User's guide
H-5464-8501-02-A

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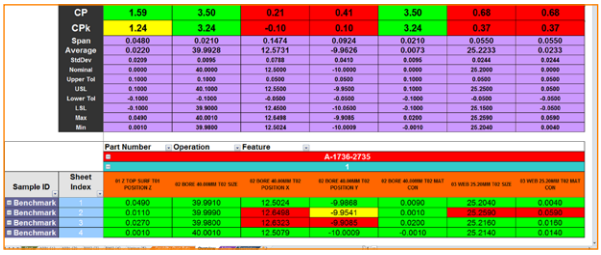
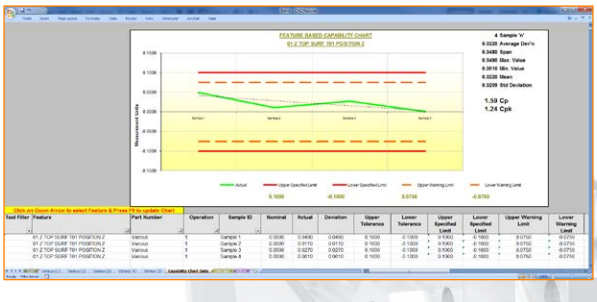
Renishaw CNC Reporter



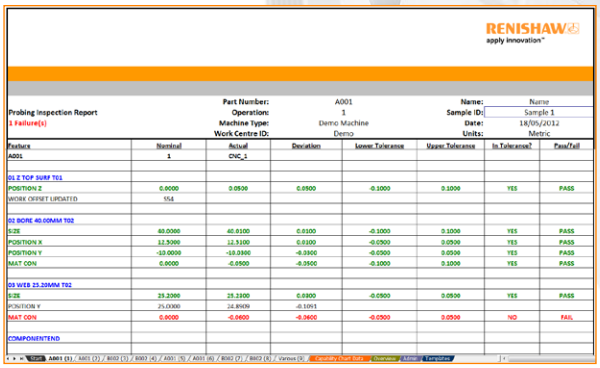
	CP	1.59	3.50	0.21	0.41	3.50	0.68	0.68
	CPk	1.24	3.24	-0.10	0.10	3.24	0.37	0.37
	Span	0.0480	0.0210	0.1474	0.0924	0.0210	0.0550	0.0550
	Average	0.0220	39.9928	12.5731	-9.9626	0.0073	25.2233	0.0233
	StdDev	0.0209	0.0095	0.0788	0.0410	0.0095	0.0244	0.0244
	Nominal	0.0000	40.0000	12.5000	-10.0000	0.0000	25.2000	0.0000
	Upper Tol	0.1000	0.1000	0.0500	0.0500	0.1000	0.0500	0.0500
	USL	0.1000	40.1000	12.5500	-9.9500	0.1000	25.2500	0.0500
	Lower Tol	-0.1000	-0.1000	-0.0500	-0.0500	-0.1000	-0.0500	-0.0500
	LSL	-0.1000	39.9000	12.4500	-10.0500	-0.1000	25.1500	-0.0500
	Max	0.0490	40.0010	12.5498	-9.9085	0.0200	25.2590	0.0590
	Min	0.0010	39.9890	12.5024	-10.0009	-0.0010	25.2040	0.0040

		Part Number	Operation	Feature				
				A-1736-2735				
Sample ID	Sheet Index	01 Z TOP SURF T01 POSITION Z	02 BORE 40.00MM T02 SIZE	02 BORE 40.00MM T02 POSITION X	02 BORE 40.00MM T02 POSITION Y	02 BORE 40.00MM T02 MAT CON	03 WEB 25.20MM T02 SIZE	03 WEB 25.20MM T02 MAT CON
Benchmark	1	0.0490	39.9910	12.5024	-9.9958	0.0090	25.2040	0.0040
Benchmark	2	0.0110	39.9990	12.5498	-9.9541	0.0010	25.2590	0.0590
Benchmark	3	0.0270	39.9890	12.5323	-9.9085	0.0200	25.2150	0.0160
Benchmark	4	0.0010	40.0010	12.5079	-10.0009	-0.0010	25.2140	0.0140

Import measurement results



Review statistical data



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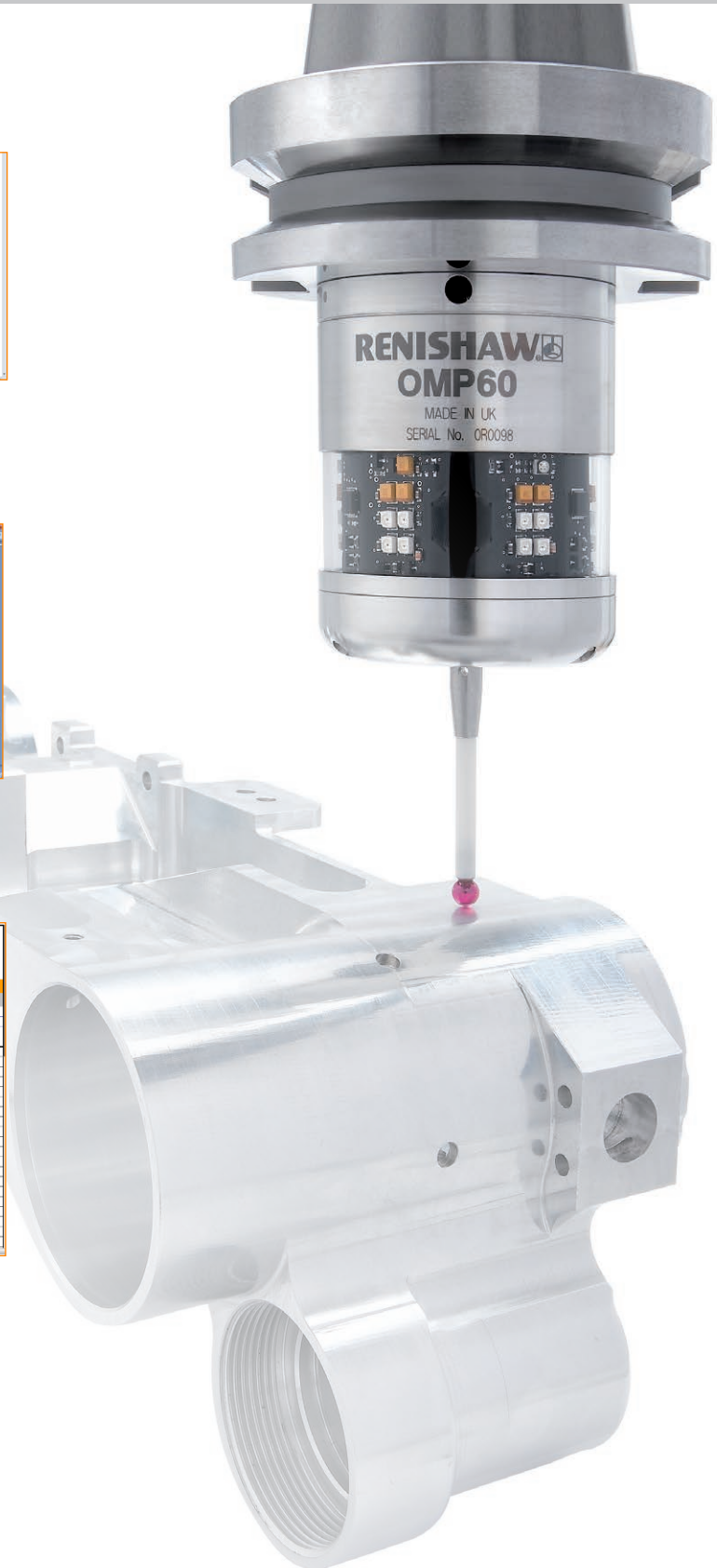
Probing Inspection Report
1 Failure(s)

Part Number: A001
Operation: 1
Machine Type: Demo Machine
Work Centre ID: Demo
Name: Name
Sample ID: Sample 1
Date: 18/05/2012
Units: Metric

Feature	Nominal	Actual	Deviation	Lower Tolerance	Upper Tolerance	In Tolerance?	Pass/Fail
A001	1	CNC_1					
01 Z TOP SURF T01							
POSITION Z	0.0000	0.0500	0.0500	-0.1000	0.1000	YES	PASS
WORK OFFSET UPDATED	954						
02 BORE 40.00MM T02							
SIZE	40.0000	40.0100	0.0100	-0.1000	0.1000	YES	PASS
POSITION X	12.5000	12.5100	0.0100	-0.0500	0.0500	YES	PASS
POSITION Y	-10.0000	-10.0500	-0.0500	-0.0500	0.0500	YES	PASS
MAT CON	0.0000	-0.0500	-0.0500	-0.1000	0.1000	YES	PASS
03 WEB 25.20MM T02							
SIZE	25.2000	25.2300	0.0300	-0.0500	0.0500	YES	PASS
POSITION Y	25.0000	24.9909	-0.1091				
MAT CON	0.0000	-0.0600	-0.0600	-0.0500	0.0500	NO	FAIL
COMPONENTEND							

Determine process capability



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About Renishaw CNC Reporter

Renishaw CNC Reporter is a software package designed to display and process inspection results from Renishaw probing software. It allows users to create multiple inspection reports and to track a measured feature between several measured parts.

An additional, complementary application - Data Manager - allows the historical analysis of inspection data that has previously been processed using Renishaw CNC Reporter.

Both CNC Reporter and Data Manager run within the Microsoft Excel spreadsheet package, providing a familiar operating environment in which to work.

We hope that Renishaw CNC Reporter meets your reporting requirements. If you have any questions, or require technical assistance, please contact your local Renishaw representative. Details are available at **www.renishaw.com/contact**

Compatibility and system requirements

Data output package

Renishaw CNC Reporter is compatible with inspection data produced by the following software packages:

- Productivity+™ Active Editor Pro
- Productivity+™ GibbsCAM® plug-in
- Renishaw Inspection Plus *

* Configuration by Renishaw engineers is required before Inspection Plus data can be used with Renishaw CNC Reporter.

PC specification

For optimum performance ensure the target PC meets or exceeds the following PC specification.

Operating system	Microsoft Windows 7 (or later)
Processor	2.0 GHz Intel Core 2 Duo (or equivalent)
Memory	4 GB RAM, 1 GB hard disk space
Other	CD/DVD drive for software installation Microsoft Excel 2007 (or later): Microsoft Excel 2016 recommended

NOTES:

Earlier operating systems (Windows Vista and Windows XP) can be supported by installing Renishaw CNC Reporter V6.02, which is located in the Archive folder of the V6.03.01 installation media.

Version 6.02 is compatible with Microsoft Excel 2003, however Excel 2003 with a Windows 7 operating system is not a supported combination. Additionally, it is not possible to use a 64-bit version of Microsoft Excel in combination with a 32-bit operating system.

Renishaw CNC Reporter is available in English only.

Customise the Productivity+ post processor

The Renishaw Productivity+ post processor is a text file with a .RenMF file extension containing a series of commands and switches that can be configured to suit a particular CNC machine tool and application.

The post processor includes a **DELIM#** function that is used to configure the system to output delimited data. When the post processor is first installed, the **DELIM#** function is disabled, rendering the function inactive. In order to use Productivity+ generated inspection data in Renishaw CNC Reporter, the **DELIM#** function must be activated and the appropriate delimiter character, for example "/" must be defined.

Example post processor content:

DELIM# function inactive with "/" delimiter character

```
;_DELIM# /
```

DELIM# function active with "/" delimiter character

```
_DELIM# /
```

DELIM is located in the Reporting section of the Renishaw .RenMF editing tool.

Indicating a new component in an inspection report

When inspecting a batch of components it is important to identify each instance of a new component being inspected. This is achieved by outputting a 'trigger word' at the end of the Productivity+ inspection cycle using DPRNT (or equivalent) followed by a particular word or string of characters added as, for example, a G-code block.

A sample G-code block for an ISO controller would be:

```
POPEN
G103P1
DPRNT[COMPONENTEND]
G4P50
G103
PCLOS
```

CAUTION: The 'trigger word' used within the macro program must exactly match the **New Part Inspection Sheet "Trigger Word"** defined in the *Initial Set Up Data* panel in the **Start** tab of Renishaw CNC Reporter.

Sample output results (as per the Demo Results. txt file) would appear:

```
PNUM-A001/OPERATION/1/
/
02 BORE 40.00MM T02/
SIZE/40.0000/39.991/-0.009/-0.1000/0.1000/
POSITION X/12.5000/12.5024/0.0024/-
0.0500/0.0500/
POSITION Y/-10.0000/-9.9868/0.0132/-
0.0500/0.0500/
MAT CON/0.0000/0.009/0.009/-0.1000/0.1000/
/
03 WEB 25.20MM T02/
SIZE/25.2000/25.204/0.0040/-0.0500/0.0500/
POSITION Y/25.0000/24.89
0.0000/0.0000/
MAT CON/0.0000/0.0040/0.(
/
COMPONENTEND/
PNUM-A001/OPERATION/1/
/
02 BORE 40.00MM T02/
SIZE/40.0000/39.999/-0.0010/-0.1000/0.1000/
POSITION X/12.5000/12.6498/0.1498/-
0.0500/0.0500/
POSITION Y/-10.0000/-9.9541/0.0459/-
0.0500/0.0500/
MAT CON/0.0000/0.001/0.001/-0.1000/0.1000/
/
03 WEB 25.20MM T02/
SIZE/25.2000/25.259/0.059/-0.0500/0.0500/
POSITION Y/25.0000/24.97
0.0000/0.0000/
MAT CON/0.0000/0.059/0.0
/
COMPONENTEND/
```

New Part Inspection Sheet "Trigger Word" .0500/

New Part Inspection Sheet "Trigger Word" 500/

Installation and product registration

Install Renishaw CNC Reporter

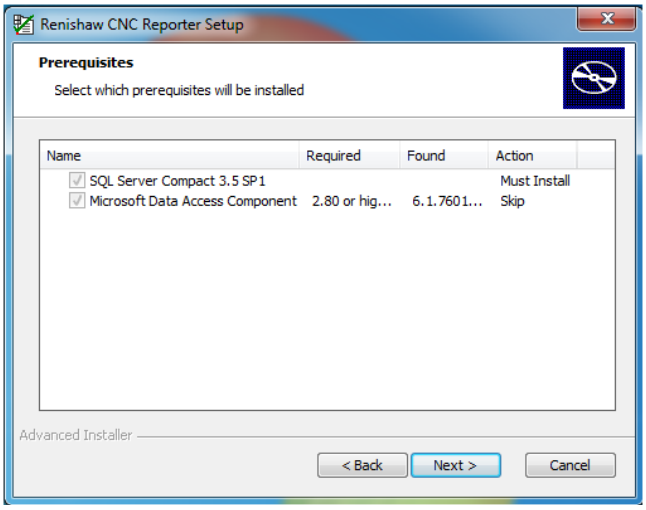
NOTE: Admin rights for the target PC are required to install Renishaw CNC Reporter.

