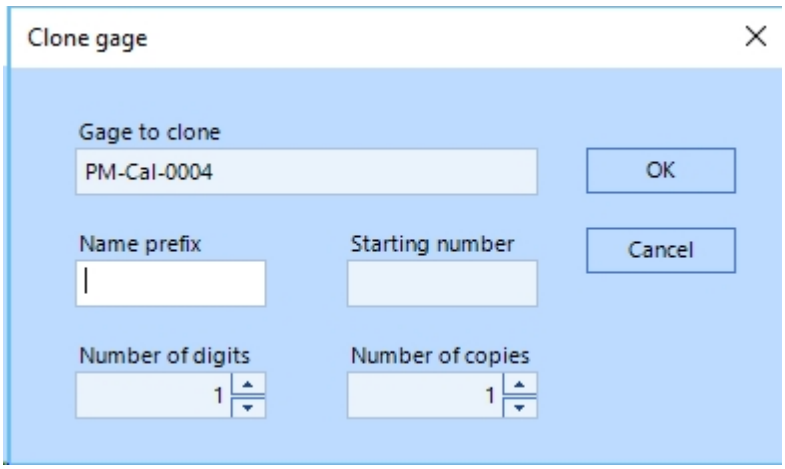
Cloning a gage

Cloning a gage

Clone gage is similar to ***Copy gage*** in that it will create new gages by copying all the characteristics of an existing gage, except for history events. The difference is that cloning a gage can generate many new gages at once.

To clone a gage:

1. Highlight the desired gage on the gage list and click ***Clone gage*** from the ribbon bar.



2. You will be prompted to enter a ***Name prefix***, a ***Starting number*** (extra digits will not be used - 0001> 1), the ***Number of digits*** to appear in the name (0000), and the ***Number of copies*** to create.
3. Click ***OK***, and the ***Clone completion*** dialog box will display the number of gages created.
4. Click ***OK***, and both the ***Clone completion*** dialog box and the ***Clone gage*** dialog box will close.

See Also

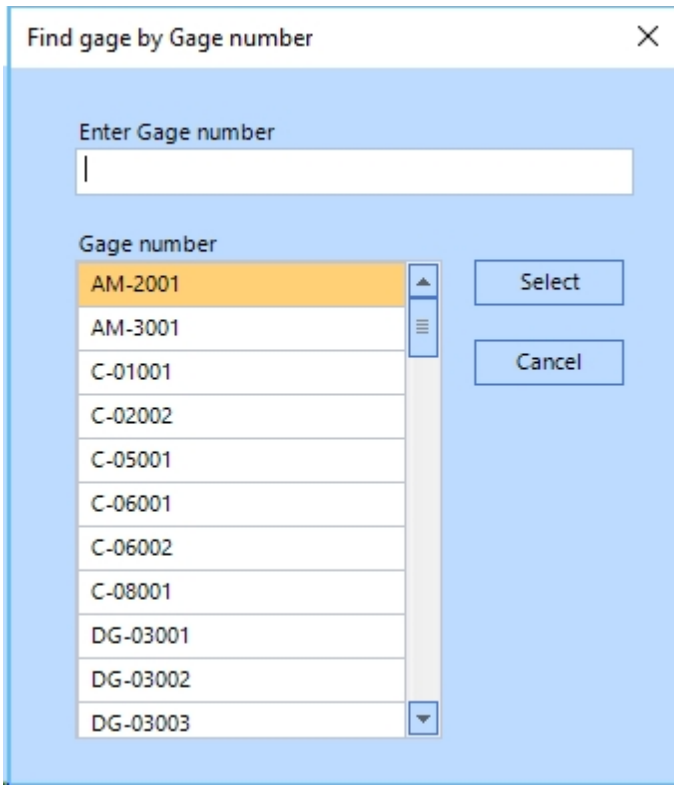
Gage management
Gage form
Adding a gage
Editing a gage
Deleting a gage
Copying a gage
Finding a specific gage
Search and replace
Filters
Reports
Views

Finding a specific gage

Finding a specific gage

From the ***Inventory*** tab, there are two options for finding a gage.

Option 1 (basic)



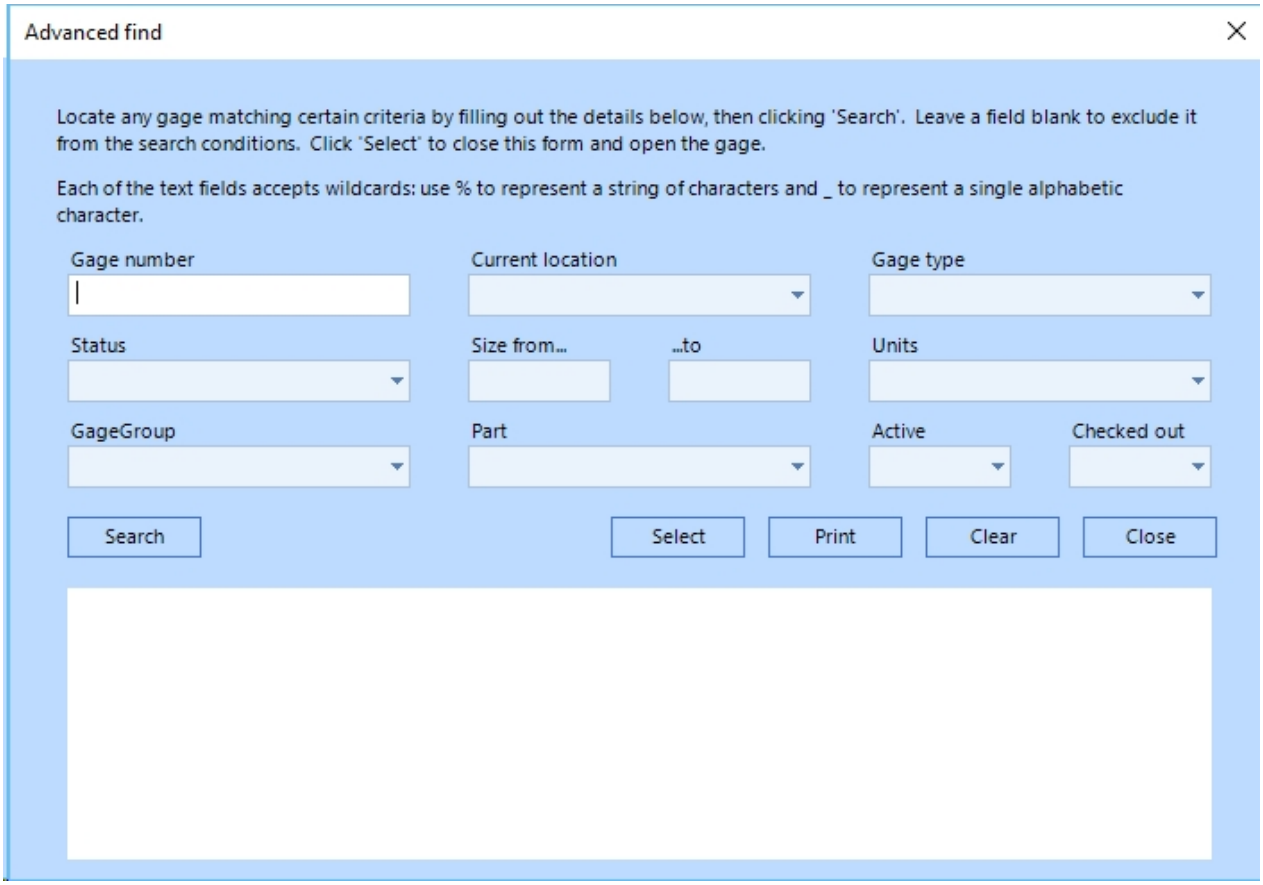
1. Click on the ***Find by gage number*** icon from the ribbon bar.
2. Enter the number of the device that you want to find. Also, you can scroll through the list of gages provided through this window, and highlight the name of the gage that you want.
3. Click ***Select***. You can also double-click on the gage name to select the gage.

Option 2 (advanced)

Use this option to search for a gage or group of gages using a more complex set of criteria.

From the ribbon bar, select ***Find advanced***.

1. Set your search criteria.
2. Click ***Search***. Gages that match the search criteria will be listed in the grid at the bottom of the form.



See Also

Gage management
Gage form
Adding a gage
Editing a gage
Deleting a gage
Copying a gage
Cloning a gage
Search and replace
Filters
Reports
Views

Search and replace

Search and replace

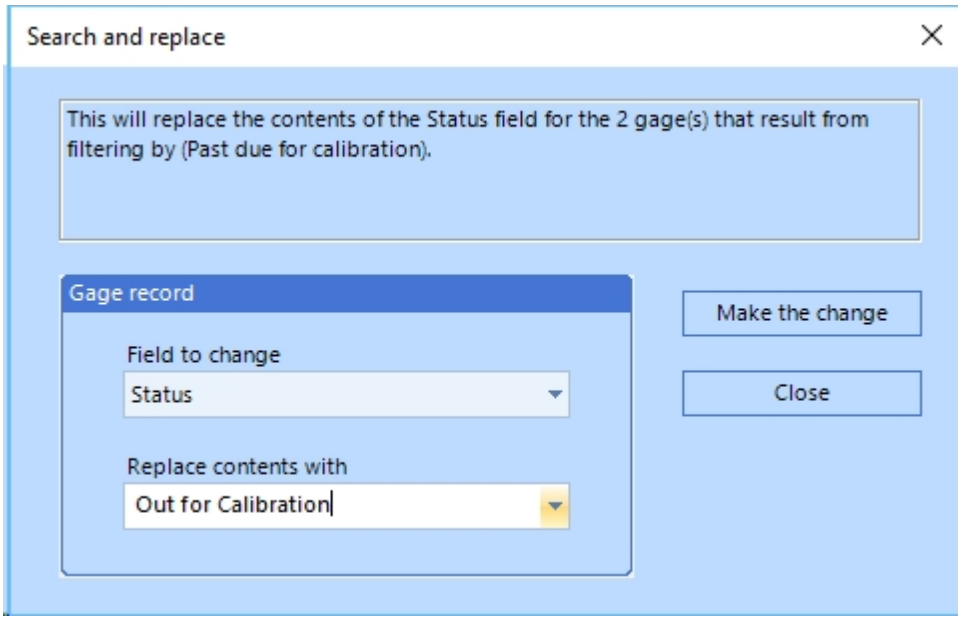
The 'Search and replace' family of utilities is used to make mass changes to the gage inventory. Each of the four utilities described below will make the prescribed change to every gage currently visible on the **Gages** grid. Gages that are hidden from the **Gages** grid using a filter will not be changed.

In This Section	See Also
Basic	Gage management
Calibration templates	Gage form
PM plans	Adding a gage
Master gages	Editing a gage
	Deleting a gage
	Copying a gage
	Cloning a gage
	Finding a specific gage
	Filters
	Reports
	Views

Basic

Basic

The standard 'Search and replace' utility will change the contents of a single field for every gage currently visible on the inventory grid.



In this screenshot, a filter is being used to show only gages that are past due for calibration. By clicking ***Make the change*** here, these 2 gages will have their ***Status*** changed to 'Out for Calibration.'.

Note: There is no way to undo changes made by search and replace. Be careful.

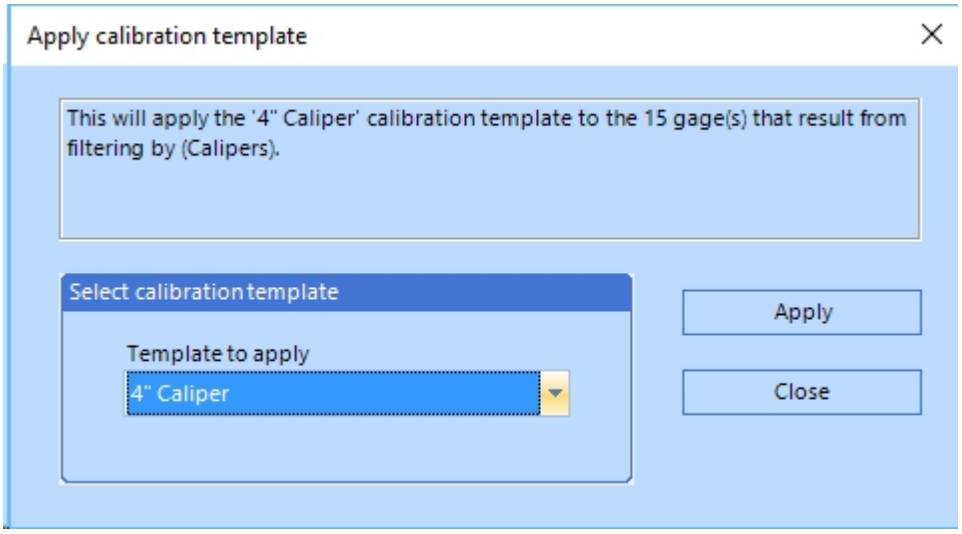
See Also
Search and replace
Calibration templates
PM plans

Master gages

Calibration templates

Calibration templates

The calibration templates 'Search and replace' utility will update the calibration steps of all the gages currently visible on the inventory grid so that they match the contents of the specified calibration template.



In this screen shot, a filter is being used to show only calipers. When ***Apply*** is clicked, the calibration template called "4" Caliper" will be applied to those 15 calipers.

Note: There is no way to undo changes made by search and replace. Be careful.

See Also

Search and replace

Basic

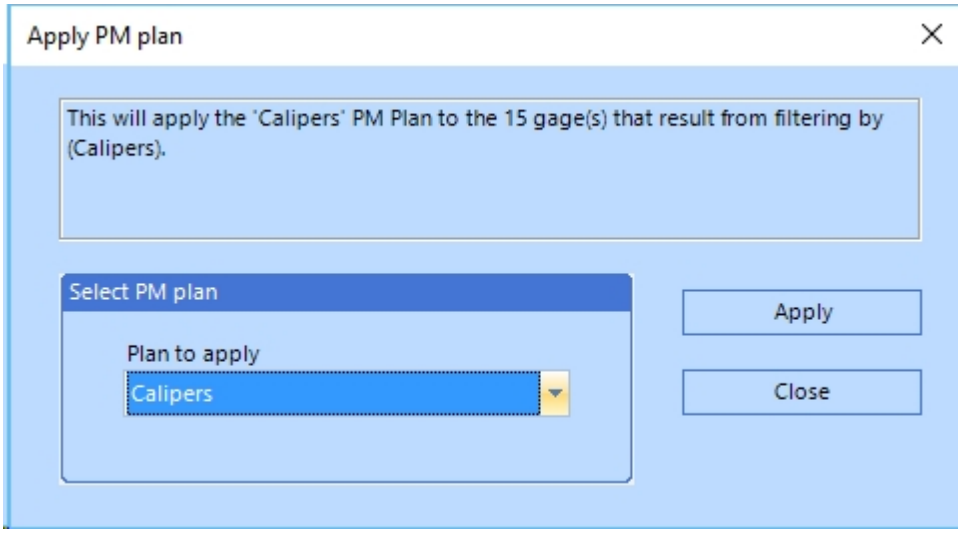
PM plans

Master gages

PM plans

PM plans

The PM (Preventative Maintenance) plans 'Search and replace' utility will update the PM tasks lists of all the gages currently visible on the inventory grid so they match the contents of the specified PM plan.



In this screen shot, a filter is being used to show only calipers. When ***Apply*** is clicked, the PM plan called "Calipers" will be applied to those 15 calipers.

Note: There is no way to undo changes made by search and replace. Be careful.

See Also

Search and replace

Basic

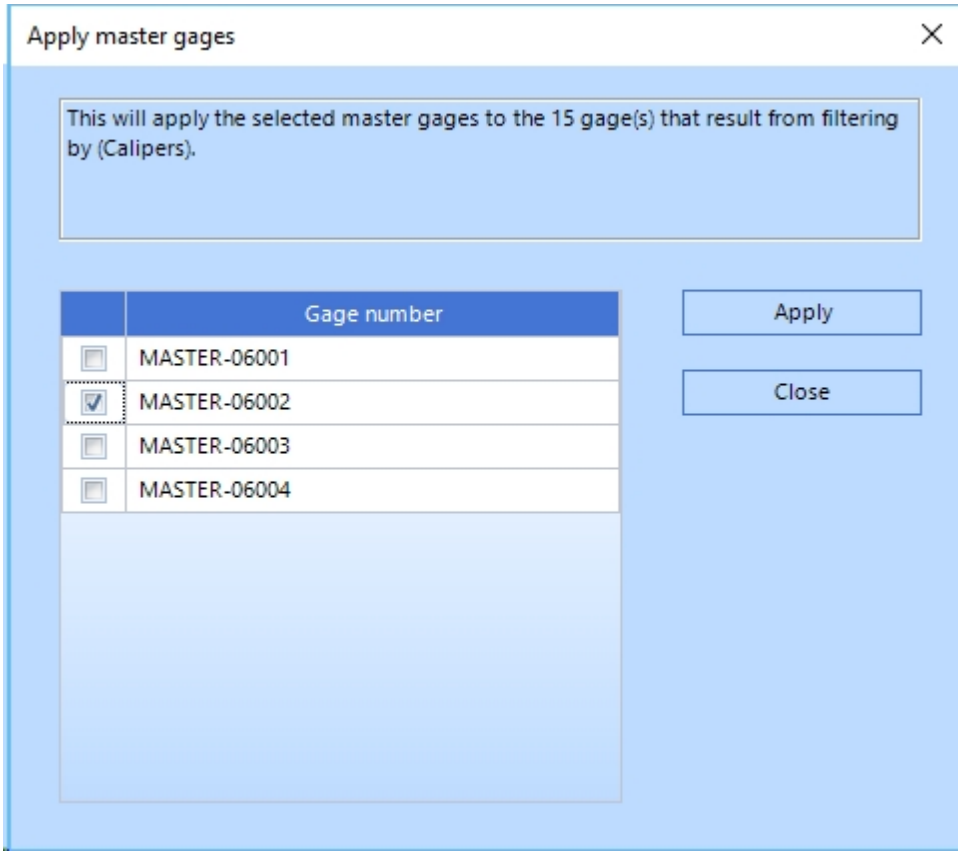
Calibration templates

Master gages

Master gages

Master gages

The master gages 'Search and replace' utility will update the master gage references of all the gages currently visible on the inventory grid so they match those masters selected by the user.



In this screen shot, a filter is being used to show only calipers. When ***Apply*** is clicked, the master gage 'Master-06002' will be added as a reference to those 15 calipers. Any previously existing master gage references on these gages will be replaced.

Note: There is no way to undo changes made by search and replace. Be careful.

See Also

Search and replace

Basic

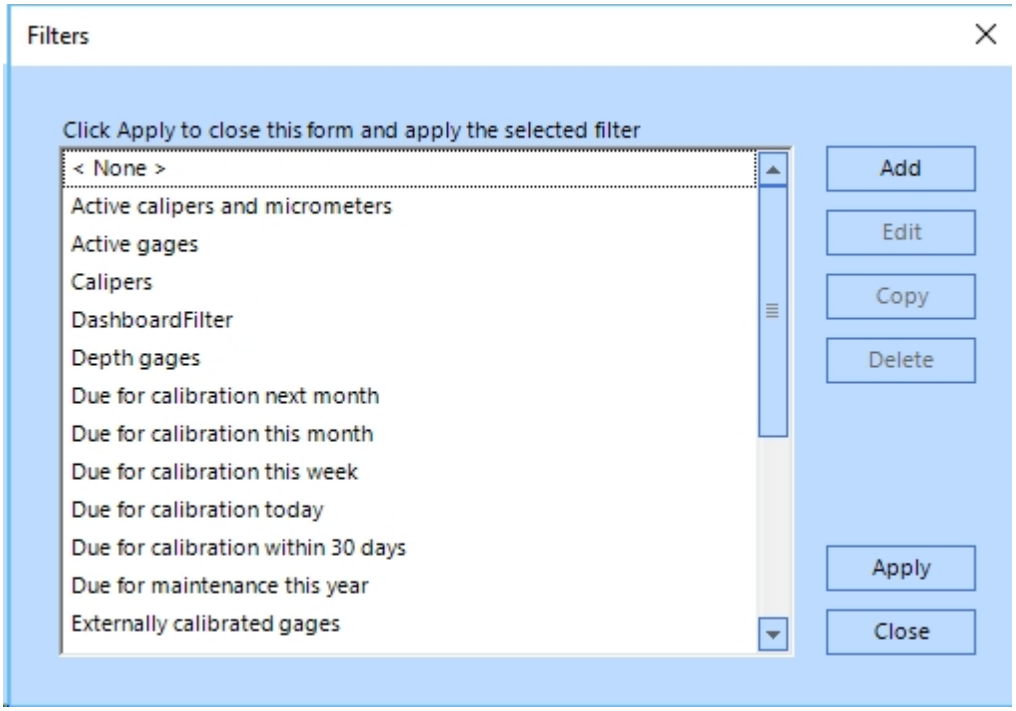
Calibration templates

PM plans

Filters

Filters

Filters allow the user to configure the main inventory grid by having it display only the gages that match a certain set of criteria. To access the filters interface, go to the Inventory tab and click the ***Filters*** icon on the toolbar.

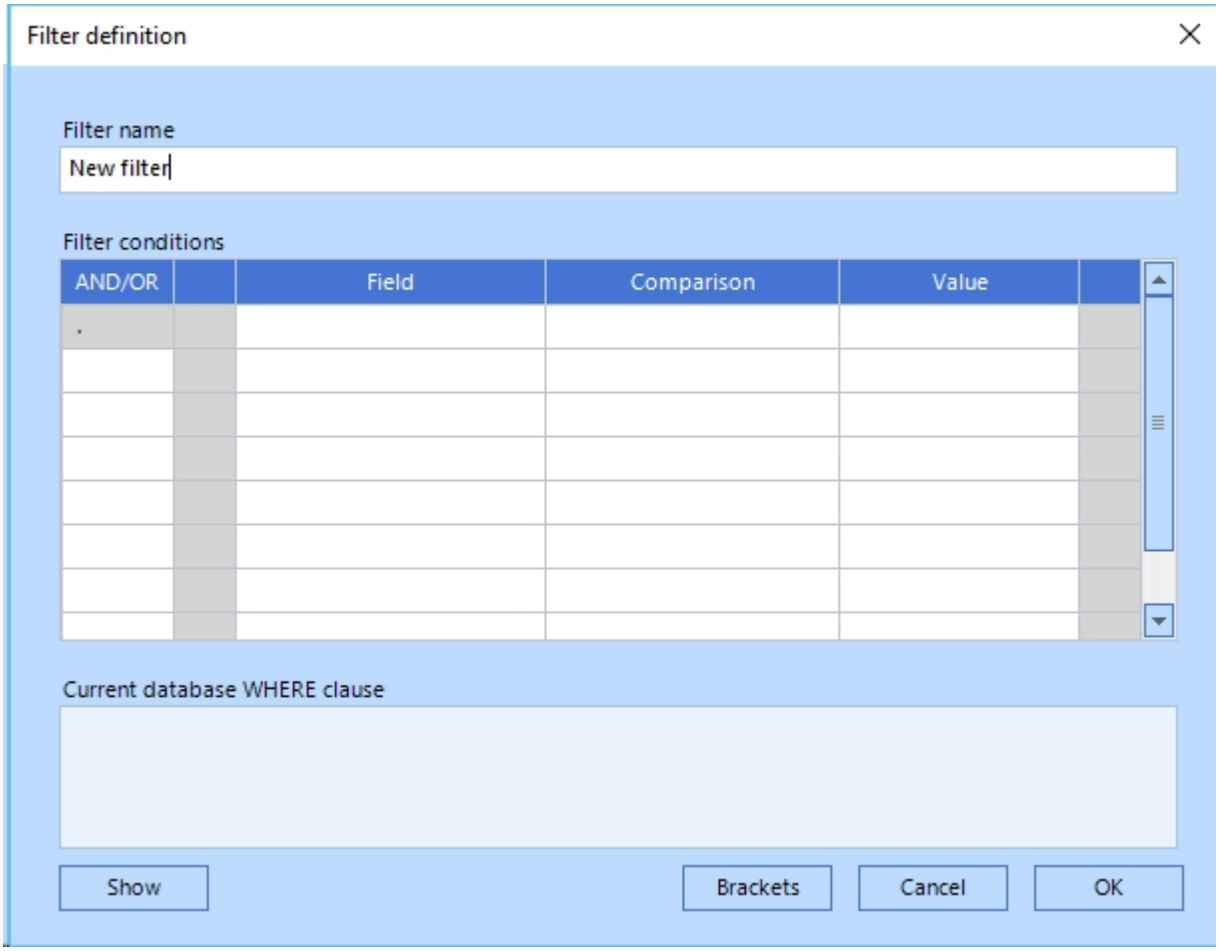


In This Section	See Also
Adding a filter	Gage management
Wild-card filters	Gage form
Time-frame filters	Adding a gage
Applying a filter	Editing a gage
	Deleting a gage
	Copying a gage
	Cloning a gage
	Finding a specific gage
	Search and replace
	Reports
	Views

Adding a filter

Adding a filter

To create a new filter, click ***Add***. This will open a blank filter definition window.



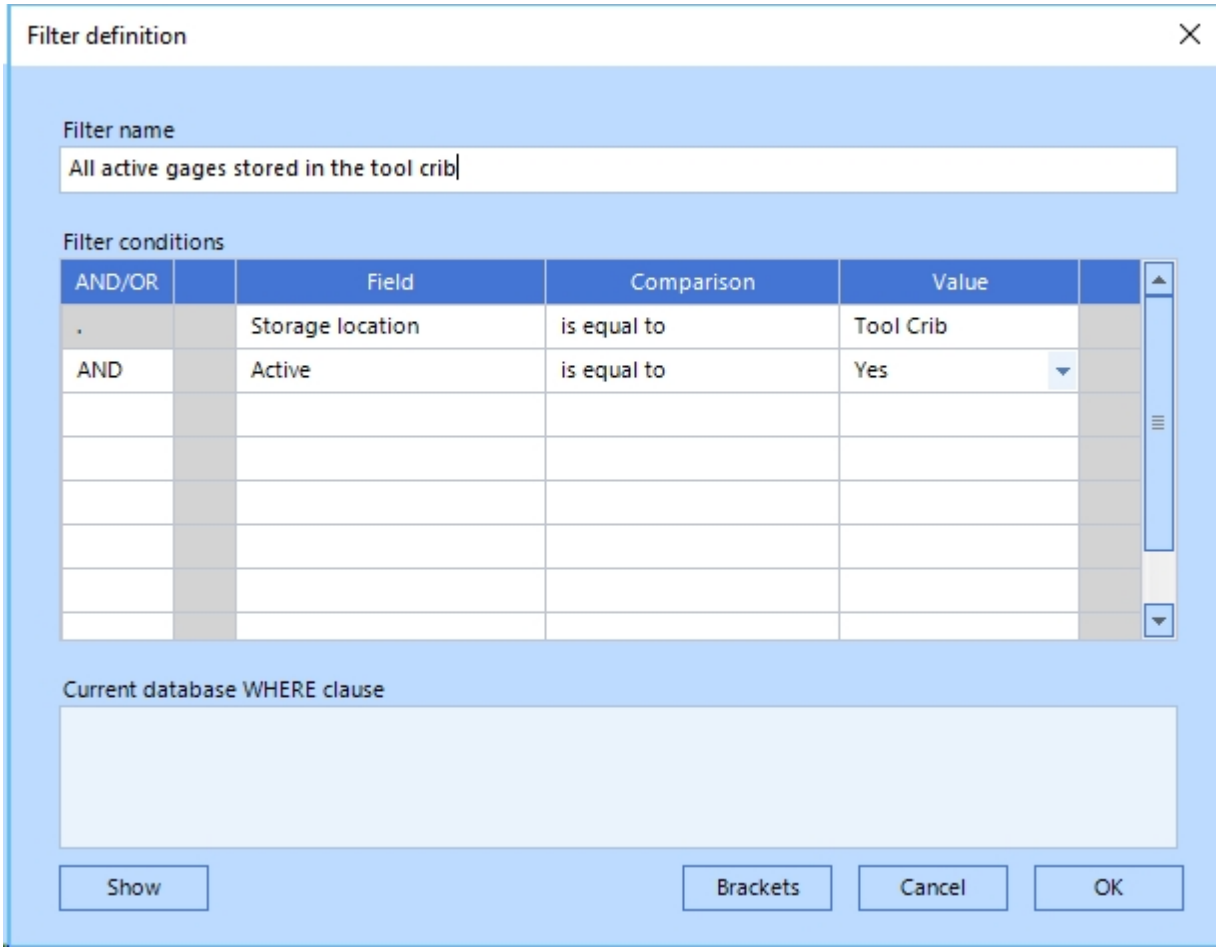
In order for a filter to function properly, three things must be present in the filter definition:

Field – This is the gage characteristic that the filter will examine when trying to decide if a gage should be included. Any and every gage characteristic can be used in a filter.

Comparison – 'is equal to,' 'is greater than,' 'does not equal,' etc

Value – The input against which the contents of the specified gage characteristic will be evaluated. In many cases, this column will offer a dropdown list of available options.

When applied to the inventory grid, the filter in the screen shot below will show only active gages that are stored in the Tool Crib.



See Also

Filters

Wild-card filters

Time-frame filters

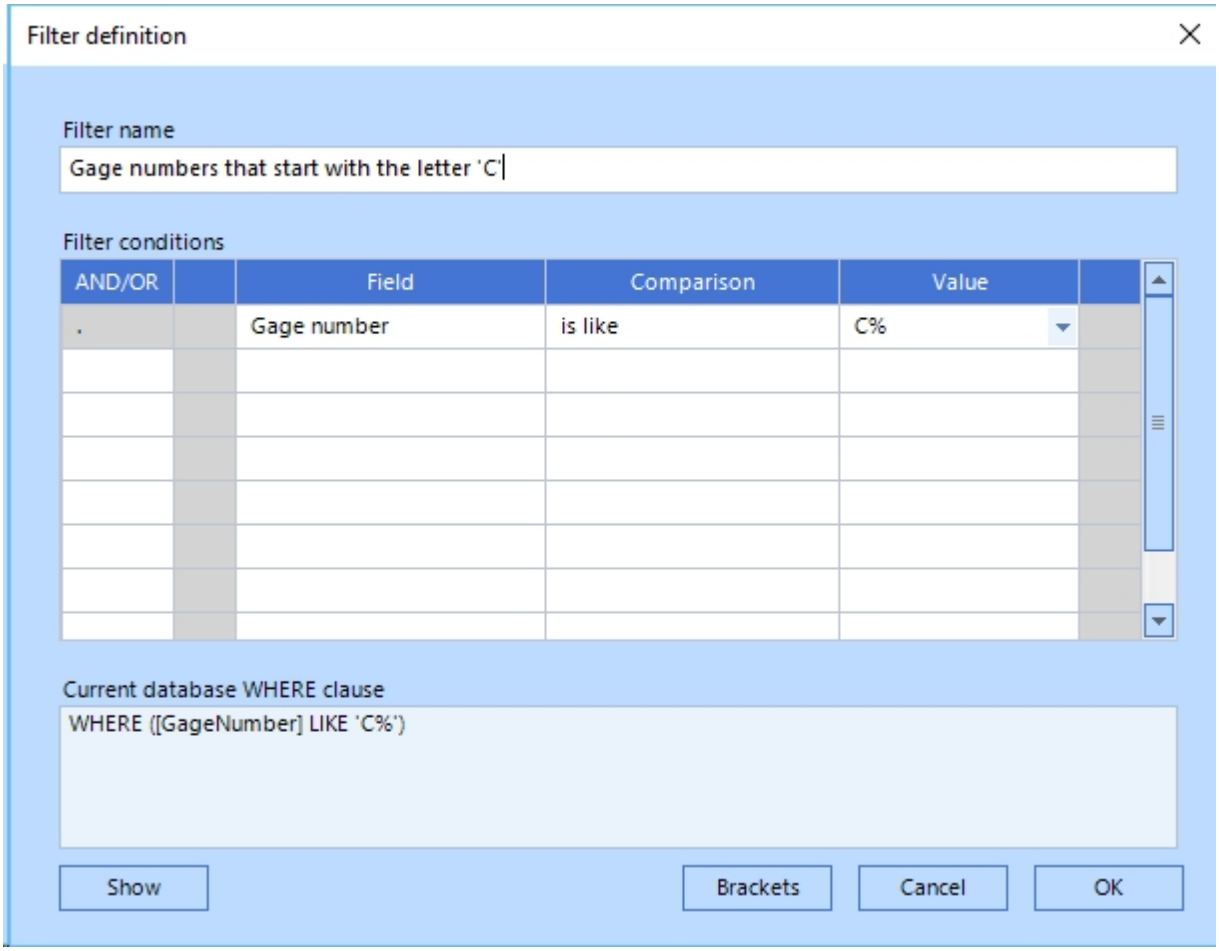
Applying a filter

Wild-card filters

Wild-card filters

Filters can be configured to return results based on a part of a text field, rather than matching the whole field. This is done by using the 'is like' value in the Comparison dropdown in conjunction with the '%' symbol as the wild card.

When applied to the inventory grid, the filter in the screenshot below will show all of the gages that have gage numbers that begin with the letter 'C.'



See Also

Filters

Adding a filter

Time-frame filters

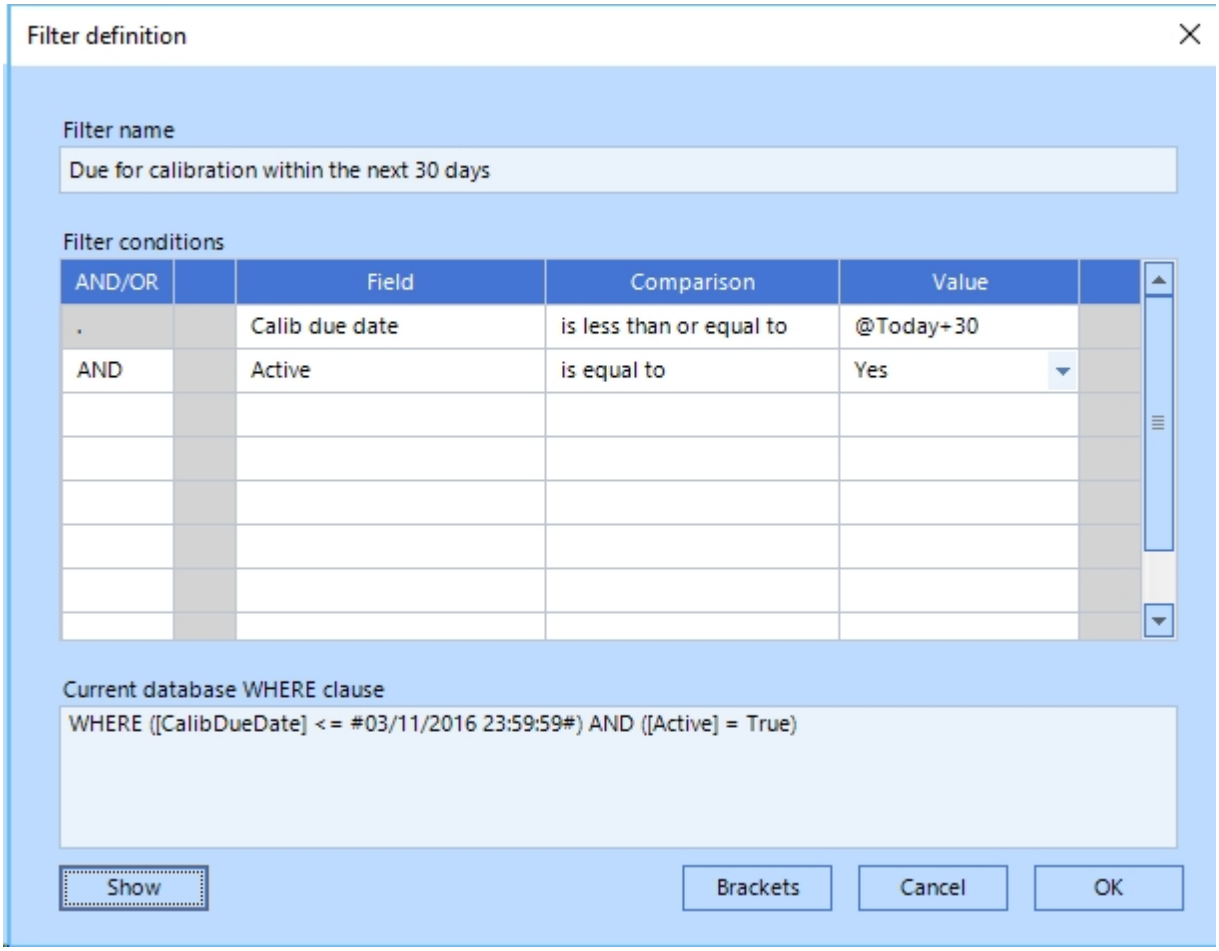
Applying a filter

Time-frame filters

Time-frame filters

When a filter condition is used to examine a date field (such as 'CalibDueDate' or 'LastCalibDate'), the ***Value*** dropdown will offer a series of @macros which can be used to retrieve the current date and time from the computer. This is extremely useful because it means that filters concerned with a particular time frame relative to 'today' never have to be updated once they are created.

When applied to the inventory grid, the filter in the screen shot below will show all of the active gages that are due for calibration within 30 days from "today" (where "today" is whatever day the filter is applied to the grid).



Notice that the @macro in conjunction with a (+/-) and a number can be used to move the date into the past or the future. This formula can be used to refer to any number of time frames. Here are some examples:

@ThisMonth-2: Two months ago

@ThisWeek+4: Four weeks in the future

@ThisYear+1: One year in the future

@Today-7: Seven days ago

See Also
Filters
Adding a filter
Wild-card filters
Applying a filter

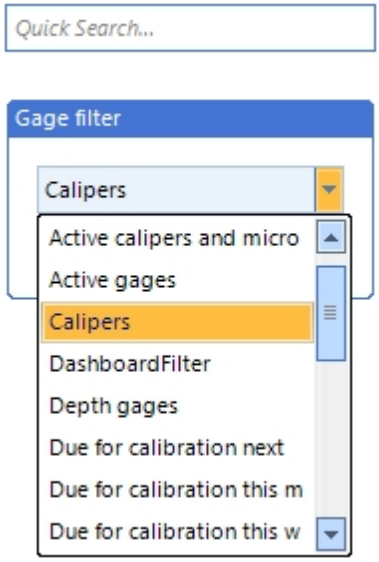
Applying a filter

Applying a filter

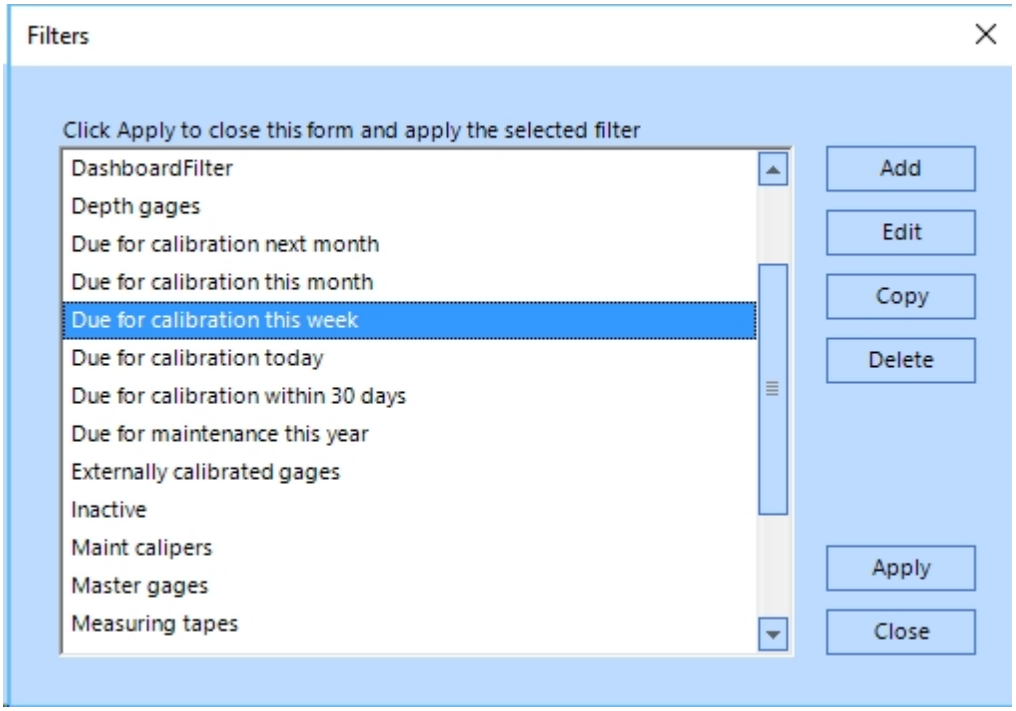
Once a filter exists, there are several different ways to apply it.

The first and most accessible is to select the filter from the dropdown list that appears in the global filter

panel on the right side of the screen.



A second option is to open the filters list, select the filter, and click Apply.



Finally, a filter can be applied in conjunction with other features, such as Views and Local settings (start-up filter).

See Also
Filters
Adding a filter
Wild-card filters
Time-frame filters

Reports

Reports

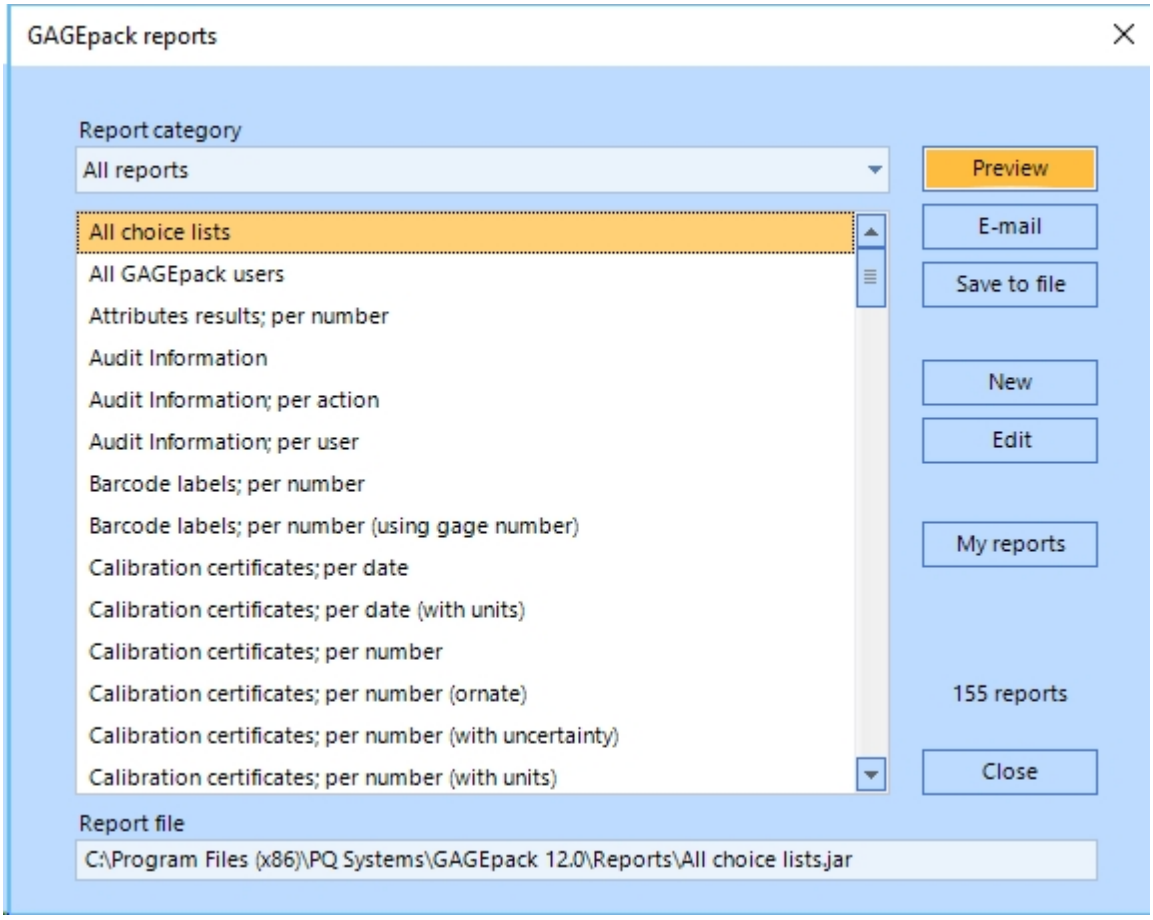
Reports are designed to extract useful information from any part of the database and display that information in a well-formatted way. Given such a loose definition, reports are extremely flexible in that they can inform the user about anything of interest in the database and can be shared in a number of different ways. The reports list can be accessed from the **Home** tab of the ribbon bar.

In This Section	See Also
View a report	Gage management
Email a report	Gage form
Save a report to a file	Adding a gage
Create a new report	Editing a gage
Edit a report	Deleting a gage
My Reports	Copying a gage
	Cloning a gage
	Finding a specific gage
	Search and replace
	Filters
	Views

View a report

View a report

By default, there are approximately 150 reports included in GAGEpack when it is first installed. These, along with any new reports created by the user, can be generated and displayed by selecting a report from the list and clicking ***Preview***.

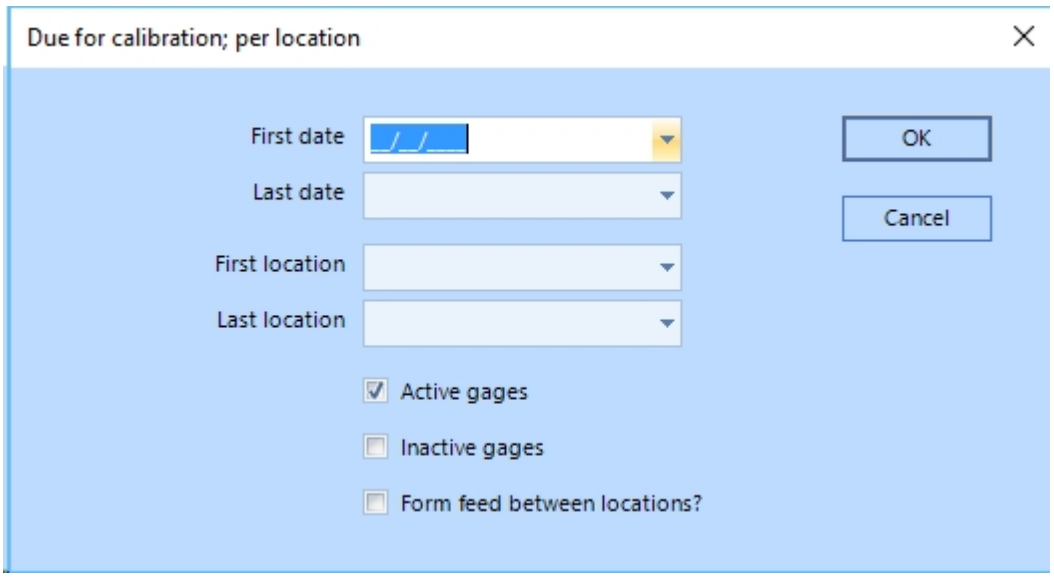


In This Section	See Also
Prompts	Reports
	Email a report
	Save a report to a file
	Create a new report
	Edit a report
	My Reports

Prompts

Prompts

Many reports will ask the user to provide some information in the form of parameters before the report is generated. These parameters are used to define the range of what will be displayed on the report. These are called prompts.



Leaving a prompt field blank will cause the associated parameter to be ignored.

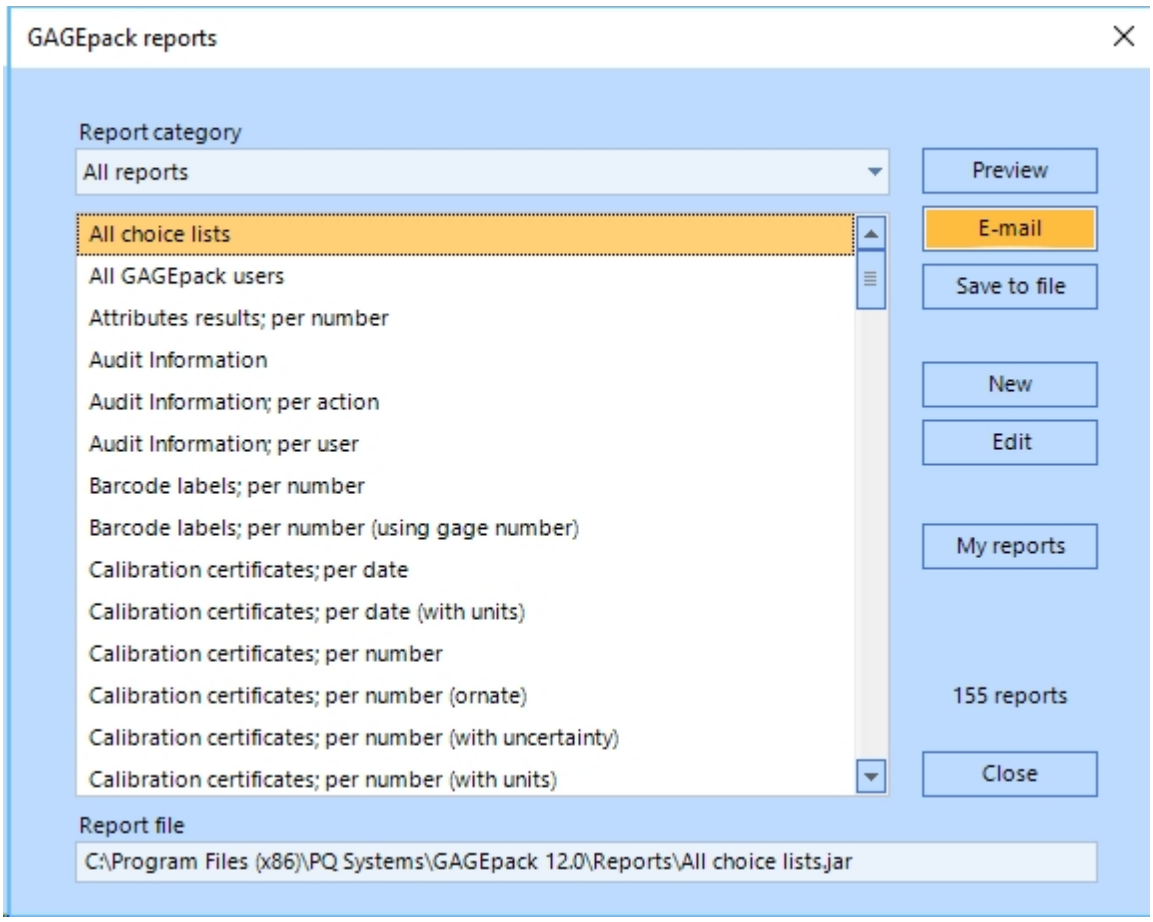
See Also

View a report

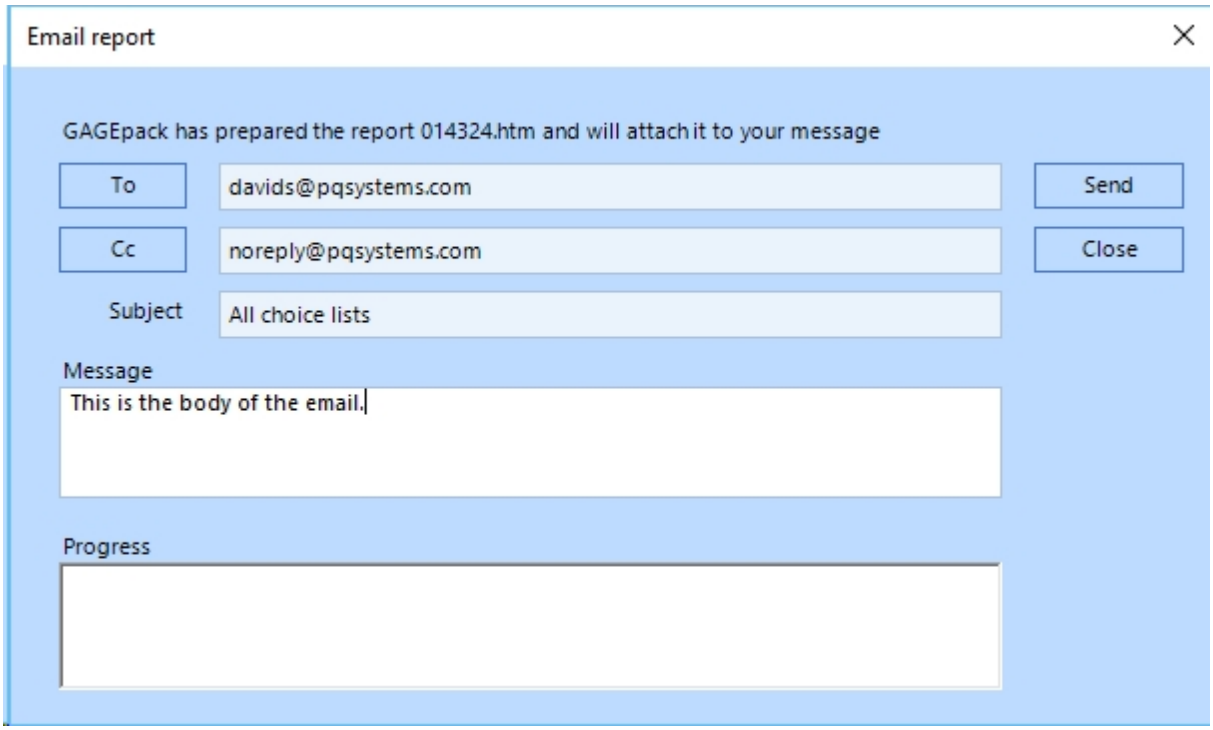
Email a report

Email a report

Reports can be sent as an email attachment by selecting the report from the list and clicking E-mail.



The user will be able to enter any required prompts information, and then will need to specify who should receive the email and what the body of the message should say.



See Also

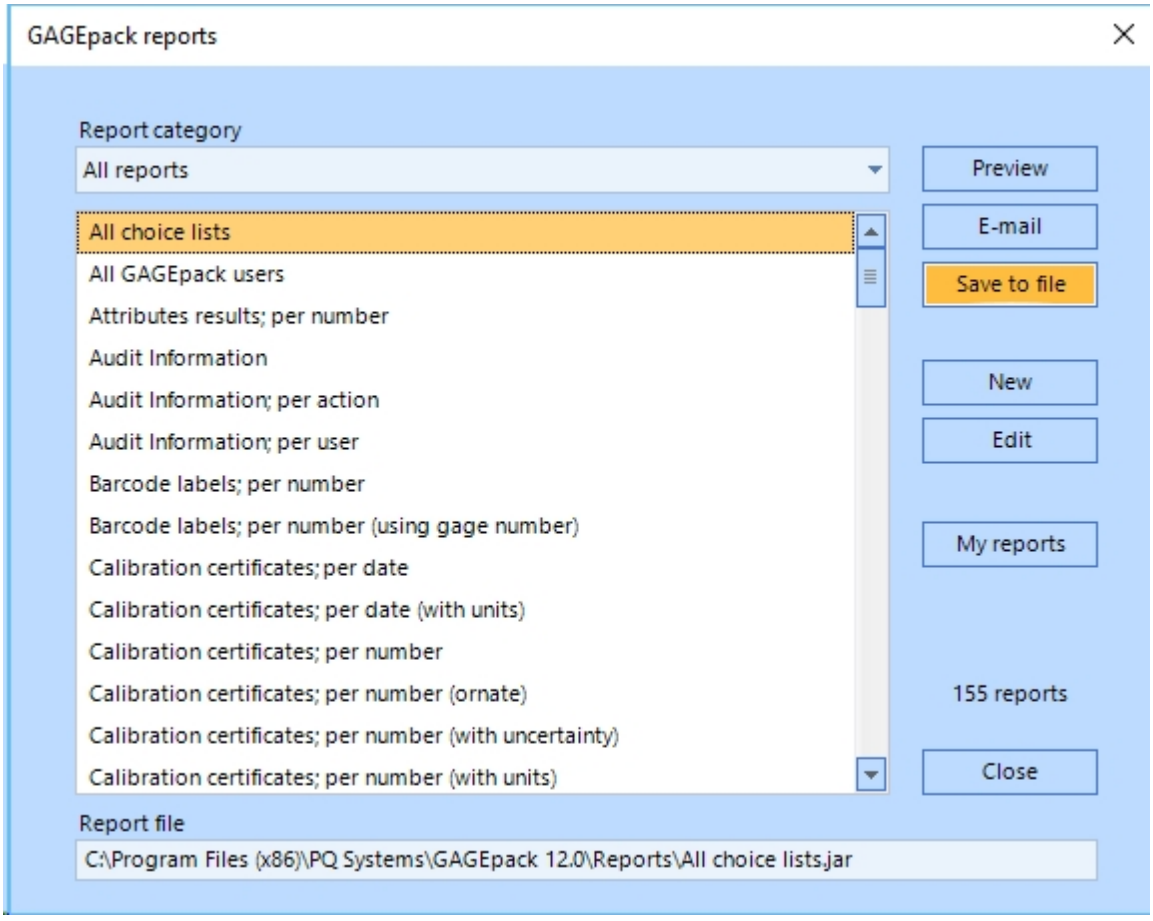
Reports

View a report
Save a report to a file
Create a new report
Edit a report
My Reports

Save a report to a file

Save a report to a file

A report can be saved as an .htm file, which can be viewed in a web browser or in Microsoft Excel, among other programs. To do this, select the report of interest and click Save to file.



The user will be able to enter any required prompts information, and then will need to specify where the file should be saved and what it should be called

See Also

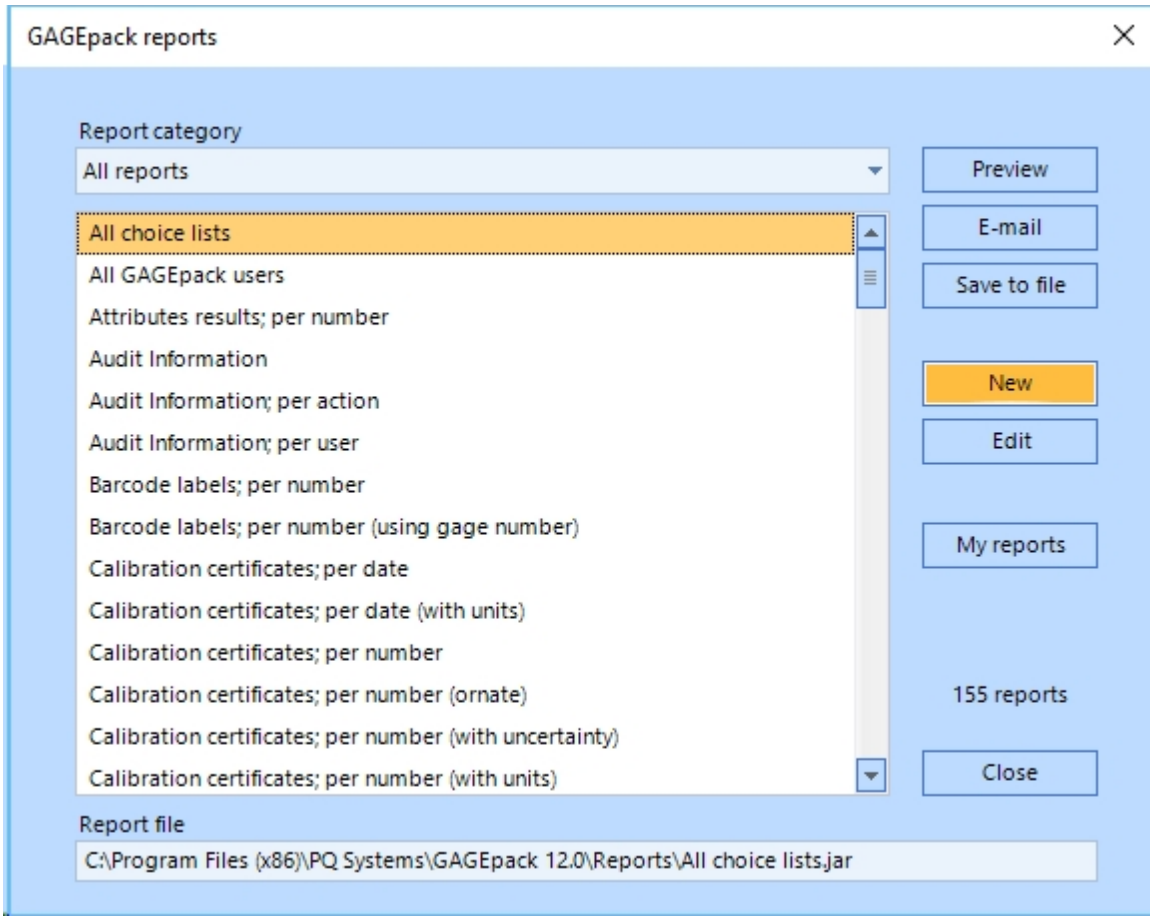
Reports
View a report
Email a report
Create a new report
Edit a report

My Reports

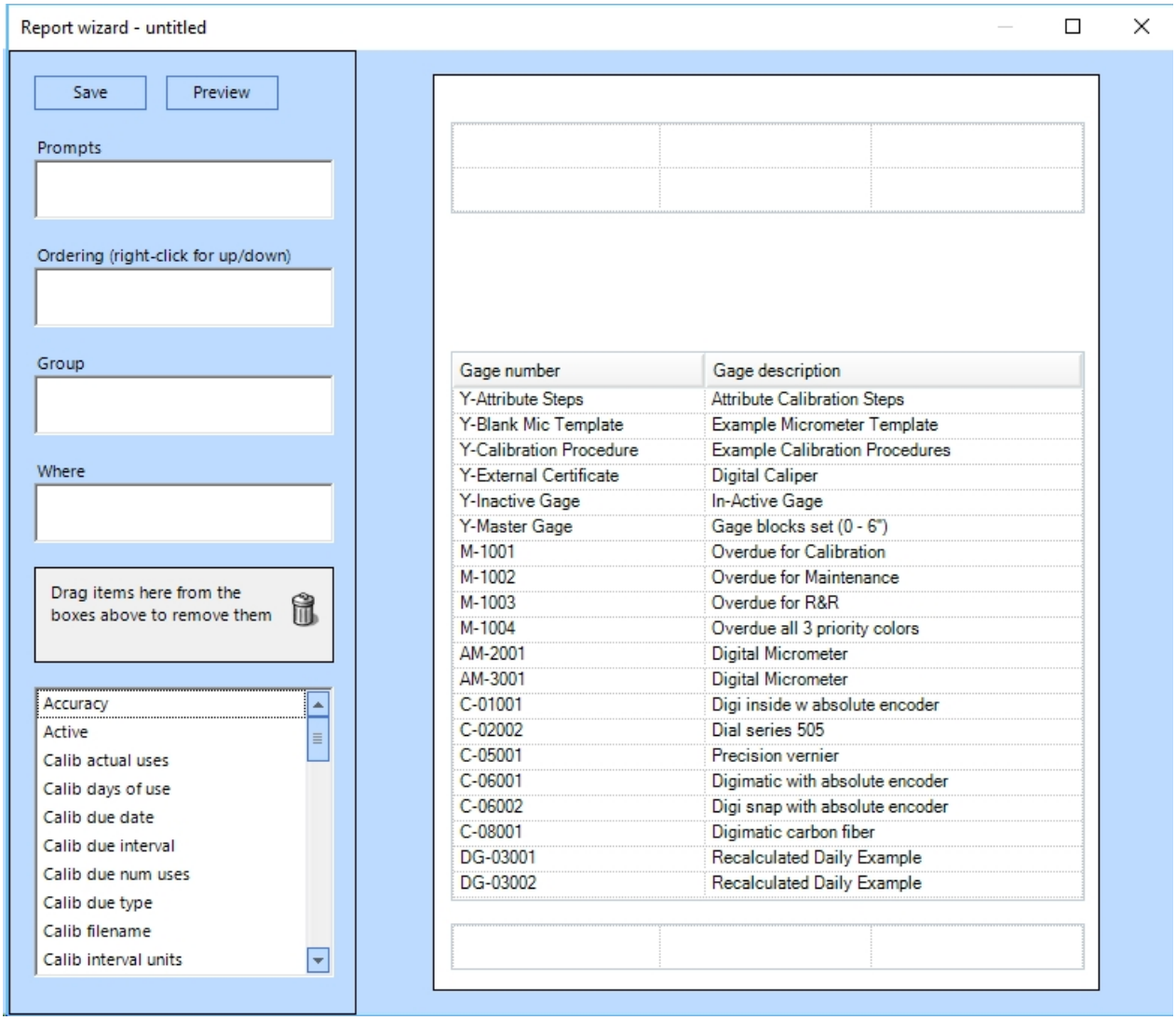
Create a new report

Create a new report

To create a new report from scratch, click ***New***.



