



**Analysis & Reporting using  
Minitab, Prolink Charting, &  
Excel**

**SPC Office Buddy®  
Training  
Manual & Workbook**  
Version 3.4.49

## Notices

This document was produced by Prolink Corporation, 148 Eastern Blvd, Glastonbury, CT 06033.

Telephone: 860-659-5928

Fax: 860-633-7309

E-mail: [sales@prolinksoftware.com](mailto:sales@prolinksoftware.com)

Internet: [http:// www.SPCTOfficeBuddy.com](http://www.SPCTOfficeBuddy.com)

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# 1. Introduction

## 1.1 The SPC Office Buddy

SPC Office Buddy (referred to as Buddy throughout the remainder of this document) is a Windows software program that provides a fast and easy method of moving CMM and gage inspection results directly into Minitab®, JMP®, and Prolink Charting Statistical Software. In addition, data can be exported directly into Excel 97, Excel 2003, Excel 2007 & Excel 2010.

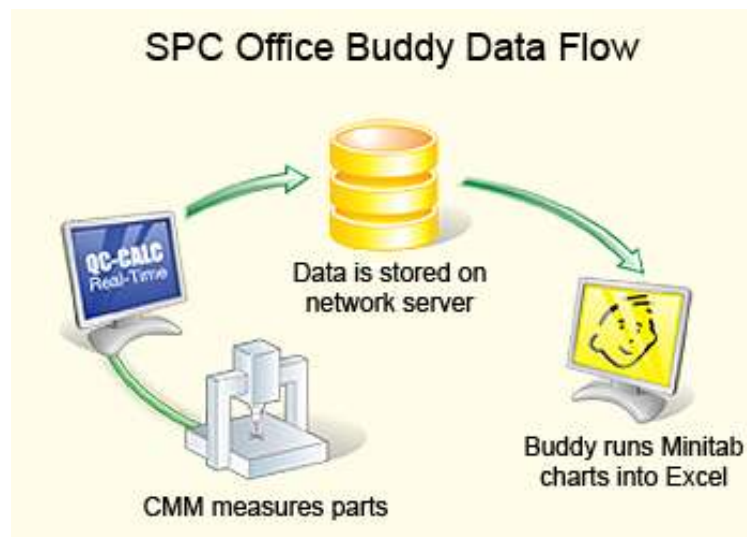
Buddy displays your data as a grid of numbers that you filter by both rows (records) and columns (dimensions). After you reduce the raw data to the items you want to analyze, Buddy can export the data to Minitab and/or directly run selected Minitab reports for you. Likewise, the JMP export can be automated using any valid JSL (JMP Scripting Language) commands. This saves an enormous amount of typing since all nominal and tolerance data is automatically sent to the report. If you do not own these software products you can use our built-in graphing package called Prolink Charting.

## 1.2 What is the Data Source

Currently, the source of inspection data is QC-CALC Real-Time. QC-CALC was written to read data directly from CMMs, Vision CMMs, and gages. QC-CALC Real-Time runs in your CMM and saves all inspection results to one common format known as .QCC files. For purposes of discussion, we will use the word CMM to imply the source of all inspection results.

## 1.3 How is the Data Organized

Buddy was written to run in the same computer as your Minitab, JMP, or Excel software. This is usually located in your office, hence the name SPC Office Buddy. This combination of running QC-CALC Real-Time in your CMM and Buddy in your office PC creates a complete solution. You are able to obtain and analyze inspection results in Minitab without having to type any numbers. This speeds up the analysis process to near real-time.



If you are a current user of QC-CALC Real-Time and Minitab, JMP, or Excel you will immediately gain from this valuable program. The installation of software contains a sample QCC file for you to practice with and is referenced throughout this document.

## Introduction

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### 1.4 What If I Don't Have a Network

If your CMM is not connected to a network you will have to copy the QC-CALC files to a memory stick or floppy disk. This is sometimes referred to as a "Sneaker Net" since you must move the data manually which involves walking. This is still a much better solution than retyping raw data into Excel and importing it into Minitab. Simply copy the QC-CALC files of interest. All QC-CALC files have a file extension of .QCC.

### 1.5 Network Configuration

Since CMMs are usually located in an inspection room the inspection results are not readily available unless you are saving your results to a shared network server. By default, QC-CALC Real-Time saves data on the C: drive of the CMM PC as parts are measured. Since the shop floor can be a dangerous place, it is usually recommended that you save QC-CALC data on a network drive. This way, data is collected on the shop floor but is saved to a company file server on the network that is backed up nightly and can be recovered in the event of hardware failure. Also, following this suggestion makes the data available for other network applications such as QC-CALC SPC or SPC Office Buddy.

## 2. Setup

SPC Office Buddy is distributed via the Internet and must be installed in your Windows PC using the standard SETUP.EXE program. Perform the following steps:

1. Install SPC Office Buddy.
2. The following screen is displayed on the first run.



3. If you purchased the software, click the **Activate Software** button otherwise, click the **Begin Evaluation** button.  
**NOTE:** You may activate your software at any time.
4. SAMPLE.QCC is loaded for you and displayed in the grid.
5. You are now ready to begin a quick demonstration of the Buddy software using the sample file. If you already own QC-CALC you can begin exporting your own data to Excel and/or Minitab immediately.

### 2.1 How Do I Get a Copy of QC-CALC

If you do not own a copy of QC-CALC you can download a copy for free and try it for 30-days. Visit the **Downloads** page of our website at:

[www.ProlinkSoftware.com](http://www.ProlinkSoftware.com)

If you have a Prolink account you must login to download. If you do not have an account, you can create one instantly by entering an email address and password. Don't forget to download the CMM manual so you can obtain the simple QC-CALC instructions to ensure successfully data collection with your particular CMM or Gage.



### 3. The Basics

Before getting into the details about this software product, let's quickly cover the basics. Double click the SPC Office Buddy icon on your desktop to start the program.



On first launch the SAMPLE.QCC data file is opened for you so you have some data to use for this simple demonstration. A screen similar to the one shown below contains several areas of interest.

- [The Data Grid](#) pg. 4
- [The Nominals & Tolerances Header](#) pg. 4
- [Excel Jobs](#) pg. 20
- [Batch Jobs](#) pg. 74
- [Record Filter](#) pg. 16
- [Dimension Filter](#) pg. 12
- [File Menu](#) pg. 97
- [Toolbar](#) pg. 98

The screenshot displays the SPC Office Buddy application window. The main area is a data grid with columns for Plus Tol, Minus Tol, Record, X Hole Position, Y Hole Position, Z Hole Position, Line Length, Datum 1, Datum 2, Datum 3, Datum 1 - Datum 2, and Chamfer Angle. The grid contains data for records 59 through 96. Several panels on the left are highlighted with red boxes: 'Select Batch Job', 'Select Excel Job', 'Select Record Filter', and 'Select Dimension Filter'. A red box labeled 'Data Grid' points to the main data table. The 'Select Record Filter' panel shows a list of filters including THIS\_WEEK, THIS\_MONTH, THIS\_YEAR, LAST\_WEEK, LAST\_MONTH, LAST\_YEAR, TODAY, and YESTERDAY. The 'Select Dimension Filter' panel shows a list of filters including [Show All], [Choose from list...], [Containing Text...], Criticals 1 and 4, My 10-12, My First 3 Dims, and TP & Diameter.

# The Basics

## 3.1 The Data Grid

This grid contains the data of the QC-CALC file you opened. In this example, we opened our demonstration file called SAMPLE.QCC as shown in the title bar at the top of the screen. The amount of data displayed can be too much and should be filtered to a reasonable amount. The filters are discussed in detail in the [Record Filter](#) (page 16) and [Dimension Filter](#) (page 12) sections.

	Record	X Hole Position	Y Hole Position	Z Hole Position
79	79	0.9997	2.0004	2.9987
80	80	1.0005	1.9995	2.9984
81	81	1.0009	2.0002	3.0009
82	82	1.0004	1.9996	3.0017
83	83	1.0001	1.9987	3.0012
84	84	0.9992	1.9996	2.9999
85	85	0.9989	1.9985	3.0024
86	86	1.0003	2.0002	2.9981
87	87	0.9998	2.0003	3.0009
88	88	0.9996	1.9998	2.9999

## 3.2 The Nominals & Tolerances Header

Should you need to reference the nominals & tolerances of the dimensions, they can be shown above each column. QC-CALC Real-Time automatically obtained the nominal and tolerance information from your part program and Buddy displays the values in a multi-line header. Remember, a row of data is one part and a column is one dimension (feature).

Plus Tol	0.0010	0.0020	0.0030	
Nominal	1.0000	2.0000	3.0000	
Minus Tol	-0.0010	-0.0020	-0.0030	
Record	X Hole Position	Y Hole Position	Z Hole Position	
82	82	1.0004	1.9996	3.0017
83	83	1.0001	1.9987	3.0012
84	84	0.9992	1.9996	2.9999
85	85	0.9989	1.9985	3.0024
86	86	1.0003	2.0002	2.9981
87	87	0.9998	2.0003	3.0009

Columns with Tolerances

USL	1.0010	2.0020	3.0030	
Nominal	1.0000	2.0000	3.0000	
LSL	0.9990	1.9980	2.9970	
Record	X Hole Position	Y Hole Position	Z Hole Position	
82	82	1.0004	1.9996	3.0017
83	83	1.0001	1.9987	3.0012
84	84	0.9992	1.9996	2.9999
85	85	0.9989	1.9985	3.0024
86	86	1.0003	2.0002	2.9981
87	87	0.9998	2.0003	3.0009

Columns with Specifications

USL	1.0010	2.0020	3.0030	
Plus Tol	0.0010	0.0020	0.0030	
Nominal	1.0000	2.0000	3.0000	
Minus Tol	-0.0010	-0.0020	-0.0030	
LSL	0.9990	1.9980	2.9970	
Record	X Hole Position	Y Hole Position	Z Hole Position	
84	84	0.9992	1.9996	2.9999
85	85	0.9989	1.9985	3.0024
86	86	1.0003	2.0002	2.9981
87	87	0.9998	2.0003	3.0009
88	88	0.9996	1.9998	2.9999
89	89	0.9996	1.9991	3.0006

Columns with Tolerances and Specs

When you perform any of the Minitab analysis reports, Buddy sends the nominal and tolerance information directly to the Minitab report you choose. To select what is displayed in this header, choose the **View – Tolerances** menu and/or the **View – Specifications** menu. The grid header can contain:

- Dimension Labels, Nominals, and Specifications
- Dimension Labels, Nominals, and Tolerances
- Dimension Labels, Nominals, Tolerances, and Specifications
- Just Dimension Labels

If both are chosen you see 5 lines of values. Tolerances and Specification Limits are displayed above each column to save you the time of looking up and entry during Minitab analyses.

## 4. Running Charts

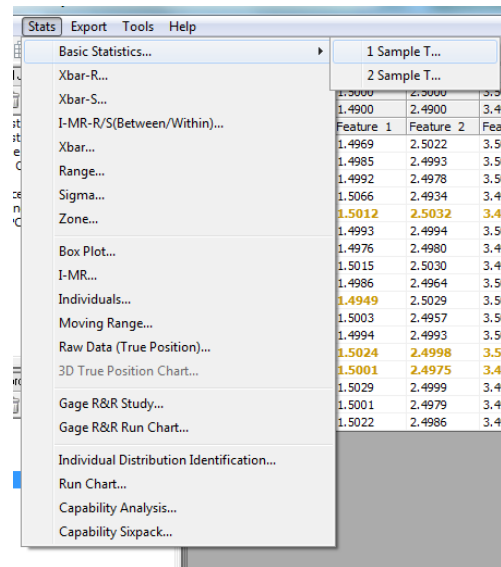
Now that you've learned how to open QC-CALC files and the general layout of the software you are ready to create some SPC charts.

1. Start by selecting data using the mouse. Here we selected 18-rows and 3-columns in the data area that we wish to send to Minitab. It is required that Minitab be installed in this PC in order to launch and send the necessary commands and data to it. If you do not wish to use Minitab, you can always select "Prolink Charting" as the **Chart Tool** in the **Chart Settings** area of the **Tools – Options** menu.

63	63	0.9992	2.0006	2.9984	3.9997
64	64	0.9992	2.0010	3.0021	3.9986
65	65	1.0000	2.0008	3.0022	4.0014
66	66	1.0000	1.9996	2.9984	3.9992
67	67	0.9995	2.0004	2.9974	4.0030
68	68	0.9996	2.0020	3.0043	3.9969
69	69	0.9997	1.9991	2.9996	3.9976
70	70	0.9999	1.9997	2.9994	3.9993
71	71	1.0006	1.9981	3.0004	4.0043
72	72	0.9997	1.9993	3.0021	3.9945
73	73	0.9995	1.9993	2.9991	3.9988
74	74	1.0005	1.9988	3.0010	3.9985
75	75	0.9997	2.0008	2.9972	3.9998
76	76	0.9992	2.0010	3.0029	4.0024
77	77	0.9994	1.9993	2.9978	3.9978
78	78	0.9993	2.0007	2.9996	3.9994
79	79	0.9997	2.0004	2.9987	4.0011
80	80	1.0005	1.9995	2.9984	3.9991
81	81	1.0009	2.0002	3.0009	4.0020
82	82	1.0004	1.9996	3.0017	4.0020

2. Once you have the data you want plotted, simply select the **Stats – Capability Composite Chart** (or **Capability Sixpack**) menu as shown. Note: This menu text changes to **Capability Sixpack** if you are using Minitab. This is the same for any other chart but for this demonstration we'll use the Sixpack Chart.

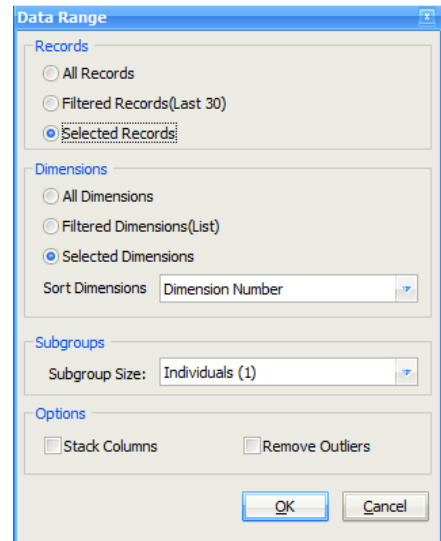
**Note:** The True Position chart is only available using Prolink Charts. Likewise for the 3D True Position chart. Please see [Raw Data \(True Position\) Charts \(2D\)](#) and [True Position Charts](#) on page [121](#) & [122](#) for a full description.



3. Next the **Data Range** box is displayed asking you to verify your data selection before the charts are run in Minitab or Prolink Charting. When you click **OK** Buddy sends the data and commands to the charting package and executes your desired charts.

**Sort Dimensions** gives you the ability to control the order the dimensions appear in in your reports. Ascending order will always be used, but you can choose different items to sort on in the list.

**Stack Columns** allows you to join columns together into one set of numbers having the same magnitude. See [Stacked Columns](#) on page [6](#) for



# Running Charts

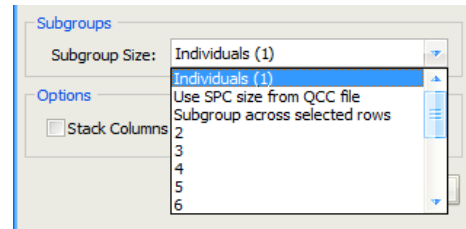
more details.

**Removing outliers** rids the data of any numbers exceeding 3-sigma. This processes in successive rounds until no more outliers are found and is only available when using Prolink Charting.

You will see your charting package launch, the data inserted, and the charts plotted. Once the charts are complete your charting package is left onscreen.

## 4.1 Subgroup Selection

If you select a chart requiring a **Subgroup Size**, you have several options available. You can manually select a subgroup from 1 to 15, use QC-CALC's current Subgroup Size, or subgroup across rows.



### 4.1.1 Select a Subgroup Size

You can manual select the subgroup size before the report is printed by choosing from a list of 1 through 15.

### 4.1.2 Use Size from QCC File

Each QC-CALC file has a Subgroup Size setting within the file. Choosing this option simply passes the QC-CALC value through to your charting package. There are 2 Subgroup Sizes for each QC-CALC file.

- Real-Time – used during data collection
- SPC – used during analysis in SPC

This option uses the SPC Subgroup Size and the Real-Time Subgroup Size is ignored.

### 4.1.3 Subgroup Across Rows

This option allows you to subgroup across columns such as Minitab C1, C2, & C3. You must select a matching set of columns for the Subgroup Size. For example, if your Subgroup Size is 3, highlight the 3 columns and the appropriate number of rows and your single chart is generated.

	Record	Feature 1	Feature 2	Feature 3	Fe
1	1	1.4998	2.4977	3.4999	4.
2	2	1.4979	2.4983	3.5017	4.
3	3	1.5009	2.5033	3.4976	4.
4	4	1.4969	2.5047	3.4898	4.
5	5	1.4926	2.5013	3.4994	4.
6	6	1.5093	2.5004	3.4981	4.
7	7	1.5031	2.4933	3.5002	4.
8	8	1.4969	2.4926	3.4978	4.
9	9	1.5043	2.5023	3.4937	4.
10	10	1.5009	2.5005	3.4987	4.
11	11	1.4982	2.5012	3.4913	4.
12	12	1.4987	2.4969	3.4956	4.
13	13	1.4964	2.4987	3.5045	4.

In this example our subgroup size is 3 because we selected 3 columns of 12 rows and then chose **Subgroup Across Rows**. Each number in row 1, column 1, 2, & 3 is subgrouped before moving to row 2. This yields a total of 12 subgroups of 3. It should be clear that the Subgroup Size is driven by the number of columns selected.

### 4.1.4 Stacked Columns

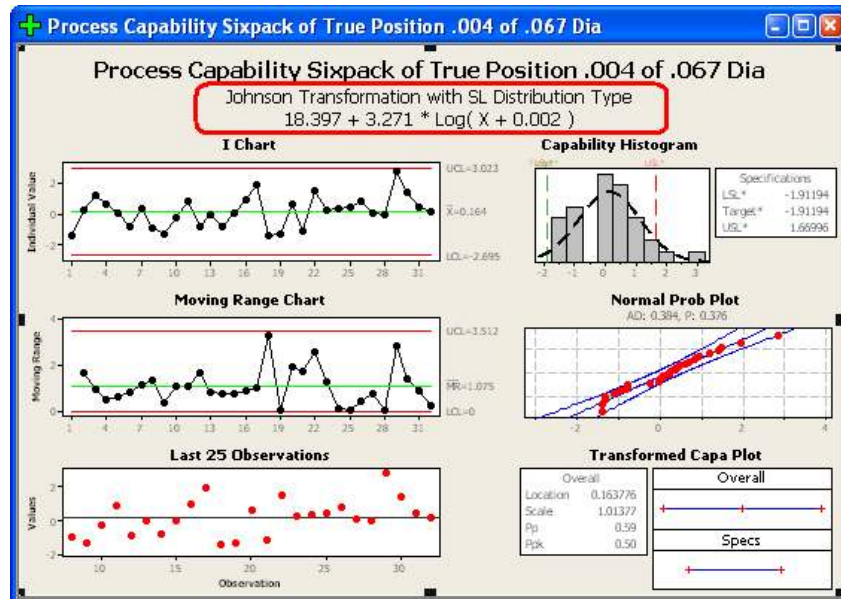
If you have several features that have the same nominal and tolerances and wish to join them together instead of subgrouping across rows, you can check the **Stack Columns** box. This same option in QC-CALC is known as **Group Dimensions**. Performing an I-MR chart on the above diagram would yield 36 points on one chart (rather than 3 charts with 12 points each). To picture it, picture the columns literally being stacked on top of each other forming one column. This checkbox is not remembered to ensure you do not accidentally forget to turn it off between runs.

# Running Charts

## 4.2 Minitab Non-normal data - version 14

### 4.2.1 Single-Sided Data is Non-Normal

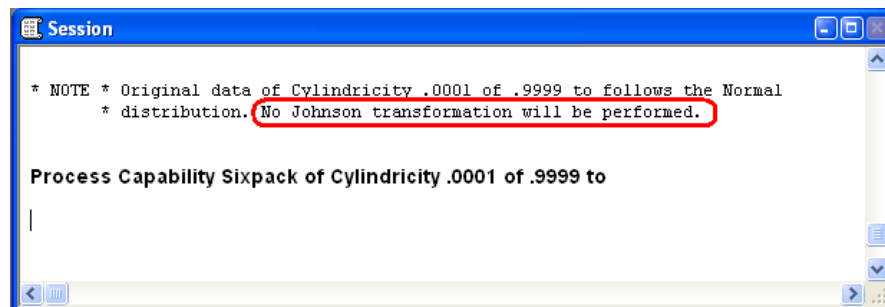
When Buddy commands Minitab to create a process capability or Sixpack chart, it adds additional information when a feature has a single-sided tolerance. This occurs with items such as True Position, Flatness, Perpendicularity, etc. In most cases single-sided data is considered non-normal so Buddy commands Minitab to apply a Johnson Transformation before charting. Since you normally set a boundary when all data falls on one side of nominal, Buddy also commands Minitab to set the boundary for you. For more details see [Process Capability/Sixpack Options](#) on page 130. **Note:** As of Minitab 16 the method of transforming your data has changed. Please see [Minitab non-normal data version 16 or Higher](#) on page 8 for an explanation.



The resultant chart has text added indicating the data has been transformed so the numbers will appear different than the raw data you might expect to see.

### 4.2.2 Single-Sided Data is Normal

Occasionally, single-sided data appears normally distributed. When this occurs, Minitab shows a warning notice that the transformation will not be performed in its Session window as shown below. Just be aware that Buddy attempted to enforce a transform but Minitab overrode this command.



At this writing, Buddy only supports the Johnson Transform.

### 4.2.3 Other SPC Charts

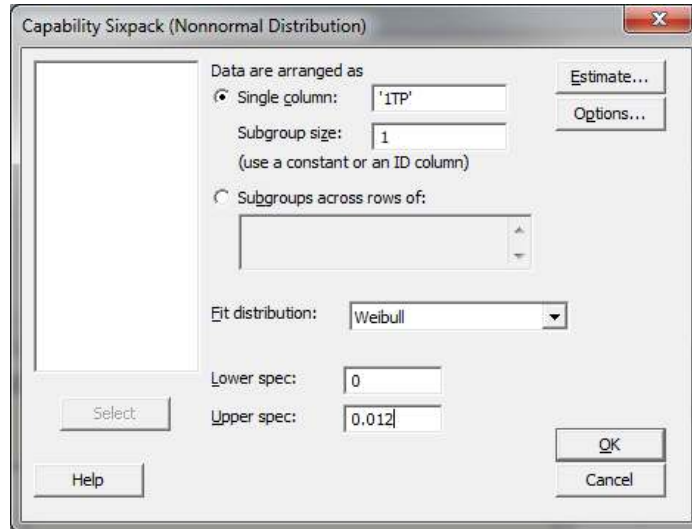
All other charts found in the Stats menu operate the same as the Sixpack but have differing output results.

## Running Charts

### 4.3 Minitab non-normal data version 16 or Higher

#### 4.3.1 Single-Sided Data is Non-Normal

When Buddy commands Minitab to create a non-Normal Process Capability or Sixpack chart, it needs to know which transform to use. Typically, you identify the distribution to use and then command Minitab to perform non-normal Sixpack and select your transform. This action is shown below where we selected Weibull and entered the appropriate details.



#### 4.3.2 Identify the Fit

The problem we face is identifying the distribution to use. Fortunately, Minitab provides a quick method to identify the distribution by selecting the **Stats – Quality Tools – Individual Distribution Identification**. The results of the **Goodness of Fit Test** are found in Minitab's Session window similar to the list shown below. You typically use the transform with the highest P value. In this example, the Box Cox Transform would be used.

##### Goodness of Fit Test

Distribution	AD	P	LRT	P
Normal	0.455	0.240		
Box-Cox Transformation	0.320	0.509		
Lognormal	0.431	0.277		
3-Parameter Lognormal	0.469	*	0.991	
Exponential	1.235	0.058		
2-Parameter Exponential	0.453	>0.250	0.006	
Weibull	0.323	>0.250		
3-Parameter Weibull	0.330	>0.500	0.326	
Smallest Extreme Value	0.721	0.051		
Largest Extreme Value	0.418	>0.250		
Gamma	0.356	>0.250		
3-Parameter Gamma	0.356	*	1.000	
Logistic	0.463	0.203		
Loglogistic	0.452	0.216		
3-Parameter Loglogistic	0.523	*	0.716	

#### 4.3.3 Run your Chart

Now that Minitab has helped you identify the best fit, you re-run your non-normal SixPack but this time select the correct (best) fit. It should be obvious this is a two-step process and can be time consuming if many dimensions are being analyzed. The next paragraph explains how to automate these two steps.

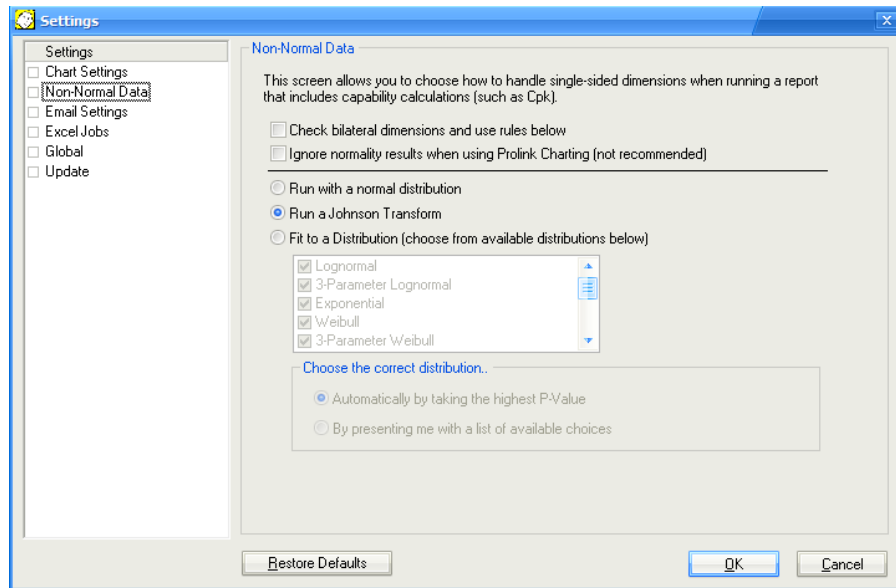
# Running Charts

## 4.3.4 Non-Normal Charts with Buddy

SPC Office Buddy was designed to save you time so dealing with non-normal data should be no exception. The two step process just discussed can be performed quickly using Buddy but more discussion is needed. There are four possible normality situations for Buddy to handle based on the feature tolerance type and data's normality:

Tolerance Type	Normality	Action to Take
Bilateral	Data is already normal	Run the process chart
Bilateral	Data is NOT normal	Check for best fit, run chart
Single Side	Data is already normal	Run the process chart
Single Side	Data is NOT normal	Check for best fit, run chart

Buddy knows everything about each QC-CALC feature including the tolerance type and automatically runs the Minitab **Goodness-of-Fit** test for you. Based on your selection Buddy will choose the transform with the highest P-value for you and run the chart. However, you can override Buddy's choice by adjusting the options in the **Tools – Options – Non-Normal Data** area.



### Check bilateral dimensions and use rules below

Typically the transformation of non-normal data applies to single-sided dimensions, but with this option non-normal dimensions that are bilateral can follow the same rules set up for the single-sided dimensions.

### Ignore normality results when using Prolink Charting

With this option, the capability calculations (like Cpk) will be calculated by Prolink Charting even if the data is determined to be non-normal.

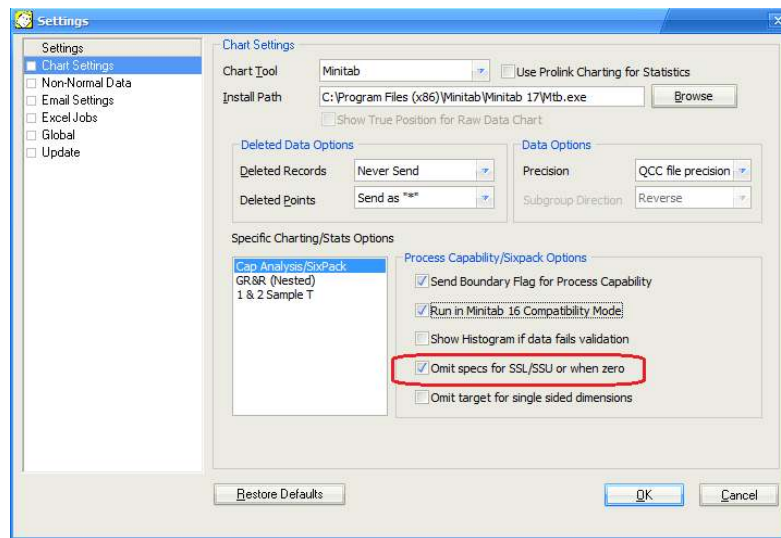
- If you choose **Run with a normal distribution** a normal Sixpack will be run regardless of the normality of the data being used.
- If you choose the **Run a Johnson Transform** option Buddy will run the same as it did in Minitab version 14. In other words if the data needs to be transformed, Minitab will do it for you otherwise it won't. This is the default setting.
- If you choose **Fit to a Distribution** Buddy will command Minitab to test each dimension against all selected transforms. It will record all of the P-

## Running Charts

value results from Minitab and prepare the chart for you using the highest P-value transform. Buddy will **Choose the Correct Distribution** if you select **Automatically By Taking The Highest P-Value**. Uncheck the transforms that do not apply to your company's SPC standards.

- You can slow the process down a bit and choose a transform for each dimension if you select **"By presenting me with a list of available choices"**. Buddy will stop and ask you which transform to use for each dimension requiring you to review the P-values manually.
- The default setting for Buddy is to assume the data of bilateral features is normally distributed. This is the quickest method of running Minitab charts. However, it may be wrong. By selecting **Check bilateral dimensions and use rules below**, Buddy will check the normality of each bilateral dimension before running the process chart. If the data is found to be normal, Minitab is commanded to run the Normal Process chart. Otherwise, it is command to run the Non-Normal chart with the added transform.

A checkbox in the **Chart Settings** screen is used to treat bilateral dimensions as single sided if the USL or LSL is zero. If **Omit specs for SSL/SSU or when zero** is checked then Buddy omits the zero (when one of the spec limits = 0) which should calculate a higher Cpk.



All single sided dimensions are checked for normality now (even single sided dimensions that are assumed to be non-normal). If the data is normally distributed, then it runs the Capability Analysis or Sixpack using the normal chart.

In conclusion if you turn on distributions, Buddy checks all single sided for normality and runs the best fit distribution for those that are non-normal. If you also check the **"bilateral checkbox"**, it will check all dimensions for normality. Any dimension found to be non-normal causes the best fit distribution to be run. The ones that are normal run normally.