Insert the Renishaw CNC Reporter software disc into the CD/DVD drive.

Select the appropriate installer (32-bit or 64-bit) and follow the on-screen instructions to complete the installation.

If the installer cannot detect an installed copy of Microsoft Excel, notification will be given and the installation process will cease.

A dialog will indicate that additional, prerequisite software packages are required by Renishaw CNC Reporter: ensure the tick boxes are selected to install these packages.



NOTE: When installing Renishaw CNC Reporter on PCs with early versions of Microsoft Windows and Microsoft Excel, additional components may also be installed.

Once installation is complete a Renishaw CNC Reporter icon will be visible on the PC desktop.

Double-click this icon (or single-click and press Enter) to open the application.

On opening, a 'Security Warning (Macros have been disabled)' dialog may be displayed in the Microsoft Excel header.

Select the option to enable content / trust the publisher and allow the application to run.

Depending on the target PC configuration and permission settings, a 'Macro Security Trust Settings' dialog may be displayed.

Renishaw CNC Reporter will close down allowing the 'trust access to Visual Basic / VBA Project' to be checked.

Follow the instructions provided within the dialog to resolve the issue.

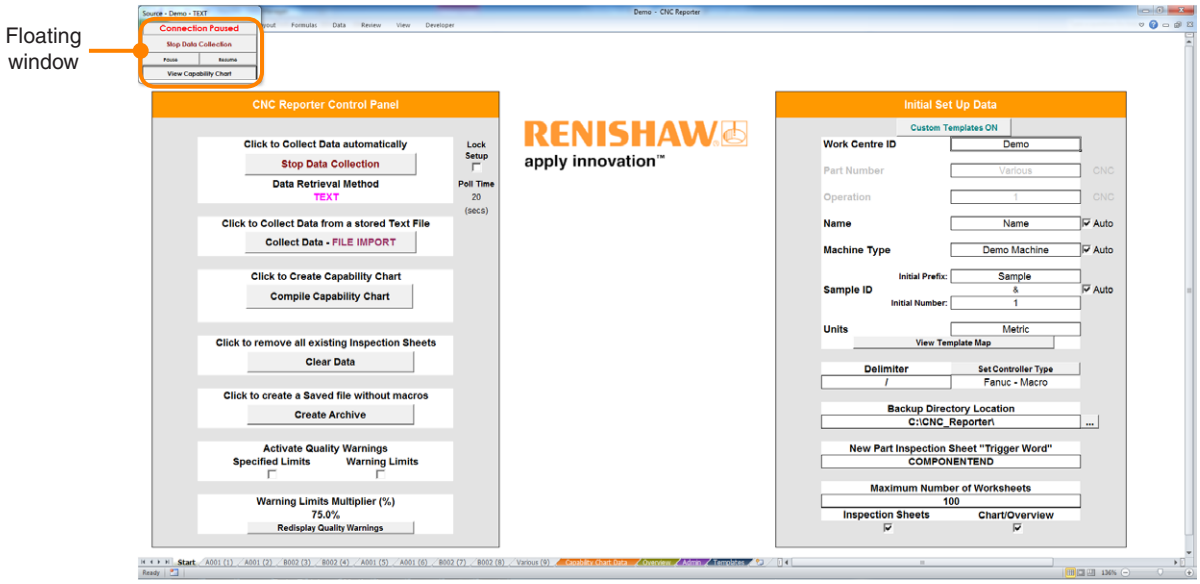
Screenshots may vary from those shown depending on the version of Renishaw CNC Reporter installed.

Renishaw CNC Reporter screen layout

(For detailed operational information, please see "Using Renishaw CNC Reporter" on page 9.)

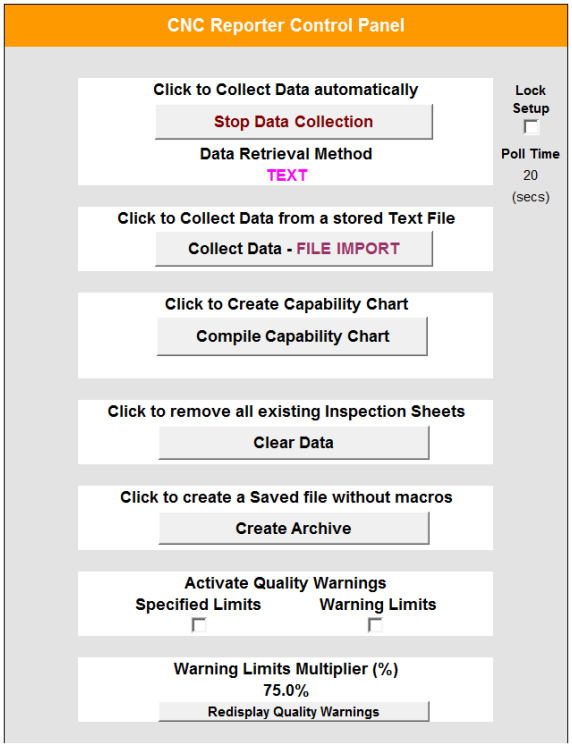
Use the tabs at the bottom of the screen to navigate through Renishaw CNC Reporter.

Start tab

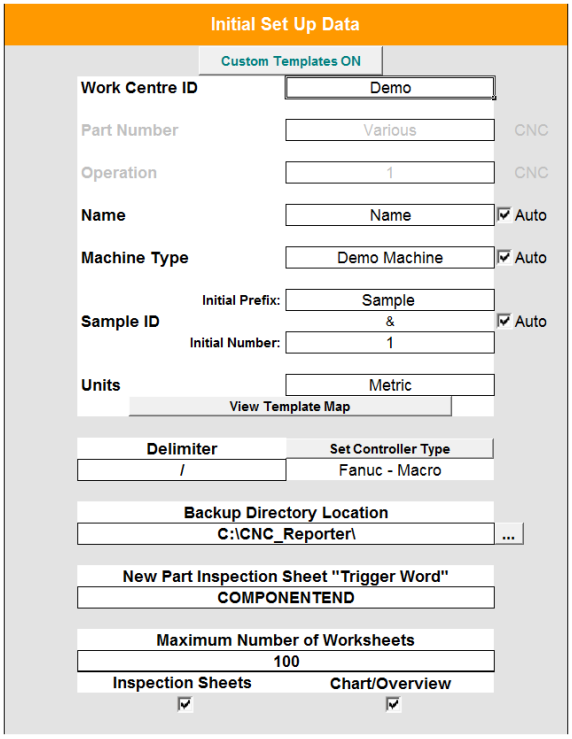


The Renishaw CNC Reporter **Start** tab comprises two panels:

CNC Reporter Control Panel



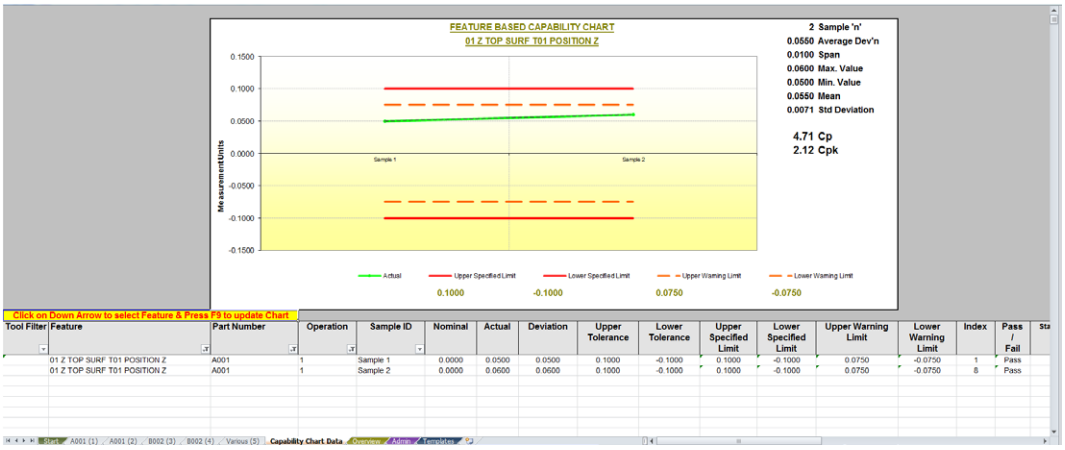
Initial Set Up Data



The *CNC Reporter Control Panel* is used to select the data file for import and to initiate the creation of the **Capability Chart**. Options allow the calculation of warning limits, derived from tolerance values within the inspection data, and the display of **Specified Limits** (tolerance) and **Warning Limits** on the chart.

The *Initial Set Up Data* panel is used to define information contained within the header section of each **Probing Inspection Report**, and specifies how the inspection of a new component and the end of a report are identified within the imported inspection data file.

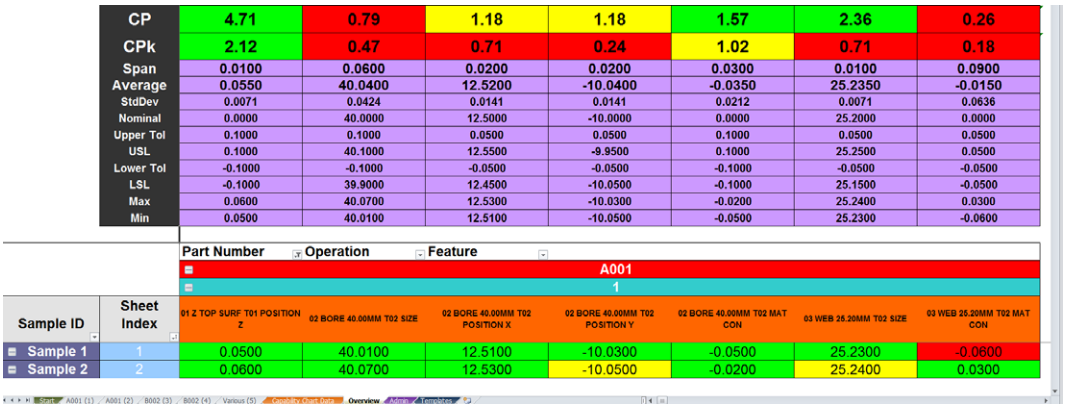
Capability Chart Data tab



The **Capability Chart** provides a graphical representation of the variation in measured data for a single feature across multiple components, along with associated statistical analysis data. User selectable filters allow data to be refined as necessary.

NOTE: The **Capability Chart** can only display toleranced results data. If the imported results file does not contain toleranced data, CNC Reporter is unable to populate the chart and a dialog advising 'There was no TOLERANCED data to process' will be displayed.

Overview tab

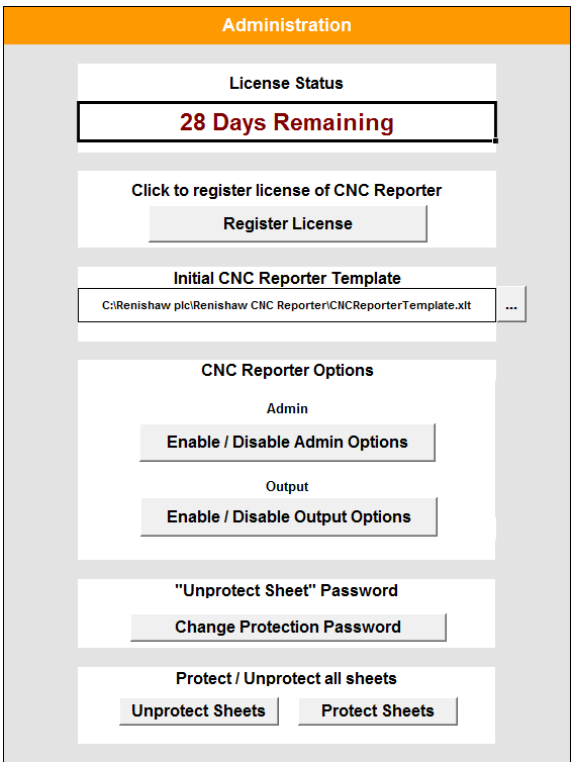


The **Overview** tab displays actual measured data in colour coded data cells, providing a visual indication of features which are in tolerance (green), approaching tolerance (yellow) and out of tolerance (red).

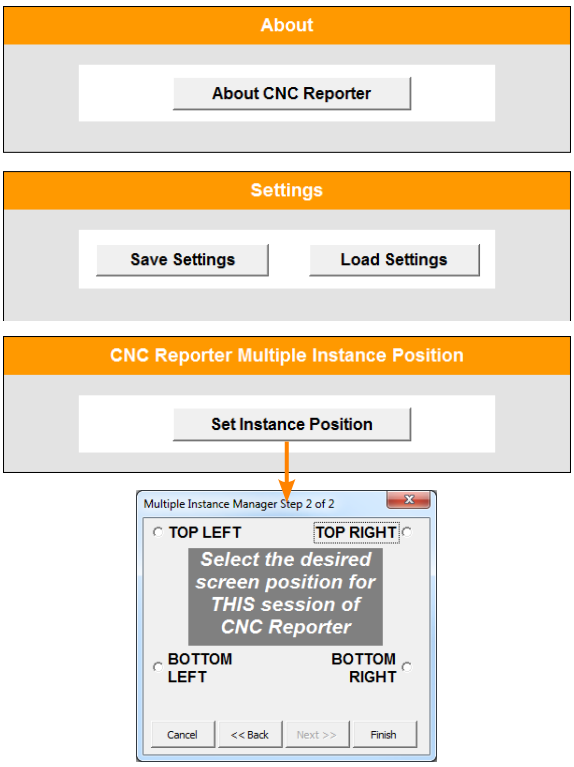
NOTE: The **Overview** tab can only display toleranced results data. If the imported results file does not contain toleranced data, the **Overview** tab will remain empty.