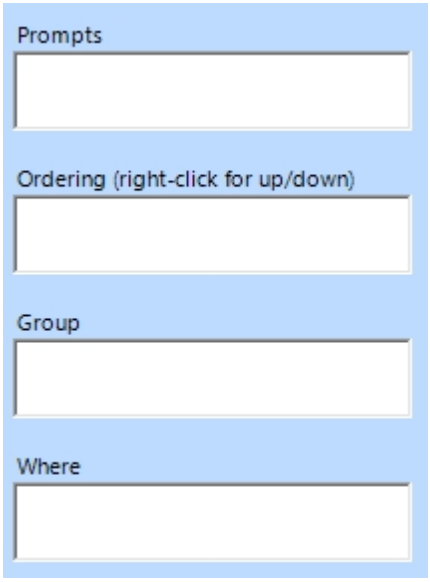
This will open the Report wizard in a new window. This wizard provides a drag-and-drop interface that allows the user to specify the layout and behavior of their new report.



The process of creating the report involves dragging gage characteristics from the list in the bottom left corner to the appropriate places on either the print preview to the right or the boxes to the top.

The area on the right side of the window is a print preview. This is what the first page of the report would look like if it were printed right now. Columns can be added, moved, or removed by dragging them to the desired spot on the preview form or the trash can icon.

The four boxes in the top left area of the wizard can be used to control the look and behavior of the report file.



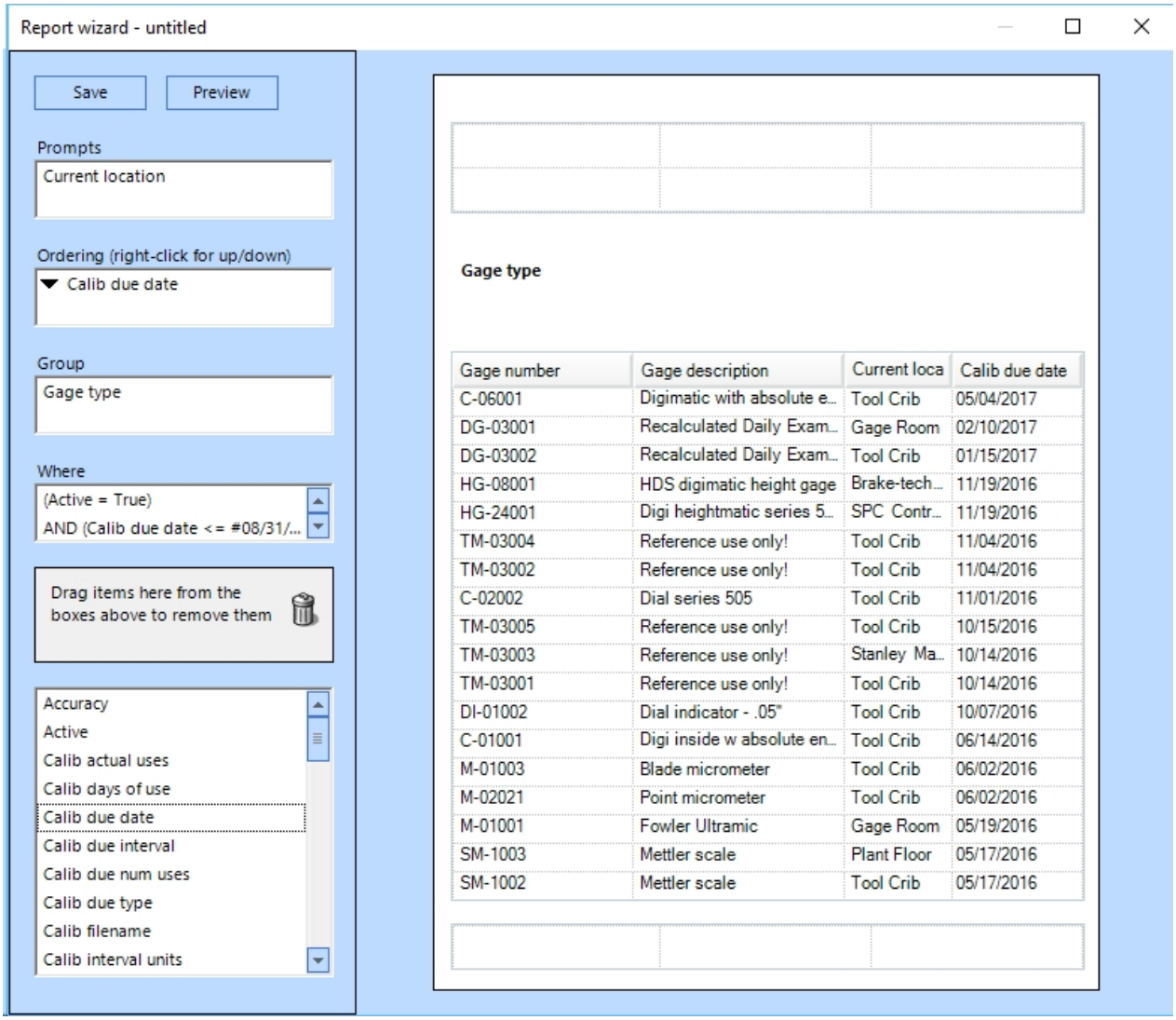
Prompts – If a gage characteristic is added to this box, this report will ask the user to specify what values a gage must have for that characteristic in order for the gage to be included on the report.

Ordering – This box refers to the sort order of the list. The gages in the report will be ordered in ascending or descending order by whatever characteristic(s) is/are dropped into this box.

Group – The report will be broken into sections based on the gage characteristic that is added to this box. For example, if 'Gage type' is put into this box, there will be a section in the report for calipers, and another section for micrometers, and so on.

Where – This box works much the same way as the filters on the inventory grid. By dropping a gage characteristic into this box, the user will be able to specify what values a gage must have for the specified characteristic in order to be included in the report.

The screen shot below shows a report that, when run, will prompt the user to specify a location. Once the user has done so, the report will show a list of all active gages due for calibration within the next 6 months. The list will be broken up into sections by gage type and each individual section will be sorted by calibration due date.



Once the layout and design of the report is finished, click ***Save*** and provide a name when prompted. Once finished, the new report will appear on the standard list of reports. To find user-created reports quickly, select 'USER' from the category dropdown list at the top of the form.

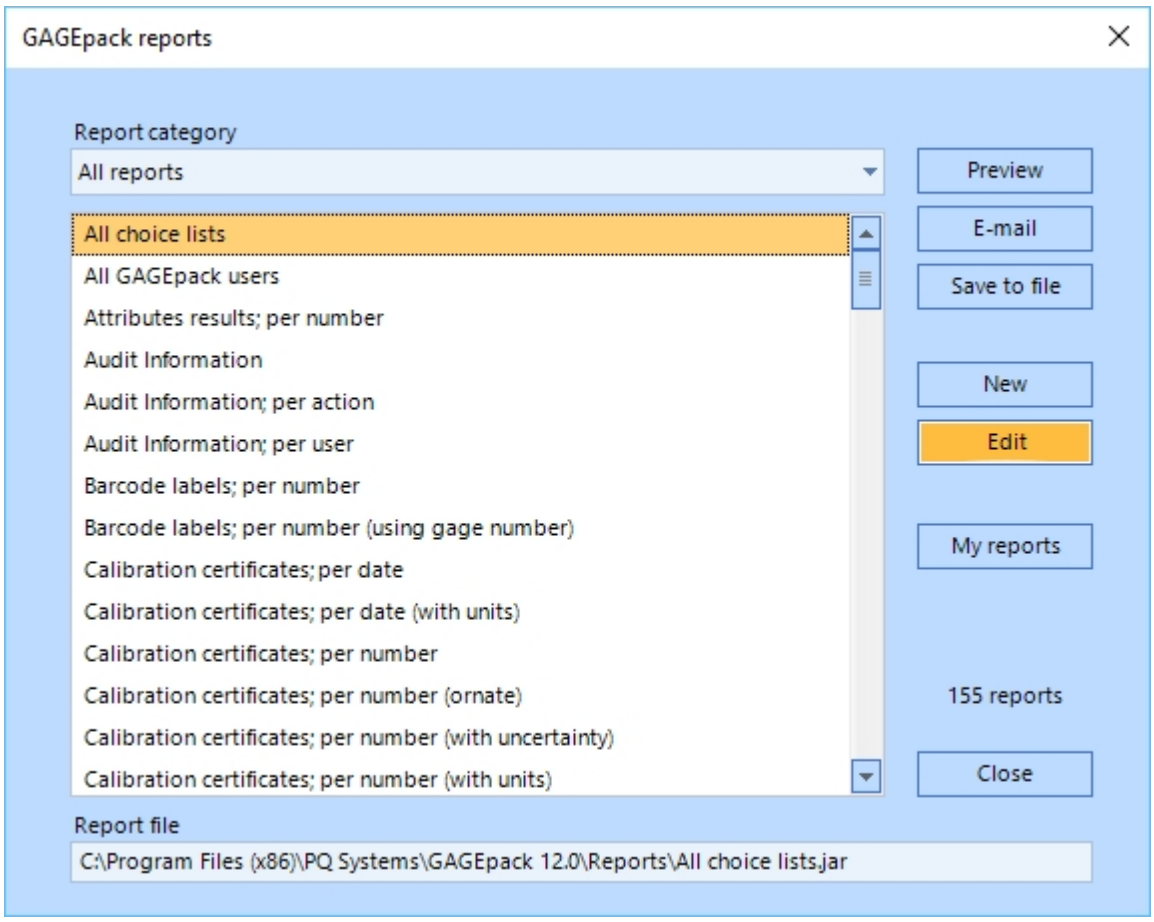
See Also

Reports
View a report
Email a report
Save a report to a file
Edit a report
My Reports

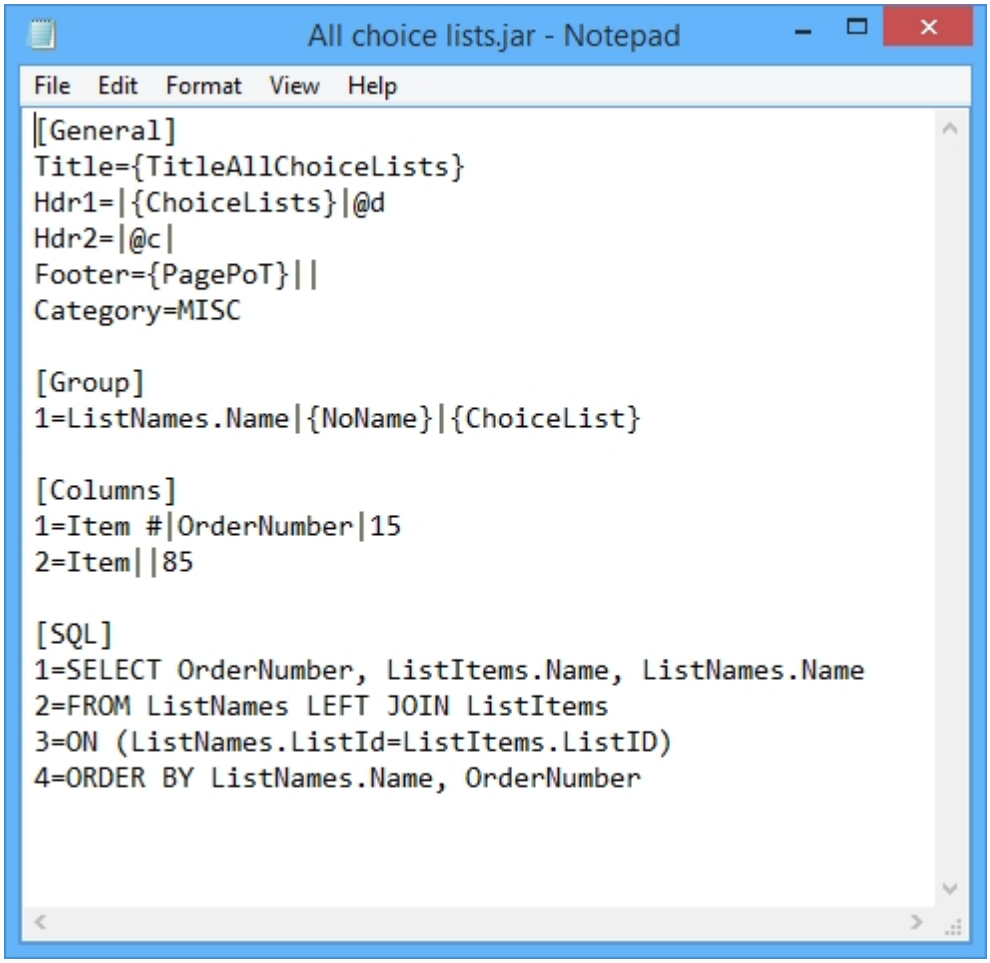
Edit a report

Edit a report

To modify an existing report, select it from the list and click ***Edit***.



If the report was originally created with the report design wizard, it will be editable using the same wizard (discussed in the next section). If not, the report file will be opened in the default text editor.



Report files use a combination of standard SQL and a special report syntax designed by PQ Systems. The report syntax is explained in detail in a document included with every installation of GAGEpack. By default, this document is located here:

C:\Program Files (x86)\PQ Systems\GAGEpack 13.0\Documents\GAGEpack Reporting Scheme120.doc

See Also

Reports

View a report

Email a report

Save a report to a file

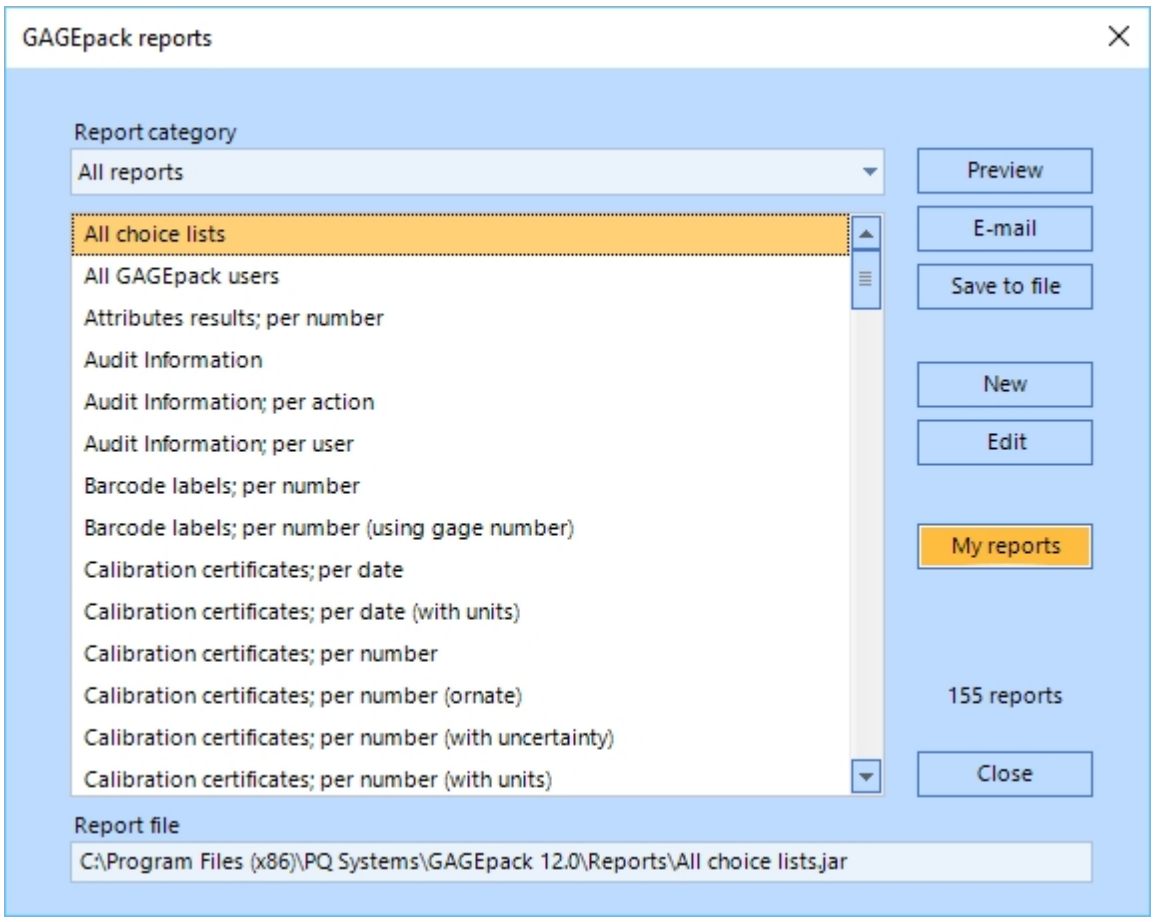
Create a new report

My Reports

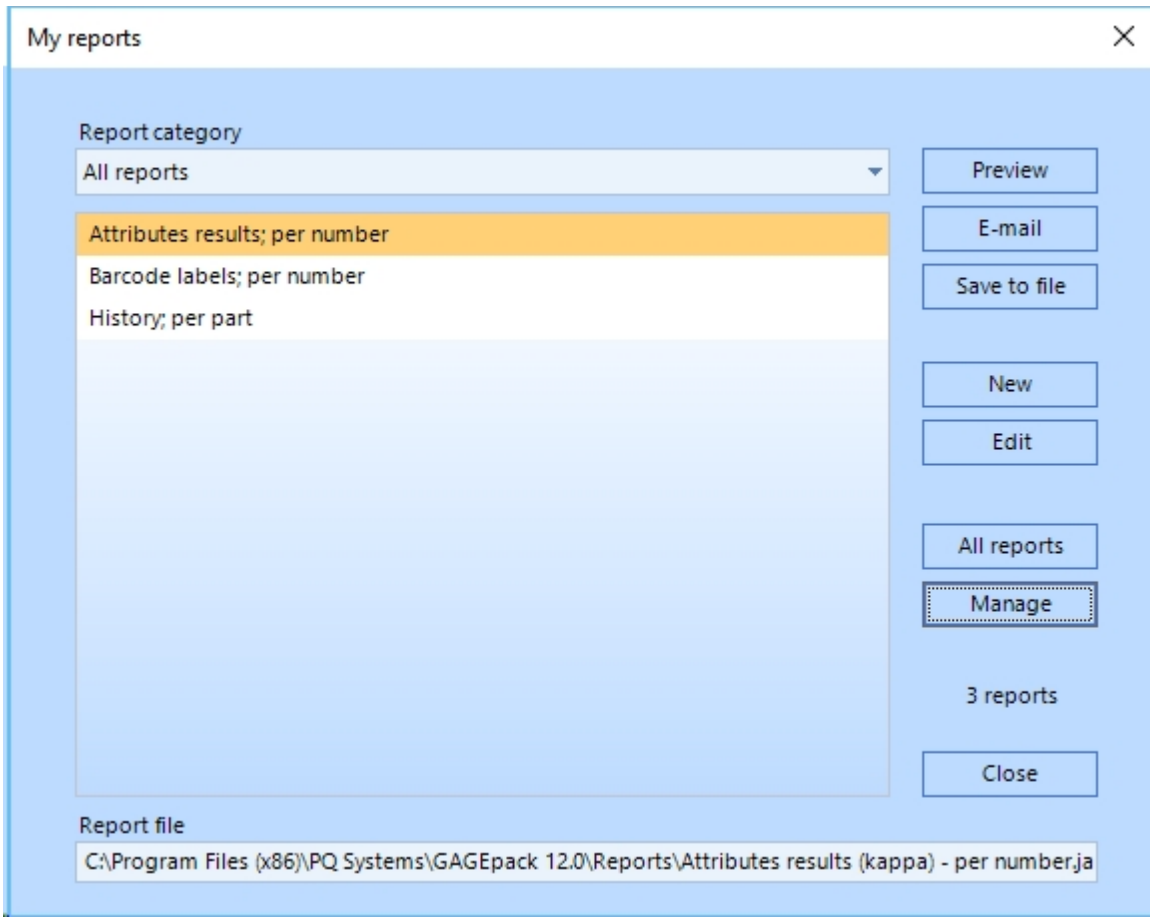
My Reports

My Reports

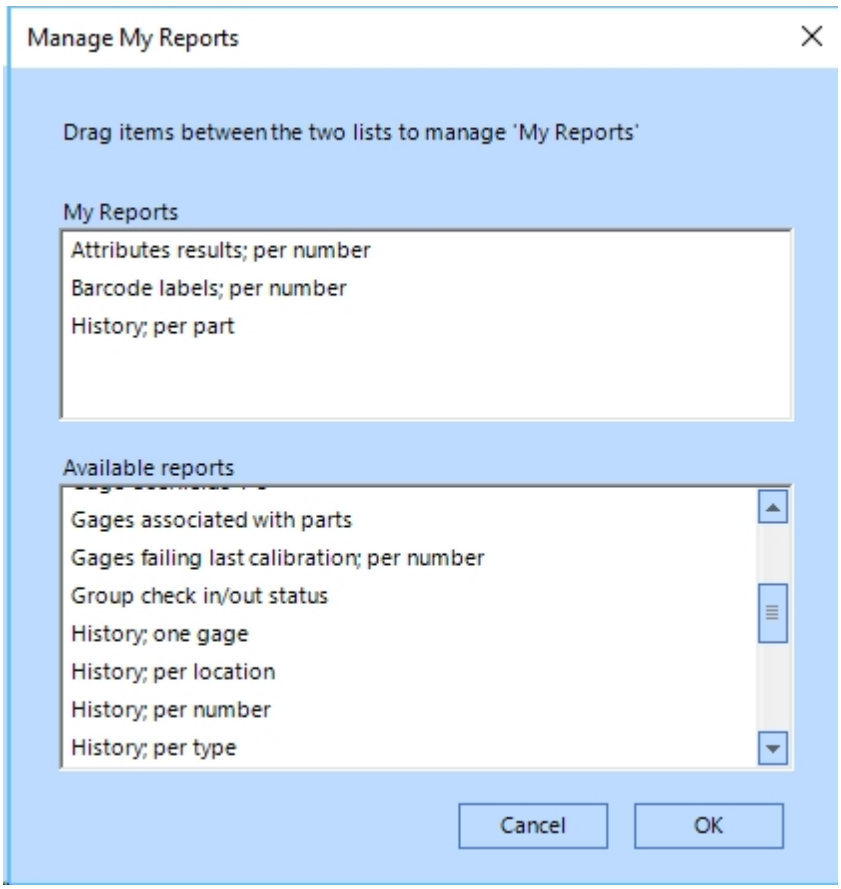
My Reports allows each user to create a small collection of their own commonly used reports. To access this list, click ***My Reports***.



The complete list of reports will be replaced with the list of the user's previously selected reports.



To add or remove reports from this list, click ***Manage***.



See Also

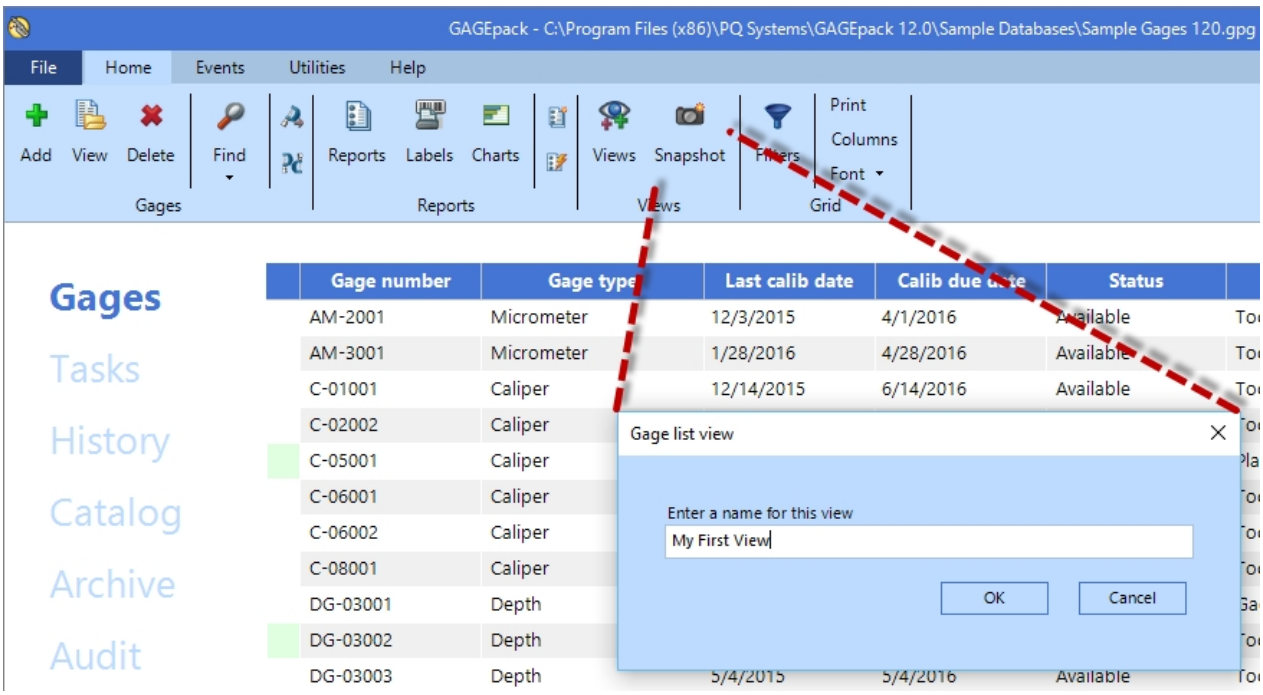
Reports
View a report
Email a report
Save a report to a file
Create a new report
Edit a report

Views

Views

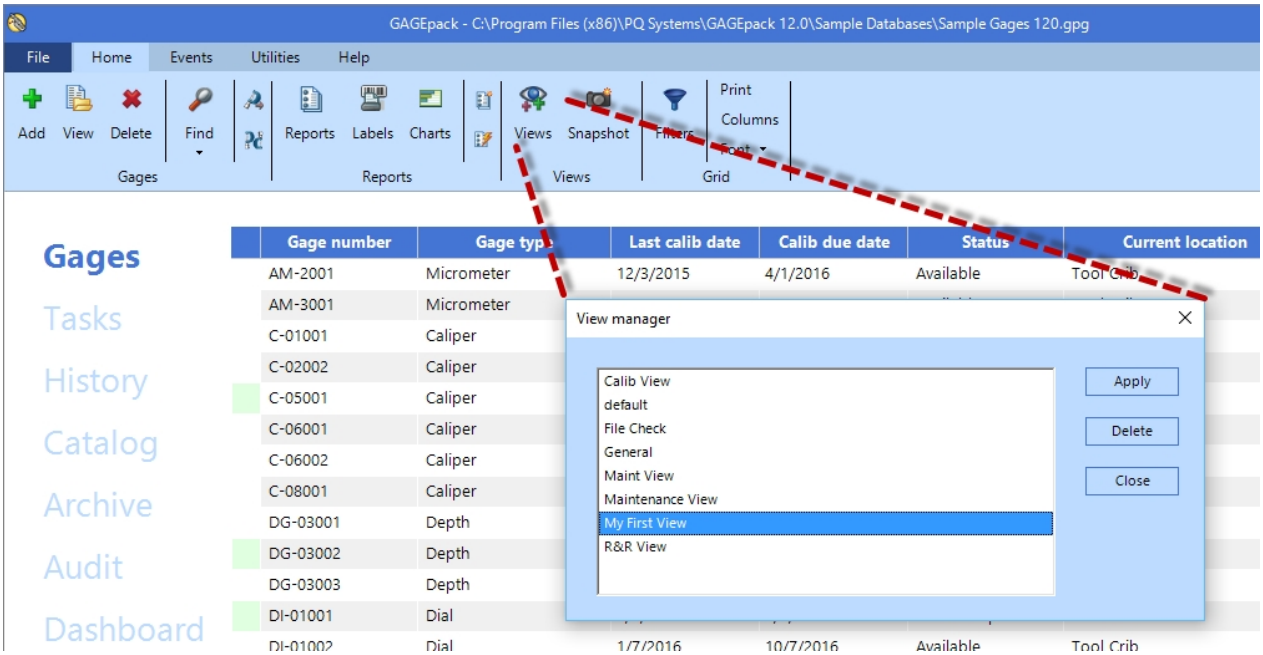
Views enable users to quickly apply a previously saved configuration of columns and settings to the main form tabs.

To create a view, click the ***Snapshot*** button on the ribbon bar.



Give the view a name and click ***OK*** to save it.

To apply a previously saved view to the inventory, click ***Views*** from the ribbon bar.



Select the desired view and click ***Apply***.

See Also
Gage management
Gage form
Adding a gage
Editing a gage
Deleting a gage

Copying a gage
Cloning a gage
Finding a specific gage
Search and replace
Filters
Reports

Upcoming gage events

Upcoming gage events

This chapter covers the various ways to see what events are scheduled to be completed soon. Many of these topics are covered in other places in this document, but here we will discuss utilizing these features specifically for the purpose of knowing what events are coming due.

In this chapter

Color-coding
Sorting
Filters
Reports
Calendar
To do list
GAGEmail

Color-coding

Color-coding

There are three color-coding statuses available to signal that a gage is past due for some event. They are "Past due for calibration," "Past due for maintenance," and "Past due for R&R." If color-coding is enabled, any gages that fall into one of these three categories will be highlighted using the color associated with their status.

It is recommended that users not rely heavily on this method for two reasons.

#1 – Gages that are colored are already PAST due, which means the opportunity to complete the event on time has already come and gone. The event is late if the gage is colored.

#2 – It is not practical to scroll through the gage list looking for colors.

Color-coding late events is meant to be a warning flag that something has gone wrong, not a way to schedule activity.

Please see Configuring GAGEpack for information about setting up color-coding.

See Also

Upcoming gage events
Sorting
Filters
Reports
Calendar
To do list
GAGEmail

Sorting

Sorting

Sorting the gage inventory list by one of the three due-date columns represents a quick and easy way to see the event schedule. Simply add a due-date column to the inventory grid and sort it by clicking on the column header. Adding columns and sorting are both covered in the Inventory tab section of Getting Started.

See Also

Upcoming gage events
Color-coding
Filters
Reports
Calendar
To do list
GAGEmail

Filters

Filters

Filters can be created in such a way that, when applied to the inventory grid, they will show only gages that are coming due for a certain event within a certain window of time. For instructions on how to create a filter, please see Gage management. The section Time-frame filters contains an example of this type of filter.

See Also

Upcoming gage events
Color-coding
Sorting
Reports
Calendar
To do list
GAGEmail

Reports

Reports

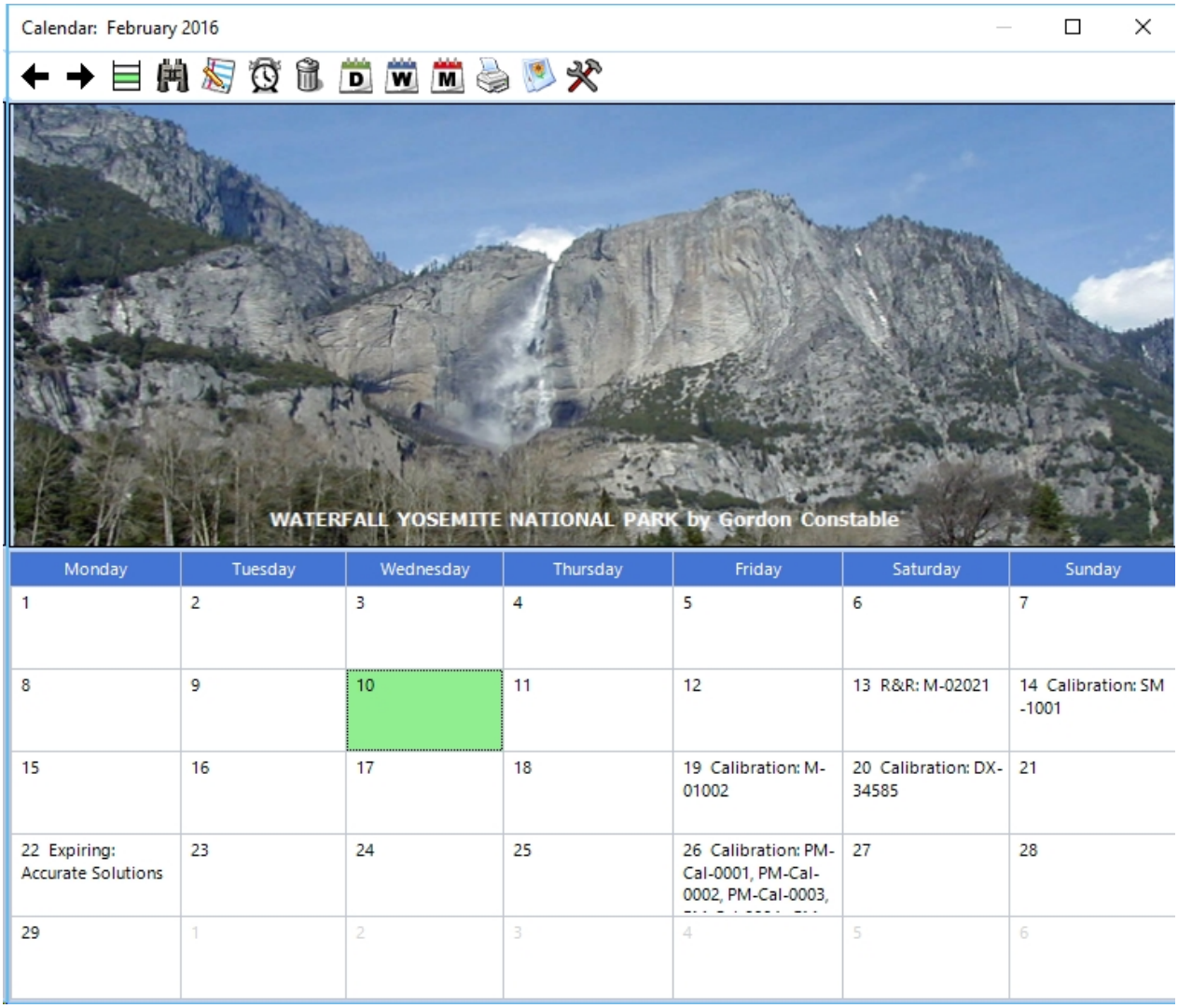
There are about 20 different "Due for " reports included in GAGEpack by default. These can be viewed from the reports list accessible from the inventory tab toolbar. In addition, custom reports can be created by the user to display the desired information about upcoming events. For information about viewing, editing, creating, and sharing reports, please see Gage management.

See Also
Upcoming gage events
Color-coding
Sorting
Filters
Calendar
To do list
GAGEmail

Calendar

Calendar

The calendar can be accessed from the default inventory tab toolbar. It offers an overview of the event schedule in either daily, weekly, or monthly view. It can also record and display user-created alarms and notes, which can be created using the calendar toolbar.



Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7
8	9	10	11	12	13 R&R: M-02021	14 Calibration: SM-1001
15	16	17	18	19 Calibration: M-01002	20 Calibration: DX-34585	21
22 Expiring: Accurate Solutions	23	24	25	26 Calibration: PM-Cal-0001, PM-Cal-0002, PM-Cal-0003,	27	28
29	1	2	3	4	5	6

In daily and weekly views, the gage events will be displayed as hyperlinks. These can be clicked on to launch the associated event directly from the calendar view.

See Also

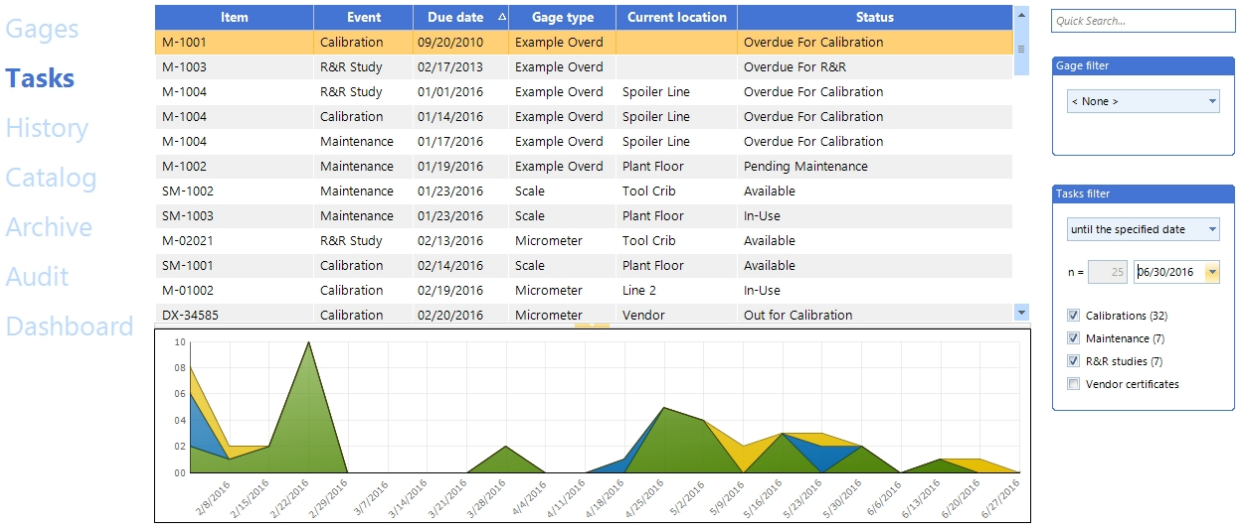
Upcoming gage events
Color-coding
Sorting
Filters
Reports
To do list
GAGEmail

To do list

To do list

The To do list is the main feature of the Tasks tab. It displays a list of all of the events that are scheduled to take place within a user-defined window of time. This list is always up to date in that it will immediately

reflect relevant changes made elsewhere in the software.



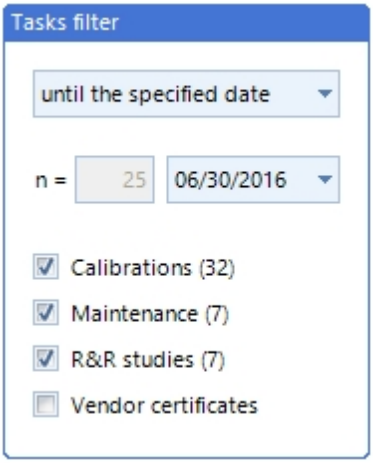
In This Section	See Also
To do list control panel	Upcoming gage events
To do list columns	Color-coding
Printing the to do list	Sorting
Emailing the to do list	Filters
To do list worksheets	Reports
Gages due based on uses	Calendar
	GAGEmail

To do list control panel

To do list control panel

The control panel at the top of the To do list allows the user to specify what should appear on the list. The check boxes can be used to activate and deactivate the display of calibration events, R&R studies, maintenance activities, and expiring vendor certifications.

Show items for allows the user to define the date range of interest for the list. The dropdown list has a series of pre-defined ranges in addition to the options of looking ahead by N days and simply selecting the end date from a calendar.



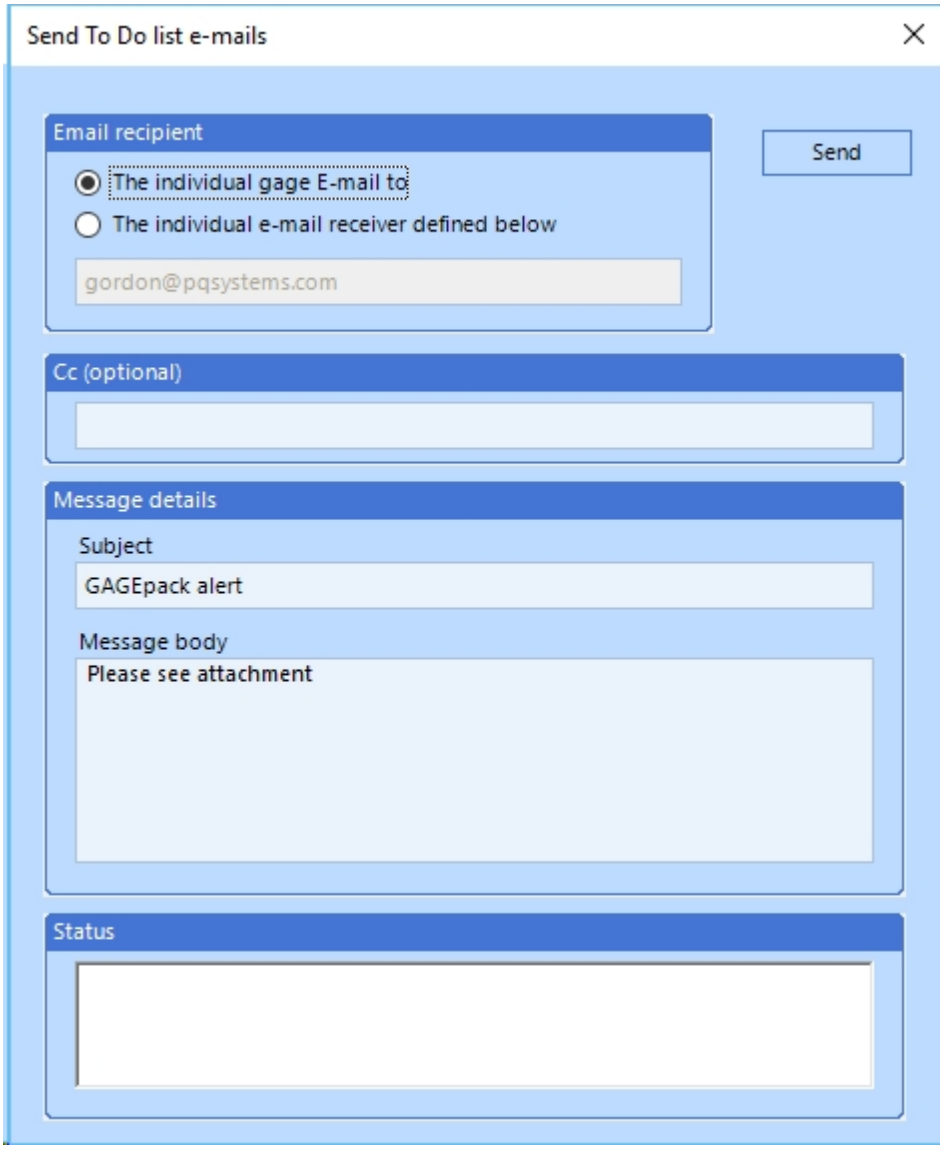
See Also

To do list
To do list columns
Printing the to do list
Emailing the to do list
To do list worksheets
Gages due based on uses

Emailing the to do list

Emailing the to do list

Once GAGEpack has been configured to send emails (see chapter 4), the To do list can send messages concerning its content. To access the email mechanism, click ***Email*** in the ribbon bar.



There are two options for recipients of emails. The most basic is to send the complete To do list to a single recipient by selecting ***The individual e-mail receiver defined below*** and typing in an email address.

The other option is to select ***The individual gage E-mail to***. This option refers to the EmailTo field found on the general tab of the gage viewing form. If it is selected, every email contact in the database with a gage that currently appears on the To do list will receive a personalized message that will show a list of only their gages.

The message itself will contain a .htm file attachment, which can be opened in any web browser. This attachment will display the gage information using the same columns that appeared on the To do list at the time the message was sent.

Item	Event	Gage type	DueDate	Current location
1-Overdue - Calibration	Calibration	Example Overdue Gage	3/26/2007	
1-Overdue - R&R	R&R Study	Example Overdue Gage	8/23/2009	
1-Overdue - Maintenance	Maintenance	Caliper	2/26/2010	Plant Floor
1-Overdue-Cal-R&R-Maint	Calibration	Micrometer	2/26/2010	Spoiler Line
1-Overdue-Cal-R&R-Maint	R&R Study	Micrometer	2/25/2011	Spoiler Line
1-Overdue-Cal-R&R-Maint	Maintenance	Micrometer	2/24/2012	Spoiler Line
M-02021	R&R Study	Micrometer	8/16/2012	Tool Crib
SM-1001	Calibration	Scale	8/17/2012	Plant Floor
M-01002	Calibration	Micrometer	8/22/2012	Line 2

See Also

- To do list
- To do list control panel
- To do list columns
- Printing the to do list
- To do list worksheets
- Gages due based on uses

To do list worksheets

To do list worksheets

It is possible to use the To do list to generate a collection of worksheets for all of the calibration and maintenance events that are currently displayed on the list. Simply click ***Worksheets*** in the ribbon bar. No extra input is required.

See Also

- To do list
- To do list control panel
- To do list columns
- Printing the to do list
- Emailing the to do list
- Gages due based on uses

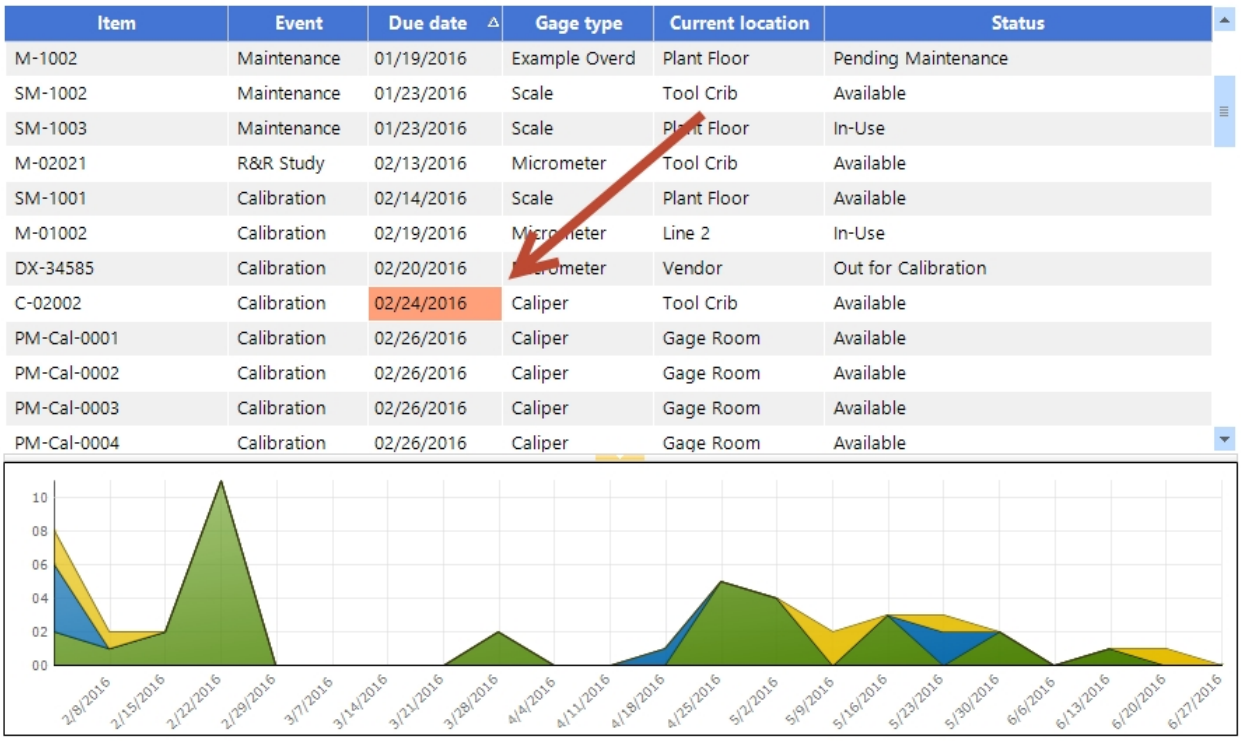
Gages due based on uses

Gages due based on uses

The To do list handles gages due based on the number of uses by estimating their due dates and then displaying them along with gages that have actual due dates. Estimated due dates are highlighted to set them apart from actual due dates.

These dates are estimated by assuming that the rate of uses-consumption is constant between calibrations.

For example, if a gage was calibrated 10 days ago and at the present time 20 percent of its uses have been consumed, its due date will be estimated to be 40 days from today.



Item	Event	Due date	Gage type	Current location	Status
M-1002	Maintenance	01/19/2016	Example Overd	Plant Floor	Pending Maintenance
SM-1002	Maintenance	01/23/2016	Scale	Tool Crib	Available
SM-1003	Maintenance	01/23/2016	Scale	Plant Floor	In-Use
M-02021	R&R Study	02/13/2016	Micrometer	Tool Crib	Available
SM-1001	Calibration	02/14/2016	Scale	Plant Floor	Available
M-01002	Calibration	02/19/2016	Micrometer	Line 2	In-Use
DX-34585	Calibration	02/20/2016	Micrometer	Vendor	Out for Calibration
C-02002	Calibration	02/24/2016	Caliper	Tool Crib	Available
PM-Cal-0001	Calibration	02/26/2016	Caliper	Gage Room	Available
PM-Cal-0002	Calibration	02/26/2016	Caliper	Gage Room	Available
PM-Cal-0003	Calibration	02/26/2016	Caliper	Gage Room	Available
PM-Cal-0004	Calibration	02/26/2016	Caliper	Gage Room	Available

See Also

To do list

To do list control panel

To do list columns

Printing the to do list

Emailing the to do list

To do list worksheets

GAGEmail

GAGEmail

GAGEmail is an add-on program designed to work in conjunction with GAGEpack. It is a Windows Service application, which means it will run automatically and silently in the background whenever the computer is turned on and it does not require any input from the user.

GAGEmail is designed to monitor a gage database for upcoming gage events and generate email alerts to be sent to the people who are responsible for completing the events.

For information about how to install GAGEmail, please see the document located here:

C:\Program Files (x86)\PQ Systems\GAGEpack 13.0\Documents\Getting started with GAGEmail.docx

For information about how to configure GAGEmail activity in a particular database, please see GAGEmail settings in Configuring GAGEpack.

See Also
Upcoming gage events
Color-coding
Sorting
Filters
Reports
Calendar
To do list

Recording gage events

Recording gage events

This chapter explains the process of adding gage events to the database. It also explains features and functions unique to each of the gage event types.

The process of adding an event to GAGEpack almost always involves three steps. They can be loosely described as follows:

1. Launch the event form.
2. Fill out the event form.
3. Click ***OK*** to save.

Step 3 is simple enough not to warrant discussion. Step 2 will vary depending on which event is being completed. The variances are described in the event sections throughout this chapter. Step 1 is covered in the first section.

In this chapter
Launching gage events
Calibration
External Calibration
Check-out
Check-in
Maintenance
Verification
Repair
Other
Multi-gage events
Group events
R&R variables study
R&R attribute study
R&R stability study
R&R linearity study

R&R uncertainty study/bias

Launching gage events

Launching gage events

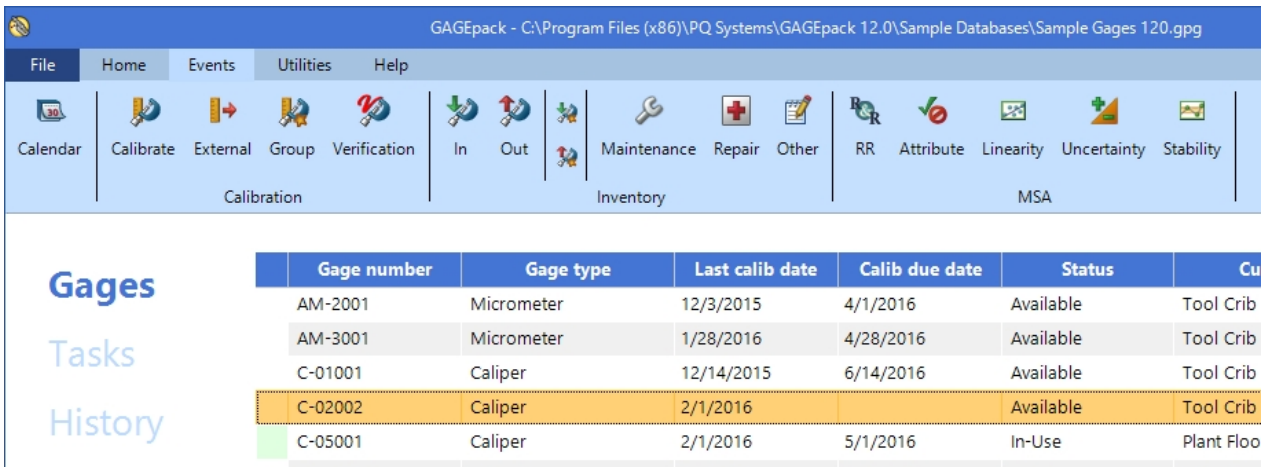
There are several ways to initiate the process of adding a gage event to the database. Not every event type can be launched using every method described in this section, but here we cover all the methods. It's important to note that all of these methods will have the same effect. These options simply represent multiple ways of doing the same thing (launching a gage event form). The method to use is a matter of personal preference.

In This Section	See Also
Inventory tab toolbar	Recording gage events
Gage history tab	Calibration
Calendar hyperlink	External Calibration
To do list	Check-out
Right-click selection menu	Check-in
	Maintenance
	Verification
	Repair
	Other
	Multi-gage events
	Group events
	R&R variables study
	R&R attribute study
	R&R stability study
	R&R linearity study
	R&R uncertainty study/bias

Ribbon bar

Ribbon bar

To launch an event using this option, click on the gage of interest so that it is highlighted and then click on the appropriate icon on the ribbon.



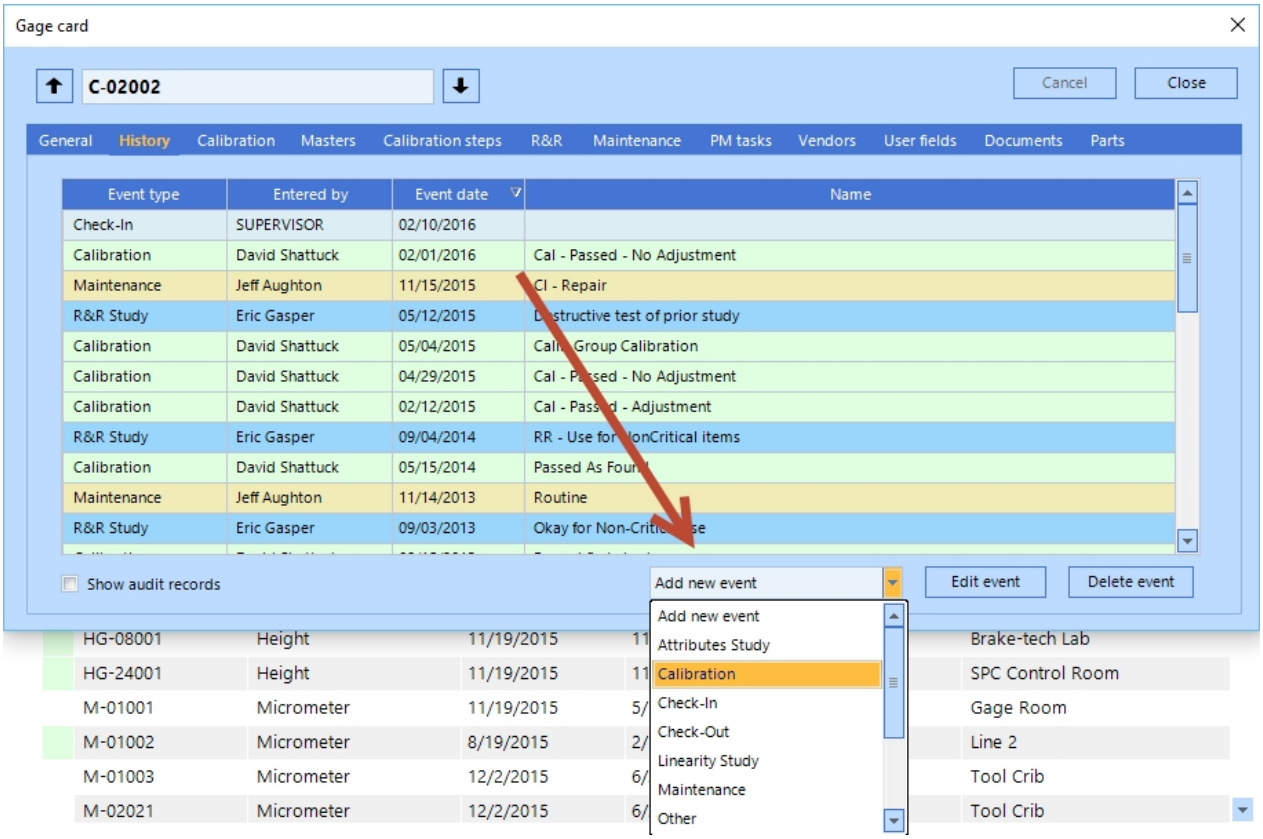
See Also

[Launching gage events]
[Gage history tab]
[Calendar hyperlink]
[To do list]
[Right-click selection menu]

Gage history tab

Gage history tab

The history tab of the gage viewing from has a dropdown at the bottom labeled Add new event. Selecting an event type from this dropdown will launch an event of that type for the currently selected gage.



See Also
Launching gage events
Inventory tab toolbar
Calendar hyperlink
To do list
Right-click selection menu

Calendar hyperlink

Calendar hyperlink

When the calendar is open in either daily or weekly view, the scheduled events are displayed as hyperlinks rather than plain text. Clicking on these links will launch the associated event.

See Also
Launching gage events
Inventory tab toolbar
Gage history tab
To do list
Right-click selection menu

To do list

To do list

Double-clicking on any row of the To do list on the tasks tab will launch the event associated with that row.

See Also
Launching gage events
Inventory tab toolbar
Gage history tab
Calendar hyperlink
Right-click selection menu

Right-click selection menu

Right-click selection menu

A gage can be "selected" on the inventory tab by clicking on it. If at least one gage is selected in this way, right-clicking on the gages grid will display a menu that includes events that can be launched from here.

See Also
Launching gage events
Inventory tab toolbar
Gage history tab
Calendar hyperlink
To do list

Calibration

Calibration

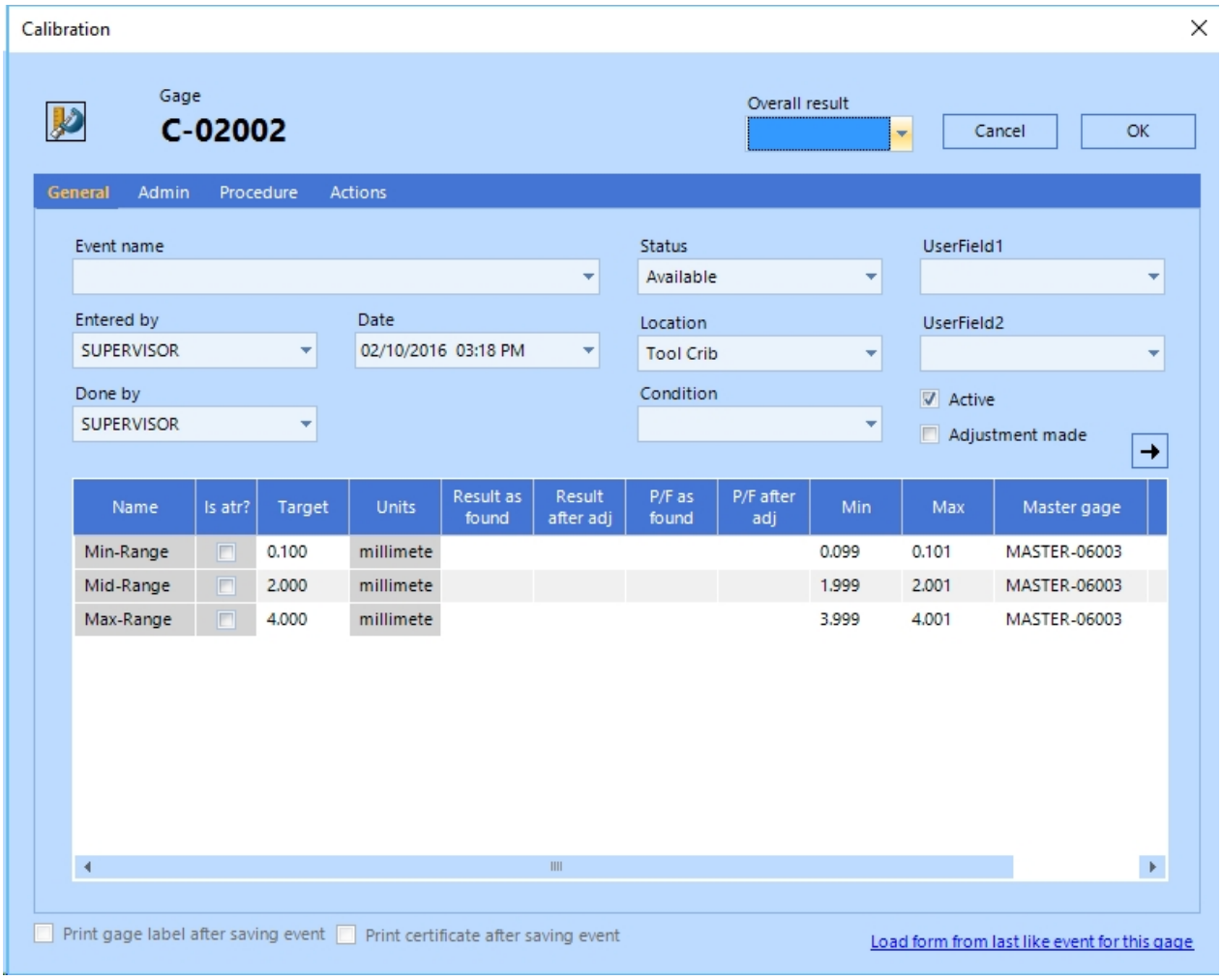
The calibration event form allows the user to view, edit, and input information about the event and the gage, and also record the measurements that were taken before and after any adjustment to the gage. This section explains the meaning and purpose of the available fields and buttons on the form.

In This Section	See Also
General	Recording gage events
Calibration results	Launching gage events
Actions	External Calibration
	Check-out
	Check-in
	Maintenance
	Verification
	Repair

Other
Multi-gage events
Group events
R&R variables study
R&R attribute study
R&R stability study
R&R linearity study
R&R uncertainty study/bias

General

General



Information about the event

Entered by – The name of the person who is adding this event to the database.

Done by – The name of the person who performed the calibration.

Date – The date when this calibration was performed.

Next date – The date of the next calibration. This can be adjusted from this field if necessary.

Certificate number – The next available certificate number. This number will be applied to this event.

Temperature/Humidity – Used to record the temperature and humidity in the calibration environment. These fields will be filled out automatically if there is a THUM device plugged into the computer.

Cost/Time (hours) – Used to record how much the calibration cost and how long it took to complete.

UserField1/UserField2 – Blank fields which can be renamed to allow the user to record more information on the general form.

Calibration vendor – The dropdown contains a list of all of the vendors stored in the database. Used to specify which vendor performed this calibration, if not completed internally.

Purchase order number- – Used to store the purchase order number associated with this calibration event, if there is one.

Certificate (file) – This field can be used to link an external file to this event.

Notes – A place to make any additional comments about this event.

Information about the gage

Condition of the gage – This dropdown is used to specify the state of the gage during the calibration.

Status – This field is used to update the status of the gage. When the calibration event is saved, the gage status will be updated so that it matches the value of this field.

Location – This field is used to update the current location of the gage. When the calibration event is saved, the gage location will be updated so that it matches the value of this field.

Active – This checkbox is used to update the active/inactive status of the gage. When the calibration event is saved, the gage active/inactive status will be updated so that it matches the state of this checkbox.

Other features of the form

Event name (optional) – This is a text field that can be used to offer a brief summary of the contents of this event. This field is visible as one of the columns on both the global and gage-level history tabs.

Adjustment made – This is a label that simply shows whether or not the values in the 'Result after adj' column of the calibration results tab are different from the values in the 'Result as found' column.

File – If there is a calibration procedure file linked to this gage on the 'Calibration' tab of the gage viewing form, this button will open that file.

Procedure – This button will display the contents of the calibration procedure text box that appears on the 'Calibration' tab of the gage viewing form.

Print gage label after saving event – If this box is checked, GAGEpack will automatically generate a system calibration label once the event has been saved to the database.

Print certificate after saving event - If this box is checked, GAGEpack will automatically generate a calibration certificate once the event has been saved to the database.

Load form from last like event for this gage – Pushing this button will fill out the contents of the general form so they exactly match the last calibration entered for this gage.

Read temperature and humidity from THUM – This button will re-fetch and update the values from the

THUM device, if there is one plugged in to the computer.

Overall result – This field must be completed before the event can be saved. Every calibration event must be labeled as 'Pass' or 'Fail.'