### 4.3.5 SPC Office Buddy Non-Normal Steps

- Select **Tools – Options – Non-Normal Data** and decide how you want Buddy to act on all single-sided dimensions. Remember to “de-select” the transforms you do not want to use.

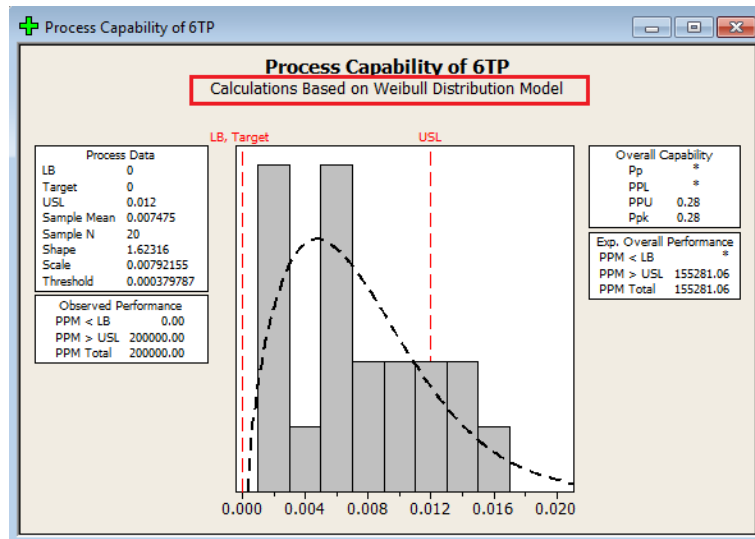


## Running Charts

- Select which dimensions you wish to analyze. This screen shows 6 true position dimensions selected.

	USL	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	
	Plus Tol	0.0120	0.0120	0.0120	0.0120	0.0120	0.0120	
	Nominal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
	Minus Tol	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
	LSL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
	Record	1TP	2TP	3TP	4TP	5TP	6TP	Nu
1	1	0.0167	0.0124	0.0049	0.0044	0.0117	0.0163	0
2	2	0.0015	0.0017	0.0016	0.0018	0.0011	0.0015	0
3	3	0.0023	0.0025	0.0016	0.0015	0.0012	0.0020	0
4	4	0.0022	0.0005	0.0008	0.0027	0.0030	0.0028	0
5	5	0.0040	0.0024	0.0009	0.0036	0.0051	0.0052	0
6	6	0.0058	0.0029	0.0014	0.0037	0.0057	0.0065	0
7	7	0.0049	0.0035	0.0020	0.0023	0.0043	0.0055	0
8	8	0.0102	0.0070	0.0033	0.0046	0.0088	0.0112	0
9	9	0.0097	0.0065	0.0025	0.0030	0.0070	0.0100	0
10	10	0.0113	0.0064	0.0009	0.0056	0.0105	0.0125	0
11	11	0.0022	0.0015	0.0022	0.0024	0.0014	0.0025	0
12	12	0.0022	0.0020	0.0018	0.0016	0.0010	0.0017	0
13	13	0.0047	0.0039	0.0024	0.0026	0.0034	0.0048	0
14	14	0.0039	0.0020	0.0008	0.0029	0.0052	0.0055	0
15	15	0.0064	0.0050	0.0021	0.0034	0.0060	0.0069	0
16	16	0.0075	0.0057	0.0028	0.0023	0.0054	0.0077	0
17	17	0.0102	0.0082	0.0034	0.0037	0.0082	0.0106	0
18	18	0.0079	0.0051	0.0018	0.0030	0.0062	0.0082	0
19	19	0.0124	0.0078	0.0023	0.0060	0.0116	0.0132	0
20	20	0.0140	0.0091	0.0030	0.0067	0.0122	0.0149	0

- Next, choose the chart you desire such as the **Six Pack** or **Capability Analysis** report. The chart is run.
- Note: you'll see Minitab flash twice; once for the transform analysis and once for running the charts. After the first Minitab run Buddy records the best fit for each dimension. Buddy uses the best fit on the second run by commanding Minitab to use what it found.
- Notice how the **Weibull Distribution Model** was chosen and listed and the top of the page.



HINT: There was an additional **Stats** menu added to Buddy labeled **Individual Distribution Identification** which exists in Minitab as well. You can use this option to test your data without going to Minitab. Buddy will do it for you. When Minitab is complete, just scroll through Minitab's Session window to see the P-Test results.

# 5. Filtering Data

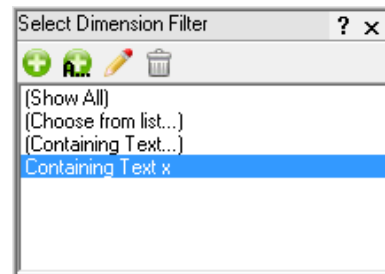
## 5.1 Introduction

Buddy can reduce the amount of data you send to your charting package by removing rows (parts) or removing columns (dimensions) or both. Collectively this is known as filtering the data. Reducing the number of dimensions is useful to show only the critical or important dimensions thereby creating less confusion. By reducing the number of records (parts) you can separate parts made by the same machine, cavity, operator, etc. This session discusses the methods of reducing data so you can quickly identify the source of any problems..

## 5.2 Dimension Filter

### 5.2.1 Introduction

The Dimension filter is used to reduce the number of columns shown in the grid. When you request a report each column displayed will create a separate chart. Be sure you reduce the columns to just the dimensions of interest. In our example we will create a filter where the labels of each column contain an X. This reduces the columns to three.



Before getting into the fine details, let's generate some success by sending our data to Minitab with minimal details. You will begin to understand the software operation by these simple examples.

### Dimension Filter Example

Using the SAMPLE file shipped with Buddy, create a Minitab **Capability Analysis** report for all dimensions whose label contains the letter **x**. Use all data found in the rows.

1. Be sure both the **Record Filter** and **Dimension Filter** areas are both showing by selecting **View – Record Filter** and **View – Dimension Filter**.
2. In the Dimension Filter area, click on the words **(Containing Text)** and type the letter **X** (either upper or lower case). Click **OK**.
3. Now give the filter a name of **All My X's**.
4. Your new filter is saved and displayed in the list.
5. Click on your **All My X's** filter to select it. In this case it is already selected because you just created the filter.
6. The columns are reduced to 3 columns of numbers since only 3 of the 20 columns contain the letter x in their label.
7. Now select **Stats – Capability Analysis**.
8. The final step before data is sent to Minitab is to decide on a range of your data. A form appears to allow you a final choice.
9. Minitab is loaded, the data is transferred, and the charts are displayed.

### 5.2.2 Dimension Filter Explained

To reduce the number of dimensions shown in the grid Buddy uses the concept of a dimension filter. This is a manual operation where a list of your dimensions is displayed and you highlight the ones you want to see. When you are inspecting parts on your CMM QC-CALC Real-Time automatically saves your data with all dimensions selected by default. Buddy uses this same filter so there may be more dimensions listed than you want.

## Filtering – Dimensions

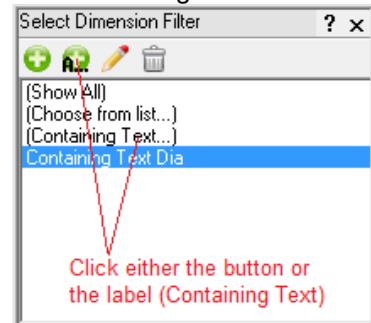
There are two types of dimension filters to choose from. They are:


- Containing Text Filter
- List Filter

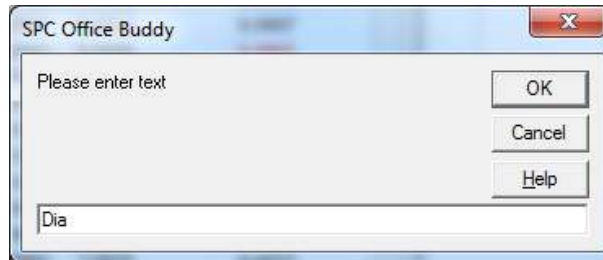
The **List** filter is a static list of dimensions to choose from while the **Containing Text** filter is dynamic. The difference between the two is the static list of dimensions is selected by you and does not change across files while the **Containing Text** filter changes each time you open a different file. In other words, if you want Buddy to display all dimension labels that contain the letters TP no matter where they are positioned in the list, use the Containing Text.

### Using the Containing Text Filter

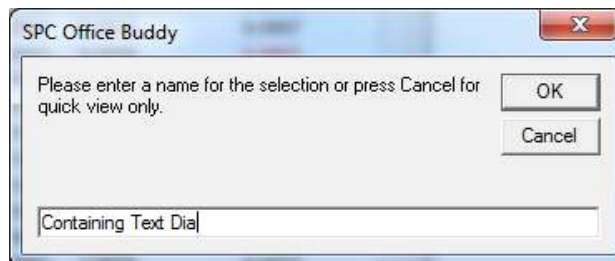
This special filter allows you to select the dimensions where the label contains a particular set of text characters. For example, let's assume your dimension labels for all true position dimensions always end with the letters "TP" or maybe you use "PC" for all process critical dimensions. If this is the case, you can quickly create global dimension filters for all parts using the **Containing Text** option.



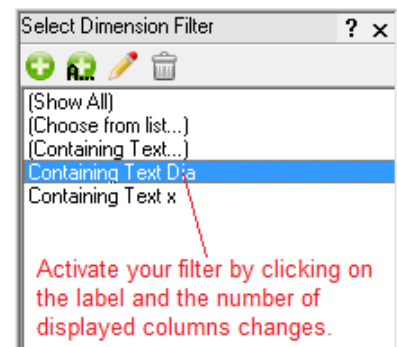
Click on the words (**Containing Text**) or click the green button  and you are requested to enter the search characters. In the picture below **Dia** was entered into the textbox to be used as a filter.



When you click **OK** you are asked to enter a name for this filter. By default, Buddy enters a name for you called **Containing Text Dia**. The name is displayed in the Dimension Filter list allowing quick access at any time in the future. Here we entered **Containing Text Dia** to remind us what the filter will provide when used.




When you click **OK**, all dimensions contain DIA are displayed. Everything you see in the data screen will be sent to the charting when you perform a report or export. You can use this filter now or in the future by clicking on its label.



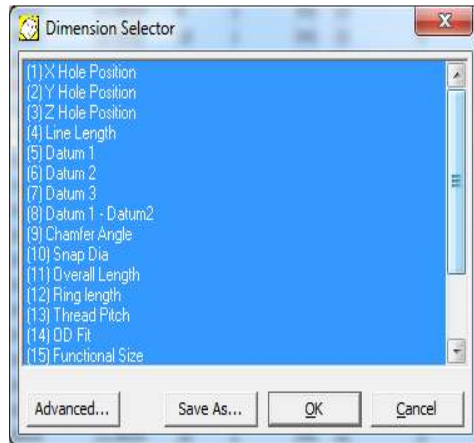
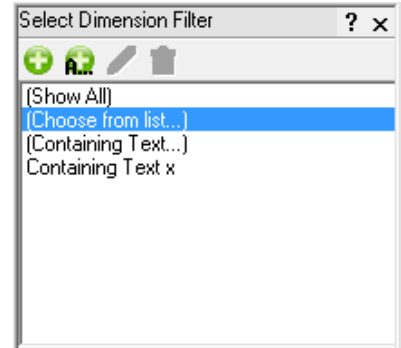
# Filtering – Dimensions

## The List Filter

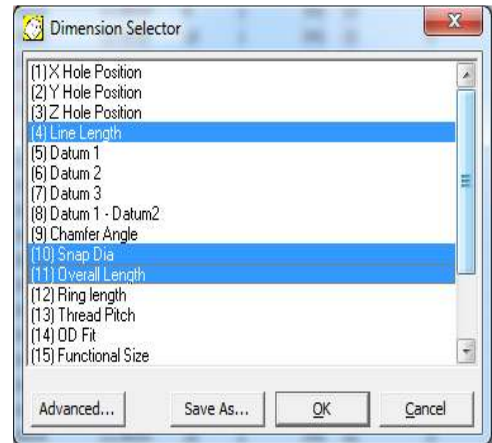
To create a List Filter for dimension selection we must first display the Dimension Filter window by clicking the **View – Dimension Filter** menu. The dimension filter is now shown on the left side of the Buddy window. Click on **(Choose From List)**

or click the green  and dimension selector is displayed.

The diagram below / left show all 20 dimensions selected while the same list on the right diagram shows only 3 of the 20 selected. Clicking **OK** immediately reduces the visible columns thereby “deselecting” the unwanted dimensions.



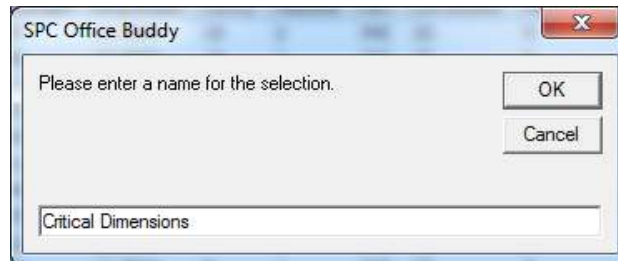
**All Dimension Selected**



**Selected Dimensions**

## Save Custom Selection by Name

After selecting which dimensions you wish to view, the selection can be saved by name. First select your dimensions then click the **Save As** button. You are then asked for a name for this selection and clicking **OK** saves your name in the list of Dimension Filters. In the future you can recall any selection quickly by choosing the name from the list.

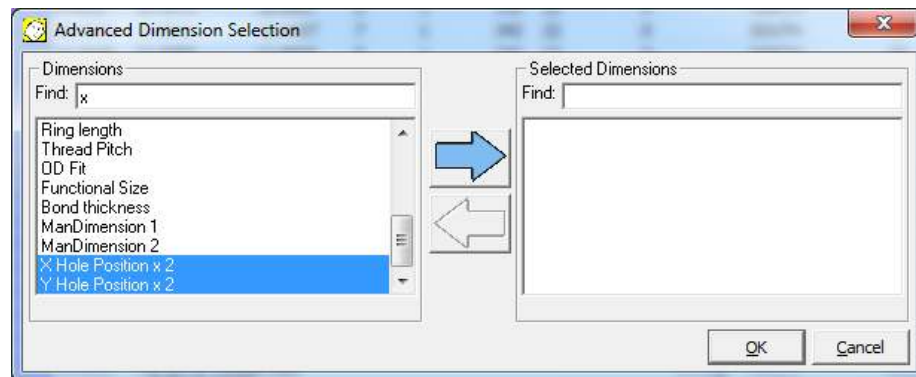


In this example we chose a name of **Critical Dimensions** so at any time we can view just the important dimensions. You could make a list called **My Diameters** if you wanted to reduce the screen to all hole diameters on the part, etc.

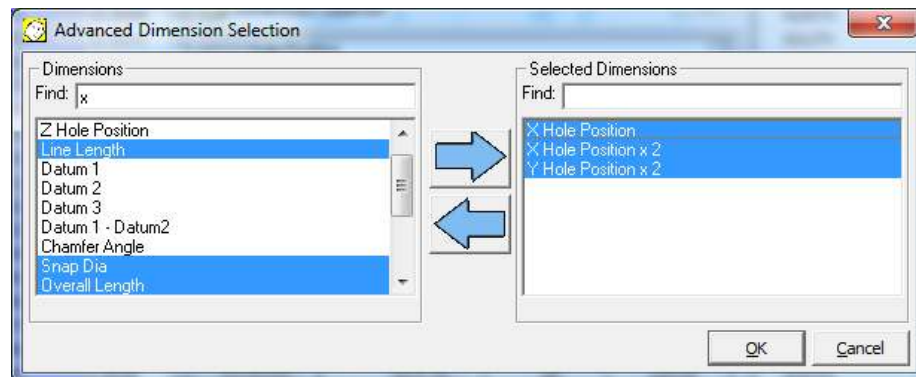
## Filtering – Dimensions

### Advanced Selection

There are times you have too many dimensions to filter and need tools to make the job easier. Pressing the **Advanced** button on the **Dimension Selector** window provides a search capability to speed up the process.



For example, suppose you have 200 dimensions in a QC-CALC file and you want to quickly find all dimensions that have an **X** in the label. Using the **Advanced Dimension Selection** screen, type your text in the **Find** window and the list in the left panel highlights the matching dimensions. Here we typed an X and just the dimension labels containing an X are highlighted. The large right arrow is enabled allowing you to move your selection to the **Selected Dimensions** area.



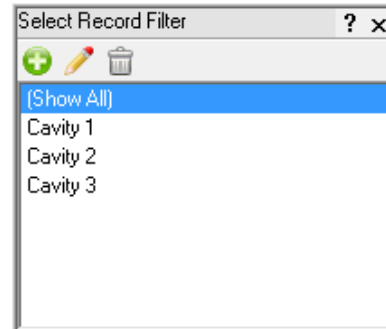
Now you can start over with a new search for dimensions in the left panel and add new results to your list. Click **OK** when you are done and optionally give your selection a name.

**TIP:** You can move dimensions back and forth by highlighting items in both sides and click the appropriate arrow. You can press and hold the CTRL key to highlight / un-highlight selected dimensions by clicking the mouse on the dimensions of interest.

## 5.3 Record Filter


### 5.3.1 Introduction

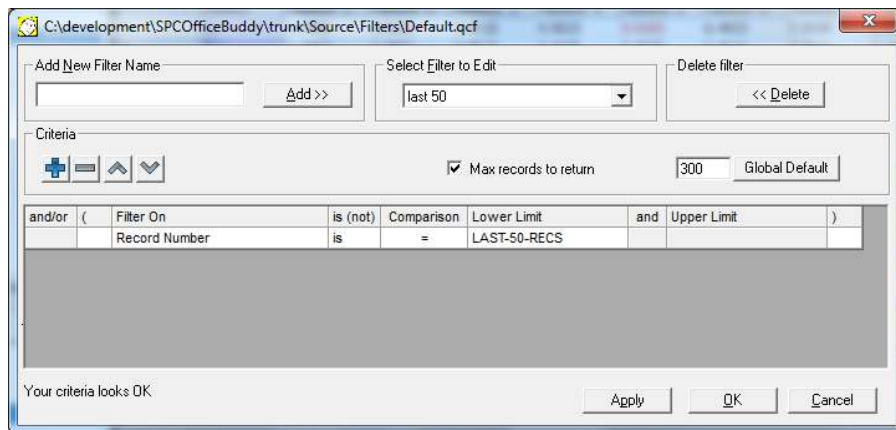
The record filter is used to reduce the number of rows shown in the grid. When a report is requested, all numbers in the grid are sent to the charting package. Be sure to filter out the records you do not want analyzed. You can filter on date / time / record numbers / trace fields, etc. The record filter is completely described in the next section. For this example we will use all available data by selecting **Show All** (100 records).



The top of the list contains any predefined filters that are not editable. These predefined filters will be shown in parentheses to show they are not editable. The **Show All** selection removes any active filter.

### 5.3.2 Record Filter Details

When you click the **Add New**  button the record filter editor is displayed. To create a new filter enter a name in the **Add New Filter Name** area shown in the upper left corner and click the **Add >>** button.





#### Entering Maximum Number of Records

Once you have a filter name you can change the **Maximum Number of Records to Return**. This number applies only when this specific filter is in used and can be no larger than the maximum number of records allowed in the database (2,000,000). If you know your subgroup is 3 and you want the latest 100 subgroups analyzed, set this number to 300.

If you uncheck the **Max records to return** option, the filtering will return all records found. In addition, you can use the default set on the **Tools – Options – Global** screen by clicking the **Global Default** button.



#### Entering Criteria

In the middle of the filter editor is the **Criteria** frame where your filter is created and edited. The choices you make for the items in this frame affect the data you see and any reports you run. The **Filter On** list contains all the possible types of information Buddy uses as a filter.

From the **Select Filter to Edit** list pick the filter name you want to edit. Clicking the  button adds new criteria to the end of the filter and the  button

## Filtering Data

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removes the currently selected criteria from the list. You can use the  and  buttons to move a criteria up and down respectively to change the selection process of the filter.

### Filter Criteria

The design of the filter criteria is setup to create a “man readable” sentence as the filter. As you select the fields in this row think about what the sentence is saying and the filter technique should be clear. For example, it should be obvious what you are trying to obtain when the filter reads:

Lot	is	between	22	and	23
Date only	is	=	TODAY		
Cavity	is	=	3		
Operator	is Not	=	Bruce		

### Save the Filter

Once your filter(s) are complete, click the **OK** button and the filter is saved and displayed in the list. Click on the filter and it immediately reduces the data to only the data that matches your criteria.

### Edit an Existing Filter

To edit an existing filter, select the filter’s name from the **Select Filter to Edit** area and edit the filter contents in the **Criteria** frame. Once you have modified your filter, click **OK** and your changes are saved.

### Deleting a Filter

Just to the right of the **Select Filter to Edit** list is the **Delete Filter** button. Clicking this button removes the currently selected filter from the list. A dialog box is displayed asking you to verify your choice.

The record filters are very capable and the detailed operation must be discussed. The [Advanced Record Filter](#) section on page [93](#) details the use of these filters.

## 5.4 Applying Both Dimension and Record Filters

The next three diagrams show the progressive reduction of data to just the details we want. Diagram 1 shows all data which in this example is 100 records of 20 dimensions.

Record	X Hole Position	Y Hole Position	Z Hole Position	Line Length	Datum 1	Datum 2	Datum 3	Datum
80	1.0005	1.9995	2.9984	3.9991	4.9956	6.0011	6.9957	7.9934
81	1.0009	2.0002	3.0009	4.0020	4.9957	6.0029	7.0081	7.9993
82	1.0004	1.9996	3.0017	4.0020	5.0028	6.0016	7.0007	7.9997
83	1.0001	1.9987	3.0012	3.9994	4.9996	5.9985	6.9961	8.0029
84	0.9992	1.9996	2.9999	3.9999	4.9973	6.0029	6.9960	7.9942
85	0.9989	1.9985	3.0024	4.0001	5.0049	6.0006	7.0068	8.0033
86	1.0003	2.0002	2.9981	4.0002	5.0003	6.0009	7.0004	8.0015
87	0.9998	2.0003	3.0009	3.9992	5.0006	6.0083	6.9984	8.0016
88	0.9996	1.9998	2.9999	3.9990	4.9977	5.9974	6.9997	8.0051
89	0.9996	1.9991	3.0006	3.9998	5.0043	6.0002	6.9989	8.0017
90	0.9998	2.0000	2.9985	3.9996	4.9960	5.9995	6.9988	7.9996
91	1.0005	2.0007	3.0011	4.0017	5.0003	6.0029	6.9968	8.0011
92	0.9993	2.0004	3.0010	3.9973	4.9981	5.9945	7.0006	8.0029
93	1.0000	2.0008	3.0005	4.0007	4.9966	6.0063	7.0009	8.0030
94	0.9996	1.9981	2.9977	4.0005	4.9972	5.9983	7.0003	7.9966
95	0.9997	2.0012	2.9988	3.9996	5.0029	6.0004	7.0063	8.0057
96	0.9991	1.9996	2.9997	4.0018	5.0008	6.0046	7.0021	7.9949
97	1.0000	1.9995	3.0003	3.9990	4.9990	5.9993	6.9954	7.9943
98	1.0005	2.0017	2.9978	4.0001	4.9974	6.0006	7.0010	7.9989
99	1.0001	1.9986	2.9975	3.9957	4.9971	6.0036	7.0039	8.0014
100	1.0003	1.9986	2.9989	4.0013	5.0004	6.0060	7.0043	8.0073

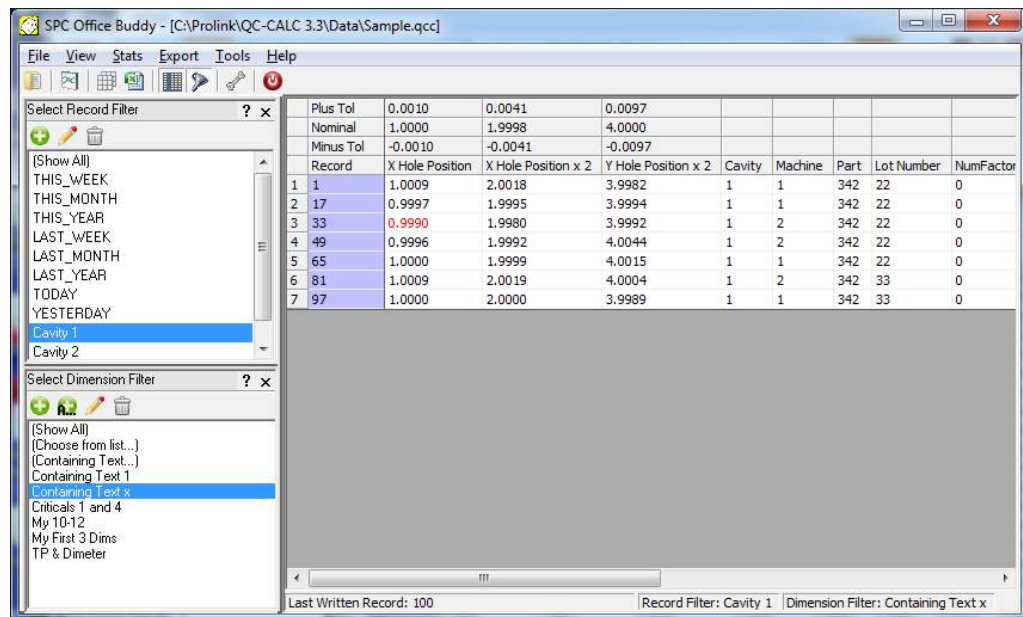
Next, we clicked on the **Cavity 1** filter and the number of rows is reduced to just seven. Many records are not included as depicted by the missing record numbers in column 1.

Record	X Hole Position	Y Hole Position	Z Hole Position	Line Length	Datum 1	Datum 2	Datum 3	Datum 1 - D
1	1.0009	1.9991	2.9990	4.0004	4.9984	5.9999	7.0008	7.9959
2	0.9997	1.9997	2.9999	3.9990	5.0022	5.9971	7.0007	8.0014
3	0.9990	1.9996	2.9999	4.0000	4.9999	6.0017	6.9975	7.9983
4	0.9996	2.0022	3.0020	4.0006	5.0018	5.9974	6.9976	7.9972
5	1.0000	2.0008	3.0022	4.0014	4.9981	5.9991	6.9996	8.0062
6	1.0009	2.0002	3.0009	4.0020	4.9957	6.0029	7.0081	7.9993
7	1.0000	1.9995	3.0003	3.9990	4.9990	5.9993	6.9954	7.9943



## Filtering Data

Lastly, we click on the dimension filter labeled **Containing Text x** which reduces the columns to three. This is the data we want to send to Minitab.



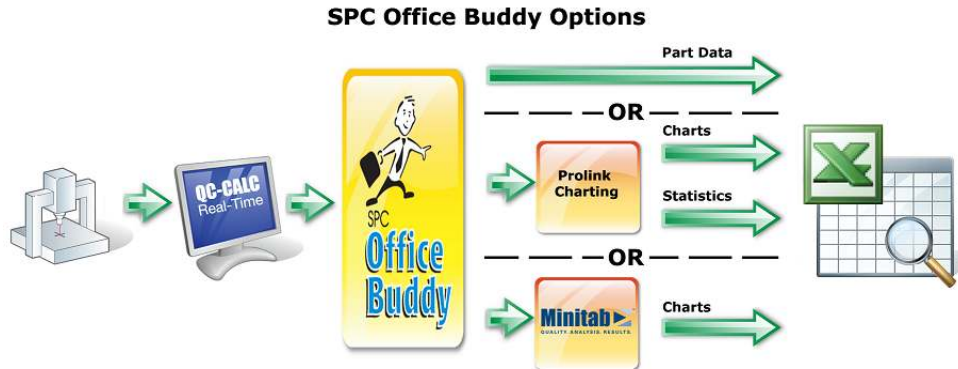
The screenshot shows the SPC Office Buddy application window. The main data table is displayed with the following columns: Plus Tol, Minus Tol, Record, X Hole Position, X Hole Position x 2, Y Hole Position x 2, Cavity, Machine, Part, Lot Number, and NumFactor. The 'Record' column contains values 1, 2, 3, 4, 5, 6, and 7. The 'X Hole Position' column contains values 1.0009, 0.9997, 0.9990, 0.9996, 1.0000, 1.0009, and 1.0000. The 'X Hole Position x 2' column contains values 2.0018, 1.9995, 1.9980, 1.9992, 1.9999, 2.0019, and 2.0000. The 'Y Hole Position x 2' column contains values 3.9982, 3.9994, 3.9992, 4.0044, 4.0015, 4.0004, and 3.9989. The 'Cavity' column contains values 1, 1, 1, 1, 1, 1, and 1. The 'Machine' column contains values 1, 1, 2, 2, 1, 2, and 1. The 'Part' column contains values 342, 342, 342, 342, 342, 342, and 342. The 'Lot Number' column contains values 22, 22, 22, 22, 22, 33, and 33. The 'NumFactor' column contains values 0, 0, 0, 0, 0, 0, and 0. The 'Plus Tol' column contains values 0.0010, 1.0000, -0.0010, 0.0041, 1.9998, -0.0041, and 0.0097. The 'Minus Tol' column contains values 0.0097, 4.0000, -0.0097, and 0.0097. The 'Record' column is highlighted in blue. The 'Select Record Filter' pane on the left shows a list of filters including THIS\_WEEK, THIS\_MONTH, THIS\_YEAR, LAST\_WEEK, LAST\_MONTH, LAST\_YEAR, TODAY, YESTERDAY, Cavity 1, and Cavity 2. The 'Select Dimension Filter' pane on the left shows a list of filters including [Show All], [Choose from list...], [Containing Text...], Containing Text 1, Containing Text x, Criticals 1 and 4, My 10-12, My First 3 Dims, and TP & Dimeter. The 'Containing Text x' filter is selected. The status bar at the bottom shows 'Last Written Record: 100', 'Record Filter: Cavity 1', and 'Dimension Filter: Containing Text x'.