Admin tab

Administration



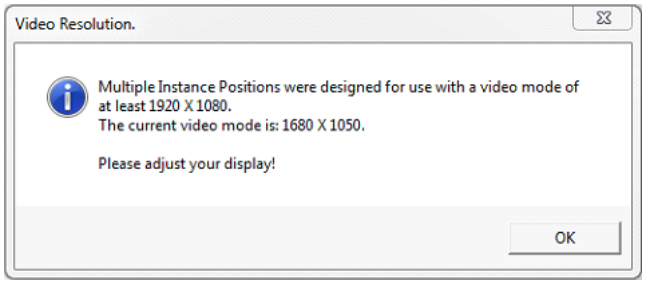
About



The **Admin** tab displays the current license status, and allows background functionality (as described in the 'Advanced features' section) to be set.

The *CNC Reporter Multiple Instance Position* panel provides the option to run four instances of CNC Reporter concurrently. Select **Set Instance Position** and use the *Multiple Instance Manager* to position the windows.

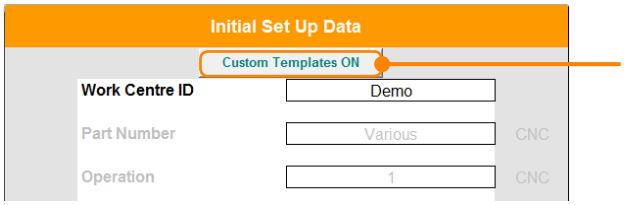
NOTE: In order to use the multiple instance function, a minimum screen resolution of 1920 × 1080 is required. If this minimum resolution is not met, the following dialog will be displayed.



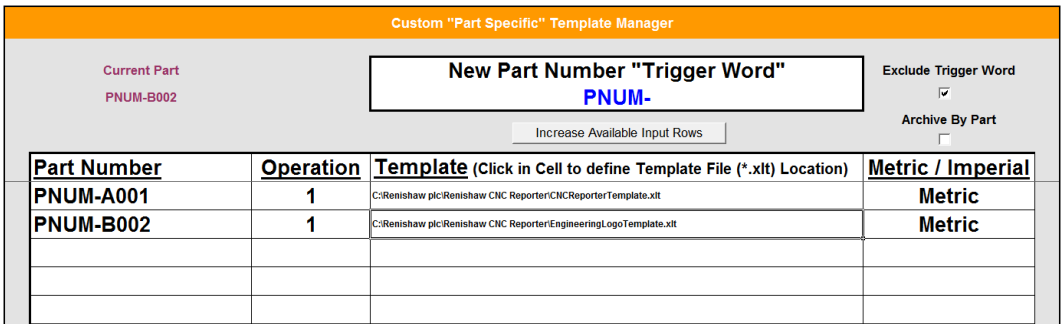
Templates tab

The **Templates** tab allows users to vary the templates used for **Probing Inspection Reports** depending on the part number of the inspected component.

NOTE: To access the **Templates** tab, select **Custom Templates OFF** in the *Initial Set Up Data* panel within the **Start** tab. This setting will then toggle to **Custom Templates ON** and the **Templates** tab will be visible.



Once clicked **Templates** tab is active



Using Renishaw CNC Reporter

Initial configuration

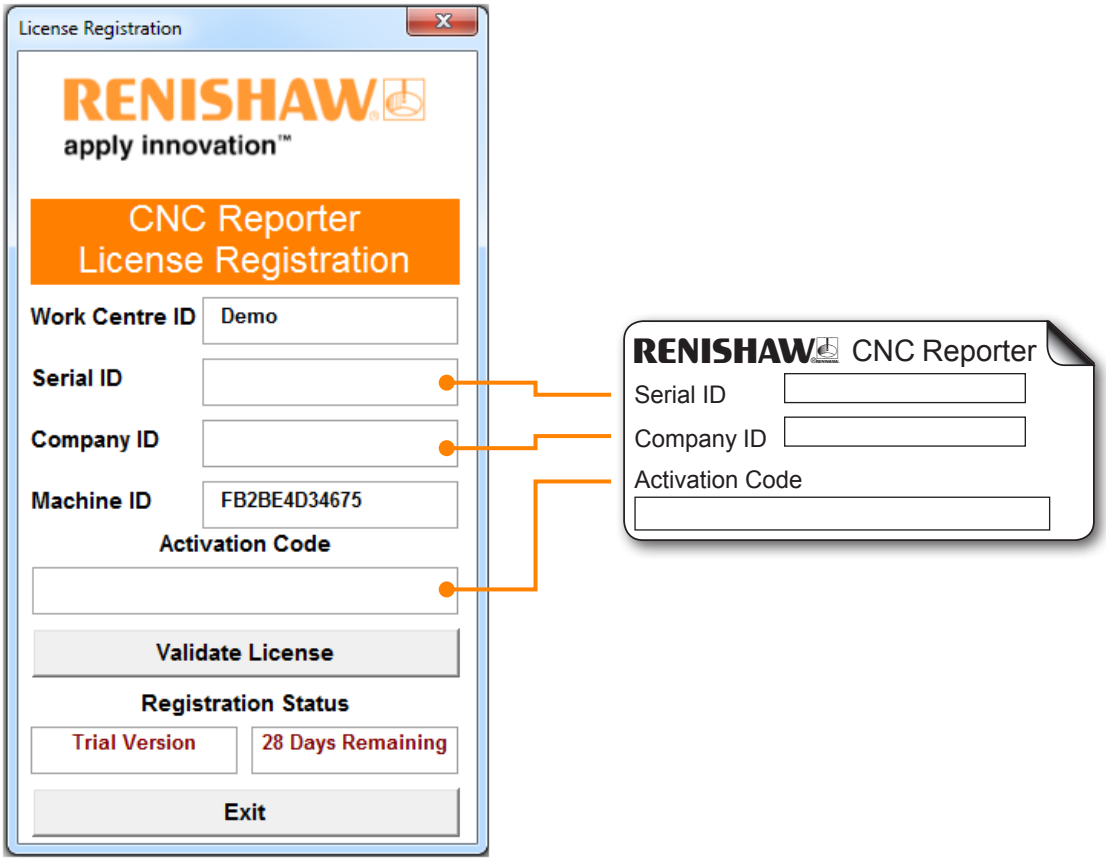
When first run, Renishaw CNC Reporter will display a message indicating that registration is required. Until registration is complete the application will run using a time limited license.

The time limited license allows the application to operate for 30 days and limits analysis capability to the `Demo Results.txt` file (supplied with the application).

NOTE: License status is always displayed in the *Administration* panel (located on the **Admin** tab - as shown on page 7).

Register Renishaw CNC Reporter

Navigate to the **Admin** tab and select **Register License** to display the **CNC Reporter License Registration** dialog.



In the **Work Centre ID (WCID)** field enter a unique name for the CNC machine tool used to gather inspection data. (The default 'Demo' entry is only valid for use with the `Demo Results.txt` file and cannot be used with real inspection data files.)

In the remaining fields enter the seven digit **Serial ID**, the seven digit alpha-numeric **Company ID** and the 32 digit alpha-numeric **Activation Code** (provided on a product label on the rear of the packaging).

Select **Validate License**.

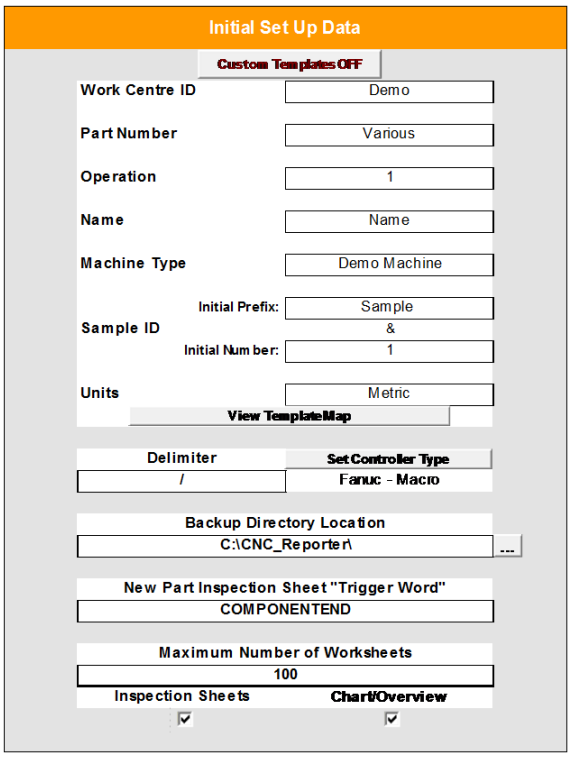
Read, acknowledge and accept the resulting software product license agreement.

Renishaw CNC Reporter is now activated and available for unlimited use.

NOTE: If Renishaw CNC Reporter is uninstalled from a PC and then reinstalled at a later date it is not necessary to reactivate the software as the PC will retain license information.

Initial Set Up Data panel

Before data is imported into Renishaw CNC Reporter, it is necessary to populate the *Initial Set Up Data* panel (within the **Start** tab) to define the information which will be displayed in the header section of **Probing Inspection Reports**.



Work Centre ID

Unique name of the CNC machine tool used to gather the inspection data which will be imported.

Part Number

Number or identifier of the part for which inspection data is to be imported.

Operation

Operation name or number associated with the inspection data to be imported.

Name

Company or operator name associated with the inspection data to be imported.

Machine Type

The machine type or name from which the inspection data is to be imported.

Sample ID

An automatically generated, incremental value comprising a prefix and numeric value.

Initial Prefix

Can be either a text or numeric value.

Initial Number

A numeric value which will be incremented with each new inspection report.

Units

Measurement units: Metric or Imperial/Inches.

Delimiter

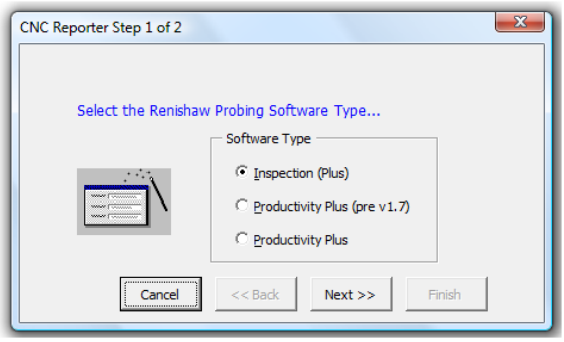
Defines the delimiter character used in the inspection data file to be imported. The default character is "/".

See "Customise the Productivity+ post processor" on page 2 for further information, and for an example of how the delimiter character should appear as part of the function.

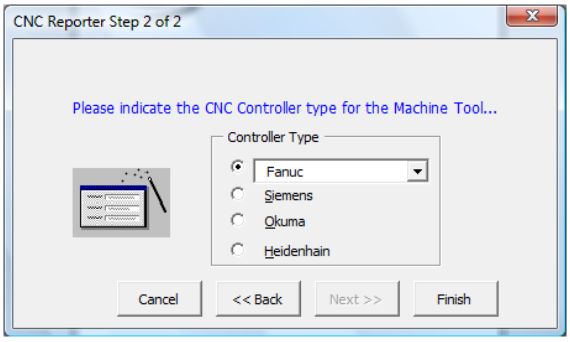
Set Controller Type

Click **Set Controller Type** to initiate the **Set Controller Wizard**.

Within the wizard select the probing software used for data collection then press **Next**.



Select the CNC controller type then press **Finish**. (For CNC machine controllers similar to Fanuc, select the arrow to the right of the **Fanuc** field and select the appropriate control from the drop-down list.)



NOTE: Some NC control platforms which are compatible with Renishaw probing software do not support the output of inspection report data and are therefore not compatible with Renishaw CNC Reporter.

Backup Directory Location

Defines the location to which **Excel Archives** and data **Text Logs** are stored.

New Part Inspection Sheet "Trigger Word"

Defines the word used in the inspection data to indicate the end of a report.

See also "Indicating a new component in an inspection report" on page 2.

Maximum Number of Worksheets

Defines the number of inspection reports that will trigger the automatic archive process. The entered value must be between 5 and 400 inspection reports.

See "Archive data" on page 17 for more information.

Inspection Sheets checkbox

When this tick box is checked, all **Probing Inspection Reports** will be archived during the automated archive process.

Chart/Overview checkbox

When this tick box is checked, the **Capability Chart** and **Overview** sheets will be archived during the automated archive process.

NOTE: Select **Inspection Sheets** and **Chart/Overview** checkboxes to ensure all data is archived.

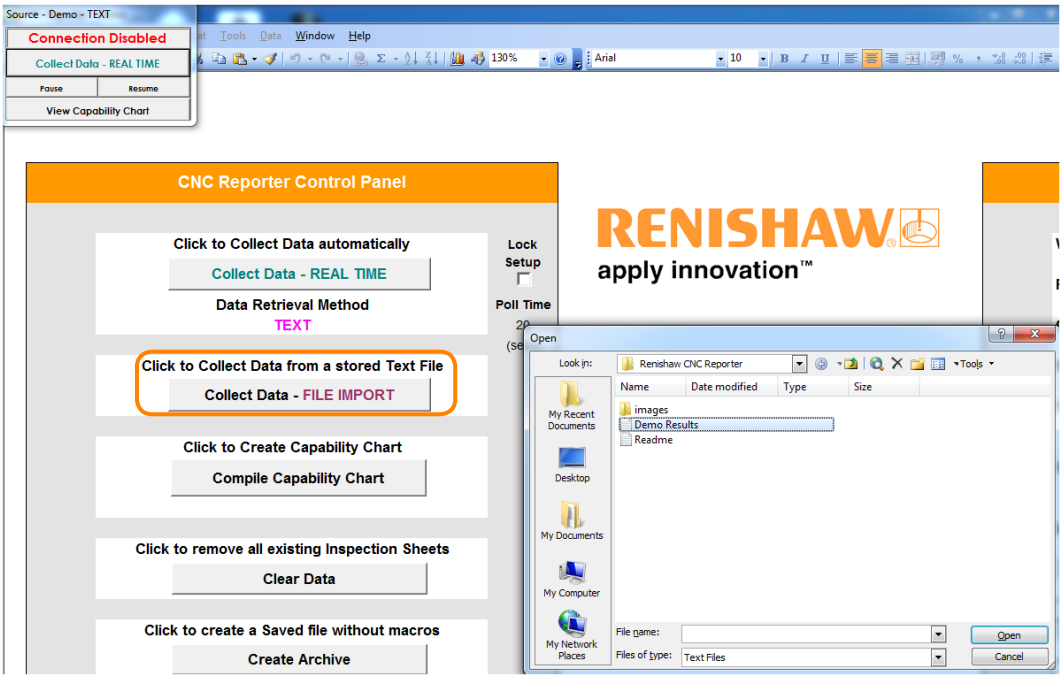
Importing data

Two methods of data import are available: **FILE IMPORT** and **REAL TIME**.