See Also
Calibration
Calibration results
Actions

Calibration results

Calibration results

The table at the bottom of the 'General' tab is used to record the measurements taken during the calibration. The grid here is created based on the contents of the 'Calibration steps' tab of the gage viewing form.

Name	Is atr?	Target	Units	Result as found	Result after adj	P/F as found	P/F after adj	Min	Max	Master gage	Comment
Min-Range	☐	0.100	millimete					0.099	0.101	MASTER-06003	
Mid-Range	☐	2.000	millimete					1.999	2.001	MASTER-06003	
Max-Range	☐	4.000	millimete					3.999	4.001	MASTER-06003	

Grid columns

Name – Comes directly from the calibration steps grid on the gage viewing form. Identifies the step on each row. This column is not editable here.

Is atr? – Short for "Is this an attribute step?" This is used to distinguish between variables and attribute steps. This column is not editable here.

Target – Shows the ideal value for this step.

Units – Units of measurement (inches, millimeters, pounds, volts, etc). This column is not editable here.

Result as found – Shows what the gage was reading at the start of the calibration.

Result after adj – Shows what the gage was reading after any adjustments have been made.

P/F as found – This column is filled out automatically once ***Result as found*** is populated. It evaluates the value entered in that column against the ***Max*** and ***Min*** values for the current step and flags the step as either 'Pass' or 'Fail.'

P/F after adj - This column is filled out automatically once ***Result after adj*** is populated. It evaluates the value entered in that column against the ***Max*** and ***Min*** values for the current step and flags the step as either 'Pass' or 'Fail.'

Max – The maximum acceptable value for this step.

Min – The minimum acceptable value for this step.

Master gage – This is a dropdown list that contains all of the active master gages in the database (unless certain options are enabled to restrict the masters available for selection) . If a master gage was used for this step, this column can be used to associate that gage with this step.

Comment – Any additional notes about the step can be added here.

Uncertainty – This column is only visible if the associated checkbox is enabled under Setup > Preferences > Global settings > General. It is used to store the uncertainty value for this step.

Other features of the tab

Show previous data – This button will display a grid of every historical calibration event recorded for this gage. Each row on the grid will show the results of those calibration events.

Chart previous data – This button will display the data shown using ***Show previous data*** in graphical form.

Coding active. Increment= - This label will be visible only if the increment value for this gage has been defined on the 'Calibration steps' tab of the gage viewing form. If the label is visible, pushing ***Page Up*** or ***Page Down*** on the keyboard while the cursor is in one of the result columns of the grid will fill that cell with the target value for that row. The value can be increased or decreased by one increment by pushing ***Page Up*** or ***Page Down***, respectively.

After pressing Enter move – This button is a toggle that controls how the cursor moves within the calibration results grid after pushing Enter on the keyboard.

See Also
Calibration
General
Actions

Actions

Actions

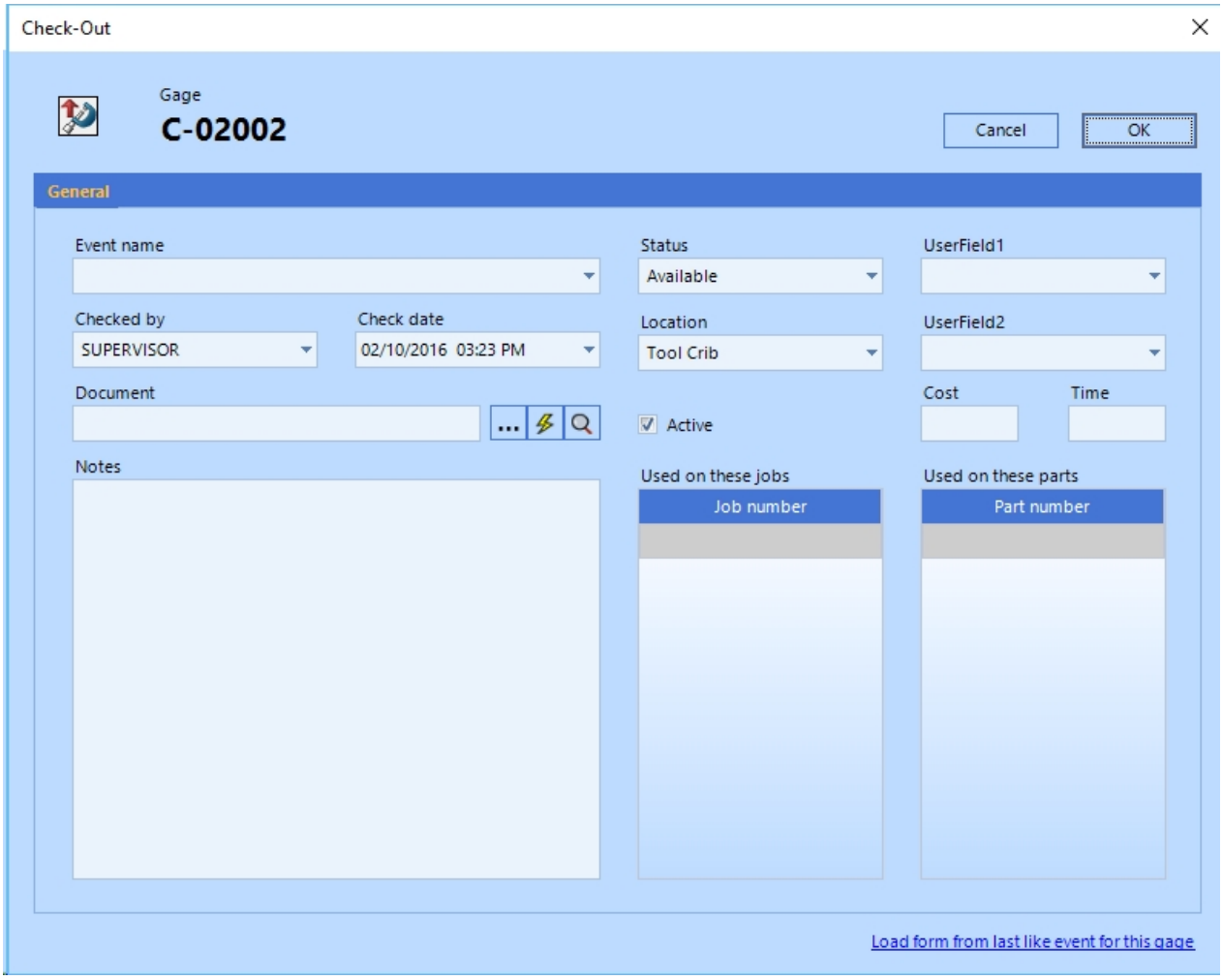
This tab will be visible only if the associated check box is enabled under ***File*** > ***Settings*** > ***Global settings*** > ***Validation criteria***. If enabled, and if a gage is found to be out of calibration or fails to calibrate correctly, the user will not be able to save the event without providing details of any shippable product that might have been affected by the inaccurate gage and explain any corrective action that has been taken in response to the failure.

See Also
Calibration
General
Calibration results

Check-out

Check-out

What it means for a gage to be "checked-out" has been intentionally left vague. Checking a gage out and back in can mean whatever the organization wants it to mean. The check-out event form provides a location to store information about the check-out and update a few attributes of the gage.



Event name (optional) – This is a text field that can be used to offer a brief summary of the contents of this event. This field is visible as one of the columns on both the global and gage-level history tabs.

Checked by – The name of the person who is adding this event to the database.

Used on these jobs – Allows the event and the gage to be associated with one or more of the jobs stored in the database. These dropdown lists display the contents of the 'Job Number' choice list which can be viewed and edited by going to Setup > Preferences > Global collections > Choice lists.

Used on these parts - Allows the event and the gage to be associated with one or more of the parts stored in the database. These dropdown lists display the contents of the Parts collection which can be viewed and edited by going to Setup > Parts.

Check Date – The date when this gage was checked out.

Status – This field is used to update the status of the gage. When the event is saved, the gage status will be updated so that it matches the value of this field.

Location – This field is used to update the current location of the gage. When the event is saved, the gage location will be updated so that it matches the value of this field.

Active – This checkbox is used to update the active/inactive status of the gage. When the event is saved, the gage active/inactive status will be updated so that it matches the state of this checkbox.

Cost/Time (hours) – Used to record how much the event cost and how long it took to complete.

UserField1/UserField2 – Blank fields which can be renamed to allow the user to record more information on the form.

Document – A reference to any external file.

Notes – A place to make any additional comments about this event.

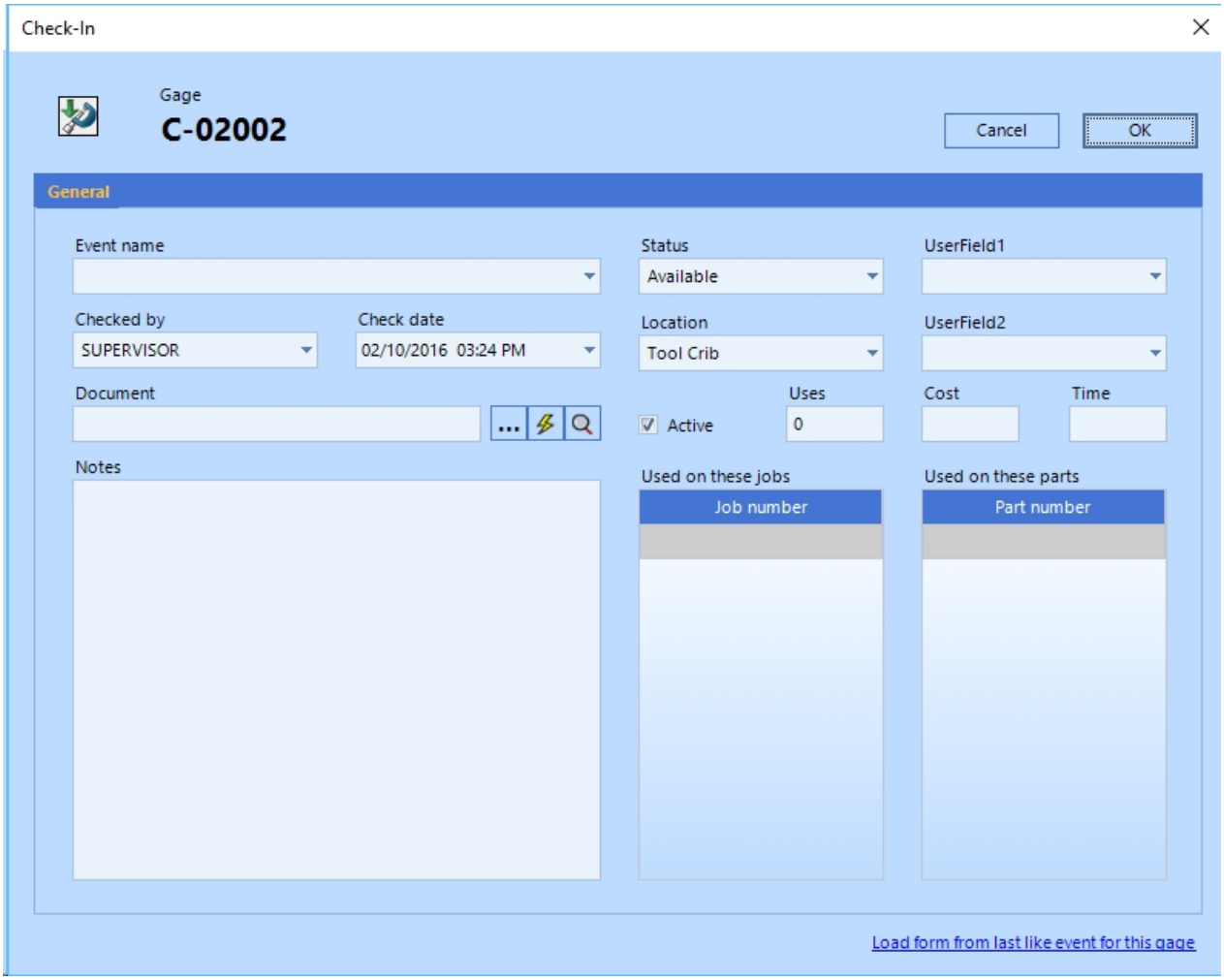
Load form from last like event for this gage – Pushing this button will fill out the contents of the general form so they match the last event of this type entered for this gage.

See Also
Recording gage events
Launching gage events
Calibration
External Calibration
Check-in
Maintenance
Verification
Repair
Other
Multi-gage events
Group events
R&R variables study
R&R attribute study
R&R stability study
R&R linearity study
R&R uncertainty study/bias

Check-in

Check-in

Check-Ins are the opposite of Check-Outs.



Event name (optional) – This is a text field that can be used to offer a brief summary of the contents of this event. This field is visible as one of the columns on both the global and gage-level history tabs.

Checked by – The name of the person who is adding this event to the database.

Used on these jobs – Allows the event and the gage to be associated with one or more of the jobs stored in the database. These dropdown lists display the contents of the 'Job Number' choice list which can be viewed and edited by going to Setup > Preferences > Global collections > Choice lists.

Used on these parts - Allows the event and the gage to be associated with one or more of the parts stored in the database. These dropdown lists display the contents of the Parts collection which can be viewed and edited by going to Setup > Parts.

Check Date – The date when this gage was checked out.

Uses – Records the numbers of times the gage was used while it was checked out. This is a critically important field for gages that are calibrated on an interval based on the number of times the gage has been used.

Status – This field is used to update the status of the gage. When the event is saved, the gage status will be updated so that it matches the value of this field.

Location – This field is used to update the current location of the gage. When the event is saved, the gage location will be updated so that it matches the value of this field.

Active – This checkbox is used to update the active/inactive status of the gage. When the event is saved, the

gage active/inactive status will be updated so that it matches the state of this checkbox.

Cost/Time (hours) – Used to record how much the event cost and how long it took to complete.

UserField1/UserField2 – Blank fields which can be renamed to allow the user to record more information on the form.

Notes – A place to make any additional comments about this event.

Load form from last like event for this gage – Pushing this button will fill out the contents of the general form so they match the last event of this type entered for this gage.

See Also
Recording gage events
Launching gage events
Calibration
External Calibration
Check-out
Maintenance
Verification
Repair
Other
Multi-gage events
Group events
R&R variables study
R&R attribute study
R&R stability study
R&R linearity study
R&R uncertainty study/bias

Maintenance

Maintenance

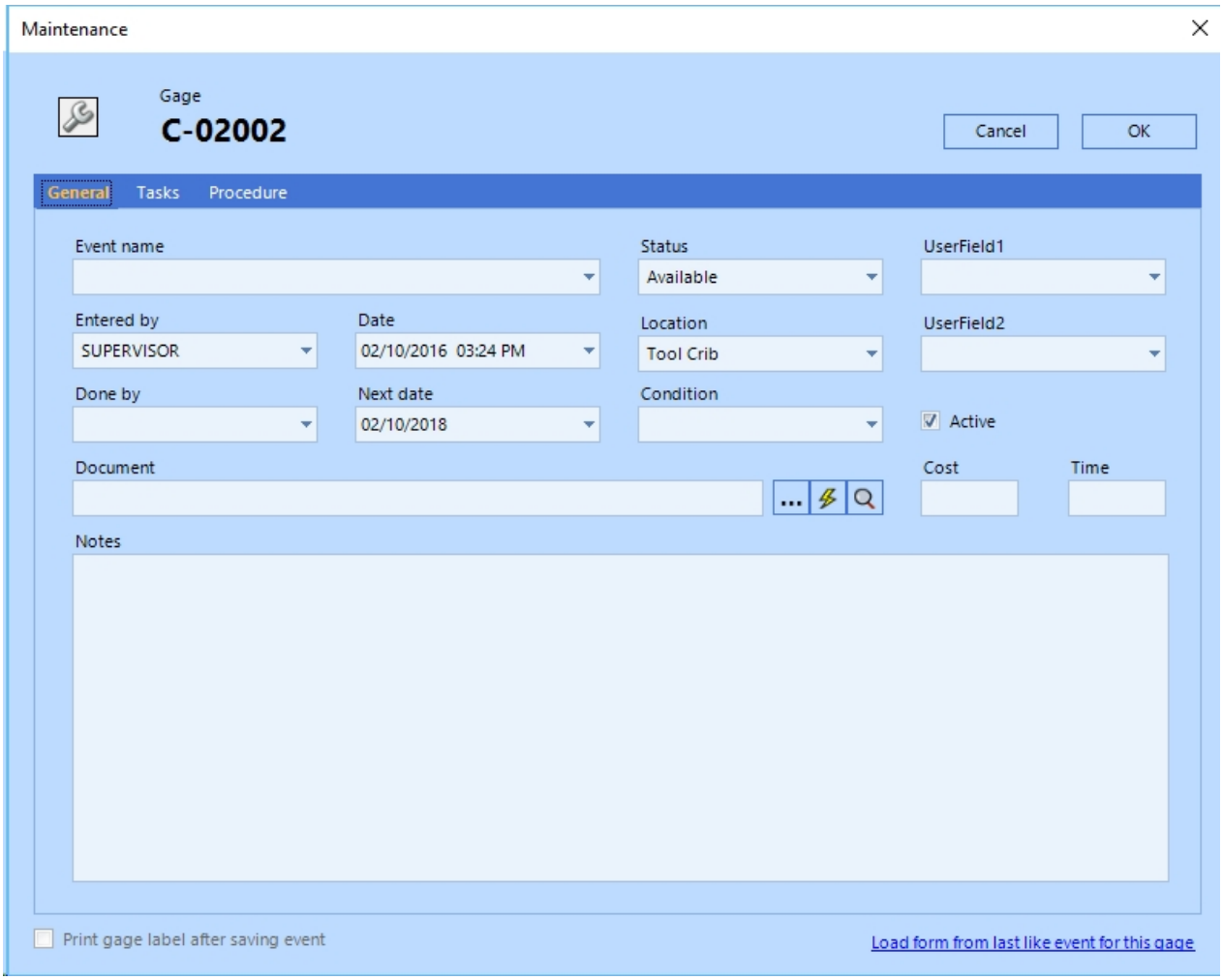
Maintenance events are used to record routine servicing activity that is not covered during standard calibrations. These events also used to note the completing of the Preventative Maintenance tasks that are assigned and scheduled on the 'PM Tasks' tab of the gage viewing form.

In This Section	See Also
General	Recording gage events
Tasks	Launching gage events
	Calibration
	External Calibration
	Check-out
	Check-in

Verification
Repair
Other
Multi-gage events
Group events
R&R variables study
R&R attribute study
R&R stability study
R&R linearity study
R&R uncertainty study/bias

General

General



Entered by – The name of the person who is adding this event to the database.

Done by – The name of the person who performed this event.

Date – The date when this gage was checked out.

Next date – The date of the next maintenance. This can be adjusted from this field if necessary.

Condition of the gage – This dropdown is used to specify the state of the gage during the maintenance.

Status – This field is used to update the status of the gage. When the event is saved, the gage status will be updated so that it matches the value of this field.

Location – This field is used to update the current location of the gage. When the event is saved, the gage location will be updated so that it matches the value of this field.

Active – This checkbox is used to update the active/inactive status of the gage. When the event is saved, the gage active/inactive status will be updated so that it matches the state of this checkbox.

Cost/Time (hours) – Used to record how much the event cost and how long it took to complete.

UserField1/UserField2 – Blank fields which can be renamed to allow the user to record more information on the form.

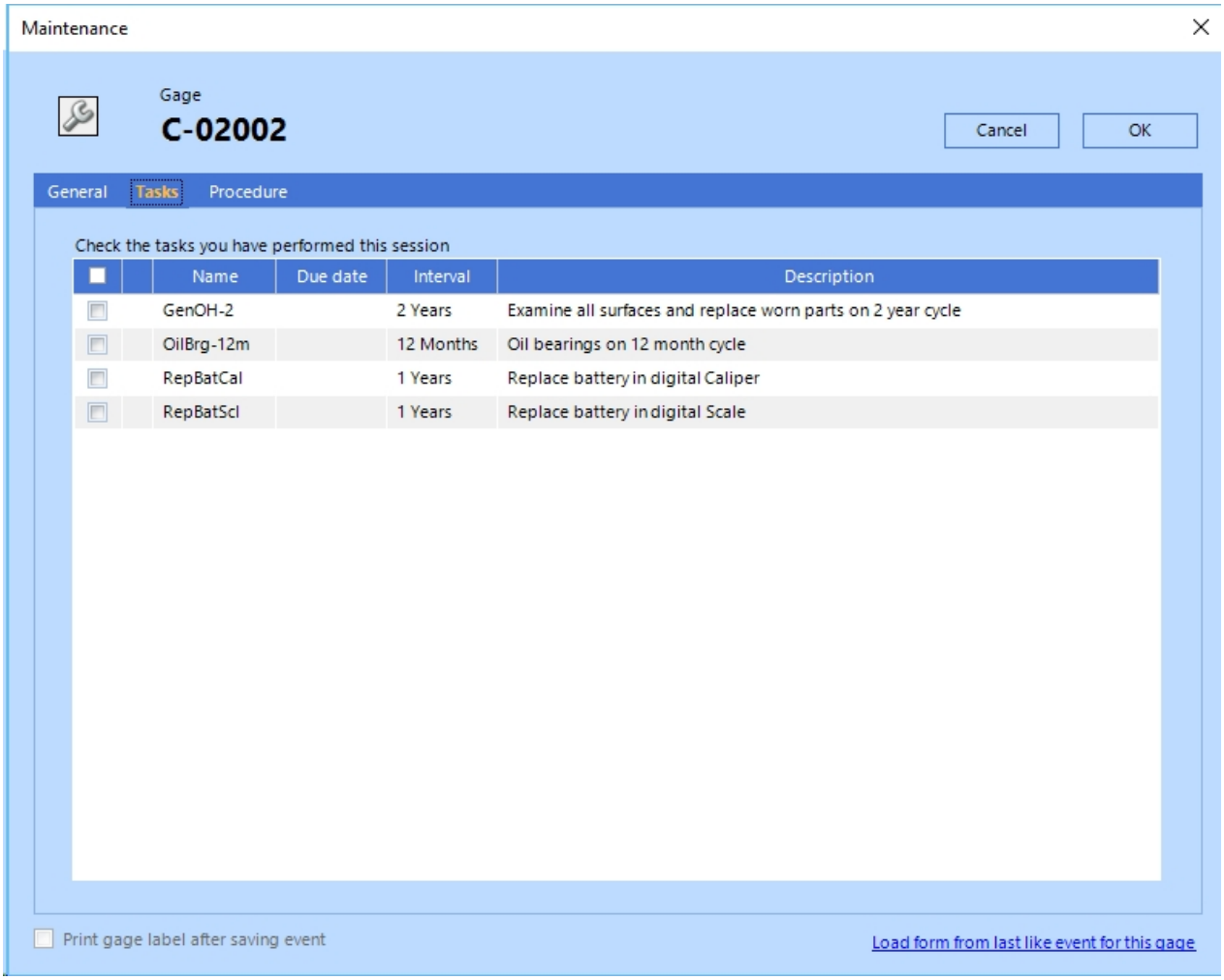
Document – Used to associate this event with some external file.

Notes – A place to make any additional comments about this event.

See Also
Maintenance
Tasks

Tasks

Tasks



The tasks tab lists all the preventative maintenance tasks that are supposed to be completed for this gage, along with their individual due dates. To complete this tab, check the boxes associated with the tasks that have been completed during this maintenance event.

Other features of the form

Event name (optional) – This is a text field that can be used to offer a brief summary of the contents of this event. This field is visible as one of the columns on both the global and gage-level history tabs.

File – If there is a calibration procedure file linked to this gage on the 'Calibration' tab of the gage viewing form, this button will open that file.

Procedure – This button will display the contents of the calibration procedure text box that appears on the 'Calibration' tab of the gage viewing form.

Print label after saving event – If this box is checked, GAGEpack will automatically generate a system calibration label once the event is saved to the database.

Load form from last like event for this gage – Pushing this button will fill out the contents of the general form so they match the last event of this type entered for this gage.

See Also
Maintenance
General

Verification

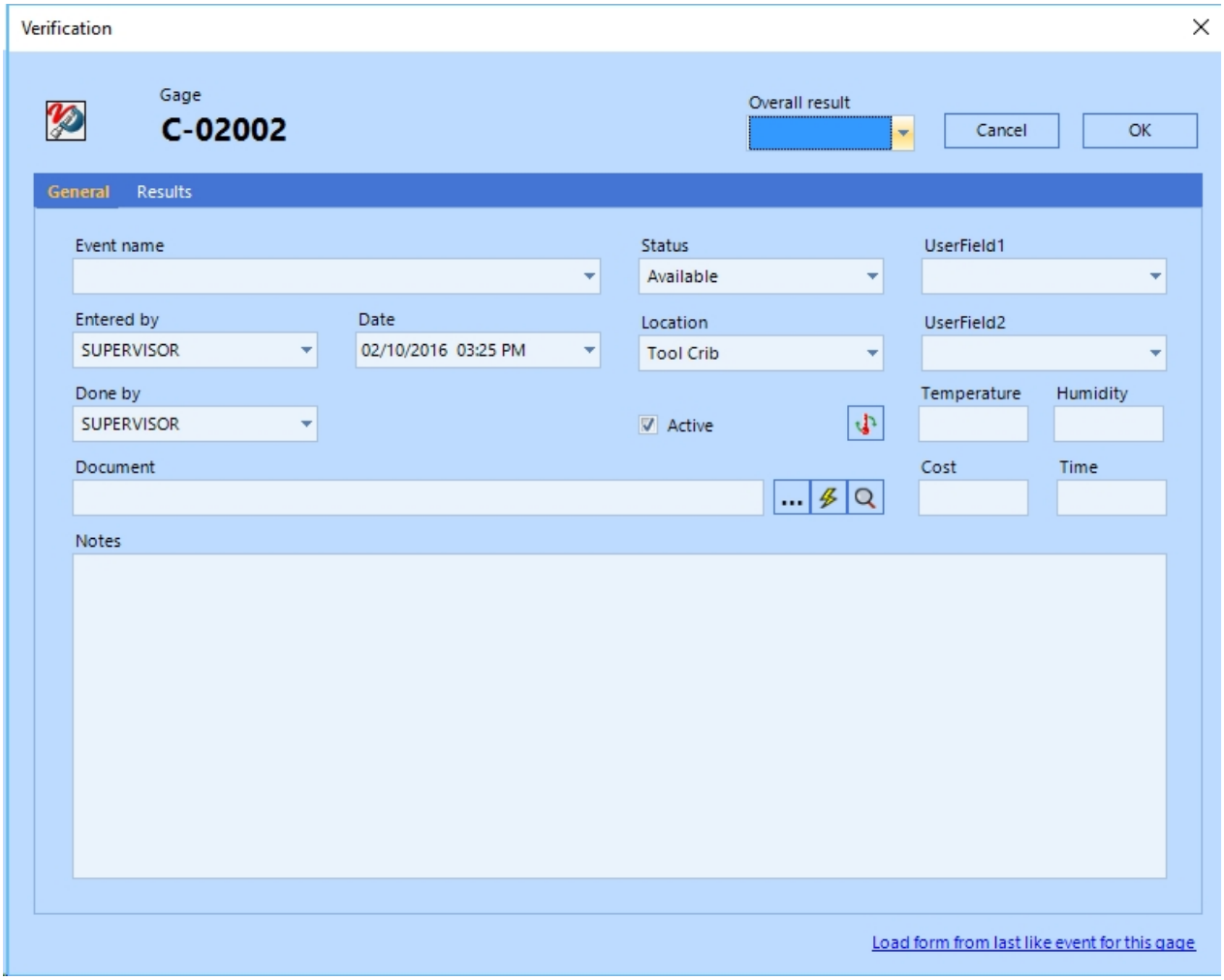
Verification

Verification events are used to confirm that a gage is reading accurately without formally calibrating it. These events are commonly completed prior to a series of important measurements in order to double-check that the results will be valid.

In This Section	See Also
General	Recording gage events
Results data	Launching gage events
	Calibration
	External Calibration
	Check-out
	Check-in
	Maintenance
	Repair
	Other
	Multi-gage events
	Group events
	R&R variables study
	R&R attribute study
	R&R stability study
	R&R linearity study
	R&R uncertainty study/bias

General

General



Entered by – The name of the person who is adding this event to the database.

Done by – The name of the person who performed the verification.

Date – The date when this calibration was performed.

Temperature/Humidity – Used to record the temperature and humidity in the calibration environment. These fields will be filled out automatically if there is a THUM device plugged into the computer.

Read temperature and humidity from THUM – This button will re-fetch and update the values from the THUM device, if there is one plugged in to the computer.

Cost/Time (hours) – Used to record how much the calibration cost and how long it took to complete.

UserField1/UserField2 – Blank fields which can be renamed to allow the user to record more information on the general form.

Certificate file – This field can be used to link some external file to this event.

Notes – A place to make any additional comments about this event.

Information about the gage

Status – This field is used to update the status of the gage. When the event is saved, the gage status will be updated so that it matches the value of this field.

Location – This field is used to update the current location of the gage. When the event is saved, the gage location will be updated so that it matches the value of this field.

Active – This checkbox is used to update the active/inactive status of the gage. When the event is saved, the gage active/inactive status will be updated so that it matches the state of this checkbox.

Other features of the form

Event name (optional) – This is a text field that can be used to offer a brief summary of the contents of this event. This field is visible as one of the columns on both the global and gage-level history tabs.

Load form from last like event for this gage – Pushing this button will fill out the contents of the general form so they exactly match the last event of this type entered for this gage.

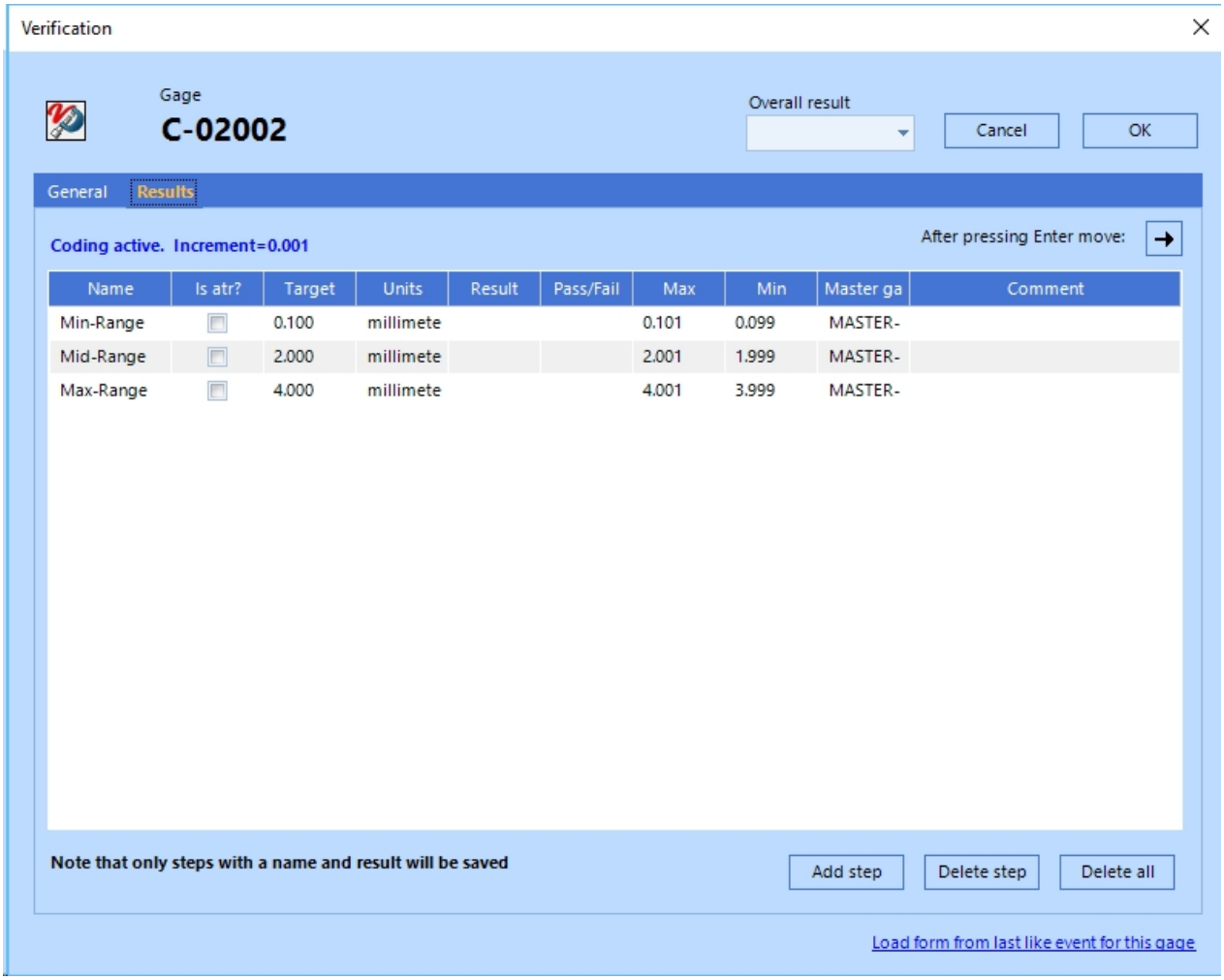
Overall result – This field must be completed before the event can be saved. Every verification event must be labeled as 'Pass' or 'Fail.'

See Also
Verification
Results data

Results data

Results data

This tab is used to record the measurements taken during the verification event and compare them to the target values. By default, the grid on this table will be populated using the table on the 'Calibration steps' tab of the gage viewing form.



Grid columns

Name – Comes directly from the calibration steps grid on the gage viewing form. Identifies the step on each row. This column is not editable here.

Is atr? – Short for "Is this an attribute step?" This is used to distinguish between variables and attribute steps. This column is not editable here.

Target – Shows the ideal value for this step.

Units – Units of measurement (inches, millimeters, pounds, volts, etc). This column is not editable here.

Result– Shows what the gage reads.

Pass/Fail – This column is filled out automatically once ***Result*** has been populated. It evaluates the value entered in that column against the ***Max*** and ***Min*** values for the current step and flags the step as either 'Pass' or 'Fail.'

Max – The maximum acceptable value for this step.

Min – The minimum acceptable value for this step.

Master gage – This is a dropdown list that contains all the master gages in the database. If a master gage was used for this step, this column can be used to associate that gage with this step.

Comment – Any additional notes about the step can be added here.

Uncertainty – This column is only visible if the associated checkbox is enabled under Setup > Preferences > Global settings > General. It is used to store the uncertainty value for this step.

Other features of the tab

Coding active. Increment= - This label will be visible only if the increment value for this gage has been defined on the 'Calibration steps' tab of the gage viewing form. If the label is visible, pushing ***Page Up*** or ***Page Down*** on the keyboard while the cursor is in one of the result columns of the grid will fill that cell with the target value for that row. The value can be increased or decreased by one increment by pushing ***Page Up*** or ***Page Down***, respectively.

After pressing Enter move – This button is a toggle that controls how the cursor moves within the calibration results grid after pushing ***Enter*** on the keyboard.

Add step – If it is necessary to test the gage at a range not already specified in the default calibration steps grid, additional rows can be added to the verification table by clicking this button.

Delete step – Push this button to remove the currently selected row from the grid.

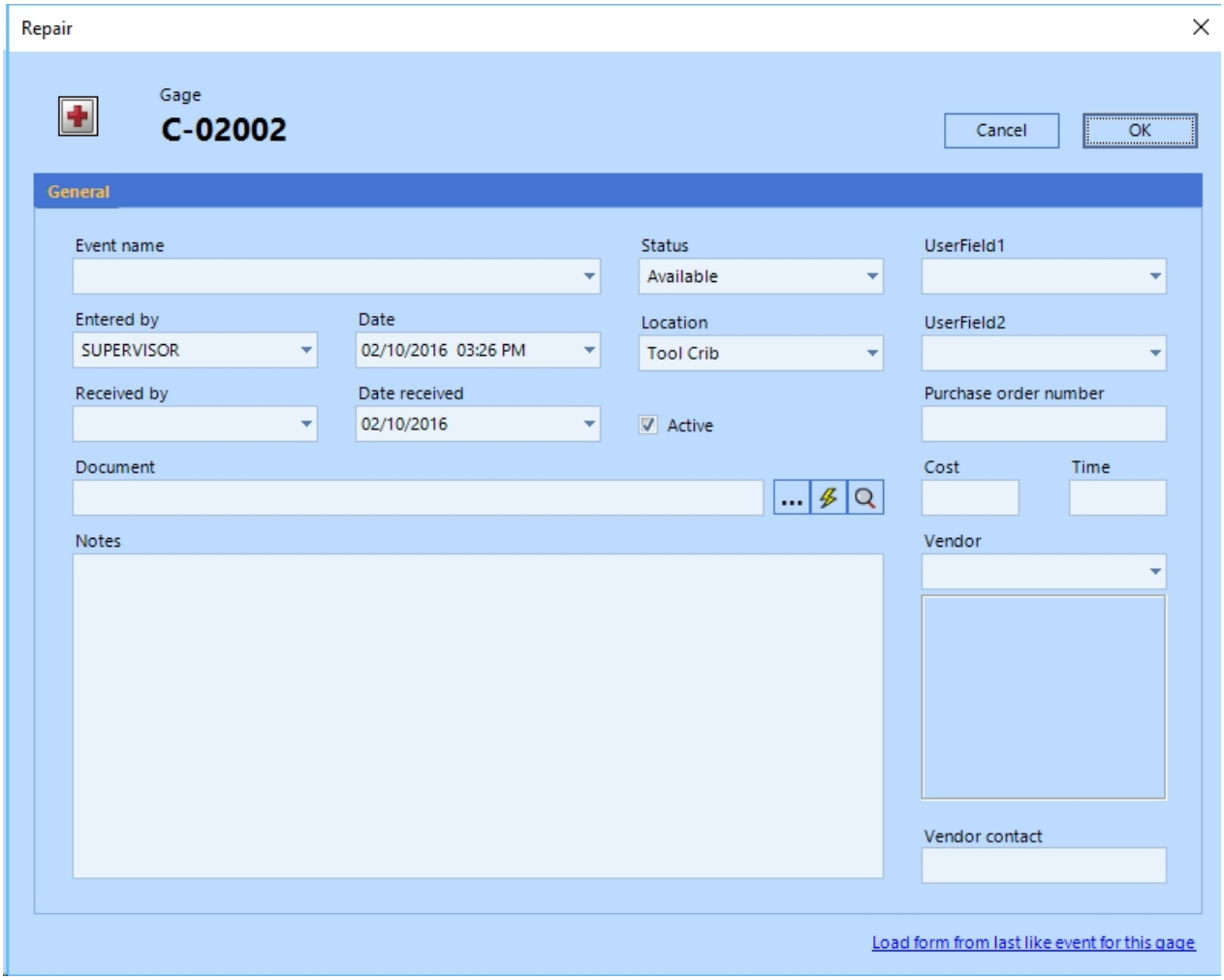
Delete all – Removes all of the steps from the grid.

See Also
Verification
General

Repair

Repair

Repair events are used to record a repair.



Event name (optional) – This is a text field that can be used to offer a brief summary of the contents of this event. This field is visible as one of the columns on both the global and gage-level history tabs.

Entered by – The name of the person who is adding this event to the database.

Received by – The name of the person who accepts the repaired gage back from whoever repaired it (optional).

Date – The date when the repair was performed.

Date received – The date of the repaired gage being restored to the active gage inventory.

Purchase order number\- – Used to store the purchase order number associated with this event, if there is one.

Cost/Time (hours) – Used to record how much the repair cost and how long it took to complete.

Status – This field is used to update the status of the gage. When the event is saved, the gage status will be updated so that it matches the value of this field.

Location – This field is used to update the current location of the gage. When the event is saved, the gage location will be updated so that it matches the value of this field.

UserField1/UserField2 – Blank fields that can be renamed to allow the user to record more information on the general form.

Vendor – The dropdown contains a list of all of the vendors stored in the database. Used to specify which vendor performed this repair, if not completed internally.

Vendor contact – The name of the person who represents the vendor that performed the repair event.

Document – This field can be used to link an external file to this event.

Notes – A place to make any additional comments about this event.

Active – This checkbox is used to update the active/inactive status of the gage. When the event is saved, the gage active/inactive status will be updated so that it matches the state of this checkbox.

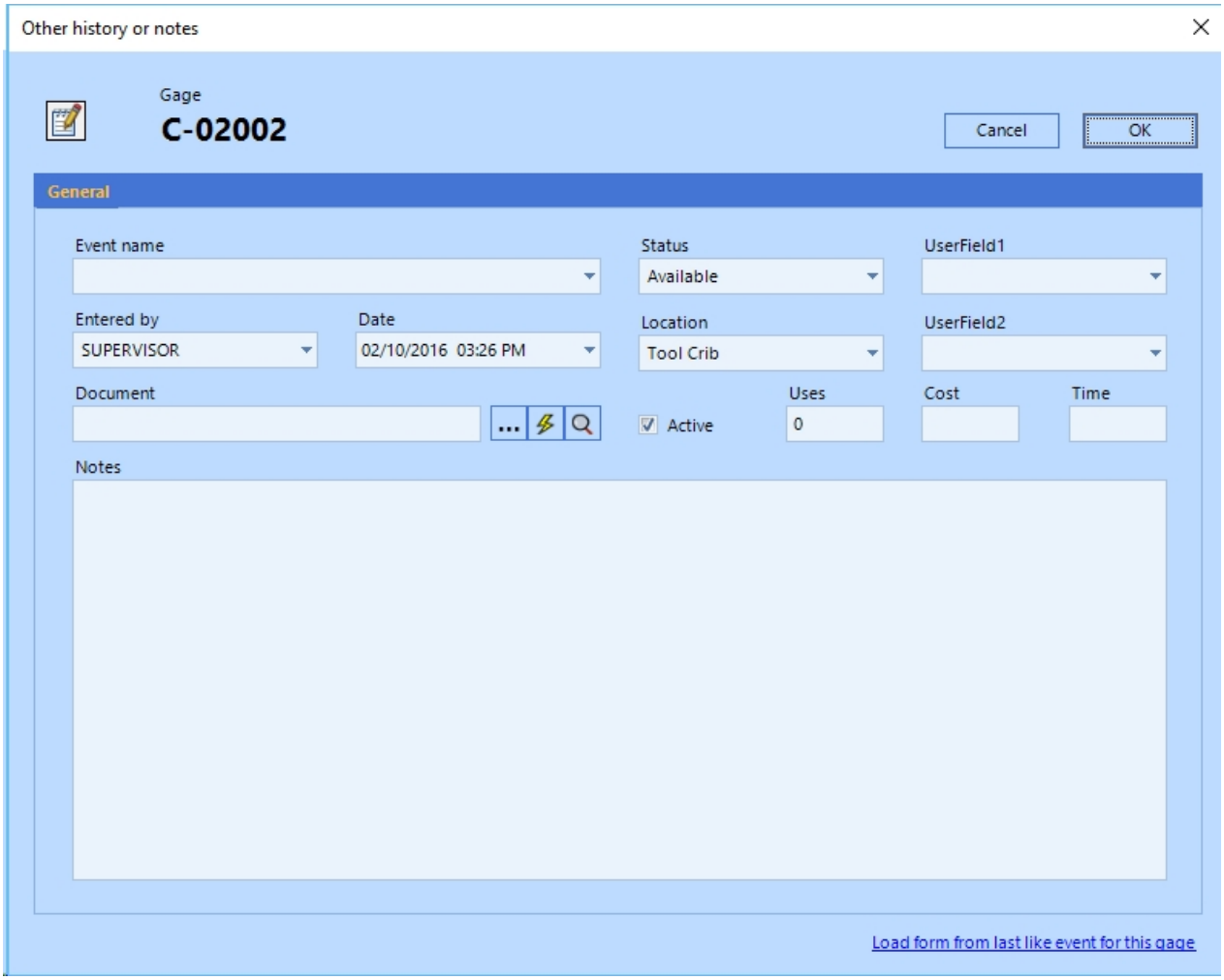
Load form from last like event for this gage – Pushing this button will fill out the contents of the general form so they match the last repair entered for this gage.

See Also
Recording gage events
Launching gage events
Calibration
External Calibration
Check-out
Check-in
Maintenance
Verification
Other
Multi-gage events
Group events
R&R variables study
R&R attribute study
R&R stability study
R&R linearity study
R&R uncertainty study/bias

Other

Other

These events are used to record some happening or add some note to the history of a gage in those cases where the event does not fall under the category of one of the other event types.



Event name (optional) – This is a text field that can be used to offer a brief summary of the contents of this event. This field is visible as one of the columns on both the global and gage-level history tabs.

Entered by – The name of the person who is adding this event to the database.

Date – The date when the event took place.

Uses – Records the numbers of times the gage was used during this event. This is a critically important field for gages that are calibrated on an interval based on the number of times the gage has been used.

Cost/Time (hours) – Used to record how much the event cost and how long it took to complete.

Status – This field is used to update the status of the gage. When the event is saved, the gage status will be updated so that it matches the value of this field.

Location – This field is used to update the current location of the gage. When the event is saved, the gage location will be updated so that it matches the value of this field.

Active – This checkbox is used to update the active/inactive status of the gage. When the event is saved, the gage active/inactive status will be updated so that it matches the state of this checkbox.

UserField1/UserField2 – Blank fields which can be renamed to allow the user to record more information on the general form.

Notes – A place to make any additional comments about this event.

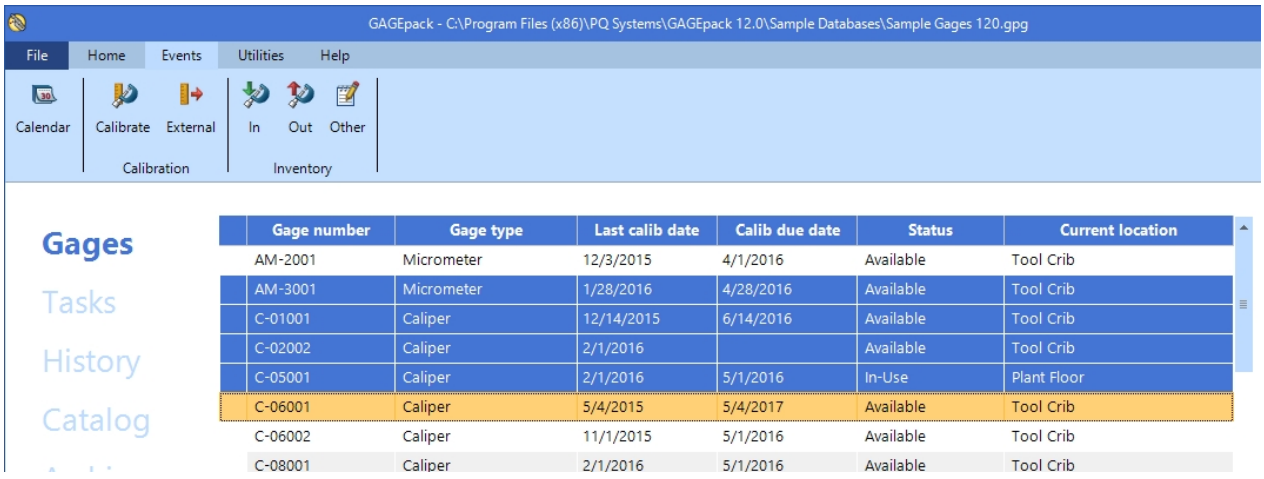
Load form from last like event for this gage – Pushing this button will fill out the contents of the general form so they match the last repair entered for this gage.

See Also
Recording gage events
Launching gage events
Calibration
External Calibration
Check-out
Check-in
Maintenance
Verification
Repair
Multi-gage events
Group events
R&R variables study
R&R attribute study
R&R stability study
R&R linearity study
R&R uncertainty study/bias

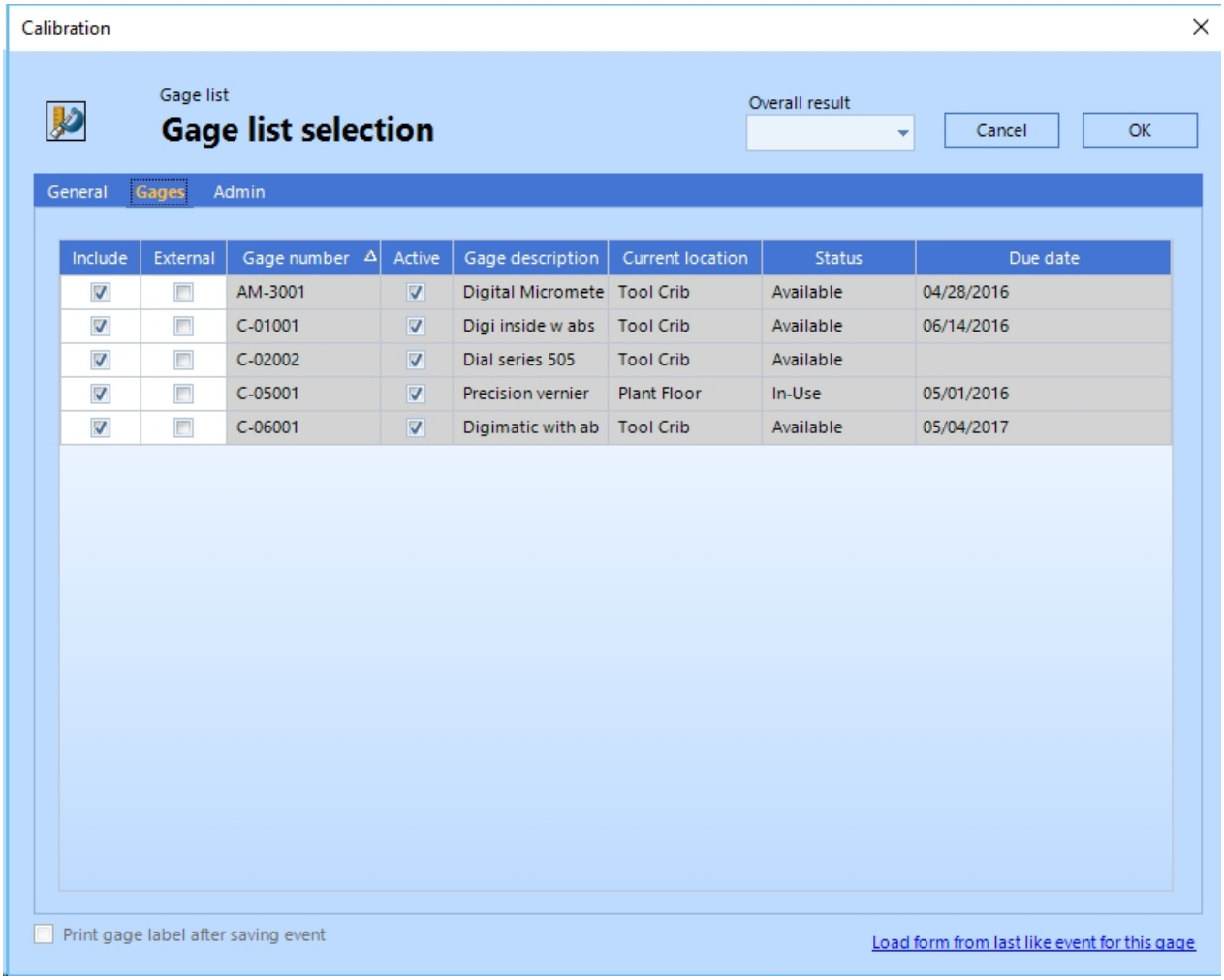
Multi-gage events

Multi-gage events

Calibrations, check-outs, check-ins, and 'Other' events can be completed on a many-gages-at-once basis. To launch these types of events, select the gages of interest by clicking-and-dragging (or holding **Shift** or **Ctrl** to select multiple gages), and then click the appropriate button on the Events tab of the ribbon bar.



The event form will have most of the same fields that appear on the single-gage version of the event type. The main difference is that the multi-gage event will include a tab called **Gages** which will allow you see the list of included gages and make changes if necessary. Click ***OK*** to save the event to the database.



Note: Every gage associated with a multi-gage event will have a unique event added to its own history. For example, a multi-gage calibration with five gages will add five single-gage calibration events to the database, not one multi-gage calibration.

Note: If necessary, it is possible to open a calibration event that was previously entered using a multi-gage event and edit it. For example, this is useful for adding calibration results data.

See Also

Recording gage events

Launching gage events

Calibration

External Calibration

Check-out

Check-in

Maintenance

Verification

Repair

Other

Group events

R&R variables study

R&R attribute study

R&R stability study

R&R linearity study

R&R uncertainty study/bias

Group events

Group events

Group events are used to record calibration, check-out, and check-in events for every gage in a group at once. When a group event is launched, the user will be prompted for the name of the group to be serviced.

The form that is displayed will be the same as the one used for multi-gage events. The same notes apply to group events as well. Please see the associated section above for details.

Note: The list of groups in the database is defined using the 'Group' choice list which can be accessed by going to File > Settings > Global collections > Choice lists.

Note: A gage is assigned to a particular group by selecting the group from the associated dropdown list on the 'General' tab of the gage viewing form.

See Also

Recording gage events

Launching gage events

Calibration

External Calibration

Check-out

Check-in

Maintenance

Verification

Repair

Other

Multi-gage events

R&R variables study

R&R attribute study

R&R stability study

R&R linearity study

R&R uncertainty study/bias

R&R variables study

R&R variables study

GAGEpack supports a five-step process for doing R&R studies.

The five steps are:

1. ***Determine due dates for R&R.*** This step can be accomplished by selecting R&R studies only on the ***Tasks*** tab, by filtering the gage list, or by running any one of several Due for R&R reports.
2. ***Print R&R worksheets.*** This step can be done only at the individual study level. It requires that the study is set up before the worksheets can be printed.
3. ***Enter the data into the R&R study.*** This can be done manually from the keyboard or electronically if desired. In addition, data in the right format can be pasted directly from the clipboard.
4. ***Analyze results.*** The standard percentages are available using the X-Bar and Range method and ANOVA. In addition, several charts are available on the ***Charts*** tab for analyzing the data more specifically.
5. ***View/Print reports.*** This can be done at the individual gage level, and the report will be customized to the method used to calculate the percentages for Equipment Variation, Appraiser Variation, R&R Variation, and Part Variation. These percents can be calculated based on Study variation, Specification, and Process variation. In addition, GAGEpack provides Don Wheeler's Honest Gage study results as well as ANOVA. GAGEpack provides a number of charts for analyzing an individual R&R study. A number of reports can be done that show an R&R for an individual gage or group of gages as well as showing multiple R&R events for a single gage.

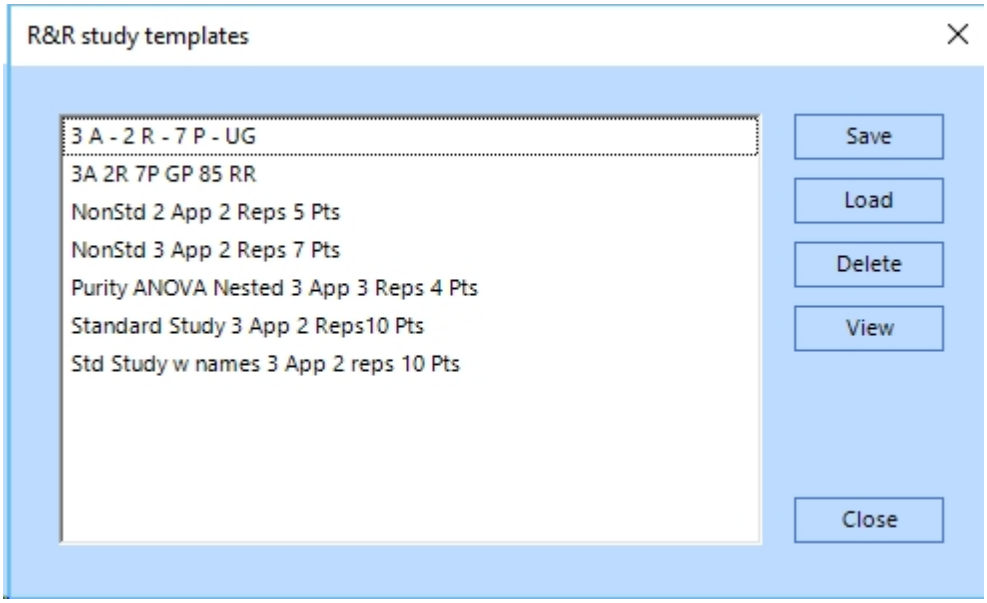
Users can choose to customize these steps to develop their own unique R&R processes.

In This Section	See Also
Conducting an R&R variables study	Recording gage events
R&R Templates button	Launching gage events
R&R study worksheets	Calibration
Study results tab	External Calibration
Charts tab	Check-out
	Check-in
	Maintenance
	Verification
	Repair
	Other
	Multi-gage events
	Group events
	R&R attribute study
	R&R stability study
	R&R linearity study
	R&R uncertainty study/bias

R&R Templates

R&R Templates

R&R templates allow duplication of an R&R study setup for use with subsequent studies. This template saves the study and process parameters, appraiser names, and part reference values if these existed when the template created. ***Save*** will allow the user to create a new template by naming the current configuration. ***Load*** will allow the user to select a previously saved template as the starting point for a new study. ***Delete*** deletes a previously saved template.



In This Section	See Also
Creating a template	R&R variables study
Loading a template	Conducting an R&R variables study
Deleting a template	R&R study worksheets
	Study results tab
	Charts tab

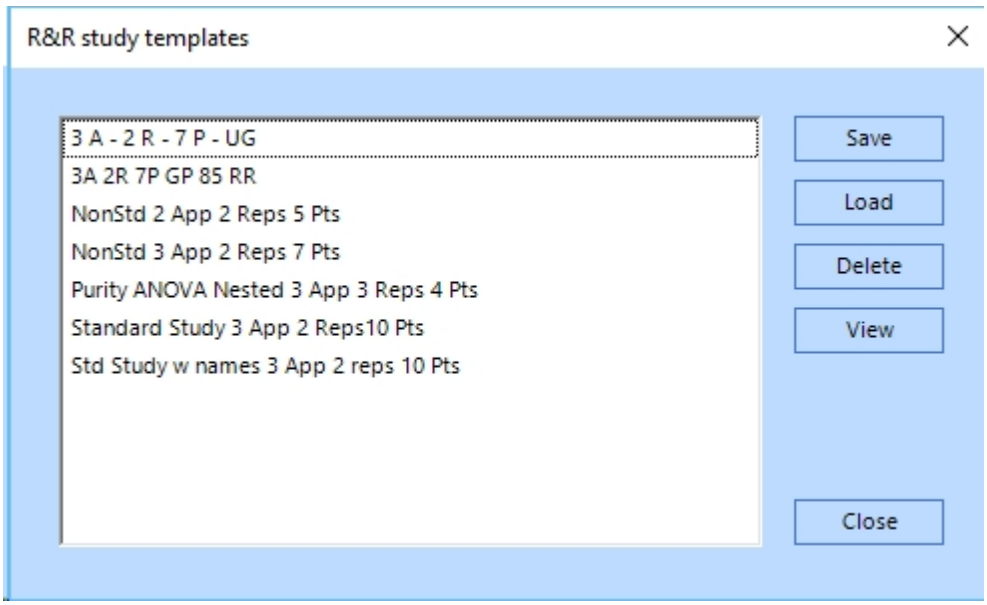
Creating a template

Creating a template

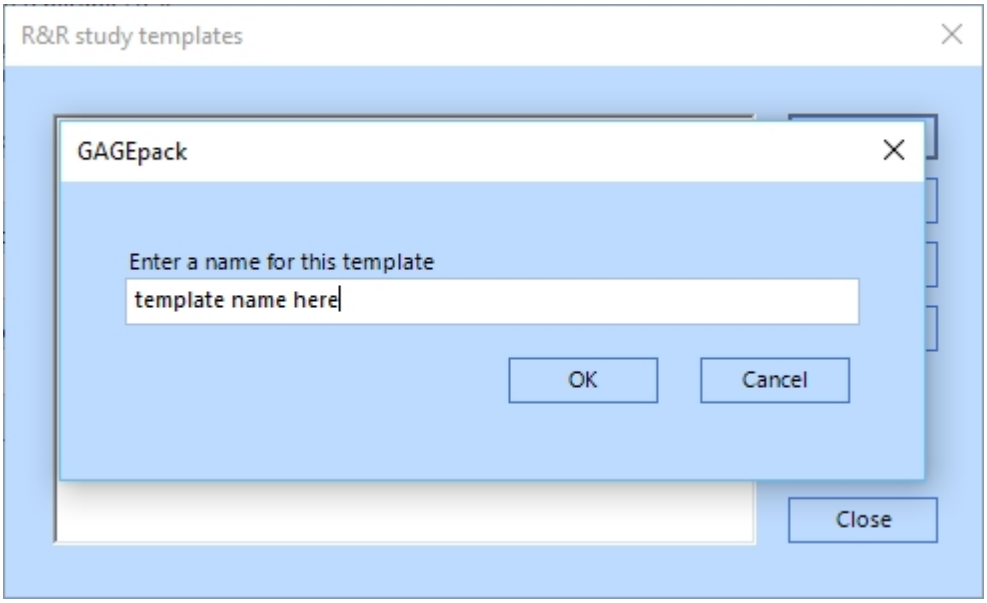
If this is a common R&R study setup, you can save the study and process parameters with names and true values as a template.

To create a template:

1. Set up the study with the desired information on a new ***R&R study*** form, or select a prior study that has the desired parameters. Any item on the first three tabs can be changed and saved as part of the template.
2. Click on the ***Templates*** button and the ***R&R study templates*** screen will open.



3. Click on the ***Save*** button and window will open asking for a name for this template.
    - o You can create an unlimited number of templates.



See Also

R&R Templates button

Loading a template

Deleting a template

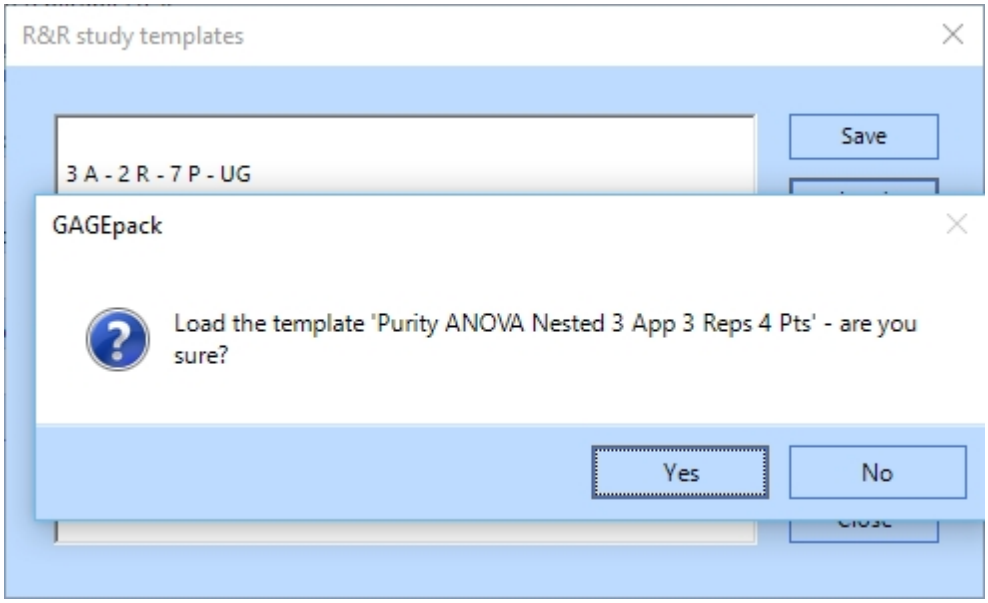
Loading a template

Loading a template

To load a template:

1. From the ***R&R study*** form, click on the ***Templates*** button.
2. Highlight the template that you want to use.

3. Click the ***Load*** button and the load question will appear.



4. Click on ***Yes*** and the template will be loaded.

See Also

R&R Templates button

Creating a template

Deleting a template

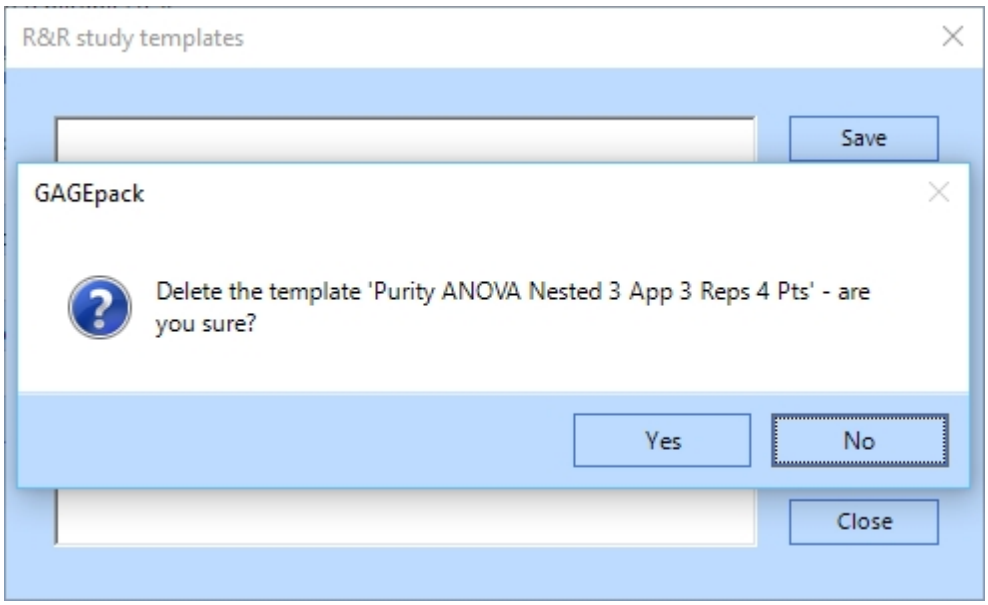
Deleting a template

Deleting a template

To delete a template:

From the ***R&R study*** form, click on the ***Templates*** button.