Plus Tol	0.0010	0.0041	0.0097							
Nominal	1.0000	1.9998	4.0000							
Minus Tol	-0.0010	-0.0041	-0.0097							
Record	X Hole Position	X Hole Position x 2	Y Hole Position x 2	Cavity	Machine	Part	Lot Number	NumFactor		
1	1	1.0009	2.0018	3.9982	1	1	342	22	0	
2	17	0.9997	1.9995	3.9994	1	1	342	22	0	
3	33	0.9990	1.9980	3.9992	1	2	342	22	0	
4	49	0.9996	1.9992	4.0044	1	2	342	22	0	
5	65	1.0000	1.9999	4.0015	1	1	342	22	0	
6	81	1.0009	2.0019	4.0004	1	2	342	33	0	
7	97	1.0000	2.0000	3.9989	1	1	342	33	0	

## 6. Excel Jobs

### 6.1 Introduction

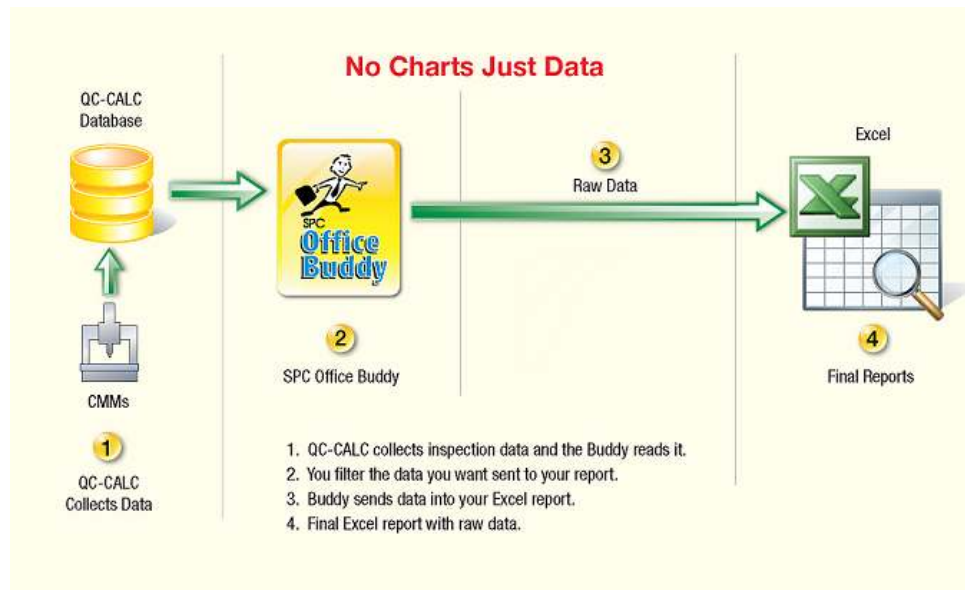
QC-CALC is the leader in data collection and Real-Time SPC, Minitab is the industry leader of statistical software, and Excel is the leading spreadsheet. In recognition of these facts, Buddy was written to tie these “best-in-class” products together into an easy to use, comprehensive reporting tool to save you an enormous amount of time. Complex reporting is reduced from hours of cut-n-pasting & typing to several seconds. We know you want to use Excel as your final report container so here is the answer. The following diagram shows the concept.



Currently, there are two methods to generate your charts; Minitab & Prolink Charting. If you own Minitab, you can leverage that investment with Buddy. If you do not own Minitab you can obtain charts similar to Minitab with the Prolink Charting option built in to Buddy. The diagram above shows the three paths data can flow from a CMM to Excel using Buddy.

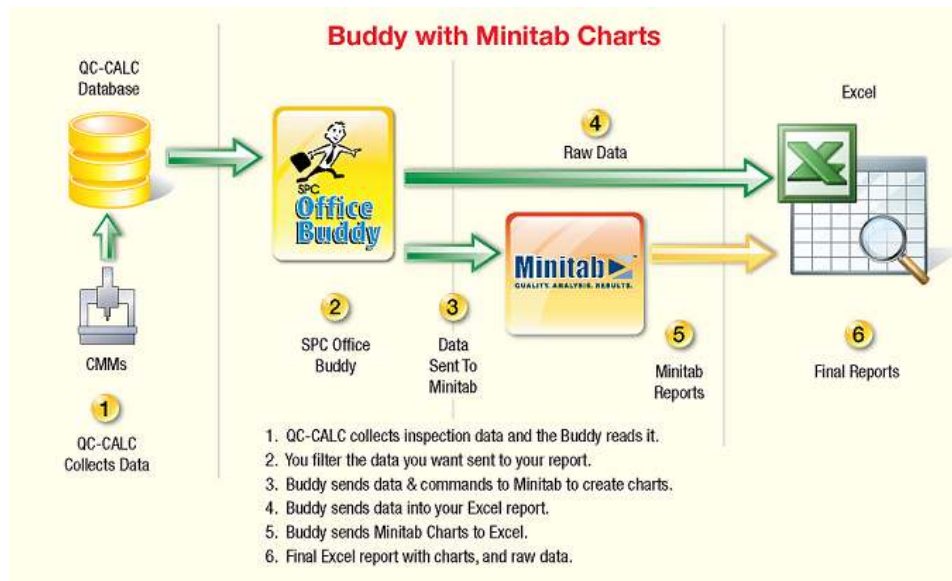
#### 6.1.1 No Charts

You can use Excel Jobs to move data from a QC-CALC database directly to your Excel report without the need of Minitab or Prolink Charting.



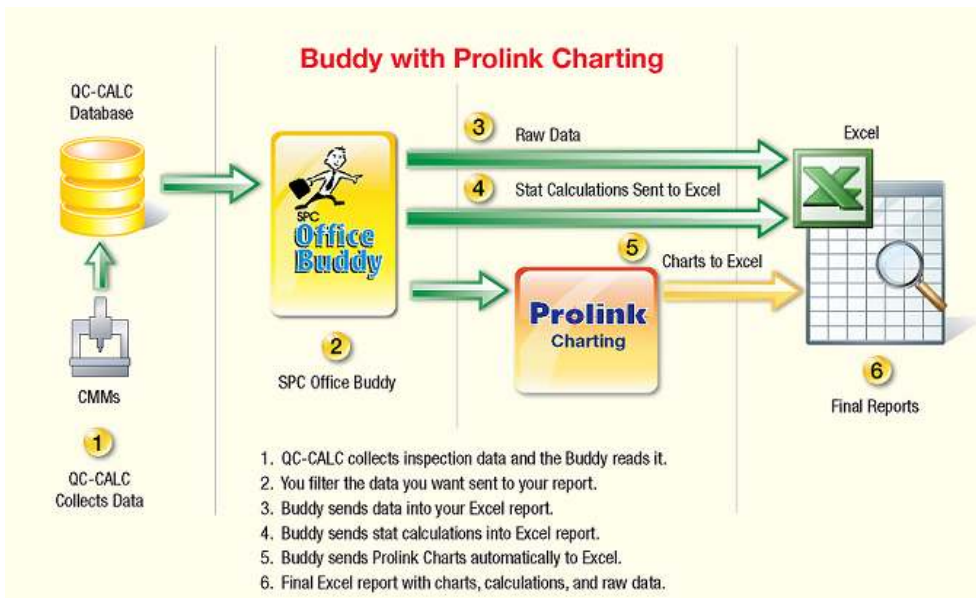
## 6.1.2 Using Minitab Charts

Another option is to create charts using Minitab. This diagram depicts how the data and charts flow. Keep in mind you must own Minitab and it must be available on the Buddy computer.



## 6.1.3 Using Prolink Charting

A third option is to create your charts using Prolink Charting. This diagram depicts how the data and charts flow. Keep in mind you must own Prolink Charting although it works in evaluation mode showing you the charts. The charts have a watermark indicating you are running an evaluation copy.




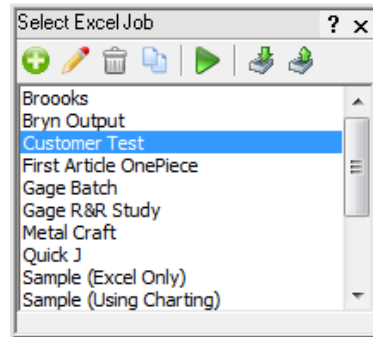
### 6.2 Let's Get Started








Before you can create your final Excel report using Minitab or Prolink Charts, you must write what is called an Excel Job. Writing, Editing, and Deleting of Excel Jobs is controlled from the Excel Job Panel. This section walks you through the various steps of creating and editing these jobs. The first job you write might take a little while but after that, you'll be writing them in a couple of minutes.

### 6.3 The Excel Job Control Panel

The buttons that control the Excel Job operation are:

-  - Add new Excel Job
-  - Edit Excel Job
-  - Delete Excel Job
-  - Copy Excel Job
-  - Run Excel Job
-  - Import from another Buddy
-  - Export to another Buddy



- You press the **Add**  button to create a new Excel job. You are lead through the **Excel Report Job Setup Wizard** which asks questions about your job. Your job is saved in the list for future, repeated use.
- Click on any job in the list and the **Edit**  button becomes available. Use the **Edit** button to change an existing Excel job. This launches the **Excel Report Job Setup Wizard**.
- You can remove any unwanted jobs by pressing the **Delete**  button. You are asked if you are sure before the job is permanently removed from the list.
- Likewise, clicking on the **Copy**  button after highlighting a job makes a copy of the highlighted job. When you edit the job, rename it.
- Highlight a job in the list and press the **Run**  button to start the job. Optionally, you can double click any job in the list.
- Press the **Export**  button to send someone else one or more of your Excel jobs. The Export file contains the Excel spreadsheet template and the Excel job file for each job selected. For details on the Export operation please see [Exporting Excel Jobs](#) on page 91.
- The **Import**  button is used to read Excel jobs from other users into your SPC Office Buddy. The file type is .ZIP which contains the Excel spreadsheet and the Excel Job. For details on the Import operation please see [Importing Excel Jobs](#) on page 91.

### 6.4 Setup the Excel Job

In this section we discuss how to setup your Excel reports so you can send QC-CALC data, stat calculations, charts, and place these results where you want them in your spreadsheet report. An overview includes:

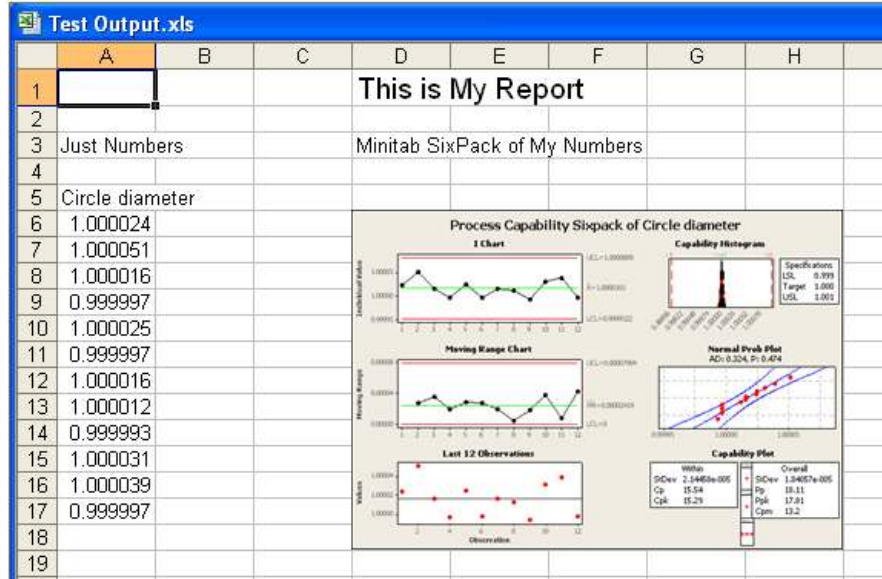
1. Using Excel create a report template used to create your final report.
  - Place Tags indicating where the data to be placed.
  - Place Tags indicating where you want Minitab or Prolink charts.
2. Add a new Excel Job in Buddy.
3. Optionally filter the data for the report.
4. Run the Excel Job.

# Excel Jobs

## 6.5 Getting Started

Before starting a new Excel job, let's take a look at the final report we want to create in Excel. Here you see a column of 12 numbers on the left and a Minitab Sixpack chart on the right. Using this final report, we will create the needed Excel template shown below the report. We realize your reports are more complex but for demonstration purposes we'll use this simple example.

### The Final Report




### The Excel Template

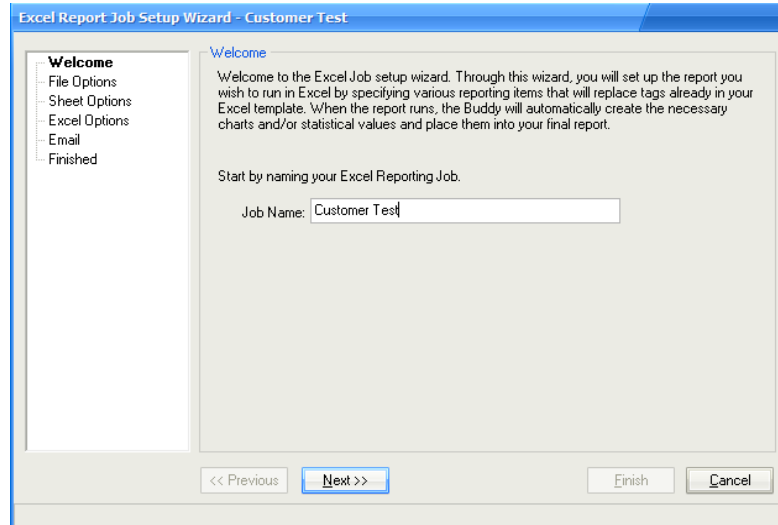


As you can see, the Excel template contains very little data but instead contains Tags telling Buddy where to place the data and which chart to create in the final report. Tags are words in square brackets [ ]. Please see [Understanding Tags](#) on page 34 for more details explaining their use. With these two pictures in mind, let's create an **Excel Job** in Buddy and tie it all together.

## 6.6 Add New Job

### 6.6.1 Step #1

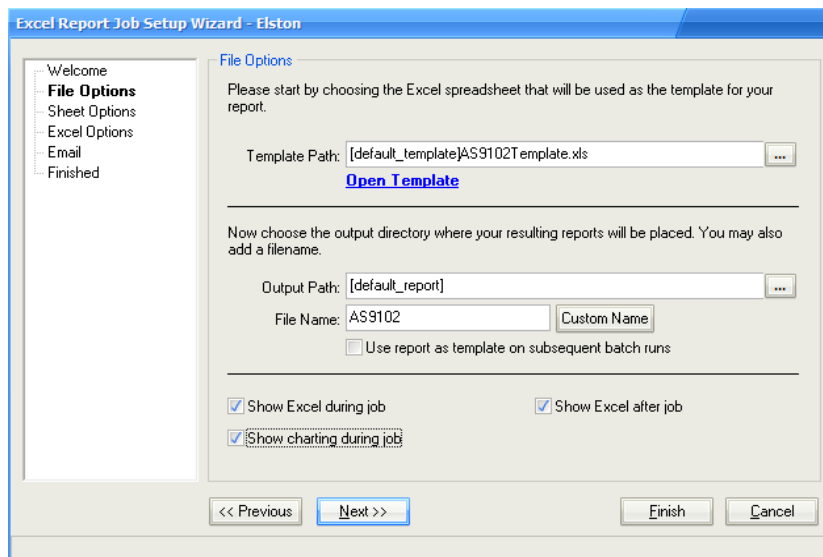
To begin your Excel Job, press the **Add New Excel Job**  button to start the **Excel Report Job Setup Wizard**. Enter a Name in the box. Here we entered **Customer Test**. The name lets you re-run or **Edit** this job at any time by selecting it from the list instead of using this wizard again.



### 6.6.2 Step #2

Press the **Next >>** button to move to the **File Options** screen. In the **Template Path** area, choose the Excel spreadsheet to use as the template. Now enter the **Output Path** and **File Name** for the report. We selected **AS9102Template.xls** as the template and **AS9102.xls** as the output report as shown below. File extensions of .xls, .xlsx, and .xlsm are supported. Buddy will automatically produce a spreadsheet of the same type as set in the template. Therefore, if the template is a macro enabled (.xlsm) spreadsheet, the report output will create the same.

TIP: Please see **Tools – Options – Excel Jobs** on page [132](#) for a discussion on default paths.



## Excel Jobs

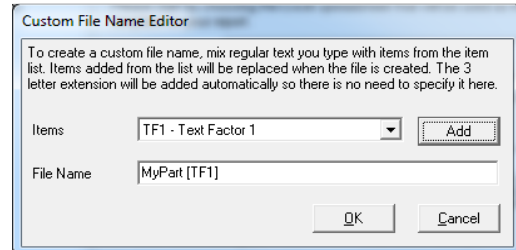
---

### Custom Name

The **File Name** entered is the name of the .XLS file that will be created. There are times when you may want the File Name to be variable, based on a Factor Value, the Date and Time, or typed in text. The **Custom Name** button allows you to select what the final File Name will be at export time.

Clicking the **Custom Name** button brings you to the **Custom File Name Editor**.

- Use Part Name, Date, and Time
- Date of Inspection
- Time of Inspection
- QCC File Name
- Any Text Factor value
- Any Numeric Factor value



Simply select the item from the list and click the **Add** button. If you know what you want, you can manually type the text into the lower box. When the Excel Job runs, all items are joined together and the name that is formed is used for the Excel file name.

### Use report as template on subsequent batch runs

This feature allows you to use the report file name for subsequent runs in batch mode. Batch mode refers to three situations; when running in a batch command file, when running as part of a batch job in Buddy, and when running an export that runs the same Excel Job multiple times from the Enterprise Report Scheduler (ERS).

In the latter two instances, both Buddy and ERS pass a job number along with the commands when running the Excel Job multiple times. The job number is simply a counter telling the Buddy which step is being run. For instance, if a batch job runs the Excel Job 5 times, it will pass 1, 2, 3, 4, and 5 for each time it runs the job. If this checkbox is checked in the Excel Job, then a special behavior happens. If the number is 1, then the normal template path set in the Excel Job is used. If the number is greater than 1, the report path set in the Excel Job is used.

This way, the template is used on the first iteration and the report output is updated on subsequent iterations allowing you to save the template for later use.

Limitations:

1. Buddy does not track whether the same Excel Job is being run multiple times or multiple jobs are being run. Therefore, if a batch job is created that runs one MyReport1 twice and then MyReport2 once, MyReport2 will be sent a job number of 3 even though it is the first time it is being run. This could cause unintended consequences and this checkbox should not be used in this situation.
2. Buddy does not take custom report naming into account when using the report name. Therefore, if the report is set up to use a date/time stamp in the output filename, it will find a different report file name each time it runs since the time will have changed. Again, unintended consequences will occur and this option should be avoided.

### Show Excel during job

With this option enabled, Excel is visible while the job is running and you see your data and charts being substituted for Tags as the job runs. This is useful for troubleshooting your Excel Job but it slows the job down a bit due to the constant screen repainting.

## Excel Jobs

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### Show charting during job

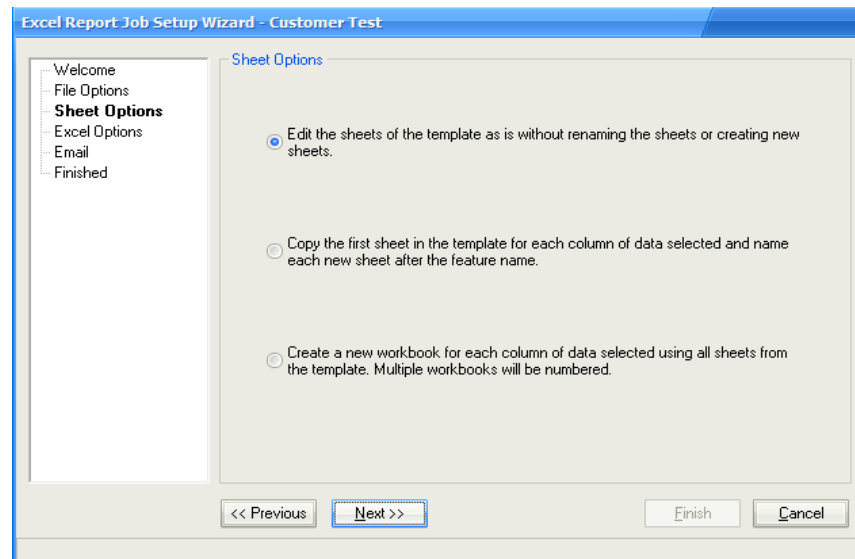
With this option enabled Minitab or Prolink Charting is shown during the job processing as it is generated. After the charting package closes, you will see the Tag substituted with the charts if **Show Excel during job** is checked.

### Show Excel after job

With this option enabled Excel stays on screen and your final report is available to view. In either case, Buddy saves your final Excel report to disk at the conclusion of the job.

### 6.6.3 Step #3

Press the **Next >>** button to move to the **Sheet Options** screen. The **Sheet Options** allow you to:



#### Edit the sheets of the template as is....

This means your final report is the same as your original template but it contains the substitutions. Because Buddy saves your template as another name, your original template is preserved. This is the most commonly used option.

#### Copy the first sheet in the template for each column...


Buddy will copy the first sheet found in your workbook template, make the substitutions and then rename the sheet to the feature name contained within that sheet. If multiple dimensions are selected, this process will happen again for the next dimension in the file, so there will be 1 sheet for each selected dimension. This is useful if each feature has complex reporting needs and you do not want to clutter the sheet.

#### Create a new workbook for each column of data...

Buddy will copy your Excel template file and create a new workbook for each feature in the report. The workbook names have an added number to the output name i.e. Final1.xls, Final2.xls, etc. to keep them unique. For more information about this option please see [Workbook and Sheet Considerations](#) on page [72](#).

### 6.6.4 Step #4

Press the **Next >>** button and arrive at the **Excel Options** screen. For this screen you will need to match all the Tags you have in your Excel file to specific data items coming from Buddy.

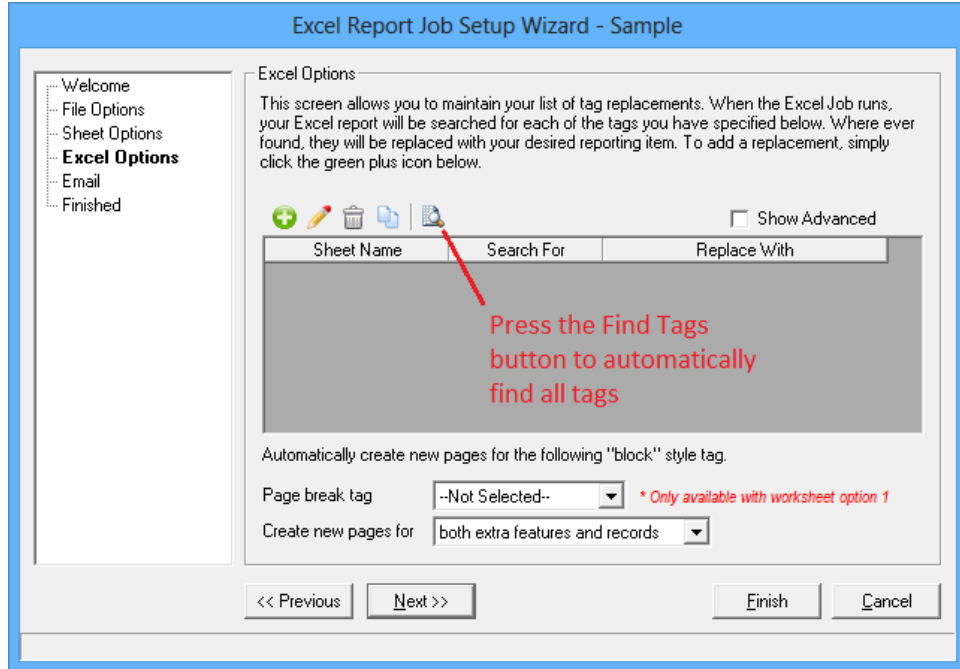
The **Find Tags in Excel Template** button (  ) saves time by finding and listing all tags in your Excel report. If you use the tag names suggested in the **Auto**



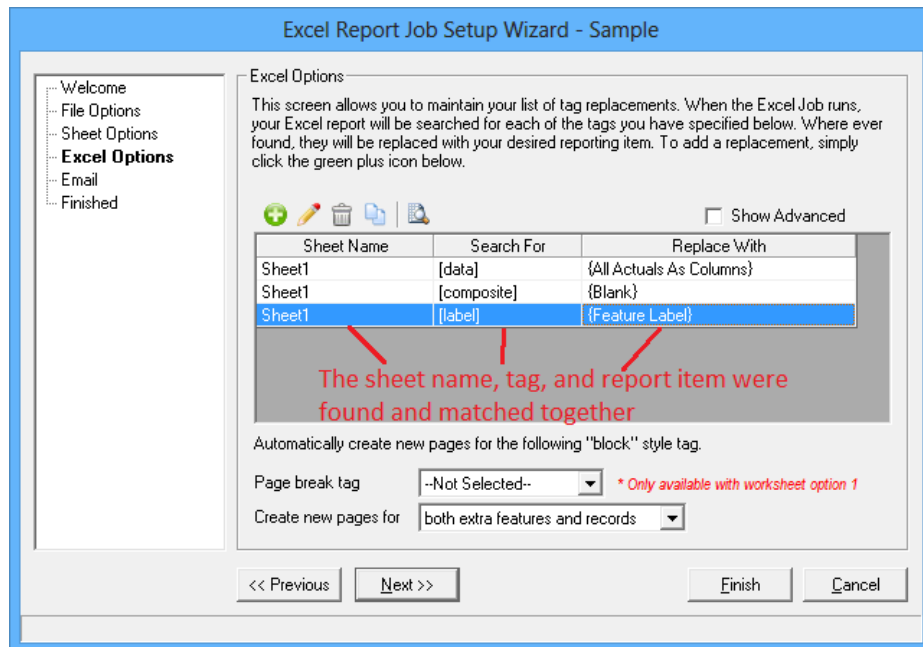
## Excel Jobs

**Match Tag Names** areas, Buddy will automatically list and match them to the replacement item. Please see:

- [Auto Match Tag Names – Part Data](#) pg. [44](#)
- [Auto Match Tag Names – Factors](#) pg. [48](#)
- [Auto Match Tag Names – Statistics](#) pg. [50](#)
- [Auto Match Tag Names – Charts](#) pg. [55](#)



In the screen below the **Find Tags in Excel Template** button was pressed and the entire Excel spreadsheet was read. The tags were extracted and the results displayed here. The [Label] tag was automatically matched (mapped) to {Feature Label}. Any item listed as **{Blank}** means you need to edit the link and connect your tag with a replacement item.



## Excel Jobs

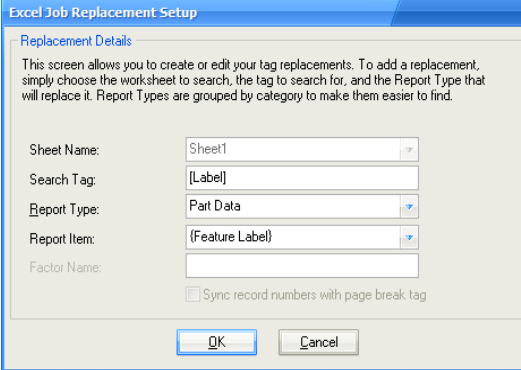
Use the **Delete Replacement** (🗑️) and **Copy Replacement** (📄) buttons as required.

### Show Advanced

Checking the **Show Advanced** option enables a new step in the Wizard that is used to turn on Password protection in the Excel file or run macros before or after processing. See [Show Advanced](#) on page 31 for details.


### Excel Job Replacement Setup

Select the sheet name from the list and enter the tag name (in square brackets [ ]) you wish to assign (link) to a replacement item. In our continuing example, the sheet name was filled in for us as Sheet1 and [Label] is the tag found in that sheet.



The dialog box titled "Excel Job Replacement Setup" has a "Replacement Details" section. It contains the following fields: "Sheet Name" (Sheet1), "Search Tag" ([Label]), "Report Type" (Part Data), "Report Item" ({Feature Label}), and "Factor Name" (empty). There is a checkbox for "Sync record numbers with page break tag" which is unchecked. "OK" and "Cancel" buttons are at the bottom.

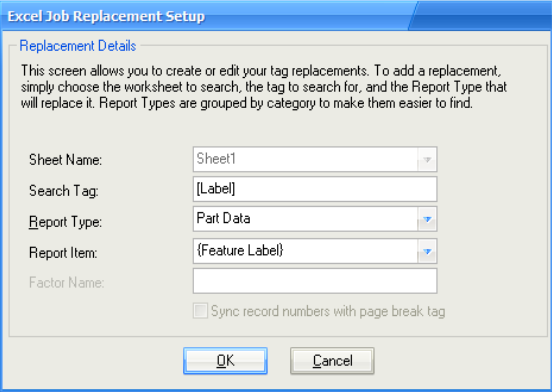
### Edit Report Type

Double click any item in the list to edit the **Replacement** item or press the  **Edit Replacement** button. Use the **Report Type Category** list to select the type of item to link to your tag. There are five categories to choose from:

<b>Charts</b>	Various SPC plots and charts to include in your report.
<b>Numeric Factors</b>	Trace information in numeric form such as cavity numbers.
<b>Text Factors</b>	Trace information in text form such as name, lot num, etc.
<b>Part Data</b>	Actuals, nominals, tolerances, data source, etc.
<b>Statistics</b>	Calculations such as Avg, Range, Min, Max, Cpk, Sigma, etc.

The items found in the **Report Item** list change as you select a different **Report Type** category. Select the exact item from the **Report Item** list you wish matched with your **[data]** tag and click **OK**.

This example tells Buddy to write the current column of data to the spreadsheet. Buddy looks for a tag called **[data]** and replaces it with the corresponding actual values for the dimension being processed. Buddy stops filling data if it finds an End Tag **[/data]**. See [Understanding Tags](#) on page 34 for details on tags.



This is a duplicate of the dialog box shown above, with the same fields and options.

The Composite chart is placed in the Excel report by typing **[Composite]** in the **Search Tag** area, selecting **Charts** for the **Report Type**, and **Capability Composite Chart** from the **Report Item** list. While viewing our template ([Getting Started](#) section) on page 23, notice how the tags are set on a diagonal forming

## Excel Jobs

the size and placement of the **Composite** chart. Remember, the size of the chart is set by the location of the replacement tags.

### Sync record numbers with page break tag

Please see the [Page Break Tag](#) section on page [67](#) for an explanation of this feature.

### 6.6.5 Step #5

Press the **Next >>** button to arrive at the optional email screen. You can email your generated Excel report as an attachment to anyone you wish. Check the **Send As Email Attachment** checkbox and fill-in the usual email details. Use semicolons (;) to separate the addresses. When the job is complete you'll briefly see the email screen sending your email.

The screenshot shows the 'Excel Report Job Setup Wizard - Customer Test' dialog box. On the left is a vertical list of steps: Welcome, File Options, Sheet Options, Excel Options, **Email**, and Finished. The main area is titled 'Email Options' and contains the following text: 'This screen allows you to email your report to one or more people after the Excel Job has completed. To enable an email, check the box and fill in the fields below. Separate multiple email addresses with semi-colons (;)'. Below this text is a checked checkbox labeled 'Send As Email Attachment'. There are four input fields: 'Email To:' with the placeholder 'your\_email\_here@your\_company.com', 'Email CC:', 'Subject:' with the text 'Here is my Excel report made with Buddy', and 'Message:' with the text 'Enjoy! It only took me 3 seconds to generate it!' and 'Bruce'. At the bottom are buttons for '<< Previous', 'Next >>', 'Finish', and 'Cancel'.