Data collection - FILE IMPORT method

FILE IMPORT is a manual process which imports all inspection data from a text (or similar) file in a single operation. This is expected to be the most common method of data import.

Select **Collect Data - FILE IMPORT** from the **Start** tab.



Click **OK** in the **Import a Data File** dialog, then navigate to and select the data file for import.

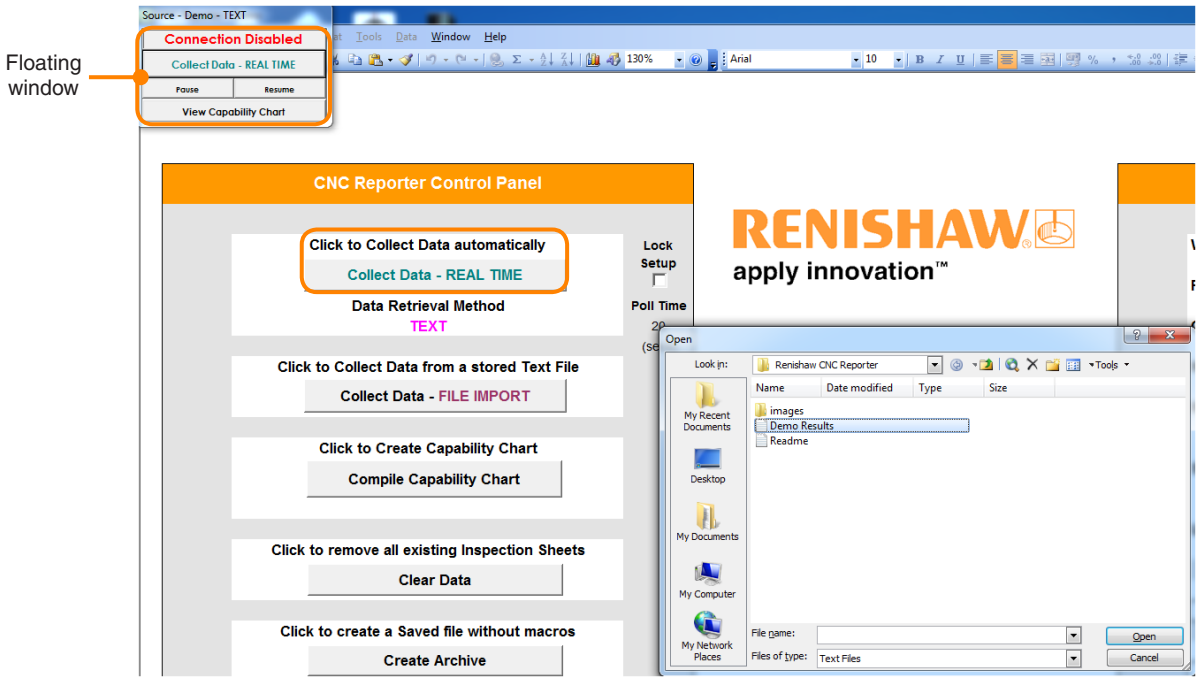
NOTE: By default the Open dialog will display files with a .txt file extension. This can be modified and any file type supported by Microsoft Excel can be imported.

Data collection - REAL TIME method

The **REAL TIME** data import method periodically accesses (polls) a file to retrieve inspection data. The time between each access, the poll time, can be any whole value between 5 and 999 seconds (default setting is 20 seconds) and is defined in the **Poll Time** field. (See also "Poll time" on page 23.)

If the file is locked by another application, CNC Reporter skips over the file by the defined poll time.

To import data, select **Collect Data - REAL TIME** (from the *Floating Window* or the *CNC Reporter Control Panel* within the **Start** tab).



In the resulting dialog, navigate to and select the data file to import.

NOTE: By default the **Open** dialog will display files with a .txt file extension. This can be modified and any file type supported by Microsoft Excel can be imported.

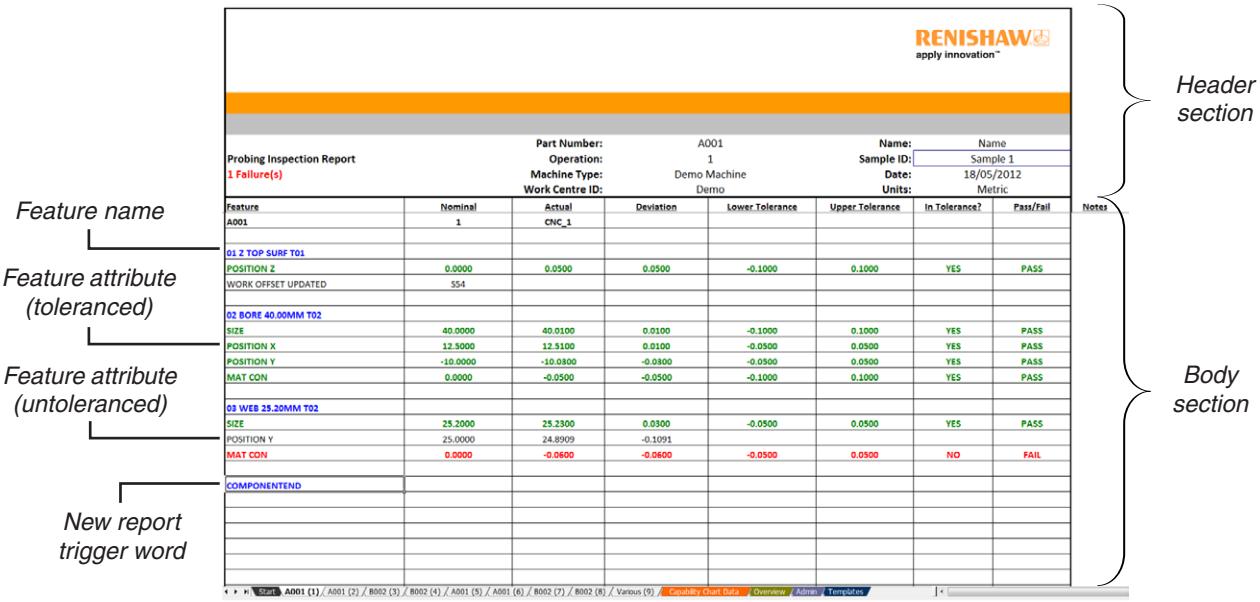
Once all data has been imported the file is deleted, but the application will continue to interrogate the folder location periodically (as defined by the poll time) for any additional results files that may be added.

Review and analyse data

Review data: Probing Inspection Reports

A **Probing Inspection Report** is created for each inspected component, with a new worksheet created for each report. Worksheet tabs are named sequentially using the data from the **Initial Prefix** field and the **Initial Number** field (defined in the *Initial Set Up Data* panel of the **Start** tab).

Each report comprises a header section and a body section.



The header section is populated using data defined in the *Initial Set Up Data* panel and provides a summary of any failures found.

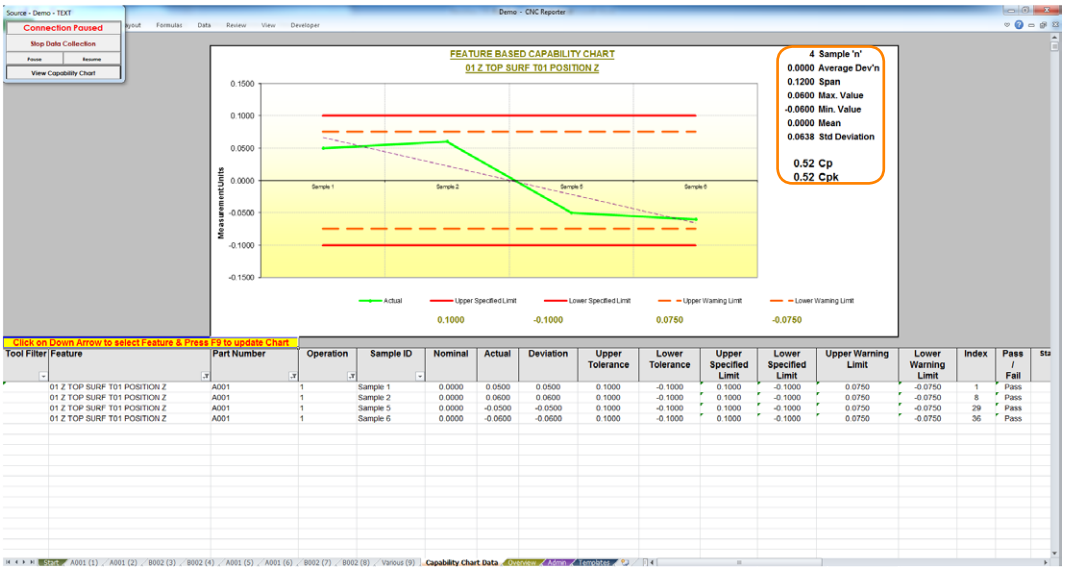
The body section is populated with colour coded inspection data.

- **Feature Names** appear in **bold blue** font.
- **Toleranced Feature Attributes** appear in **bold red** or **bold green** font (depending on adherence to tolerance).
- **Untoleranced Feature Attributes** and **Process Information** appear in non-bold black font.

Analyse data: Capability Chart

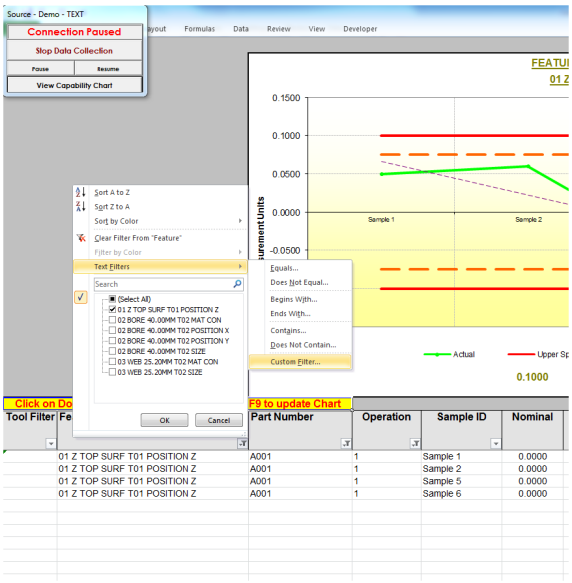
Select **View Capability Chart** (from the *Floating Window*) or **Compile Capability Chart** (from the *CNC Reporter Control Panel* located on the **Start** tab).

The **Capability Chart Data** tab will become active and a graphical display showing the variation of actual measured values for a single feature across all inspected components is visible.



Statistical data such as mean, standard deviation, Cp and Cpk values for the feature is displayed to the right of the chart.

Data can be filtered by **Feature**, **Part Number**, **Operation** and **Sample ID**. Microsoft Excel custom filters can also be used. Statistical data is updated automatically as filters are applied.



NOTE: The Renishaw CNC Reporter **Capability Chart** shows data for a single feature across multiple components. Users of Microsoft Excel 2010 can use the **Comparison Chart** within Data Manager to compare data across multiple features.

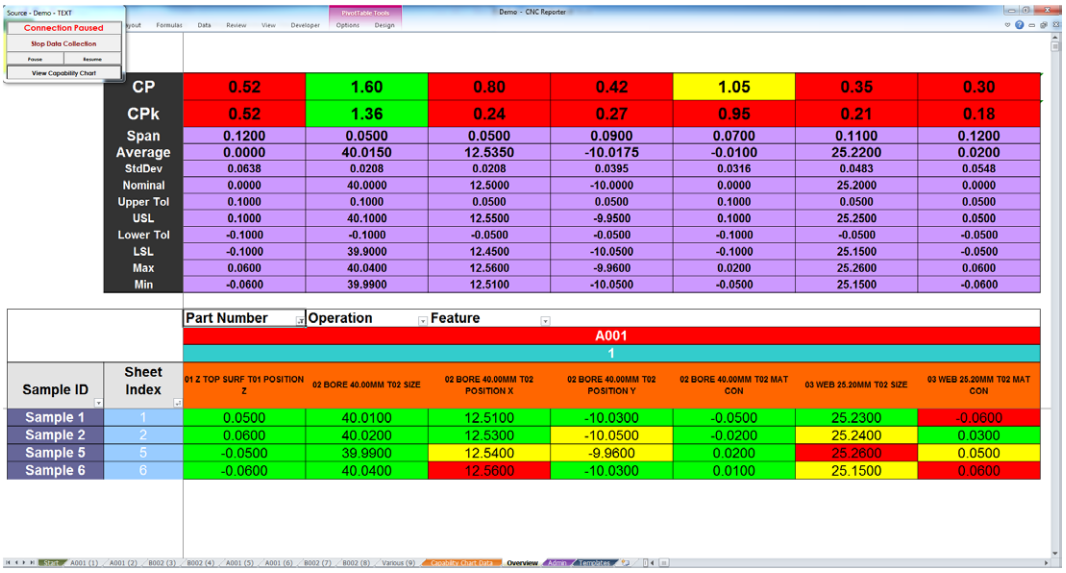
Control limits

Red lines on the capability chart are **Specified Limits**, determined by the tolerance value set within the probing cycles. Visibility of these limits on the capability chart is determined by the status of the **Specified Limits** tick box in the *CNC Reporter Control Panel* (on the **Start** tab).