1. Select the template that you want to delete.
2. Click the ***Delete*** button and the delete question window will open.



3. Click on the ***Yes*** button to confirm the deletion.

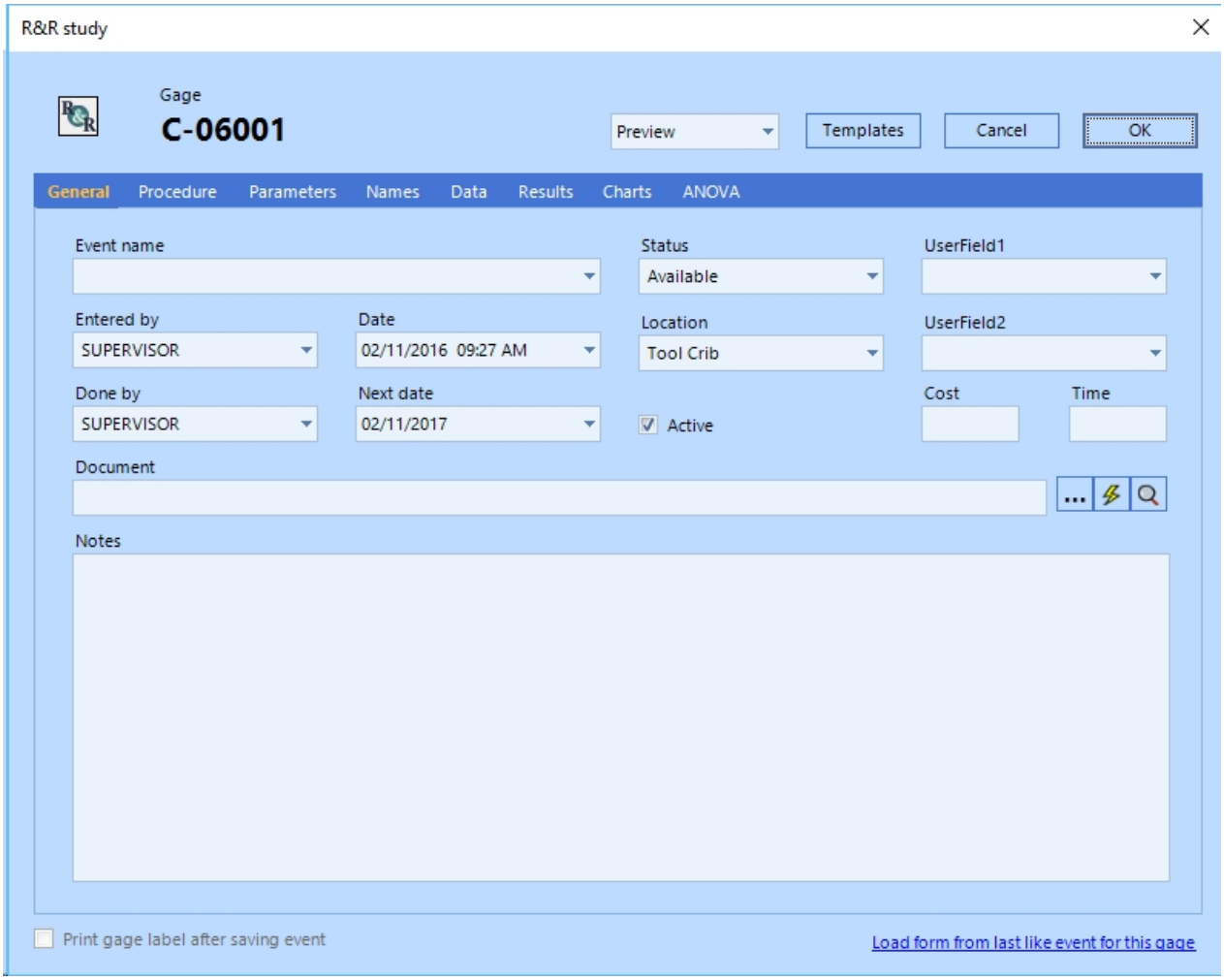
See Also
R&R Templates button
Creating a template
Loading a template

General tab

General tab

1. Highlight the gage for which you want to record the R&R study. (You can open the gage form as well by double-clicking on it.)
2. Click on the ***R&R study*** icon. (If you opened the gage form you can also go to the ***History*** tab on the gage form and select ***R&R***

Study from the ***Add new event*** menu.) The ***R&R study*** form will open.



3. The ***General*** tab will be displayed. Enter a name for the R&R study, if desired. This information will appear in the event name field of the ***History*** tab.
4. If you are logged into GAGEpack, your name will appear in the ***Entered by*** field. If not, enter your name in the ***Entered by*** field. You can type it in or select it from the user choice list. The same process can be used to fill the name in the ***Study done by*** field.
5. The current date and time are automatically recorded by GAGEpack. In addition, the date for the next event is shown and can be edited at this time. The ***Status*** field shows the current status of the gage. Likewise, ***Location*** shows the current location. You can change any of these by typing over the data. ***Location*** and ***Status*** may also be changed through choice lists drop-down menus for these fields. Record this data for traceability.
6. There are two Event user-defined fields that can be used to record additional information. Choice lists can be created to facilitate entering this information.
7. Enter ***Cost*** for the test and ***Time (hours)*** (both optional). If data is consistently entered here, several summary reports will summarize and display this information.
8. The ***Active*** box may be checked or unchecked to reflect the current status of a gage. The default for an existing event done prior to the introduction of this box is to check the box as ***Active***.
9. A gage label may be printed at the conclusion of the event by checking the box ***Print label after saving*** that will reflect the new due date for a passed calibration event.
10. Enter any other general information that you desire to preserve with the study or want to appear on the report in the ***Notes*** section of the ***General*** tab. You may want to put items into the ***Notes*** section after the study has been completed.

See Also

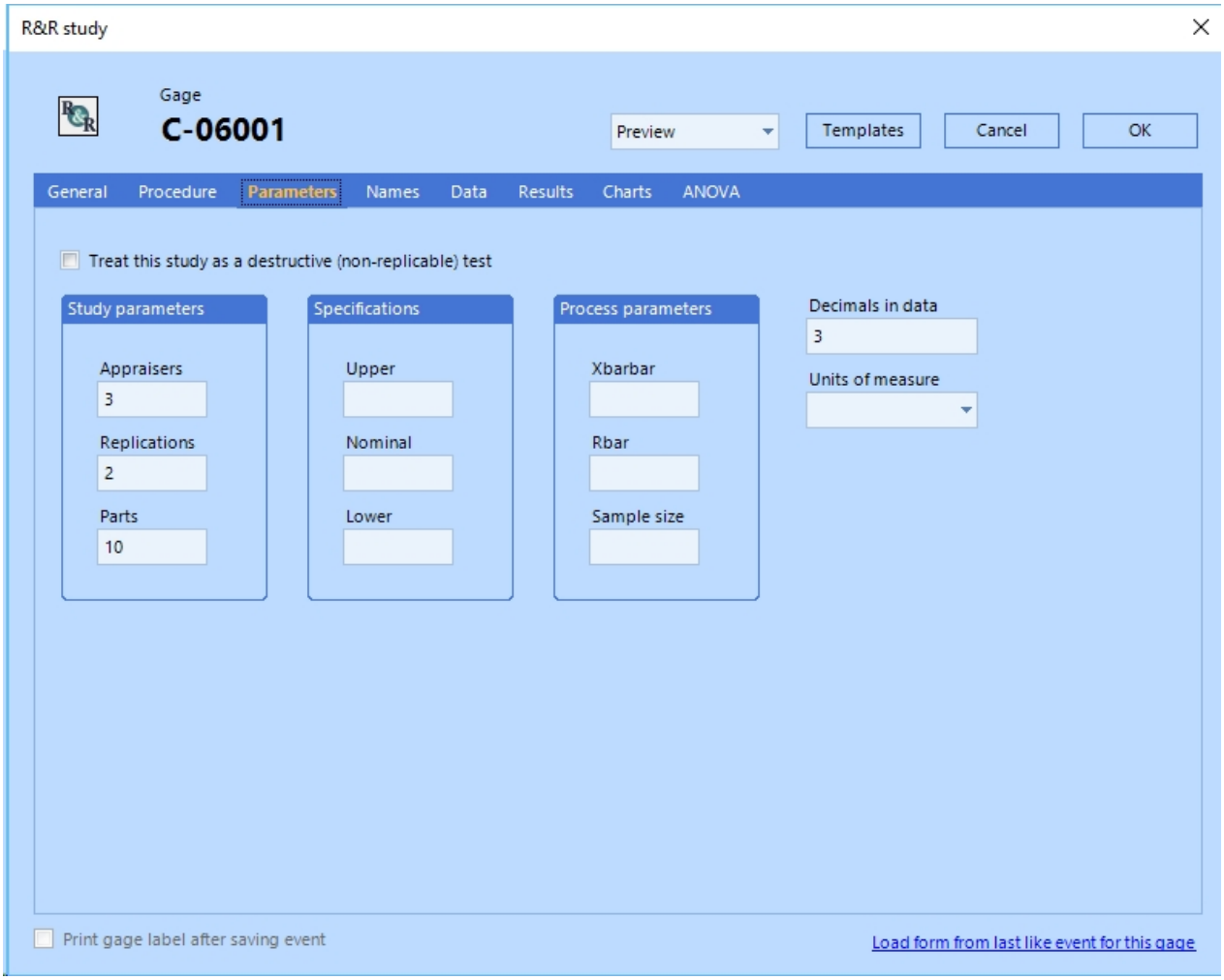
To enter an R&R study
Study parameters tab

Parameters tab

Parameters tab

A standard study is generally based on the example given in the Measurement Systems Analysis manual distributed by AIAG. In general, AIAG uses 3 appraisers, 2 replications, and 10 parts in the examples. Therefore, when the ***R&R study*** form appears, the default study parameters are 3 appraisers, 2 replications, and 10 parts. These can be easily changed by typing over the values or by loading a specific saved template. (See R&R templates menu for more information on loading templates.)

1. Click on the ***Study parameters*** tab to enter the ***Study parameters***: number of ***Appraisers*** (1 – 20; normally 1 – 3), number of ***Replications*** (1 – 20; normally 2 – 3), and number of ***Parts*** (1 – 20; normally 5 – 10) or select a saved template by clicking on the ***Template*** button.



NOTE: To use a template with this R&R study, open the ***R&R study templates*** screen by clicking on the ***Templates*** button and selecting a template to load. Once a template has been selected, click ***Load*** and the parameters will be entered into the study. Make any desired changes. For more information on templates, see R&R Templates button.

2. Change any of the defaults if necessary. For the rest of this discussion, we will use 3 appraisers, 2 replications, and 7 parts.
3. If study results are desired using specifications, the ***Specifications*** can be entered now or at some

later time.

4. If study results are desired based on process parameters (factors coming from a variables control chart using the same measurement as used in the R&R study), the ***Process parameters*** can be entered now or at some later time.
5. The ***Data format*** can be specified primarily to limit the number of digits to display to the right of the decimal.
6. The ***Units of measure*** can be typed in even though it has no effect on the analysis.
7. One of the options that GAGEpack permits is a destructive analysis using units (parts) that are thought to be more alike for replications than parts (units) selected to represent the range of the process. In the case of Destructive testing, the analysis of the data can be done only by using ANOVA. To do a destructive test, check the ***Treat this study as a destructive (non-replicable) test*** box on the ***Study parameters*** tab. Once the study data has been entered and the study has been saved, the user can no longer check or uncheck this box.
8. Once the ***Study parameters*** tab has been completed, click on the ***Names & text*** tab. Before going to that tab, we will address templates and worksheets.

NOTE: If there is a desire to use a template, it can be loaded at this time and worksheets printed with the appropriate information entered. If names are desired and have not been entered, the user must enter them on the ***Names & text*** tab prior to printing the worksheets and reports.

See Also

To enter an R&R study

General tab

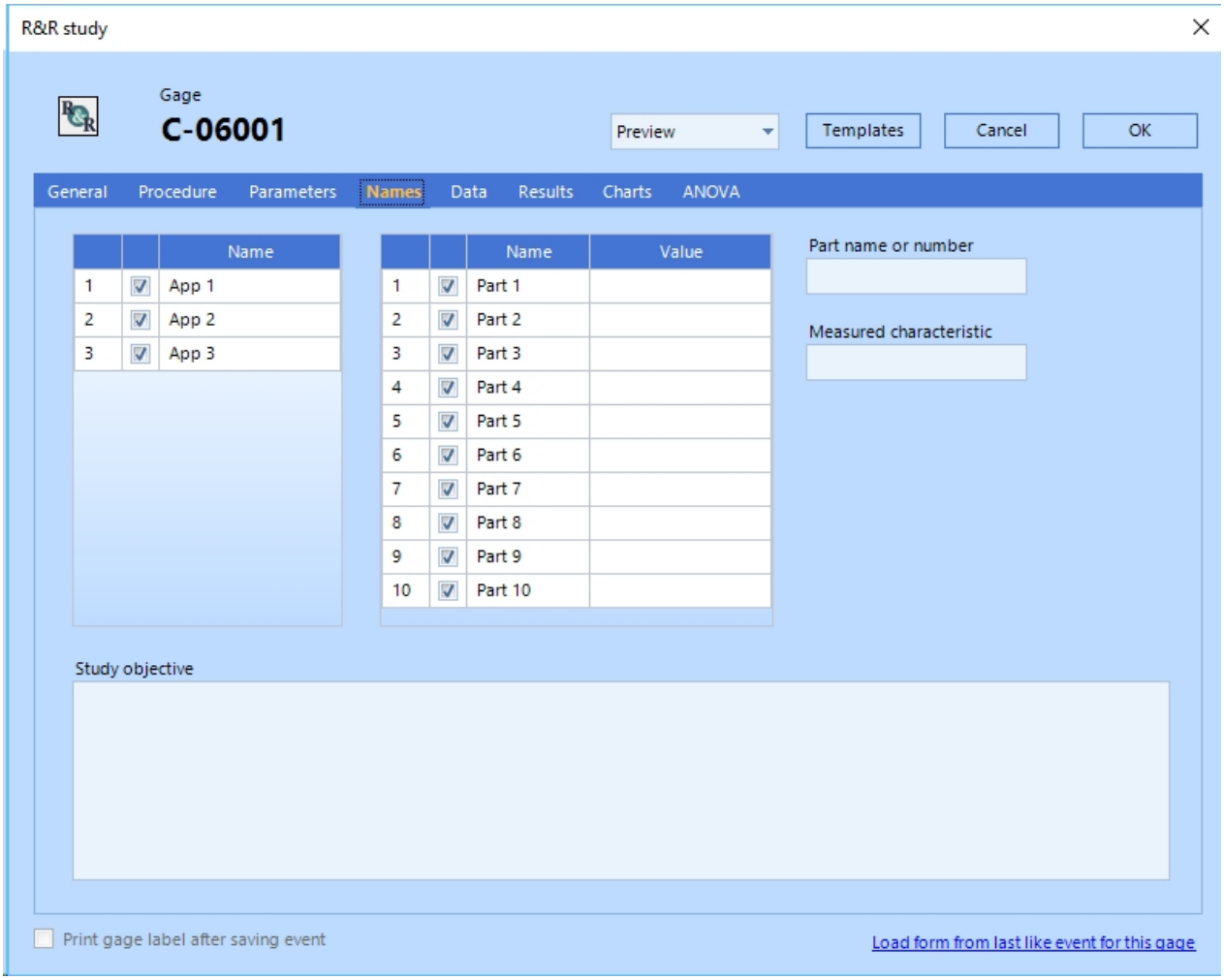
Names tab

Names tab

This tab is used to enter appraiser and part names, reference values, study objectives, part designation, and the measurement characteristic. If the names for the parts and appraisers are entered prior to printing the worksheet, the names will appear on the worksheet and the ***RR study data*** tab.

To enter information on the ***Names*** tab:

1. Click on the ***Names*** tab to display this form. Move the cursor to the field into which you want to place a value.



2. Type the appraiser names and reference values if appropriate (optional).

NOTE: The gage number is fixed as the gage is selected prior to beginning the study.

3. Enter information concerning the part name and/or number in the ***Part name or number*** field.
4. Enter information concerning the measured characteristic in the ***Measured characteristic*** field.
5. Enter the objective for doing the R&R study in the box labeled ***Study objective***.

NOTE: Any general notes that you need to record for this R&R study may be entered in the ***Notes*** section of the ***General*** tab.

6. Click on the ***Study data*** tab to enter data when it is available.

See Also

Printing an R&R study worksheet

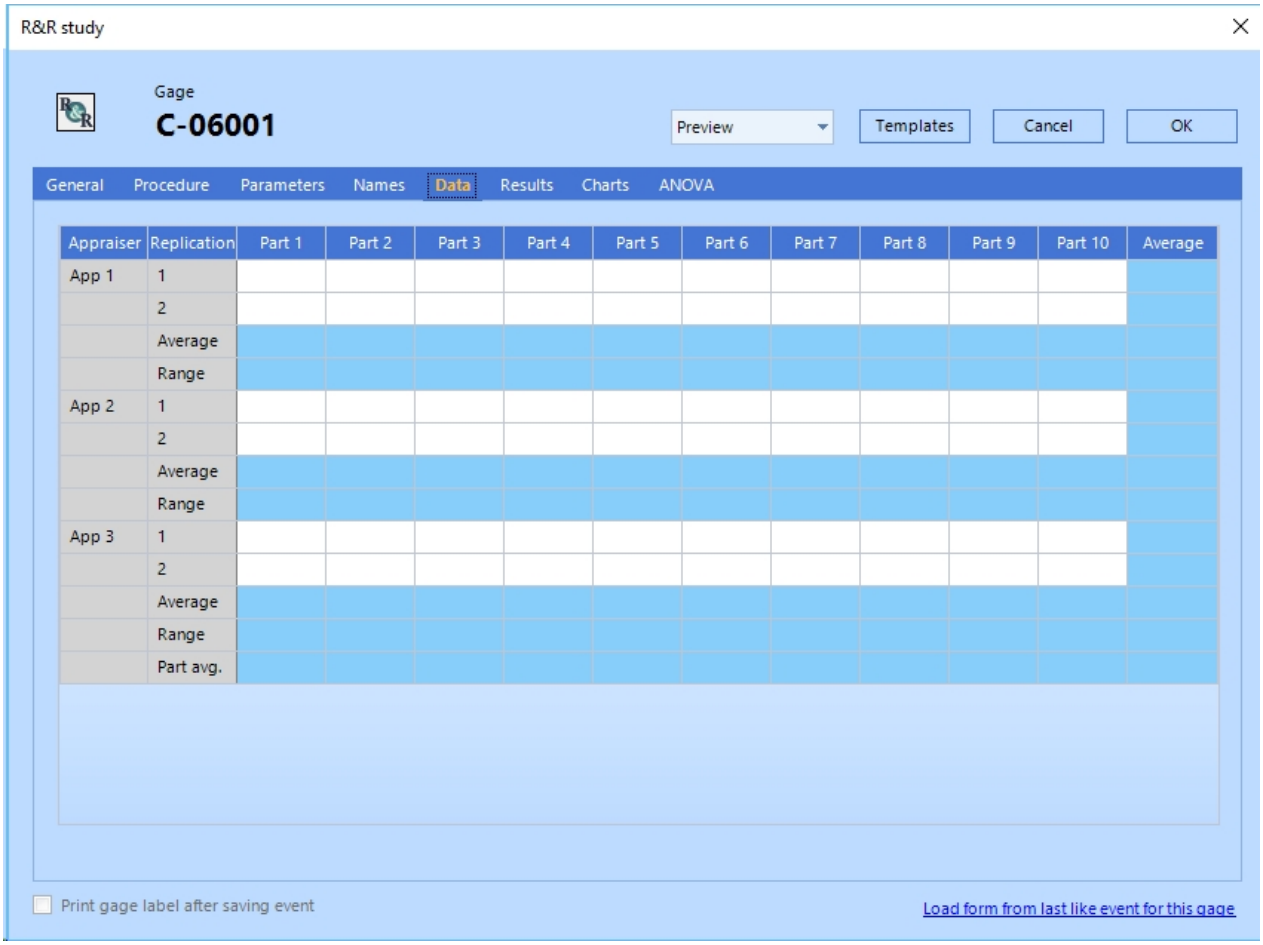
Study data tab

Data tab

Data tab

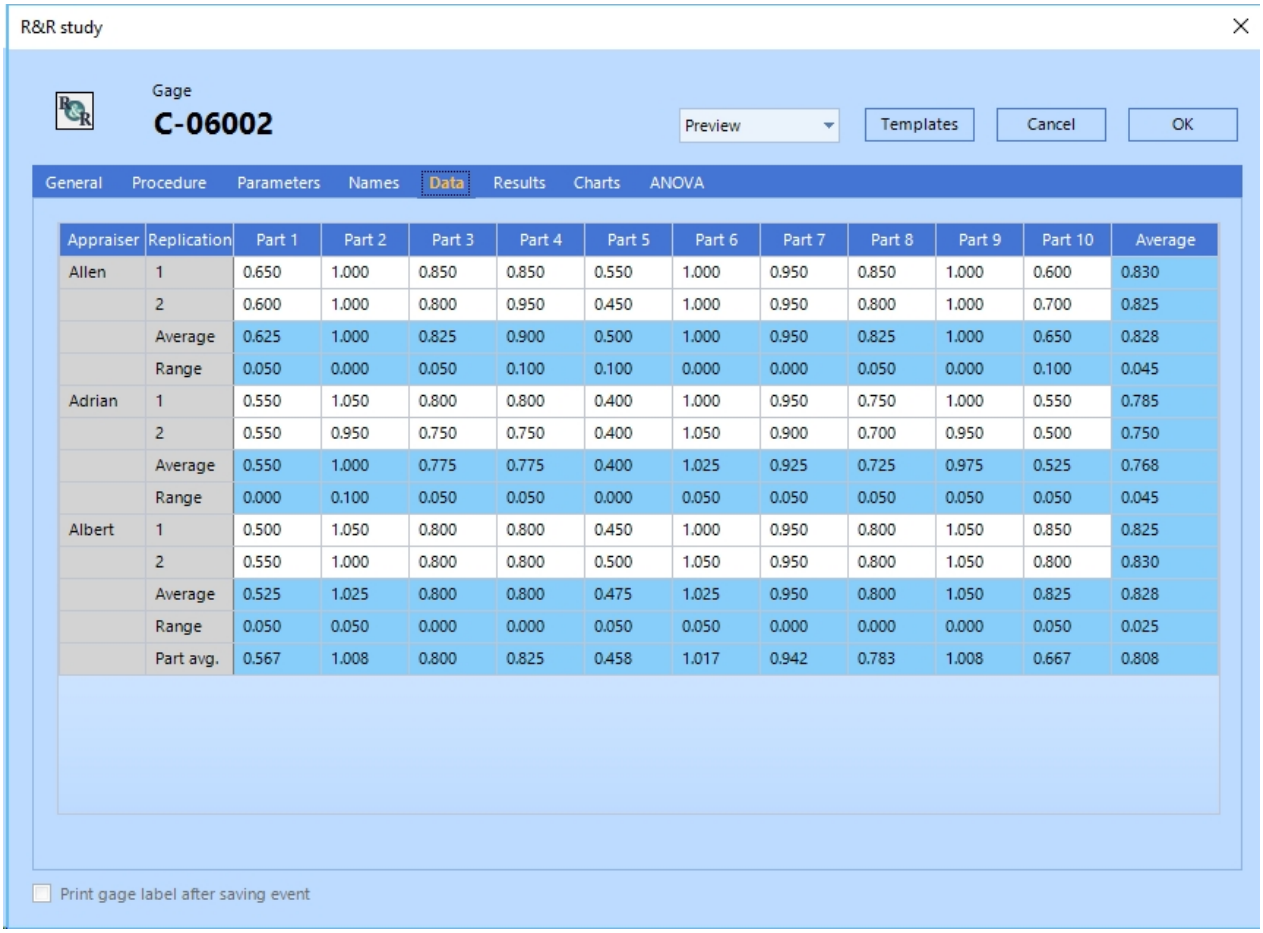
Click on the R&R ***Study data*** tab to display the data entry form shown below. Use this form to record the study data manually, using direct entry from an electronic device or pasting from the clipboard. The data

fields on this form are based on the settings that you specified on the ***Study parameters*** tab.



To manually enter study data:

1. Enter the first replication for Alvin (the first appraiser) for all parts used in the study.
2. Enter the next replication for the first appraiser for all parts used in the study.
3. Repeat step 2 above until all replications for Alvin (Appraiser 1) have been entered.
4. Repeat steps 1 through 3 for Simon and Teddy (the remaining appraisers) used in the study
5. When the data has been completely entered, click the ***OK*** button to save the study or click on one of the tabs to the left of the ***Study data*** tab and then click on the ***Study data*** tab showing the statistics have been calculated. Now, click on the ***Study results*** tab to begin analyzing the results.



Appraiser	Replication	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	Part 10	Average
Allen	1	0.650	1.000	0.850	0.850	0.550	1.000	0.950	0.850	1.000	0.600	0.830
	2	0.600	1.000	0.800	0.950	0.450	1.000	0.950	0.800	1.000	0.700	0.825
	Average	0.625	1.000	0.825	0.900	0.500	1.000	0.950	0.825	1.000	0.650	0.828
	Range	0.050	0.000	0.050	0.100	0.100	0.000	0.000	0.050	0.000	0.100	0.045
Adrian	1	0.550	1.050	0.800	0.800	0.400	1.000	0.950	0.750	1.000	0.550	0.785
	2	0.550	0.950	0.750	0.750	0.400	1.050	0.900	0.700	0.950	0.500	0.750
	Average	0.550	1.000	0.775	0.775	0.400	1.025	0.925	0.725	0.975	0.525	0.768
	Range	0.000	0.100	0.050	0.050	0.000	0.050	0.050	0.050	0.050	0.050	0.045
Albert	1	0.500	1.050	0.800	0.800	0.450	1.000	0.950	0.800	1.050	0.850	0.825
	2	0.550	1.000	0.800	0.800	0.500	1.050	0.950	0.800	1.050	0.800	0.830
	Average	0.525	1.025	0.800	0.800	0.475	1.025	0.950	0.800	1.050	0.825	0.828
	Range	0.050	0.050	0.000	0.000	0.050	0.050	0.000	0.000	0.000	0.050	0.025
	Part avg.	0.567	1.008	0.800	0.825	0.458	1.017	0.942	0.783	1.008	0.667	0.808

In This Section	See Also
Copying and pasting input	Printing an R&R study worksheet
	Names and text tab

Copying and pasting input

Copying and pasting input

R&R study data can be pasted into a study from the clipboard, and data in a study may be copied to the clipboard.

To paste data "ONLY" to the Study data grid:

1. Copy the data for an R&R study to the clipboard. The data can be in a data management file (such as Excel or Access) or in a text file. The data needs to conform to the pattern shown above (the part replications in a column with each appraiser's measurements grouped together.
2. Select the gage that was used to gather the data.
3. Create or open a previously created R&R study without data.
4. Click on the ***Study data*** tab and the data grid will be displayed.
5. Right-click on the data grid opening the paste/copy window.
6. Select ***Paste data from clipboard*** and the data will be pasted into the grid.
    - The user needs to ensure that the data is in the same format as the data grid on the ***Study data*** tab.

- This pastes everything on the Clipboard to the grid, starting with the field for the first part and first appraiser.

NOTE: Any missing or peripheral information will result in an error message and can result in an incorrect pasting of the data to the study grid.

To copy data to the clipboard:

1. Open a previously created R&R study with data, or create a study and fill in the data grid.
2. Click on the ***Study data*** tab.
3. Right-click on the study data grid and select ***Copy data to clipboard*** (data only).
4. Select ***OK*** and the window will close.

See Also
Study data tab

R&R study worksheets

R&R study worksheets

Since an R&R study can be uniquely defined each time it is run, worksheets can be printed only after the study has been defined. Generally, a gage will only have one R&R study defined, and it may be repeated on some periodic basis. It is possible to have more than one R&R study defined for a gage that is used for different measurements for the same or different customers requiring an R&R to be done for different measurements.

NOTE: If you want the appraiser names and other information printed on the worksheet, the information will need to be filled in on the ***Names & text*** tab.

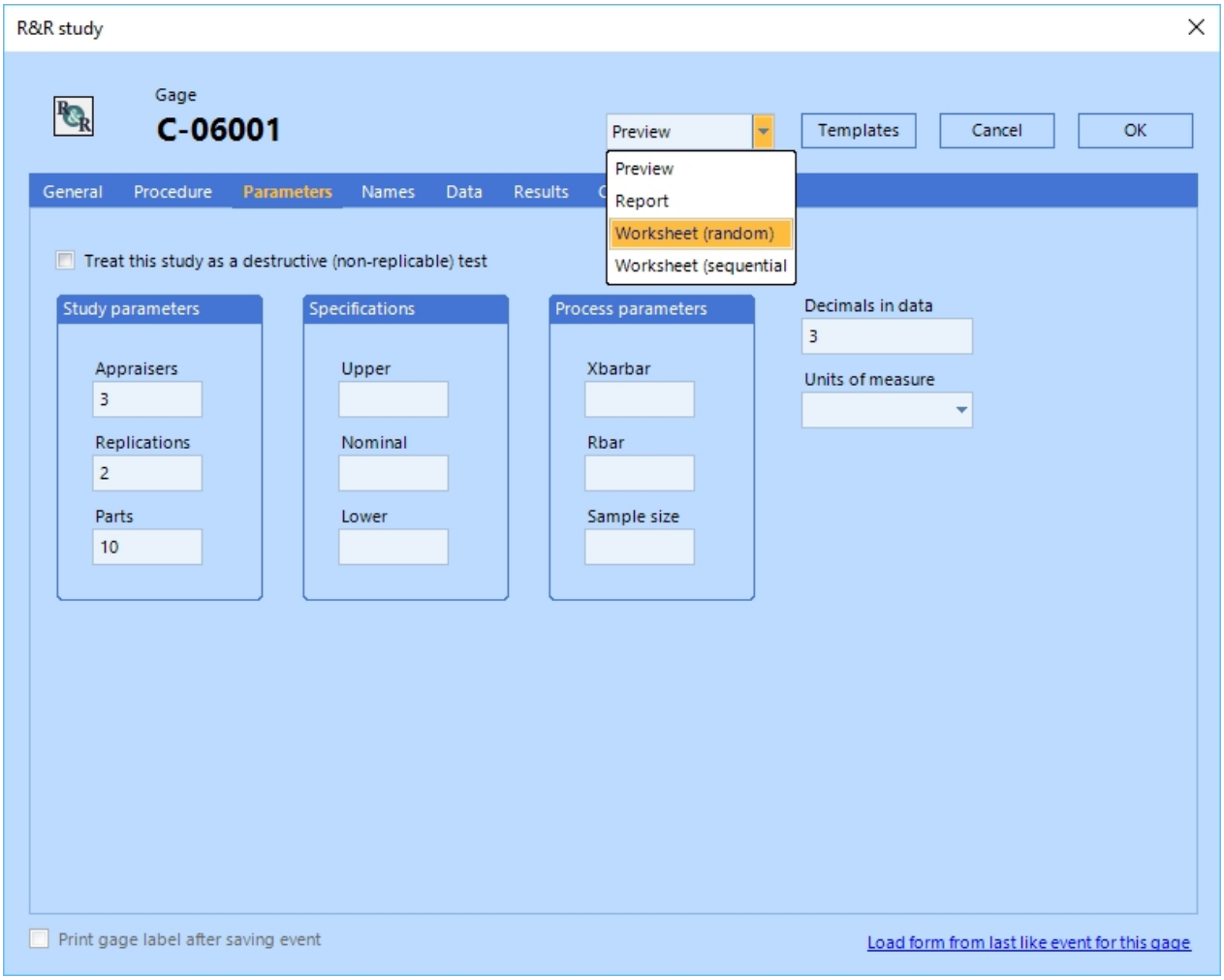
In This Section	See Also
Printing an R&R study worksheet	R&R variables study
	Conducting an R&R variables study
	R&R Templates button
	Study results tab
	Charts tab

Printing an R&R study worksheet

Printing an R&R study worksheet

To print a worksheet for a defined study from the ***Study parameters*** tab:

1. Click on the ***Preview*** menu.



2. Select ***Worksheet (random)*** or ***Worksheet (sequential)***. Each individual replication, appraiser and part will be listed either randomly (for the experimental design) or sequentially, for the ease of data entry on one or more printed sheets.
3. Click on the ***Printer*** icon to print the worksheet.

In This Section	See Also
Names and text tab	R&R study worksheets
Study data tab	

Results tab

Results tab

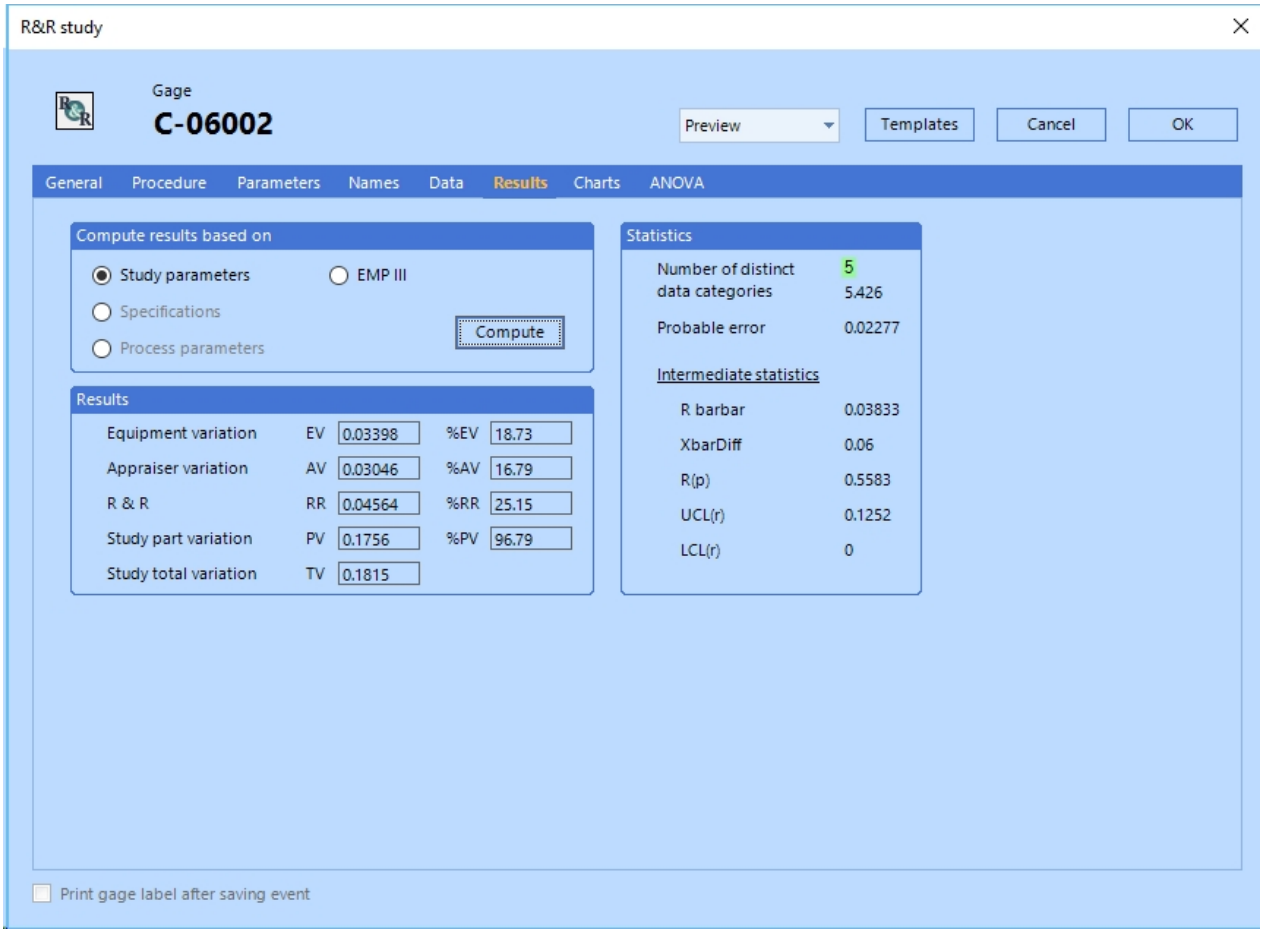
In This Section	See Also
Calculating statistics and study results	R&R variables study
Editing an R&R event record	Conducting an R&R variables study
	R&R Templates button
	R&R study worksheets
	Charts tab

Calculating statistics and study results

Calculating statistics and study results

To compute the results of the R&R study:

1. Click on the ***Study results*** tab to display this form and click on ***Compute***.



2. In the ***Compute results based on*** field, select the option that you want GAGEpack to use for calculating R&R percentages. Options are:

Study parameters This option uses the settings specified in the ***Study parameters*** tab and the data entered in the study. The ranges for the replicated measurements and the means of the appraisers' total measurements are used to determine estimates of the standard deviations for Equipment Variation (EV) and Appraiser Variation (AV). The averages of the part measurements are used to estimate the standard deviation of the Process Variation (PV). The percentages are determined by dividing each component by the Total Variation (TV). This is the default option.

Specifications This option uses the spread of the specifications to calculate R&R percentages. This option is available only if the specification data has been entered on the ***Study parameters*** tab. The percentages for this option are determined by dividing the specification range by six (to represent the specification range as one standard deviation). This in turn is used in the place of TV to calculate the percentages for EV,

AV, R&R and PV.

Process parameters This option uses the process parameters to determine the estimate of total variation, and uses that total variation to calculate R&R percentages. This option is available only if process parameter data has been entered on the ***Study parameters*** tab.

EMP III This option uses the settings specified on the ***Study parameters*** tab and the data entered in the study. The parts used in the study are used to estimate process variation. The formulas and statistics come from the "Honest gage study" as defined by Don Wheeler in a paper titled "An Honest Gauge R&R Study" (March 2008).

- The statistics calculated as follows:

Statistic	***Representing***	***Formulas***
EV	Equipment variation	$EV = \bar{\bar{R}} \times K_1$
AV	Appraiser variation	$AV = \sqrt{[(\bar{X}_{Diff} \times K_2)^2 - EV^2/nr}$
PV	Part variation	$PV = R_p \times K_3$
R&R	Repeatability & Reproducibility	$R\&R = \sqrt{(EV^2 + AV^2)}$
TV	Total variation	$TV = \sqrt{(R\&R^2 + PV^2)}$
EV%	Equipment variation percentage	$\%EV = 100\ [EV/TV]$
AV%	Appraiser variation percentage	$\%AV = 100\ [AV/TV]$
PV%	Part variation percentage	$\%PV = 100\ [PV/TV]$
RR%	R&R percentage	$\%R\&R = 100\ [R\&R/TV]$

- K1 values are based on the number of trials. For 2 trials, this is estimated at 0.8862. For 3 trials, this is estimated at 0.5908.
- K2 values are based on the number of appraisers. For 2 appraisers, this is estimated at 0.707. For 3 appraisers, this is estimated at 0.5231
- K3 values are based on the number of parts. These are estimated as follows:

Number Parts	***K3 value***
2	0.7071
3	0.5231
4	0.4467

5	0.4030
6	0.3742
7	0.3534
8	0.3375
9	0.3249
10	0.3146

- For more precise K1, K2, and K3 values, refer to the AIAG Measurement Systems Analysis, Third Edition.
- Intermediate stats, used in creating charts for this study are also shown. These are $\overline{\overline{R}}$, $\overline{X}_{Diff}$, R(p), UCL(r), LCL(r).

3. If you select ***Specifications***, ***Process parameters*** or ***EMP III***, the data in the results fields will clear. Click on the ***Compute*** button and GAGEpack will calculate the values for the option selected. If the options for ***Specifications*** and/or ***Process parameters*** are grayed out, you will need to enter specifications or process parameter values on the ***Study parameters*** tab.

See Also

Study results tab

Editing an R&R event record

Editing an R&R event record

Editing an R&R event record

To edit an R&R event record from a previously entered R&R study:

1. From the ***Gage*** list, double-click on the gage for which the R&R event was recorded to open the ***Gage*** form.
   - You can also use the ***Find*** function to locate the gage and the ***Edit gage*** icon to open the ***Gage viewing*** form.
2. Click on the ***History*** tab.
3. Select the R&R event you want to edit.
4. Click on the ***Edit event*** button to open the R&R study form.
5. When you are finished making changes, click the ***OK*** button.

See Also

Study results tab

Calculating statistics and study results

Charts tab

Charts tab

In This Section	See Also
R&R - Charts and Analysis	R&R variables study
	Conducting an R&R variables study
	R&R Templates button
	R&R study worksheets
	Study results tab

R&R - Charts and Analysis

R&R - Charts and Analysis

In This Section	See Also
To display an R&R chart	Charts tab
Creating R&R charts	
Editing R&R charts	
Editing R&R charts	
Chart Descriptions	

To display an R&R chart

To display an R&R chart

To display an R&R chart:

1. Click on the ***Charts*** tab of the ***R&R study*** form if this is not already the current tab.
2. Highlight the name of the chart you want to see and click on the ***Draw*** button.
3. To close the chart, click on the ***X*** in the upper right corner of the chart window or press the ***Esc*** key.

If you need help interpreting the charts, the AIAG Measurement Systems Analysis manual (available at www.aiag.org) and Dr. Donald Wheeler's Evaluating the Measurement Process (available from www.spcpress.com) are useful references.

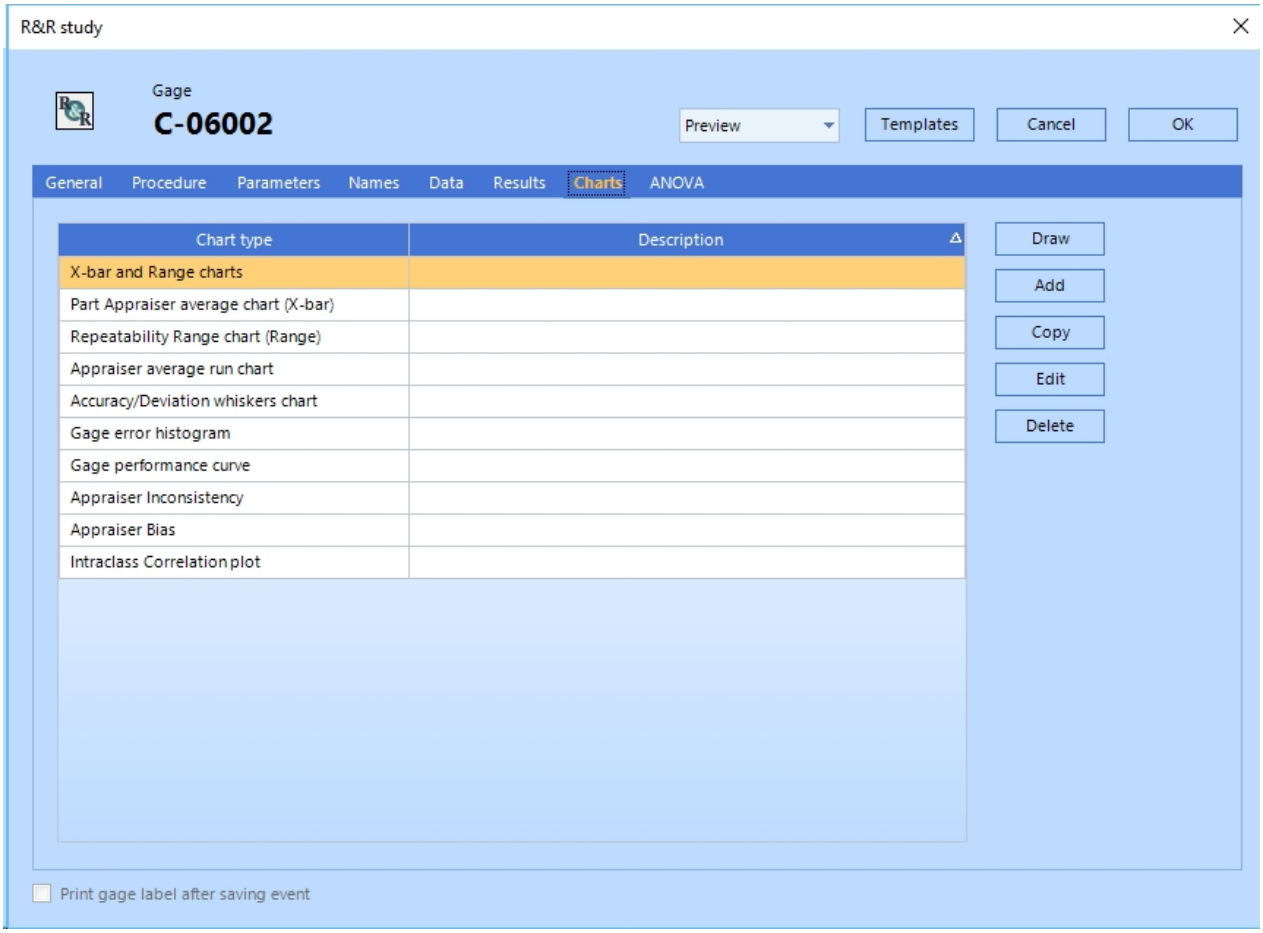
See Also
R&R - Charts and Analysis
Creating R&R charts
Editing R&R charts
Editing R&R charts
Chart Descriptions

Creating R&R charts

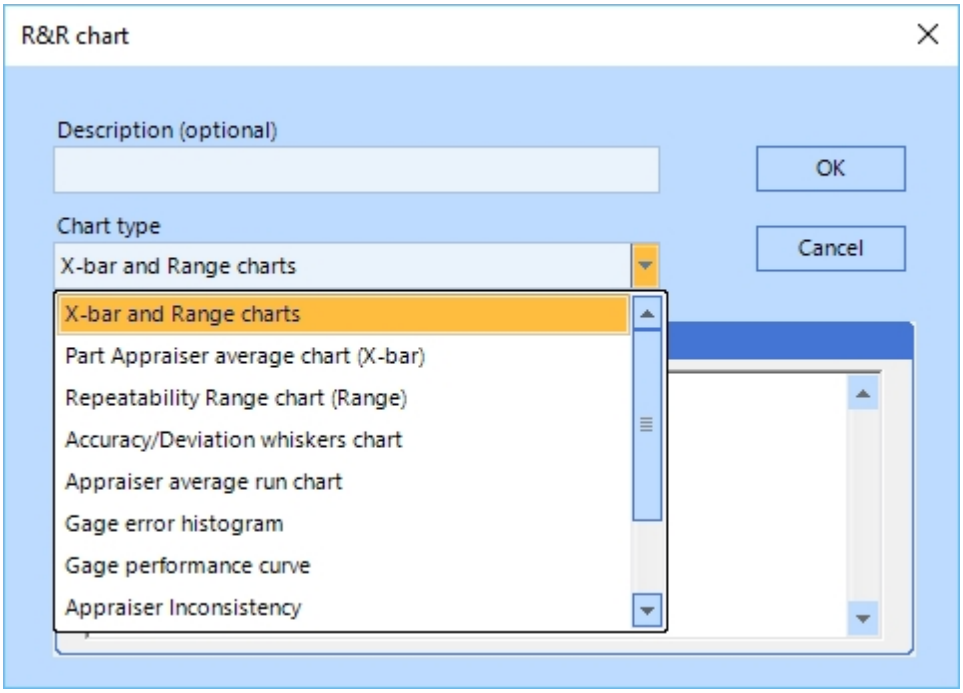
Creating R&R charts

To create R&R charts:

1. Click on the ***Charts*** tab of the ***R&R study*** form.



2. Click the ***Add*** button to display the ***R&R chart*** form.



   - Default charts are included with the program as a reference for defining charts.

3. Enter a name for this chart in the ***Chart name*** field.
   - This field is required. The default name is "New name".

4. Enter a description of the chart in the ***Description*** field. This field is optional.
5. Select ***OK*** to close the screen.

See Also
R&R - Charts and Analysis
To display an R&R chart
Editing R&R charts
Editing R&R charts
Chart Descriptions

Editing R&R charts

Editing R&R charts

To edit an existing chart or default chart:

1. Click on the ***Charts*** tab of the ***R&R Study*** form if this is not already the current tab.
2. Select a chart to edit by highlighting it.
3. Click the ***Edit*** button.
4. Make desired changes.
5. Click the ***OK*** button

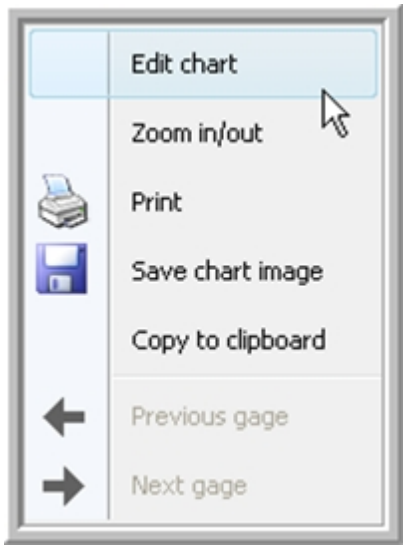
See Also
R&R - Charts and Analysis
To display an R&R chart
Creating R&R charts
Editing R&R charts
Chart Descriptions

Editing R&R charts

Editing R&R charts

To edit an existing chart or default chart:

1. Click on the ***Charts*** tab of the ***R&R study*** form if this is not already the current tab.
2. Highlight the chart you desire to modify its appearance.
3. Click the ***Draw*** button or double-click on the chart name.
4. Right-click on the chart that you desire to take action on, and the action window will open.



5. Highlight the action you desire to take.
6. Follow the indicated steps to completion of the desired action.
7. Click the ***OK*** button.

See Also
R&R - Charts and Analysis
To display an R&R chart
Creating R&R charts
Editing R&R charts
Chart Descriptions

Chart Descriptions

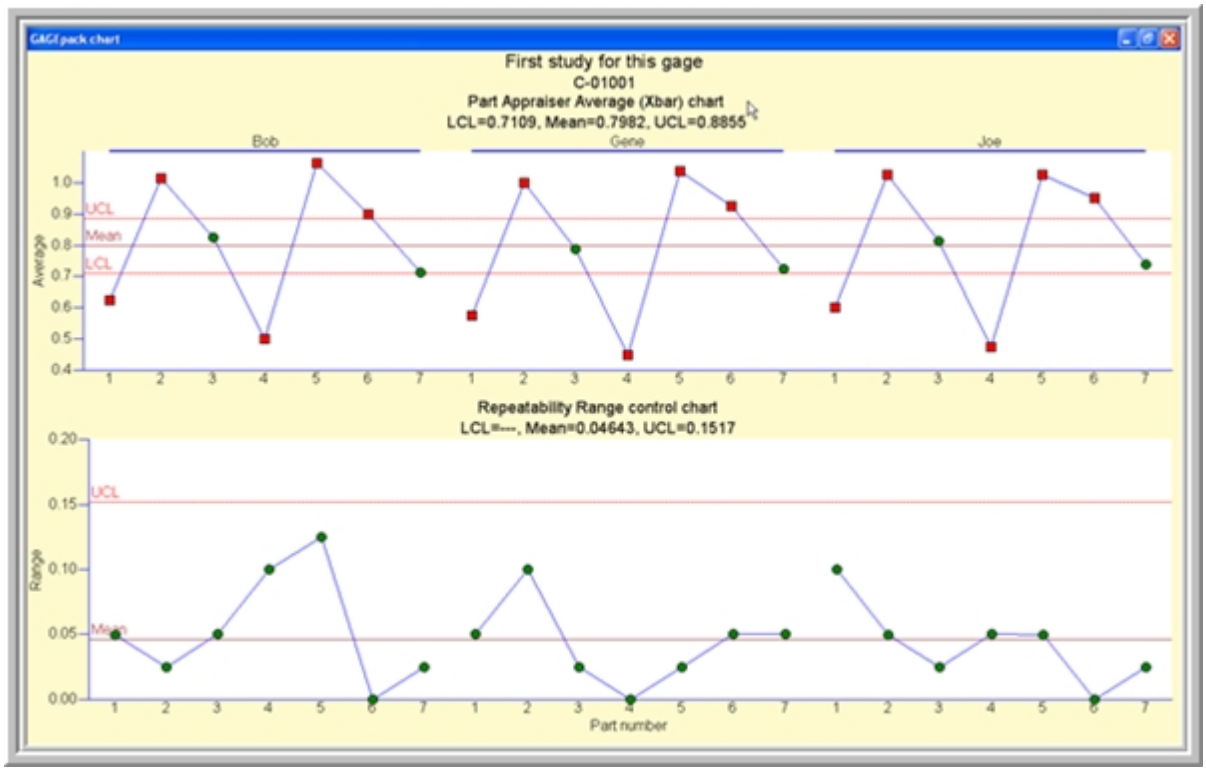
Chart Descriptions

In This Section	See Also
R&R X-bar and range charts	R&R - Charts and Analysis
R&R Part appraiser average chart (X-bar)	To display an R&R chart
R&R repeatability range chart (Range)	Creating R&R charts
R&R appraiser average run chart	Editing R&R charts
R&R accuracy/deviation whiskers chart	Editing R&R charts
R&R gage error histogram	
R&R gage performance curve	
R&R appraiser inconsistency	
R&R appraiser bias	
R&R intraclass correlation plot	
R&R multi-chart	
R&R ANOVA	

R&R X-bar and range charts

R&R X-bar and range charts

This chart is the combination of the Part Appraiser Average chart and Repeatability Range chart. On the X-bar chart, at least half of the points should fall outside the control limits. On the Range chart, all of the points should fall within control limits.



To display multiple sets of control limits on the chart, exclude out-of-control Range subgroups, or add titles:

1. Right-click on the chart.
2. Select any of the options available if desired.
3. Add, modify, and/or delete titles.
4. Click the ***Close*** button.

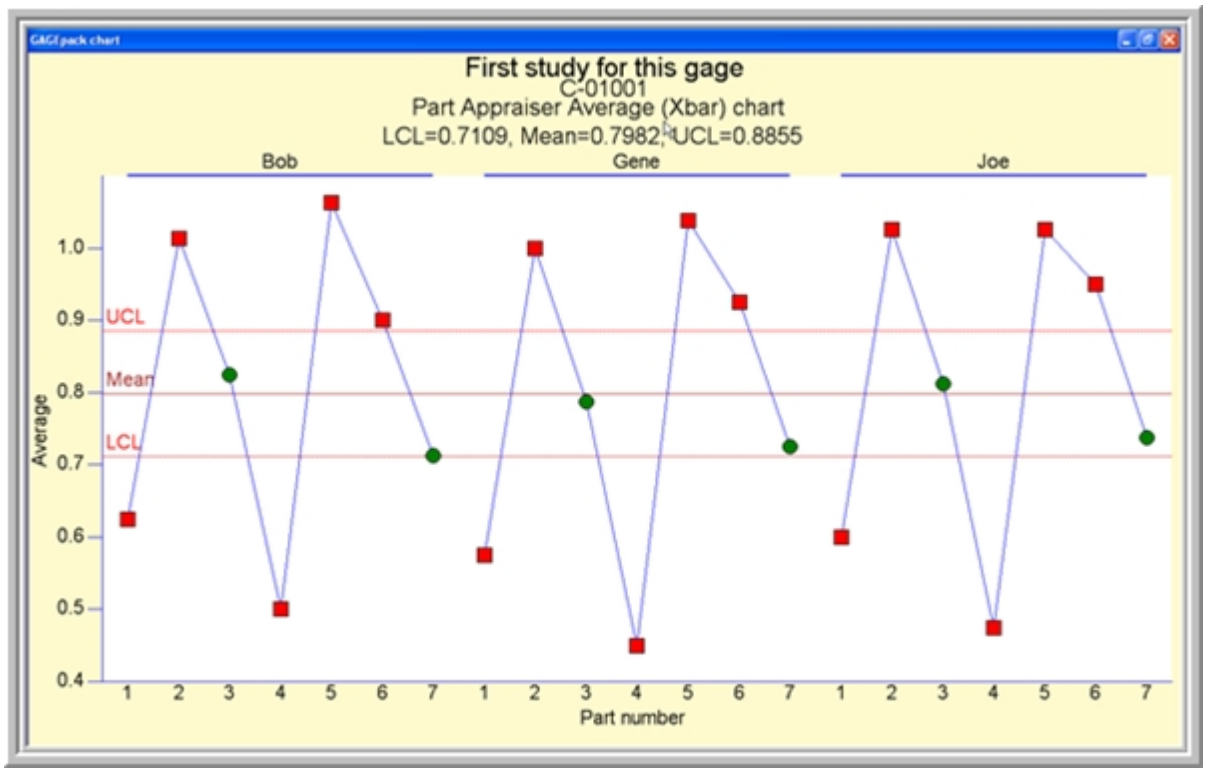
See Also
Chart Descriptions
R&R Part appraiser average chart (X-bar)
R&R repeatability range chart (Range)
R&R appraiser average run chart
R&R accuracy/deviation whiskers chart
R&R gage error histogram
R&R gage performance curve
R&R appraiser inconsistency
R&R appraiser bias

R&R intraclass correlation plot
R&R multi-chart
R&R ANOVA

R&R Part appraiser average chart (X-bar)

R&R Part appraiser average chart (X-bar)

This X-bar chart shows the part averages for each appraiser. The averages on this chart represent part and measurement variation. The chart provides a check on the operator-to-operator consistency and relative measures of the usefulness of the measurements. The pattern of part averages should be the same across operators. If the measurement system is able to determine the differences in the parts, more than half the points will fall outside the limits.



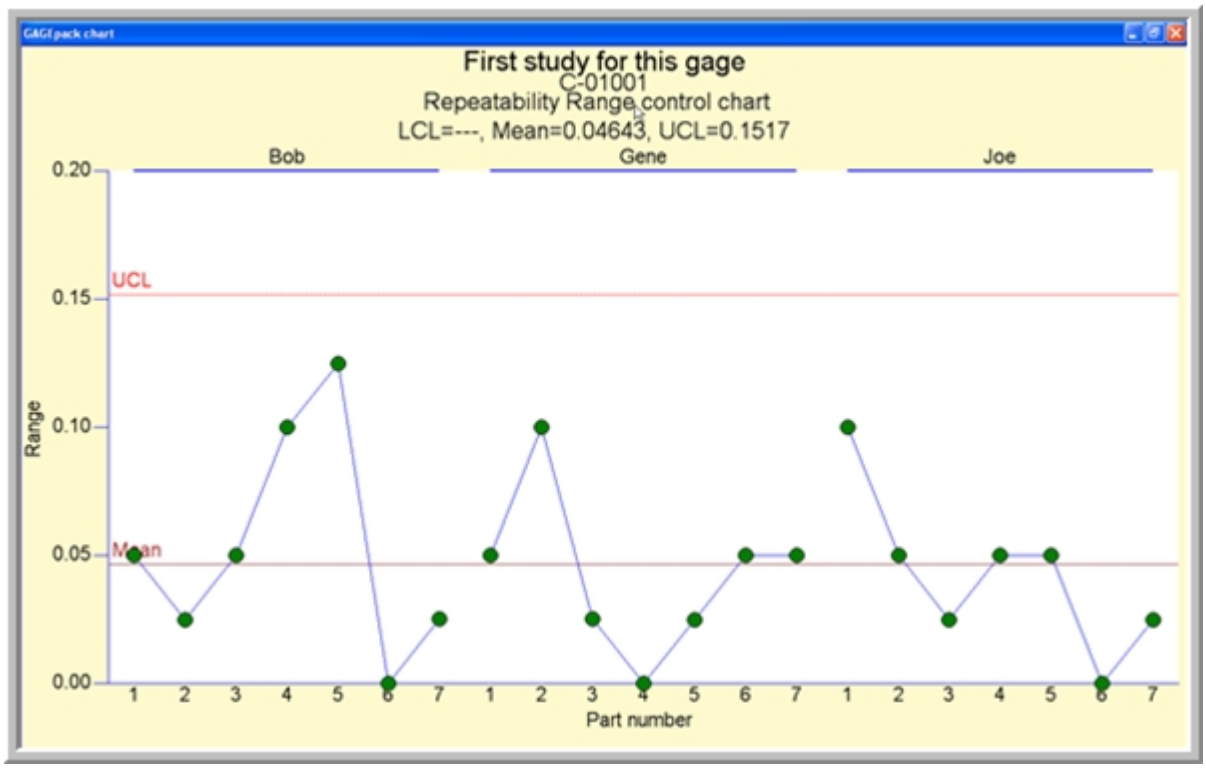
See Also

- Chart Descriptions
- R&R X-bar and range charts
- R&R repeatability range chart (Range)
- R&R appraiser average run chart
- R&R accuracy/deviation whiskers chart
- R&R gage error histogram
- R&R gage performance curve
- R&R appraiser inconsistency
- R&R appraiser bias
- R&R intraclass correlation plot
- R&R multi-chart
- R&R ANOVA

R&R repeatability range chart (Range)

R&R repeatability range chart (Range)

This chart plots the range for each subgroup and shows the consistency of the differences in the measurements each operator has made on each chart. Each range represents multiple measurements of the same part for the same characteristic using the same gage by the same operator. If all ranges displayed on this chart are in control, the appraisers' variation in measurements is essentially the same. If an appraiser's range falls outside the control limits, this appraiser may be using a measurement method that differs from that used by the other appraisers, or there may be another special cause. If most appraisers have ranges outside the control limits, the measurement system is too sensitive to the measurement methods to be useful. In either case, ranges outside the limits are to be excluded from the analysis or replaced once the cause has been determined.