### 6.6.6 Step #6

Click the **Next >>** button. You have completed the Excel job and can **Run the Job Now** by checking the checkbox. For now, just click **Finish** and we will run the job manually in the next step.

The screenshot shows the 'Excel Report Job Setup Wizard - Customer Test' dialog box. On the left is a vertical list of steps: Welcome, File Options, Sheet Options, Excel Options, Email, and **Finished**. The main area is titled 'Finish' and contains the following text: 'Congratulations! You have successfully set up an Excel Report job. To run the job, select some data from the main screen and choose the job by name from the Jobs menu.' Below this text is a checkbox labeled 'Run Job Now'. There are two more checkboxes: 'Clean up unused (column) tags after replacements are finished' and 'Clean up all unused tags after replacements are finished'. At the bottom are buttons for '<< Previous', 'Next >>', 'Finish', and 'Cancel'.

## Excel Jobs

### Clean up unused {column} tags after replacements are finished

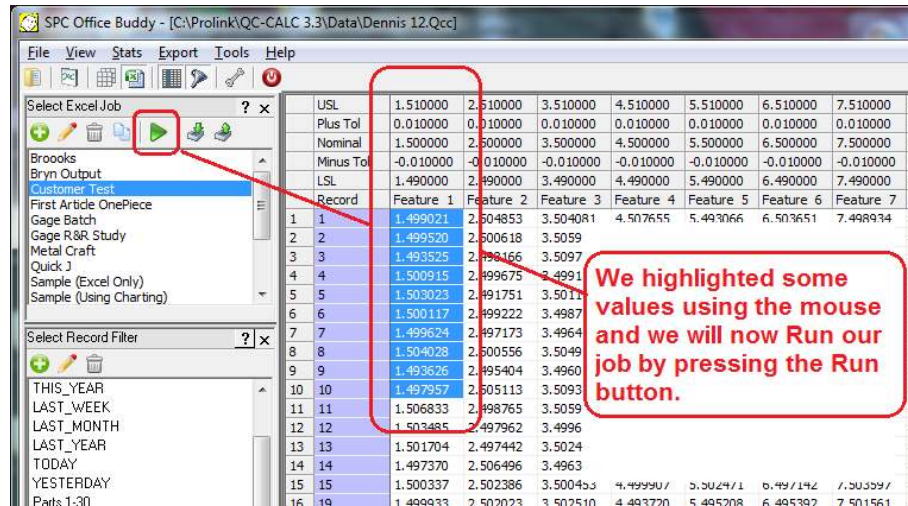
This option will remove any extra tags that remain with different dimension numbers referenced. See [Special {Column} Tag Variable](#) on page 53 for details.

### Clean up all unused tags after replacements are finished

This option will remove all extra tags from the Excel file after processing has finished.

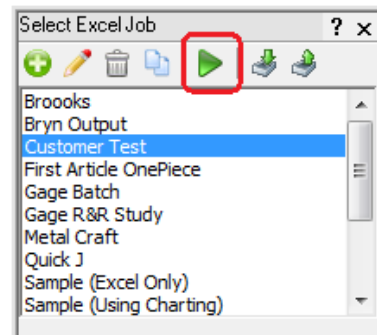
## 6.6.7 Run Job

Using the mouse, we selected the 12 data points we want to report and we are now ready to run the job.



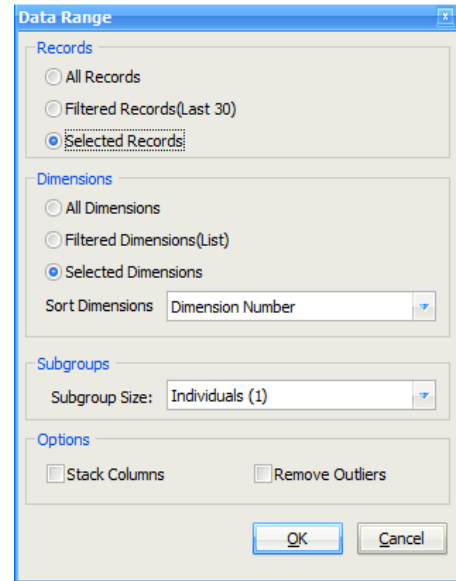
Double-click your newly created Excel job (Customer Test) from the list in the control panel and the job begins to run. You can use the **Run** button instead of double clicking if you prefer.

Verify the **Data Range** is correct. In our example we used the mouse to select one column with 12 values so use **Selected Records** and **Selected Dimensions**.



## Excel Jobs

Clicking **OK** starts the sequence of launching Minitab or Prolink Charting, loading the data, running the selected charts, and moving the actual data and charts into Excel. If you checked the **Show Excel after Job** option, your final report is presented in Excel where you can modify it if required. The report was saved using the name and location you entered in [Step #2](#) on page [24](#).



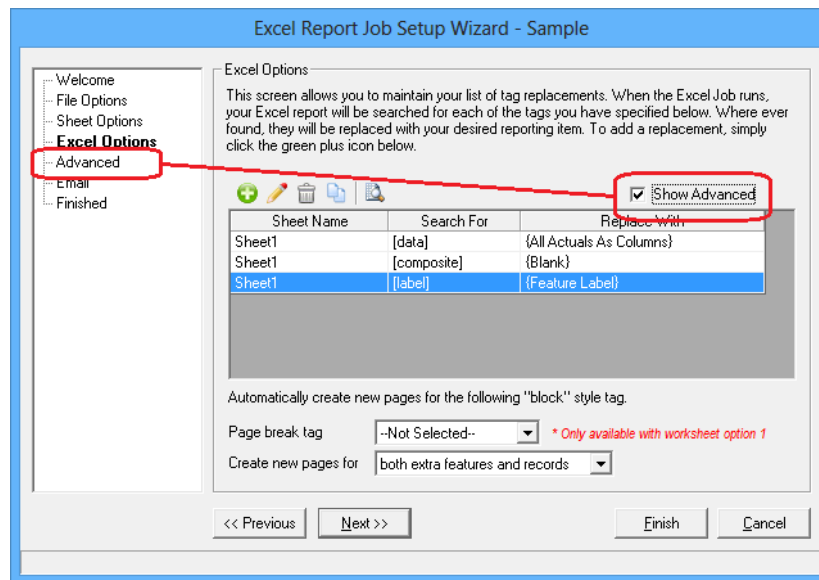
The Data Range dialog box contains the following sections:

- Records:** Radio buttons for All Records, Filtered Records (Last 30), and Selected Records (selected).
- Dimensions:** Radio buttons for All Dimensions, Filtered Dimensions (List), and Selected Dimensions (selected). A dropdown menu for Sort Dimensions is set to Dimension Number.
- Subgroups:** A dropdown menu for Subgroup Size is set to Individuals (1).
- Options:** Checkboxes for Stack Columns and Remove Outliers, both of which are unchecked.

Buttons for OK and Cancel are located at the bottom right.

### 6.7 Show Advanced

The previous Step 4 shows an option on the screen we did not discuss. Checking this option causes the **Advanced** step to be inserted into the Wizard. This screen is used to control more advanced functionality which includes locking worksheets with passwords and running macros before or after the Excel Job.



The Excel Report Job Setup Wizard - Sample dialog box shows the following options:

- Navigation pane on the left with steps: Welcome, File Options, Sheet Options, **Excel Options**, Advanced, Email, Finished.
- Excel Options:** A section with a description and a **Show Advanced** checkbox (checked).
- Table:** A table with columns Sheet Name, Search For, and Replace With.
- Page break tag:** A dropdown menu set to --Not Selected--.
- Create new pages for:** A dropdown menu set to both extra features and records.

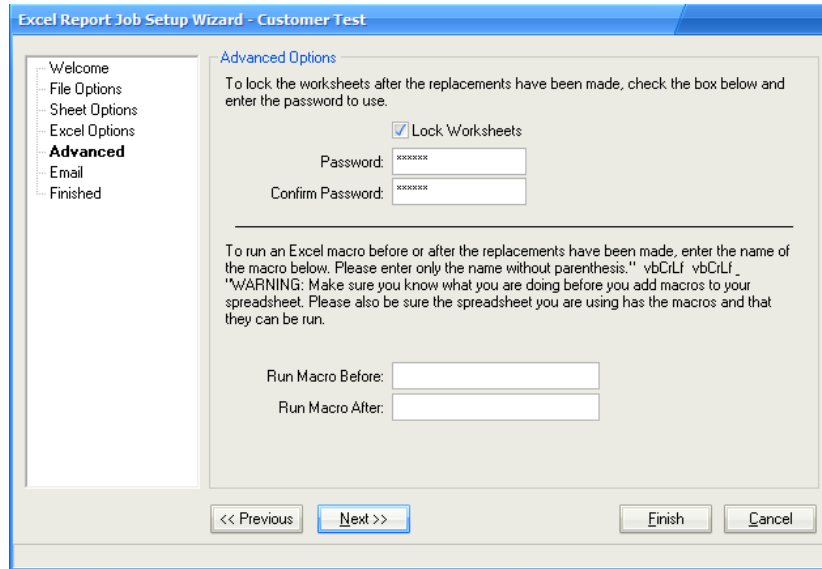
Sheet Name	Search For	Replace With
Sheet1	[data]	{All Actuals As Columns}
Sheet1	[composite]	{Blank}
Sheet1	[label]	{Feature Label}

Buttons for << Previous, Next >>, Finish, and Cancel are located at the bottom.

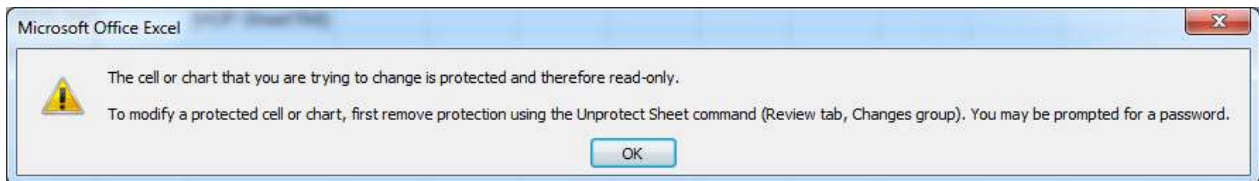
## Excel Jobs

### 6.7.1 Locking Worksheets

The purpose of this option is to lock the worksheet to ensure no one changes the report after it finishes. You will have to enter the password twice to ensure you entered the password correctly.



At the conclusion of the run, the saved worksheet is viewable but not editable.



### 6.7.2 Running Macros

You can run Excel macros before or after the tag replacements within an Excel Job run. Buddy was designed so you do not require macros but power users can expand on the capability of Buddy by using this option. There are many reasons you might want to use macros but we'll show you one simple example of adding new tags to a worksheet after Buddy finishes.

#### Macro Example

Let's say you inspect five features on a part and at the conclusion of the CMM program you run an Excel Job. The Excel Job simply writes the five values in the next available row in the spreadsheet. Here you can see we have one tag labeled [Data] with a matching end tag of [/data].

The screenshot shows an Excel spreadsheet titled 'Add\_A\_Part.xls'. The data is as follows:

	A	B	C	D	E	F	G	H
1			Part ABC					
2								
3								
4								
5								
6		Length	Width	Dia	X	Y		
7		[Data]				[/data]		
8								
9								
10								
11								
12								

## Excel Jobs

As the job runs the tags are replaced with data (row 7) as normal. Without going into the details of macro writing, our macro finds the last written row and rewrites the same tags in that row, column 2 and 6. Because this macro finds the last written row and then writes a new set of tags in row 8, the final report is actually a new Excel template but with the first run of data inserted. Now the template can be reused as an input template because new tags are available. After Run 2 the data is written into row 8 and the macro adds new tags in row 9 etc.

### After 1 Run

5						
6		<b>Length</b>	<b>Width</b>	<b>Dia</b>	<b>X</b>	<b>Y</b>
7		1.000016	2.000023	2.999963	4.000016	4.99998
8		[Data]				[/data]
9						
10						

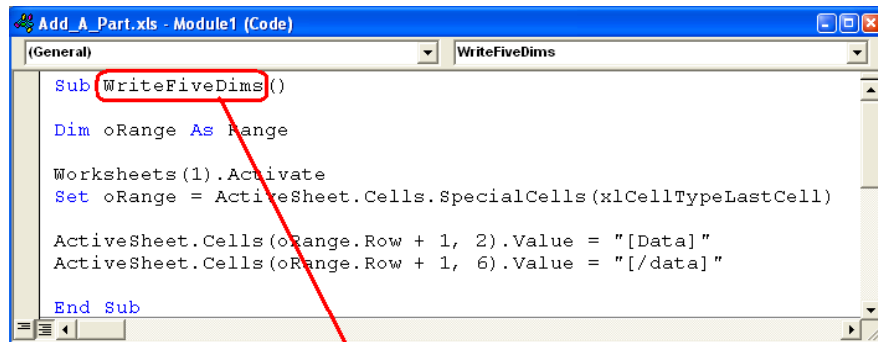
### After 2 Runs

5						
6		<b>Length</b>	<b>Width</b>	<b>Dia</b>	<b>X</b>	<b>Y</b>
7		1.000016	2.000023	2.999963	4.000016	4.99998
8		0.999997	1.999974	3.000022	4.000014	4.999983
9		[Data]				[/data]
10						
11						

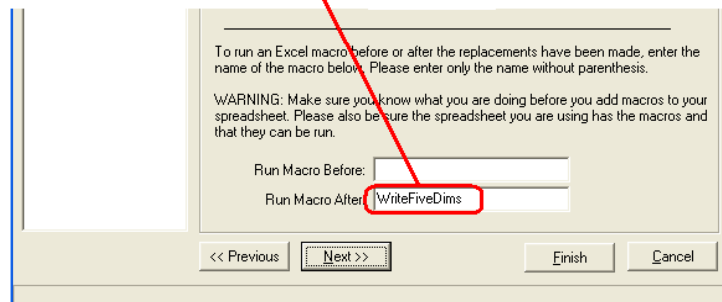
### After 3 runs

4						
5						
6		<b>Length</b>	<b>Width</b>	<b>Dia</b>	<b>X</b>	<b>Y</b>
7		1.000016	2.000023	2.999963	4.000016	4.99998
8		0.999997	1.999974	3.000022	4.000014	4.999983
9		1.000025	1.999968	3.00004	4.000024	4.999986
10		[Data]				[/data]
11						

Remember, every time an Excel job runs, the tags are replaced with the corresponding data so the normal final Excel report cannot be reused (no tags to find). The solution we chose in this example is to write and run the following macro **after** the job runs. The example below shows the macro "WriteFiveDims" in Excel and we added the macro name in the **Run Macro After** box so Buddy will automatically run that macro when the Excel Job has finished.



```
Sub WriteFiveDims()  
    Dim oRange As Range  
    Worksheets(1).Activate  
    Set oRange = ActiveSheet.Cells.SpecialCells(xlCellTypeLastCell)  
    ActiveSheet.Cells(oRange.Row + 1, 2).Value = "[Data]"  
    ActiveSheet.Cells(oRange.Row + 1, 6).Value = "[/data]"  
End Sub
```



To run an Excel macro before or after the replacements have been made, enter the name of the macro below. Please enter only the name without parenthesis.

WARNING: Make sure you know what you are doing before you add macros to your spreadsheet. Please also be sure the spreadsheet you are using has the macros and that they can be run.

Run Macro Before:

Run Macro After:

<< Previous    Next >>    Finish    Cancel

If we chose to **Run Macro Before** the Excel Job, the tags would have been written to the template and replaced so quickly you may not even see the tags. When you run this macro **Before** the job runs no extra tags are left in your final report. You would not have to delete the very last set of tags on the last part when the report is complete.

### 6.7.3 Macros with Parameters

Parameters can be passed into macros by enclosing them in parentheses just after the name of the macro in the text field. Parameters are separated from each other by commas and Buddy currently supports up to 10 parameters per macro.

Examples:

```
MyMacro(param1, param2)
DoSomething(1, 2)
```

### 6.7.4 Dynamic Parameters

Dynamic parameters can also be passed to the macros. When the macro is run, these dynamic parameters are automatically replaced with the numbers they represent at run-time. Please keep in mind that the text for these parameter names is not case sensitive. Buddy currently supports the following dynamic parameters:

**{Number of Features}** – The number of dimensions being sent to the Excel Job.

**{Number of Records}** – The number of records being sent to the Excel Job.

**{Subgroup Size}** – The subgroup size chosen when the Excel Job was run.

Example:

Assuming the job is run with 10 dimensions and 15 records, the following dynamic parameters would be replaced as shown.

```
DoSomething({Number of records}, {Number of features})
```

At run-time becomes...

```
DoSomething(15, 10)
```

### 6.7.5 Macros Tips

- Any macro you write must be in the Excel spreadsheet you use.
- Buddy was written so you do not have to use complex macros. Please keep in mind these advanced features are not normally required.

### 6.7.6 Using with QC-CALC

Normally, Buddy runs separately in your office PC using shared QC-CALC data found on your file server. We added the ability to QC-CALC to directly trigger an automatic Buddy when your inspection is complete. The QC-CALC Real-Time training manual explains how to run this type of report.

## 6.8 Understanding Tags

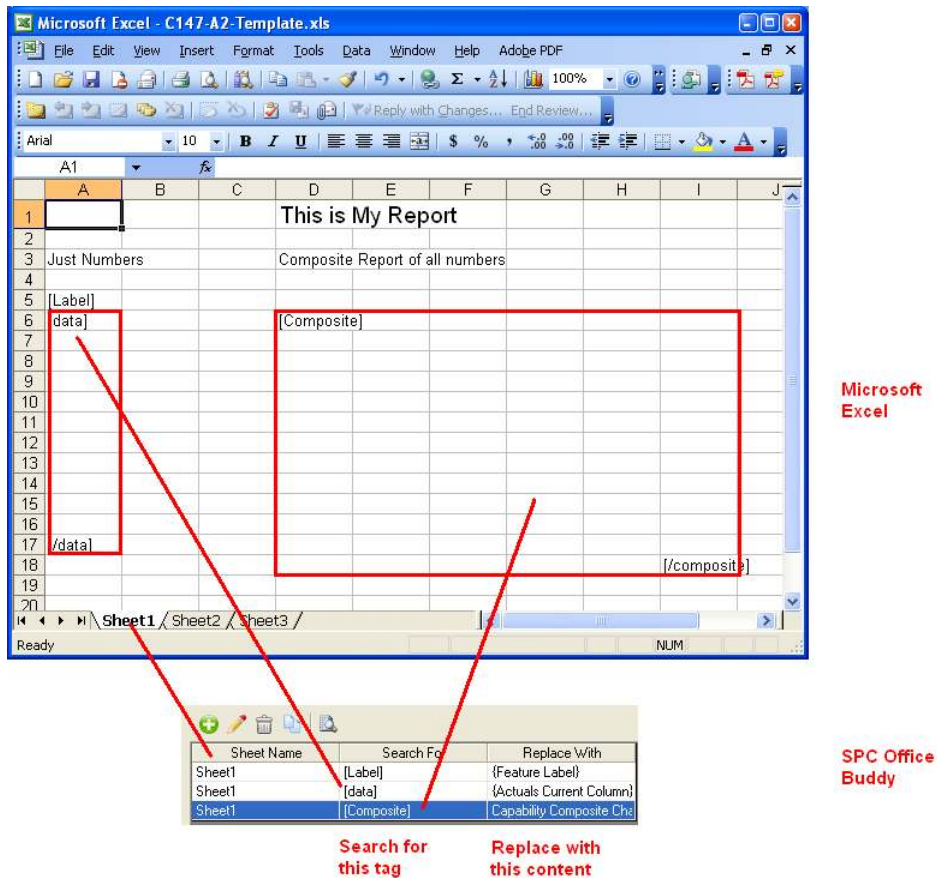
Since it is difficult to determine where to place data and charts in an Excel report, Buddy works on the concept of TAG substitution. Tags are any words you type into your Excel template between square brackets [ ]. You map a **Report Item** to each tag which is replaced with the value of each item when you run the Excel Job. You can have a single tag or matched pair. Matched pairs of tags have the same text but the “End Tag” is preceded with a forward slash.

i.e. [Data] ... [/Data].



## Excel Jobs

Matched pair tags are used to block out the area of the spreadsheet you want the data to use. In the case of a column of numbers, you may want Buddy to stop early to ensure portions of your report are not accidentally overwritten. In the case of a chart, you use the matched pair to define the size and location of the chart. i.e. [Composite] is the upper left corner and [/Composite] is the lower right corner.



The screenshot shows a Microsoft Excel window titled "Microsoft Excel - C147-A2-Template.xls". The spreadsheet has the following content:

	A	B	C	D	E	F	G	H	I	J
1				This is My Report						
2										
3	Just Numbers			Composite Report of all numbers						
4										
5	[Label]									
6	[data]			[Composite]						
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17	[/data]									
18										[/composit]
19										
20										

Below the spreadsheet is a table for the replacement setup:

Sheet Name	Search For	Replace With
Sheet1	[Label]	{Feature Label}
Sheet1	[data]	{Actuals Current Column}
Sheet1	[Composite]	Capability Composite Ch

Red arrows point from the replacement table to the corresponding tags in the spreadsheet. The text "Microsoft Excel" is on the right side of the spreadsheet window, and "SPC Office Buddy" is on the right side of the replacement table.

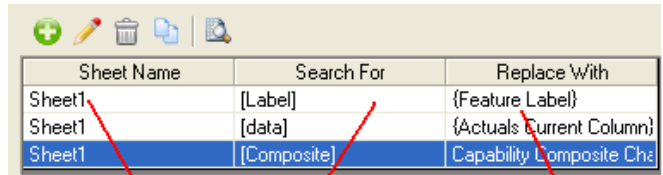
As shown above, you map your custom tag names to a **Report Item** in the **Excel Job Replacement Setup** screen. Here we show an area in Sheet 1 of the Excel workbook mapped to **{Actuals Current Column}**. Likewise, we have mapped an area using [Composite] & [/Composite] to contain a **Capability Composite** chart.

You can use a tag to start a column or row of data without an End Tag. Be careful as this can get out of control when large amounts of data are saved since the data continues filling the column until all data is exhausted. Using an End Tag guarantees the flow of data will stop when the tag is reached.

## 6.9 Report Items

### 6.9.1 Introduction

Report Items are items that replace your tags when the Excel job runs. Buddy needs to know what **sheet** to look on, what **tag** you want replaced, and what **Report Item** to use in place of that tag.



Sheet Name	Search For	Replace With
Sheet1	[Label]	{Feature Label}
Sheet1	[data]	{Actuals Current Column}
Sheet1	[Composite]	Capability Composite Che

Look on Sheet1 for [Label] and replace with Feature Label

**Report Items** are surrounded by curly brackets and you choose them from the list. Your typed tags are replaced with the value of the Report Item selected. Due to the large number of items in the list, the **Report Items** are grouped into 5 different categories:

- Part Data
- Factors (text)
- Factors (numeric)
- Statistics
- Charts

See the [Report Item Categories](#) section on page [36](#) for a more thorough explanation of the different categories available.

### 6.9.2 Report Item Categories

While there is an ever expanding list of report items you can use to replace tags in your templates, they all fit into 4 main categories with predictable behaviors. Once you understand the different categories, you can use them in different ways to create the desired effect in your spreadsheets. These categories are listed below with descriptions and examples to help you understand the different concepts.

#### Single Values

Single values are literally single values that can be placed in your template. They do not support end tags because there is only one value that will be replaced. They tend to be used with the second and third worksheet options (**Copy worksheet** or **Copy Workbook**) because they apply to a single feature.

## Excel Jobs

Notice in the image below that the Feature Label, Nominal, and Tolerances are replaced by the individual values for the feature in question.

The Template					The Results					
	A	B	C	D	E		A	B	C	D
1	Label	[Label]				1	Label	Feature 5		
2	Nom	[Nomin]				2	Nom	5.5		
3	Plus Tol	[Ptol]				3	Plus Tol	0.01		
4	Minus Tol	[Mtol]				4	Minus Tol	-0.01		
5		[data]				5		5.495225		
6						6		5.504665		
7						7		5.501066		
8						8		5.501653		
9						9		5.495665		
10		[/data]				10				
11	Time	[time]				11	Time	5/9/2008 10:13		

	USL	1.5100	2.5100	3.5100	4.5100	5.5100	6.51
Nominal	1.5000	2.5000	3.5000	4.5000	5.5000	6.5000	6.50
LSL	1.4900	2.4900	3.4900	4.4900	5.4900	6.4900	6.49
Record	Feature 1	Feature 2	Feature 3	Feature 4	Feature 5	Feat	
1	1	1.5038	2.4960	3.5098	4.5006	5.4952	6.50
2	2	1.5046	2.5046	3.4972	4.4914	5.5047	6.50
3	3	1.4976	2.4938	3.4995	4.5048	5.5011	6.49
4	4	1.4992	2.5046	3.5014	4.5022	5.5017	6.49
5	5	1.5000	2.5013	3.4975	4.4967	5.4957	6.50
6	6	1.5050	2.4995	3.5044	4.5001	5.5070	6.50

Examples:  
 {Part Name}  
 {Cpk}  
 {Nominal}

### List Types

List types are lists that typically span features or records. They support the end tag which allows you both limit the data and to flow the data either vertically or horizontally. List types automatically snake until they hit the end tag without truncation. They almost always begin with the word "All" to indicate multiple values will be replacing your tag. The only exception to this is {Actuals Current Column}.

Notice how the data starts in cell A1 below and then snakes its way as columns until stopping in cell C5.

The Template					The Results				
	A	B	C	D		A	B	C	D
1	[data]				1	1.000899	0.99997	0.999813	
2					2	1.000048	0.999592		
3					3	1.000203	1.000324		
4					4	1.000076	0.999276		
5			[/data]		5	0.9999	1.000466		
6					6				
7					7				

Examples:  
 {Actuals Current Column}  
 {All Cpk}  
 {All Nominals}

### Block Types

Block types are two dimensional lists that span both features and records. They support the end tag and flow either as columns or as rows. All block report items begin with the word "All" and end with either "As Columns" or "As Rows". When Buddy reaches an end tag boundary, it truncates the remaining values of that particular row or column and starts over on the next row or column of the spreadsheet.

## Excel Jobs

Below is an example of a block type flowing “as columns”. Notice how the data flows downward from A1 until hitting the end tag boundary at A5. Any data after A5 is truncated and the next feature’s data starts in B1. This differs from the snaking nature of the list type. In the example below, the first column’s values are all approximately 1.00 while the second column is clearly a different feature since its values are all approximately 2.00.

		The Template				The Results			
		A	B	C	D	A	B	C	D
1		[data]				1.000899	1.999119	2.998975	
2						1.000048	2.000751	2.998645	
3						1.000203	1.999917	3.001062	
4						1.000076	2.000091	3.002594	
5				[/data]		0.99999	1.999215	3.000449	
6									
7									

Below is an example of a block type flowing “as rows”. Notice how, similar to “as columns”, it flows in rows from left to right until hitting the end tag boundary. The remaining data is then truncated and the next row starts with data from the next feature.

		The Template				The Results			
		A	B	C	D	A	B	C	D
1		[data]				1.000899	1.000048	1.000203	
2						1.999119	2.000751	1.999917	
3						2.998975	2.998645	3.001062	
4									
5				[/data]					
6									
7									

### Examples:

- {All Actuals as Columns}
- {All Actuals as Rows}
- {All Deviations as Columns}
- {All Notes as Columns}

## Charts

Charts are literal pictures that are created from a charting tool (either Minitab or the built-in ProLink Charting). The charting tool saves the images as JPG, EMF, or PNG files and Buddy places them in the exact location of the begin tag. End tags are supported to allow you to size the image. The image is always positioned to line up with the top left corner of the cell in which the tag is placed. The image is then sized to line up with the lower right corner of the cell in which the end tag is found. If no end tag is specified, the image is displayed at 100% of size.

### Examples:

- Capability Analysis
- Capability Sixpack
- Box Plot

# Excel Jobs

## 6.9.3 Part Data

### {Actuals Current Column}

The **Current Column** refers to the feature being reported at the moment. As Buddy cycles through each column it replaces a single column of numbers for the current feature being reported. This is useful if you ask Buddy to create separate sheets for each of the 3 features. It will create 3 separate sheets and write the actual of each feature on each separate sheet. You will not see the other feature data since it is on another sheet.

The Template

	A	B	C	D
1	[data]			
2				
3				
4				
5	[/data]			
6				
7				

The Results

	A	B	C	D
1	1.000899			
2	1.000048			
3	1.000203			
4	1.000076			
5	0.9999			
6				
7				

You can create a template containing a tag and an End Tag with an offset to force your single column of numbers into a grid. For example, if we start our tag in A1 and end in C5 the data is placed in multiple columns. In this example, we sent 11 values so Buddy squeezed the data by going down column A until the max was reached, then started over in B1.

The Template

	A	B	C	D
1	[data]			
2				
3				
4				
5			[/data]	
6				
7				

The Results

	A	B	C	D
1	1.000899	0.99997	0.999813	
2	1.000048	0.999592		
3	1.000203	1.000324		
4	1.000076	0.999276		
5	0.9999	1.000466		
6				
7				

### {All Actuals as Columns}

**All Actuals as Columns** allows you to place an entire grid of numbers in one location within the Excel report. If you have 3 features of 20 numbers and you want the 3 columns to appear next to one another, you must specify **{All Actuals as Columns}**. The final report shows as many columns as your template tags allow. Each column is placed next to one another. **NOTE:** Be sure to enter your tags on a diagonal and leave enough room for all data.

The Template

	A	B	C	D
1	[data]			
2				
3				
4				
5			[/data]	
6				
7				

The Results

	A	B	C	D
1	1.000899	1.999119	2.998975	
2	1.000048	2.000751	2.998645	
3	1.000203	1.999917	3.001062	
4	1.000076	2.000091	3.002594	
5	0.9999	1.999215	3.000449	
6				
7				

In the above example we selected 3 columns of 11 numbers in Buddy data grid. Did you notice how each column has a different set of numbers but they are trimmed at row 5? This happened because we set our End Tag at C5 causing 6 numbers in each column to be discarded.

# Excel Jobs

## {All Actuals as Rows}

This is the same as **{All Actuals as Columns}** but it allows you to save your data in rows instead of columns. This is similar to a pivot table in Excel except Buddy rotates your data for you.

The Template					The Results				
	A	B	C	D		A	B	C	D
1	[data]				1	1.000899	1.000048	1.000203	
2					2	1.999119	2.000751	1.999917	
3					3	2.998975	2.998645	3.001062	
4					4				
5			[/data]		5				
6					6				
7					7				

We selected 3 columns of 11 numbers in Buddy data grid. Did you notice how each row has a different set of numbers (magnitude) but they are trimmed at column 3? This happened because we set our End Tag at C5 causing 8 numbers in each row to be discarded.