Orange lines are **Warning Limits**, defined as a percentage of the tolerance value. Visibility of these limits on the compatibility chart is determined by the status of the **Warning Limits** tick box in the *CNC Reporter Control Panel* (on the **Start** tab). The percentage of tolerance (**Warning Limits Multiplier**) is also set in the *Control Panel*. By default the **Warning Limits Multiplier** is 75%.

Analyse data: Overview tab

The **Overview** tab shows a Red Amber Green (RAG) chart for the data and a range of statistical data.



CP		0.52	1.60	0.80	0.42	1.05	0.35	0.30
CPk		0.52	1.36	0.24	0.27	0.95	0.21	0.18
Span		0.1200	0.0500	0.0500	0.0900	0.0700	0.1100	0.1200
Average		0.0000	40.0150	12.5350	-10.0175	-0.0100	25.2200	0.0200
StdDev		0.0638	0.0208	0.0208	0.0395	0.0316	0.0483	0.0548
Nominal		0.0000	40.0000	12.5000	-10.0000	0.0000	25.2000	0.0000
Upper Tol		0.1000	0.1000	0.0500	0.0500	0.1000	0.0500	0.0500
USL		0.1000	40.1000	12.5500	-9.9500	0.1000	25.2500	0.0500
Lower Tol		-0.1000	-0.1000	-0.0500	-0.0500	-0.1000	-0.0500	-0.0500
LSL		-0.1000	39.9000	12.4500	-10.0500	-0.1000	25.1500	-0.0500
Max		0.0600	40.0400	12.5600	-9.9600	0.0200	25.2600	0.0600
Min		-0.0600	39.9900	12.5100	-10.0500	-0.0500	25.1500	-0.0600

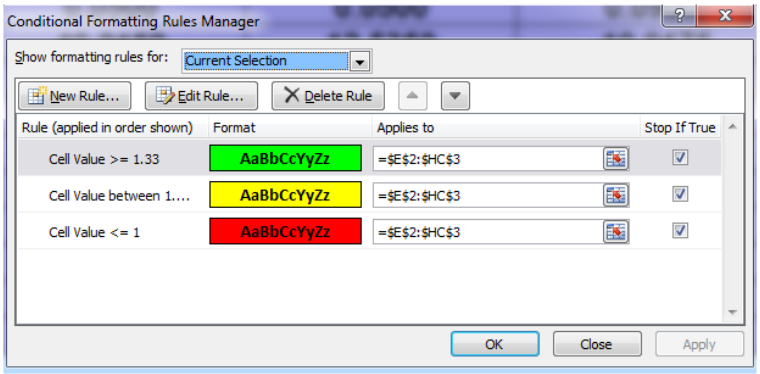
		Part Number	Operation	Feature				
				A001				
				1				
Sample ID	Sheet Index	01 Z TOP SURF T01 POSITION Z	02 BORE 40.00MM T02 SIZE	02 BORE 40.00MM T02 POSITION X	02 BORE 40.00MM T02 POSITION Y	02 BORE 40.00MM T02 MAT CON	03 WEB 25.20MM T02 SIZE	03 WEB 25.20MM T02 MAT CON
Sample 1	1	0.0500	40.0100	12.5100	-10.0300	-0.0500	25.2300	-0.0600
Sample 2	2	0.0600	40.0200	12.5300	-10.0500	-0.0200	25.2400	0.0300
Sample 5	5	-0.0500	39.9900	12.5400	-9.9600	0.0200	25.2600	0.0500
Sample 6	6	-0.0600	40.0400	12.5600	-10.0300	0.0100	25.1500	0.0600

Data can be filtered by **Feature**, **Part Number**, **Operation**, **Sample ID** or **Sheet Index** to change, add or remove attributes. Microsoft Excel custom filters can also be used. Statistical data is updated automatically as filters are applied.

Colour coding of the actual data cells is dependent on the **Specified Limits** and **Warning Limits**. Red indicates actual data is outside the **Specified Limit**; green indicates actual data is inside the **Warning Limit**; yellow indicates that actual data is outside the **Warning Limit** but inside the **Specified Limit**.

Colour of Cp and Cpk data cells are determined using **Conditional Formatting** within Microsoft Excel. The default settings are Red ≤ 1; yellow > 1 and < 1.33; green ≥ 1.33

These values can be amended using the **Conditional Formatting Rules Manager** within Microsoft Excel.



Archive data

An Excel workbook archive containing **Inspection Reports**, **Capability** charts and **Overviews** can be saved automatically or manually to the **Backup Directory Location** defined in the *Initial Set Up Data* panel.

(The type of data archived is dependent on selections made in the *Initial Set Up Data* panel within the **Start** tab.)

Manual archive

Select **Create Archive** from the *CNC Reporter Control Panel* (on the **Start** tab). All data will be processed, and a date stamped Excel workbook created in the defined backup location.

The same archive workbook will be overwritten on each manual archive operation unless **Clear Data** is selected, which will create a new archive workbook for subsequent archive data.

NOTE: Where more than one archive is created in a single day, an incremental prefix is applied to the name of the Excel workbook.

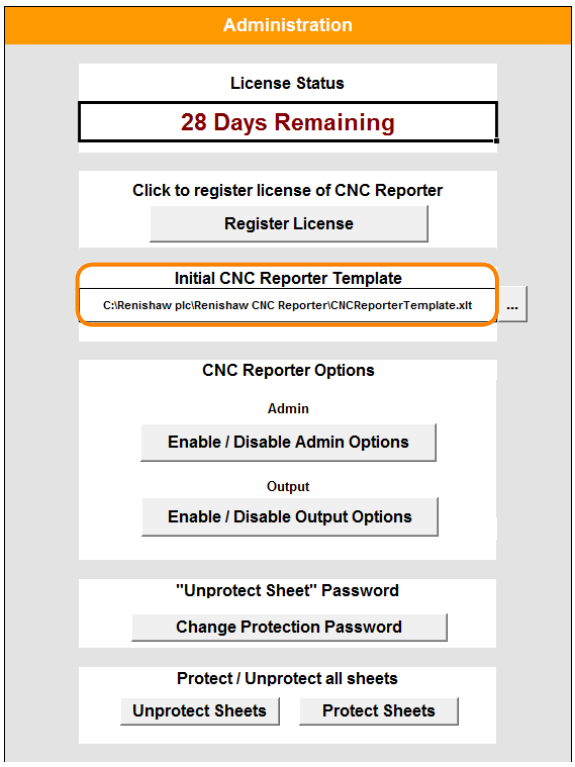
Automatic archive

When the number of inspection reports (worksheets) equals the number defined in the **Maximum Number of Worksheets** field (defined in the *Initial Data Set Up* panel on the **Start** tab), Renishaw CNC Reporter will automatically pause, process and archive data before resuming collection.

Additional features

Custom templates

By default Renishaw CNC Reporter is configured to use a standard template for all **Probing Inspection Reports**. The location and name of this template file is defined in the *Administration* panel (on the **Admin** tab) as `C:\Renishaw plc\Renishaw CNC Reporter\CNCReporterTemplate.xlt`



If required, the white area at the top of this template can be modified and images can be added to create a customised template that can be used instead.

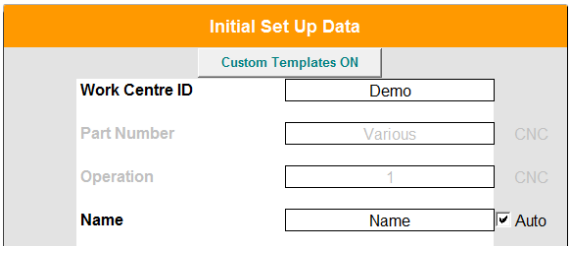
To create a customised template, open the existing template file in a new instance of Microsoft Excel, make the necessary amendments and save as an Excel template (.xlt or .xltx file extension).

NOTE: Do not amend cell positions or data column headings.

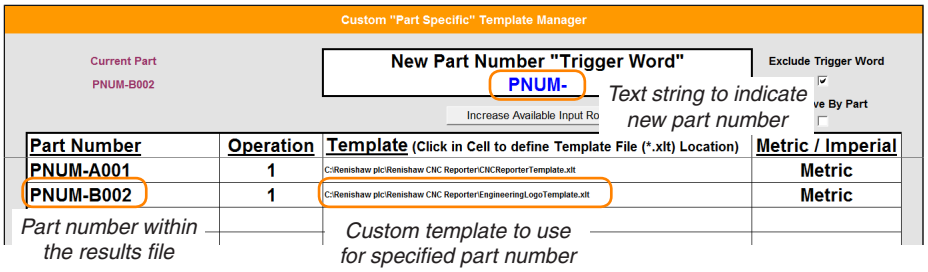
To use a customised template for all **Probing Inspection Reports** relating to a single data results file, navigate to the **Admin** tab, and select the ellipsis button ... to the right of the location and file name of the default template within the *Administration* panel. Navigate to and select the required alternative template. The location and file name of this template will now be displayed in the **Initial CNC Reporter Template** field.

Where a results file contains inspection data for multiple parts, it is also possible to vary the template used dependent on the part inspected.

Select **Custom Templates OFF** in the *Initial Set Up Data* panel within the **Start** tab. This will toggle the setting to **Custom Templates ON**/ and will make the **Part number and Operation** fields in this panel inactive. A **Templates** tab will open and CNC Reporter will jump to this tab.

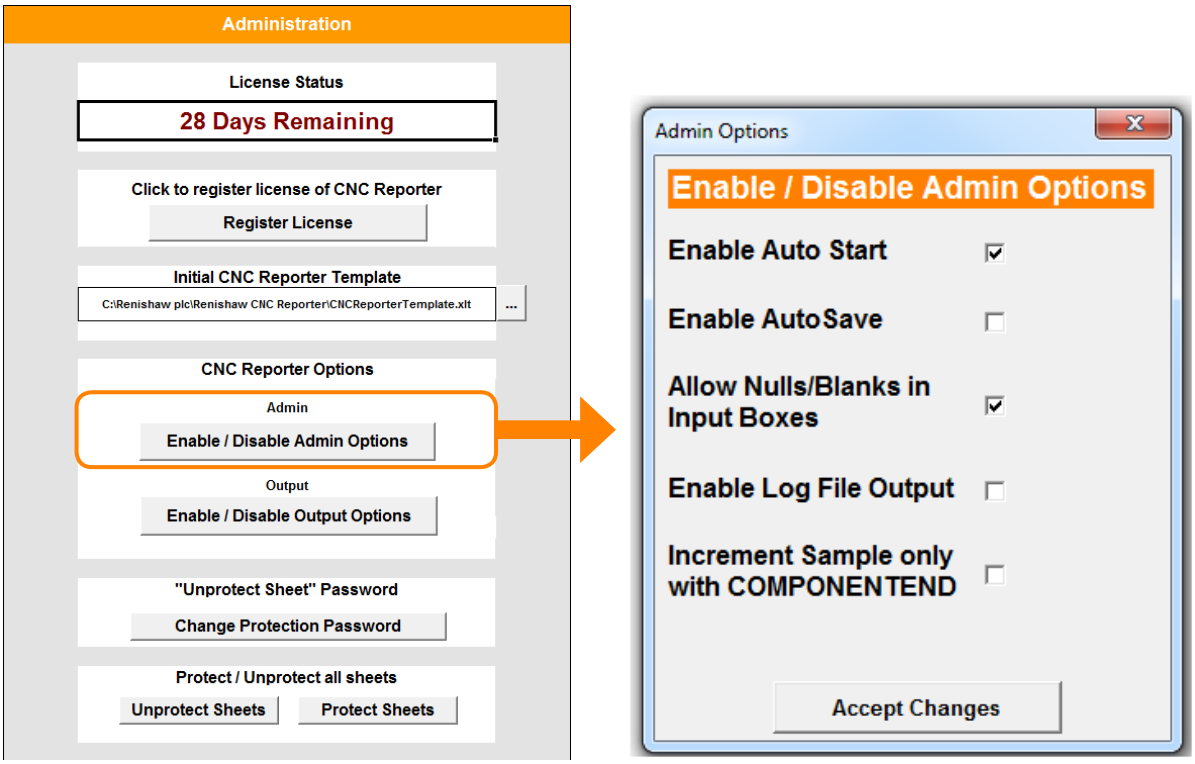


In the **Part number** column enter the part numbers that appear in the results data file. Click the relevant cell in the **Template** column to select the template to be used for each part.



In the **New Part Number "Trigger Word"** area at the top of the worksheet enter the unique text string used in the results data file to indicate the inspection of a new part number.

CNC Reporter Options: Admin Options



Enable Auto Start

When checked, CNC Reporter will go straight into **Collect Data - REAL TIME** mode when CNC Reporter is opened.

NOTE: This option must be used in conjunction with the **Lock Setup** check box (*CNC Reporter Control Panel*, **Start** tab).

Enable AutoSave

When checked, CNC Reporter will auto save hourly.

Allow Nulls/Blanks in Input Boxes

When checked, **Input Box** fields used for **Custom Template** information can remain empty.

If left unchecked and **Input Box** fields remain empty, a prompt will be displayed until sufficient valid information is entered.