See Also

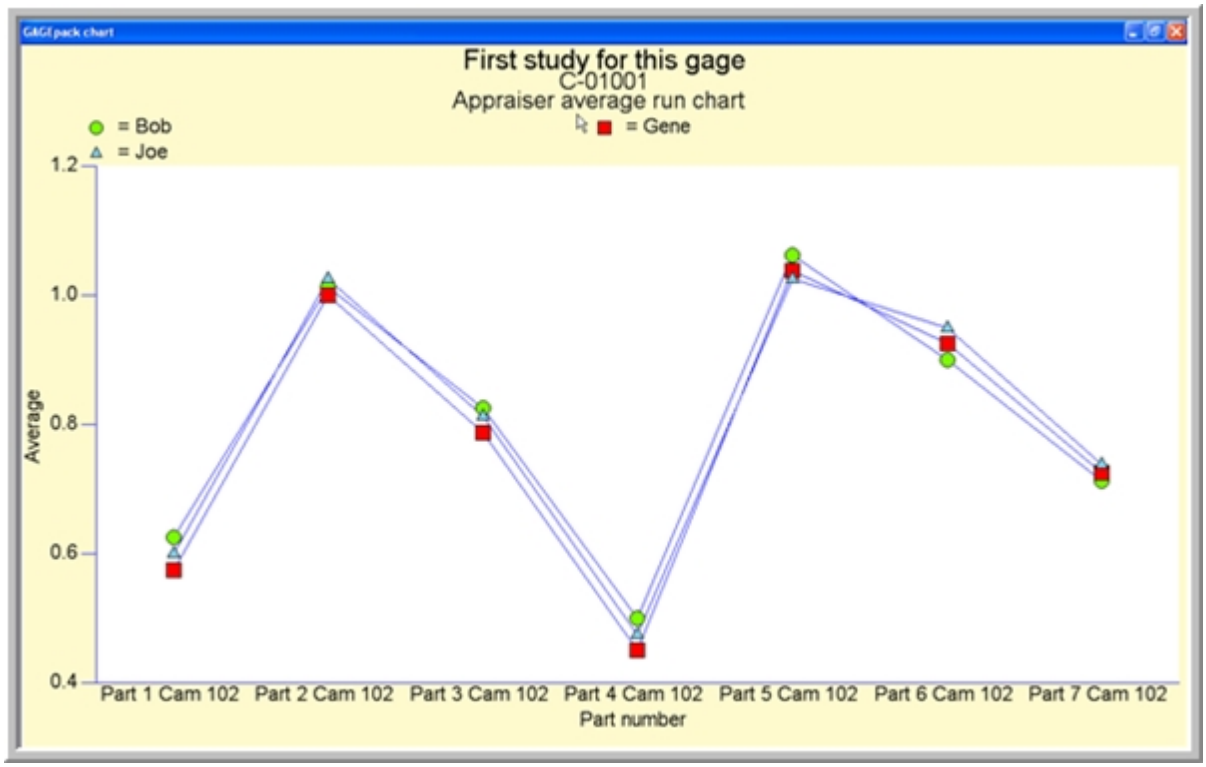
- Chart Descriptions
- R&R X-bar and range charts
- R&R Part appraiser average chart (X-bar)
- R&R appraiser average run chart
- R&R accuracy/deviation whiskers chart
- R&R gage error histogram
- R&R gage performance curve
- R&R appraiser inconsistency
- R&R appraiser bias
- R&R intraclass correlation plot
- R&R multi-chart

R&R ANOVA

R&R appraiser average run chart

R&R appraiser average run chart

Also called an Interaction Plot, this chart displays the part average for each part by appraiser in a run chart. The difference between this and the X-bar chart is that this is a multi-line chart, where each appraiser is super imposed over the others on the scale. It helps in determining the consistency among appraisers and the usability of the measurement system by comparing the results of the average readings by part for each operator graphically. If the part averages differ by a substantial amount, and appraiser lines cross, some appraiser-part interaction may have taken place. If one appraiser's averages fall above or below the other appraisers', it may indicate appraiser bias.



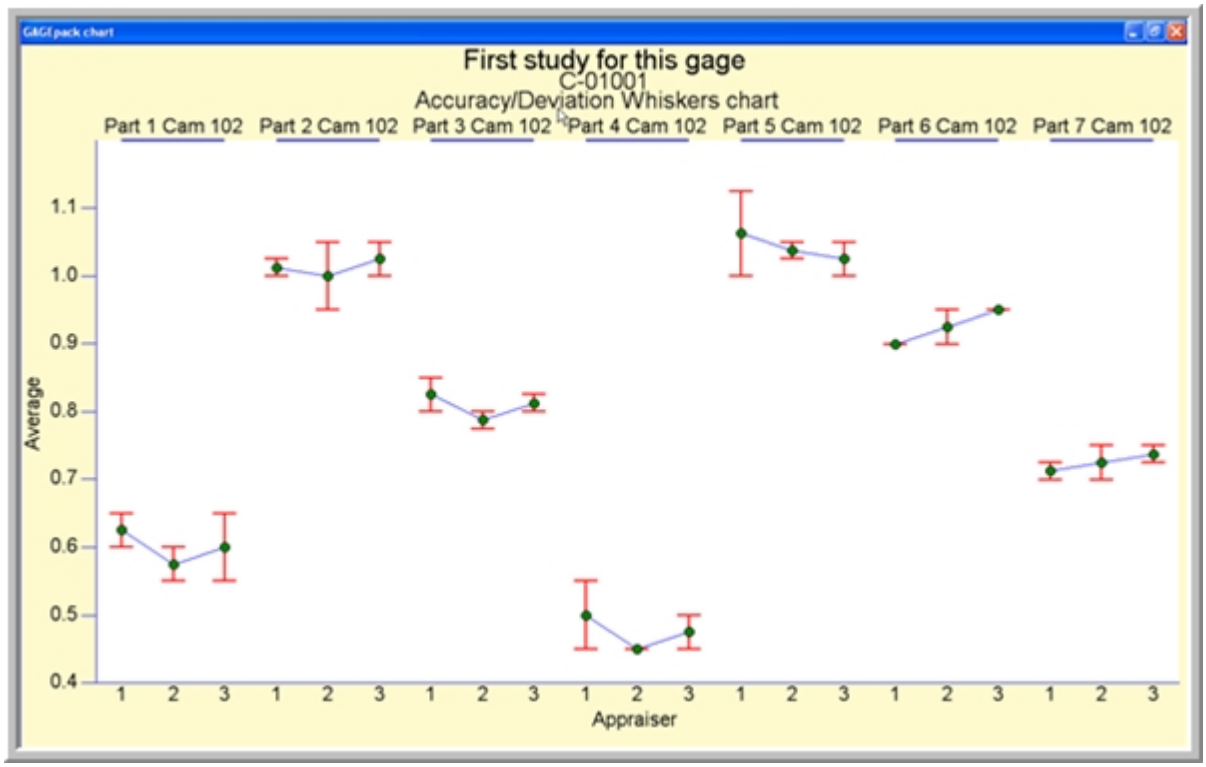
See Also

- Chart Descriptions
- R&R X-bar and range charts
- R&R Part appraiser average chart (X-bar)
- R&R repeatability range chart (Range)
- R&R accuracy/deviation whiskers chart
- R&R gage error histogram
- R&R gage performance curve
- R&R appraiser inconsistency
- R&R appraiser bias
- R&R intraclass correlation plot
- R&R multi-chart
- R&R ANOVA

R&R accuracy/deviation whiskers chart

R&R accuracy/deviation whiskers chart

This chart shows the high and low data values and the averages by part and by appraiser. This illustrates the deviation of the measured values from the average values. The large **I** represents the range deviation made by an appraiser on one part. This helps determine measurement consistency by an appraiser, and across appraisers, and shows abnormal readings and part appraiser interaction.



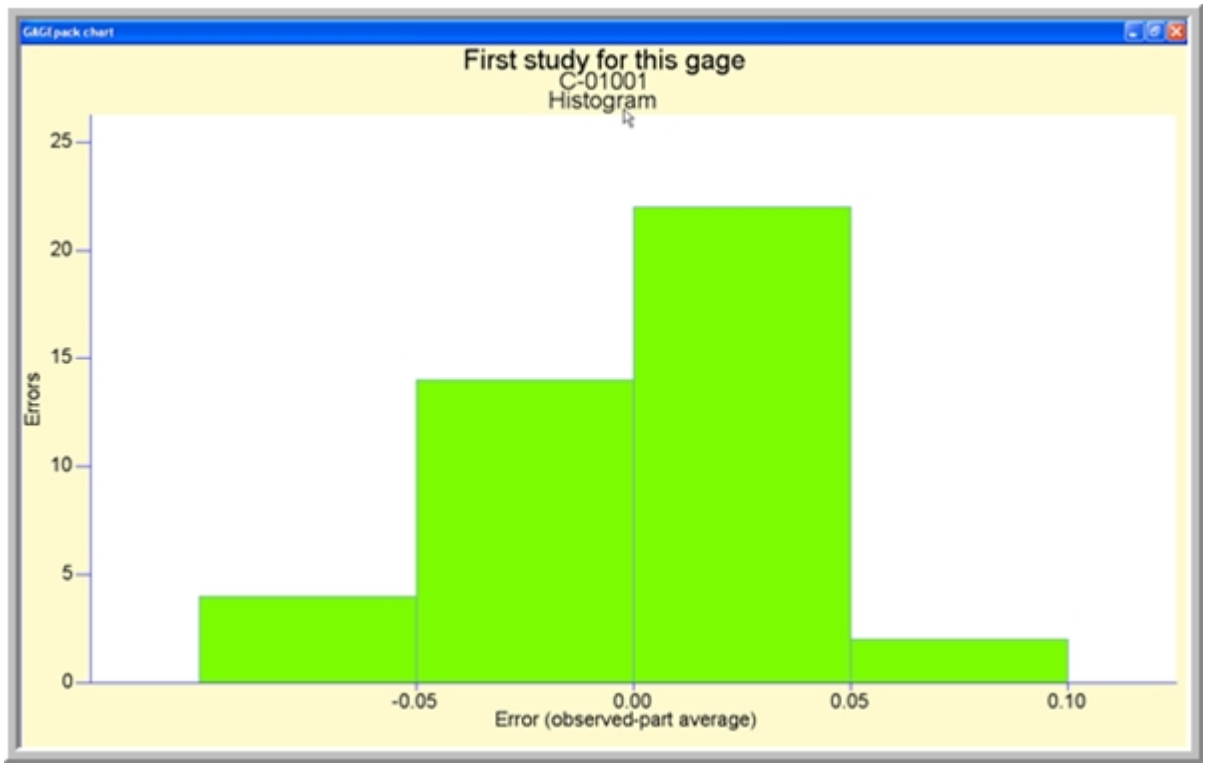
See Also

- Chart Descriptions
- R&R X-bar and range charts
- R&R Part appraiser average chart (X-bar)
- R&R repeatability range chart (Range)
- R&R appraiser average run chart
- R&R gage error histogram
- R&R gage performance curve
- R&R appraiser inconsistency
- R&R appraiser bias
- R&R intraclass correlation plot
- R&R multi-chart
- R&R ANOVA

R&R gage error histogram

R&R gage error histogram

Also called Accuracy/Deviation Histogram, this chart shows the distribution of the deviations from the average of the part values or from the reference values if they are included. Ideally, the values will be centered on 0.0 with a bell-shaped curve. The tighter the base of the bell, the smaller the variation is about the average (or reference) values.



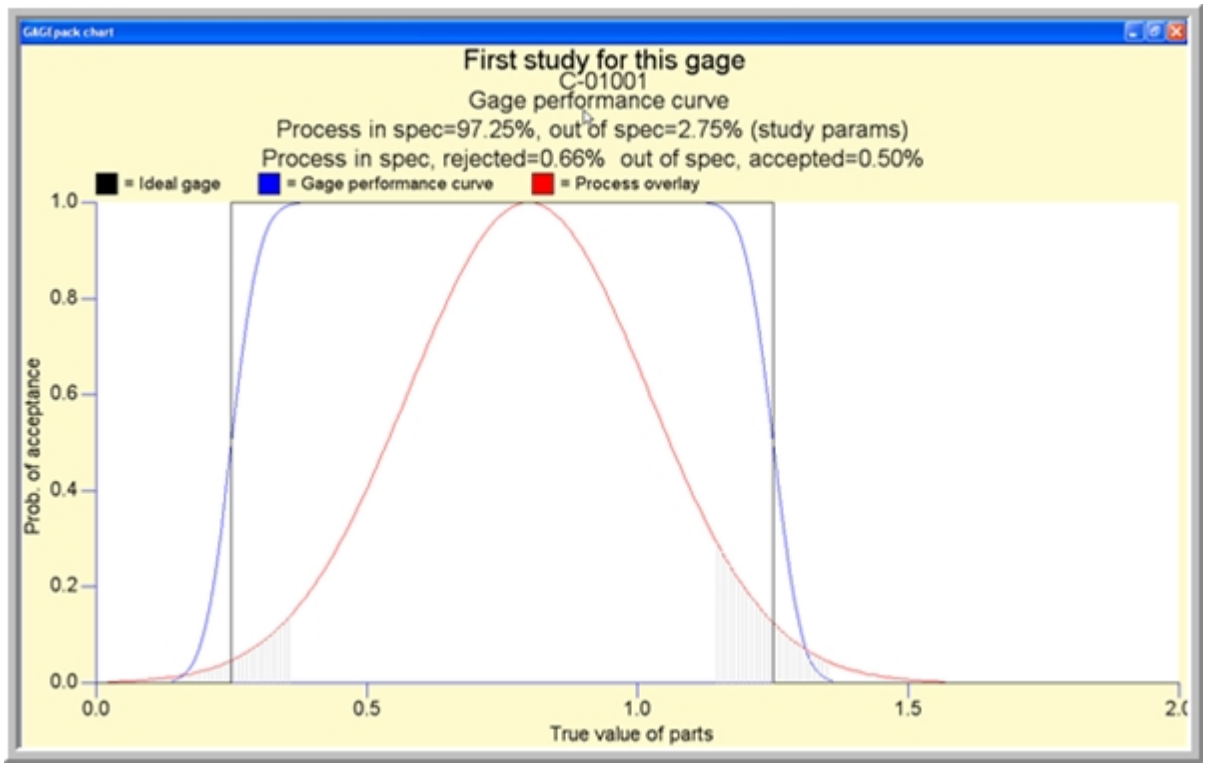
See Also

- Chart Descriptions
- R&R X-bar and range charts
- R&R Part appraiser average chart (X-bar)
- R&R repeatability range chart (Range)
- R&R appraiser average run chart
- R&R accuracy/deviation whiskers chart
- R&R gage performance curve
- R&R appraiser inconsistency
- R&R appraiser bias
- R&R intraclass correlation plot
- R&R multi-chart
- R&R ANOVA

R&R gage performance curve

R&R gage performance curve

Use the Gage performance curve chart to determine the probability of either accepting or rejecting a part with a particular measurement value. The left axis represents the probability of acceptance, from 0 to 1. For a part value that lies on one of the specification limits, the probability of acceptance would be 0.5, if the measurement is unbiased.



To select study or process parameters to overlay the process curve, use reference values and/or add titles:

1. Right-click on the chart.
2. Select ***Edit chart*** from the pop-up menu.
3. Select any of the options available if desired.
4. Add, modify, and/or delete titles.
5. Click the ***Close*** button.

See Also

Chart Descriptions

R&R X-bar and range charts

R&R Part appraiser average chart (X-bar)

R&R repeatability range chart (Range)

R&R appraiser average run chart

R&R accuracy/deviation whiskers chart

R&R gage error histogram

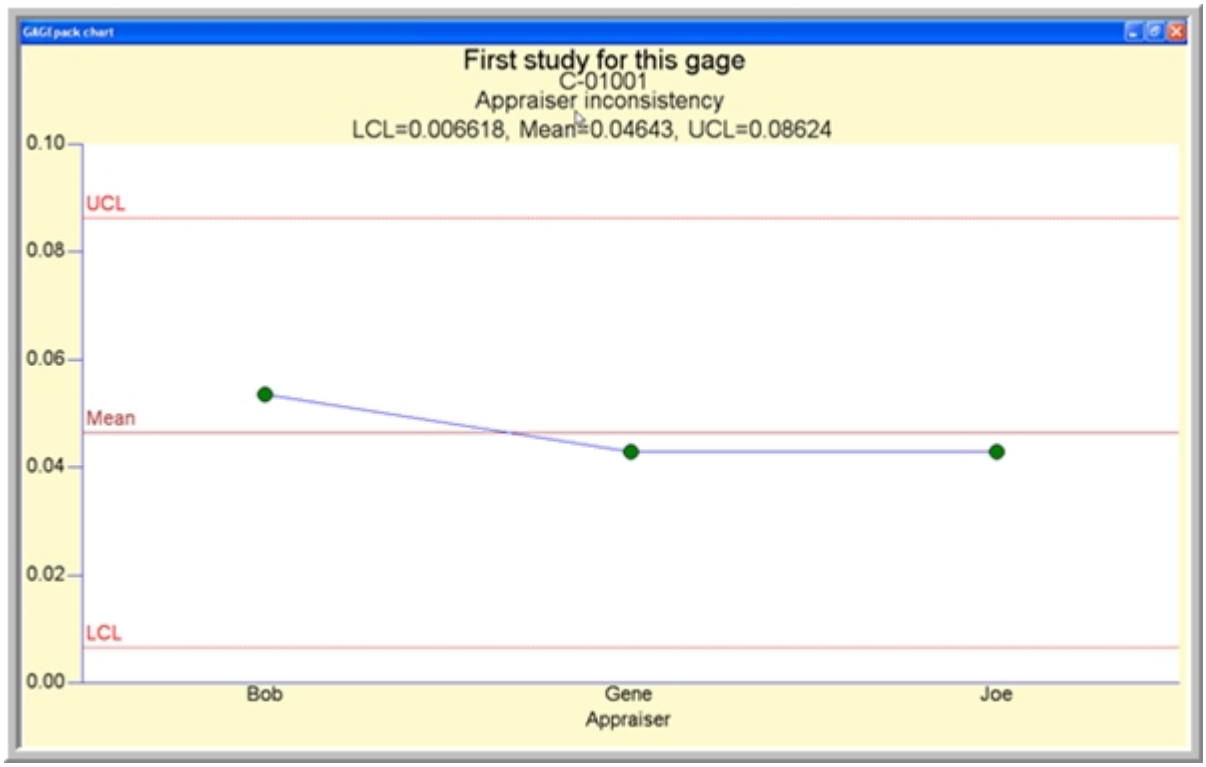
R&R appraiser inconsistency

R&R appraiser bias
R&R intraclass correlation plot
R&R multi-chart
R&R ANOVA

R&R appraiser inconsistency

R&R appraiser inconsistency

The Appraiser Inconsistency chart is a control chart of average ranges by each appraiser. It shows whether there is a detectable difference among the ranges of part measurements for each appraiser. Analysis for appraiser inconsistency can be performed if more than one appraiser is used in the study. Inconsistency is a way of seeing if the range for one appraiser is statistically different from the others. This analysis is similar to that of the range chart in the X-bar and Range charts. The data should fall inside control limits. If an appraiser's average range falls above the upper control limit, that appraiser's replications are statistically farther apart than the replications made by the other appraisers.



To add titles:

1. Right-click on the chart.
2. Select ***Edit chart*** from the pop-up menu.
3. Add, modify, and/or delete titles.
4. Click the ***OK*** button.

See Also

Chart Descriptions

R&R X-bar and range charts

R&R Part appraiser average chart (X-bar)

R&R repeatability range chart (Range)

R&R appraiser average run chart

R&R accuracy/deviation whiskers chart

R&R gage error histogram

R&R gage performance curve

R&R appraiser bias

R&R intraclass correlation plot

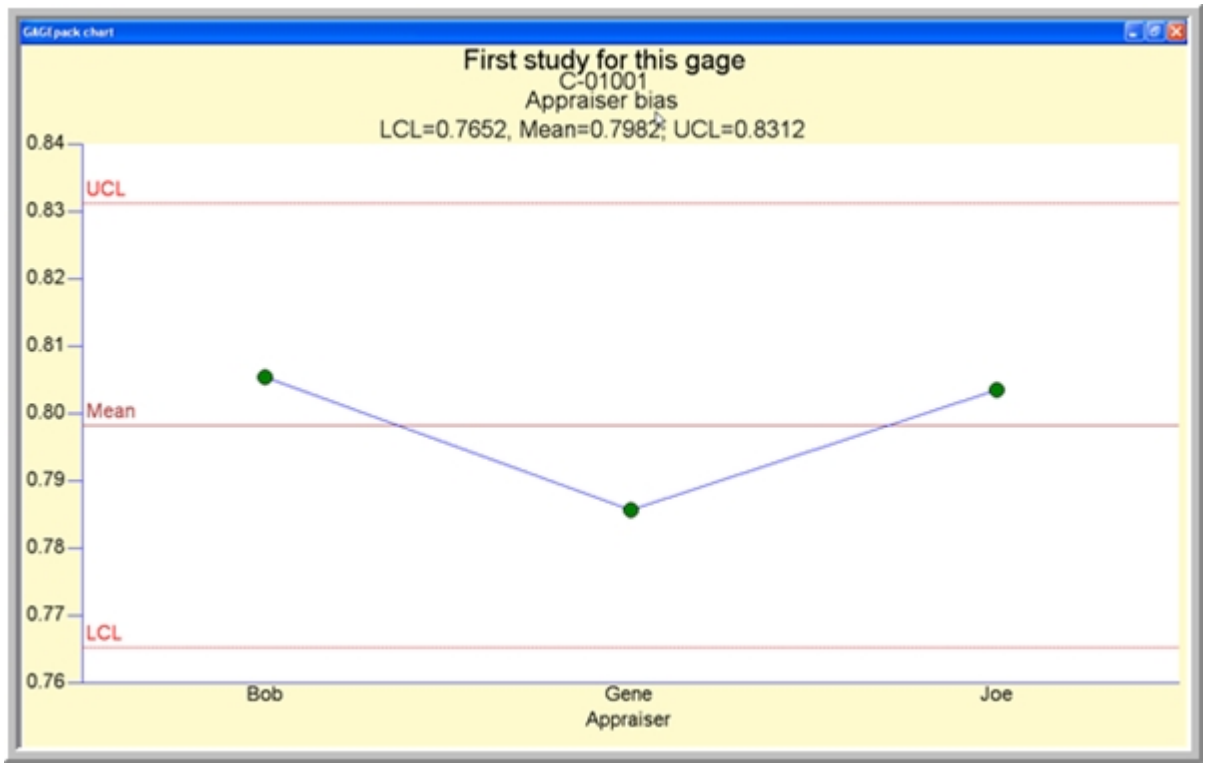
R&R multi-chart

R&R ANOVA

R&R appraiser bias

R&R appraiser bias

The Appraiser Bias chart is an X-bar chart of the averages of all the measurements made by an appraiser. By plotting averages of all the measurements taken by each appraiser on a control chart, one can see statistically if one of the appraisers is measuring the parts in a way that is biased (higher or lower) from the others. All the appraisers' averages should fall within the control limits. If any appraiser's average measurement is above the upper control limit, that appraiser is measuring the parts statistically larger than the other appraisers. If any appraiser's average measurement is below the lower control limit, that appraiser is measuring the parts statistically smaller than the other appraisers.



See Also

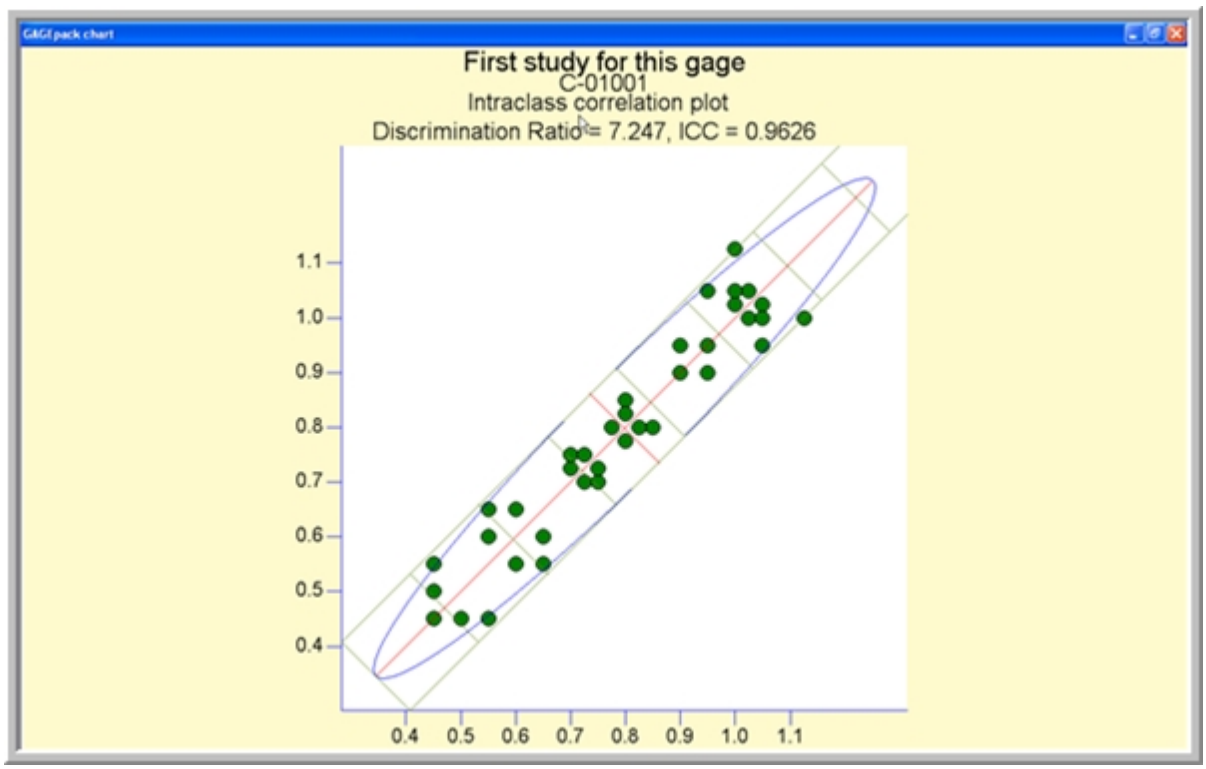
- Chart Descriptions
- R&R X-bar and range charts
- R&R Part appraiser average chart (X-bar)
- R&R repeatability range chart (Range)
- R&R appraiser average run chart
- R&R accuracy/deviation whiskers chart
- R&R gage error histogram
- R&R gage performance curve
- R&R appraiser inconsistency
- R&R intraclass correlation plot
- R&R multi-chart
- R&R ANOVA

R&R intraclass correlation plot

R&R intraclass correlation plot

The Intraclass Correlation Plot is a plot of ranges of measurements made by a gage. It illustrates the relationships between total variation and measurement error. The major axis (long line) represents the total variation attributable to product variation and measurement error. The minor axis (short line) is attributable to the measurement error alone. The Discrimination Ratio (D.R.) compares the total variation to the measurement variation. A Discrimination Ratio greater than four is considered acceptable. As the D.R. gets larger, the Intraclass Correlation Plot becomes more elliptical and less round. The Intraclass Correlation Coefficient (ICC) measures the same thing as the D.R., but is limited to a scale of 0.0 to 1.0. The ICC should be greater than 0.8824. The D.R. should be greater than 4.0. These calculations are made based on the assumption that the appraiser variation is zero. The long axis of the ellipsoid represents the total variation (part variation plus equipment variation) and the short axis represents the equipment variation.

Right-click on the chart window and select ***Edit chart*** to specify if category squares should be drawn on the Intraclass Correlation Plot to display the D.R. in squares. A D.R. = 4 implies that four squares will be drawn. You can add chart titles through this form also.



To select Draw category squares and/or to add titles:

1. Right-click on the chart.
2. Select ***Edit chart*** from the pop-up menu.
3. Select or de-select category squares.
4. Add, modify, and/or delete titles.
5. Click the ***OK*** button.

See Also

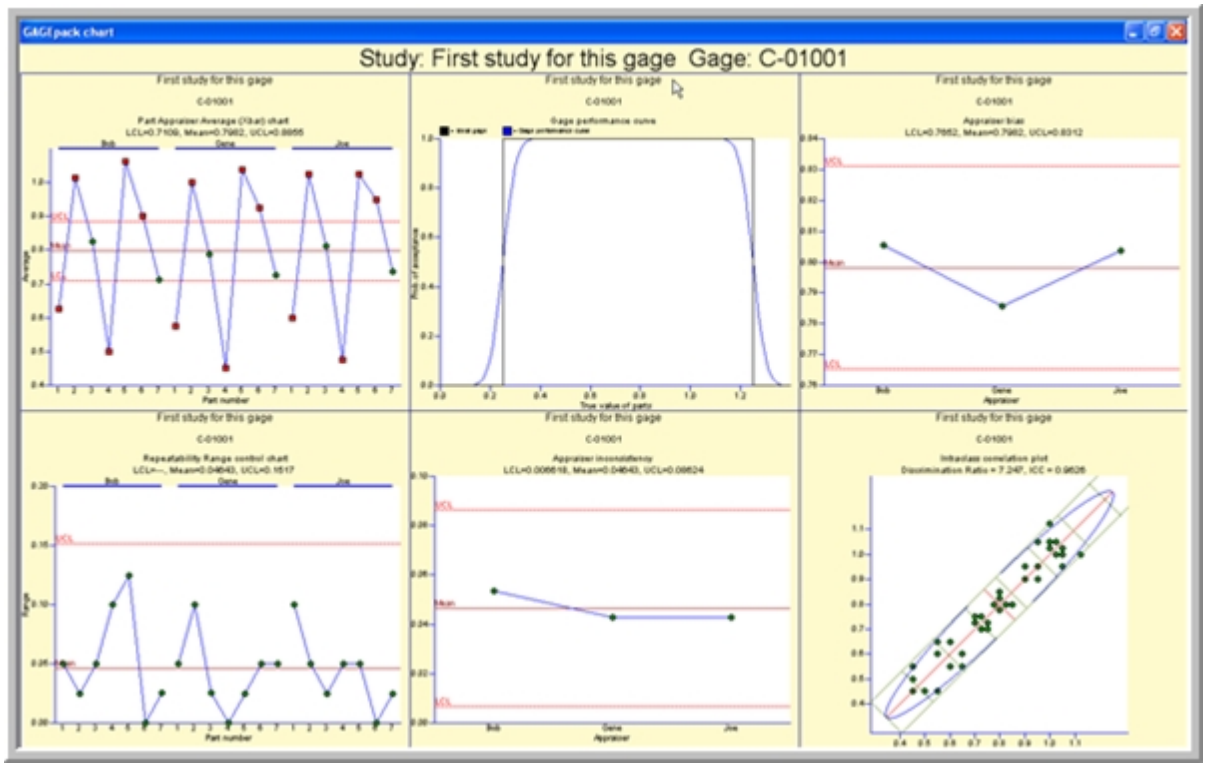
Chart Descriptions

R&R X-bar and range charts
R&R Part appraiser average chart (X-bar)
R&R repeatability range chart (Range)
R&R appraiser average run chart
R&R accuracy/deviation whiskers chart
R&R gage error histogram
R&R gage performance curve
R&R appraiser inconsistency
R&R appraiser bias
R&R multi-chart
R&R ANOVA

R&R multi-chart

R&R multi-chart

The Multi-chart lets you select up to six charts to be viewed or printed on one page. Click on the ***Add*** button, give the chart a name, and select the charts to be included from the list of available charts by clicking on the check box next to the chart name. The only charts available to be included are those that have been defined for this study.



See Also

- Chart Descriptions
- R&R X-bar and range charts
- R&R Part appraiser average chart (X-bar)
- R&R repeatability range chart (Range)
- R&R appraiser average run chart
- R&R accuracy/deviation whiskers chart
- R&R gage error histogram
- R&R gage performance curve
- R&R appraiser inconsistency
- R&R appraiser bias
- R&R intraclass correlation plot
- R&R ANOVA

R&R ANOVA

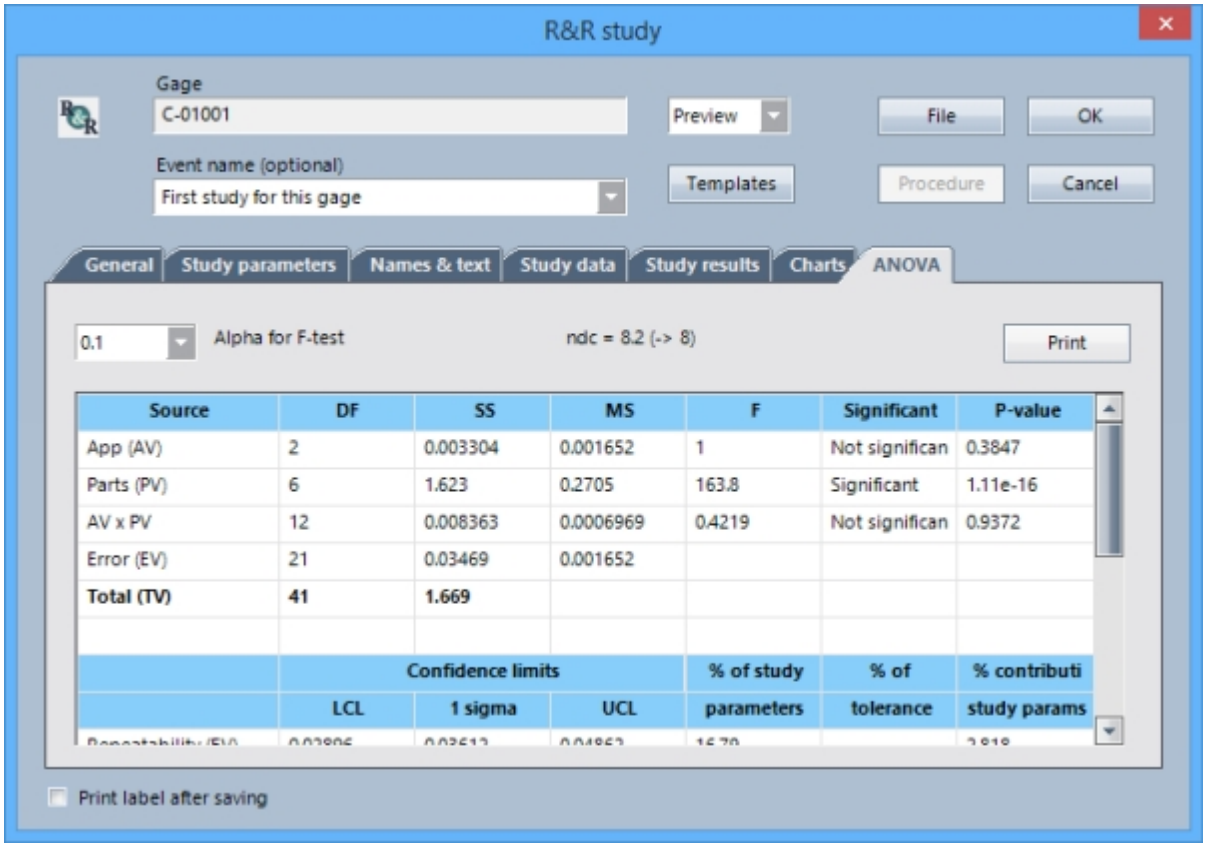
R&R ANOVA

Ideally, the sum of the squares (SS) for the appraiser and appraiser part interaction should not be significant. If the associated p-value is smaller than the desired alpha value (usually 0.05 or 0.01), then the source of variation is considered to be significant. In addition, the column following the F value will display an asterisk if the source of variation is significant.

Calculating the "percent of total" here is similar to calculating the percent of total variation under the R&R study results. The "% Contrib" (percent contribution) calculates the percent of the total variation contributed by the factor listed (e.g., appraisers) based on the variances (SS). Since variances are additive, the "% Contrib" will sum to 100 percent.

To view a standard ANOVA table for the study:

1. From the Gage list, double-click on the gage for which the R&R event was recorded in order to open the ***Gage viewing*** form. You can also use the ***Find*** function to locate the gage and the ***Edit gage*** icon to open the ***Gage viewing*** form.
2. Click the ***History*** tab. Then, locate the R&R event for which you want to see the ANOVA table.
3. Click the ***Edit event*** button to open the ***R&R study*** form.
4. Click the ***ANOVA*** tab. Use the drop-down menu to set an ***Alpha for F-tests*** values.
5. Generally, for experimental investigative purposes the alpha value is set at a relatively high value (0.10) when compared to the alpha value normally used in quality control (0.0027). In this case the ***P-value*** becomes useful, since it is indicating that the values are significant beyond the 0.001 level.



6. The factors Appraiser, Parts and Appraiser x Part (interaction) are all significant, indicated by the asterisk in the column next to the F column. The parts should be significant, since the objective is to

be able to distinguish among the parts. However, you do not want either Appraisers or the Appraiser/Part interaction to be significant.

ANOVA report
PQ Systems **8/13/2012**

Gage number: C-01001
Study name:
Study date: 8/13/2012
Operators: 3
Parts: 10
Replications: 2
Alpha level: 0.1

Source	DF	SS	MS	F	sig.	P-value
App (AV)	2	0.048	0.024	18.58	sig.	5.624e-06
Parts (PV)	9	2.059	0.2287	177.1	sig.	0
AV x PV	18	0.1037	0.005759	4.459	sig.	0.0001563
Error (EV)	30	0.03875	0.001292			
Total (TV)	59	2.249				

	Confidence limi			% of study	% of	% contribution
	LCL	1 sigma	UCL	parameters	tolerance	study params
Repeatability (EV)	0.02975	0.03594	0.04578	17.57		3.088
Reproducibility (AV)	0.007045	0.0337	0.1518	16.48		2.715
AV x PV	0.02869	0.04726	0.07363	23.11		5.341
Gage R&R (EV+AV)	0.06032	0.06827	0.1632	33.38		11.14
Part variation (PV)	0.1207	0.1928	0.3345	94.26		88.86
Total variation (TV)		0.2045				

ndc = 4.0 (-> 3)

7. This part of the analysis provides a calculation of the R&R percentages (% of Total column) using the ANOVA sum of squares analysis to determine the percentages. They should be similar but not exactly equal to those obtained using the traditional analysis. In addition, the ANOVA approach typically provides another column of percentages (% Contribution). These percentages are figured using the variances, and the R&R percentage plus the Part-to-part percentage will add up to 100 percent.

See Also

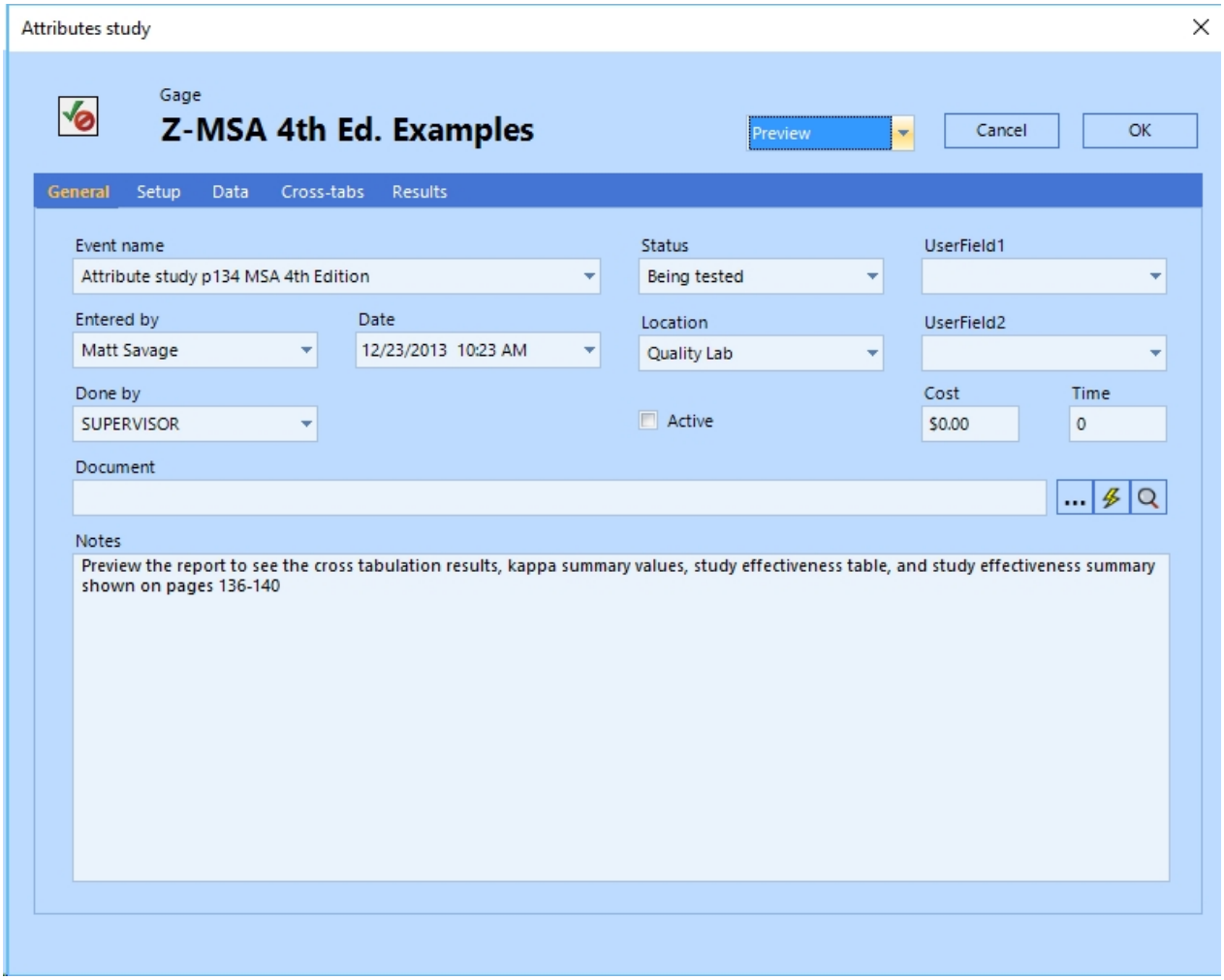
Chart Descriptions
R&R X-bar and range charts
R&R Part appraiser average chart (X-bar)
R&R repeatability range chart (Range)
R&R appraiser average run chart
R&R accuracy/deviation whiskers chart
R&R gage error histogram
R&R gage performance curve
R&R appraiser inconsistency
R&R appraiser bias
R&R intraclass correlation plot
R&R multi-chart

R&R attribute study

R&R attribute study

To conduct an Attributes R&R study:

1. Open the ***Attributes study*** form.
   - Move the highlight to the record for the gage that you want. Click the ***Attributes R&R study*** icon.
   - Double-click on the record to open the ***Gage viewing*** form. Click on the gage ***History*** tab. Select ***Attributes Study*** from the ***Add new event*** drop-down menu.



In This Section	See Also
General study setup tab	Recording gage events
Study names tab	Launching gage events
Study data tab	Calibration
Cross tabs tab	External Calibration
Study results tab	Check-out
	Check-in
	Maintenance

Verification
Repair
Other
Multi-gage events
Group events
R&R variables study
R&R stability study
R&R linearity study
R&R uncertainty study/bias

General study setup tab

General study setup tab

1. The ***General study setup*** tab will be displayed. Enter a name for the Attributes Study, if desired. This information will appear in the ***Event name*** field of the ***History*** tab.
2. Enter your user name in the ***Entered by*** field. You can type it in or select from the user choice list. If user login is activated when you start GAGEpack, your name will appear in the ***Entered by*** field. If you do not use login, the default entry is Supervisor.
3. Date and time are automatically recorded in the study ***Date*** field. To change the date, click on the down arrow on the right side of the field. A calendarform will open. Click the right or left arrows to change the month. Click on a date to select it.
4. ***Next date*** is a new field added to this screen and allows the user to reset the next due date at the entry of the current study information.
5. The study ***Done by*** field allows you to enter the name of the operator who conducted the study.
6. Enter cost to accomplish the study and the time in hours required into the ***Cost*** and ***Time (hours)*** fields if you desire to track these items.
7. The ***Status*** field shows the current status of the gage. Likewise, ***Location*** shows the current location. You can change any of these by typing over the data. ***Location*** and ***Status*** may also be changed through choice lists drop-down menus for these fields. Record Status and Location at the time of the study for traceability purposes.
8. Enter a number of ***Appraisers***, ***Parts***, and ***Replications*** in their respective fields. (3 appraisers, 50 parts with 3 replications are the suggested numbers.)
9. Use the optional ***Notes*** field to enter any notes about the study.

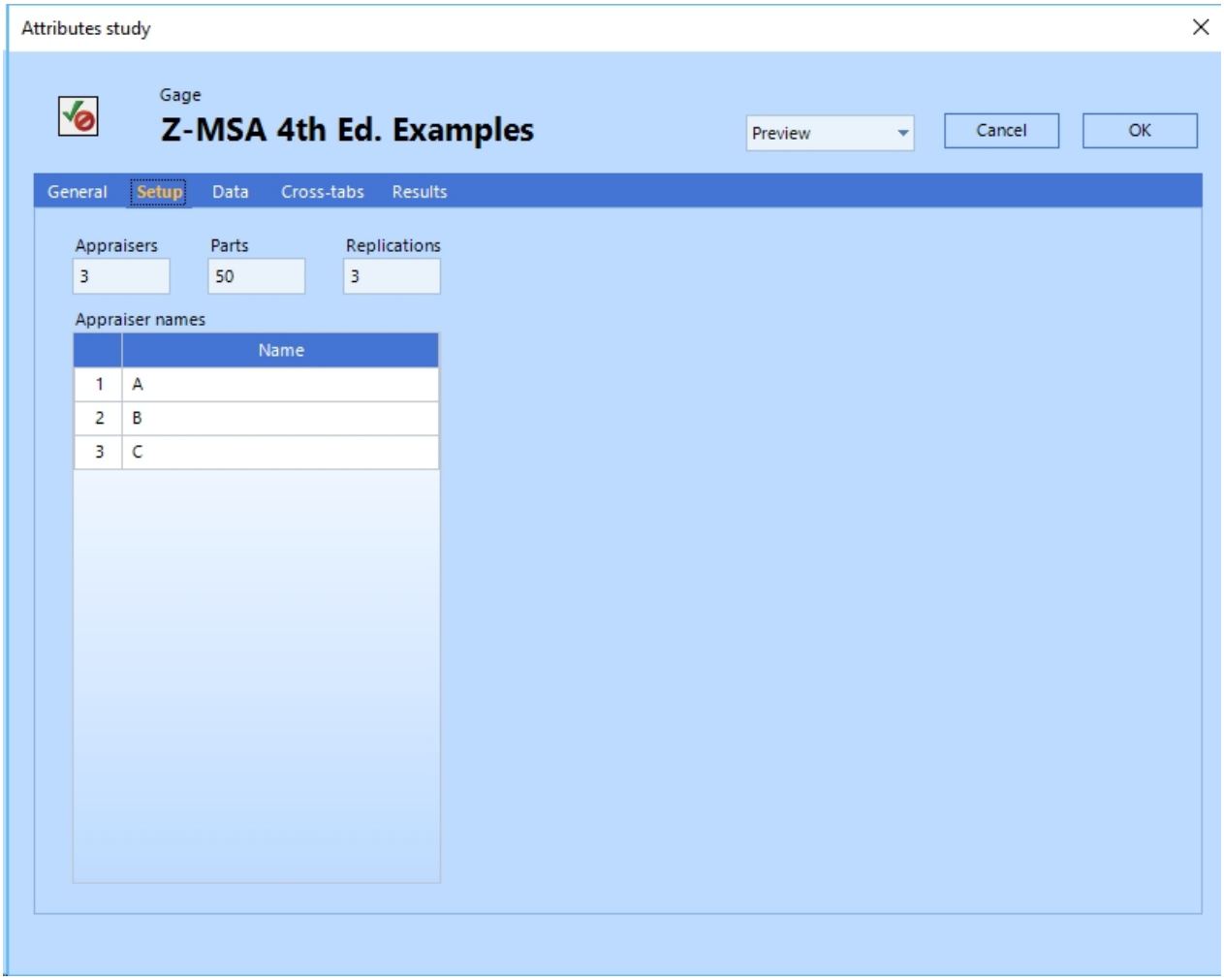
See Also

R&R attribute study
Study names tab
Study data tab
Cross tabs tab
Study results tab

Setup tab

Setup tab

1. To enter the names of the appraisers', click the ***Setup*** tab. Enter the appraisers' names.



See Also

[R&R attribute study]

[General study setup tab]

[Study data tab]

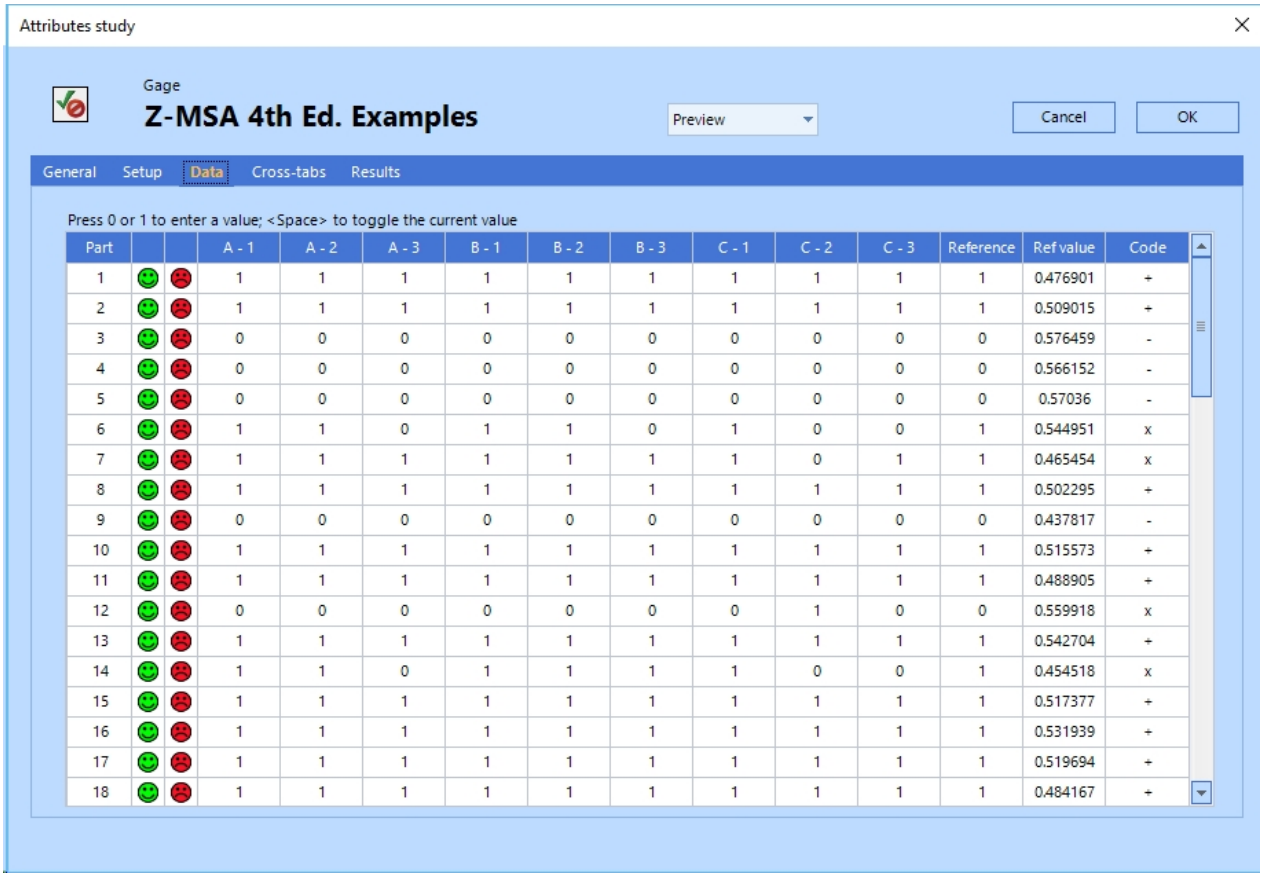
[Cross tabs tab]

[Study results tab]

Data tab

Data tab

1. To enter the test results, click the D***ata*** tab. When you first click on the tab, the form shows all ones. If a part is considered to be good (passes), enter a 1 in the field. If the part fails, leave a zero (0) in the field. If a part passes for all appraisers, click on the green smiley face to set that part to all ones. If a part fails for all appraisers, click on the Red face to set all zeros. The current default is to all passes.



Part			A - 1	A - 2	A - 3	B - 1	B - 2	B - 3	C - 1	C - 2	C - 3	Reference	Ref value	Code
1			1	1	1	1	1	1	1	1	1	1	0.476901	+
2			1	1	1	1	1	1	1	1	1	1	0.509015	+
3			0	0	0	0	0	0	0	0	0	0	0.576459	-
4			0	0	0	0	0	0	0	0	0	0	0.566152	-
5			0	0	0	0	0	0	0	0	0	0	0.57036	-
6			1	1	0	1	1	0	1	0	0	1	0.544951	x
7			1	1	1	1	1	1	1	0	1	1	0.465454	x
8			1	1	1	1	1	1	1	1	1	1	0.502295	+
9			0	0	0	0	0	0	0	0	0	0	0.437817	-
10			1	1	1	1	1	1	1	1	1	1	0.515573	+
11			1	1	1	1	1	1	1	1	1	1	0.488905	+
12			0	0	0	0	0	0	0	1	0	0	0.559918	x
13			1	1	1	1	1	1	1	1	1	1	0.542704	+
14			1	1	0	1	1	1	1	0	0	1	0.454518	x
15			1	1	1	1	1	1	1	1	1	1	0.517377	+
16			1	1	1	1	1	1	1	1	1	1	0.531939	+
17			1	1	1	1	1	1	1	1	1	1	0.519694	+
18			1	1	1	1	1	1	1	1	1	1	0.484167	+

2. Each of the test results has the default set to good (1). If there is a reference for each part (1 is good and 0 is bad), make sure it is entered correctly. Using the faces to change the new to all passes or all fails does the same to the reference. The references are used in the analysis, but their numerical equivalence recorded under Ref. value is not used in the analysis.
3. Enter the reference values if known for each part. These are numerical values and not pass/fail. These values do not enter directly into the analysis, but can be used to determine the reference (pass/fail) if specifications are known.

See Also

R&R attribute study

General study setup tab

Study names tab

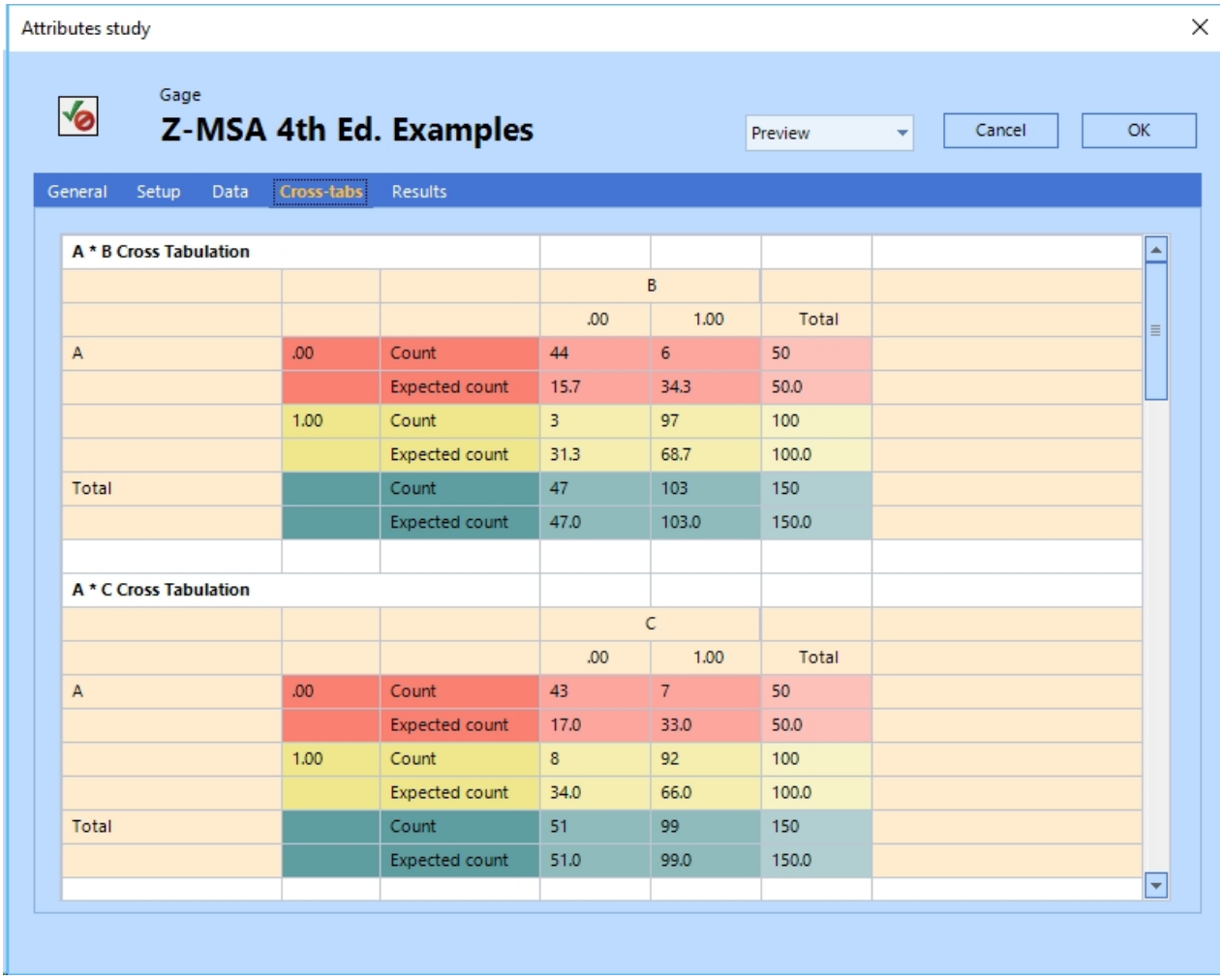
Cross tabs tab

Study results tab

Cross tabs tab

Cross tabs tab

1. If you are using AIAG's Cross Tab Method for Hypothesis Test Analysis, click the ***Cross tabs*** tab to view these results. The first set of cross tabs will be between appraisers and the second with each appraiser and the Reference. If the references are not known, the second set of cross tabs and resulting ***Kappa values*** are all irrelevant.



A * B Cross Tabulation

			B		
			.00	1.00	Total
A	.00	Count	44	6	50
		Expected count	15.7	34.3	50.0
	1.00	Count	3	97	100
		Expected count	31.3	68.7	100.0
Total		Count	47	103	150
		Expected count	47.0	103.0	150.0

A * C Cross Tabulation

			C		
			.00	1.00	Total
A	.00	Count	43	7	50
		Expected count	17.0	33.0	50.0
	1.00	Count	8	92	100
		Expected count	34.0	66.0	100.0
Total		Count	51	99	150
		Expected count	51.0	99.0	150.0

See Also

R&R attribute study

General study setup tab

Study names tab

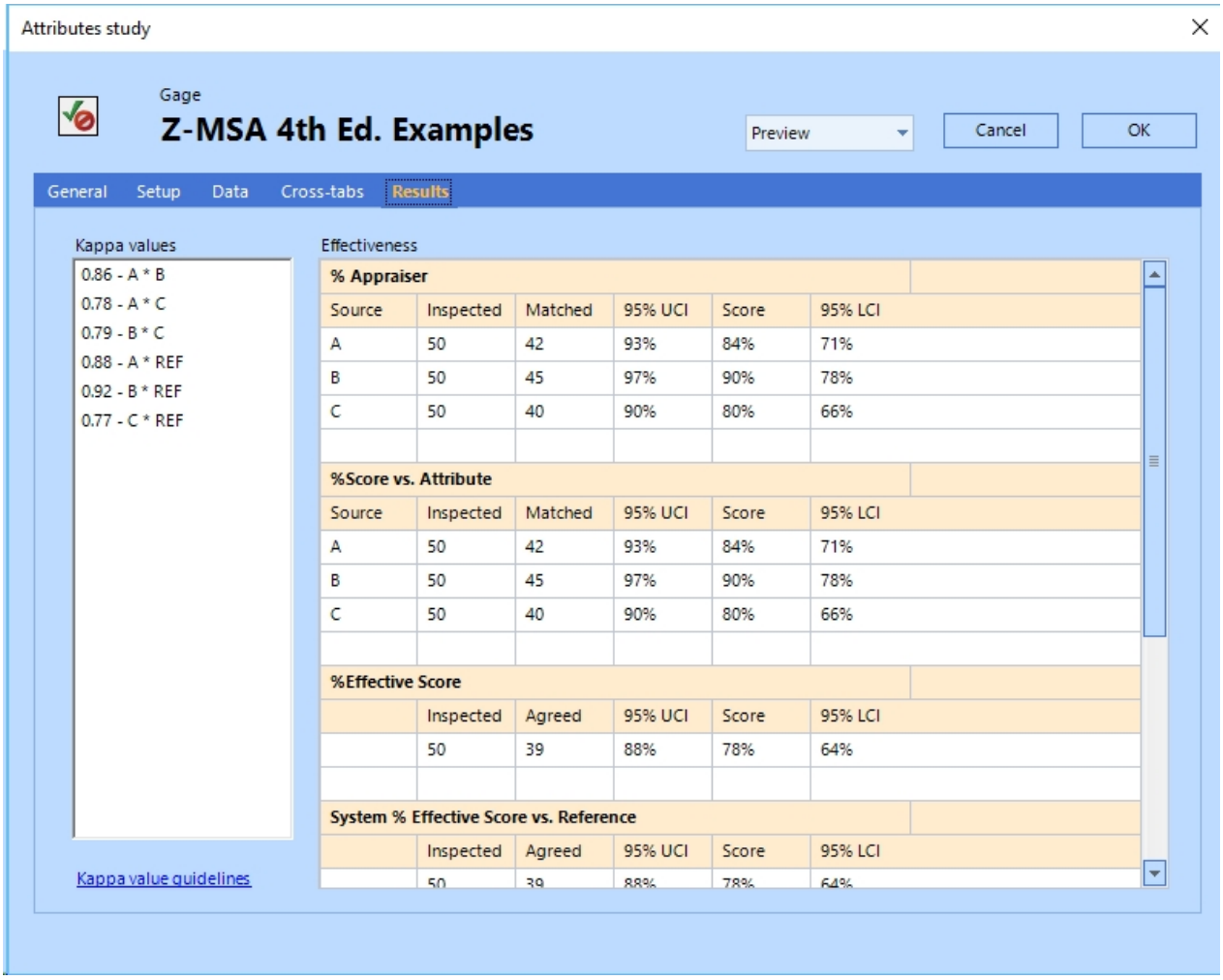
Study data tab

Study results tab

Results tab

Results tab

1. For the study results, click the R***esults*** tab. The ***Kappa values*** indicate the level of agreement between two appraisers or between one appraiser and the reference. Guidelines are:
   - K> 0.75 good to excellent agreement
   - 0.40 < K< 0.75 acceptable agreement
   - K< 0.40 unacceptable agreement
   - K=0 implies random agreement



2. Click the ***Report*** button to view or print a report of the Attributes study.

To better understand the results, consult a measurement systems analysis reference such as that published by the Automotive Industry Action Group, Measurement Systems Analysis Fourth Edition.

See Also
R&R attribute study
General study setup tab
Study names tab
Study data tab
Cross tabs tab

R&R stability study

R&R stability study

Process stability refers to the ability to predict what is to come. When a process is stable, it is subject only to common cause variation. Without process stability, the statistics for repeatability and reproducibility, cannot help you predict future outcomes.

In terms of measuring equipment, stability is the total variation in the measurements obtained with a

measurement device on the same unit (frequently called a master) when measuring a single characteristic over an extended period of time. In this instance, stability refers to the predictability of the equipment over time.

The appropriate time interval is often a major consideration when analyzing the measurement system. Knowledge of the circumstances and conditions in which the equipment is used will help identify special causes when the system is unstable. Action should be taken to make the measurement system robust to the conditions that cause instability.

The more likely it is that the system will change, the shorter the time interval should be between samples.