There is one special case to consider. Since Buddy rotates your data 90 degrees when you use **{All Actuals as Rows}** you can place a selected row of data in columns by using **{All Actuals as Rows}**. Below we selected 1 row of 5 values yet we set up our template as columns. We used **{All Actuals as Rows}** giving the effect of taking your selected data and placing it where you wanted it. This works for multiple rows as well.

The Template					The Results				
	A	B	C	D		A	B	C	D
1					1				
2	[data]				2	1.503786			
3					3	2.496002			
4					4	3.509755			
5					5	4.500603			
6	[/data]				6	5.495225			
7	[time]				7	5/9/2008 10:13			

	USL	1.5100	2.5100	3.5100	4.5100	5.5100	6.5100	7.510
Nominal	1.5000	2.5000	3.5000	4.5000	5.5000	6.5000	7.500	
LSL	1.4900	2.4900	3.4900	4.4900	5.4900	6.4900	7.490	
Record	Feature 1	Feature 2	Feature 3	Feature 4	Feature 5	Feature 6	Featu	
1	1	1.5038	2.4960	3.5098	4.5006	5.4952	6.5036	7.500
2	2	1.5046				5.5047	6.5002	7.504
3	3	1.4976				5.5011	6.4977	7.503
4	4	1.4992	2.5046	3.5014	4.5022	5.5017	6.4989	7.501
5	5	1.5000	2.5013	3.4975	4.4967	5.4957	6.5032	7.496

## {Actual}

This is a single value from within the set of actuals being sent to the Excel Job. The key to this single value is that Buddy must be told which row and column within the data should be placed into the Excel sheet. As such, this is not commonly used and should only be used when no other option will work for the report.

The format of the tag is normal, but must contain a "{rowcol:x,y}" command within the square brackets of the tag. The RowCol section must appear in curly brackets, followed by a colon, and the row and column numbers separated by a comma. The keywords "First" and "Last" are also available to use in both the row and column positions.

## Excel Jobs

**NOTE:** The row and column specified are relative to the data being sent to the Excel Job and are NOT the positions within the QCC file. Therefore, row 2 is not necessarily the 2<sup>nd</sup> record in the QCC file, but is instead the 2<sup>nd</sup> record in the data set being sent to the Excel Job.

**NOTE:** If you choose to sort the dimensions when you run the job, your dimensions may re-order. In this case, the column specified will be after the sort was applied and may not be in the same position as it is shown in the main Buddy grid.

Examples:

[mytag{rowcol:2,4}] – places the value from the 2<sup>nd</sup> row and the 4<sup>th</sup> column.

[mytag{rowcol:First,Last}] – places the value from first row (1) and last column based on the data that is sent to the job when it runs.

[mytag{rowcol:Last,Last}] – places the value from last row and column based on the data that is sent to the job when it runs.

Due to the specificity, the replacement in the Excel Job should match the tag in the template. No wildcards are accepted. This allows you to have multiple “actual” tags throughout the document. The image below shows the tag in the cell, the replacement screen from the Excel Job Wizard, the data being sent to the job during running, and the final report.

The diagram illustrates the Excel Job process in three stages:

- The Template:** A screenshot of an Excel spreadsheet showing a cell with the tag `[act{rowcol:2,4}]`.
- Excel Job:** A screenshot of the Excel Job Wizard showing the search criteria: `Sheet Name` is `Sheet1` and `Search For` is `{act{rowcol:2,4}}`.
- Data during run:** A screenshot of a data grid with 5 columns and 20 rows. The value `3.5004` in the 2nd row and 4th column is highlighted with a red circle.
- The Report:** A screenshot of the final report showing the value `$,500387` in a cell.

### {Part Name}

This is a single variable value containing the QC-CALC file name. This is a convenient method of identifying the origin of the report's data. If you use multiple QC-CALC files with the same template, using this Report Item helps you identify the report.

### {Current Time}

This is the system time at the time the Excel Job is run. Using this variable is an easy way to mark the date and time your report was created.

### {Inspect Time}

This is the inspection time of the one part you are reporting. Remember, each part in the QC-CALC database has an inspection time associated with the entire part. If a multiple sheet report is created across many sheets, you may want this time printed on each sheet for each feature. If you send multiple parts to Excel, the first part's inspection time is used.

# Excel Jobs

## {All Inspect Times}

When multiple features with multiple values are used there is a time associated with each part. Here we created an Excel template with data and time and used both **{All Actuals as Columns}** and **{All Inspect Times}** to print the date and time of each row (part).

The Template					The Results				
	A	B	C	D		A	B	C	D
1					1				
2	[data]			[time]	2	1.503786	2.496002	3.509755	5/9/2008 10:13
3					3	1.504622	2.504611	3.49716	5/9/2008 10:18
4					4	1.497586	2.493763	3.49953	5/9/2008 10:24
5					5				
6			[/data]		6				
7					7				

	USL	1.5100	2.5100	3.5100	4.5100	5.5100	6.5100	7.
	Nominal	1.5000	2.5000	3.5000	4.5000	5.5000	6.5000	7.
	LSL	1.4900	2.4900	3.4900	4.4900	5.4900	6.4900	7.
	Record	Feature 1	Feature 2	Feature 3	Feature 4	Feature 5	Feature 6	Fe
1	1	1.5038	2.4960	3.5098	4.5006	5.4952	6.5036	7.
2	2	1.5046	2.5046	3.4972	4.4914	5.5047	6.5002	7.
3	3	1.4976	2.4938	3.4995	4.5048	5.5011	6.4977	7.
4	4	1.4992	2.5046	3.5014	4.5022	5.5017	6.4989	7.
5	5	1.5000	2.5013	3.4975	4.4967	5.4957	6.5032	7.

## {Feature Label}

The **Feature Label** applies to the current feature being reported. There is only one value returned for this Report Item.

## {All Feature Labels}

This item has many labels and is used when you want a grid of labels in one row or one column. This Report Item requires that you place a tag and an End Tag in the template to tell Buddy which direction to travel. i.e. Top – Bottom or Left – Right. Remember, the default direction of fill is top – bottom so if we hadn't placed the [/label] at the end of the row, the labels would have overwritten some of our data (go down).

The Template					The Results				
	A	B	C	D		A	B	C	D
1	[Label]		[/label]		1	Feature 1	Feature 2	Feature 3	
2	[data]			[time]	2	1.503786	2.496002	3.509755	5/9/2008 10:13
3					3	1.504622	2.504611	3.49716	5/9/2008 10:14
4					4	1.497586	2.493763	3.49953	5/9/2008 10:14
5					5				
6			[/data]		6				
7					7				

	USL	1.5100	2.5100	3.5100	4.5100	5.5100	6.5100	7.
	Nominal	1.5000	2.5000	3.5000	4.5000	5.5000	6.5000	7.
	LSL	1.4900	2.4900	3.4900	4.4900	5.4900	6.4900	7.
	Record	Feature 1	Feature 2	Feature 3	Feature 4	Feature 5	Feature 6	Fe
1	1	1.5038	2.4960	3.5098	4.5006	5.4952	6.5036	7.
2	2	1.5046	2.5046	3.4972	4.4914	5.5047	6.5002	7.
3	3	1.4976	2.4938	3.4995	4.5048	5.5011	6.4977	7.
4	4	1.4992	2.5046	3.5014	4.5022	5.5017	6.4989	7.
5	5	1.5000	2.5013	3.4975	4.4967	5.4957	6.5032	7.

## {All Record Numbers}

This will display a list of the actual Record Numbers used on the Excel sheet.



# Excel Jobs

- {Upper Spec}
- {Plus Tol}
- {Nominal}
- {Minus Tol}
- {Lower Spec}

These five items should be self-explanatory; however, we will use them in an example for clarity. Each Report Item contains one value for the current reported feature. All items operate the same and they do not require an End Tag for direction flow since there is only one value.

The Template					The Results					
	A	B	C	D	E		A	B	C	D
1	Label	[Label]				1	Label	Feature 5		
2	Nom	[Nomin]				2	Nom	5.5		
3	Plus Tol	[Ptol]				3	Plus Tol	0.01		
4	Minus Tol	[Mtol]				4	Minus Tol	-0.01		
5		[data]				5		5.495225		
6						6		5.504665		
7						7		5.501066		
8						8		5.501653		
9						9		5.495665		
10		[/data]				10				
11	Time	[time]				11	Time	5/9/2008 10:13		

The Buddy Data Screen							
	USL	1.5100	2.5100	3.5100	4.5100	5.5100	6.5100
	Nominal	1.5000	2.5000	3.5000	4.5000	5.5000	6.5000
	LSL	1.4900	2.4900	3.4900	4.4900	5.4900	6.4900
Record	Feature 1	Feature 2	Feature 3	Feature 4	Feature 5	Feat	
1	1	1.5038	2.4960	3.5098	4.5006	5.4952	6.50
2	2	1.5046	2.5046	3.4972	4.4914	5.5047	6.50
3	3	1.4976	2.4938	3.4995	4.5048	5.5011	6.49
4	4	1.4992	2.5046	3.5014	4.5022	5.5017	6.49
5	5	1.5000	2.5013	3.4975	4.4967	5.4957	6.50
6	6	1.5050	2.4995	3.5044	4.5001	5.5070	6.50

- {All Upper Specs}
- {All Plus Tols}
- {All Nominals}
- {All Minus Tols}
- {All Lower Specs}

These Report Items each have many values (one for each reported feature) and are used when you need to display their values in a row or column. They all operate the same and they require an End Tag to ensure proper direction flow in a row.

The Template					The Results						
	A	B	C	D	E		A	B	C	D	E
1	Labels	[Label]		[/label]		1	Labels	Feature 1	Feature 2	Feature 3	
2	Nom	[Nomin]		[/Nomin]		2	Nom	1.5	2.5	3.5	
3	Plus Tol	[Ptol]		[/Ptol]		3	Plus Tol	0.01	0.01	0.01	
4	Minus Tol	[Mtol]		[/Mtol]		4	Minus Tol	-0.01	-0.01	-0.01	
5		[data]			[time]	5		1.503786	2.496002	3.509755	5/9/2008 10:13
6						6		1.504622	2.504611	3.49716	5/9/2008 10:14
7						7		1.497586	2.493763	3.49953	5/9/2008 10:14
8						8					
9					[/data]	9					

	USL	1.5100	2.5100	3.5100	4.5100	5.5100	6.5100	7.
	Nominal	1.5000	2.5000	3.5000	4.5000	5.5000	6.5000	7.
	LSL	1.4900	2.4900	3.4900	4.4900	5.4900	6.4900	7.
Record	Feature 1	Feature 2	Feature 3	Feature 4	Feature 5	Feature 6	Feat	
1	1	1.5038	2.4960	3.5098	4.5006	5.4952	6.5036	7.
2	2	1.5046	2.5046	3.4972	4.4914	5.5047	6.5002	7.
3	3	1.4976	2.4938	3.4995	4.5048	5.5011	6.4977	7.
4	4	1.4992	2.5046	3.5014	4.5022	5.5017	6.4989	7.
5	5	1.5000	2.5013	3.4975	4.4967	5.4957	6.5032	7.

- {Feature Number}

This will display the current Feature Number being used.

- {All Feature Numbers}

This will display a list of the Feature Numbers displayed in the Excel sheet.

## 6.9.4 Auto Match Tag Names – Part Data

To improve the speed of mapping your tags to the Report items, use standard tag words and Buddy will do the work for you. When you press the **Find Tags** button it not only finds your tags but it ties the tags together with the built-in **Report** replacement items within Buddy.

Report Type Item	Your Tag for Part Data
{All Actuals As Columns}	[ACTCOL], [DATA], [ACTCOLS]
{All Deviations As Columns}	[DEVCOL], [DEVCOLS]
{All Actuals As Rows}	[ACTROW], [ACTROWS]
{All Deviations As Rows}	[DEVROW], [DEVROWS]
{All Feature Labels}	[LABELS], [ALLLABELS], [ALL LABELS], [ALL FEATURE LABELS]
{All Feature Sources}	[FEATURE_SOURCES], [FEATURE SOURCES], [SOURCES], [ALL SOURCES]
{All Feature Extra Info}	[ALL FEATURE INFO], [ALL EXTRA INFO], [ALL DIM INFO]
{All Feature Numbers}	[ALL FEATURE NUMBERS], [DIM NUMBERS], [FEATURE NUMBERS], [ALL DIM NUMBERS], [ALL DIM NUMS]
{All Inspect Time}	[ALLDATES], [ALL DATES], [DATES], [TIMES]
{All Lower Specs}	[LSLS], [ALL LSLS]
{All Minus Tols}	[ALLMINUS], [MINUSTOLS]
{All Nominals}	[ALLNOMS], [ALLNOMINALS], [NOMS], [ALL NOMINALS]
{All Plus Tols}	[ALLPLUS], [PLUSTOLS]
{All Upper Specs}	[USLS], [ALL USLS]
{All Record Numbers}	[RECORD NUMBERS], [RECNUMS], [RECORD NUMS], [ALL RECORD NUMS], [ALL RECORD NUMS], [ALL RECORD NUMBERS]
{All Notes As Columns}	[NOTESCOL], [NOTES AS COLS]
{All Notes As Rows}	[NOTESROW], [NOTES AS ROWS]
{All Assignable Cause # Descriptions}	[ALL AC#S], [ALL AC#], [AC#]
{All Corrective Action # Descriptions}	[ALL CA#S], [ALL CA#], [CA#]
{Actuals Current Column}	[ACTUALS], [ACT]
{Deviations Current Column}	[DEVIATIONS], [DEV], [DEVS]
{Feature Label}	[LABEL], [FEATURE LABEL], [FEATURELABEL]
{Feature_Source}	[FEATURE_SOURCE], [FEATURE SOURCE], [DIM SOURCE], [SOURCE]
{Feature Extra Info }	[EXTRA_INFO], [FEATURE INFO], [DIM INFO], [INFO]
{Feature Number}	[FEATURENUMBER], [FEATURE NUMBER], [DIM NUMBER], [DIMNUMBER], [DIM NUM]
{Current Time}	[CURRENTDATE], [CURRENT DATE], [CURRENTTIME], [CURRENT TIME]
{Inspect Time}	[DATE], [TIME]
{Lower Spec}	[LSL], [LOWER SPEC], [LOWER]
{Minus Tol}	[MINUS], [MINUSTOL], [MINUS TOL]
{Nominal}	[NOM], [NOMINAL]
{Part Name}	[PART], [PART NAME], [PARTNAME]
{Plus Tol}	[PLUS], [PLUSTOL], [PLUS TOL]

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{Upper Spec}	[USL], [UPPER SPEC], [UPPER]
{Notes Current Column}	[NOTES]

### 6.9.5 Numeric and Text Factors

**{Numeric Factor 1}**

**{Text Factor 1}**

QC-CALC has 30 Numeric Factors and 30 Text Factors that are used to track a part's origin or other non-measurement data i.e. **{Numeric Factor 1}** thru **{Numeric Factor 30}**. You save items like Lot Number, Cavity, Fixture, Operator, Machine, etc. in the QC-CALC factors and then use Buddy to save them into your Excel spreadsheet.

The value of **{Numeric Factor 1}** is singular for the current part being reported. Therefore, you use these Report Items when reporting into a separate spreadsheet or workbook. Should you select multiple rows when running your Excel Job, Buddy uses the value of the first row. Remember, each part is stored in a row in QC-CALC and Buddy.

In this example, we linked **{Numeric Factor 1}** and **{Text Factor 1}** to [NFac1] and [TFac1] to show the value at the bottom of the column of raw data.

The Template

	A	B	C
1		[Label]	
2	<b>Nom</b>	[Nomin]	
3	<b>Plus Tol</b>	[Ptol]	
4	<b>Minus Tol</b>	[Mtol]	
5			
6		[data]	
7			
8			
9			
10			
11			
12			
13		[/data]	
14			
15	Cavity	[NFac1]	
16	Operator	[TFac1]	
17			
18			
19			

The Results

	A	B	C
1		Feature 1	
2	<b>Nom</b>	1.5000	
3	<b>Plus Tol</b>	0.0100	
4	<b>Minus Tol</b>	-0.0100	
5			
6		1.4973	
7		1.4895	
8		1.5067	
9		1.5038	
10		1.5017	
11		1.4951	
12		1.4983	
13		1.5030	
14			
15	Cavity		2
16	Operator	Bruce	
17			
18			
19			

**{Numeric Factor Named}**

**{Text Factor Named}**

These two options allow you to specify the factor by name rather than by ordinal position. This can be very useful if you want to run your Excel Job with multiple QCC files and the factors are not always in the same order. For instance, in one QCC file, Operator may be the 1st text factor while in another it is the 5th text factor. If you call the factor by name, Buddy will automatically find the factor in the QCC file. If the factor is found, it will replace the tag with your value. If it is not found, it will be skipped.

Excel Job Replacement Setup

Replacement Details

This screen allows you to create or edit your tag replacements. To add a replacement, simply choose the worksheet to search, the tag to search for, and the Report Type that will replace it. Report Types are grouped by category to make them easier to find.

Sheet Name: Sheet1

Search Tag: [n:cavity]

Report Type: Factors - Numeric

Report Item: {Numeric Factor Named}

Factor Name: Cavity

OK Cancel

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When you choose this option from the list on the **Tag Replacement** screen, the **Factor Name** field becomes enabled and you can type the name of the factor you want to search on. In the picture above, the name of the factor is “Cavity”. Please keep in mind that the factor name is not case sensitive. Therefore, Buddy will find the factor even if the actual casing is “cavity”, “Cavity”, or “cAVltY”.

In addition, if you know the factor is named differently based on the QCC file, you can enter multiple spellings of the factor name separated by commas into the **Factor Name** field and Buddy will search for all of them. For instance, in one QCC file, the factor is called “Cavity”, but it’s named “Cav #” in another QCC file and “Cav Num” in a third. You can enter all three spellings separated by commas and Buddy will use the first one it finds in the QCC file.

Example:

Cavity, Cav #, Cav Num

### **{All Numeric Factors 1s}**

### **{All Text Factor 1s}**

These are the same Factor values just discussed. The value of **{All Numeric Factor 1s}** is plural meaning each part has a value to report so if many parts are selected, Buddy has many factors to report. If you select multiple rows when running your Excel Job, Buddy will use the value for each part (row). This means if you have a column of 15 numbers you might want to display a column of Numeric Factor 1 values in a column next to it.

Each record shown in the Buddy grid contains many factor values all found in **{All Numeric Factor 1s}** or **{All Text Factor 1s}**. You can see what is available by scrolling the grid to the extreme right side. You use these Report Items when you report multiple items in a single spreadsheet.

### **{All Numeric Factors Named}**

### **{All Text Factor Named}**

These are the same Factor values just discussed. The value of **{All Numeric Factors Named}** is plural, meaning each part has a value to report so if many parts are selected, Buddy has many factors to report. If you select multiple rows when running your Excel Job, Buddy will use the value for each part (row). This means if you have a column of 15 numbers, you might want to display a column of factor values in a column next to it.

Just like above with the named factor, this uses a name rather than an ordinal position (i.e. All Text Factor 2s). The casing and multiple value rules discussed above in the named factor tags are the same for these list tags.

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In this example we made room for 3 data columns and placed the factor values to the right side. We linked the [NFac1] tag to **{All Numeric Factor 1s}** and [TFac1] to **{All Text Factor 1s}**.

The Template

	A	B	C	D	E	F	G
1		[Label]		[/Label]			
2	<b>Nom</b>	[Nomin]		[/Nomin]			
3	<b>Plus Tol</b>	[Ptol]		[/Ptol]			
4	<b>Minus Tol</b>	[Mtol]		[/Mtol]		Cavity	Operator
5							
6		[data]				[NFac1]	[TFac1]
7							
8							
9							
10							
11							
12							
13				[/data]		[/NFac1]	[/TFac1]
14							

The Result

	A	B	C	D	E	F	G
1		Feature 2	Feature 3	Feature 4			
2	<b>Nom</b>	2.5000	3.5000	4.5000			
3	<b>Plus Tol</b>	0.0100	0.0100	0.0100			
4	<b>Minus Tol</b>	-0.0100	-0.0100	-0.0100		Cavity	Operator
5							
6		2.5023	3.5038	4.5025		1	Joe
7		2.4987	3.5031	4.4938		1	Joe
8		2.4948	3.4972	4.5032		1	Joe
9		2.4983	3.5017	4.5024		1	Joe
10		2.5019	3.4961	4.4980		2	Bruce
11		2.5002	3.5045	4.5022		2	Bruce
12		2.4970	3.4975	4.5005		2	Bruce
13							
14							

**NOTE:** We formatted the cells in the template as numbers with 4 decimal points on the right side. This is not noticeable until the final report is complete. Format your cells in the template to ensure your final report is exactly the way you want it without having to make changes after Buddy is finished. Also note the blue label format.

### 6.9.6 Auto Match Tag Names – Factors

To improve the speed of mapping your tags to the Report Items, use standard tag words and Buddy will do the work for you. When you press the **Find Tags** button it not only finds your tags but it ties the tags together with the built-in **Report** replacement items within Buddy. Because there are 30 numeric and 30 text factors we have abbreviated the table below.

Report Items	Your Tag for Factors
{All Numeric Factor #s}	[N#S], [ALL N#S]
{All Numeric Factor ##s}	[N##S ], [ALL N##S]
{All Numeric Factors Named: ??}	[All N:??], [ALLN:??]
{All Numeric Factor Labels}	[NLABELS], [ALL NUMERIC LABELS]
{All Text Factor #s}	[T#S], [ALL T#S]
{All Text Factor ##s}	[T##S], [ALL T##S]
{All Text Factors Named: ??}	[All T:??], [ALLT:??]
{All Text Factor Labels}	[TLABELS], [ALL TEXT LABELS]
{Numeric Factor #}	[N#]
{Numeric Factor ##}	[N##]
{Numeric Factor Named: ??}	[N:??]
{Numeric Factor Label #}	[N# LABEL]
{Numeric Factor Label ##}	[N## LABEL]
{Text Factor #}	[T#]
{Text Factor ##}	[T##]
{Text Factor Named: ??}	[T:??]
{Text Factor Label #}	[T# LABEL]
{Text Factor Label ##}	[T## LABEL]

You must enter the tags in your spreadsheet with factor numbers instead of the # signs shown above. The double ## replaces 2 digit factor numbers. In the case of textual names, the double ?? replaces the name (ex. [t:operator]).

**The Template**

**The Result**

12				
13				
14				
15				
16				
17		[/data]		
18				
19	Cpk	[Cpk]		
20	Min	[min]		
21	Max	[max]		
22	Avg	[avg]		
23				
24	[N3Label]	[N3]		
25				

12		1.000012		
13		0.999993		
14		1.000031		
15				
16				
17				
18				
19	Cpk	17.61		
20	Min	0.999993		
21	Max	1.000051		
22	Avg	1.000015		
23				
24	Operator	2		
25				

Sheet Name	Search For	Replace With
Sheet1	[Label]	{Feature Label}
Sheet1	[data]	{Actuals Current Column}
Sheet1	[Composite]	Capability Composite Che
Sheet1	[Cpk]	{Cpk}
Sheet1	[min]	{Min}
Sheet1	[max]	{Max}
Sheet1	[avg]	{Mean}
Sheet1	[n3]	{Numeric Factor 3}
Sheet1	[N3Label]	{Numeric Factor Label 3}

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### 6.9.7 Statistics

There are many statistical calculations built into Buddy that are only available when Prolink Charting is enabled. Here we added four of the many available statistical items to our continuing example. A few of the available Statistics are explained below. For a complete list of calculations, see [Auto Match Tag Names – Statistics](#) on page 50.

**The Template**

	A	B	C
1			
2			
3		Just Numbers	
4			
5		[Label]	
6	Data	[data]	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17		[/data]	
18			
19	Cpk	[Cpk]	
20	Min	[min]	
21	Max	[max]	
22	Avg	[avg]	

**The Result**

	A	B	C
1			
2			
3		Just Numbers	
4			
5		X Hole Position	
6	Data	0.999364	
7		1.000511	
8		1.000595	
9		0.999095	
10		1.00021	
11		0.999987	
12		0.999589	
13		0.999693	
14		0.999805	
15		0.999964	
16		0.999581	
17		0.999622	
18			
19	Cpk	0.68	
20	Min	0.999095	
21	Max	1.000802	
22	Avg	0.999906	

{Cp}  
{Cpk}

The Cp and Cpk values are calculated based on the Sigma by Range value (Rbar/D2). If you need the Process Capability that was calculated based on the square root of the variance (the summation equation for Sigma), you should use the Pp or Ppk items.

{All Lower Control Limits}  
{All Means}  
{All RBars}  
{All Upper Control Limits}  
{etc...}

These Report Items each have many values (one for each reported feature) and are used when you need to display their values in a row or column. These items are calculated based on the specific data being used at the time the Excel Job runs and these are only available if Prolink Charting is enabled.

{Lower Control Limit}  
{Mean}  
{RBar}  
{Upper Control Limit}  
{etc...}

Each Report Item contains one value for the current reported feature. All items operate the same and they do not require an End Tag for direction flow since there is only one value. These items are calculated based on the specific data being used at the time the Excel Job runs and these are only available if Prolink Charting is enabled.

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{All QCC Lower Control Limits}  
 {All QCC Means}  
 {All QCC Range Means}  
 {All QCC Upper Control Limits}  
 {etc...}

All items with a QCC in their name are taken directly from the QCC file. These values were saved in the QCC file at some point in the past and are NOT calculated based on the data currently being used. These Report Items each have many values (one for each reported feature) and are used when you need to display their values in a row or column.

{QCC Lower Control Limit}  
 {QCC Mean}  
 {QCC Range Mean}  
 {QCC Upper Control Limit}  
 {etc...}

All items with a QCC in their name are taken directly from the QCC file. These values were saved in the QCC file at some point in the past and are NOT calculated based on the data currently being used. Each Report Item contains one value for the current reported feature. All items operate the same and they do not require an End Tag for direction flow since there is only one value.

### 6.9.8 Auto Match Tag Names – Statistics

To improve the speed of mapping your tags to the Report Items, use standard tag words and Buddy will do the work for you. When you press the **Find Tags** button it not only finds your tags but it ties the tags together with the built-in **Report** replacement items within Buddy.

Report Item	Your Tag for Statistics
{All Cps}*	[CPS], [ALL CPS]
{All Cpk}*	[CPKS], [ALL CPKS]
{All CpkLs}*	[ALL CPKLS], [CPKLS]
{All CpkUs}*	[ALL CPKUS], [CPKUS]
{All Cpms}*	[ALL CPMS], [CPMS]
{All Crs}*	[ALL CRS], [CRS]
{All Lower Control Limits}*	[LCLS], [ALL LCLS]
{All Upper Control Limits}*	[UCLS], [ALL UCLS]
{All Maxes}*	[MAXES], [ALL MAXES]
{All Means}*	[MEANS], [ALL MEANS]
{All Medians}*	[MEDIANS], [ALL MEDIANS]
{All Mins}*	[MINS], [ALL MINS]
{All Record Counts}*	[COUNTS], [ALL RECORD COUNTS], [RECORD COUNTS], [ALL COUNTS]
{All Pps}*	[PPS], [ALL PPS]
{All Ppk}*	[PPKS], [ALL PPKS]
{All PpkLs}*	[ALL PPKLS], [PPKLS]
{All PpkUs}*	[ALL PPKUS], [PPKUS]
{All ZLowers}*	[Z LOWERS], [ALL Z LOWERS]
{All ZUppers}*	[Z UPPERS], [ALL Z UPPERS]
{All QCC Lower Control Limits}	[QCCLCLS], [QCC LCLS]
{All QCC Means}	[QCCMEANS], [QCC MEANS]
{All QCC Range Lower Control Limits}	[QCCRLCLS], [QCC RLCLS]
{All QCC Range Means}	[QCCRMEANS], [QCC RMEANS]
{All QCC Sigma Lower Control Limits}	[QCCSLCLS], [QCC SLCLS]
{All QCC Sigma Means}	[QCCSMEANS], [QCC SMEANS]
{All QCC Upper Control Limits}	[QCCUCLS], [QCC UCLS]
{All QCC Range Upper Control Limits}	[QCCRUCLS], [QCC RUCLS]



## Excel Jobs

{All QCC Sigma Upper Control Limits}	[QCCSUCLS], [QCC SUCLS]
{All Ranges}* {All RBars}* {All Sigmas}* {All SigmaByRs}* {All Sigma Pops}* {All Kurts}* {All Skews}* {All Normality}* {Subgroup Values Current Column}* {Subgroup Ranges Current Column}* {Subgroup Sigmas Current Column}* {All Number of Fails by Part}* {All Number of Fails by Feature}* {All Number of Subgroups}* {All PPM Above USL - Est}* {All PPM Below LSL - Est}* {All PPM Total Defects - Est}* {All PPM Above USL - Obs}* {All PPM Below LSL - Obs}* {All PPM Total Defects - Obs}* {All Defects Above USL}* {All Defects Below LSL}*  {Cp}* {Cpk}* {CpkL}* {CpkU}* {Cpm}* {Cr}* {Lower Control Limit}* {Upper Control Limit}* {Max}* {Mean}* {Median}* {Min}* {Number of Records}* {Pp}* {Ppk}* {PpkL}* {PpkU}* {ZLower}* {ZUpper}* {QCC Lower Control Limit} {QCC Mean} {QCC Range Lower Control Limit} {QCC Range Mean} {QCC Sigma Lower Control Limit} {QCC Sigma Mean} {QCC Upper Control Limit} {QCC Range Upper Control Limit} {QCC Sigma Upper Control Limit}  {Range}* {RBar}*	[RANGES], [ALL RANGES] [RBARS], [ALL RBARS] [SIGMAS], [ALL SIGMAS] [SIGMABYRS], [ALL SIGMABYRS] [ALL SIGMA POPS], [SIGMA POPS] [ALL KURTS], [KURTS] [ALL SKEWS], [SKEWS] [ALL NORMALITY] [SUBGROUPS] [SGRANGES] [SGSIGMAS] [ALL FAILS], [ALL_FAILS] [ALL FAILS BY DIM] [ALLNUMSG], [ALL NUMSG] [PPMUPPERS] [PPMLOWERS] [PPMTOTALS], [DPMOS] [PPMUPPERS_OBS] [PPMLOWERS_OBS] [PPMTOTALS_OBS] [ALL DEFECTS ABOVE USL] [ALL DEFECTS BELOW LSL]  [CP] [CPK] [CPKL] [CPKU] [CPM] [CR] [LCL], [LOWER CONTROL LIMIT] [UCL], [UPPER CONTROL LIMIT] [MAX] [MEAN] [MEDIAN] [MIN] [SIZE], [SAMPLES], [NUM], [RECORDS], [COUNT] [PP] [PPK] [PPKL] [PPKU] [Z LOWER], [ZLOWER] [Z UPPER], [ZUPPER] [QCCLCL], [QCC LCL] [QCCMEAN], [QCC MEAN] [QCCRLCL], [QCC RLCL] [QCCRMEAN], [QCC RMEAN] [QCCSLCL], [QCC SLCL] [QCCSMEAN], [QCC SMEAN] [QCCUCL], [QCC UCL] [QCCRUCL], [QCC RUCL] [QCCSUCL], [QCC SUCL]  [RANGE] [RBAR]

## Excel Jobs

{Sigma}*	[SIGMA]
{SigmaByR}*	[SIGMABYR]
{Sigma Pop}*	[SIGMA POP]
{Kurt}*	[KURT]
{Skew}*	[SKEW]
{Normality}*	[NORMALITY]
{Subgroup Size}	[SUBGROUP]
{Number of Fails by Part}*	[NUM FAILS], [NUM_FAILS], [FAILS]
{Number of Fails by Feature}*	[FAILS BY DIM]
{Number of Subgroups}*	[NUMSG]
{PPM Above USL - Est}*	[PPMUPPER]
{PPM Below LSL - Est}*	[PPMLOWER]
{PPM Total Defects - Est}*	[PPMTOTAL], [DPMO]
{PPM Above USL - Obs}*	[PPMUPPER_OBS]
{PPM Below LSL - Obs}*	[PPMLOWER_OBS]
{PPM Total Defects - Obs}*	[PPMOBSERVED], [PPMSOBSERVED], [PPMTOTAL_OBS]
{Defects Above USL}*	[DEFECTS ABOVE USL]
{Defects Below LSL}*	[DEFECTS BELOW LSL]
{Gage R&R - Total}†	[TOTAL], [GRRTOTAL]
{Gage R&R - Repeatability}†	[REPEAT], [GRRREPEAT]
{Gage R&R - Reproducibility}†	[REPROD], [GRRREPROD]
{Gage R&R - Part Variation}†	[PARTVAR], [GRRPARTVAR]

\* Only available with the Prolink Charting option enabled

† Either Minitab or Prolink Charting needed

### 6.10 Understanding Tags with Pictures

By now you should understand how to place a Minitab or Prolink chart in your Excel report. But how would you include multiple Minitab charts in the same Excel sheet? We need a method to describe which column of actuals represents the chart being generated. Suppose you have a sheet named **Capability** and you want to place 3 Minitab capability charts in the sheet (one for each column of data). You must use the **{column}** tag variable.