Enable Log File Output

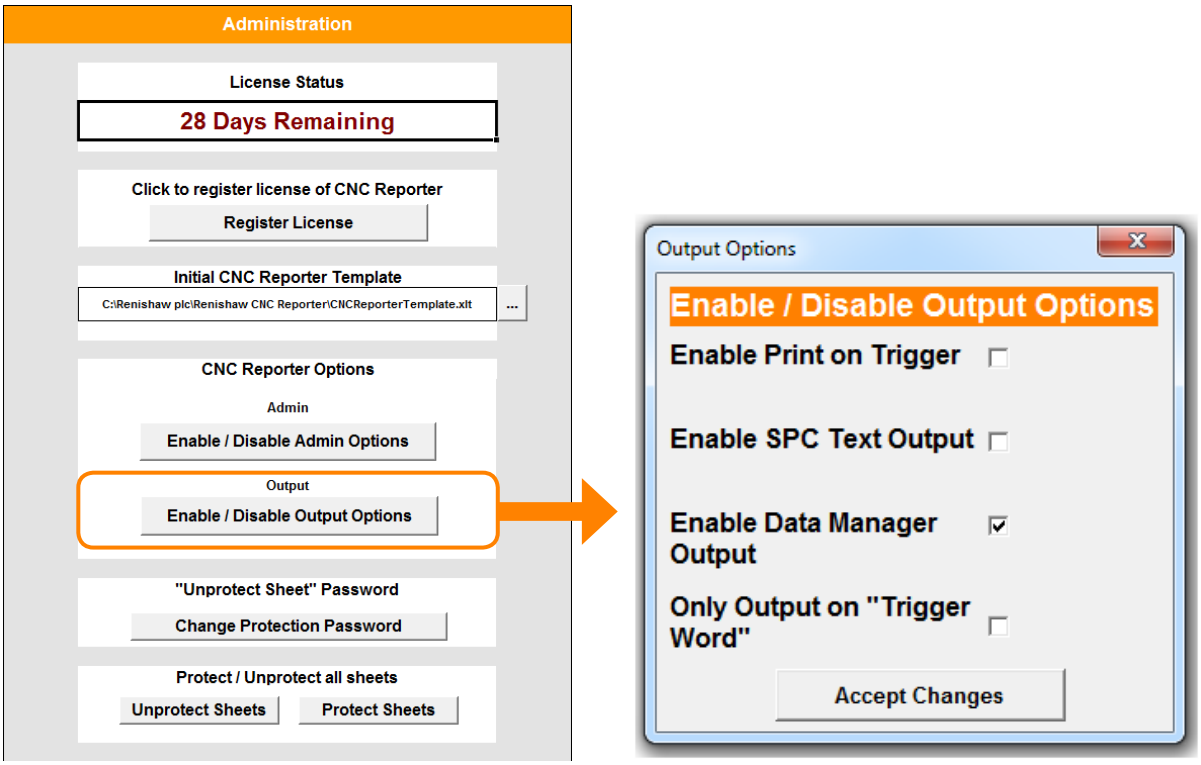
When checked, CNC Reporter will log all events to a file in the installation directory.

Increment Sample only with COMPONENTEND

When checked, the **Sample ID Number** will only increment when the **New Part Inspection Sheet "Trigger Word"** (COMPONENTEND or similar) is seen at the end of a report.

If left unchecked, the **Sample ID Number** will remain as set in the *Initial Set Up Data* panel (within the **Start** tab), and will not increment when the **New Part Inspection Sheet "Trigger Word"** is seen.

CNC Reporter Options: Output Options



Enable Print on Trigger

When checked, the live report is sent to the default printer whenever the **New Part Inspection Sheet "Trigger Word"** is seen.

Enable SPC Text Output

When checked, a text file called [wcid_name]_SPC_ARCHIVE_DATA.txt of inspection results data for toleranced features is produced in the specified backup directory location.

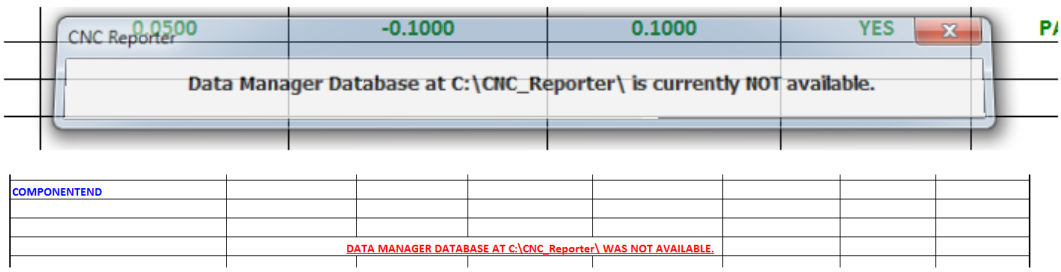
This data can then be imported into an external SPC package for further analysis. The structure of the output is as follows.

Part number /	A001/
Operation Number /	1/
Machine Type /	Demo Machine/
Work Centre ID /	Demo/
Company Name /	Renishaw plc/
Sample Number /	Sample1/
Date /	02 June 2012/
Units /	Metric/
Feature Name & Attribute /	POINT1 POSITION X/
Nominal /	0/
Actual /	-0.03/
Deviation /	-0.03/
Lower Tolerance /	-0.05/
Upper Tolerance /	0.05/
In Tolerance? /	YES/
Pass\Fail /	PASS/

Enable Data Manager Output

When checked, this option enables toleranced results data to be written to a local database for subsequent access and analysis using Data Manager.

An on screen dialog will advise if the database is unaccessible, and a message will be added to the **Probing Inspection Report**.



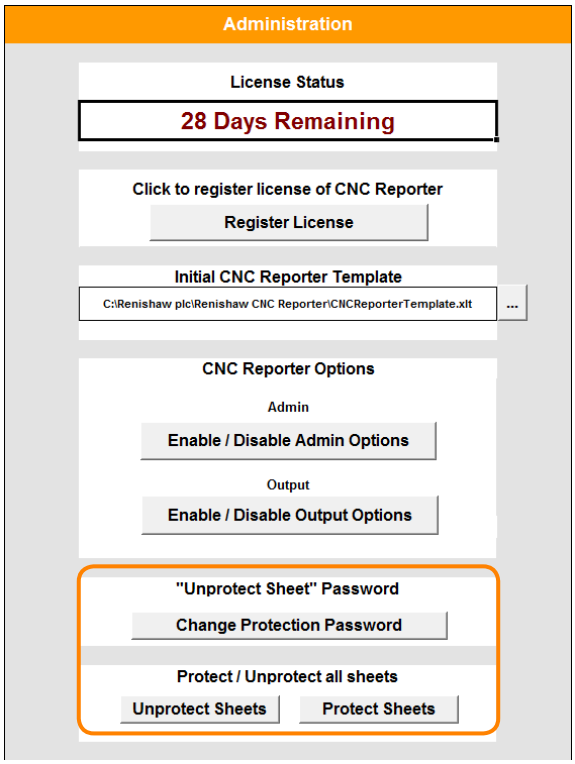
Only Output on "Trigger Word"

When checked, results are only sent to the database when the **New Part Inspection Sheet "Trigger Word"** (COMPONENTEND or similar) is seen at the end of a report.

Leave this option unchecked during component or job prove out, where a disproportionate number of failures could be expected. This will prevent data obtained during the prove out process being sent to database within Renishaw CNC Reporter and processed by the application.

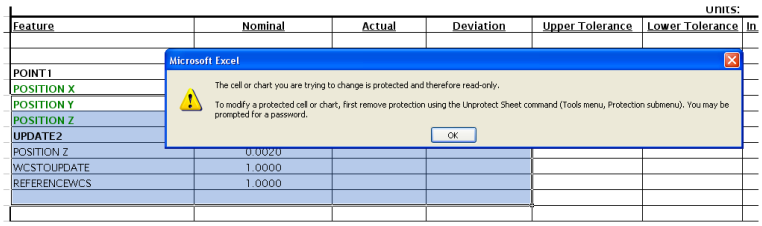
Once the prove out process is complete, check the option to allow Renishaw CNC Reporter to import and analyse results data.

Password protection



Data imported into Renishaw CNC Reporter is password protected to prevent deletion or editing.

Attempts to edit data will display a warning that cells are password protected and therefore read-only.



To unprotect a worksheet open the **Unprotect Sheet** dialog and enter the password.

As shipped the required password is 'password' (all lower case).

To modify the password, select **Change Protection Password** (on the **Admin** tab). Enter the default password when prompted, then enter and confirm the new password.

Save Renishaw CNC Reporter to retain the new password.

NOTE: The password can only be changed when there is no data within CNC Reporter. If necessary, perform a **Clear Data** operation before changing the password.

Protect / Unprotect all sheets

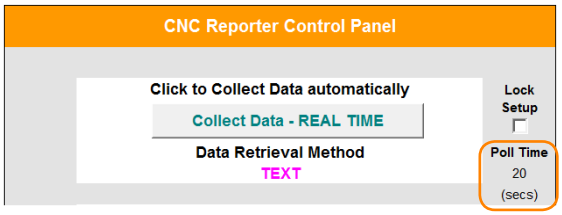
To unprotect all **Probing Inspection Reports** in a single operation, select **Unprotect Sheets** (on the **Admin** tab).

Password protection can be applied to all the sheets in a single operation by selecting **Protect Sheets** (on the **Admin** tab).

Poll time

NOTE: Poll time is only applicable when using the **REAL TIME** method of data import.

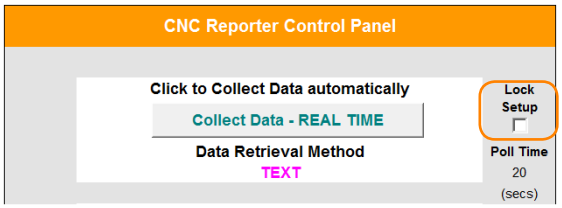
The period of time between accessing a results data file can be adjusted by amending the **Poll Time** (secs) value in the *CNC Reporter Control Panel* (on the **Start** tab). **Poll Time** can be any whole number between 5 and 999 seconds.



Lock setup

The **Lock Setup** check box allows users to prevent changes to a number of fields within the *Initial Set Up Data* panel. With this option ticked, only **Part Number**, **Operation**, **Name**, **Machine Type** and **Sample ID** remain editable.

The method of data retrieval, the results file being imported and the poll time are also locked when this check box is selected.



To unlock, deselect the check box and enter the **Unprotect Sheet** password.

Alarms

The *CNC Reporter Control Panel* (on the **Start** tab) provides the ability to generate on screen alarms when either **Specified Limits** and / or **Warning Limits** are exceeded.

Specified Limits

Specified Limits, displayed as red lines on the **Capability Chart**, provide a visual indication of tolerances defined within inspection programs. Measured values which exceed these limits are displayed in red in the **Probing Inspection Report** and in red cells in the **Overview** tab.

NOTE: Where tolerances are specified as ±0.000 no limits are displayed on the **Capability Chart**.

Warning Limits

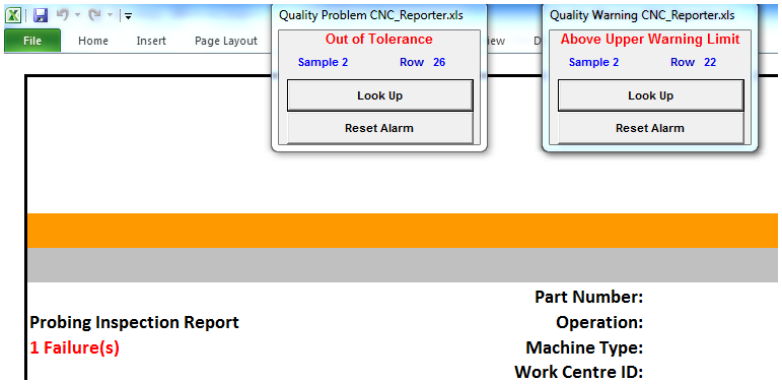
Warning Limits, displayed as dashed orange lines on the **Capability Chart**, provide a visual indication of features approaching tolerance. These limits are generated by Renishaw CNC Reporter and are defined as a percentage of the **Specified Limit** (**Warning Limits Multiplier**).

Measured values exceeding these limits but within the **Specified Limits**, are displayed in green in the **Probing Inspection Report** and in yellow cells in the **Overview** tab.

NOTE: Where the **Warning Limit Multiplier** is 100% **Warning Limits** and **Specified Limits** are the same: no **Specified Limits** are displayed on the **Capability Chart**.

Alarm Messages

Alarm message boxes will appear at the top of the screen for inspection values which exceed the defined limits.

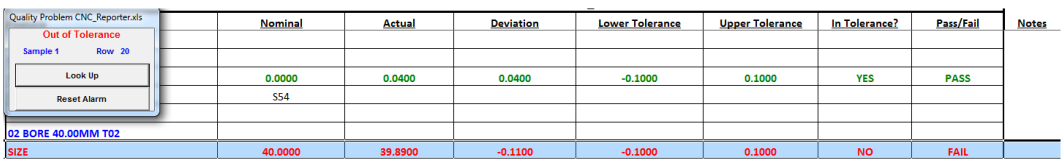


The alarm message will show whether the dimension is **Out of Tolerance** or outside (above or below) a **Warning Limit**.

The message will also show the **Sample ID** that is out of tolerance and identify the row on which it appears.

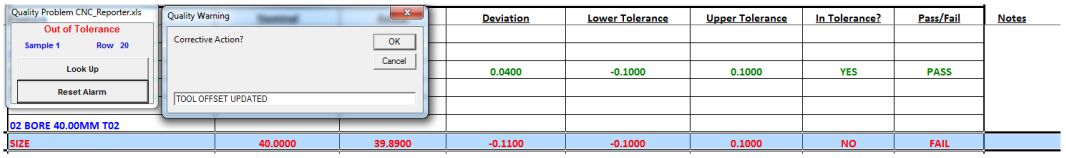
NOTE: Where multiple alarm messages are generated they may stack on top of one another.

Selecting **Look Up** from the alarm dialog will highlight the row within the **Probing Inspection Report** relating to the error message.



Notes

Add notes to, and clear alarm messages by pressing **Reset Alarm** from the alarm dialog.



Enter a **Corrective Action** into the input box and press **OK**.

Feature	Nominal	Actual	Deviation	Lower Tolerance	Upper Tolerance	In Tolerance?	Pass/Fail	Notes
02 BORE 40.00MM T02								
SIZE	40.0000	39.8900	-0.1100	-0.1000	0.1000	NO	FAIL	TOOL OFFSET UPDATED
POSITION X	12.5000	12.5100	0.0100	-0.0500	0.0500	YES	PASS	
POSITION Y	-10.0000	-10.0500	-0.0500	-0.0500	0.0500	YES	PASS	

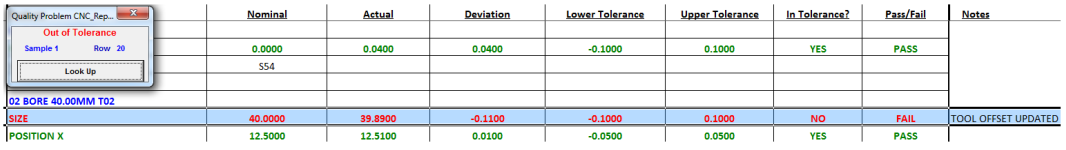
The note will then be added to the **Probing Inspection Report**.