In This Section	See Also
Entering an R&R stability study	Recording gage events
Editing a continuing R&R stability study	Launching gage events
Deleting an R&R stability study	Calibration
	External Calibration
	Check-out
	Check-in
	Maintenance
	Verification
	Repair
	Other
	Multi-gage events
	Group events
	R&R variables study
	R&R attribute study
	R&R linearity study
	R&R uncertainty study/bias

Entering an R&R stability study

Entering an R&R stability study

In This Section	See Also
To setup a stability study for a gage	R&R stability study
	Editing a continuing R&R stability study
	Deleting an R&R stability study

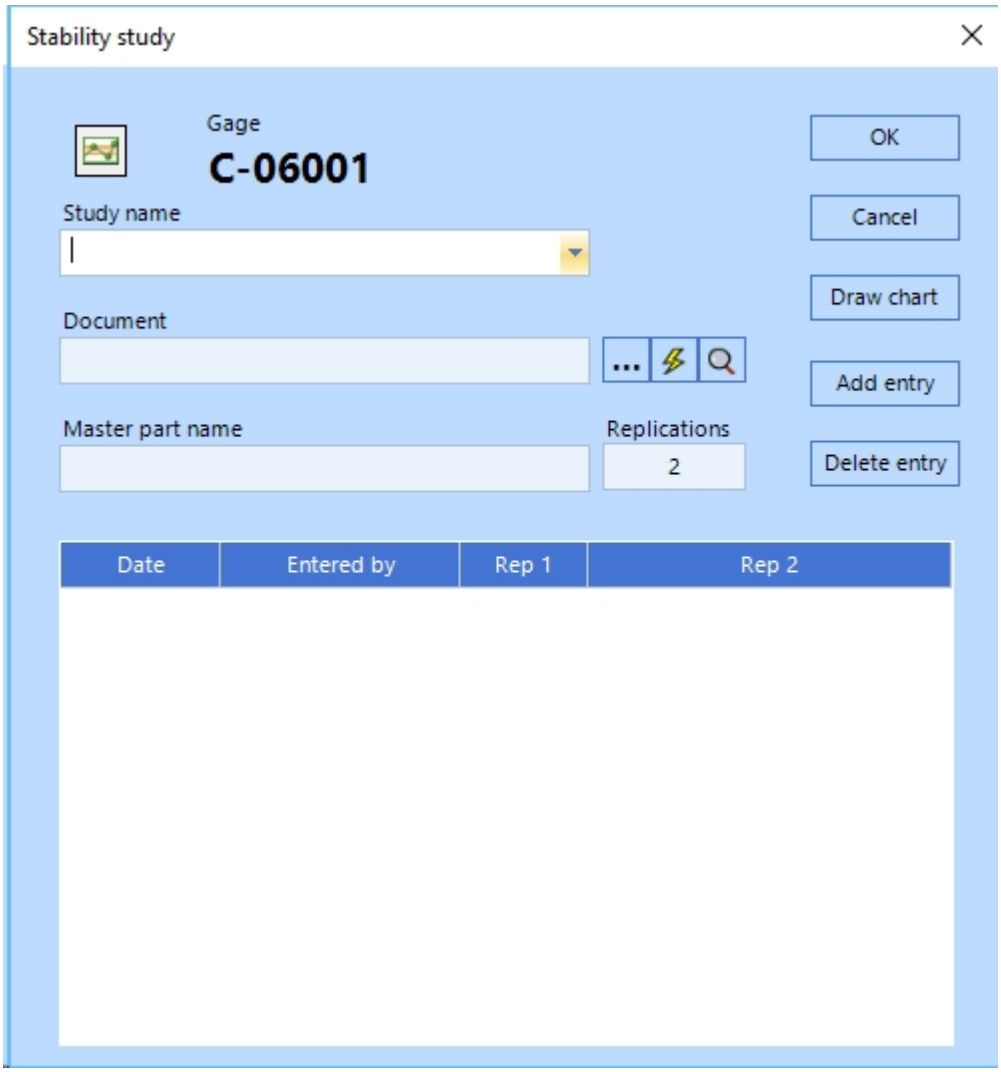
To setup a stability study for a gage

To setup a stability study for a gage

1. Open the ***Stability study*** form. To do this:
    - On the ***Inventory*** tab, highlight the gage that you want to add to the stability study. Click on

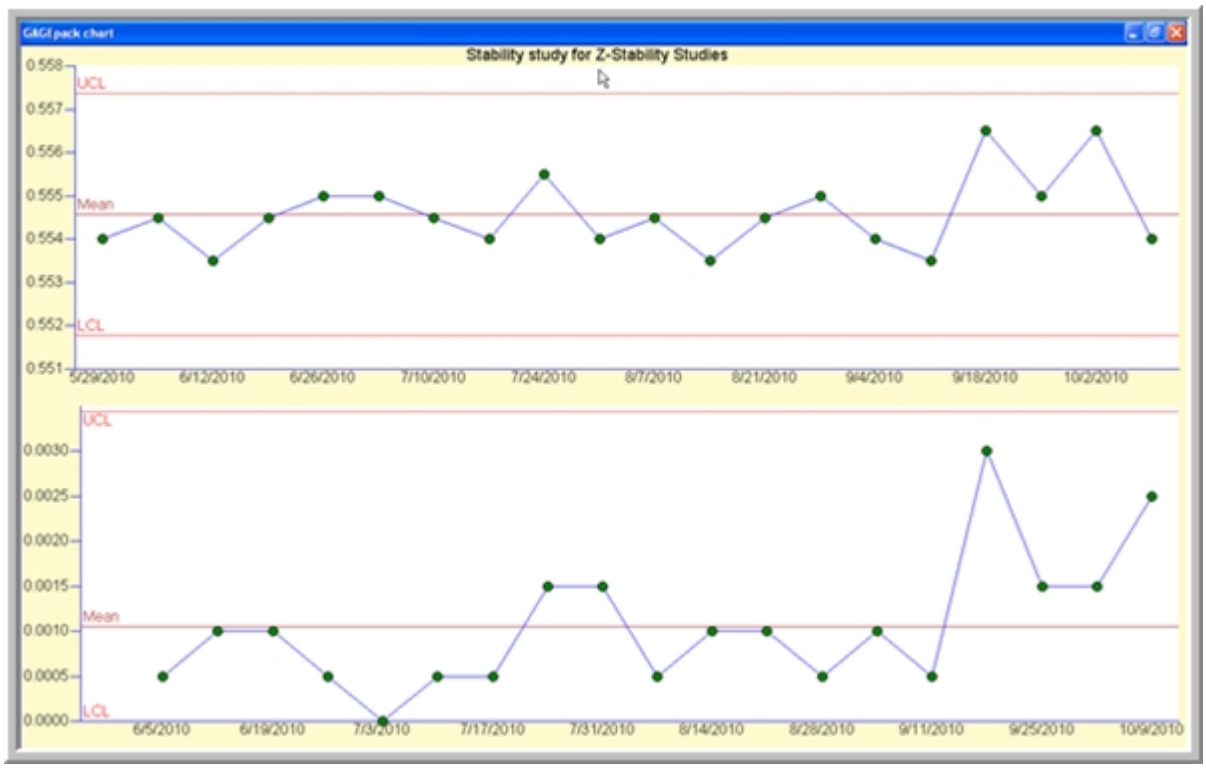
the ***Stability study*** icon.

- On the ***Inventory*** tab double-click on the record to open the ***Gage viewing*** form. Click on the ***History*** tab. Select ***Stability Study*** from the ***Add new event*** drop-down menu.



2. Enter a ***Study name*** and ***Master part name*** in the respective fields.
3. Enter the number of ***Replications*** for this study.
   - Once you click on the ***Add entry*** button, you cannot change the number of replications. The information entered in the ***Study name*** field will be displayed in the gage history list.
4. Click on the ***Add entry*** button to enter data.
   - The current date will be added automatically, but can be edited.
5. If user login is not activated, the default entry for ***Entered by*** is Supervisor. Different information can be entered in place of supervisor or selected from the pull-down menu if desired. If user login is activated, the current user name will be listed in the ***Entered by*** field.
6. Enter the data collected into the sample.
   - You might consider taking 5 to 10 samples initially to establish some preliminary limits for the control chart.
7. Once sufficient data has been collected, click the ***Draw chart*** button to see the control chart and to check for out-of-control conditions.
8. Click the ***OK*** button.
   - Since data is entered into a stability study periodically (once each hour, once per day, etc.), the study must be edited to enter new data as it is collected. When entering the ***History*** tab,

click on the study and edit it, or if the ***Stability study*** icon is clicked on, a pop up window will ask whether you want to continue with the most recent stability study (if one exists) or create a new one. In addition, the data for the stability event advances to the date of the most recently entered data keeping it more current on the ***History*** tab.



See Also
Entering an R&R stability study

Editing a continuing R&R stability study

Editing a continuing R&R stability study

On some periodic basis, additional samples are to be entered using the same part, gage, appraiser, method, etc. After the sample has been entered, the chart can be drawn and checked for out-of-control conditions.

In This Section	See Also
To edit an R&R study	R&R stability study
	Entering an R&R stability study
	Deleting an R&R stability study

To edit an R&R study

To edit an R&R study

1. Gather the data as outlined above.
2. Select the gage on the gage list.

NOTE: An option here is to select the ***Stability study*** icon which asks if you want to open the most current

stability study found. If you want any other study opened, you will need to follow the steps below.

3. Open the gage for editing on the ***History*** tab.
4. Find the Stability study on the history list and open it for editing.
5. Enter the sample data.
6. Select ***Draw chart*** and check for out-of-control conditions. One point out will be denoted as a red box. A run of seven points above or below the mean will be indicated by six consecutive points with unfilled red boxes, with the seventh and any continuing points designated by filled red boxes.
7. Take appropriate action:
    a. If the process is in control, close the chart, click ***OK***, and schedule the next sample to be taken.
    b. If the process is out of control, look for assignable causes and take appropriate action. If appropriate after the action has been taken, schedule the next sample.
8. Repeat steps 1 to 7.

NOTE: As a sample is entered, the date for the stability study will become current, placing it based on the date of the most recent data. Data should be entered into a Stability Study periodically—for example, once each day, once per hour, etc. If the process remains stable for long periods of time, consider lengthening the calibration period. The process is stable if all the points lie within the control limits. An out-of-control point on the range chart indicates excessive variation within a sample larger than one or between samples of size one. An out-of-control point on the X-bar chart or X chart indicates a change in the measurement center. If a point falls outside the control limits or if there is a run of 7 points above or below the mean, look for assignable causes and take corrective action (such as calibration, appraiser training).

See Also
Editing a continuing R&R stability study

Deleting an R&R stability study

Deleting an R&R stability study

To delete an R&R stability study:

1. Click on the ***History*** tab and move the highlight to the Stability study that you want to delete.
2. Right-click on the history and select ***Delete event*** from the pop-up menu.
    - You will be prompted to confirm the deletion.
3. Click the ***Yes*** button.
4. Click the ***OK*** button.

See Also
R&R stability study
Entering an R&R stability study
Editing a continuing R&R stability study

R&R linearity study

R&R linearity study

This option allows you to define a linearity study for a gage. Linearity describes how bias varies over the operating range of the gage. For a 6" micrometer, you might analyze readings at 0.5", 1", 3", 4", and 5.5". You can use parts or standards, such as gage blocks, but you must have an acceptable reference value for each item measured. To estimate the bias for a specific reference, take the average of all measurements for that specific part and subtract the reference value. For that reference part, no bias would mean a zero value. Repeat this for all the parts used in the study. A straight line is fit to the bias values for each of the reference parts using least squares regression. The coefficient of determination (r2) indicates how much of the variation of the points around a horizontal line is explained (by size of the part) by the regression equation. Ninety-five percent confidence limits are developed around the regression line. If a horizontal line drawn at 0.0 on the vertical axis is contained completely with the confidence limits over the operating range of the gage, then the gage can be said to have a zero bias over its operating range. A second test checks the average bias at each of the selected values to see if these values also fall within the confidence limits. If so, the gage can be said to have a zero bias throughout its operating range. If a gage fails the test, corrective action (such as calibration, repair, or replacement) should be taken.

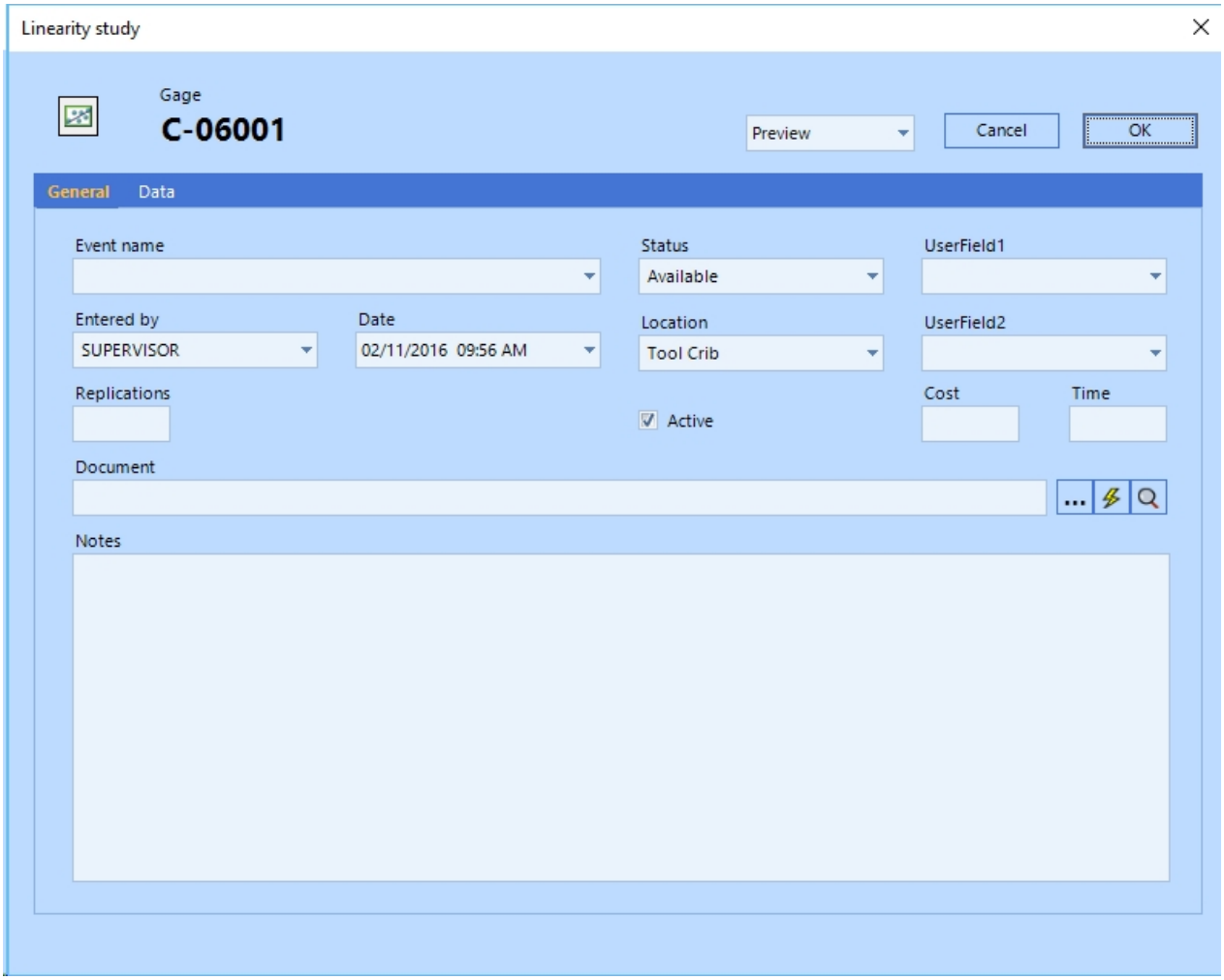
In This Section	See Also
Entering a linearity study data for a gage	Recording gage events
Editing an R&R linearity study	Launching gage events
Deleting an R&R linearity study	Calibration
	External Calibration
	Check-out
	Check-in
	Maintenance
	Verification
	Repair
	Other
	Multi-gage events
	Group events
	R&R variables study
	R&R attribute study
	R&R stability study
	R&R uncertainty study/bias

Entering a linearity study data for a gage

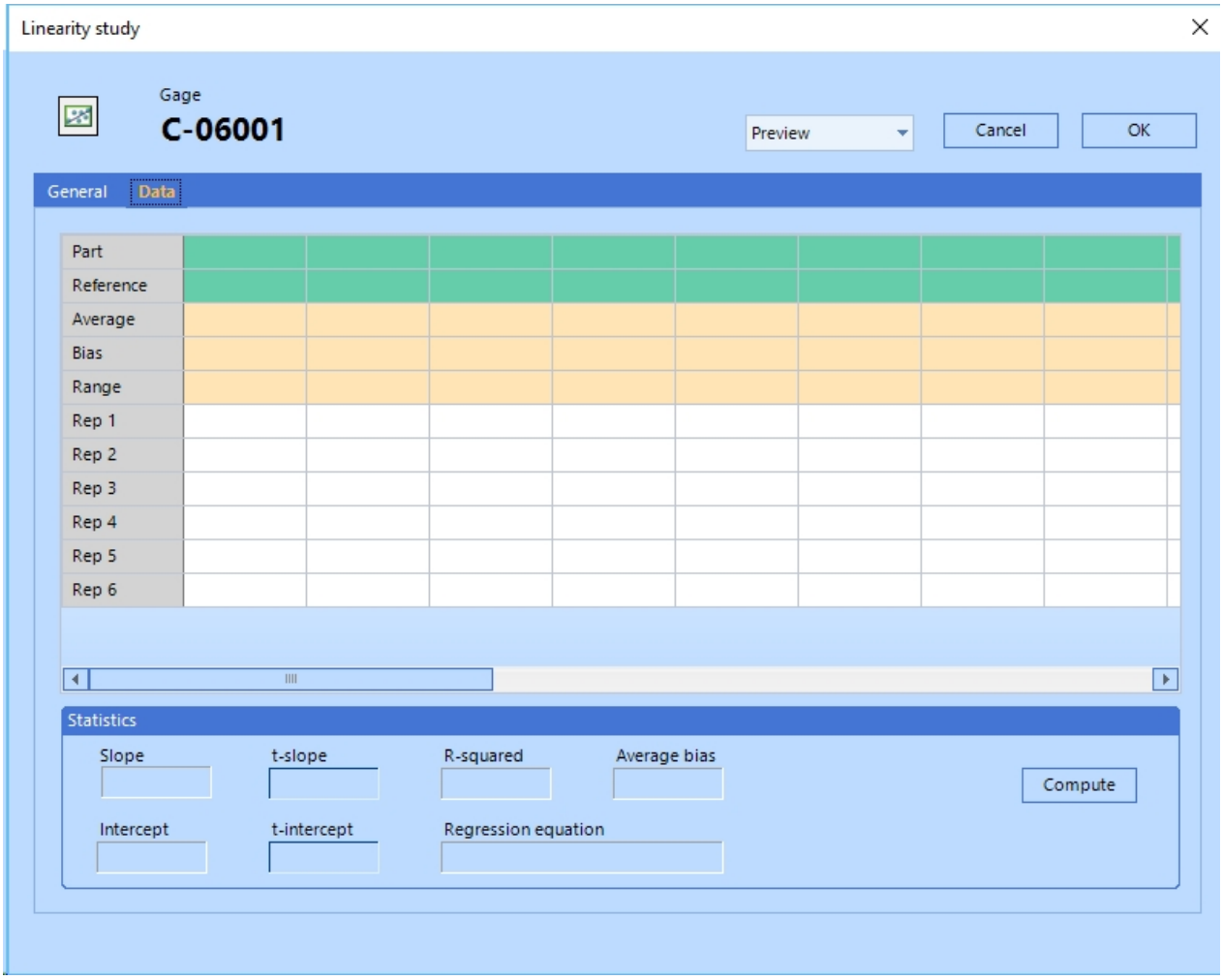
Entering a linearity study data for a gage

To enter linearity study data for a gage:

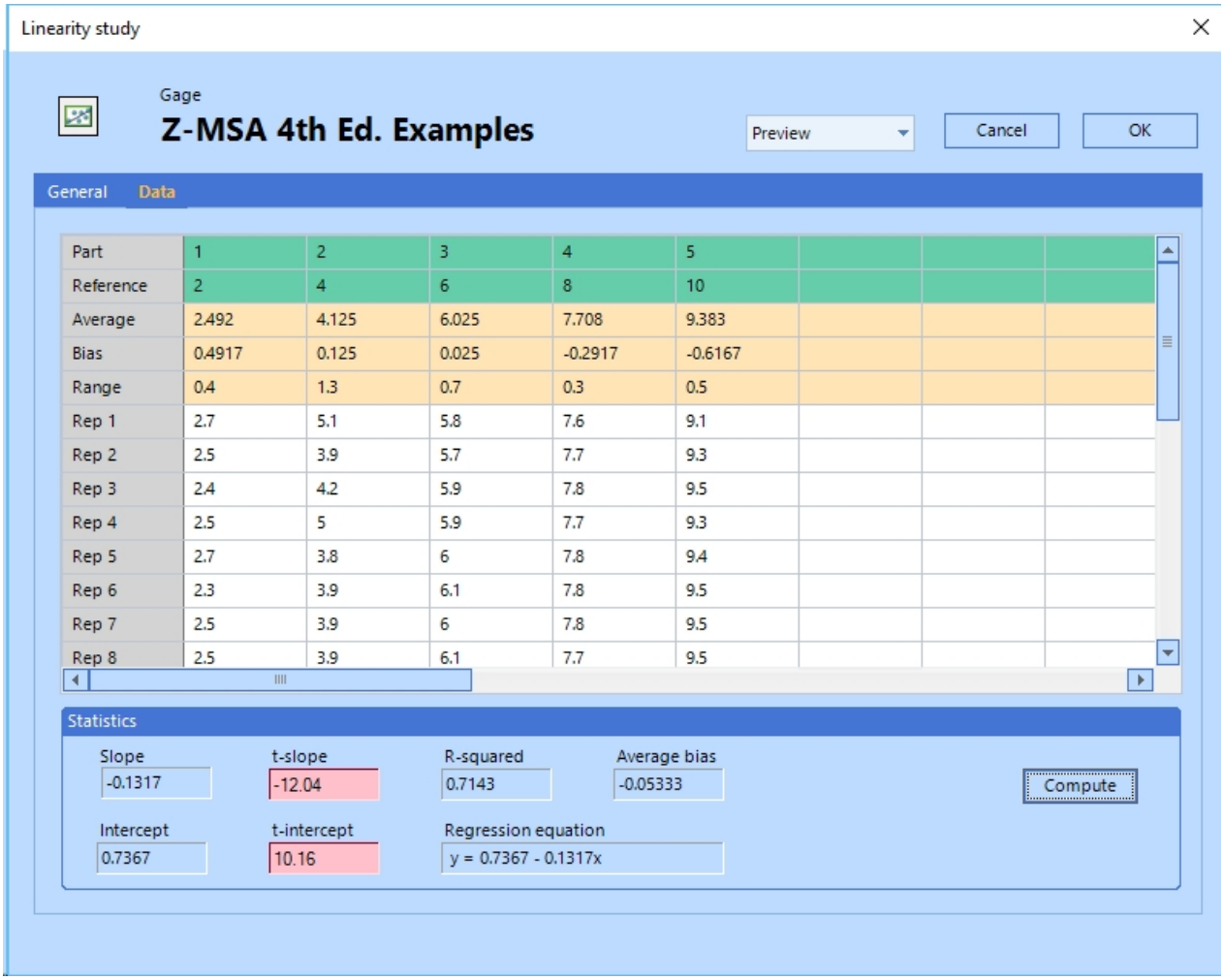
1. Open the ***Linearity study*** form. To do this:
   - On the ***Inventory*** tab, highlight the gage to which you want to add the Linearity study. Click on the ***Linearity study*** icon.
   - On the ***Inventory*** tab, double-click on the ***Gage*** form. Click on the ***History*** tab. Select ***Linearity Study*** from the ***Add new event*** drop-down menu and the ***Linearity study*** form will open.



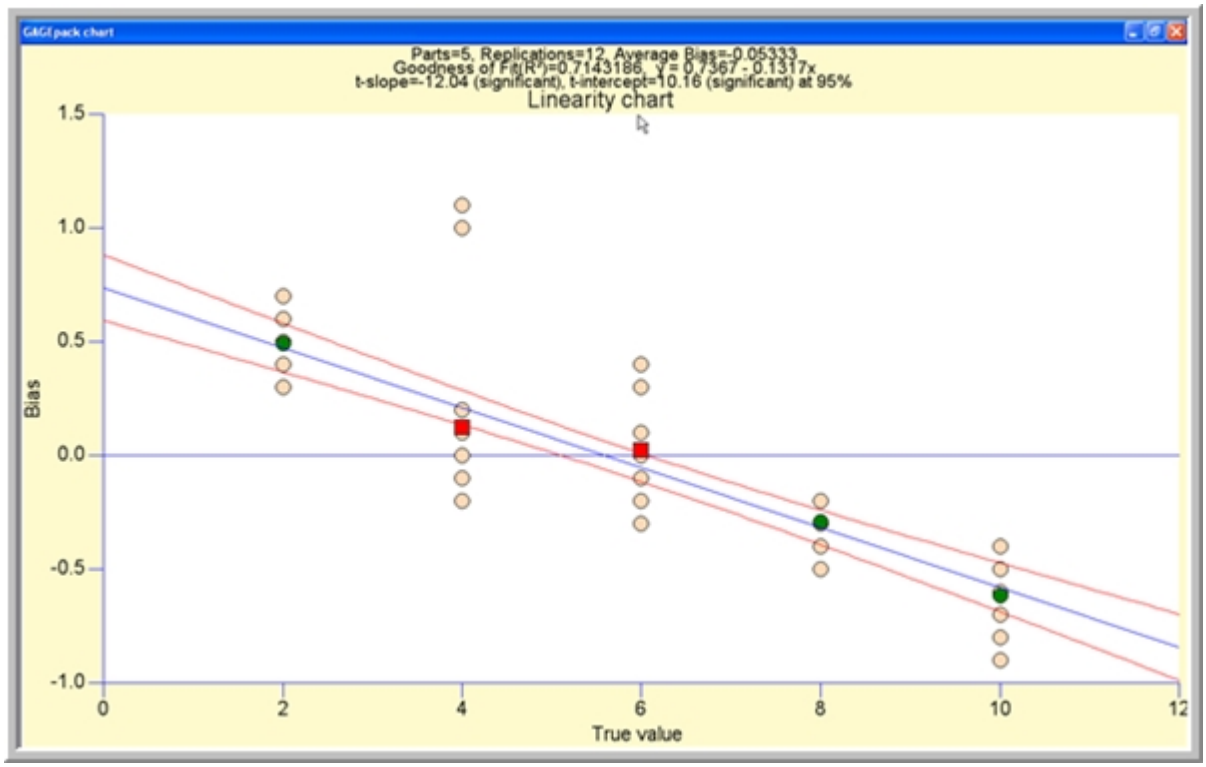
2. Enter a name for the study in the ***Event name*** field. Information entered in this field will appear in the gage history display.
3. Enter the name of the person who conducted the Linearity study in the ***Entered by*** field. This can be typed in or selected from the user choice list. If user login is activated, the current user will be entered in the ***Entered by*** field. If user logins are not activated, the default entry is Supervisor.
4. The current date is added automatically by GAGEpack. To edit the date, click on the down arrow on the right side of the field. A calendar form will open. Click on the right or left arrows to change the month. Click on a date to select it.
5. Enter the number of replications for the study in the ***Replications*** field. GAGEpack will create a table with a column for parts with this many replications in it. Once this value has been filled in, the ***Study data*** tab will become available.
6. The ***Status*** field shows the current status of the gage. Likewise, ***Location*** shows the current location. Edit these by typing over the data or selecting a new location or status through choice lists. Record this data for traceability.
7. Optional fields for recording ***Cost*** and ***Time (hours)*** are available, as well as two event user fields that may be named and data entered.
8. Enter the part name, reference value, and replication data in the fields provided.
9. Once the desired information has been entered on the ***General*** tab, click on the ***Study data*** tab and the data entry screen will open.



10. Enter the part names and reference values in the top two rows of the data grid. These may be some type of gage block or different parts with known measurement values throughout the range of the gage (similar to the steps in a calibration).
11. Enter the data into the grid. Data may be entered individually or copied from the clipboard by right-clicking on the grid and selecting ***Paste from clipboard***.
12. To calculate statistics for ***Slope***, ***t-slope***, ***R-squared***, ***Intercept***, and ***t-intercept***, click on the ***Compute*** button.



13. To view a report, click on the ***Report*** button.
14. To view a linearity plot, click on the ***Draw chart*** button. If the ***Draw chart*** button is grayed out, click on the ***OK*** button to save the report and then re-open the chart and click on the ***Draw chart*** button.



See Also
R&R linearity study
Editing an R&R linearity study
Deleting an R&R linearity study

Editing an R&R linearity study

Editing an R&R linearity study

From the Gage list, double-click on the gage for which you want to edit the Linearity study. You can also use the ***Find*** function to locate the gage and the ***Edit gage*** icon to open the ***Gage viewing*** form.

To edit an R&R linearity study:

1. Click the ***History*** tab and select the Linearity study that you want to edit.
2. Click the ***Edit event*** button or double-click the event that you want to edit.
    - The study will be displayed.
3. Make any desired changes or add additional entries.
4. Click the ***OK*** button to close the study.

See Also
R&R linearity study
Entering a linearity study data for a gage
Deleting an R&R linearity study

Deleting an R&R linearity study

Deleting an R&R linearity study

From the Gage list, double-click on the gage for which you want to delete the linearity study. You can also use the ***Find*** function to locate the gage and the ***Edit gage*** icon to open the ***Gage viewing*** form.

To delete an R&R linearity study:

1. Click the ***History*** tab and select the Linearity study that you want to delete.
2. Click the ***Delete event*** button.
   - You will be prompted to confirm the deletion.
3. Click the ***Yes*** button.
4. Click the ***OK*** button.

See Also

R&R linearity study

Entering a linearity study data for a gage

Editing an R&R linearity study

R&R uncertainty study/bias

R&R uncertainty study/bias

The objective of an uncertainty study is to put bounds on a measurement (plus/minus some interval). Uncertainty normally gives a 95 percent confidence interval for containing the true value of the measurement. Generally a 95 percent confidence interval and the t-distribution are used, since there few observations have been taken. A study normally consists of repeated measurements (GAGEpack allows sample sizes as large as 100) using one gage, one part, one part characteristic, and one appraiser. The standard deviation is calculated using the data and the range method for sample sizes up to and including 20 if the ***Range*** button has been selected. For sample sizes larger than 20 and up to 100, standard deviation is based on the squared deviations formula. This method is available for sample sizes less than 20 and can be selected by checking the ***Individuals*** button. Both of the estimates will be shown for samples up to 20. The uncertainty estimate is obtained by using the selected estimate for the standard deviation and multiplying it times the appropriate t value. It is displayed as ***Uncertainty +***.

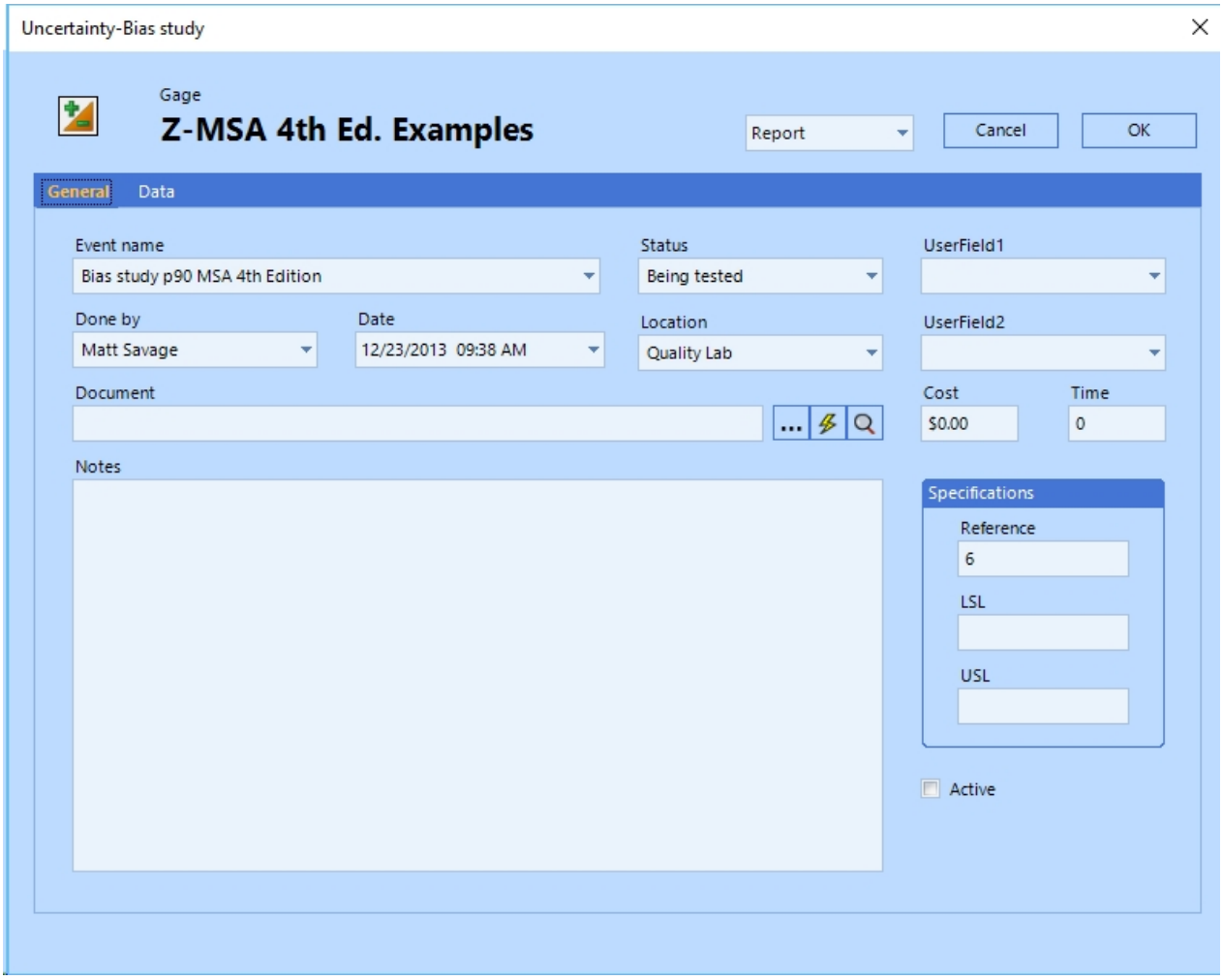
Bias indicates a measurement consistently over or under the true (reference) value for the part. If you want a bias estimate using the uncertainty data, and you have reference value for the part characteristic used, enter the reference value in the ***Reference*** field on the ***General*** tab. GAGEpack will determine the mean of the measurements and subtract the reference value to calculate an average bias value. GAGEpack also calculates a t-statistic to determine if the bias is significantly different from zero. If the bias is significant, it would indicate that some response is required.

There is an option in GAGEpack to calculate bias as a percent of the specification range. If the user enters the upper specification in the ***USL*** field and the lower specification in the ***LSL*** field on the ***General*** tab, the Bias (% of specs) will be calculated. If the specs were entered after the data was entered and the ***Compute*** button on the ***Data*** tab selected, it will be necessary to select ***Compute*** a second time.

In some cases, there may be a significant bias (significantly different from zero), but a relatively insignificant amount compared to the overall specification range. Once the reference value and the specification limits have been entered, GAGEpack will calculate the bias as a percentage of the specification range. If one selects Bias as a % of specs, enters a Max Bias % on the study ***Data*** tab and clicks on the ***Compute*** button, GAGEpack will do the rest. For example, if the bias is 3.5 percent and the Max bias is 5 percent, one could

conclude that no further action is needed. To enter an uncertainty or bias study:

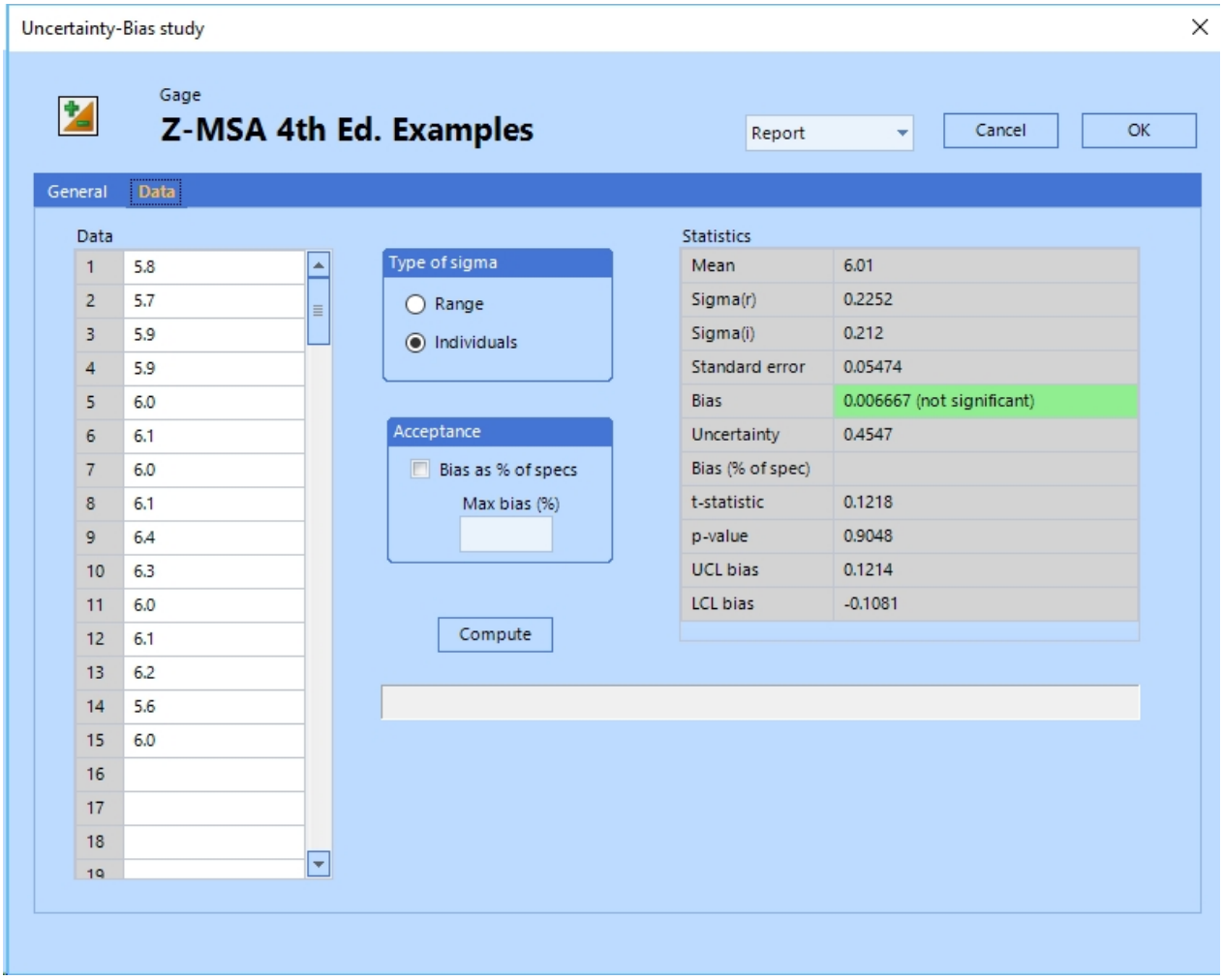
1. Open the ***Uncertainty-Bias study*** form. To do this:
   - On the ***Inventory*** tab, highlight the gage desired to add an Uncertainty/Bias study to. Click on the ***Uncertainty-Bias study*** icon.
   - On the ***Inventory*** tab, double-click on the Gage desired to add an Uncertainty/Bias study to. Click on the ***History*** tab. Select ***Uncertainty Study*** from the ***Add new event*** drop-down menu.



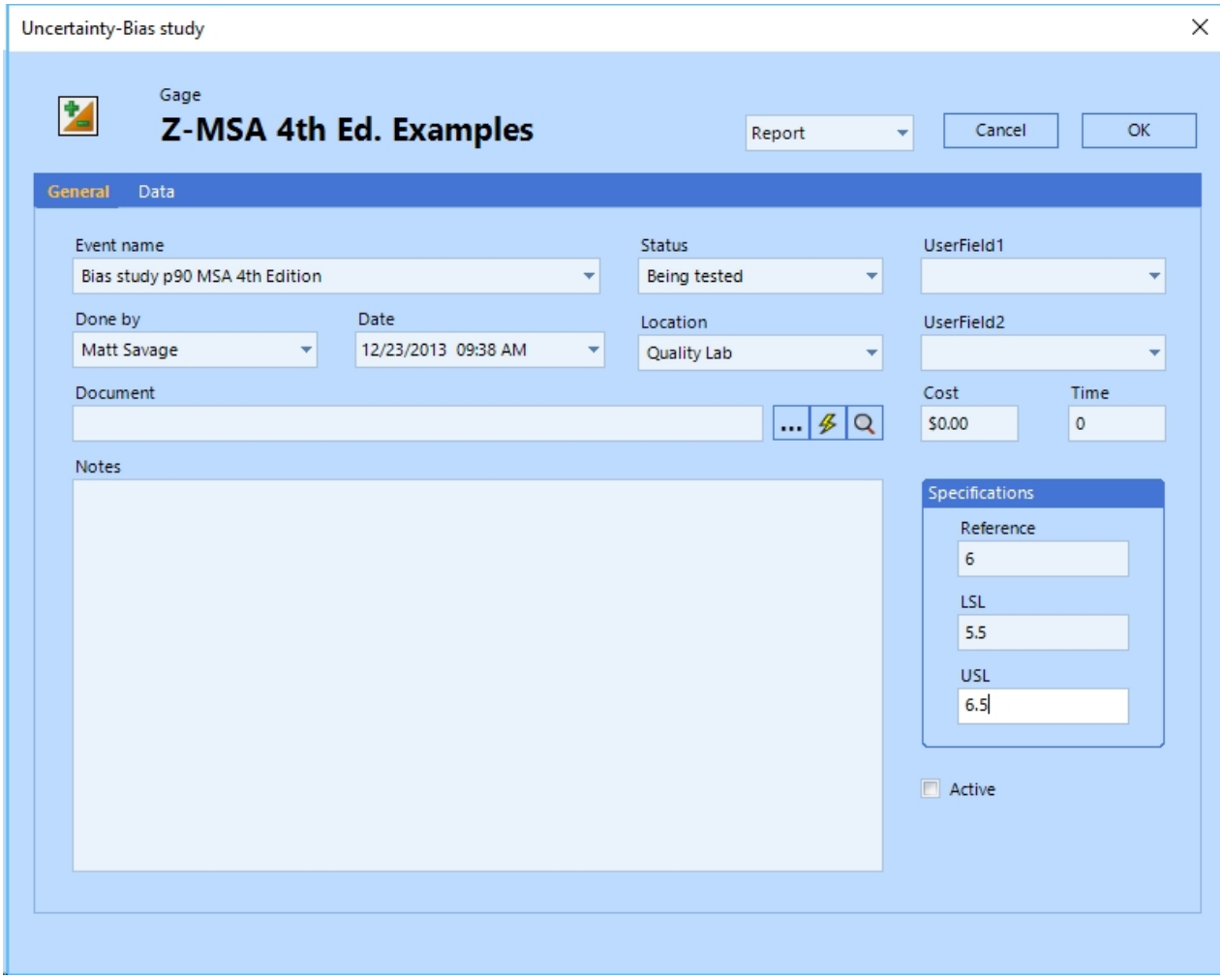
2. The Gage number will be displayed automatically in the Gage field and cannot be changed. If your organization uses a different term for an uncertainty study, enter it in the optional ***Event name*** field. Data entered in this field will appear in the gage history display.
3. From the drop-down menu in the ***Done by*** field, select the name of the person who conducted the study or type it in. If user login has been activated, the user name will appear in the ***Done by*** field. If user login is not activated, the default entry is Supervisor.
4. GAGEpack automatically adds the current date. To edit the date, click on the down arrow on the right side of the field. A ***Calendar*** form will open. Click the right or left arrows to change the month. Click on a date to select it.
5. The ***Status*** field shows the current status of the gage. ***Location*** shows the current location. Edit these by typing over the data or selecting a new location or status through choice lists. Record this data for traceability.

Optional fields for recording ***Cost*** and ***Time (hours)*** are available. Type data into these fields. In addition, two user-defined event fields are available for use.

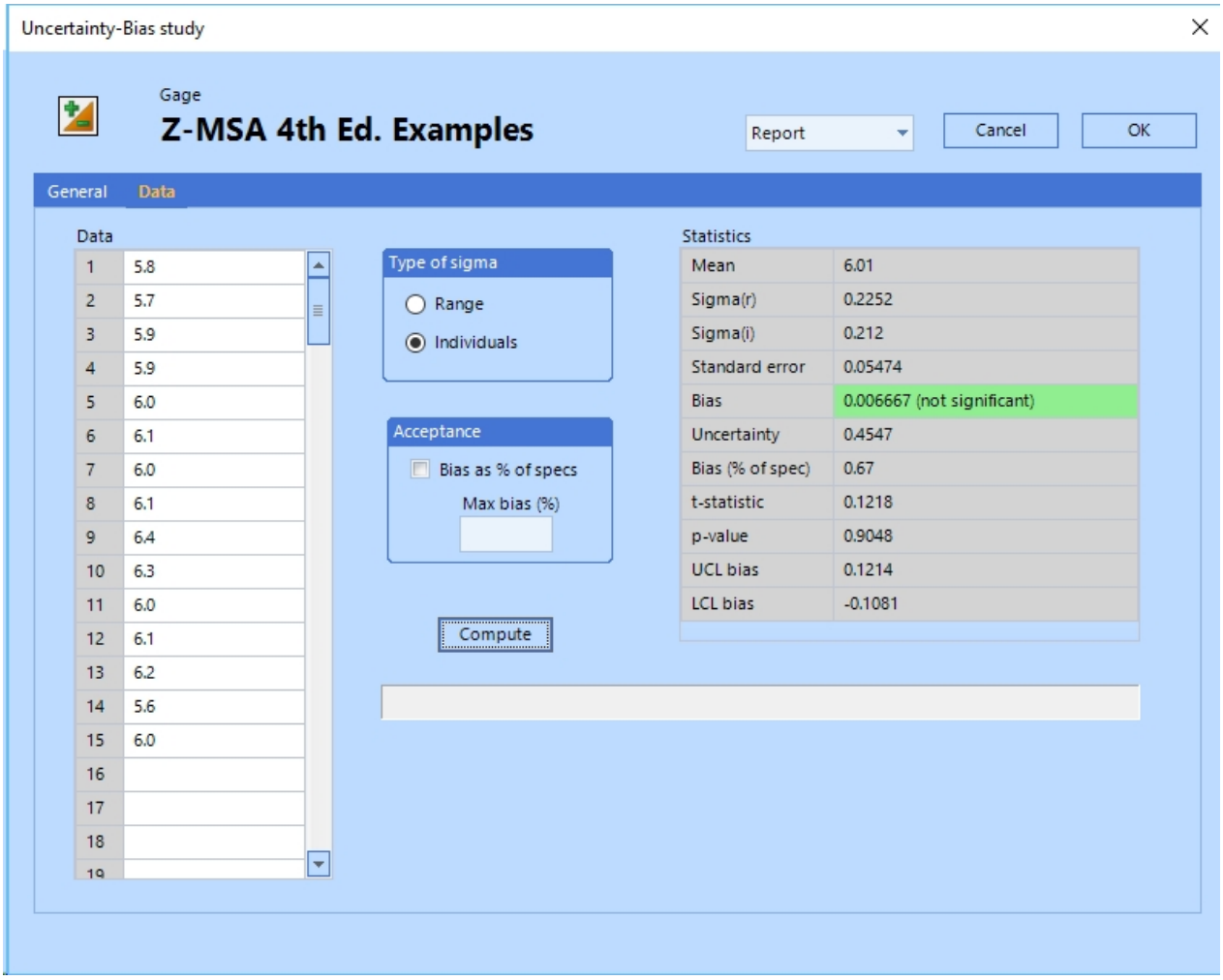
6. Select the ***Data*** tab.



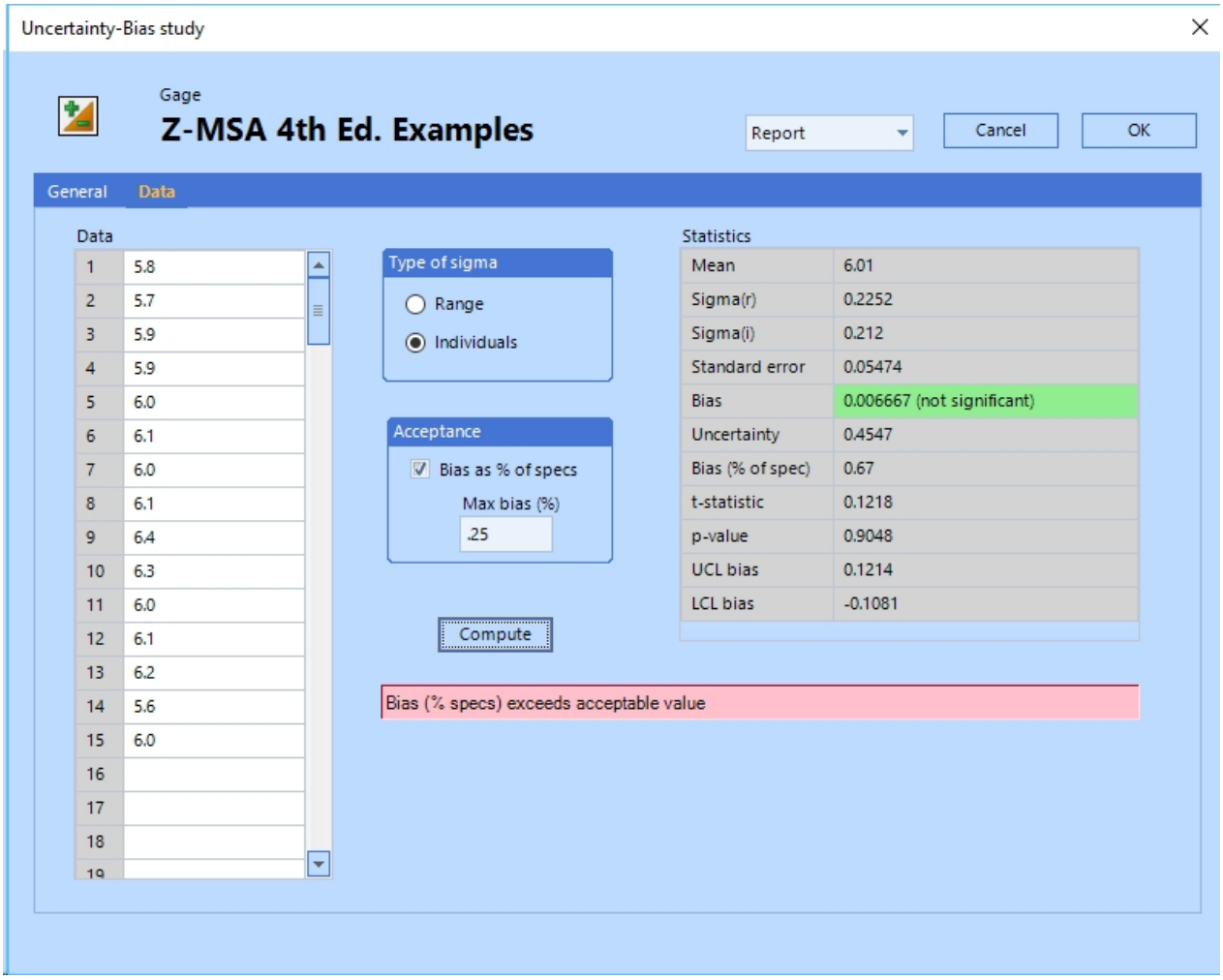
7. Enter the gage readings (repetitions) into the ***Data*** column and click the ***Compute*** button.
8. You have done all the steps required to complete an uncertainty study. If you desire a report, click on the ***Report*** down arrow.
9. Select ***Uncertainty*** and the report will be created.
10. Print or save the Report if desired, by clicking on the appropriate icon.
11. Including Bias on an uncertainty study requires only the addition of a reference value for the measurement being taken. We will add specifications as well.



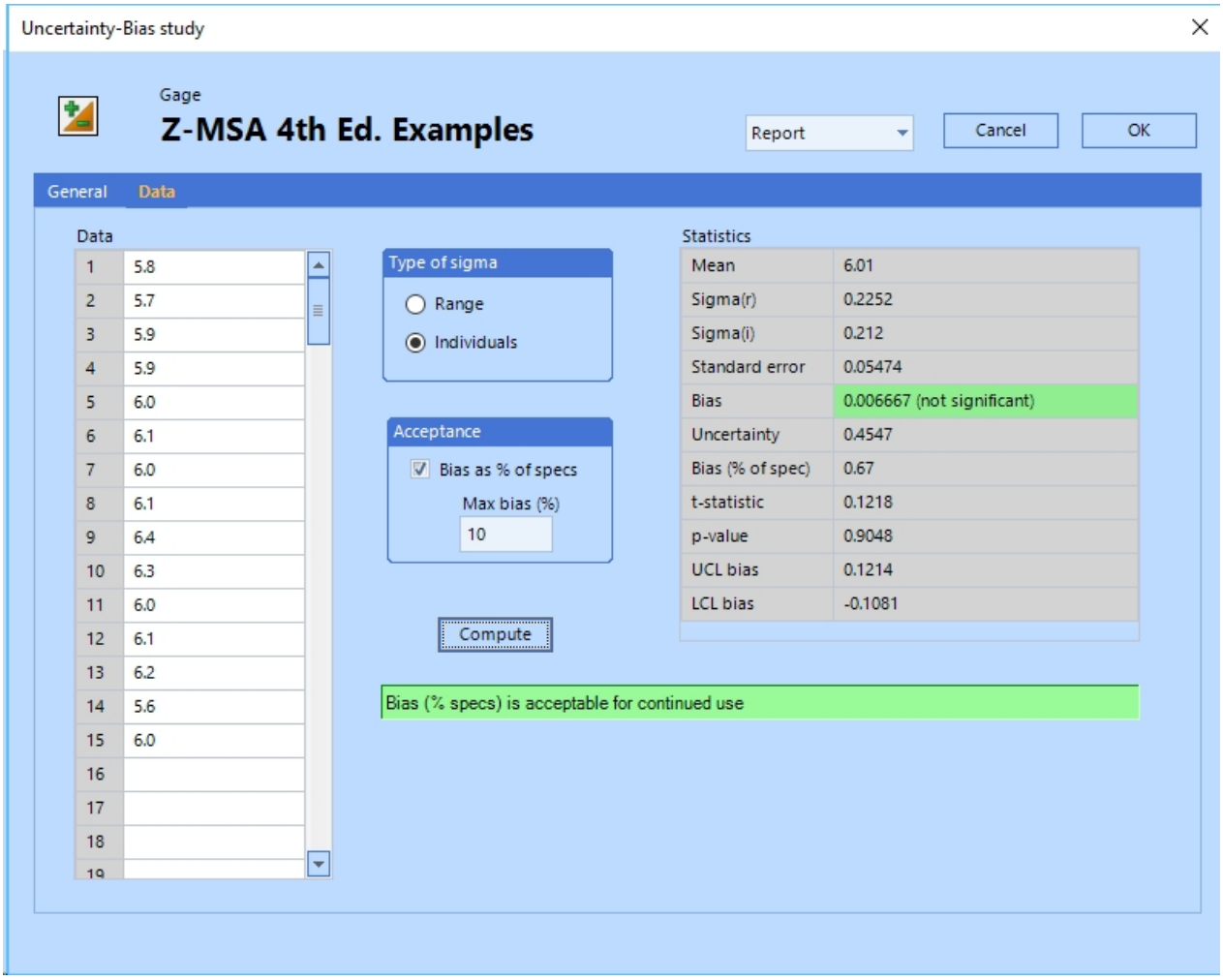
12. Select the ***Data*** tab and click on the ***Compute*** button.



13. A bias can be significant (not zero) and still not be large enough to change the outcome. If the bias is small compared to the range of the specifications, it can still can declared relatively insignificant.
14. Return to the ***Data*** tab, check the ***Bias as % of specs*** box under ***Acceptance***, enter the ***Max bias (%)*** and click on the ***Compute*** button. This will result in one of two outcomes: Bias exceeds acceptable value or Bias is acceptable for continued use.



15. After clicking on the ***Compute*** button, it is obvious that the bias is large enough to make the gage unacceptable for use in measuring this dimension with this specification.
16. Let's see what happens if we change the ***Max bias %*** to 10% and click on the ***Compute*** button again.



17. Now even though the bias is significant, since it is less than 5 percent, the gage can be used to make this measurement. Since we have added bias to our study, we can look at either a Bias report or a Both (uncertainty and bias) report. Click on the pull-down menu for ***Report*** and select ***Both***.
18. Print or save the report if desired, by clicking on the appropriate icon.
19. Save the study with any changes you have made by clicking on ***OK***.

In This Section	See Also
Editing an R&R uncertainty study	Recording gage events
Deleting an R&R uncertainty study	Launching gage events
	Calibration
	External Calibration
	Check-out
	Check-in
	Maintenance
	Verification
	Repair
	Other
	Multi-gage events
	Group events

R&R variables study
R&R attribute study
R&R stability study
R&R linearity study

Editing an R&R uncertainty study

Editing an R&R uncertainty study

From the Gage list, double-click on the gage for which you want to edit the uncertainty study. You can also use the ***Find*** function to locate the gage and the ***Edit gage*** icon to open the ***Gage viewing*** form.

To edit an R&R uncertainty study:

1. Click the ***History*** tab. Select the Uncertainty study that you want to edit.
2. Click the ***Edit event*** button or double-click the event that you want to edit.
   - The study will be displayed.
3. Make any desired changes or add additional entries.
4. Click the ***OK*** button to close the study.

See Also

R&R uncertainty study/bias

Deleting an R&R uncertainty study

Deleting an R&R uncertainty study

Deleting an R&R uncertainty study

From the Gage list, double-click on the gage for which you want to edit the uncertainty study. You can also use the ***Find*** function to locate the gage and the ***Edit gage*** icon to open the ***Gage viewing*** form.

To delete an R&R uncertainty study:

1. Click on the ***History*** tab and select the uncertainty study that you want to delete.
2. Click on the ***Delete event*** button.
   - You will be prompted to confirm the deletion.
3. Click the ***Yes*** button.
4. Click the ***OK*** button.

See Also

R&R uncertainty study/bias

Editing an R&R uncertainty study

Utilities

Utilities

This chapter will examine the collection of miscellaneous utilities that can be accessed from various places within the software.

In this chapter

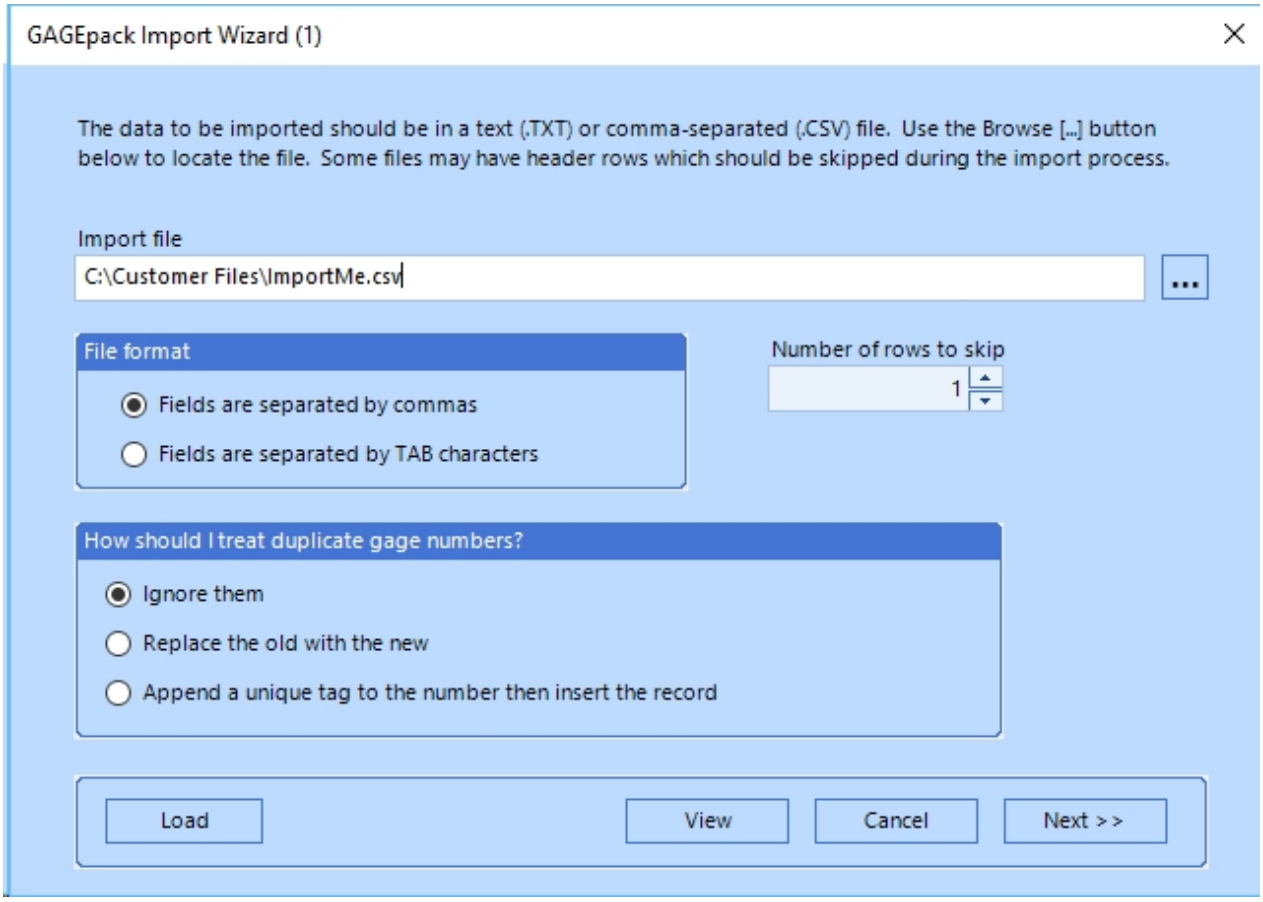
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Import data

Import data

This utility is designed to read the contents of a comma or TAB delimited text file that contains gage information and then import that information into the currently open GAGEpack database. This utility can be found by going to Utilities > Import > Gages from .csv.

The utility is organized in a wizard format with three pages. The first page requires the user to browse to the file to be imported and offers a few options to govern the behavior of the import.



Import file – Use the browse button to navigate to the text file that contains the gage information.

File format – Specify whether the columns in the text file are separated by commas or TAB characters.

How should I treat duplicate gage numbers? – All gage numbers in GAGEpack must be unique. In the event that the file being imported contains two gages with identical numbers, the wizard will either ignore all but the first instance of the gage, ignore all but the last instance of the gage (replace the old with the new), or keep both instances of it while slightly modifying the gage number to preserve the uniqueness, depending on how this option is configured.

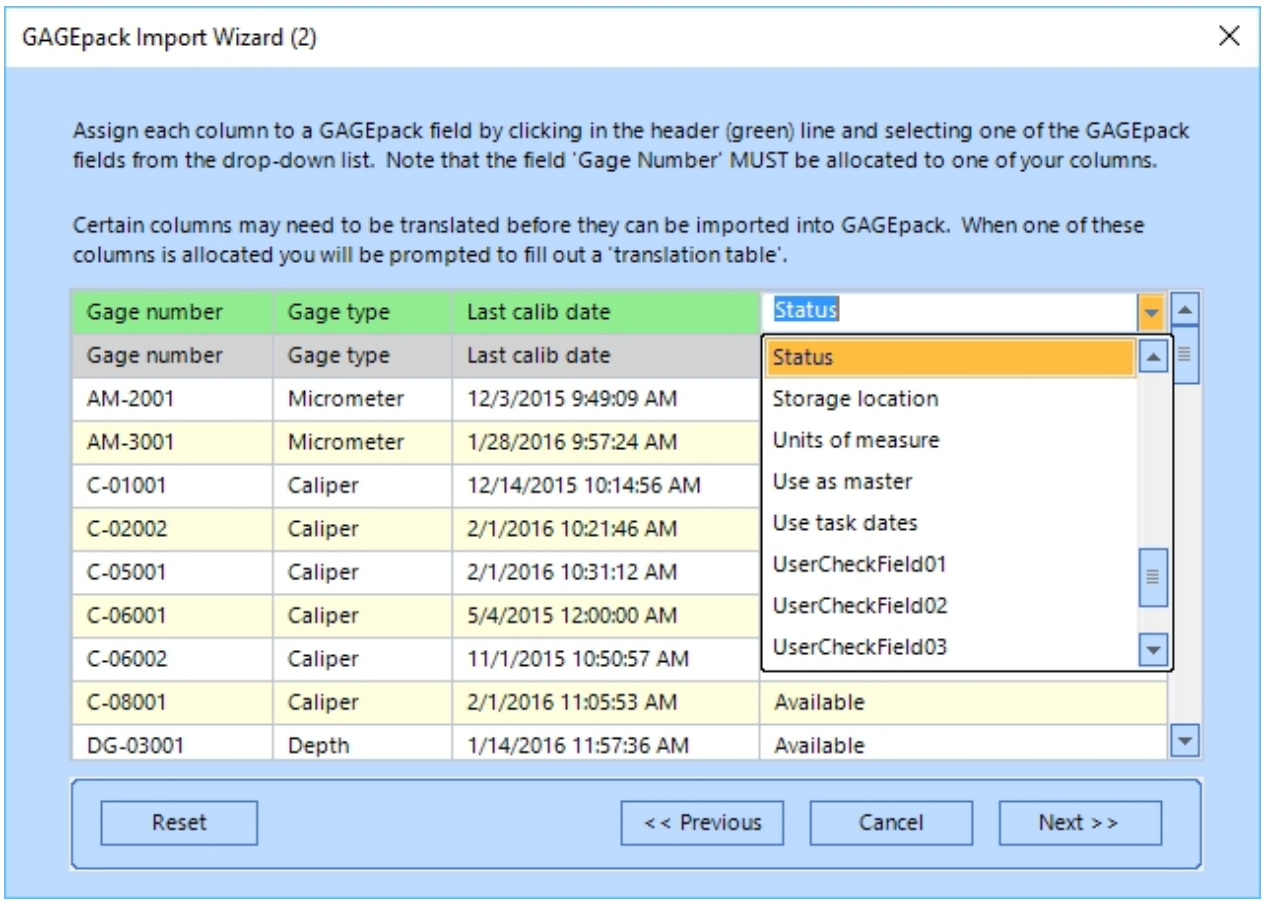
Load – Used to apply a previously saved stored import procedure.