### 6.10.1 Special {Column} Tag Variable

When Buddy is sending data to Excel, it does so 1 column at a time. The current column (dimension) number is a simple count from 1 to x columns. If you place the tag variable **{column}** in your tag, the word **{column}** is replaced with a count that represents the current column being added to your Excel report. This creates an internal list of labels to look for such as [Lab1], [Lab2], [Lab3] etc. By adding these labels into your template, Buddy knows where to place this Report Item. This example explains the use of multiple labels and multiple charts.

**The Data**

USL	1.5100	2.5100	3.5100	4.5100	5.5
Nominal	1.5000	2.5000	3.5000	4.5000	5.5
LSL	1.4900	2.4900	3.4900	4.4900	5.4
Record	Feature 1	Feature 2	Feature 3	Feature 4	Fe
14	1.4973	2.5019	3.5017	4.5001	5.4
15	1.4895	2.5028	3.5001	4.4997	5.4
16	1.5067	2.5013	3.4985	4.4973	5.5
17	1.5038	2.5007	3.4999	4.4996	5.4
18	1.5017	2.4996	3.5004	4.4990	5.4
19	1.4951	2.5012	3.4964	4.5050	5.4
20	1.4903	2.5023	3.5047	4.5029	5.5
21	1.5030	2.4996	3.4971	4.5006	5.5
22	1.5019	2.5023	3.5038	4.5025	5.5
23	1.4984	2.4987	3.5031	4.4938	5.5

**The Buddy Setup**

Remove	Sheet	Search For	Replace With
Remove	Sheet1	[label]	(All Feature Labels)
Remove	Sheet1	[Ptol]	(All Plus Tols)
Remove	Sheet1	[nomin]	(All Nominals)
Remove	Sheet1	[mtol]	(All Minus Tols)
Remove	Sheet1	[Lab(column)]	(Feature Label)
Remove	Sheet1	[chart(column)]	Capability Analysis

1. The highlighted data is mapped to your tags in the Excel Job.

**The Template**

	A	B	C	D	E	F	G	H
1	Labels	[Label]		[Label]		[Lab1]		
2	Nom	[Nomin]		[Nomin]		[Chart1]		
3	Plus Tol	[Ptol]		[Ptol]				
4	Minus Tol	[Mtol]		[Mtol]				
5		[data]						
6								
7								
8								
9						[Lab2]		[/Chart1]
10						[Chart2]		
11				[/data]				
12								
13								
14								[/Chart2]
15						[Lab3]		
16						[Chart3]		
17								
18								
19								
20								[/Chart3]
21								
22								

2. The Buddy cycles through your select columns calculating the column number and replacing the word {column} with the value.

[chart{column}] = 1 creating **chart1**  
 [chart{column}] = 2 creating **chart2**  
 [chart{column}] = 3 creating **chart3**

If these generated tags are found in your template, the Buddy replaces the label with the Minitab Charts.

We also added {column} to the Lab tag which creates **Lab1**, **Lab2**, & **Lab3**. We added these tags in the Excel sheet to be replaced with the label values.

3. We changed the color of our [Lab1], [Lab2], and [Lab3] tags to red. When the Buddy replaces the tags with the real label values, the color attribute is preserved. You can change other attributes to make certain report items clearly stand out.

**The Final Report**

	A	B	C	D	E	F	G	H
1	Labels	Feature 2	Feature 3	Feature 4		Feature 2		
2	Nom	2.5	3.5	4.5				
3	Plus Tol	0.01	0.01	0.01				
4	Minus Tol	-0.01	-0.01	-0.01				
5		2.501929	3.501744	4.500118				
6		2.502789	3.500067	4.498663				
7		2.501333	3.498464	4.497898				
8		2.500699	3.498901	4.499575				
9		2.499611	3.500427	4.498885				
10		2.501237	3.496363	4.504995				
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

## 6.10.2 The {Row:x} Command

Similar to the column command, there is a row command which is useful in row-based individual value tags. Most replacements are column-based (ex: {Nominal}, {Cpk}, {Max}), but there are a few row-based replacements. When a tag replacement is set up for a row-based replacement and the replacement is an individual value replacement (such as {Inspect Time} or {Text Factor 1}), Buddy always uses the first value from the list of records passed to the Excel Job. If the value of a different row of data is desired, the {Row:x} command can be used in the tag itself to specify the row from which to pull the data.

The two images below illustrate the use of the {Row:X} command in a report. This report has 4 features and subgroups of 5 parts. In order to show the appropriate inspection date for the subgroup, the [date] tag is augmented to show [date{Row:1}], [date{Row:6}], and [date{Row:11}]. This way, the correct inspection date lines up with the data rows being shown.

Header	Features	Date	Time	Sample 1	Sample 2	Sample 3
me	[labels]	[date{Row:1}]	[date{Row:1}]	[act_rows]		
		[date{Row:1}]	[date{Row:1}]			
		[date{Row:1}]	[date{Row:1}]			
		[date{Row:1}]	[date{Row:1}]			
me	[labels]	[date{Row:6}]	[date{Row:6}]			
		[date{Row:6}]	[date{Row:6}]			
		[date{Row:6}]	[date{Row:6}]			
		[date{Row:6}]	[date{Row:6}]			
me	[labels]	[date{Row:11}]	[date{Row:11}]			

**Before Row Replacement**

Header	Features	Date	Time	Sample 1	Sample 2	Sample 3
100	Feature 1	8/22/2002	12:50:15 PM	1.403	1.503	1.48
	Feature 2	8/22/2002	12:50:15 PM	2.5139	2.5396	2.60
	Feature 3	8/22/2002	12:50:15 PM	3.51	3.53	3.5
	Feature 4	8/22/2002	12:50:15 PM	4.552	4.465	4.57
100	Feature 1	8/22/2002	12:50:22 PM	1.381	1.539	1.45
	Feature 2	8/22/2002	12:50:22 PM	2.5854	2.5435	2.51
	Feature 3	8/22/2002	12:50:22 PM	3.53	3.47	3.4
	Feature 4	8/22/2002	12:50:22 PM	4.579	4.561	4.47
100	Feature 1	8/22/2002	12:50:23 PM	1.34	1.553	1.45

**After Row Replacement**

The {Row:x} command can accept either a number or the keywords “First” or “Last” to automatically pull the first or last value. If the number specified is greater than the number of records available, Buddy will automatically return the last row of the dataset.

Examples:

- [TextFactor1{Row:5}] – Returns the 5<sup>th</sup> row’s Text Factor 1 value.
- [TextFactor1{Row>Last}] – Returns the last row’s Text Factor 1 value.

The following tag replacements support the {Row:x} command:

- {Inspect Time}
- {Number of Fails by Part}
- {Numeric Factor 1} – {Numeric Factor 30}
- {Text Factor 1} – {Text Factor 30}

### 6.10.3 Resizing Pictures Using Tags

You can resize an image created by Minitab or Prolink Charting by the placement of an End Tag, the resizing of rows or columns, or both. Buddy uses the top left corner of the Begin Tag cell as the location of the image and the bottom right corner of the End Tag as the determinants of width and height. If there is no End Tag, the image is inserted at 100% of size.

### 6.10.4 Auto Match Tag Names – Charts

To improve the speed of mapping your tags to the Report Items, use standard tag words and the Buddy will do the work for you. When you press the **Find Tags** button it not only finds your tags but it ties the tags together with the built-in **Report** replacement items within Buddy.

Report Type Item	Your Tag for Charts
Box Plot	[BOX], [BOXPLOT]
Capability Analysis	[CAPABILITY], [HIST]
Capability SixPack	[SIX], [SIXPACK]
Gage R&R Study	[GRR], [GR&R], [GRRSTUDY], [GR&RSTUDY], [GAGESTUDY]
Gage R&R Run Chart	[GRRRUNCHART], [GR&RRUNCHART], [GAGERUNCHART]
I-MR RS Between	[IMR-S]
I-MR	[IMR]
Individuals	[INDIV], [INDIVIDUALS]
Moving Range	[MOVING RANGE]
Range	[RCHART], [R]
Raw Data (True Position)	[TP], [RAW], [TRUPOS], [RAWDATA]
Run Chart	[RUN], [RUNCHART]
Sigma	[SIGMA CHART]
True Position 3D*	[3DTP], [3D TRUPOS]
Xbar	[XBAR]
Xbar-R	[XBARR]
Xbar-S	[XBARS]
Zone	[ZONE]

\* Only available with the Prolink Charting option enabled

## 6.11 Controlling Data Placement

The different methods available for controlling data placement are discussed below.

- [Special {Skip} Command](#) pg. [55](#)
- [The {Hop} Command](#) pg. [56](#)
- [The {Jump} Command](#) pg. [58](#)
- [The {Hop Continue} Command](#) pg. [60](#)
- [The {Jump Continue} Command](#) pg. [63](#)
- [The {Next} Command](#) pg. [66](#)
- [The {Current} Command](#) pg. [66](#)
- [The {Stop} Command](#) pg. [67](#)
- [Page Break Tag](#) pg. [67](#)

### 6.11.1 Special {Skip} Command

This special command can be added anywhere in your Excel template to tell Buddy to skip this particular cell. This is useful if you must hand edit or approve a few items in the final report at the conclusion of this automatic report. Let's say you have room for 17 numbers in your sheet as shown below. If you send 15

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items and leave room for 2 **{skip}** tags, the entire data area is filled except for the two **{skip}** tags. The **{skip}** tags are removed as they are found.

### Template

	A	B	C	D	E	F	G	H	I	J	K
1	Production Part Approval Process										
2	Dimensional Results										
3	Supplier				Your Company Part No.				Page of		
4	Custom Production Grinding				35172-06				1 1		
5	Customer			Part Name				Part No. (Supplier)			
6	Smith Aero			Counter Shaft				35172-06			
7	Name of Inspection Facility			Drawing Revision		Date of Inspection		No. of Samples Inspected			
8	Custom Production Grinding			B		2/15/2006		2			
9											
10	Item	Dimension / Specification			Spl	Supplier Measurement				OK	NOT OK
11					Char	Results					
12	27	ø .9713				[Data]					
13	28	Runout .002 A-B									
14	29	No Steps Allowed				{skip}				{skip}	
15	30	1.774 / 1.766			*						
16	31	1.0236 / 1.0231			*						
17	32	Runout .001 A-B									
18	32	Runout .001 A-B									
19	33	0.0002 Roundness									
20	34	20 Max RA Finish									
21	35	No Visual Chatter									
22	36	1.0236 / 1.0231			*						
23	37	Runout .001 A-B									
24	38	0.0002									
25	39	No Visual Chatter				{skip}				{skip}	
26	40	20 Max RA Finish									
27	41	.596 / .591 Length			*						
28	42	Sharp Edge Required								[Data]	

### Output

	A	B	C	D	E	F	G	H	I	J	K
1	Production Part Approval Process										
2	Dimensional Results										
3	Supplier				Your Company Part No.				Page of		
4	Custom Production Grinding				35172-06				1 1		
5	Customer			Part Name				Part No. (Supplier)			
6	Smith Aero			Counter Shaft				35172-06			
7	Name of Inspection Facility			Drawing Revision		Date of Inspection		No. of Samples Inspected			
8	Custom Production Grinding			B		2/15/2006		2			
9											
10	Item	Dimension / Specification			Spl	Supplier Measurement				OK	NOT OK
11					Char	Results					
12	27	ø .9713				0.9769	0.9852		X		
13	28	Runout .002 A-B				0.00015	0.0002		X		
14	29	No Steps Allowed									
15	30	1.774 / 1.766			*	1.7715	1.7705		X		
16	31	1.0236 / 1.0231			*	1.02323	1.02333		X		
17	32	Runout .001 A-B				0.00005	0.00004		X		
18	32	Runout .001 A-B				0.00008	0.00007		X		
19	33	0.0002 Roundness				0.00007	0.00008		X		
20	34	20 Max RA Finish				9.41	11.89		X		
21	35	No Visual Chatter									

### 6.11.2 The {Hop} Command

The **{hop}** command is a convenient method that causes the focus to hop between cells on either the same or another worksheet. This tag is available for all list items (i.e. {All Feature Labels}, {All Nominals}, etc.) and both block items ({All Actuals as Columns}, {All Actuals as Rows}) and is useful when you need to break a list/block into more than one piece because of either reporting page breaks or other formatting reasons.

To use the **{hop}** command, simply place **{Hop}** in a spreadsheet cell with an address of the continuation point. When Buddy encounters the command during output of the list, it will first replace the hop command with the current list item

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and then jump to the new location and continue with the list until either a new end tag is found or the list ends.

## Template

	A	B	C	D	E	F	G	H	I	J
1				This is My Report						
2										
3		Just Numbers		Composite Report of all numbers						
4										
5		[Label]								(data cont.)
6		[data]		[Composite]						
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17				{HOP:Sheet1!J6}						
18										
19		Cpk	[Cpk]					[/composite]		[/data]
20		Min	[min]							
21		Max	[max]							
22		Avg	[mean]							
23										

The {hop} tag is formatted as follows: {hop:[sheet name]![cell address]}

**Sheet Name** – This should be the name of the sheet as seen at the bottom of the Excel window. If the sheet name contains spaces, it should be enclosed in single quotes. This is a standard Excel practice for addressing.

(i.e. {hop:'this is a sheet'!A5}).

**Cell Address** – This is the standard Excel addressing style of letter + number indicating the column letter and row number.

### Examples:

{hop:Sheet1!J6} – will cause the next item to be placed in J6 on Sheet1.

The template shown on the previous page shows the data starting a B6 flowing down to B17 then hopping to J6 and finally ending at J17 where our end tag is waiting. Here is what the final report might look like.

## Output

	A	B	C	D	E	F	G	H	I	J
1				This is My Report						
2										
3		Just Numbers		Composite Report of all numbers						
4										
5			TG2X-0.9805 DIA.							(data cont.)
6			0.98036							0.97994
7			0.98029							0.98013
8			0.98018							0.97995
9			0.98034							0.98001
10			0.98022							0.98002
11			0.98027							0.98028
12			0.98026							0.98004
13			0.98034							0.98009
14			0.98025							
15			0.98041							
16			0.98028							
17			0.98039							
18										
19		Cpk	0.8							
20		Min	0.97994							
21		Max	0.98041							
22		Avg	0.9802							
23										

### Hop Commands with End Tags

What's important to understand about Buddy is that list type items always flow in the direction of the end tag (i.e. [/tag]). When Buddy encounters a **{hop}** command and jumps to another location, it searches for a new end tag. If it doesn't find one, the list will continue on flowing downward (the default direction). If an end tag is found, the list will continue and flow in the direction of the new end tag. In this way, you could have a list that flows downward on one page, then hops to a new page and flows to the right.

**NOTE:** You can place end tags on your sheets to effect flow direction regardless as to whether or not you will ever actually reach the end tag. This is because the end tag is always removed as soon as it is found and its location is remembered by Buddy during the sending of the data.

### Hop Commands with Blocks

An important thing to remember about blocks is that the rows or columns do not loop back. They always run in one direction until either an end tag is reached or the data runs out. To stay consistent with this style, a **{hop}** command will cause the focus to jump to another cell, but the list will not be continued or loopback. Instead, the next row or column in the list will be started. This is to keep orphan items from being displayed in the wrong place.

If you want looping to occur, use a series of {Actuals Current Column} lists and flow them either as columns or rows as necessary. Since {Actuals Current Column} is a list type, it will follow the normal list rules. Also see the hop\_continue command.

### 6.11.3 The {Jump} Command

The **{jump}** command is similar to the {hop} command in that it causes the focus to jump between cells on either the same or another worksheet. The main difference is the {jump} command performs the jump before placing the value into the cell that contained the command. In other words, the {hop} command replaces the command with data first and then hops while the {jump} command jumps first and then puts the next data point in the destination cell before continuing.

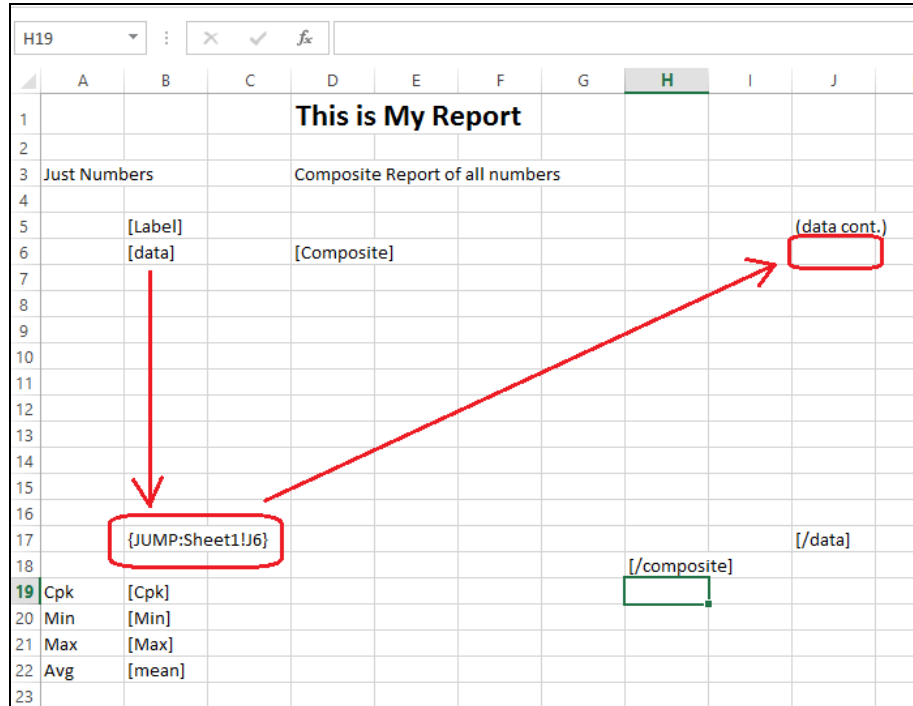
This tag is available for all list items (i.e. {All Feature Labels}, {All Nominals}, etc.) and both block items ({All Actuals as Columns}, {All Actuals as Rows}) and is useful when you need to break a list/block into more than one piece because of either reporting page breaks or other formatting reasons.

To use the **{jump}** command, simply place **{jump}** in a spreadsheet cell with an address of the continuation point. When Buddy encounters the command during output of the list, it will jump to the new location and continue with the list until either a new end tag is found or the list ends.



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## Template



The **{jump}** tag is formatted as follows: **{jump:[sheet name]![cell address]}**

**Sheet Name** – This should be the name of the sheet as seen at the bottom of the Excel window. If the sheet name contains spaces, it should be enclosed in single quotes. This is a standard Excel practice for addressing.

(i.e. `{jump:'this is a sheet'!A5}`).

**Cell Address** – This is the standard Excel addressing style of letter + number indicating the column letter and row number.

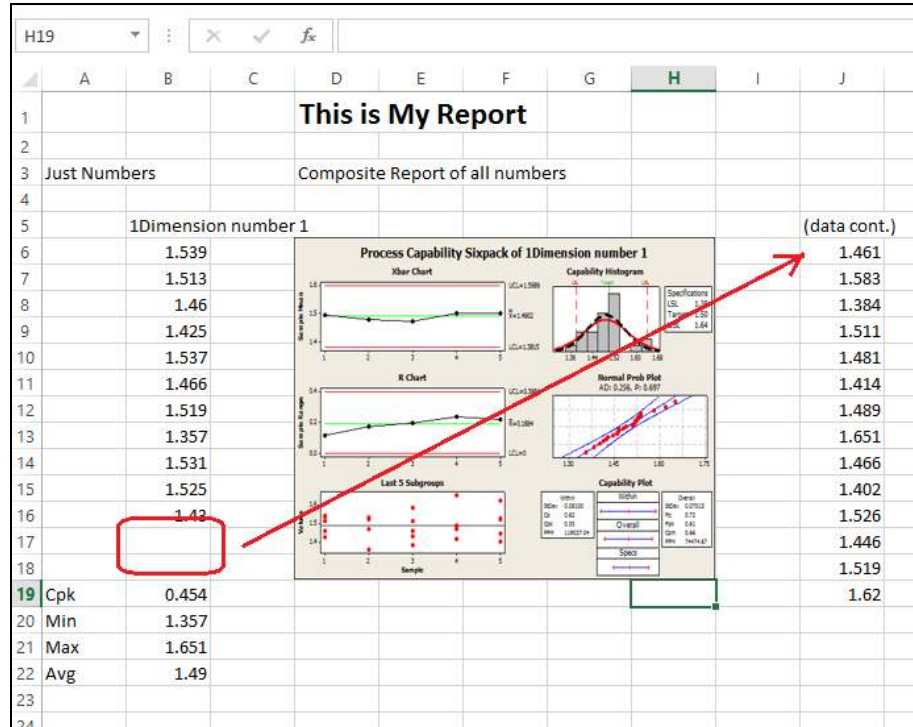
### Examples:

**{jump:Sheet1!J6}** – will cause the next item to be placed in J6 on Sheet1.

The template above shows the data starting at B6 flowing down to B17 then jumping to J6 and finally ending at J19 where our end tag is waiting. Notice that the jump occurs before the data is placed into cell B17 which causes it to be blank. This is probably not a typical example, but was used to illustrate the difference between the `{hop}` and `{jump}` commands. Here is what the final report might look like.

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## Output



### Jump Commands with End Tags

What's important to understand about Buddy is that list type items always flow in the direction of the end tag (i.e. [/tag]). When Buddy encounters a **{jump}** command and jumps to another location, it searches for a new end tag. If it doesn't find one, the list will continue on flowing downward (the default direction). If an end tag is found, the list will continue and flow in the direction of the new end tag. In this way, you could have a list that flows downward on one page, then jumps to a new page and flows to the right.

**NOTE:** You can place end tags on your sheets to effect flow direction regardless as to whether or not you will ever actually reach the end tag. This is because the end tag is always removed as soon as it is found and its location is remembered by Buddy during the sending of the data.

### Jump Commands with Blocks

An important thing to remember about blocks is that the rows or columns do not loop back. They always run in one direction until either an end tag is reached or the data runs out. To stay consistent with this style, a **{jump}** command will cause the focus to jump to another cell, but the list will not be continued or loopback. Instead, the next row or column in the list will be started. This is to keep orphan items from being displayed in the wrong place.

If you want looping to occur, use a series of {Actuals Current Column} lists and flow them either as columns or rows as necessary. Since {Actuals Current Column} is a list type, it will follow the normal list rules. Also see the jump\_continue command.

### 6.11.4 The {Hop\_Continue} Command

The {hop continue} command is very similar to the hop command. In fact, if you are using it in list types (such as {All Nominals} or {All Labels}), it behaves identically to the {hop} command. The difference happens when using it within a

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block data type (such as {All Actuals as Columns} or {All Actuals as Rows}). This is due to the way block data types behave when a hop occurs.

Normally when you are printing a data block into a block of Excel cells and either a hop, jump, or end tag is encountered, the remainder of the data in the row or column is truncated. As was explained in the individual block types, the data does not snake. It flows in columns or rows until an end tag and then starts over at the beginning of the next column/row. Because of this, it is impossible to use a {hop} or {jump} tag to hop or jump and continue printing the same row or column within a data block. The hop continue command was added for this exact purpose; to hop within a data block without truncating the remainder of a row or column thus “continuing” the data after the hop.

To use the **{hop\_continue}** command, simply place **{hop\_continue}** in a spreadsheet cell with an address of the continuation point. When Buddy encounters the command during output of the list, it will hop to the new location and continue with the list until either a new end tag is found or the list ends.

The **{hop\_continue}** tag is formatted as follows: **{hop\_continue:[sheet name]![cell address]}**

**Sheet Name** – This should be the name of the sheet as seen at the bottom of the Excel window. If the sheet name contains spaces, it should be enclosed in single quotes. This is a standard Excel practice for addressing.

(i.e. {hop\_continue:'this is a sheet'!A5}).

**Cell Address** – This is the standard Excel addressing style of letter + number indicating the column letter and row number.

Examples:

**{hop\_continue:Sheet1!J6}** – will cause the next item to be placed in J6 on Sheet1.

Observe the following image of a template with a hop\_continue command in cell B10 while midway through an {All Actuals as Rows} data block.

Template

	A	B	C	D	E	F	G	H
1								
2								
3								
4	Dimensions	1	2	3	4	5	6	
5	[labels]	[actrows]						
6								
7								
8								
9	{hop:sheet1!a15}							
10		{hop_continue:Sheet1!B15}						
11								
12								
13								
14	Dimensions	1	2	3	4	5	6	
15								
16								
17								
18								
19	[/labels]							[/actrows]
20								
21								

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As you can see below, it causes the data to hop to the new location and continue the same data column (all in the 6.5 range). However, since it is a hop\_continue, it behaves like the {hop} tag which always inserts the data in the cell with the command before hopping. Therefore, the data is placed in B10, the hop occurs but it skips B15 (since the data is above), and the data continues on C15.

Notice that the first end tag is in cell G10. This is because the hop\_continue is in the 10<sup>th</sup> row. If the end tag were in the typical location (G9), then the data would stop flowing before ever reaching B10 and the hop\_continue command. Instead we placed it one row lower to force the Buddy to hop in the first cell.

### Output

	A	B	C	D	E	F	G	H
1				<b>This is My Report</b>				
2								
3				<b>Samples</b>				
4	<b>Dimensions</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	
5	Drilled Hole A:X	1.4966	1.4985	1.4986	1.4989	1.498	1.497	
6	Drilled Hole A:Y	2.4995	2.5014	2.4975	2.4996	2.5017	2.4973	
7	Drilled Hole A:Dia	3.5011	3.5017	3.5019	3.5022	3.5007	3.5017	
8	Hole Chamfer	4.4993	4.4998	4.5007	4.5001	4.5023	4.4966	
9	Tab #2 Length	5.4992	5.499	5.4997	5.4981	5.4977	5.4994	
10		6.4966						
11								
12								
13				<b>Samples</b>				
14	<b>Dimensions</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	
15	Tab #2 Width		6.5004	6.503	6.4996	6.501	6.5038	
16	Slot B:Dia	7.5013	7.5018	7.502	7.5003	7.501	7.5021	
17	Slot B:X Pos	8.5016	8.4981	8.4995	8.5001	8.5007	8.5031	
18	Slot B:Length	9.4952	9.4976	9.4983	9.4983	9.4975	9.4961	
19	Slot B:Width	10.4983	10.4993	10.5006	10.498	10.4993	10.5008	
20								
21								
22								

Just like the {hop} command, once the hop occurs, the Buddy searches for a new end tag and flows the data in that direction. In this case, we have an extra [/actrows] tag in cell G19 so it completes the table.

### Special Behavior for {Hop\_continue}

Hop\_continue differs by behaving differently depending on where it is placed in the data block. If it is placed in the first row or column of the data block, the assumption is that you want to hop to the new location and continue from that new point. If it is placed in a cell other than the first row or column of the data block, the assumption is that you want to hop and continue until the data is finished, but then return to the original cell in the next row/column.

Using the same example as above with {All Actuals as Rows}, the hop\_continue tags are placed in the 6<sup>th</sup> data column of each row. In this case, when the hop occurs and hops to J5, the row continues until the next end tag. Then it returns all the way back to the beginning column of the next row (B6) and starts a new row. This works the same way with column data blocks such as {All Actuals as Columns}.

## Template

In the example above there are multiple [/actrows] end tags on the right side in cells O10-O14 because each hop\_continue searches for an end tag and flows toward it if found. In addition, each hop\_continue also removes the end tag when found making it necessary to add 4 end tags to match the 4 hop\_continue commands.

## Output

Dimensions	1	2	3	4	5	6	7	8	9	10	11	12
Drilled Hole A:X	1.4966	1.4985	1.4986	1.4989	1.498	1.497	1.4989	1.4988	1.4993	1.498	1.4974	1.4992
Drilled Hole A:Y	2.4995	2.5014	2.4975	2.4996	2.5017	2.4973	2.4998	2.5021	2.4971	2.5001	2.5025	2.4966
Drilled Hole A:Dia	3.5011	3.5017	3.5019	3.5022	3.5007	3.5017	3.5039	3.5012	3.5021	3.5032	3.5002	3.5013
Hole Chamfer	4.4993	4.4998	4.5007	4.5001	4.5023	4.4966	4.4988	4.4999	4.5005	4.5006	4.5026	4.5016
Tab #2 Length	5.4992	5.499	5.4997	5.4981	5.4977	5.4994	5.4994	5.4968	5.4982	5.498	5.4996	5.4952

Dimensions	1	2	3	4	5	6
Tab #2 Width	6.4966	6.5004	6.503	6.4996	6.501	6.5038
Slot B:Dia	7.5013	7.5018	7.502	7.5003	7.501	7.5021
Slot B:X Pos	8.5016	8.4981	8.4995	8.5001	8.5007	8.5031
Slot B:Length	9.4952	9.4976	9.4983	9.4983	9.4975	9.4961
Slot B:Width	10.4983	10.4993	10.5006	10.498	10.4993	10.5008

In cell B10, there is a jump\_continue command which introduces our next topic.