NOTE: Alarm notes are not displayed in the Data Manager database.

Redisplay Quality Warnings

To redisplay all warnings after they have been acknowledged, click **Redisplay Quality Warning** (on the **Start** tab).

All warnings will be redisplayed at the top of CNC Reporter. Be aware that they may stack on top of one another.



Upgrading and retaining settings

When upgrading to a new version of Renishaw CNC Reporter it is possible to save settings from the existing installation which can then be loaded to the new version.

- Select **Save Settings** (*Settings* panel, **Admin** tab).
- Install the latest version of Renishaw CNC Reporter. This will overwrite the currently installed version, but will not affect software registration and database files.
- Open the new installation.
- Select **Load Settings** (*Settings* panel, **Admin** tab).

NOTE: Before loading the saved settings, any existing **Probing Inspection Report** data should be cleared by selecting **Clear Data** (*CNC Reporter Control Panel*, on the **Start** tab).

Data Manager

Data Manager is a separate, complementary application for the analysis of historical data which has previously been processed using Renishaw CNC Reporter, allowing data to be viewed in tabular (Archive Query tab), Overview and chart formats to determine trends and variations.

The application installs alongside Renishaw CNC Reporter, and a Data Manager icon is added to the desktop.

NOTES:

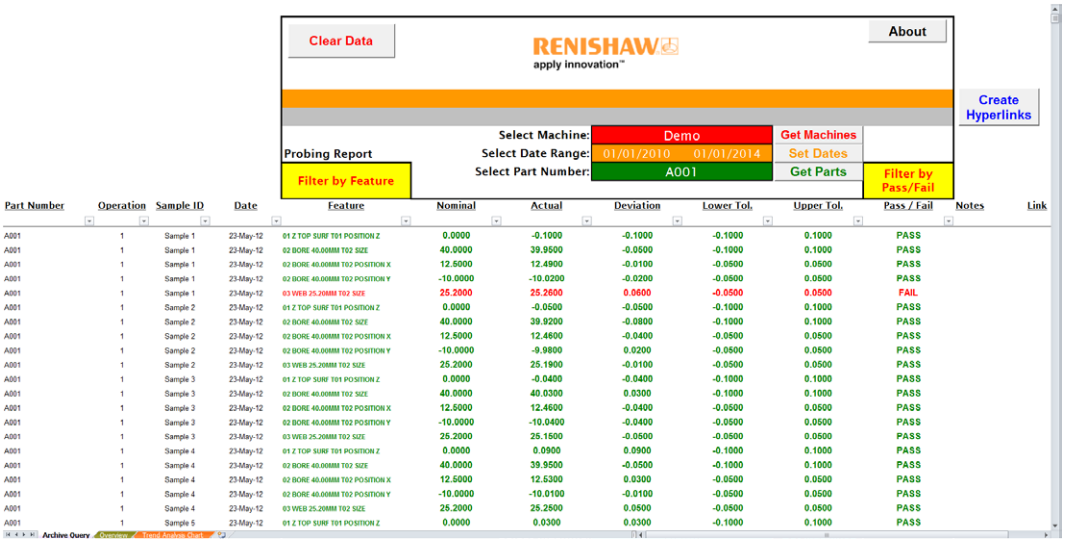
Only toleranced data is available for review and analysis in Data Manager.

The version of Data Manager installed is dependent on the version of Microsoft Excel on the target PC.

Data Manager screen layout

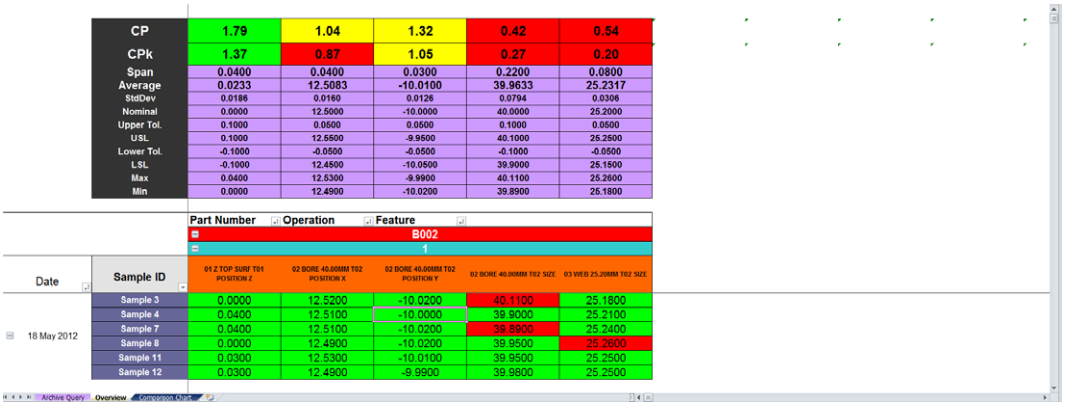
Use the tabs at the bottom of the screen to navigate through Data Manager.
(Tabs shown below are from an installation with Microsoft Excel 2010.)

Archive Query tab



The Archive Query tab presents a tabular view of the inspection data retrieved by Data Manager based on **Machine**, **Date range** and **Part number** selections.

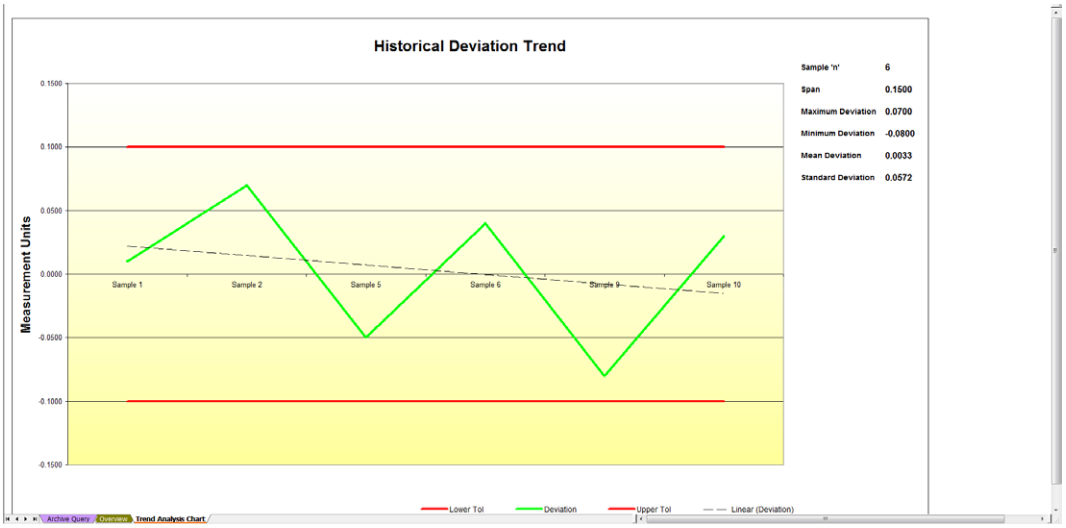
Overview tab



The Overview tab shows actual measured data in colour coded data cells indicating adherence to tolerance. (This is the same information as displayed by the Overview tab in Renishaw CNC Reporter.)

Trend Analysis Chart tab

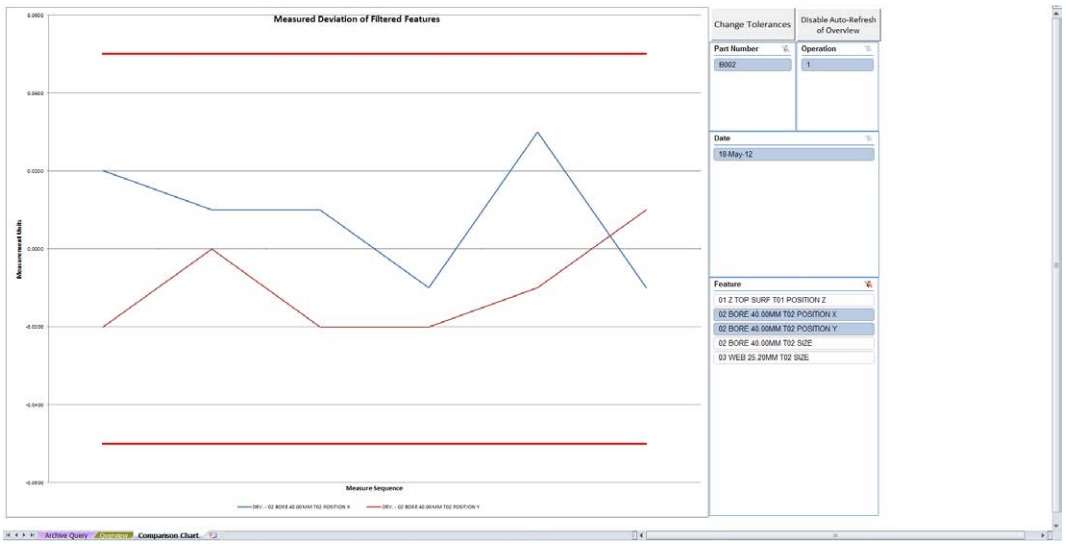
(Installations with Excel 2007 only)



The **Trend Analysis Chart** provides a graphical representation of measured data for a single feature across multiple components.

Comparison Chart tab

(Installations with Excel 2010 and later)

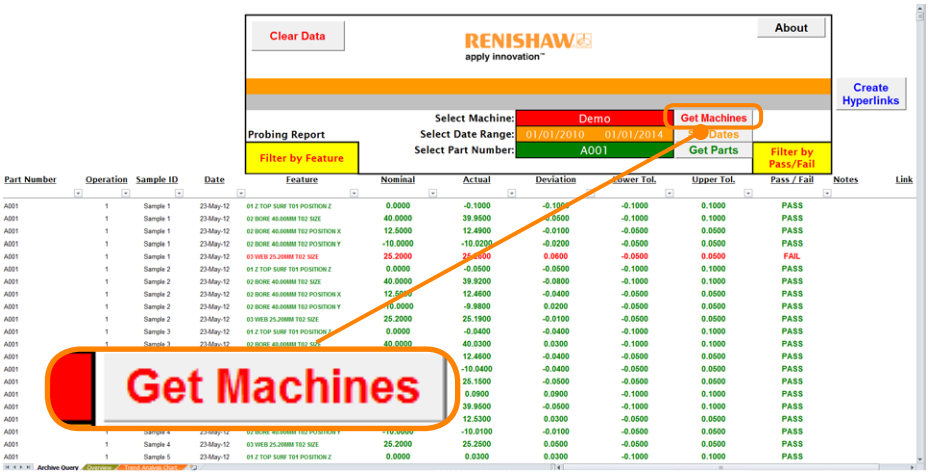


The **Comparison Chart** provides a graphical representation of measured data for one or more features across multiple components.

Using Data Manager

Select machine

Select **Get Machines** (from the Archive Query tab) to display a list of the CNC machine tools from which data has been collected.

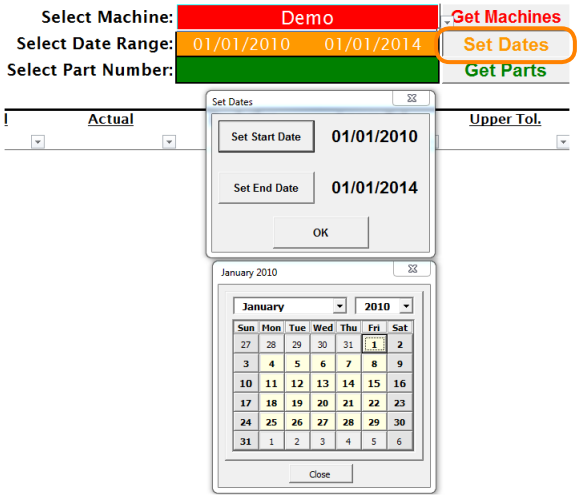


Click on the red cell to open a drop-down box listing all machines.

Select the required CNC machine tool from the list.

Select date range

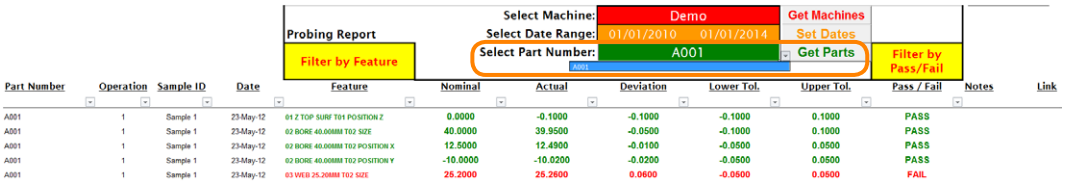
Select **Set Dates** and use the resulting calendar to set the required start and end dates of the machine data to be analysed.



Select part number

Select **Get Parts**. Parts are listed in the database alphabetically, and by default the first part number in the database is selected. Click in the green coloured cell to open a drop down box allowing other parts to be selected.

Based on these selections, data is retrieved and analysed.



The Archive Query, Overview and Trend Analysis Chart tabs are all populated during the data retrieval process.

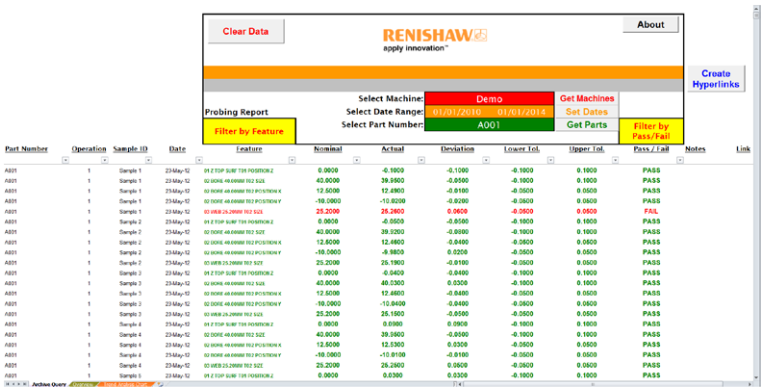
NOTE: Progress bars may be visible on screen depending on the volume of data being retrieved. If retrieval times are prohibitive, select a smaller date range.