View – Once the 'Import file' field has been filled out, this button will open the file in Windows.

Cancel – Close the wizard and abandon the import.

Next >> - Proceed to the second step of the import wizard.

The second step requires the user to match up the columns in the text file with the gage characteristics used in GAGEpack. This is done by selecting the appropriate gage characteristic from the dropdown list in the green bar at the top of each column.



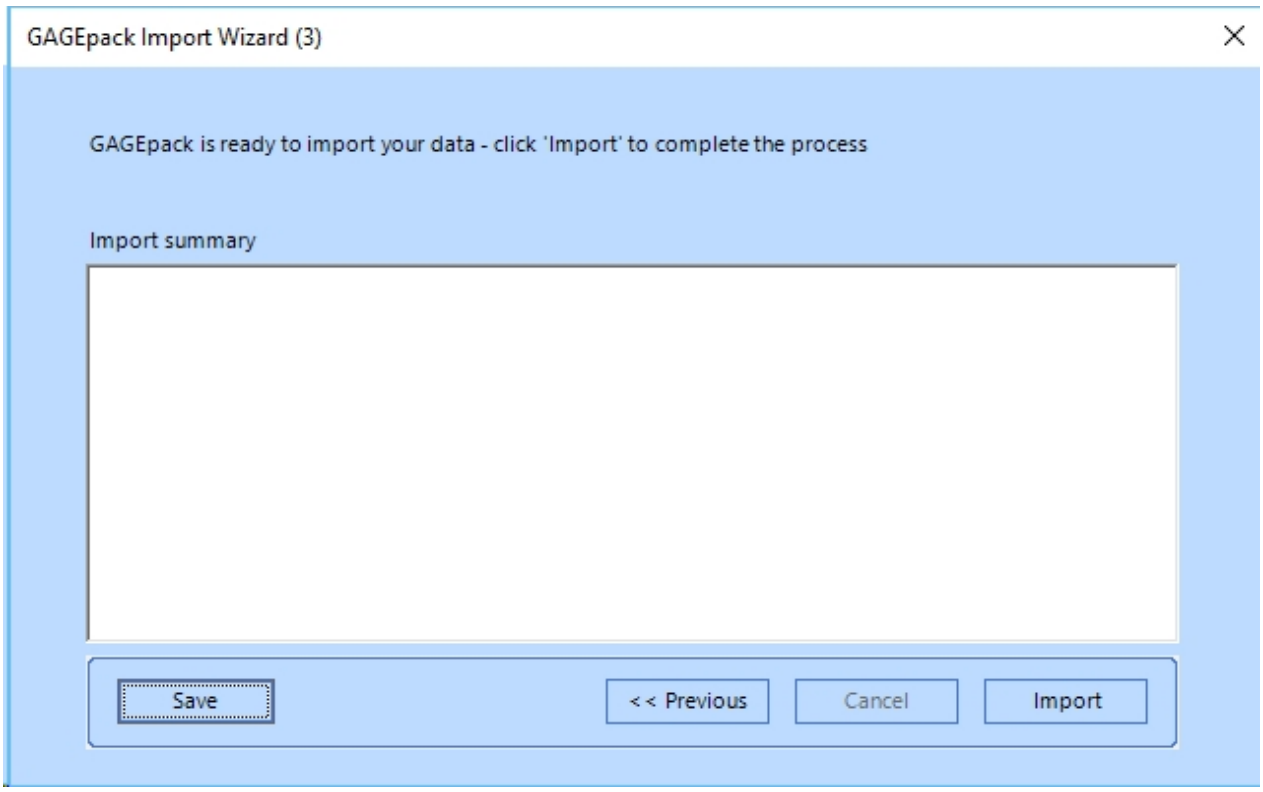
Reset – Return all of the green cells to their original blank state.

Previous – Go back to the first screen.

Cancel – Close the wizard and abandon the import.

Next >> - Proceed to the third step of the import wizard.

On the third and final form, the user will push ***Import*** to begin the import. The error log will report any problems, and the 'Records read,' 'Records imported,' and 'Progress' labels will keep the user informed about the current state of the import. Click ***Close*** to return to the main screen.



Save – Store the settings of this import for use later.

Previous – Go back to the second screen.

Cancel – Close the wizard and abandon the import.

See Also

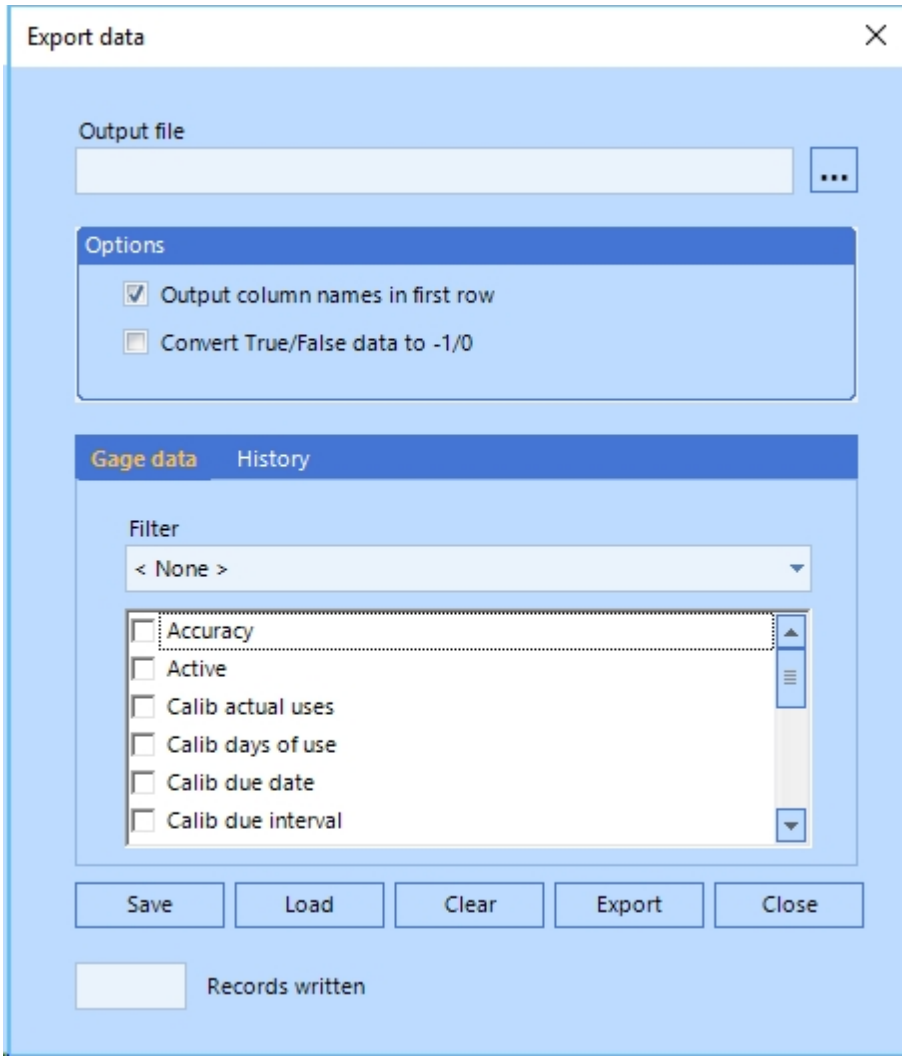
Utilities
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query

Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Export data

Export data

This utility will create a comma delimited text file (.csv) that contains the raw gage information stored in the GAGEpack database. It can be found by going to Tasks > Utilities > Export data.



Output file – Used to specify the name of the file that is to be created by the export and where the file should be saved.

Output column names in first row – By default, the first row of the new .csv file will label the column with the name of the gage characteristic. This can be disabled by unchecking this box.

Convert True/False data to -1/0 – Many of the gage characteristics are stored as Booleans. Use this

checkbox to specify whether those values should be displayed as 'TRUE/FALSE' or '-1/0'

Save – Remember the settings of this export for quick use later.

Load – Restore the settings of a previously saved export.

Clear – Uncheck all of the boxes on the list of the currently active tab.

Export – Once all settings are in place, push this button to launch the process.

Close – Exit the wizard.

In This Section	See Also
Gage data	Utilities
History	Import data
	Import gages
	Import events
	Import choice lists
	Import GAGEpack objects
	Export remote calibrations
	Import remote calibrations
	Import external calibrations
	Restore from backup
	Labels
	My reports
	Batch reports
	Management statistics
	Wear-trend analysis
	Information
	Custom query
	Refresh due dates
	Delete event history
	Load choice lists from gages
	Replace master gage
	Master gage circular references

Gage data

Gage data

This tab contains a list of every gage characteristic in the database. Only those characteristics that are checked will be included in the export.

The filter dropdown contains the same collection of filters that is available on the inventory grid. If a filter is activated here, only the gages that match the criteria specified by the filter will be included in the data

export.

See Also
Export data
History

History

History

This tab contains a list of every event characteristic that is shared by all of the event types. Only those characteristics that are checked will be included in the export.

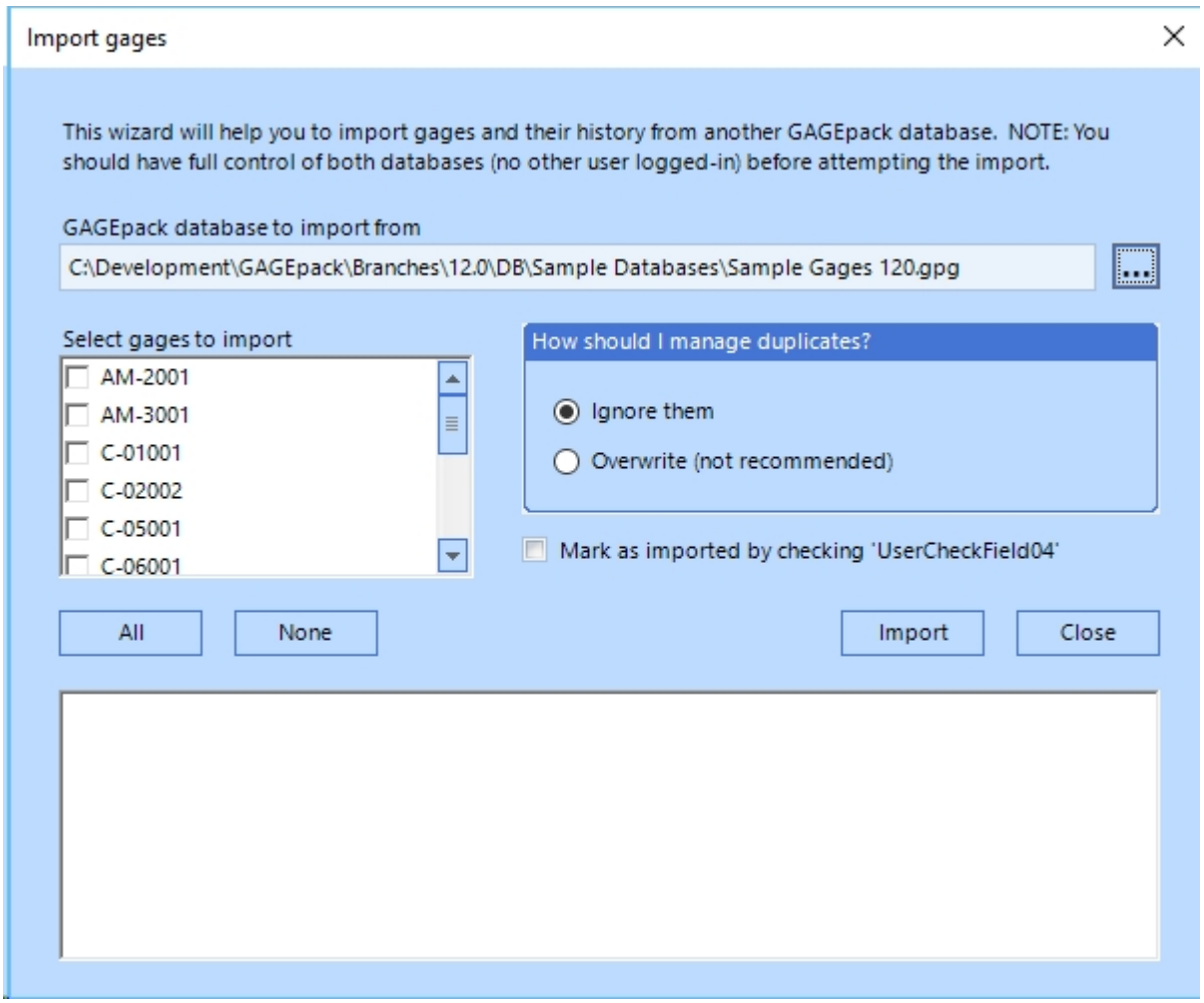
The output sequence dropdown allows the user to specify how the content of the export file will be organized. It can be sorted by gage number or by event date.

See Also
Export data
Gage data

Import gages

Import gages

This utility enables users to transfer gages and their history from one GAGEpack database to another one. It can be accessed by going to **Utilities > Import > Gages from DB**.



First, use the ***GAGEpack database to import from*** field to browse to the location of the database file where the gages to import are currently saved. Once the database has been selected, the ***Select gages to import*** list will be populated with every single gage that exists in the other database.

Use the ***All*** or ***None*** buttons to check or uncheck all of the gages on the list quickly, or pick gages manually one at a time.

Push ***Import*** to complete the transfer. Copies of the gages, along with their complete histories, will be written into the current database.

See Also

Utilities
Import data
Export data
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup

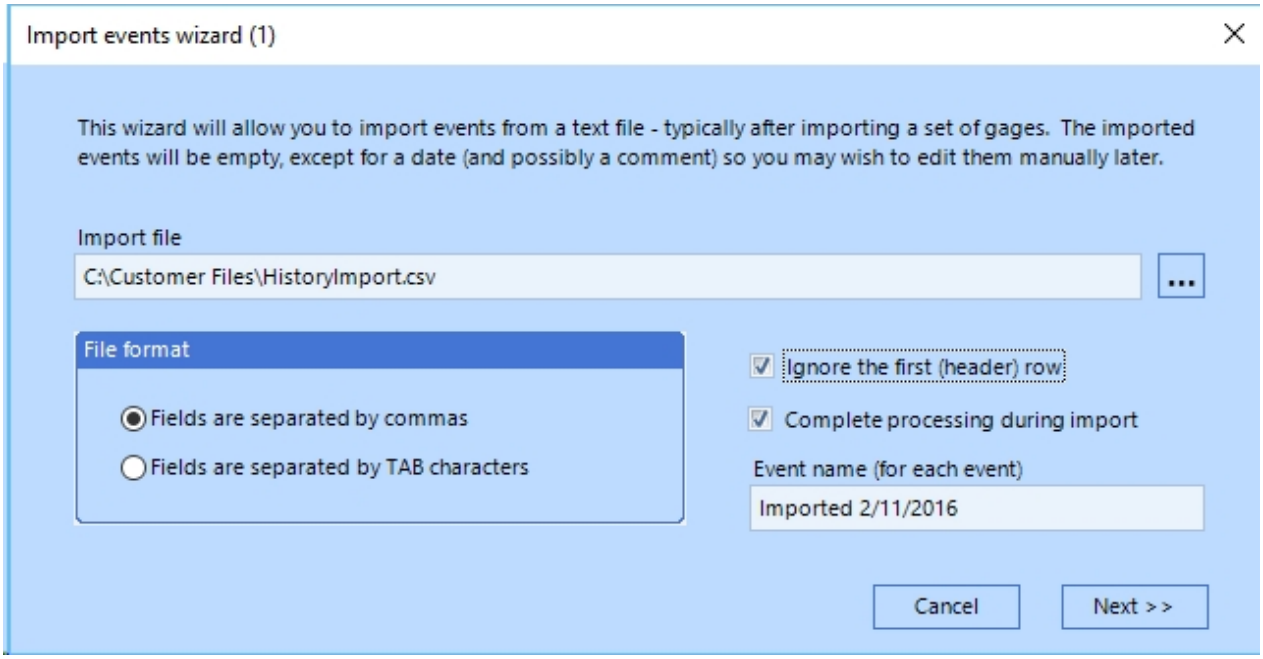
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Import events

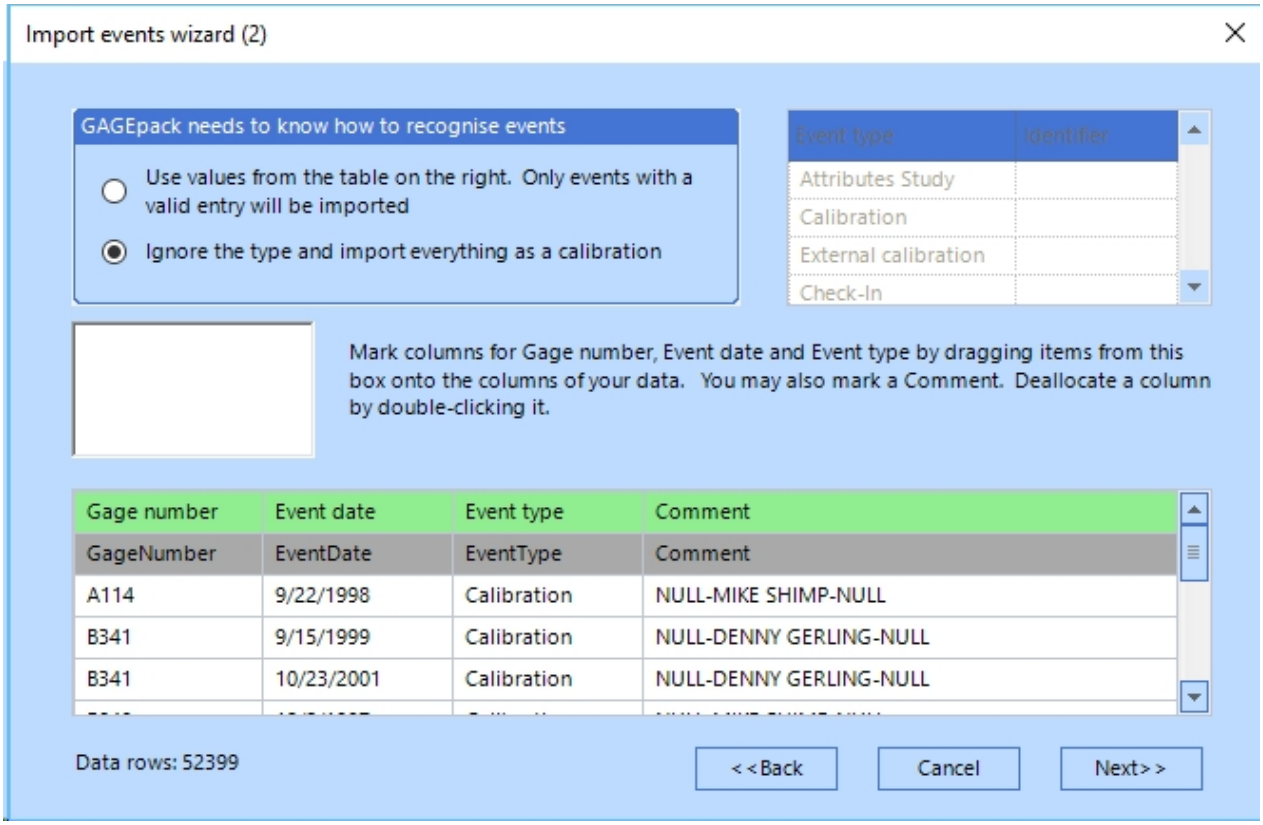
Import events

This utility is designed to read the contents of a comma or TAB delimited text file that contains gage history information and then import that information into the currently open GAGEpack database. The text file must have a column that contains the gage number that the event belongs to, and those gage numbers must correspond to gages in the current database. This utility is typically run after the 'Import data' feature is used to import a set of gages from some previous calibration software.

This utility can be found by going to Utilities > Import > Events.



First, use the ***Import file*** field to browse to the text file containing the gage history information. Use the ***File format*** box to specify whether the columns in the file are separated with commas or TAB characters. Click ***Next>>*** to continue.



The second page of the wizard requires the user to identify which columns in the text file contain the gage number and the date of the event. This is done by dragging 'Gage number' and 'Event date' from the list on the left into the green bar at the top of the grid. In addition, comment and gage event columns can be identified.

If no column is marked as the event type, every event will be imported as a calibration. If the file contains non-calibration events, the user must use the grid in the top right corner to define how each event type is identified in the data file. Click ***Next >>*** to complete the import.

See Also

Utilities
Import data
Export data
Import gages
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
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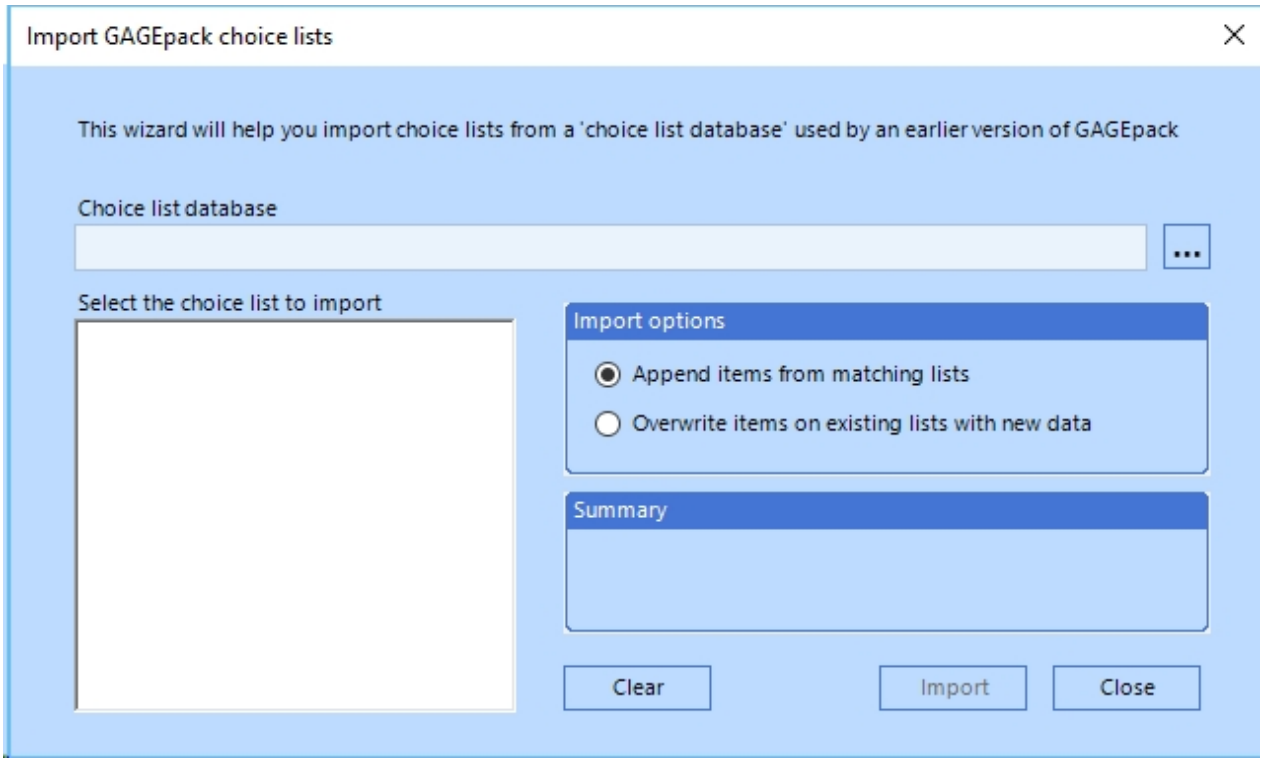
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Import choice lists

Import choice lists

Older versions of GAGEpack (v8.5 and prior) stored the contents of the choice lists in a separate database file. As of v9.0, these lists are stored in the same database as the gage information. This utility exists to give users the opportunity to import the contents of an old choice list database.

Note – In most cases, importing choice lists is unnecessary. The utility 'Load choice lists from gages' can be used to create new choice lists based on the contents of gages already in the database.



First, use the ***Choice list database*** field to browse to the .mdb file that contains the choice lists. Once it has been selected, the ***Select the choice list to import*** list will be populated with the set of all choice lists that exist in that database.

Check the boxes associated with the lists that should be added to the current database and then click ***Import*** to complete the process.

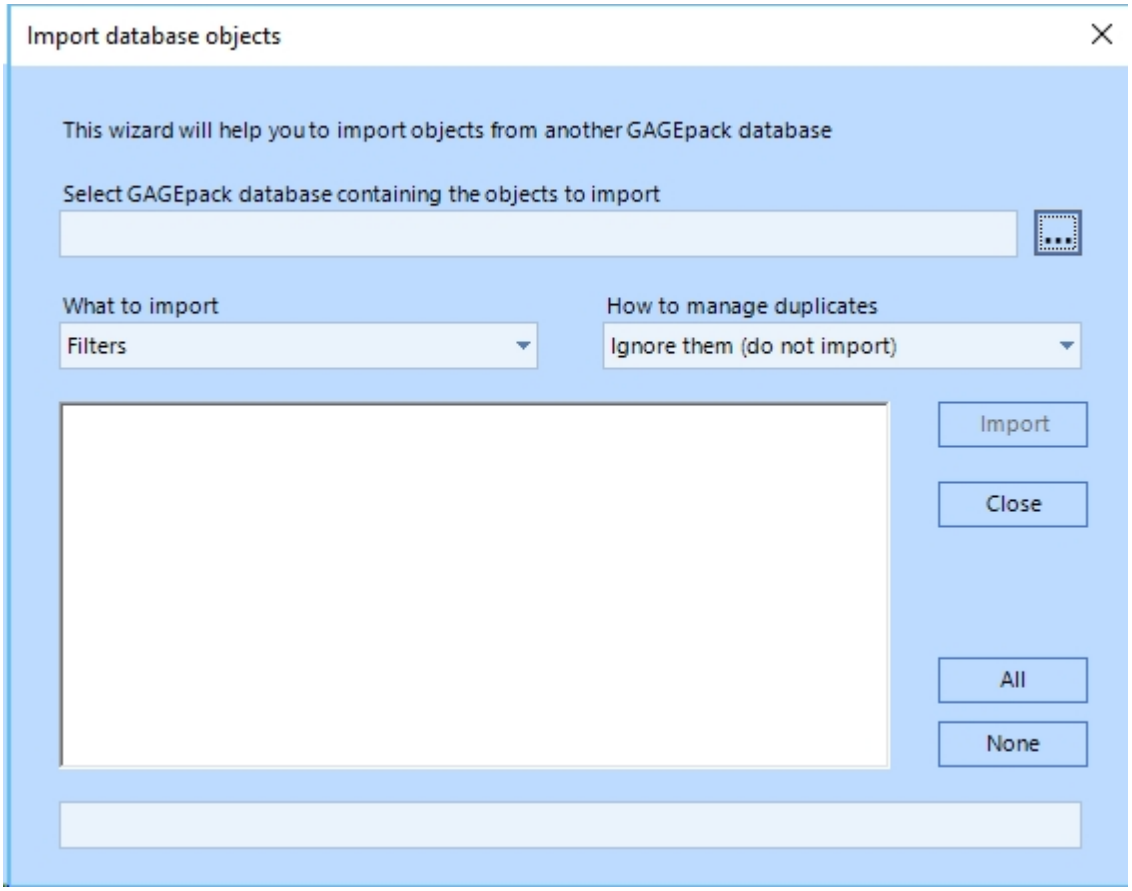
See Also

Utilities
Import data
Export data
Import gages
Import events
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Import GAGEpack objects

Import GAGEpack objects

This utility allows users to copy certain GAGEpack collections from one GAGEpack database to another. The objects available to copy include filters, users, vendors, choice lists, parts, queries, views, email addresses, PM tasks, and devices.



First, use the browse button at the top of the form to navigate to the database that contains the objects to copy. Once it has been selected, use the ***What to import*** dropdown to specify which collection should be copied into the currently active database. Click ***Import*** to complete the process.

See Also

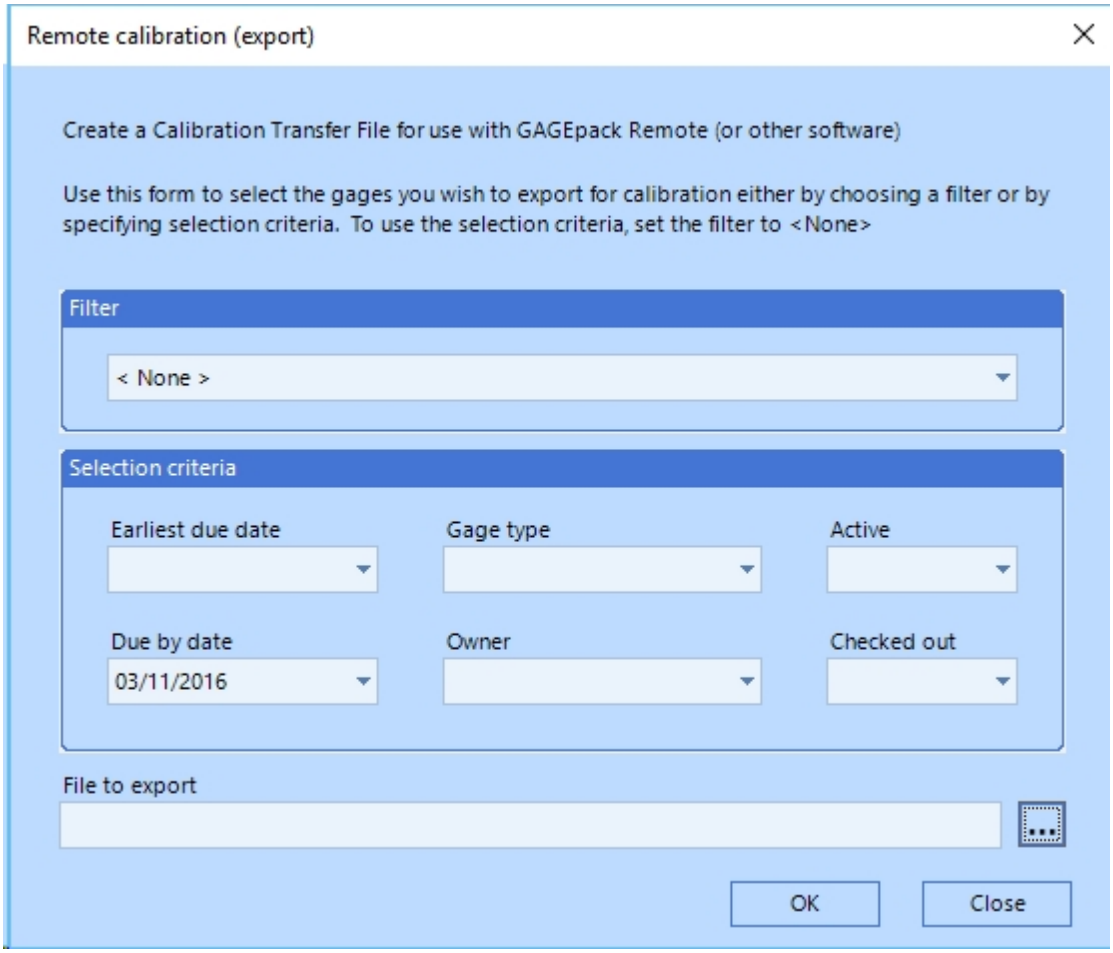
Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information

Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Export remote calibrations

Export remote calibrations

This utility is intended to work in conjunction with GAGEpack Remote, which allows users to complete calibration events from computers that do not have GAGEpack installed. Gage and calibration data are exported to a 'Calibration Transfer File' (.ctf) which is then opened by GAGEpack Remote on the other computer. The calibration results data are entered into the .ctf using GAGEpack Remote, and then the contents of the .ctf file are uploaded back into the GAGEpack database, where all records are updated appropriately.



This utility exists to create the .ctf file that contains the calibration data. Users select a filter from the dropdown list or manipulate specific selection criteria to define which gages should be included in the export. All gages that match the defined criteria will have their calibration information saved in the .ctf file.

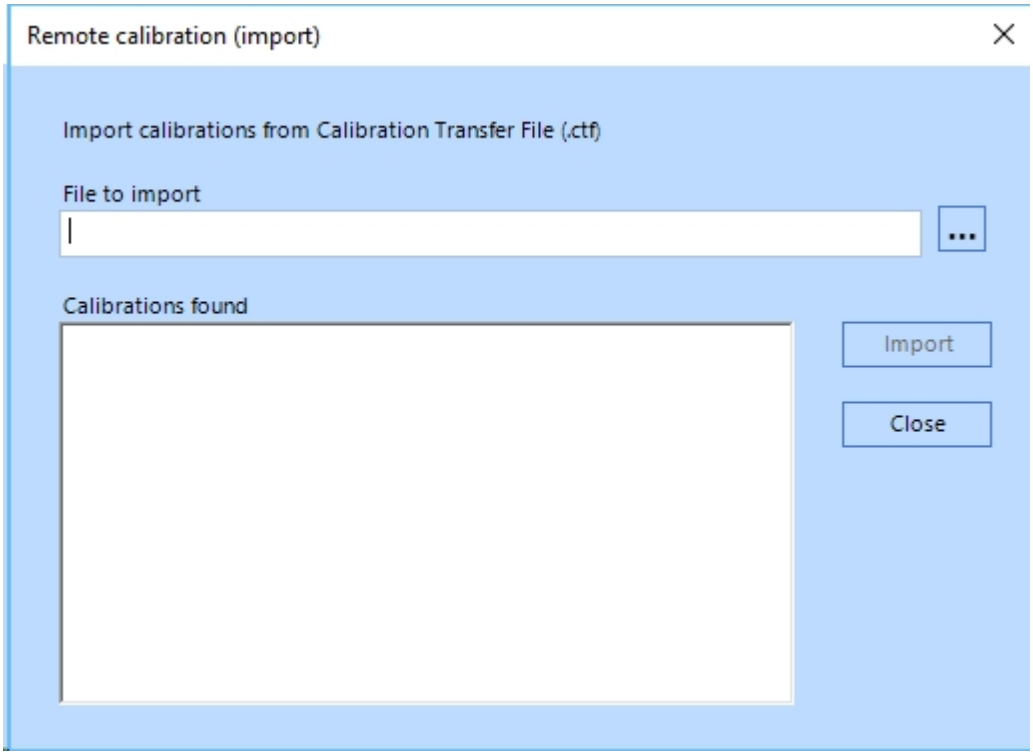
The ***File to export*** field is used to define where the new file should be saved and what it should be called.

See Also
Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Import remote calibrations

Import remote calibrations

This utility is intended to work in conjunction with GAGEpack Remote, which allows users to complete calibration events from computers that do not have GAGEpack installed. Gage and calibration data are exported to a 'Calibration Transfer File' (.ctf) which is then opened by GAGEpack Remote on the other computer. The calibration results data are entered into the .ctf using GAGEpack Remote, and then the contents of the .ctf file are uploaded back into the GAGEpack database, where all records are updated appropriately.



This utility exists to collect the calibration data that has been added to a .ctf file by GAGEpack Remote and add/update all necessary records in the gage database. Simply browse to the .ctf file using the ***File to import*** field, and then click ***Import*** to complete the process.

See Also

Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history

Load choice lists from gages
Replace master gage
Master gage circular references

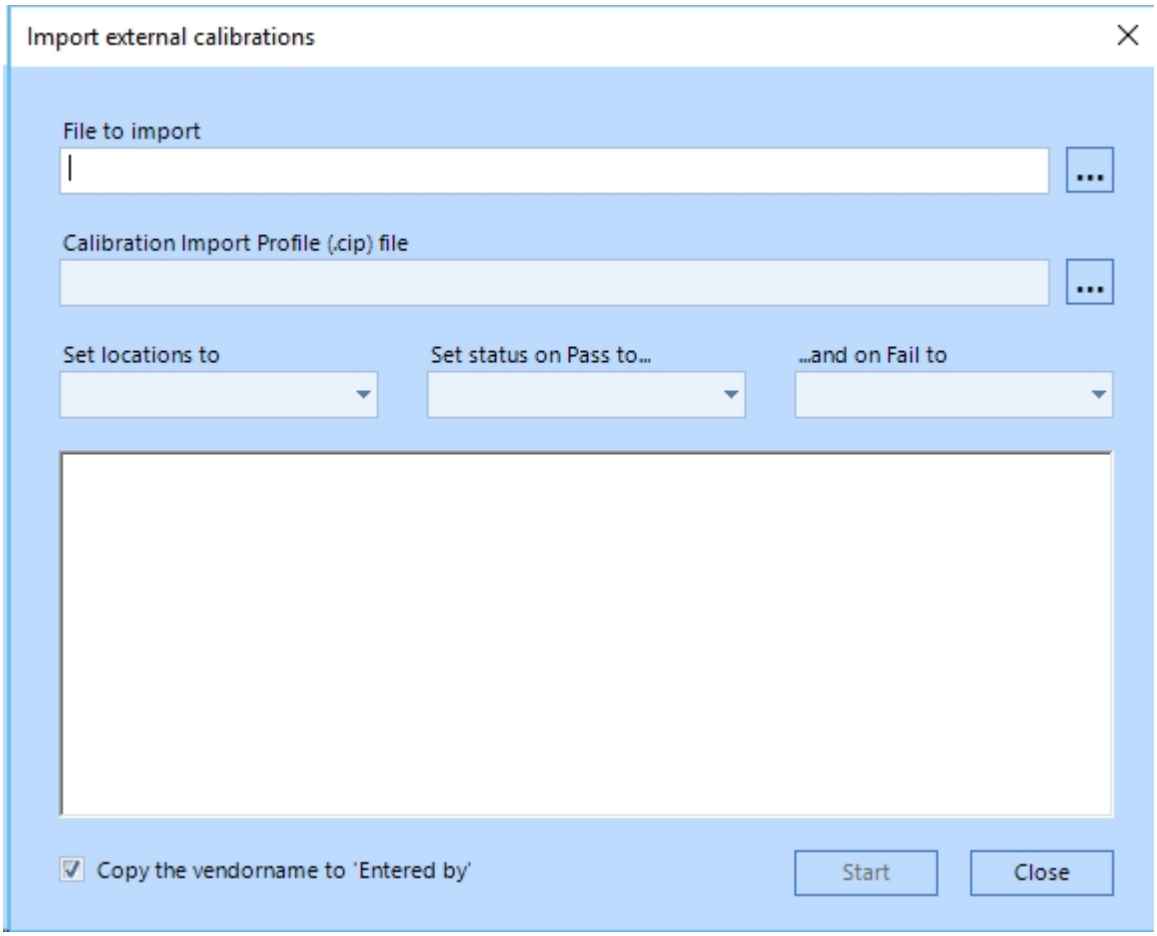
Import external calibrations

Import external calibrations

GAGEpack has the ability to import external calibration events from files supplied by a calibration vendor and this section describes the system in detail.

The vendor must supply a text file in comma-delimited format with (eventually) one gage record per line. Since different vendors may output different fields GAGEpack uses a configuration file – known as a 'profile' – to filter the contents of the vendor's file and to distribute the contents to the relevant fields in the database.

To access the import function: Tasks -> Utilities -> Import external calibrations, which causes the following form to appear:



To import the information, complete the form then click the Start button. The five entry fields are now described:

File to import - This section MUST be completed by clicking the browse button [ ] and then locating the calibration file supplied by the vendor.

Calibration Import Profile - This is also mandatory. A profile is a text file with a .cip extension that

conforms to the specification set out later in this document. Locate the required .cip file by clicking the browse button [ ].

Set locations to - This is the same field as 'Location' that appears on all events. Leaving the box empty will leave the location of the gage unchanged; otherwise it will be "moved" to the location entered here.

Set status on Pass to - This and the following field are equivalent to 'Status' that also appears on every event form in GAGEpack. Depending on whether a gage passes or fails the calibration, its status will be set accordingly. Leaving the field blank causes no change in the status.

and on Fail to- see above description.

Copy the vendor name to 'Entered by' - GAGEpack will attempt to record the vendor name from the file provided it matches a name already present in the database. In addition, checking this box will cause the name to be written to the 'Entered by' field of the calibration. If it is not checked, the name of the current user is placed there.

The import file will vary between calibration labs (and possibly within a lab, depending on what is being calibrated and who the GAGEpack customer is) but a typical format may be like this:

```
Data Transfer
Invoice number 12345678
Invoice date 14/02/2011

Asset #, Cal date, Vendor, Result, Report #, Price, Notes, Certificate File Name
C-01001,14/02/2011,Acme Inc,PASS,14987,23.40,See certificate, C:\Data\Cert14987.pdf
C-02002,13/02/2011,Acme Inc,FAIL,15018,305.00,See certificate, C:\Data\Cert15018.pdf
C-05001,13/02/2011,Acme Inc,PASS,14820,26.00,See certificate, C:\Data\Cert14820.pdf
```

This file comprises a header, then a set of lines in comma-separated format each of which represents one calibration, and will be imported into GAGEpack as a new event. Any file in this format may be imported.

To import this and other like files from the same vendor will require a profile (.cip) file located in the GAGEpack or SysData folder. This is a text file that can be created in Notepad and a suitable profile to import the above may look like this:

Acme.cip

```
[General]
Type=GAGEpack Calibration Import Profile
Name=Acme
DateFormat=dd/mm/yyyy
StartRow=6
EventName=This is the name of the event

[Fields]
1=Asset #|GageNumber
2=Entered by|EnteredBy
3=Cal date|EventDate
4=Overall result|Result
5=Calibration vendor|VendorName
6=Status|Status
7=Certificate number|CertNo
8=Certificate File Name|CertFile
```

There are two sections: [General] and [Fields] each with a number of lines of the format property=value. The property settings are:

Type – currently unused but describes what the file is.

Name – this is the text that will appear in the drop-down list on the import form.

DateFormat – currently only recognises 'dd/mm/yyyy' and 'mm/dd/yyyy'

StartRow – the line where the calibrations start (numbering from 1).

EventName – if present, the name assigned to each of the imported events.

IntervalUnits – required only where the gage calibration interval is to be amended by the import process. GAGEpack recognises intervals measured in Days, Weeks, Months and Years and the value for IntervalUnits is a string of 4 pipe-delimited items showing how these intervals are described in the import file. For example, IntervalUnits=DAYS|WEEKS|MONTHS|YEARS implies that these words will appear in the appropriate section in the calibration rows.

YesNo – this entry is required only when the data includes Boolean (Yes or No) values. At the time of writing, this only applies to the Adjusted field described later. The value comprises a pair of values separated by a pipe, with the first representing 'Yes'

In the Fields sections the rows must start from 1 and contain one entry for each of the items delimited by commas in the data section of the file. As soon as the sequence is broken, GAGEpack will stop reading the field values. The item before the pipe ('|') is unused (but must be present) and is the 'local' name of the field; the item to the right of the pipe is the equivalent GAGEpack field. In the example above, Acme Inc refers to the objects it calibrates by 'Asset #' and this field is transferred to GAGEpack's GageNumber.

In this version, the recognised fields are: GageNumber and EventDate (both madatory) , VendorName, Result, CertNo, CertFile, Cost, Comment, Adjusted, CalibDueInterval, CalibIntervalUnits, and PoNumber, together with the user-defined fields: Userfield01 – Userfield10.

The PO Number can appear on each row – that is, can vary from calibration to calibration. If the import file represents one batch job where each calibration shares a common PO number, then the number need appear only once somewhere before the data starts. In the first file shown above the line starting with "PoNumber" followed by one or more spaces followed by some text will be picked up by GAGEpack and the PO number recorded against each calibration.

Once a profile and input file have been selected, the Start button will be enabled and clicking it starts the import process. A progress log is displayed in the large box in the lower half of the form and each gage will either succeed or fail with some error message.

Successfully imported calibrations behave exactly as if they had been entered into GAGEpack manually – they update the due date (where appropriate), write to the audit trail, cancel alarms, etc.

See Also

Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Restore from backup

Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Restore from backup

Restore from backup

This utility enables users to convert database backup files (.gb? extension) into normal database files (.gpg extension). Backup files are originally created using either the ***Backup database*** command from the inventory tab toolbar, or the automated backup system configured under ***Setup*** > ***Preferences*** > ***Local settings*** > ***Files paths***.

To restore a database backup, go to ***Utilities > Restore***. You will be prompted to browse to and select the backup file. Then you will be prompted for a name and location for the database that will be created. Click ***Save*** to complete the process.

See Also

Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information

Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Labels

Labels

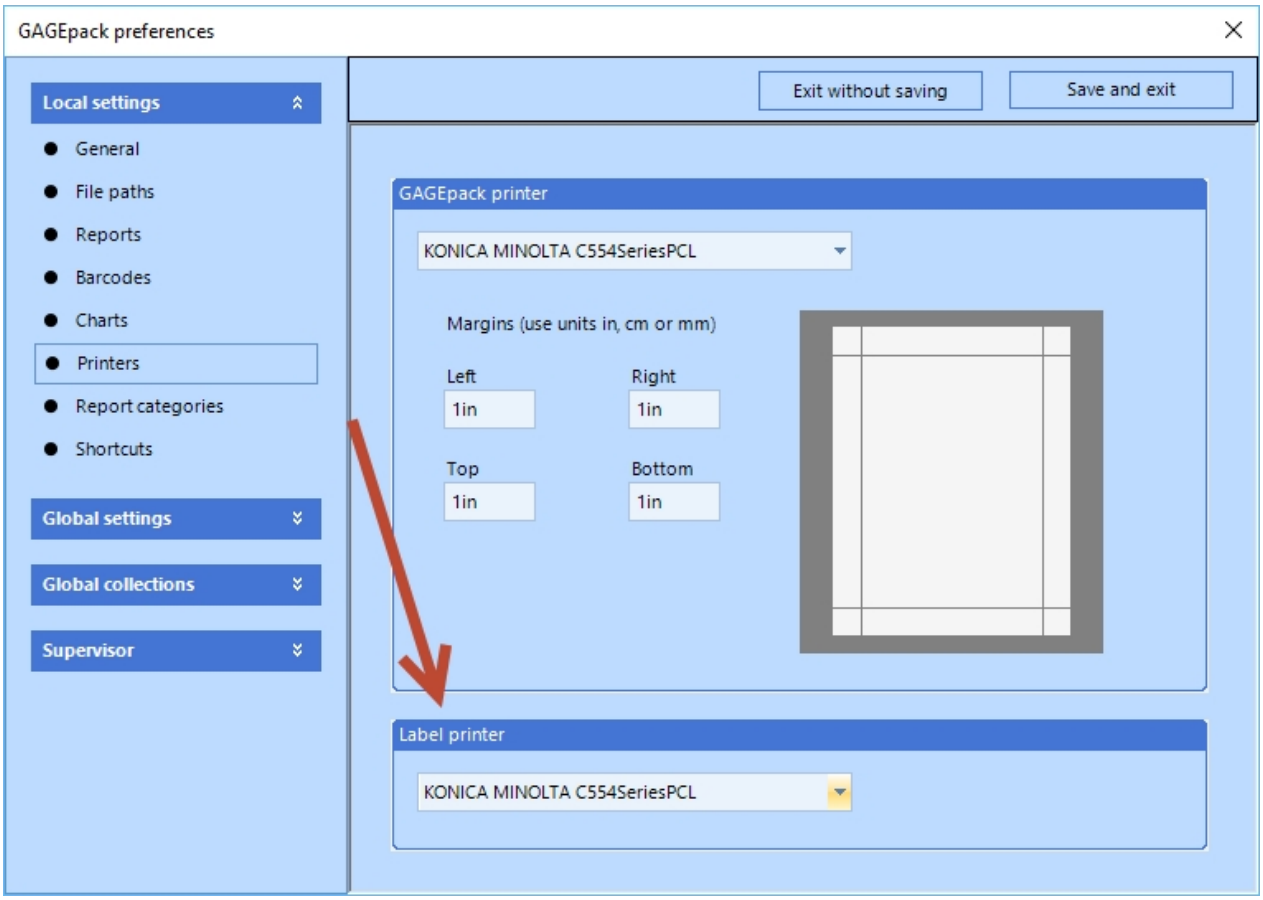
Gage labels can be printed from a number of different locations within the software. There are several different types of labels available, and all of them are customizable by the user, both in content and format. This section covers several important topics concerning labels.

In This Section	See Also
Label printer	Utilities
User-defined labels	Import data
System labels	Export data
Label design wizard	Import gages
	Import events
	Import choice lists
	Import GAGEpack objects
	Export remote calibrations
	Import remote calibrations
	Import external calibrations
	Restore from backup
	My reports
	Batch reports
	Management statistics
	Wear-trend analysis
	Information
	Custom query
	Refresh due dates
	Delete event history
	Load choice lists from gages
	Replace master gage
	Master gage circular references

Label printer

Label printer

In order to print labels, a label printer must be connected to the computer and setup with Windows. GAGEpack is compatible with any label printer that is compatible with Windows. Once Windows is aware of the label printer, GAGEpack can begin using it. Simply go to ***File*** > ***Printers*** and select the printer from the list.



It is important to note that the size of the label is determined by the printer, not GAGEpack. To adjust the label size, go to the Windows 'Devices and Printers' panel and adjust the 'Printing preferences' of the printer.

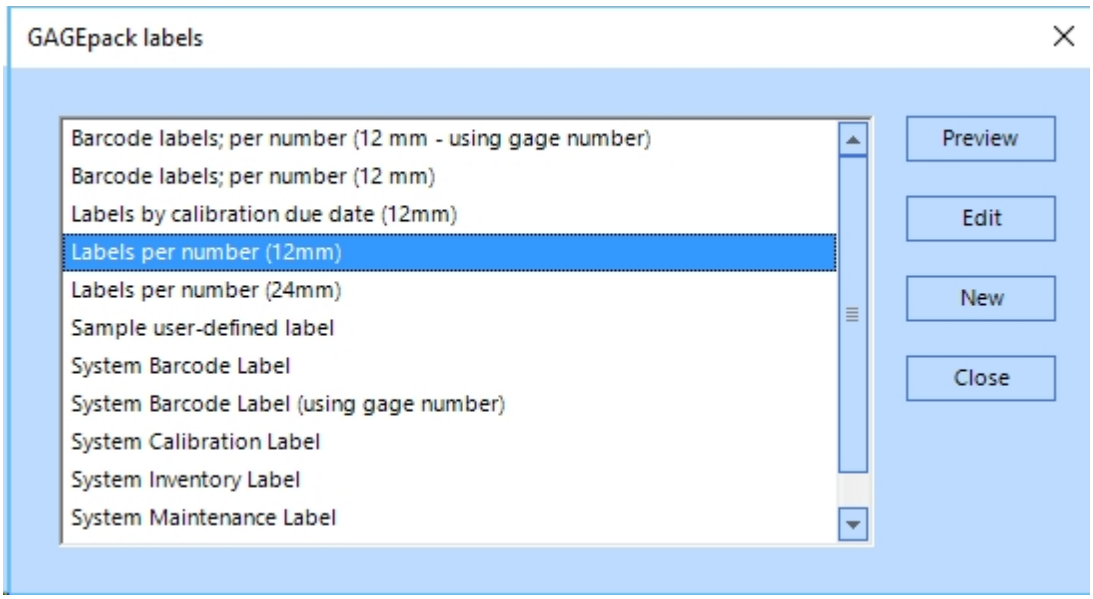
See Also

Labels
User-defined labels
System labels
Label design wizard

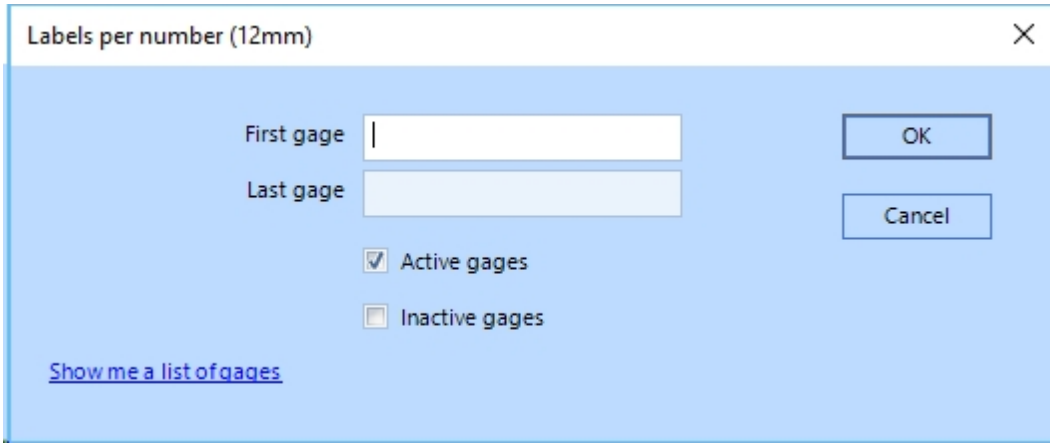
User-defined labels

User-defined labels

Uesr-defined labels are those that are printed from the ***Labels*** interface accessible from the **Home** tab of the ribbon bar.



They rely on the user to enter information into a prompts window in order to determine which gages in the database should have labels generated for them.



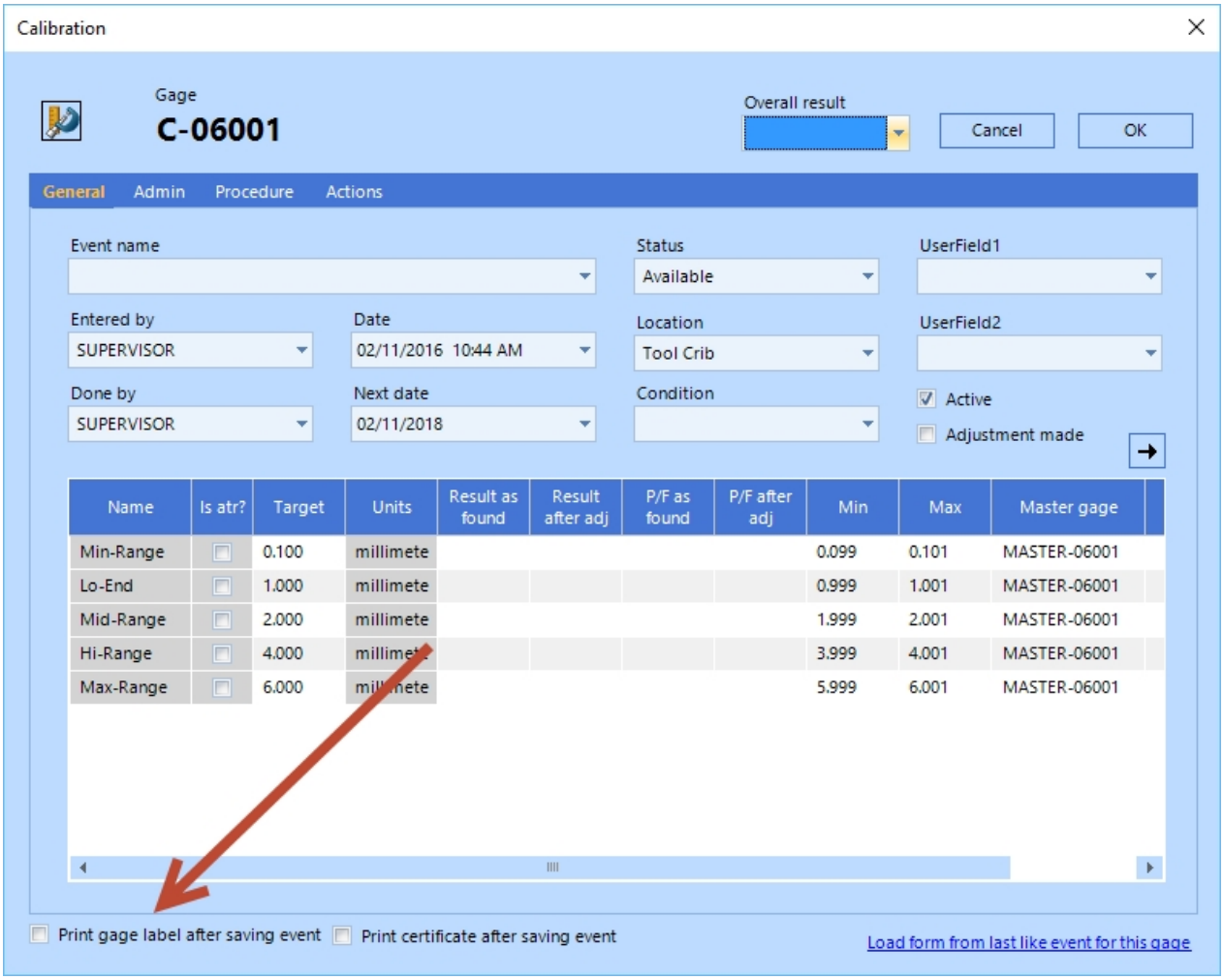
New custom labels can be created using the label design wizard, which is explained later in this section.

See Also
Labels
Label printer
System labels
Label design wizard

System labels

System labels

System labels are those that are generated in conjunction with some other feature of the software. For example, if the ***Print gage label after saving event*** box is checked on the Calibration form, a System Calibration Label will be printed once the calibration has been saved to the database.



System labels can be printed from calibration, maintenance, and R&R study events. In addition, barcode and inventory system labels can be printed from the right-click selection menu on the inventory grid.

The content of all system labels can be edited using the label design wizard, explained later in this section.

See Also

Labels

Label printer

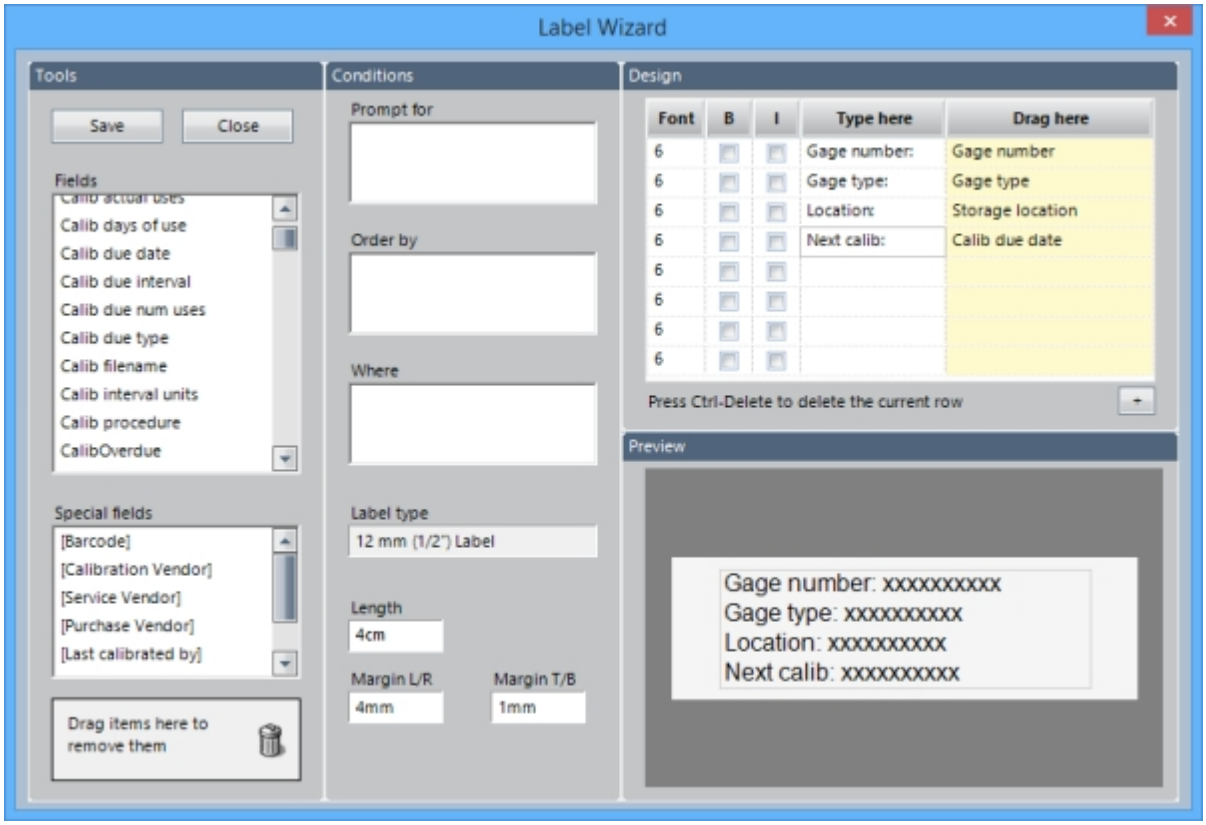
User-defined labels

Label design wizard

Label design wizard

Label design wizard

The label design wizard is a drag-and-drop interface that can be used to create new user-defined labels, edit existing user-defined labels that were originally created with the label wizard, and edit system labels. To access the label design wizard, go to the ***Print gage labels*** interface accessible from the default inventory tab toolbar. To create a new user-defined label, click ***New***. To edit an existing label, select the label and click ***Edit***. If the label is editable using the label design wizard, the user will be presented with the option to edit the label using a text editor or the label wizard. Select the label wizard.



The label design wizard interface is broken up into four sections, explained below.

In This Section	See Also
Tools	Labels
Conditions	Label printer
Design	User-defined labels
Preview	System labels

Tools

Tools

The ***Fields*** list contains the complete collection of gage characteristics in the database. Any characteristic can be dragged to the 'Design' area to be added to the label. In addition, there are several ***Special fields*** available to be added. These are fields that are not gage characteristics but are nonetheless commonly desired for labels.

The bottom of the Tools section contains a trash can where unneeded fields can be dragged from the 'Design' window to be removed from the label.

See Also
Label design wizard
Conditions
Design
Preview

Conditions

Conditions

Prompt for – If a gage characteristic is added to this box, this label will ask the user to specify what values a gage must have for that characteristic in order for the gage to have a label printed for it.

Order by – This box refers to the order in which the labels will be printed. The gage label printouts will be ordered in ascending or descending order by whatever characteristic(s) is/are dropped into this box.

Where – This box works much the same way as the filters on the inventory grid. By dropping a gage characteristic into this box, the user will be able to specify what values a gage must have for the specified characteristic in order to have a label printed for it.

Note: All three of these boxes will be disabled while editing a system label, since they are not relevant.

Label Type – This field displays the size of the label currently being used. This field is NOT editable and, in fact, GAGEpack has no control over the size of the label. This value is set by the Printing preferences control panel in Windows.

Length – The distance (in inches, centimeters, or millimeters) from the left end of the label to the right.

Margin L/R - The distance (in inches, centimeters, or millimeters) from the left and right edges of the label to the left and right edges of the printable area.

Margin T/B - The distance (in inches, centimeters, or millimeters) from the top and bottom edges of the label to the top and bottom edges of the printable area.

See Also
Label design wizard
Tools
Design
Preview

Design

Design

This area contains the grid that controls the layout of the label. Every row on this grid represents a row on the label. There are five columns that can have an effect on the label.

Font – A number that represents the size of the font for this row.

B – A checkbox that will make this row ***Bold***.

I – A checkbox that will make this row italicized.

Type here – A text field that identifies the contents of the row.

Drag here – Gage characteristics are dragged from the ***Fields*** and ***Special fields*** lists to this column to be added to the label.

See Also
Label design wizard
Tools
Conditions
Preview

Preview

Preview

This is a simple print preview that displays what the label would look like if it were printed right now. This preview will be automatically updated as changes are made to the Conditions and Design areas.

Click ***Save*** to complete the changes to the label and ***Close*** to return to the label list.