### 6.11.5 The {Jump\_Continue} Command

The {jump\_continue} command behaves the same as the hop\_continue command except it jumps before the data is placed in the cell. This mirrors the behavior of the {hop} and {jump} commands respectively. Like the {hop\_continue} command, if you are using it in list types (such as {All Nominals} or {All Labels}), it behaves identically to the {jump} command. The difference happens when using it within a block data type (such as {All Actuals as Columns} or {All Actuals as Rows}).

To use the {jump\_continue} command, simply place {jump\_continue} in a spreadsheet cell with an address of the continuation point. When Buddy encounters the command during output of the list, it will jump to the new location and continue with the list until either a new end tag is found or the list ends.

The {jump\_continue} tag is formatted as follows:  
**{jump\_continue:[sheet name]![cell address]}**

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**Sheet Name** – This should be the name of the sheet as seen at the bottom of the Excel window. If the sheet name contains spaces, it should be enclosed in single quotes. This is a standard Excel practice for addressing.

(i.e. {jump\_continue:'this is a sheet'!A5}).

**Cell Address** – This is the standard Excel addressing style of letter + number indicating the column letter and row number.

Examples:

**{jump\_continue:Sheet1!J6}** – will cause the next item to be placed in J6 on Sheet1.

Observe the following image of a template with a jump\_continue command in cell B10 while midway through an {All Actuals as Rows} data block:

Template

	A	B	C	D	E	F	G	H	I
1									
2									
3									
4	<b>Dimensions</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>		
5	[labels]	[actrows]							
6									
7									
8									
9									
10	{jump:sheet1!a15}	{jump_continue:Sheet1!B15}					[/actrows]		
11									
12									
13									
14	<b>Dimensions</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>		
15									
16									
17									
18									
19	[/labels]						[/actrows]		
20									
21									
22									

Like the {jump} command, it jumps (before inserting the data into B10) and then continues inserting rows until running out in G19. Just like the hop, jump, and hop\_continue commands, it searches for a new end tag after the jump and flows in the direction of G19.

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## Output

	A	B	C	D	E	F	G	H	
1	<b>This is My Report</b>								
2									
3	Samples								
4	Dimensions	1	2	3	4	5	6		
5	Drilled Hole A:X	1.4966	1.4985	1.4986	1.4989	1.498	1.497		
6	Drilled Hole A:Y	2.4995	2.5014	2.4975	2.4996	2.5017	2.4973		
7	Drilled Hole A:Dia	3.5011	3.5017	3.5019	3.5022	3.5007	3.5017		
8	Hole Chamfer	4.4993	4.4998	4.5007	4.5001	4.5023	4.4966		
9	Tab #2 Length	5.4992	5.499	5.4997	5.4981	5.4977	5.4994		
10									
11									
12									
13	Samples								
14	Dimensions	1	2	3	4	5	6		
15	Tab #2 Width	6.4966	6.5004	6.503	6.4996	6.501	6.5038		
16	Slot B:Dia	7.5013	7.5018	7.502	7.5003	7.501	7.5021		
17	Slot B:X Pos	8.5016	8.4981	8.4995	8.5001	8.5007	8.5031		
18	Slot B:Length	9.4952	9.4976	9.4983	9.4983	9.4975	9.4961		
19	Slot B:Width	10.4983	10.4993	10.5006	10.498	10.4993	10.5008		
20									
21									
22									

### Special Behavior of {jump\_continue}

Like the hop\_continue command, jump\_continue differs by behaving differently depending on where it is placed in the data block. If it is placed in the first row or column of the data block, the assumption is that you want to jump to the new location and continue from that new point. If it is placed in a cell other than the first row or column of the data block, the assumption is that you want to jump and continue until the data is finished, but then return to the original cell in the next row/column.

### Template

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	
1	<b>This is My Report</b>																
2																	
3	Samples																
4	Dimensions	1	2	3	4	5	6										
5	[labels]	[actrows]						{jump_continue:Sheet1!J5}									
6								{jump_continue:Sheet1!J6}									
7								{jump_continue:Sheet1!J7}									
8								{jump_continue:Sheet1!J8}									
9								{jump_continue:Sheet1!J9}									
10	{jump:Sheet1!A15}	{jump_continue:Sheet1!B15}					[/actrows]								[/actrows]		
11															[/actrows]		
12															[/actrows]		
13															[/actrows]		
14	Dimensions	1	2	3	4	5	6										
15																	
16																	
17																	
18																	
19	[/labels]														[/actrows]		
20																	
21																	

In the example above there are multiple [/actrows] end tags on the right side in cells O10-O14 because each jump\_continue searches for an end tag and flows toward it if found. In addition, each jump\_continue also removes the end tag

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when found making it necessary to add 4 end tags to match the 4 jump\_continue commands.

### Output

Samples												
Dimensions	1	2	3	4	5	6	7	8	9	10	11	12
Drilled Hole A:X	1.4966	1.4985	1.4986	1.4989	1.498		1.4989	1.4988	1.4993	1.498	1.4974	1.4992
Drilled Hole A:Y	2.4995	2.5014	2.4975	2.4996	2.5017		2.4998	2.5021	2.4971	2.5001	2.5025	2.4966
Drilled Hole A:Dia	3.5011	3.5017	3.5019	3.5022	3.5007		3.5039	3.5012	3.5021	3.5032	3.5002	3.5013
Hole Chamfer	4.4993	4.4998	4.5007	4.5001	4.5023		4.4988	4.4999	4.5005	4.5006	4.5026	4.5016
Tab #2 Length	5.4992	5.499	5.4997	5.4981	5.4977		5.4994	5.4968	5.4982	5.498	5.4996	5.4952

Samples						
Dimensions	1	2	3	4	5	6
Tab #2 Width	6.4966	6.5004	6.503	6.4996	6.501	6.5038
Slot B:Dia	7.5013	7.5018	7.502	7.5003	7.501	7.5021
Slot B:X Pos	8.5016	8.4981	8.4995	8.5001	8.5007	8.5031
Slot B:Length	9.4952	9.4976	9.4983	9.4983	9.4975	9.4961
Slot B:Width	10.4983	10.4993	10.5006	10.498	10.4993	10.5008

Using the same example as above with {All Actuals as Rows}, the jump\_continue tags are placed in the 6<sup>th</sup> data column of each row. In this case, when the jump occurs and jumps to J5, the row continues until the next end tag. Then it returns all the way back to the beginning column of the next row (B6) and starts a new row. However, since we are using a {jump\_continue}, it jumps before placing the value into the cell where the jump\_continue is found. This leaves the 6<sup>th</sup> data column empty and is similar to the {jump} command since it jumps first. This works the same way with column data blocks such as {All Actuals as Columns}.

As you can see from the examples throughout the {hop}, {jump}, {hop\_continue} and {jump\_continue}, there are different scenarios where each of these commands are well and not so well suited. Using a combination of the commands should be able to help you flow the data in the direction you need and give you the ability to hop or jump across pages.

### 6.11.6 The {Next} Command

When using the {hop}, {hop\_continue}, {jump}, or {jump\_continue} commands, you can use the {next} command in place of the sheet name to substitute the name of the next sheet. This can be especially useful when using a Page Break tag because Buddy will be creating worksheets dynamically and you may not know the name of the sheet until it is created. The {next} command will automatically move to the next sheet (if found) and continue.

Example:

**{jump\_continue:Sheet1!J6}** – will cause the next item to be placed in J6 on Sheet1.

**{jump\_continue:{Next}!J6}** – will cause the next item to be placed in J6 on the next worksheet.

### 6.11.7 The {Current} Command

When using the {hop}, {hop\_continue}, {jump}, or {jump\_continue} commands, you can use the {current} command in place of the sheet name to substitute the name of the current sheet. This is a very useful command when you are using the second worksheet option (copy first worksheet for each dimension) because the worksheets are created/named dynamically based on the dimensions sent to



the report. The {current} command allows you to hop/jump around within each individual sheet without having to worry about the name.

### 6.11.8 The {Stop} Command

As the name implies, when the {stop} command is encountered all block and list type replacements stop in that cell. Please note that the cell containing the {stop} command is replaced with the value before the stop actually occurs.

This can be a convenient command to use in addition to/in place of an end tag. Normally Buddy replaces end tags as soon as they are found. When you hop or jump, Buddy looks for a new end tag and flows the data toward that end tag until the end tag's cell is hit (or another hop/jump command is encountered along the way). When found, the end tag is removed from the cell (cell's value is set to "") as soon as it is found. Therefore, if you have several hop commands in the same sheet, you'll also need several end tags since each is removed when found. The {stop} command is never removed until it is encountered. This allows you to use the end tag to control the flow, but the {stop} command to issue a hard stop.

### 6.11.9 Page Break Tag

In your report, you may want to allow the report to flow onto multiple pages if you send more data than you have room for on a single worksheet. When you are setting up your Excel Job in the wizard, you have the opportunity to declare a **Page break tag**. This tag can be any valid block type tag on any of the sheets in your report. When you declare the Page Break tag, you are telling Buddy to look at the data that is being sent to the Excel Job and create as many worksheets as necessary to display all of the data.

As a simple example, let's say you have a template that will display your data as columns and you have laid it out so you have 5 columns and 10 rows. If you declare a Page Break tag on your {All Actuals as Columns} tag and you have highlighted 5 columns and 30 rows Buddy will automatically copy the worksheet twice to account for the extra 20 rows of data and will populate all three worksheets until it has run out of data. All other tags on the copied worksheets will also be replaced to match the first sheet.

#### Rules for Page Break tags:

1. Page Break tags can only be used in Excel Jobs using the first worksheet option (**Edit the sheets of the template as is...**).
2. Only one Page Break tag is allowed per Excel Job.
3. Only block type tags can be used as the Page Break tag.
4. The worksheet with the Page Break tag can be any worksheet in the workbook. All copied worksheets will be placed to the right of the worksheet containing the Page Break tag.

#### **Worksheet Numbering**

Worksheet numbering is generally a two number system (dimensions and records) that always begins with the page number as it relates to dimensions and ending with the page number as it relates to records. This is explained better with the example below.

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Let's say you have a Worksheet called "Report" that has a tag space for {All Actuals as Columns} spanning 5 columns and 10 rows. When you run the Excel Job, you highlight 7 features and 30 rows.

The screenshot shows an Excel spreadsheet with columns A through F and rows 1 through 13. The grid contains the following content:

	A	B	C	D	E	F
1						
2		[[labels]]				[/labels]]
3		[data]				
4						
5						
6						
7						
8						
9						
10						
11						
12						[/data]
13						

When Buddy copies the worksheet, it realizes that you need extra space for both features and records so it first copies the worksheet twice for the features (1-5 and 6-7) and then three times for the extra records. The result will be the following six worksheets:

- Report 1~1 – Features 1-5 and records 1-10
- Report 1~2 – Features 6-7 and records 1-10
- Report 2~1 – Features 1-5 and records 11-20
- Report 2~2 – Features 6-7 and records 11-20
- Report 3~1 – Features 1-5 and records 21-30
- Report 3~2 – Features 6-7 and records 21-30

The first two pages have been displayed below.

The first screenshot shows a data table with the following structure:

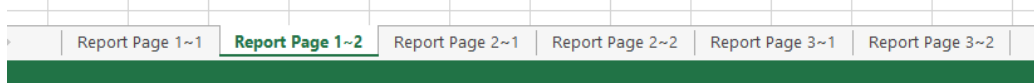
	A	B	C	D	E	F
2		Drilled Hq	Drilled Hq	Drilled Hq	Hole Char	Tab #2 Length
3		1.4997	2.4959	3.4988	4.4993	5.5009
4		1.5027	2.5002	3.5006	4.4995	5.5022
5		1.5011	2.4989	3.4972	4.4993	5.504
6		1.4996	2.5006	3.4985	4.4992	5.4993
7		1.5005	2.4997	3.4975	4.4991	5.5004
8		1.5021	2.5009	3.4997	4.501	5.5016
9		1.5034	2.4972	3.5003	4.5008	5.5022
10		1.4996	2.4991	3.4956	4.5002	5.5003
11		1.5001	2.4958	3.4953	4.5096	5.5055
12		1.5013	2.4953	3.4995	4.5036	5.5052

The second screenshot shows a similar data table with the following structure:

	A	B	C	D	E	F	G
2		Drilled Hq	Drilled Hq	Drilled Hq	Hole Char	Tab #2 Length	
3		6.4922	7.4944				
4		6.4994	7.4988				
5		6.4974	7.4976				
6		6.4998	7.4996				
7		6.498	7.5017				
8		6.4998	7.4963				
9		6.4985	7.4981				
10		6.5004	7.4997				
11		6.4981	7.5				
12		6.5008	7.4979				

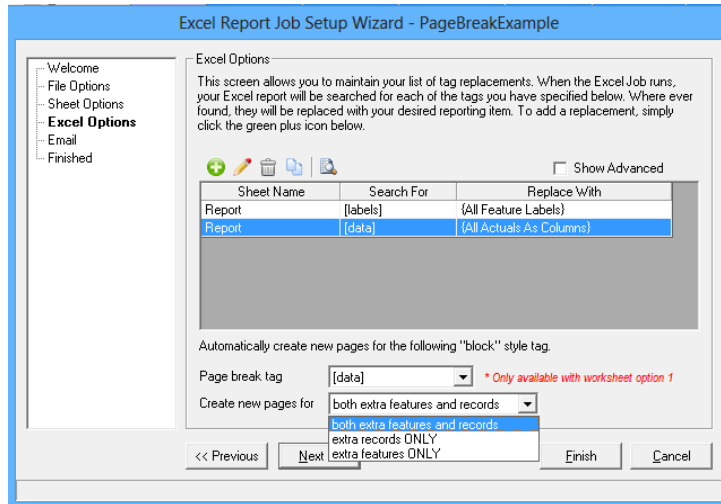
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The 6 worksheet tabs created are displayed below.



## Constraining Worksheet Creation

By default, Buddy will automatically create as many worksheets as necessary to display all features and records highlighted when the Excel Job is run. However, you may want to constrain this in order to keep your report from growing too large. The option just below the Page Break tag allows you to **Create new pages for** either records only, features only, or both.



Using the same example above, the Excel Job was changed to create pages for features only and rerun with the same data.

	A	B	C	D	E	F
1						
2		Drilled Hole A:X	Drilled Hole A:Y	Drilled Hole A:Dia	Hole Chamfer	Tab #2 Length
3		1.4997	2.4959	3.4988	4.4993	5.5009
4		1.5027	2.5002	3.5006	4.4995	5.5022
5		1.5011	2.4989	3.4972	4.4993	5.504
6		1.4996	2.5006	3.4985	4.4992	5.4993
7		1.5005	2.4997	3.4975	4.4991	5.5004
8		1.5021	2.5009	3.4997	4.501	5.5016
9		1.5034	2.4972	3.5003	4.5008	5.5022
10		1.4996	2.4991	3.4956	4.5002	5.5003
11		1.5001	2.4958	3.4953	4.5096	5.5055
12		1.5013	2.4953	3.4995	4.5036	5.5052
13						
14						
15						

Report Page 1~1 | Report Page 1~2 | (+)

READY

	A	B	C	D	E	F
1						
2		Drilled Hole A:X	Drilled Hole A:Y	Drilled Hole A:Dia	Hole Chamfer	Tab #2 Length
3		6.4922	7.4944			
4		6.4994	7.4988			
5		6.4974	7.4976			
6		6.4998	7.4996			
7		6.498	7.5017			
8		6.4998	7.4963			
9		6.4985	7.4981			
10		6.5004	7.4997			
11		6.4981	7.5			
12		6.5008	7.4979			
13						
14						
15						

Report Page 1~1 | Report Page 1~2 | (+)

READY

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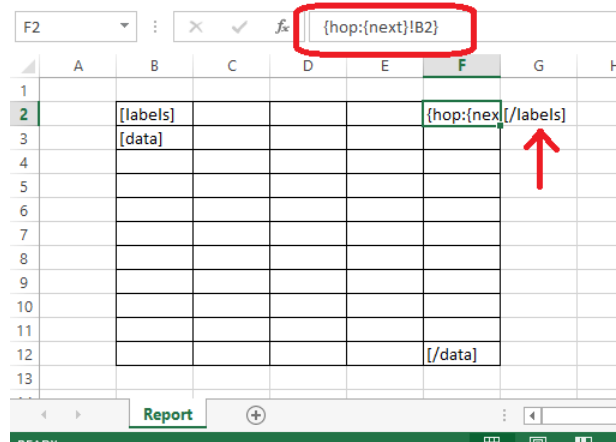
---

As you can see, only two worksheets were created this time and the remaining records (11-30) were truncated.

One issue you'll notice about this report is that the Feature Labels are repeated on the second page and do not match the data that is beneath them. There are times when you will want to repeat the same labels on subsequent worksheets (for instance, when you are printing records 11-30), but this is not one of them. To solve this issue, we'll modify our template slightly.

### Use of {hop} with Page Break Tags

We made two changes to our template. The first change was to move the [/labels] tag to the right by one cell. This is so the feature labels will still flow in a row. However, this end tag will never be hit due to the second change.



The second change is the {hop} command (highlighted above in the formula line). On its way to the [/labels] end tag, Buddy will encounter the {hop} command and hop to cell B2 in the "next" worksheet.

Notice the use of the {next} keyword. The {next} command is explained earlier in this manual, but it essentially tells Buddy to hop to the next worksheet regardless of its name. Since the worksheets will be created when the Excel Job is run, we don't know the name of each worksheet when the template is created. The {next} command ensures the correct worksheet will be found dynamically. Furthermore, cell B2 on the next worksheet just happens to be the [labels] tag since all tags are copied to the new worksheets. As such, the Feature Label list will flow from B2 to F2, hop to B2 on the next worksheet, and continue until they run out or hit another {hop} command.

## Excel Jobs

The result is below and is now correct.

	A	B	C	D	E	F
1						
2		Drilled Hole A:X	Drilled Hole A:Y	Drilled Hole A:Dia	Hole Chamfer	Tab #2 Length
3		1.4997	2.4959	3.4988	4.4993	5.5009
4		1.5027	2.5002	3.5006	4.4995	5.5022
5		1.5011	2.4989	3.4972	4.4993	5.504
6		1.4996	2.5006	3.4985	4.4992	5.4993
7		1.5005	2.4997	3.4975	4.4991	5.5004
8		1.5021	2.5009	3.4997	4.501	5.5016
9		1.5034	2.4972	3.5003	4.5008	5.5022
10		1.4996	2.4991	3.4956	4.5002	5.5003
11		1.5001	2.4958	3.4953	4.5096	5.5055
12		1.5013	2.4953	3.4995	4.5036	5.5052

	A	B	C	D	E	F
1						
2		Tab #2 Width	Slot B:Dia			
3		6.4922	7.4944			
4		6.4994	7.4988			
5		6.4974	7.4976			
6		6.4998	7.4996			
7		6.498	7.5017			
8		6.4998	7.4963			
9		6.4985	7.4981			
10		6.5004	7.4997			
11		6.4981	7.5			
12		6.5008	7.4979			

Please keep in mind that the example above uses the {hop} command, but the {hop\_continue}, {jump}, and {jump\_continue} commands are all supported.

### Synchronizing Records across Page Break

As stated above, the worksheets are copied for dimensions first and then records. Using the above scenario, it's easy to see how you might want to save record related data into your spreadsheet (record numbers, trace information at the part level, etc).

Since we don't know how many pages will be created from the dimension, this creates a problem. For example, if we send 7 dimensions, then it will create two pages for each set of records (total: 6 pages). However, if we sent 12 dimensions, then it will create three pages for each set of records (total: 9 pages). This means the {next} keyword will not work for records.

Instead, there is a special checkbox that can be set when setting up the tag replacements in the Excel Job itself. On the **Excel Job Replacement Setup** screen, check the **Sync record numbers with page break tag**. When this is checked and a page break occurs, the records automatically stay synchronized across pages regardless as to how many dimension pages are created due to the page breaks. This checkbox is only available if a page break tag has been selected and a

Excel Job Replacement Setup

Replacement Details

This screen allows you to create or edit your tag replacements. To add a replacement, simply choose the worksheet to search, the tag to search for, and the Report Type that will replace it. Report Types are grouped by category to make them easier to find.

Sheet Name: Sheet1

Search Tag: [data]

Report Type: Part Data

Report Item: {Actuals Current Column}

Factor Name:

Sync record numbers with page break tag

OK Cancel

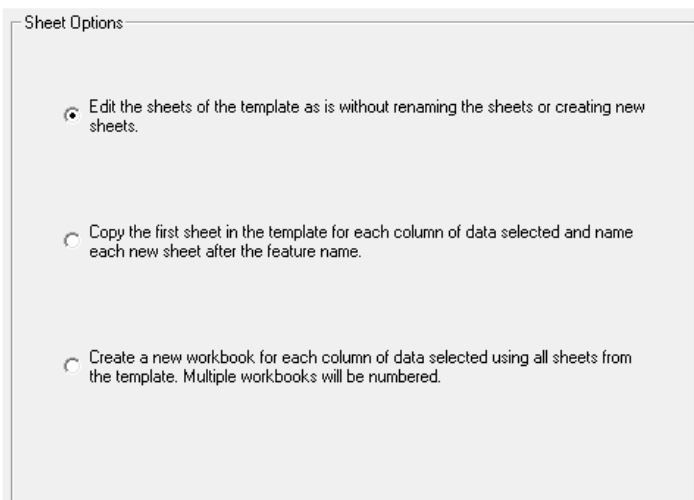
record level replacement is chosen (such as factor lists, record numbers, actuals current column, etc).

### 6.12 General Tips for Excel Job

1. The default assumption for placing data in the sheet is to insert columns of numbers from top to bottom and then left to right. To force Buddy to place the next value in a row, you must place an End Tag to the right of the tag.
2. When using End Tags, you must place the End Tag in a larger cell than the beginning tag. In other words, it must be to the right or lower in the sheet, or both. Buddy does not support reverse lookups.
3. Each feature in the QC-CALC database has only one nominal yet it has many actual values. For this reason, you'll notice the Report Item names are written as singular - **{Feature Label}** or plural **{Actuals Current Column}**.
4. You should format the cells in your Excel template the way you want the final report. This way you will not have to reformat each report after Buddy creates it. So if you want certain text colors or numeric formatting, or conditional formatting, put everything in the template and your final report will be exactly what you want when Buddy finishes.
5. Excel offers Conditional Formatting where you have the sheet test for out of specification. If the value is larger than the Upper Spec Limit or lower than the Lower Spec Limit, you can make the text red in color to catch your eye. Of course you must send the nominals and tolerances to your report so they can be used in the Conditional Formatting.
6. The order in which the Report Items are placed in your Excel report is based on the list you generated in your Excel job. The job is run top to bottom one after another. So if you overlap tag pairs you may overlap some of the data in the report. Be careful!

### 6.13 Workbook and Sheet Considerations

The **Sheet Option** discussed earlier may require some extra description to ensure you understand all options available to you. You can simply use a single sheet template to hold all features or create new sheets or new workbooks as described in the **Excel Report Job Setup Wizard**. Let's take a closer look at our options.



The screenshot shows a dialog box titled "Sheet Options" with three radio button options:

- Edit the sheets of the template as is without renaming the sheets or creating new sheets.
- Copy the first sheet in the template for each column of data selected and name each new sheet after the feature name.
- Create a new workbook for each column of data selected using all sheets from the template. Multiple workbooks will be numbered.

#### **Edit the sheets of the template as is without renaming the sheets or creating new sheets.**

Most users will choose to have Buddy place all of the results onto an Excel sheet that contains the framework of their original report. In other words, replace the data from the report they used to do by hand with [tags] which creates a template that can be reused over and over again by Buddy. This requires a method of

## Excel Jobs

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identifying and separating the data by using the {column} tag variable discussed in [Special {Column} Tag Variable](#) on page [53](#).

### **Copy the first sheet in the template for each column of data selected and name each new sheet after the feature name.**

There may be times when your report is so complex you want each reported feature to be separated into different sheets and each sheet to be renamed to the feature name. This option is used to create such a report.

The setup is simple. Create the template you want on the first sheet in the workbook and Buddy will copy that sheet, fill it with the data and charts, and rename it to that particular reported feature. It will do this over and over until all features have been processed. Your final Excel workbook report contains the same number of sheets as reported features, each separated by name.

In the worksheet method, Buddy always copies the first worksheet and only replaces tags on that worksheet and its copies. As such, you'll notice that the **Sheet** list is disabled on the **Excel Options** screen of the **Excel Report Job Setup Wizard**. Furthermore, as you add replacements, "Sheet1" is always added to the grid below. It is not necessary for the sheet to actually be named "sheet1" as Buddy uses the first sheet it finds.

### **Create a new workbook for each column of data selected using all sheets from the template.**

You may want to raise the option beyond the sheet level to the workbook level. The concept is the same as the previous option but instead of copying sheets and renaming them, Buddy copies the entire workbook and names it the same name as your original but adds a number 1, 2, 3 etc.

One benefit of this option over the worksheet method is that Buddy can replace tags on multiple sheets for the same column of data. Therefore, you could have tags on Sheet1, other tags on Sheet2, and others on Sheet3. When you build the Excel Job, you specify which sheet to search when you create your replacements just as you would when using the first option.

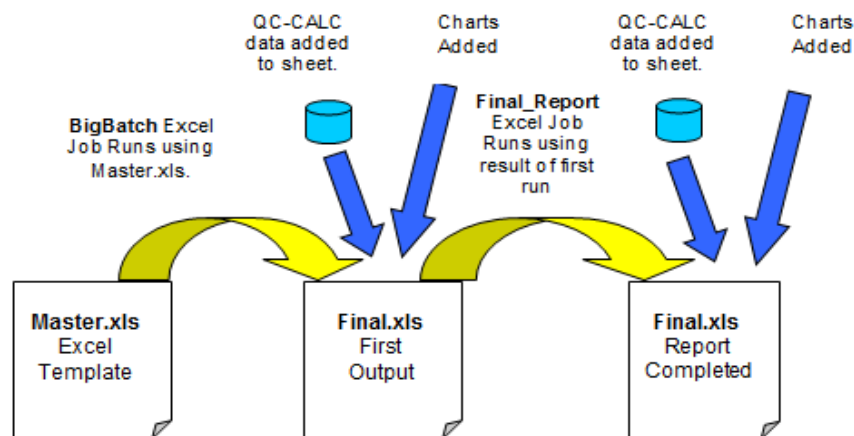
# 7. Batch Jobs

## 7.1 Introduction

Batch Jobs were added to version 3.3 of Buddy to simplify the process of running multiple Excel Jobs to merge data from different QC-CALC files. Say you have 2 different inspection results files from different gages that you wish to summarize in one Excel report. It is normal to join data from OP10 and OP20 and so on.

## 7.2 Batch Job Concept

This concept involves creating one master template with several sections, each being filled in by a different Excel Job. You'll start with a master template that contains the entire report template and run the first Excel Job. This Excel Job creates a second Excel file (template) which is partially filled in. You then open another QC-CALC file; select the second set of data, and run a second Excel Job using the spreadsheet from the first job as the template. You can continue performing this leap frog sequence as many times as needed. Graphically it looks something like:



This type of sequence may seem difficult but it allows for extreme flexibility. In the following example, we will write two separate Excel Jobs and use two separate QC-CALC databases and run them both to create our final report. The sequence is as follows:

1. Open a QC-CALC database with record and dimension filters
2. Run Excel Job #1 called **BigBatch** using **Master.xls** as the template.
3. The output is saved as **Final.xls** as the next template
4. Open the second QC-CALC database with record and dimension filters
5. Run Excel Job #2 called **Final\_Report** using **Final.xls**
6. The final report is completed, saved, and left on screen.

Keep in mind you can use Batch Jobs to run totally unrelated Excel jobs to speed up the task of running periodic reports. Use the tool that saves you the most time.



## 7.3 Running Multi-Job Example

### 7.3.1 The Master Template – Make the Template

This is the beginning template called **Master.xls** or whatever you desire. We use this as the first template and will run our **BigBatch** Excel Job to create **Final.xls**. The newly created Excel file is used in the last step of this example. Everything in the left side of this template is filled in by the first Excel Job and saved as Final.xls. The right hand side will be filled in using the second Excel Job.