Review and analyse data

Review data: Archive query

The **Archive Query** tab presents a tabular view of retrieved data.

User selectable filters allow data to be refined. For example, select a single feature, and **Fail** instances of that feature.



Review data: Overview

The **Overview** tab provides the same information as the **Overview** tab in Renishaw CNC Reporter with the addition of a filterable **Date** field.

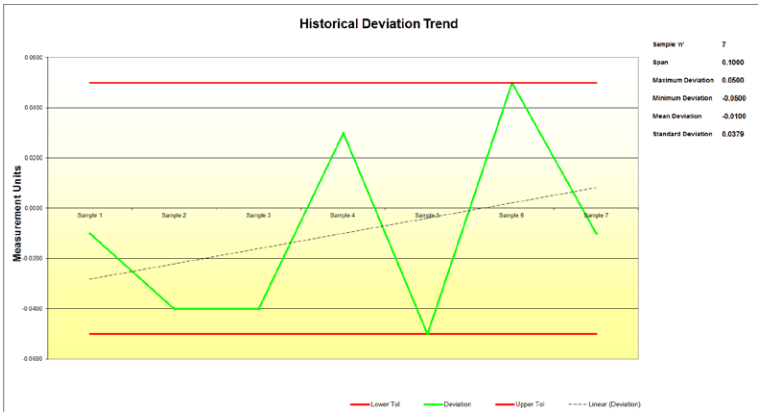
Cells are colour-coded to identify whether data is in tolerance (green) or out of tolerance (red) .

CP	0.47	0.88	0.44	0.79	0.38
CPk	0.34	0.64	0.35	0.61	0.31
Span	0.2000	0.1100	0.1000	0.0600	0.1100
Average	-0.0271	39.9729	12.4900	-10.0114	25.2100
StdDev	0.0709	0.0377	0.0379	0.0212	0.0436
Nominal	0.0000	40.0000	12.5000	-10.0000	25.2000
Upper Tol.	0.1000	0.1000	0.0500	0.0500	0.0500
USL	0.1000	40.1000	12.5500	-9.9500	25.2500
Lower Tol.	-0.1000	-0.1000	-0.0500	-0.0500	-0.0500
LSL	-0.1000	39.9000	12.4500	-10.0500	25.1500
Max	0.0900	40.0300	12.5500	-9.9800	25.2600
Min	-0.1100	39.9200	12.4500	-10.0400	25.1500

	Part Number	Operation	Feature		
	A001				
	1				
Date / Sample ID	01 Z TOP SURF T01 POSITION Z	02 BORE 40.00MM T02 SIZE	02 BORE 40.00MM T02 POSITION X	02 BORE 40.00MM T02 POSITION Y	03 WEB 25.20MM T02 SIZE
23 May 2012					
Sample 1	-0.1000	39.9500	12.4900	-10.0200	25.2600
Sample 2	-0.0500	39.9200	12.4600	-9.9800	25.1900
Sample 3	-0.0400	40.0300	12.4600	-10.0400	25.1500
Sample 4	0.0900	39.9500	12.5300	-10.0100	25.2500
Sample 5	0.0300	39.9800	12.4500	-9.9900	25.2500
Sample 6	-0.1100	40.0100	12.5500	-10.0100	25.2000
Sample 7	-0.0100	39.9700	12.4900	-10.0300	25.1700

Analyse data: Trend Analysis Chart

(Excel 2007 only)

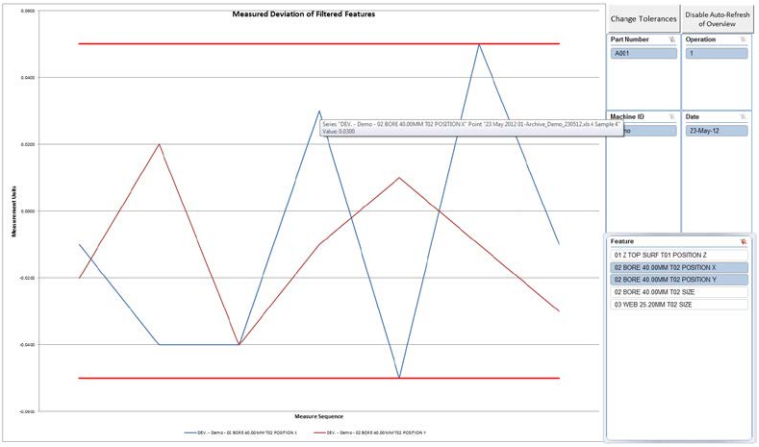


The **Trend Analysis Chart** shows a single stream of data representing data in the **Archive Query** tab.

NOTE: Whatever the number of features selected, only a single line will be plotted.

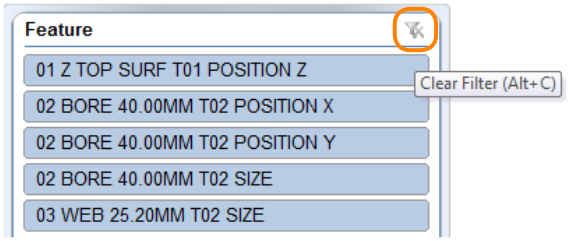
Analyse data: Comparison Chart

(Excel 2010 and later)

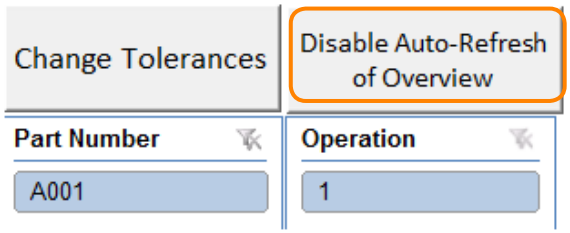


The **Comparison Chart** shows an individual line for each feature selected using the **Feature** slicers located to the top right of the chart.

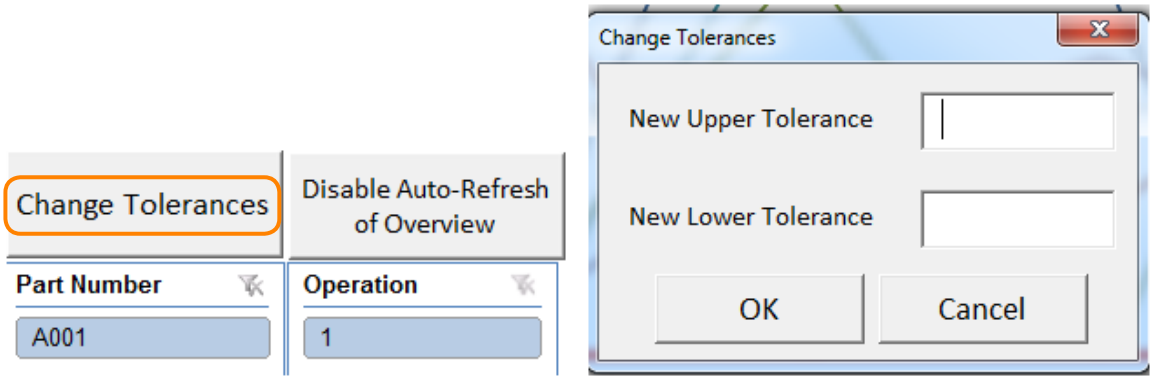
To clear the filters, click on the filter cross.



NOTE: Both the **Overview** tab and **Archive Query** tab are linked to the **Feature** slicers. To disable the link, press **DISABLE AUTO-REFRESH OF OVERVIEW**.



Where features with different tolerances have been selected is it possible to adjust the tolerances used. Select **Change Tolerances** and specify the new upper and lower tolerances to be applied to all currently filtered features.



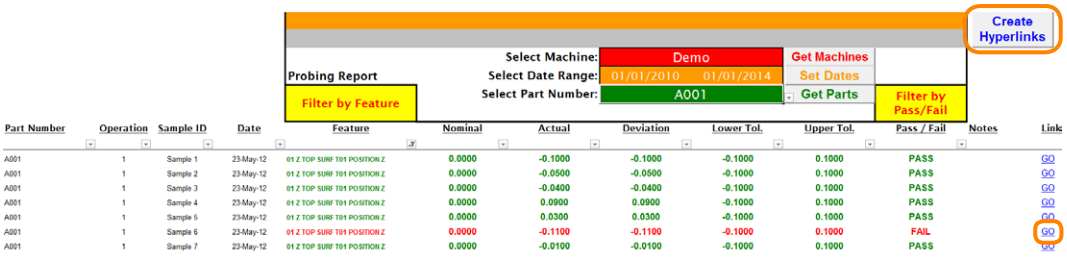
NOTE: This will affect the display on the **Comparison Chart** but will not affect data in the source database.

Additional features

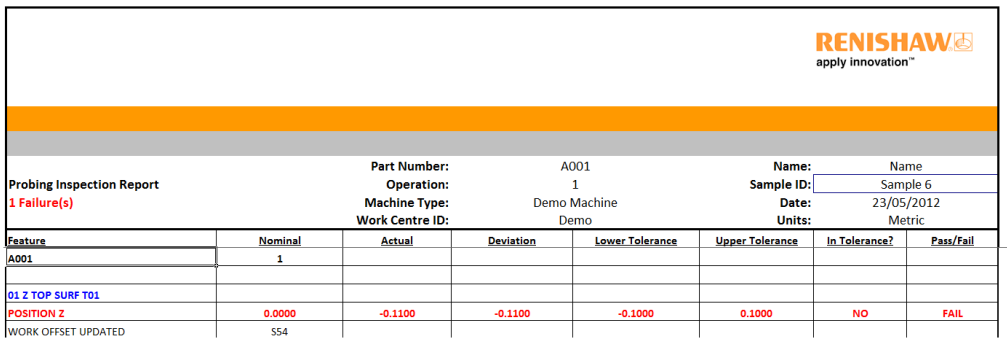
Create hyperlinks

Hyperlinks can be added to individual rows within the Archive Query tab to link back to an archived **Probing Inspection Report** containing the original toleranced data.

Select **Create Hyperlinks** (in the Archive Query tab).



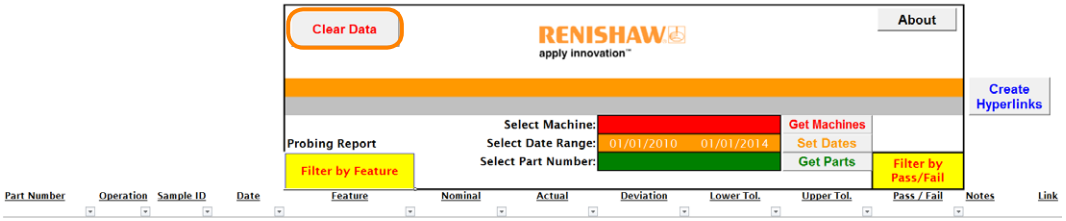
Data Manager will process the filtered Archive Query fields and create a blue 'GO' hyperlink. When the hyperlink is clicked, Data Manager will retrieve the relevant archive and open the **Probing Inspection Report** containing the toleranced data.



NOTE: Hyperlinks will not work if the archives have been moved from their original location.

Clear data

Press **Clear Data** to return Data Manager to its original state, and remove all applied filters.



Use of wildcards

If there is a requirement to analyse data obtained using multiple CNC machines, use a wildcard character (*) in the red **Select Machines** field.

Troubleshooting

Problem

'NO TOLERANCED DATA FOUND' displayed at the end of a **Probing Inspection Report**.

In addition to this message, no coloured data is shown in **Probing Inspection Reports**, the **Capability Chart**, **Overview** tab or Data Manager.

Cause

This message is displayed when no tolerance data is received from the CNC machine tool.

Solution

Ensure tolerance values are set in the probing cycles.

Problem

'There is a Format Problem with the Feature' displayed in the **Notes** column within a **Probing Inspection Report** or when attempting to export to Data Manager or a statistical process control (SPC) package.

Cause

This is the result of corrupt numerical data (spurious characters being output from the CNC).

Solution

Check for possible issues with the data transfer process. Re-inspect the component and import new data.

Problem

CNC Reporter dialog with the message 'Data Manager Database at C:\CNC_Reporter\ is currently NOT available' displayed and 'DATA MANAGER DATABASE AT C:\CNC_REPORTER\ WAS NOT AVAILABLE' displayed at the end of a **Probing Inspection Report**.

Cause

Data Manager not installed correctly, was not installed to the correct location, or the data base file could not be found.

Solution

Reinstall Renishaw CNC Reporter, ensuring to accept all default file locations offered.

Problem

'Cross talk' between multiple instances of Renishaw CNC Reporter or Data Manager, where one instance of Renishaw CNC Reporter attempts to access data specified by another instance of the application.

Cause

Registry key changes which allow each instance of Renishaw CNC Reporter to open in a new instance of Microsoft Excel have not been made.

Solution

Reinstall Renishaw CNC Reporter to automatically make the necessary adjustments to the necessary registry keys, or make the amendments manually.

These registry keys and the changes made are:

```
hkey_classes_root\excel.sheet.8\shell\open\command
hkey_classes_root\excel.sheet.12\shell\open\command
hkey_classes_root\Excel.SheetMacroEnabled.12\shell\open\command
```

The (Default) key setting of `/e` or `/dde` is changed to: `"%1"`

The command key (just below *(***Default***)*) is deleted

The `ddeexec` key has `[open("%1")]` removed from the *(***Default***)* key

(See also Microsoft Knowledgebase Article 2636670 covering 'How to open Excel files in separate windows in Windows 7'.)

NOTE: Microsoft Office updates may restore these registry keys to their original settings. CNC Reporter will detect this, and when next opened will ask to run an executable (`AMEND_EXCEL_REGISTRY.exe`) which will return these registry keys to the settings CNC Reporter requires.

Administration rights on the PC are required to enable this executable to run.

Problem

When using **REAL TIME data import**, multiple instances of the results data are imported and the source file is not deleted.

Cause

The results data file being imported into Renishaw CNC Reporter contains the word 'demo' in the file name.

Solution

Rename the results data file. In the *CNC Reporter Control Panel* (on the **Start** tab) select **Collect Data - REAL TIME** and in the **File Open** dialog, navigate to and select the renamed file.

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