See Also
Label design wizard
Tools
Conditions
Design

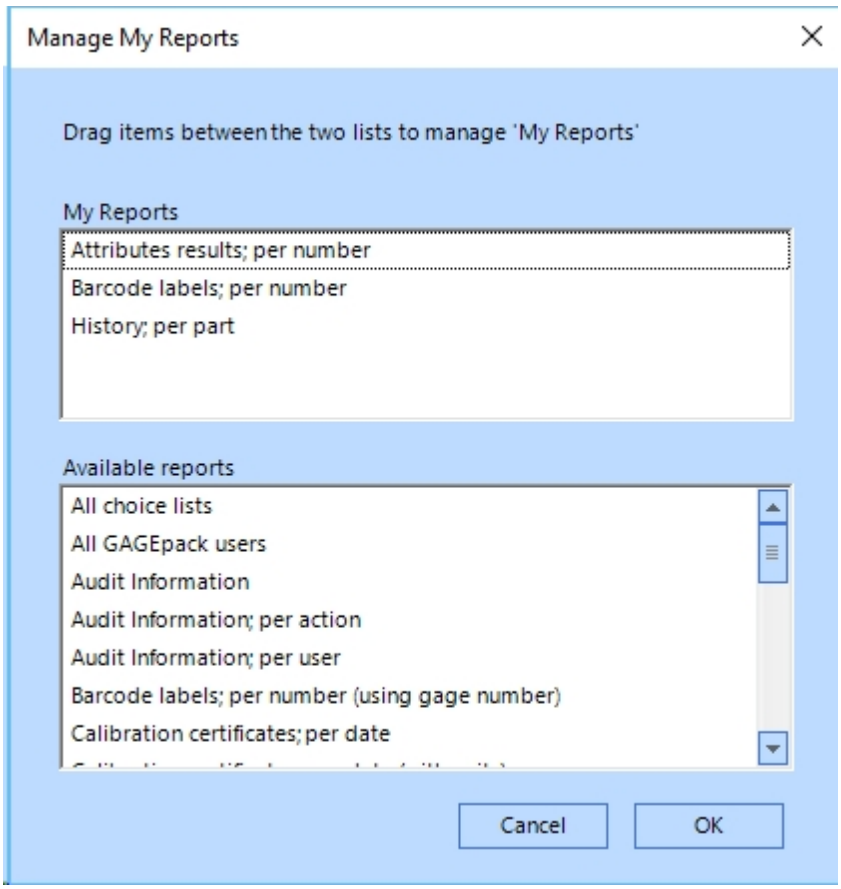
My reports

My reports

This utility allows the user to create a personalized list of commonly-used reports. This gives easy access to reports they need to see regularly without requiring them to scroll through the long list of reports found on the main reports list.

My reports can be launched from the **Home** tab of the ribbon bar. A report on the list can be displayed in the same way a report is viewed from the standard list.

To add or remove reports from ***My reports,*** click ***Manage My Reports***.



Available reports shows a list of all of the reports accessible to GAGEpack that are not already on the ***My Reports*** list. To edit the contents of ***My reports,*** simply drag the reports into the appropriate list. Click ***OK*** to save.

See Also

Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
Batch reports
Management statistics
Wear-trend analysis
Information

Custom query

Refresh due dates

Delete event history

Load choice lists from gages

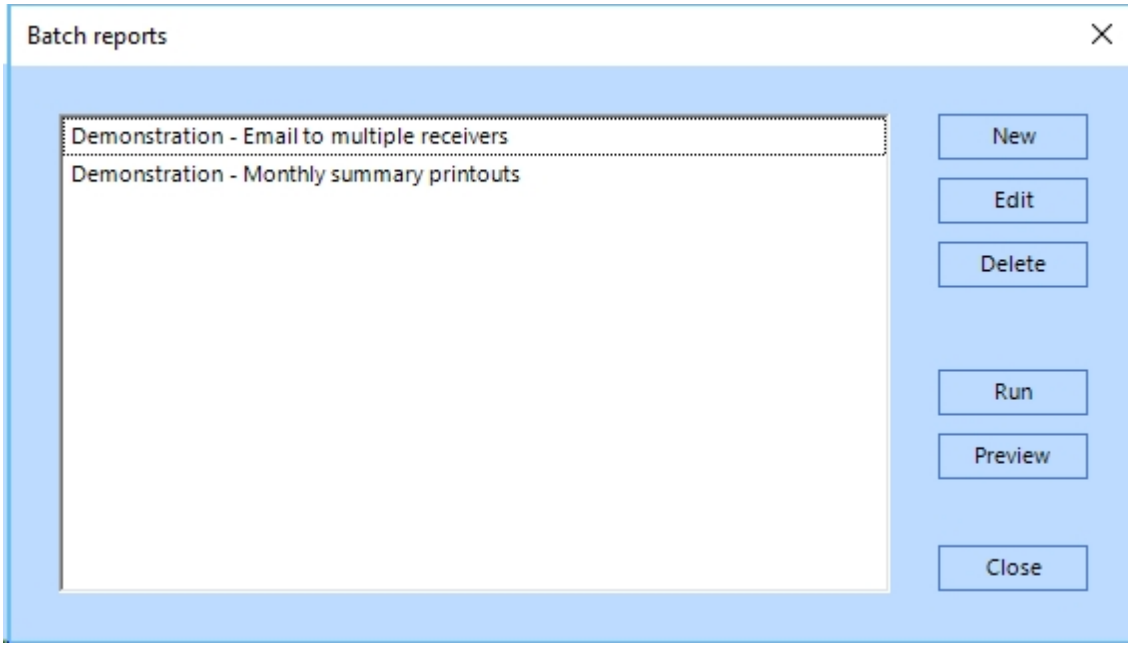
Replace master gage

Master gage circular references

Batch reports

Batch reports

A batch report is a collection of individual reports that have been clumped together and whose prompt fields have been pre-populated with values. This grouping exists to enable users to distribute many reports to the people who need them in a single action. The batch reports button can be added to the inventory tab toolbar.



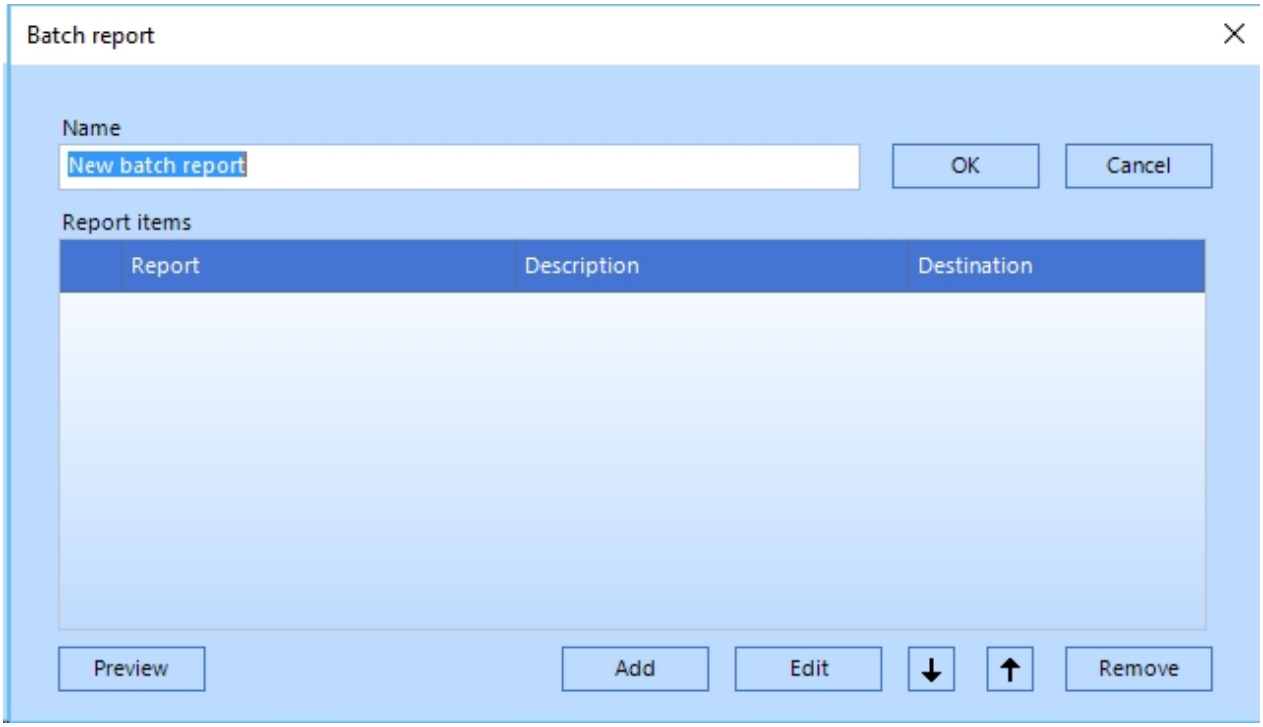
In This Section	See Also
Creating a batch report	Utilities
Running a batch report	Import data
	Export data
	Import gages
	Import events
	Import choice lists
	Import GAGEpack objects
	Export remote calibrations
	Import remote calibrations
	Import external calibrations

Restore from backup
Labels
My reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Creating a batch report

Creating a batch report

Creating a batch report involves selecting which reports should be included in the batch and filling out any prompts values required by those reports. To do this, click ***New*** from the batch reports list window.



This will open the 'Batch report' window, which displays a list of all the reports currently included in this batch report. At first the list will be empty, but reports can be added to the list by clicking ***Add***.

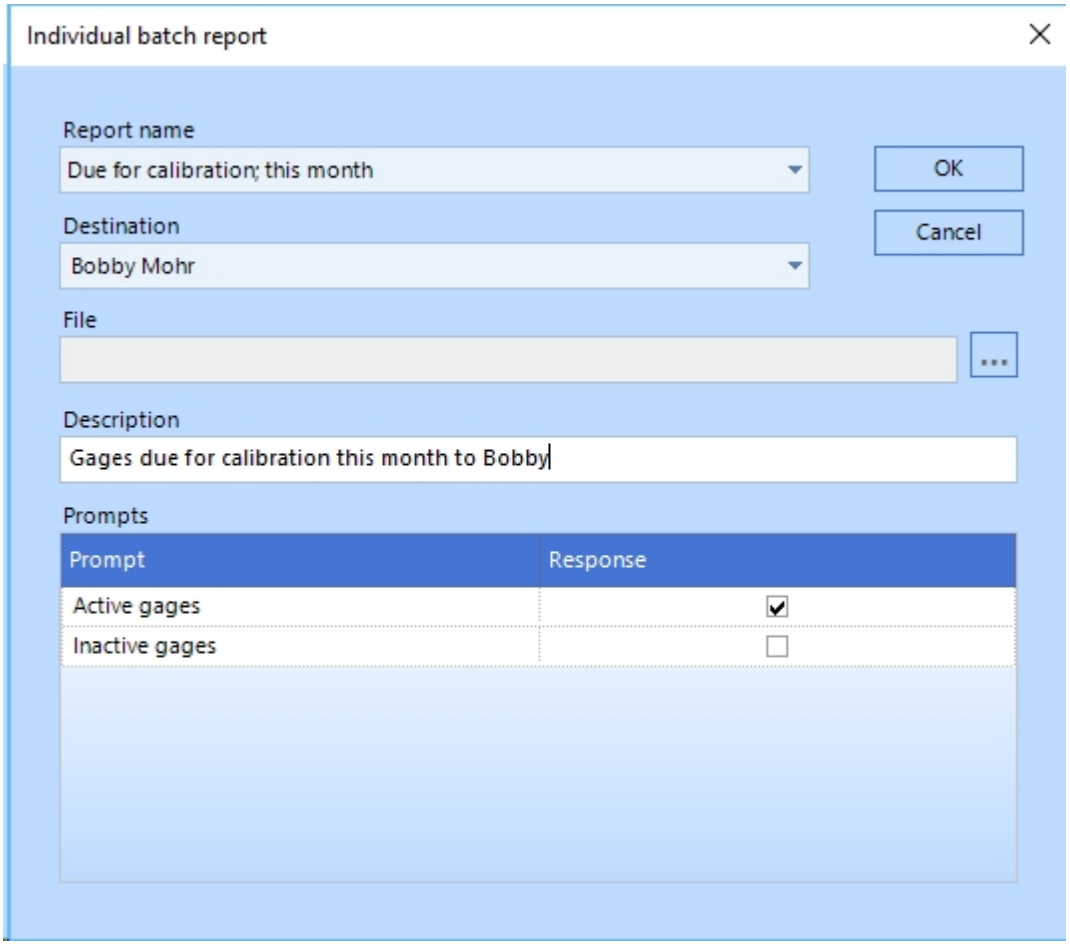
This will display a blank 'Individual batch report' form. Use ***Report name*** to select which report should be added to the batch. The dropdown list will display every report that GAGEpack is aware of. This is the same list that appears on the Reports list accessible from the default inventory tab toolbar.

Next, use ***Destination*** to define where the report should be sent. This dropdown list will display every email

recipient that exists in the gage database, as well as the option <Printer> which will simply send the report to the default GAGEpack printer.

The ***Description*** field provides the option to include a line of text about the report. This is visible on the batch report list.

The ***Prompts*** grid at the bottom displays a list of all the prompts that are built into this report. These are the values the report needs before it can be displayed. However, they can be left blank to instruct GAGEpack to simply ignore them.



Once all fields are filled out correctly, click ***OK*** to save and the report will be added to the batch. Repeat this process for every report that should be included in the batch.

See Also

Batch reports

Running a batch report

Running a batch report

Running a batch report

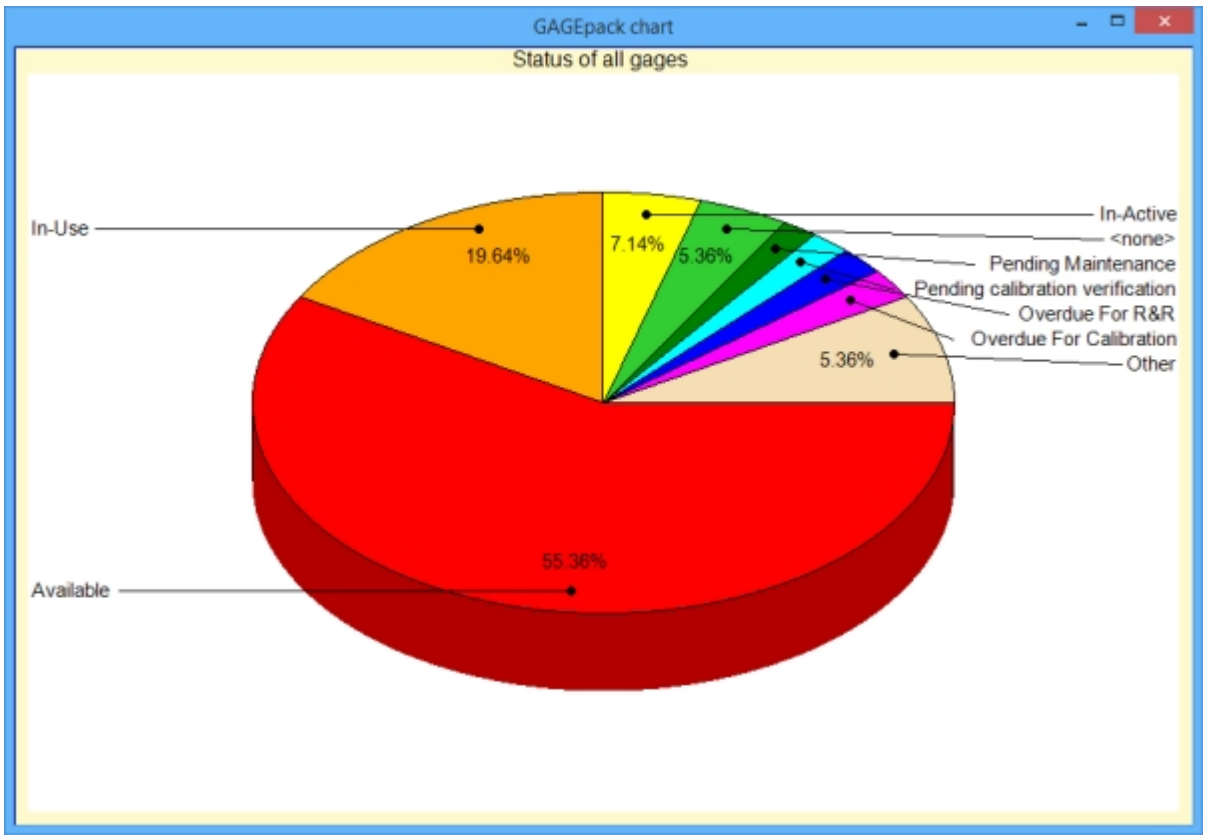
To run a batch report, select it from the batch reports list and click ***Run***. Since all of the recipients were defined and all of the prompts were populated when the batch report was created, no additional steps are required at this point.

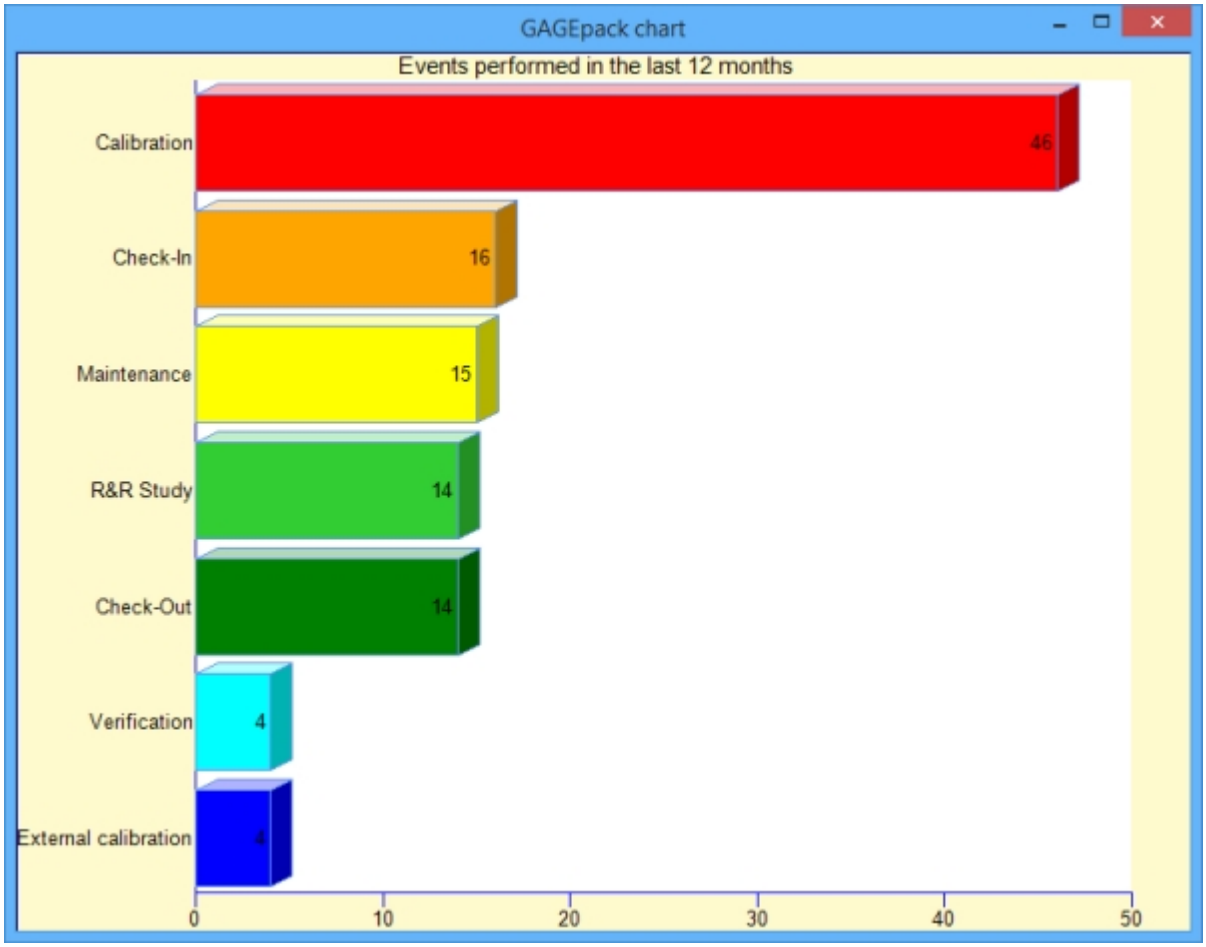
See Also
Batch reports
Creating a batch report

Management statistics

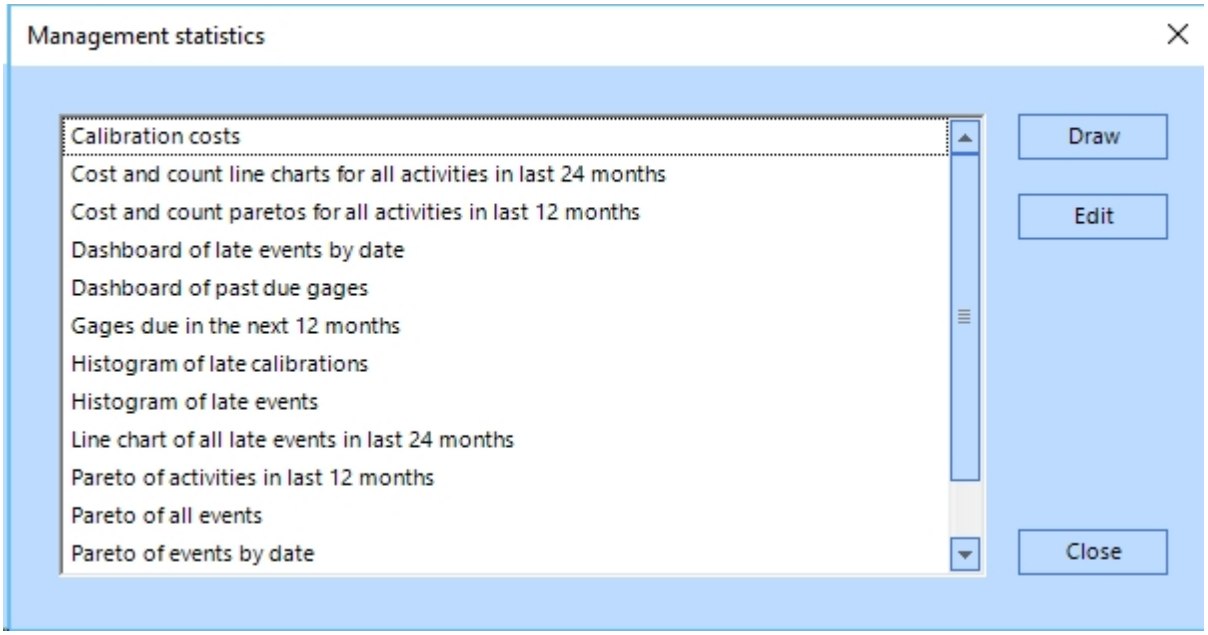
Management statistics

Management statistics are similar to reports, in that they are designed to extract information from the gage database and display it in an easy-to-understand format. The difference is that while reports display information in plain text, management statistics display information in graphical form.





These charts can be accessed by clicking on the ***Charts*** button on the **Home** tab of the ribbon bar.



It is possible to create new charts and edit existing charts. For more information, please review the document called "Management Statistics in GAGEpack 13.0.doc" which, by default, can be found here:

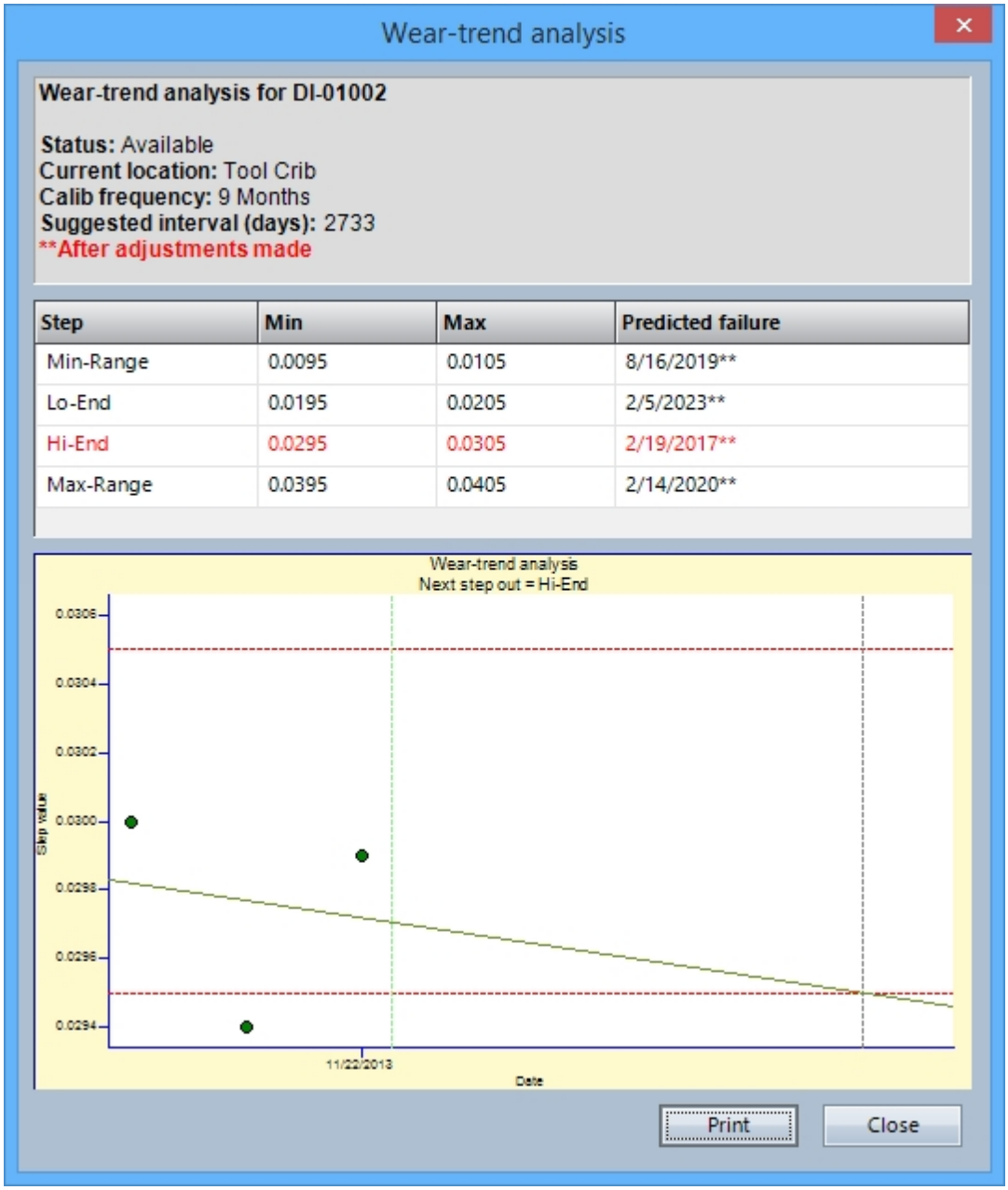
C:\Program Files (x86)\PQ Systems\GAGEpack 13.0\Documents

See Also
Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Wear-trend analysis

Wear-trend analysis

The wear-trend analysis is designed to predict when a gage will need to be replaced, by examining the calibration results data for previous calibrations. When one of the gage's ranges are seen to be drifting high or low, a line of best fit is laid over those data points to estimate when the gage will be consistently found to be inaccurate.



The wear-trend analysis for a gage can be found by right-clicking on the gage from the inventory tab and selecting ***Wear-trend analysis***.

See Also
Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations

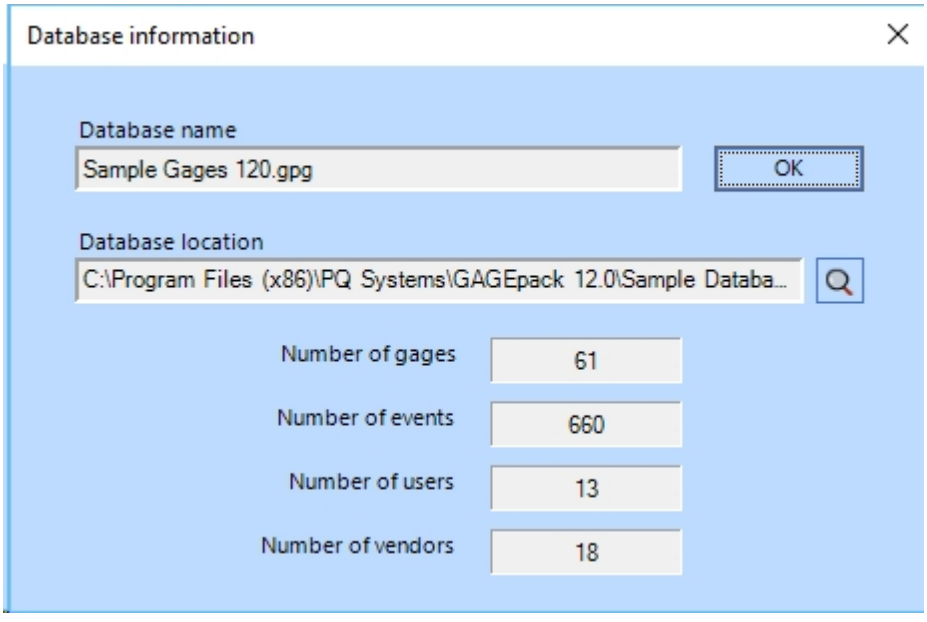
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Information

Information

The Information utility provides a few important details about the currently-open database. These include the database name, the folder where the database is saved, and the number of gages, events, users, and vendors in the database.

Users can quickly navigate to the database location by clicking the View button to the right of the field.



See Also

Utilities
Import data
Export data

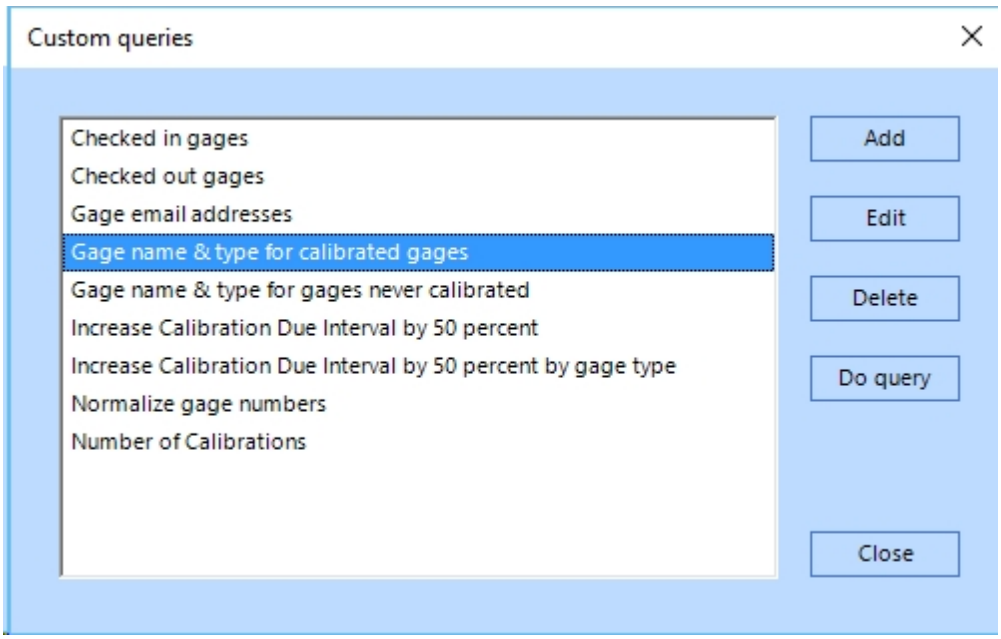
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Custom query

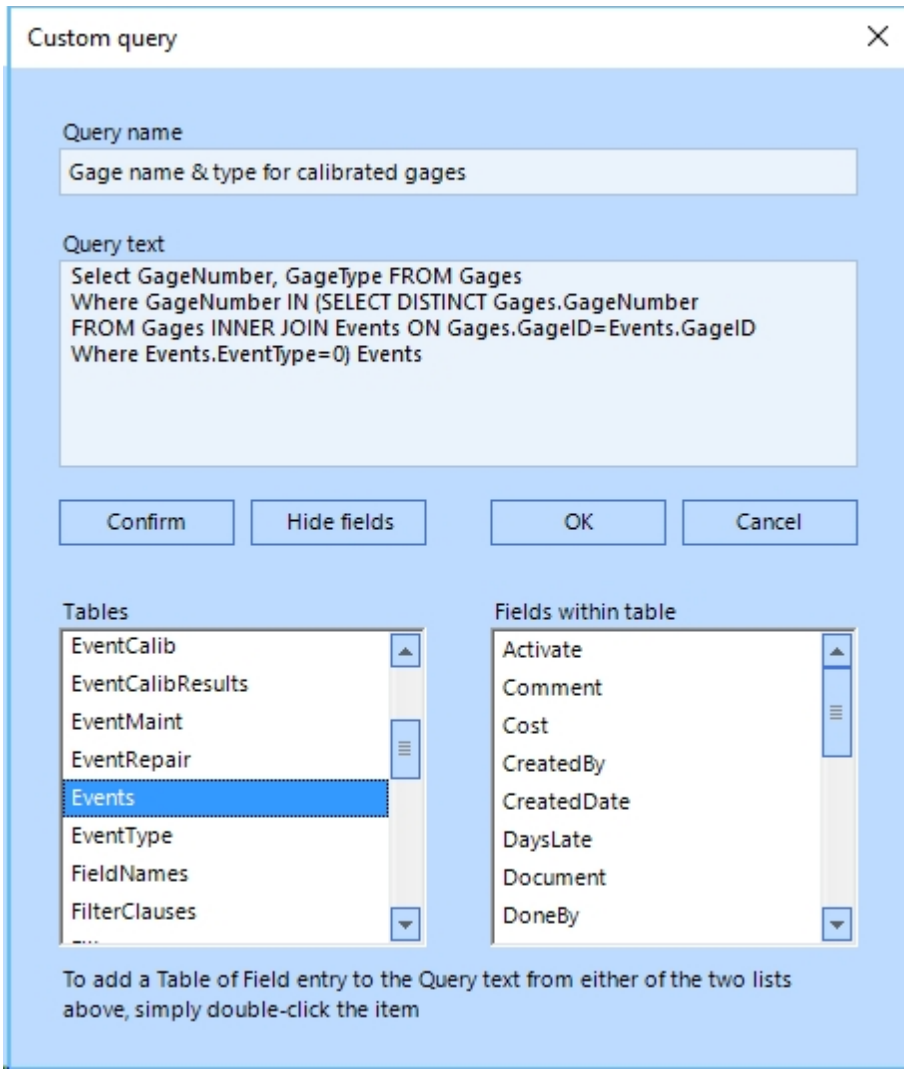
Custom query

The custom query utility provides those users who are proficient in Structured Query Language (SQL) with the ability to execute SQL statements against the GAGEpack database.

Note: This can be dangerous. Don't tinker with custom queries unless you are confident that you know what you are doing.



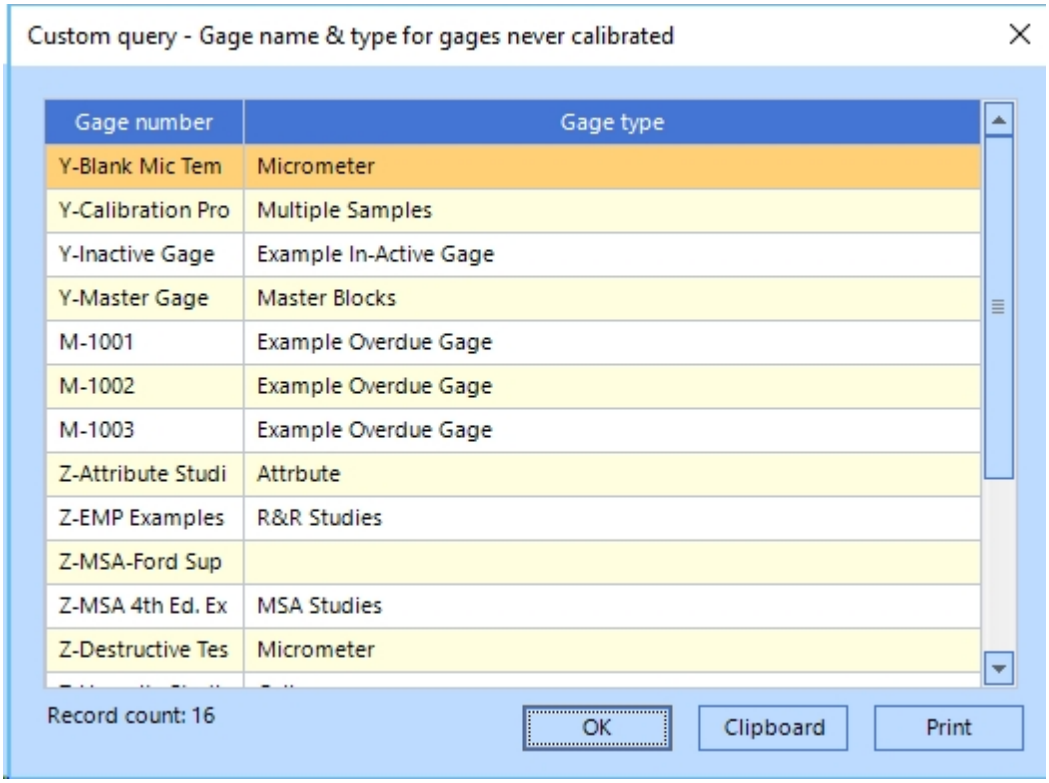
To create a new query, click ***Add***.



Give the query a name and type the SQL statement into the 'Query text' field. The ***Show fields*** button will display a list of all of the tables in the database. Selecting one of these tables will display a list of all of the

columns that exist on that table. Click ***OK*** to save the query.

To execute a query, click ***Do query***. For SELECT statements, the query results will be displayed in a new window. Other statements will display a message to inform the user that the statement was executed.



See Also

[Utilities](#)
[Import data](#)
[Export data](#)
[Import gages](#)
[Import events](#)
[Import choice lists](#)
[Import GAGEpack objects](#)
[Export remote calibrations](#)
[Import remote calibrations](#)
[Import external calibrations](#)
[Restore from backup](#)
[Labels](#)
[My reports](#)
[Batch reports](#)
[Management statistics](#)
[Wear-trend analysis](#)
[Information](#)
[Refresh due dates](#)

Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Refresh due dates

Refresh due dates

This utility will force GAGEpack to recalculate all of the calibration, maintenance, and R&R study due dates for all of the active gages in the database. In the event that some of the dates have been manually entered by users, the utility will ask the user if they want to overwrite these dates.

The utility takes into account skip dates, 'recalculated daily' gages, and 'end-of-the-month' gages when calculating the new due dates.

To access this utility, go to Utilities > Refresh due dates.

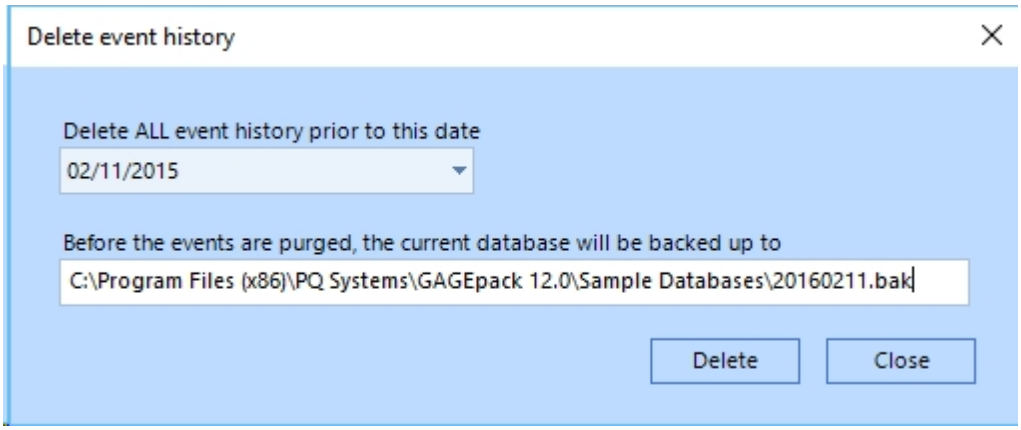
See Also

Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Delete event history
Load choice lists from gages
Replace master gage
Master gage circular references

Delete event history

Delete event history

This utility will erase all historical records of gage events in the database that occurred before the user-specified date. To perform this operation, simply select a date from the dropdown calendar and then push ***Delete***.



GAGEpack will automatically create a backup copy of the database in the specified folder before the history purge is executed.

This utility can be accessed by going to ***Utilities*** > ***Delete event history***.

See Also

Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Load choice lists from gages

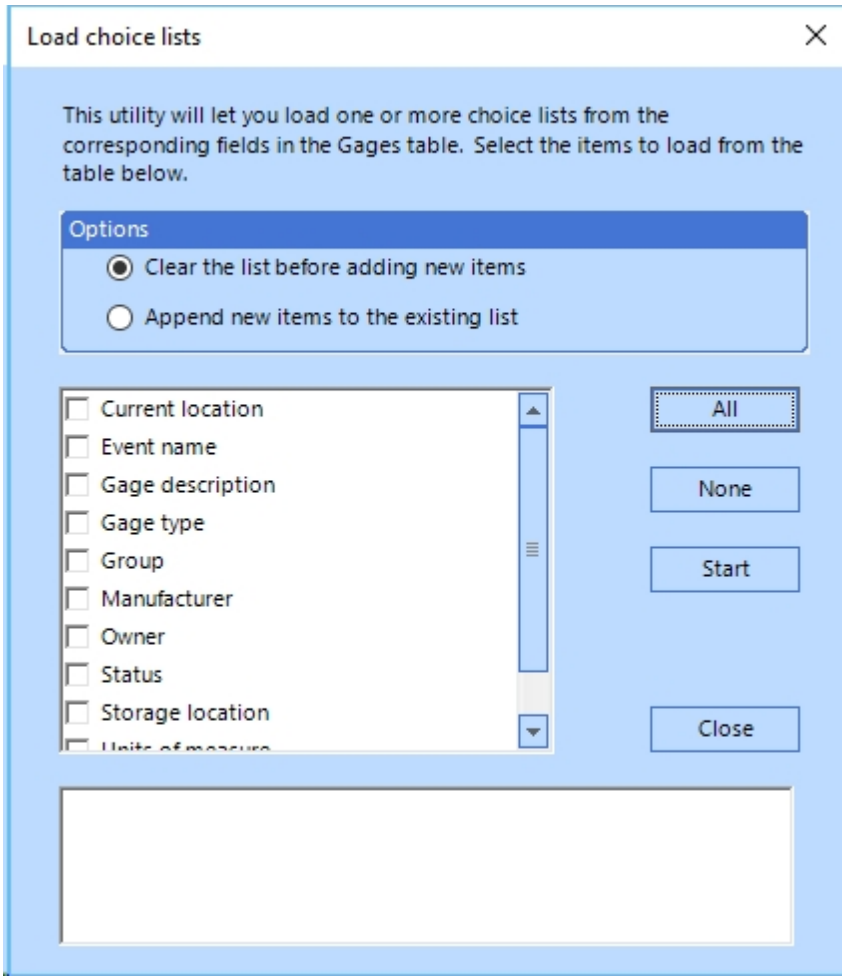
Replace master gage

Master gage circular references

Load choice lists from gages

Load choice lists from gages

This utility represents an extremely efficient method for populating the contents of the dropdown lists that appear throughout the software. It works by creating the lists based on the values that already appear on the gages in the database.



To perform this operation, select the lists that should be populated (or just click ***All*** to select every one of them), and then click ***Start***. The log box at the bottom of the screen will say "Finished" at the end of the process.

To access this utility, go to ***Utilities*** > ***Load choice lists***.

See Also

Utilities

Import data

Export data

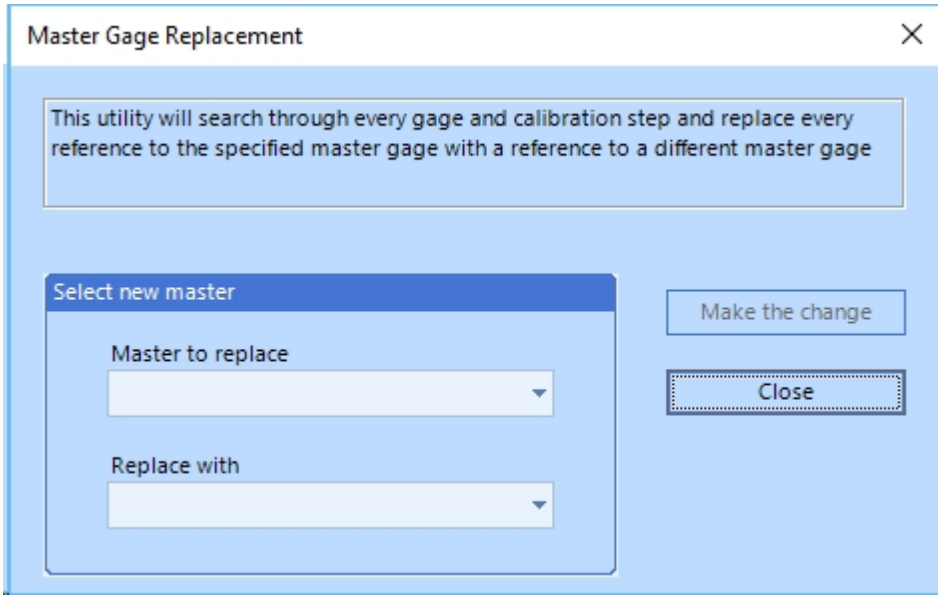
Import gages

Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Replace master gage
Master gage circular references

Replace master gage

Replace master gage

This utility provides an easy way to update all current references to one master gage with references to a different one. This is particularly useful in cases where a master gage has been retired or lost or removed from service for some other reason and is being replaced with a new master gage.



This utility examines all references to master gages on each gage and every calibration step. When it finds

the 'Master to replace,' it will remove that gage and replace it with the 'Replace with' gage.

This utility can be found by going to ***Utilities*** > ***Masters*** > ***Replace master***. The user will also be offered the opportunity to use this utility whenever they mark a current master gage as inactive or no longer a master gage.

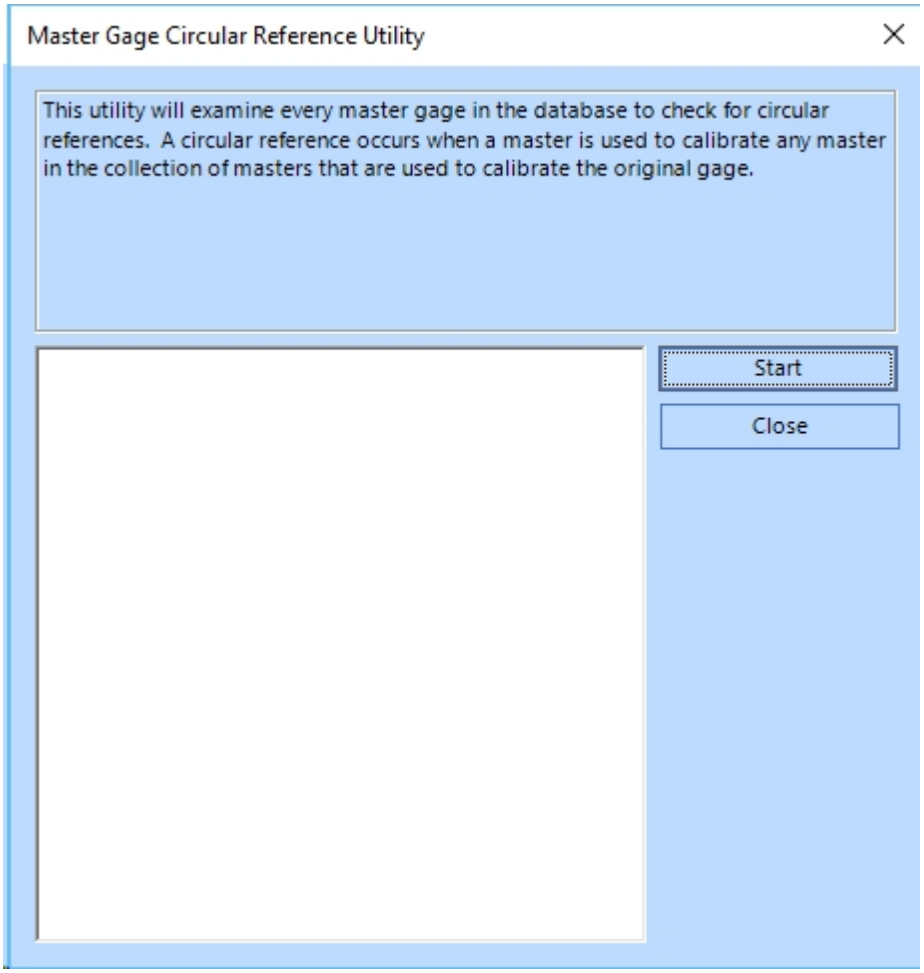
See Also
Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics
Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Master gage circular references

Master gage circular references

Master gage circular references

This utility will examine every master gage in the database to check for circular references. A circular reference occurs when a master is used to calibrate any master in the collection of masters that are used to calibrate the original gage. For example, if MasterA is used to calibrate MasterB, MasterB is used to calibrate MasterC, and MasterC is used to calibrate MasterA, a circular reference has occurred.

There is no limit to the size of the circular loop that this utility can detect. No matter how obscure the circular reference is, it will be discovered by this mechanism.



To access this utility, go to ***Utilities > Masters > Circular reference check***. To perform the check, simply click ***Start***.

See Also

Utilities
Import data
Export data
Import gages
Import events
Import choice lists
Import GAGEpack objects
Export remote calibrations
Import remote calibrations
Import external calibrations
Restore from backup
Labels
My reports
Batch reports
Management statistics

Wear-trend analysis
Information
Custom query
Refresh due dates
Delete event history
Load choice lists from gages
Replace master gage

Appendix A: Measurement systems analysis

Appendix A: Measurement systems analysis

Variation in the measurement system affects the individual measurement data and subsequently the decision based upon the data. By identifying the sources of variation, one can make better decisions and improve the measurement system.

In this chapter

What is a measurement system?
When is it used?
How do you develop a measurement system?
Measurement systems terminology
What is MSA?

What is a measurement system?

What is a measurement system?

A measurement system is the process of quantifying a description of a characteristic of interest. The resulting number from the process is determined by using a defined unit of measure that is appropriate to describe the characteristic.

Measurement is used in many different forms. One measures the physical characteristics of an object (e.g., "the ball weighs 8 pounds") or the expectations of a person or process (e.g., "I expected him to make more than one copy" or "the machining should have been 0.005 units smaller"). The appropriate means of measuring the characteristic depends both on the characteristic and the operational definition of the measure.

Regardless, the measurement equipment used in the system must be able to detect the variation in a characteristic of interest. When a measurement system cannot discriminate among the items being measured, it is said to have inadequate discrimination. Second, the measurement system must be statistically stable over time. If the system is not stable, one cannot have confidence or trust in the system. The person viewing the results of the system will be constantly second-guessing the data. Third, any error due to the measurement system must be small compared to the overall process variation.

See Also

Appendix A: Measurement systems analysis

When is it used?
How do you develop a measurement system?
Measurement systems terminology
What is MSA?

When is it used?

When is it used?

Whenever it is necessary to do any of the following:

1. To determine the quantity or dimension of a characteristic of interest for a product.
2. To compare one object to another.
3. To quantify the extent to which a process is capable of producing product with the required value for the characteristics of interest.

See Also

Appendix A: Measurement systems analysis
What is a measurement system?
How do you develop a measurement system?
Measurement systems terminology
What is MSA?

How do you develop a measurement system?

How do you develop a measurement system?

1. Define the standard unit of measure.
    a. Choose a unit of measure that permits the quantification of abstraction (e.g., length, temperature, or mass) into a form capable of being quantified (e.g., yards, degrees Fahrenheit, or grams).
2. Select the proper instruments.
    a. Instruments used in measuring the identified characteristic must meet at least the three following requirements:
        - They must be calibrated in the proper unit of measure
        - They must be calibrated against a "known standard" which is traceable to a centralized standard. This centralized standard is usually provided by an organization such as NIST (National Institute of Standards and Technology)
        - They must be sensitive enough to discriminate adequately among the units being measured.
    b. The discrimination of the equipment must be sensitive enough to identify the within-subgroup variation.

1. Select the proper method to perform the measurements.
    o The method chosen must be appropriate for the task. Guidelines for methods can come from professional societies, industry standard best practices, or internal sources.

2. Take the measurements.
3. Record the results.

See Also
Appendix A: Measurement systems analysis
What is a measurement system?
When is it used?
Measurement systems terminology
What is MSA?

Measurement systems terminology

Measurement systems terminology

In This Section	See Also
R&R stability study	Appendix A: Measurement systems ana
Accuracy and precision	What is a measurement system?
Bias	When is it used?
Linearity	How do you develop a measurement sy
Part-to-part variation	What is MSA?
Probable error	
Repeatability (equipment variation)	
Reproducibility (operator variation)	
Uncertainty	
Remember	

R&R stability study

R&R stability study

Process stability refers to the ability to predict what is to come. When a process is stable, it is subject only to common cause variation. Without process stability, the statistics for repeatability and reproducibility cannot help you predict future outcomes.

In terms of measuring equipment, stability is the total variation in the measurements obtained with a measurement device on the same unit (frequently called a master) when measuring a single characteristic over an extended period of time. In this instance, stability refers to the predictability of the equipment over time.

The appropriate time interval is often a major consideration when analyzing the measurement system. Knowledge of the circumstances and conditions in which the equipment is used will help identify special causes when the system is unstable. Action should be taken to make the measurement system robust to the conditions that cause instability.

The more likely it is that the system will change; the shorter the time interval should be between samples.

See Also
Measurement systems terminology
Accuracy and precision
Bias
Linearity
Part-to-part variation
Probable error
Repeatability (equipment variation)
Reproducibility (operator variation)
Uncertainty
Remember

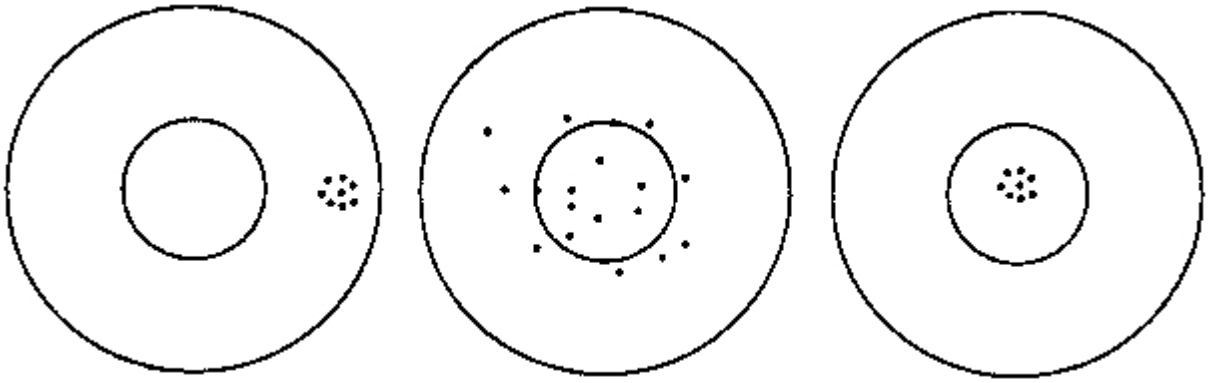
Accuracy and precision

Accuracy and precision

Accuracy is the difference between the observed average of measurements and the "true" average. The "true" value can be determined by taking a master measurement using "master" gages or equipment.

Accuracy = True Measurement - Observed Average

Precision reflects the ability of the operator or equipment to repeat or duplicate readings. This is sometimes referred to as reproducibility.



See Also
Measurement systems terminology
R&R stability study
Bias
Linearity
Part-to-part variation
Probable error
Repeatability (equipment variation)

Reproducibility (operator variation)

Uncertainty

Remember

Bias

Bias

Bias is a measure of how accurate a measurement system is on the average. If the mean of the measurements equals the true value, then the measurement system has zero bias. Generally one is interested in both how close to the true value the measurement is on the average, and in how dispersed the values are around the true value. These concepts are often referred to as Accuracy and Precision. Accuracy and Bias are very similar in concept as are Uncertainty and Precision. Uncertainty and Bias are often determined using the same study if a true value can be obtained for the part measured or if a known standard is used for taking the measurements. See Uncertainty.

See Also

Measurement systems terminology

R&R stability study

Accuracy and precision

Linearity

Part-to-part variation

Probable error

Repeatability (equipment variation)

Reproducibility (operator variation)

Uncertainty

Remember

Linearity

Linearity

Linearity is similar to Bias except that it goes throughout the operating range of the gage. The assumption is that the bias can vary based on the size of the measurement of the gage. In this case, an appraiser takes parts or standards with known values throughout the operating range of the gage and measures each of them several times. Least squares regression is used to fit a line to the data.

See Also

Measurement systems terminology

R&R stability study

Accuracy and precision

Bias

Part-to-part variation

Probable error

Repeatability (equipment variation)

Reproducibility (operator variation)
Uncertainty
Remember

Part-to-part variation

Part-to-part variation

This is the variation that exists among parts included in the analysis. The part values are determined by averaging all the measurements made by the appraisers for a part. The range for the parts is determined by subtracting the smallest part average from the largest part average. This value is then used to estimate the standard deviation for the part production process (referred to as Study Parameters in GAGEpack).

See Also

Measurement systems terminology
R&R stability study
Accuracy and precision
Bias
Linearity
Probable error
Repeatability (equipment variation)
Reproducibility (operator variation)
Uncertainty
Remember

Probable error

Probable error

Probable error is used to help define the effective resolution of a measurement. It describes the average deviation between a measurement and the average of multiple measurements of the same item. This deviation can be compared to the unit of measure to assess the "effective" resolution of the measurement system.

See Also

Measurement systems terminology
R&R stability study
Accuracy and precision
Bias
Linearity
Part-to-part variation
Repeatability (equipment variation)
Reproducibility (operator variation)
Uncertainty

Remember

Repeatability (equipment variation)

Repeatability (equipment variation)

Repeatability is the variation in the repeated measurement of a single characteristic for one part, by one operator. Frequently, a study will have several parts, several operators, and more than one gage. Repeatability answers the question of how much variation there is among these repeated measurements. This is also called Test-Retest Error or Equipment Variation.

See Also
Measurement systems terminology
R&R stability study
Accuracy and precision
Bias
Linearity
Part-to-part variation
Probable error
Reproducibility (operator variation)
Uncertainty
Remember

Reproducibility (operator variation)

Reproducibility (operator variation)

Reproducibility is the comparison of the average of all measurements made by each operator to the grand average across all parts and operators when measuring the same characteristic over the same parts. This is a measurement of how much each operator affects the average of the measurement (measuring too high or too low on a consistent basis—called bias). If these measurement averages are different across operators, a bias exists in the measurements.

See Also
Measurement systems terminology
R&R stability study
Accuracy and precision
Bias
Linearity
Part-to-part variation
Probable error
Repeatability (equipment variation)
Uncertainty
Remember

Uncertainty

Uncertainty

Measurement uncertainty is a term used to describe the quality of a measured value. It is the range assigned to a measurement result that is expected to contain the true measurement with some level of confidence - usually 95 percent. Generally one is interested in both how close to the true value the measurement is on the average, and in how dispersed the values are around the true value. These concepts are often referred to as Accuracy and Precision. Accuracy and Bias are very similar in concept as are Uncertainty and Precision. Uncertainty and Bias are often determined using the same study if a true value can be obtained for the part measured or if a known standard is used for taking the measurements.

To find the uncertainty for a particular part measurement, one takes one appraiser, one gage, and one part and has the appraiser measure the part several times (typically 10 to 100). The standard deviation is estimated using the range or the least squares method and a plus/minus factor is determined using either the t-distribution or the normal distribution with a level of confidence (e.g., 95%). At this point the analogy is flip-flopped from the interval containing 95% of the sample values to a 95% chance that the interval contains the true value. This is not a bad analysis except for Bias. If there is a Bias in the measurement, it can be large enough to exclude the true value from being with in the interval completely, or at a minimum, change the confidence level percentage. See Bias.

See Also
Measurement systems terminology
R&R stability study
Accuracy and precision
Bias
Linearity
Part-to-part variation
Probable error
Repeatability (equipment variation)
Reproducibility (operator variation)
Remember

Remember

Remember

Primary principles of measurement apply to the process of quantification and the resulting number when using such a process. Prior to performing a measurement, it is important to have the proper measuring device that has been calibrated to a known, traceable source. The device must also be able to detect the variation of the characteristic being measured. Therefore, the discrimination unit must be small enough to identify the variation within the units being measured.

See Also
Measurement systems terminology
R&R stability study
Accuracy and precision

Bias
Linearity
Part-to-part variation
Probable error
Repeatability (equipment variation)
Reproducibility (operator variation)
Uncertainty

What is MSA?

What is MSA?

Measurement systems analysis (MSA) is the study of the sources of variation within the measurement system. Variation due to the measurement system is one of many sources of variation within the overall system. The MSA provides knowledge about how much variation can be attributed to the measurement system.

Measurement systems analysis provides the system operator an opportunity to understand how variation affects the data. Any organization that bases decisions on generated numbers needs to perform an analysis of the measurement system. These organizations live by the credo, "If you can't control the numbers generated, you can't control the process that generated the numbers." The outputs of any system are only as good as the inputs. MSA can provide some confidence in the measurement system.

Conducting MSA is a requirement for ISO 9000 certification and compliance with many other standards. MSA must be included with any quality system to help the users of the system achieve compliance.

Scrutiny of the system helps to reduce the amount of bias that may occur in the system. It is human nature to accept data when:

- The data has been generated in a logical manner;
- The data has been generated using approved procedures;
- The data has been generated by someone with "more experience"
- The numbers look "right."

Failure to recognize variation in measurement data may result in:

- inaccurate decisions;
- misdirected capital expenditures;
- costly retraining of employees;
- customer dissatisfaction;
- or other negative conditions.

In This Section	See Also
When is MSA done?	Appendix A: Measurement systems ana
How do you do MSA?	What is a measurement system?
Remember	When is it used?
	How do you develop a measurement sy
	Measurement systems terminology

When is MSA done?

When is MSA done?

Conduct measurement system analysis for any of the following:

- To assess the measurement system to determine the factors that influence the variation;
- To help to understand the variation which is produced by the different areas within the process;
- To better understand the process;
- To establish confidence in the measurements coming from the measurement system;
- To compare measuring equipment before and after repair or calibration;
- To evaluate measuring equipment suspected of being faulty;
- To determine acceptance of a new measurement system (new process/products).

See Also

What is MSA?

How do you do MSA?

Remember

How do you do MSA?

How do you do MSA?

1. Determine the objective.
    - Before starting the study, the desired objective should be determined. Typical objectives are listed:
        - New quality equipment.
        - Compare measuring devices.
        - Evaluate suspect gage.
        - Evaluate continued use of a gage after a process implementation has been made.
        - Compare gage performance prior to calibration with post calibration.
        - Assess whether a factor influences the variation of a measurement system.
        - Assess how much a factor contributes to the variation of a measurement system.
        - Establish confidence in the measurement system.
2. Select characteristic (dimension) of interest.
    - Determine the units and the characteristic to be measured, such as length, inside diameter, hole to hole, viscosity, density, etc.
3. Select factors to be studied.
    - Select the factors that appear to influence the measurement variation and the number of levels of each factor. Generally, only one or two factors are considered for a single study. Typical factors are operators, measurement method, gages, shifts, etc.
4. Determine the number of parts.
    - Determine the number of parts to be used in the study. If process data is not known (data is not available from a process control chart on the process), the parts should be selected to represent the total spread of the process. Generally, a study consists of five to ten parts.
5. Determine the number of replications.
    - Determine the number of replications (re-measurements for a part) to be used in the study. Generally, a study consists of 3 to 5 replications.

1. Gather data.
    - During the data collection phase, the items listed below must be observed.

    a. Assure that the measuring method is applied to the desired characteristic and that the defined gaging procedure(s) is being followed.

    b. In reading the gage, the reading should be made to the smallest graduation on the gage or to one-half the smallest graduation.

    c. The measurements should be made in a random order to ensure any drift or changes are randomly spread throughout the study. The operator measuring the parts should be unaware of the identity of the part to avoid any possible bias. ***NOTE:*** this requires the part be identified by the person conducting the study.

1. Analyze results.
    - Analyze results following the method selected for analysis.

2. Take appropriate action.
    - Evaluate options for action. Plan and carry out options such as training operators, repairing instruments, calibrating instruments, replacing instruments, or standardizing procedures.

See Also
What is MSA?
When is MSA done?
Remember

Remember

Remember

Product and process conformance are determined by measurements made by the measurement system. Any error in these measurements has a direct bearing on conformance as defined within the system. A clear understanding of the results of the measurement system requires an understanding of the possible error within the system.

MSA is a process for determining the sources and effects of variation within the measurement system. Any organization that generates numbers and bases decisions on numbers must assess its measurement system. Those customers of the measurement system must have confidence in the results of the system. MSA provides this confidence by creating a better understanding of the process and identifying the factors contributing to the measurement variation.

See Also
What is MSA?
When is MSA done?
How do you do MSA?