Step 1: We opened the **L4 64676.QCC**

Step 2: Using the Dimension selector we chose Dims 1, 2, & 3

Step 3: We saved the selection as **My First 3 Dims**

Step 4: Using the Record Filter we chose (**Show All**)

Step 5: We ran the **BigBatch** Excel Job and the following Excel file was created

	A	B	C	D	E	F	G	H
1								
2				<b>My Big Report</b>				[Date]
3		[PartName1]				[PartName2]		
4	Labels	[AllLabels1]		[/AllLabels1]		[AllLabels2]		[/AllLabels2]
5	Nom	[AllNoms1]		[/AllNoms1]		[AllNom2]		[/AllNom2]
6	Plus Tol	[AllPlus1]		[/AllPlus1]		[AllPlus2]		[/AllPlus2]
7	Minus Tol	[AllMin1]		[/AllMin1]		[AllMin2]		[/AllMin2]
8								
9		[AllData1]				[AllData2]		
10								
11								
12								
13								
14								
15								
16				[/AllData1]				[/AllData2]
17								
18								
19		[Label1-1]				[Label2-1]		
20		[Chart1-1]				[Chart2-1]		
21								
22								
23								
24								
25				[/Chart1-1]				[/Chart2-1]
26		[Label1-2]				[Label2-2]		
27		[Chart1-2]				[Chart2-2]		
28								
29								
30								
31								
32				[/Chart1-2]				[/Chart2-2]
33		[Label1-3]						
34		[Chart1-3]						
35								
36								
37								
38								
39				[/Chart1-3]				
40								
41								

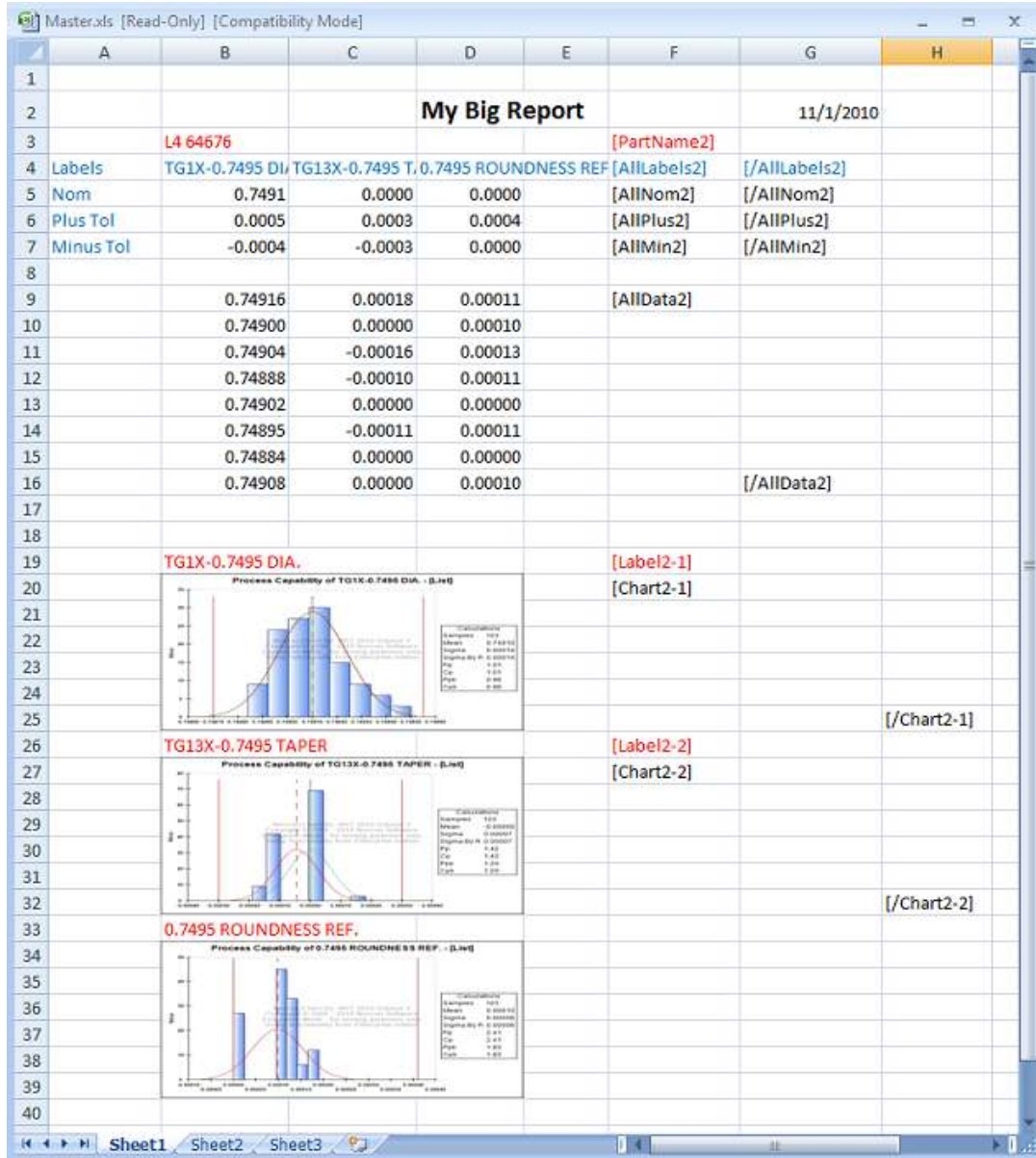
This part of the master template is populated with data from 1 QC-CALC database. We run an Office Buddy Excel Job and save the results.

This part of the master template is populated with data from a different QC-CALC database. We run a second Office Buddy Excel Job and save the results to our final report.

# Batch Jobs

## 7.3.2 The Second Template

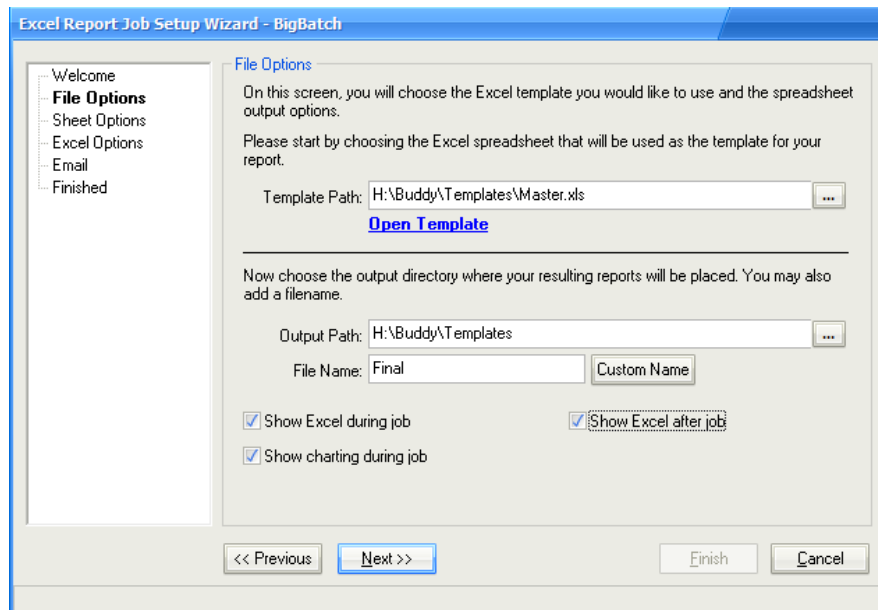
This is a new template just created and is called **Final.xls**. We use this template (half filled in) in our next job and will finish populating the right side with data from a second QC-CALC database.



## Batch Jobs

### 7.3.3 The Related Excel Job

Here are the basic settings that match the Excel template above. The **Template Path** (input) along with the **Output Path** and **File Name** are specified in the second step of the Excel Job wizard.



The screenshot shows the 'File Options' step of the 'Excel Report Job Setup Wizard - BigBatch'. The left sidebar lists steps: Welcome, File Options (selected), Sheet Options, Excel Options, Email, and Finished. The main area contains instructions and input fields for the Excel template and output settings.

**File Options**

On this screen, you will choose the Excel template you would like to use and the spreadsheet output options.

Please start by choosing the Excel spreadsheet that will be used as the template for your report.

Template Path: H:\Buddy\Templates\Master.xls

[Open Template](#)

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Now choose the output directory where your resulting reports will be placed. You may also add a filename.

Output Path: H:\Buddy\Templates

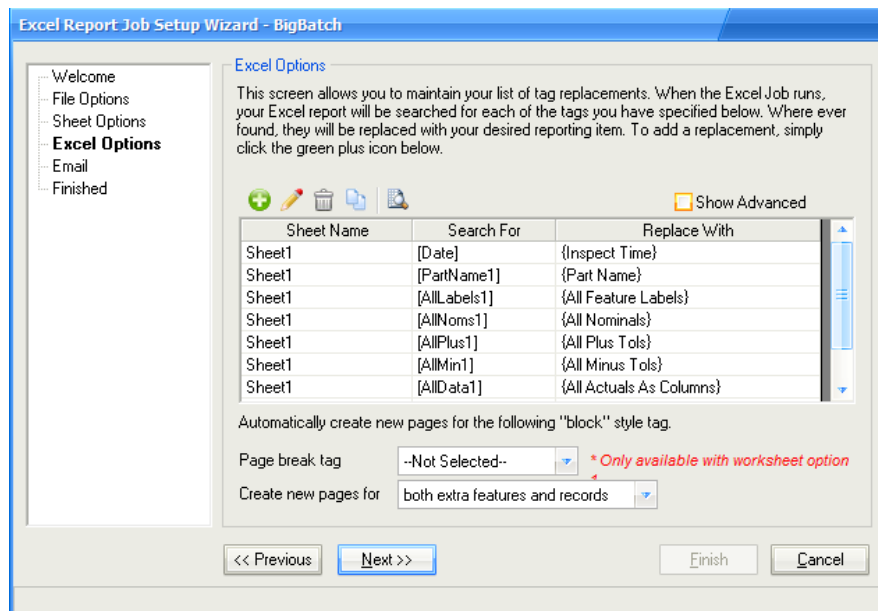
File Name: Final

Show Excel during job  Show Excel after job

Show charting during job

<< Previous 

The screen below shows how we linked the tags found in the Excel template to the SPC Office Buddy replacements items.



The screenshot shows the 'Excel Options' step of the 'Excel Report Job Setup Wizard - BigBatch'. The left sidebar lists steps: Welcome, File Options, Sheet Options, Excel Options (selected), Email, and Finished. The main area contains instructions and a table for tag replacements.

**Excel Options**

This screen allows you to maintain your list of tag replacements. When the Excel Job runs, your Excel report will be searched for each of the tags you have specified below. Where ever found, they will be replaced with your desired reporting item. To add a replacement, simply click the green plus icon below.

Show Advanced

Sheet Name	Search For	Replace With
Sheet1	{Date}	{Inspect Time}
Sheet1	{PartName1}	{Part Name}
Sheet1	{AllLabels1}	{All Feature Labels}
Sheet1	{AllNoms1}	{All Nominals}
Sheet1	{AllPlus1}	{All Plus Tols}
Sheet1	{AllMin1}	{All Minus Tols}
Sheet1	{AllData1}	{All Actuals As Columns}

Automatically create new pages for the following "block" style tag.

Page break tag: --Not Selected-- *\* Only available with worksheet option*

Create new pages for: both extra features and records

<< Previous 

SPC Office Buddy

# Batch Jobs

## 7.3.4 The Final Report

This report is the final report we wanted to create. The first 3 dimensions on the left are from one QC-CALC database after running the first Excel Job and the second two on the right are from running the second Excel Job. This Excel file is called **Final.xls**.

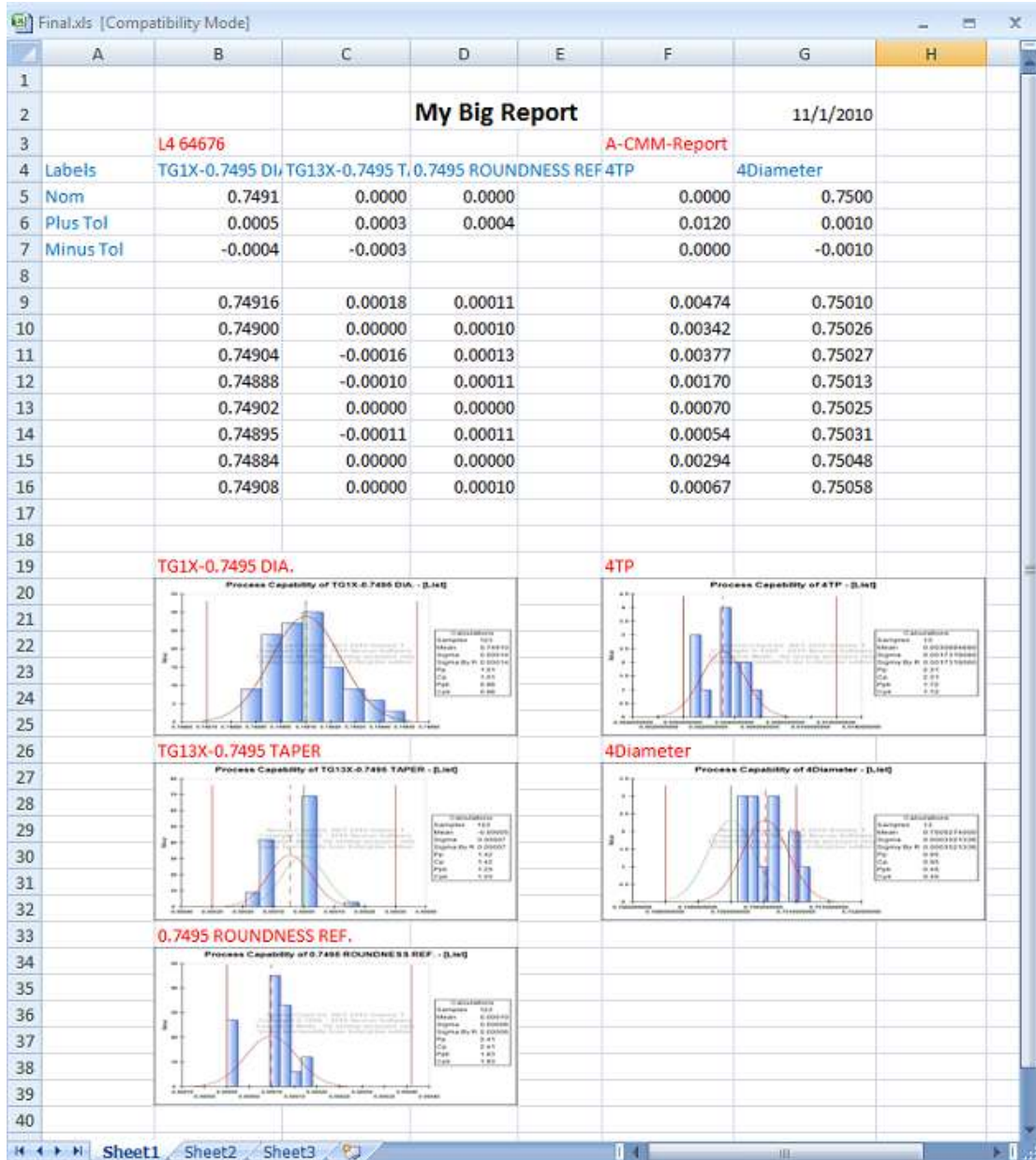
Step 1: We opened a QC-CALC file called A-CMM-Report.QCC

Step 2: We chose Dim 13 (**4TP**) and Dim 23 (**4Diameter**)

Step 3: We saved the dimension selection as **TP & Diameter**

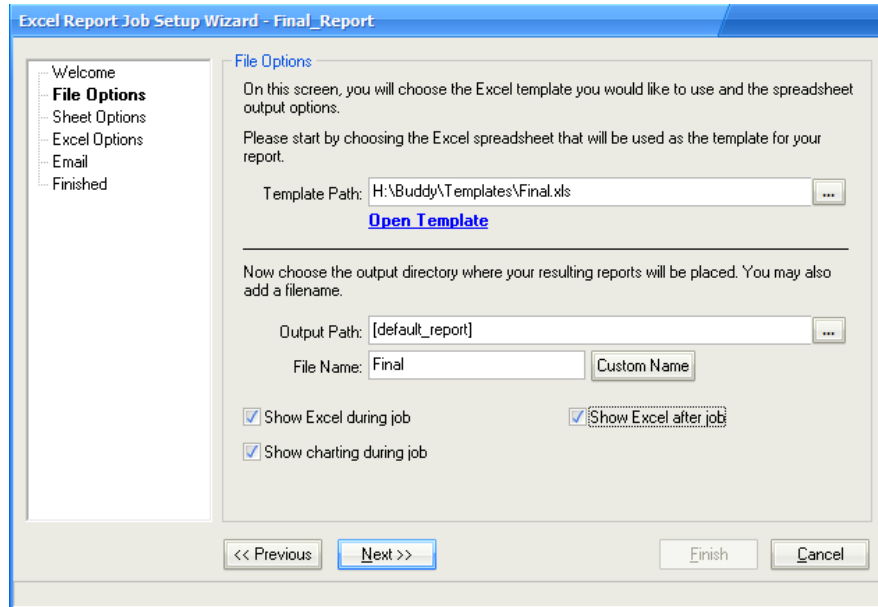
Step 4: Using the Record Filter we chose (**Show All**)

Step 5: We ran the **Final\_Report** Excel Job creating the following Excel file

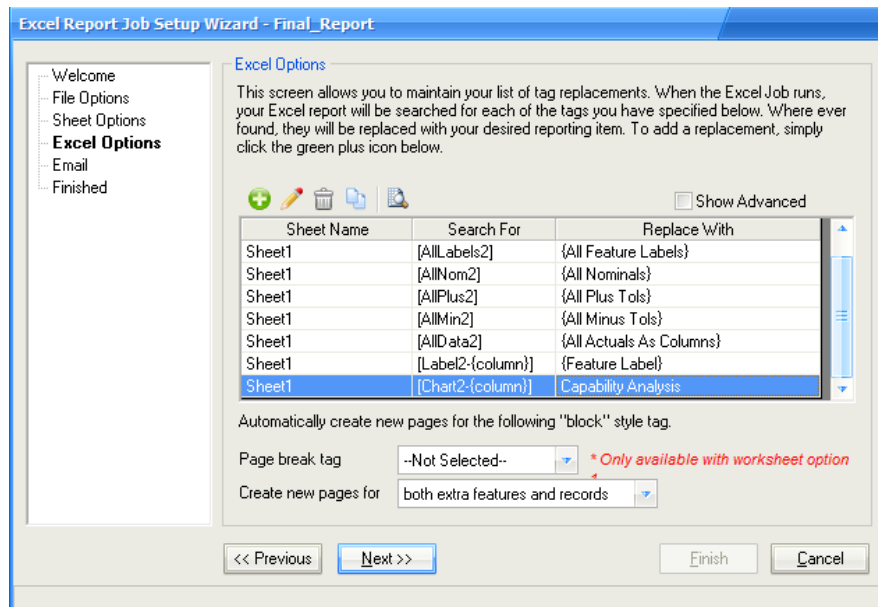


## 7.3.5 The Related Excel Job

Here are the basic settings that match the Excel template above. The **Template Path** (input) along with the **Output Path** and **File Name** are specified. Notice how in this step the template and output file name are the same? This is so we save over the existing file. It is not recommended you do this in the first Excel Job because you would have to recreate the template next time. However, in subsequent steps, you can safely save the report over the existing template as you slowly build out your full report.



The screen below shows how we linked the tags found in the template to Buddy's replacements items.



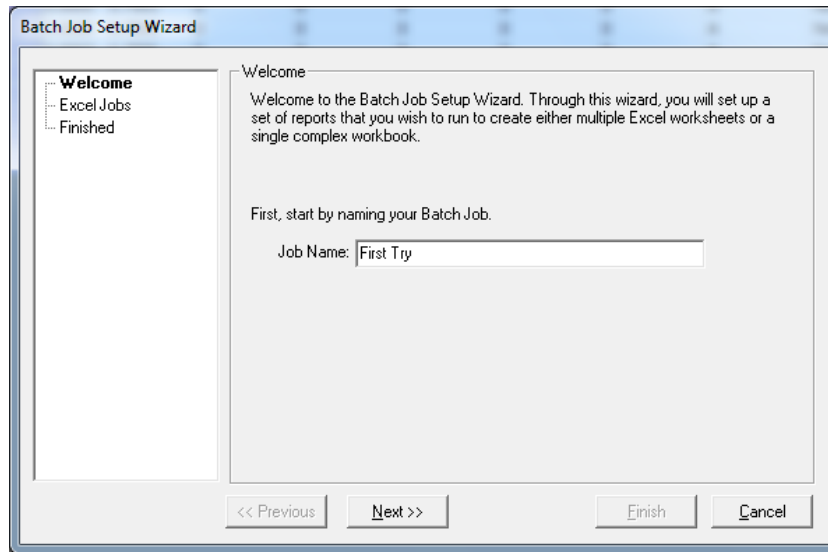
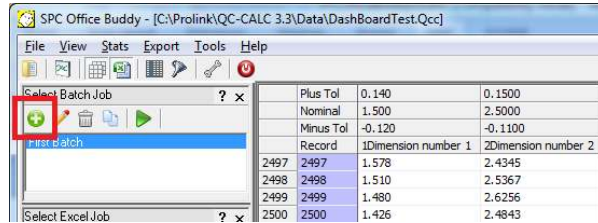
# Batch Jobs

## 7.4 Create the Batch Job

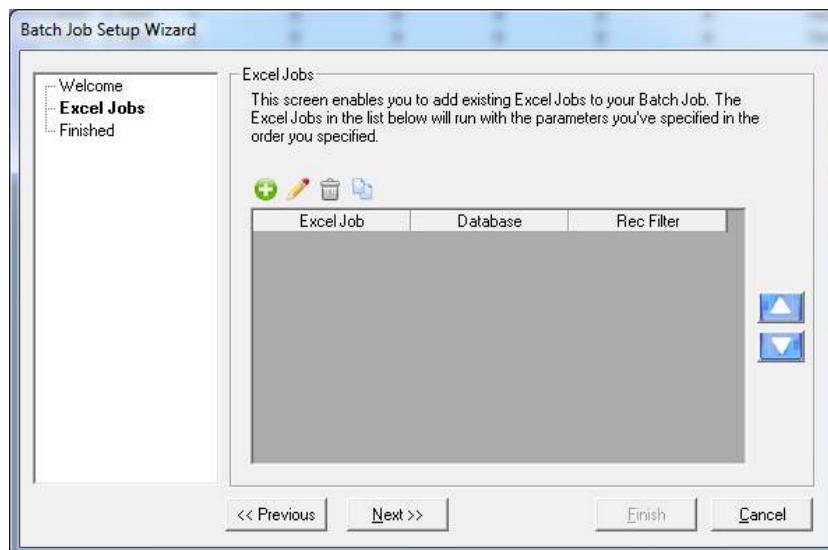
Now that we created and ran the two individual Excel Jobs along with their Excel templates we want to run both jobs as one large job to speed up the process. This step-by-step explanation shows you how to automate the two Excel Jobs into this one Batch Job which is perfect for repetitive tasks.

1. Select the **View** menu and choose **Batch Job List**. If this menu is already checked press ESC otherwise, check it. This ensures you can see and use the **Batch Job** panel.

2. In the **Select Batch Job** panel click the green plus button (**Add New Batch Job**). The following wizard screen appears:



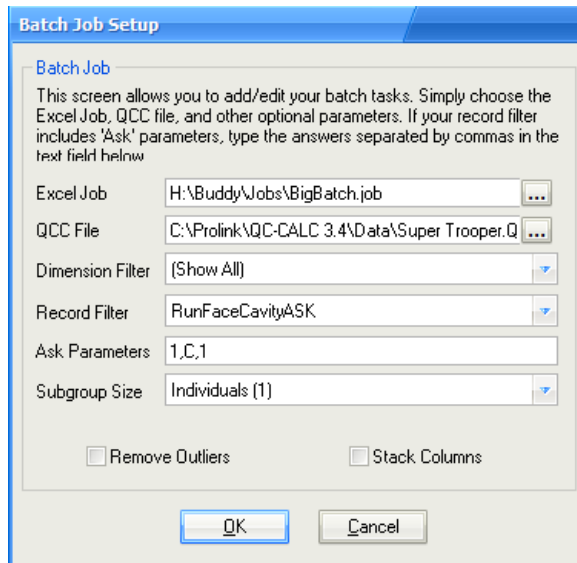
3. Enter a name such as **First Try** and Click the **Next >>** button.
4. On the **Excel Jobs** screen, click the green plus button to **Add** an Excel Job to the process.



## Batch Jobs

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5. Answer all the questions on the **Batch Job Setup** screen and click **OK**. These are the same details we chose while making our First Excel Job ([The Master Template – Make the Template](#) section) on page 75.



**Batch Job Setup**

**Batch Job**

This screen allows you to add/edit your batch tasks. Simply choose the Excel Job, QCC file, and other optional parameters. If your record filter includes 'Ask' parameters, type the answers separated by commas in the text field below

Excel Job: H:\Buddy\Jobs\BigBatch.job

QCC File: C:\Prolink\QC-CALC 3.4\Data\Super Trooper.Q

Dimension Filter: (Show All)

Record Filter: RunFaceCavityASK

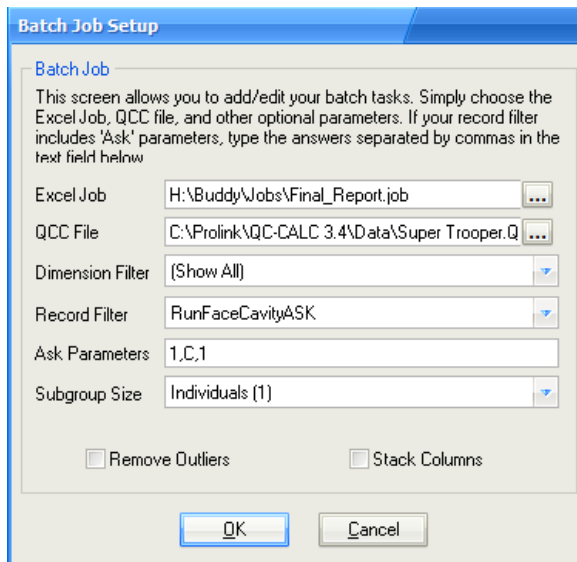
Ask Parameters: 1,C,1

Subgroup Size: Individuals (1)

Remove Outliers       Stack Columns

OK      Cancel

6. Next, click the **Add New Task** button on the **Batch Job Setup Wizard** screen again.
7. Answer the questions on the **Batch Job Setup** screen for the next stage of your Batch Job. These are the same details we chose while making our second Excel Job ([The Second Template](#) section) on page 76.



**Batch Job Setup**

**Batch Job**

This screen allows you to add/edit your batch tasks. Simply choose the Excel Job, QCC file, and other optional parameters. If your record filter includes 'Ask' parameters, type the answers separated by commas in the text field below

Excel Job: H:\Buddy\Jobs\Final\_Report.job

QCC File: C:\Prolink\QC-CALC 3.4\Data\Super Trooper.Q

Dimension Filter: (Show All)

Record Filter: RunFaceCavityASK

Ask Parameters: 1,C,1

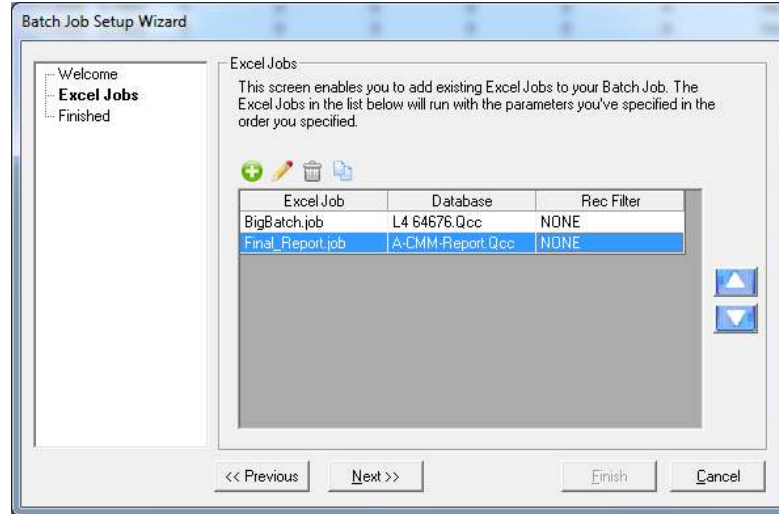
Subgroup Size: Individuals (1)

Remove Outliers       Stack Columns

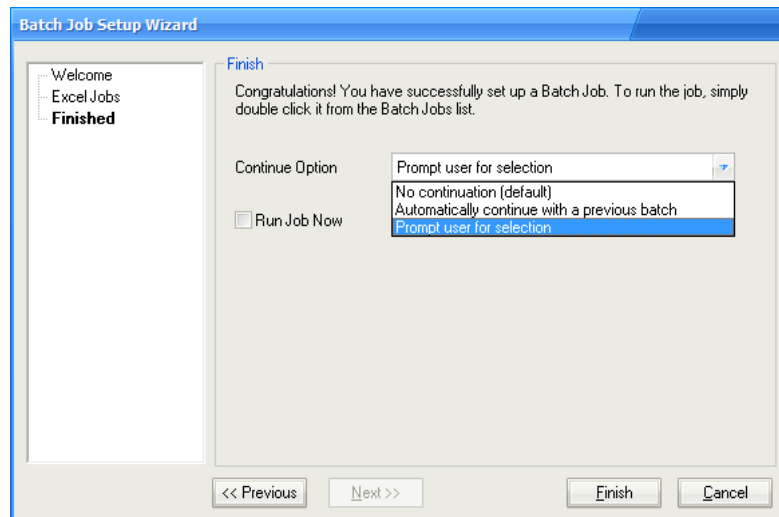
OK      Cancel

## Batch Jobs

8. Click **OK** and the Batch Job should look something like this:



9. Click the **Next >>** button followed by the **Finish** button to complete the Batch Job.

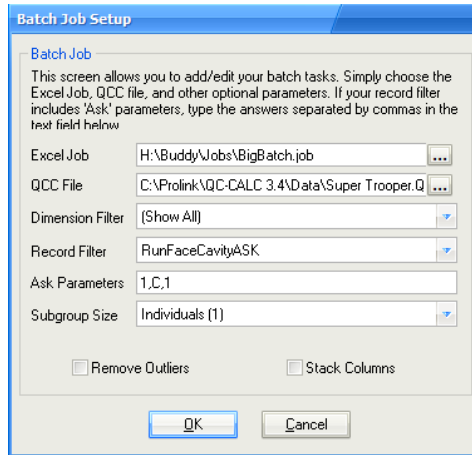




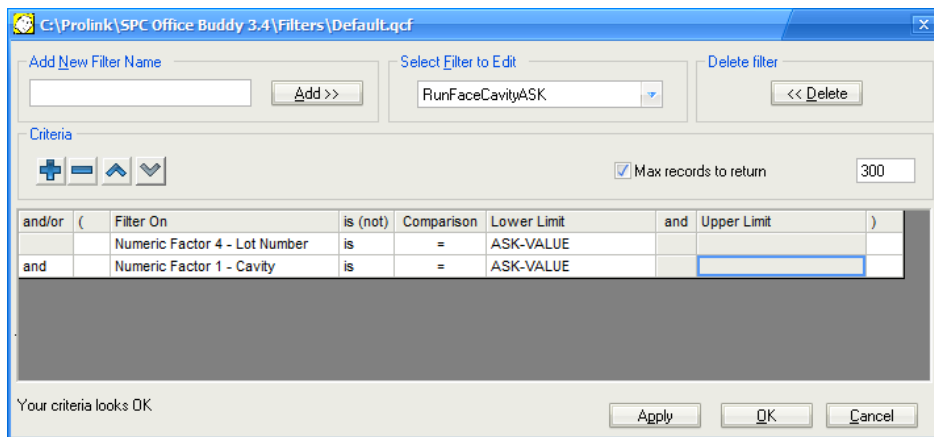
# Batch Jobs

## 7.4.1 Ask Parameters

When filling out the tasks, you fill out the **Excel Job** to run, QCC file to use as the data source, and the Dimension and Record Filters. When choosing a Record Filter, if the record filter is the type that has “ASK” parameters, you can specify them as a comma delimited list in the **Ask Parameters** field just below the **Record Filter** list.



For instance, let us assume you need to create a report to group the data across 2 lots and 5 cavities to see how each is performing. This will create 10 combinations/groupings for your report. Rather than creating 10 separate record filters to capture each combination, build a filter that includes two ASK filters as shown below so the values can be supplied when the report runs.



When you are setting up the Batch Job, you supply the values for your ASK filters in the parameter list just below the Record Filter list separated by commas.

For instance, if you wanted to query Lot 2 and Cavity 4, you would specify 2,4 in your list for that Excel Job step. In the example above, you would likely have 10 identical tasks (steps) in your Batch Job with the exception of the parameters for the record filter (i.e. 1,1 1,2 1,3 1,4 1,5 2,1...).

# Batch Jobs

## 7.4.2 Batch Job Options

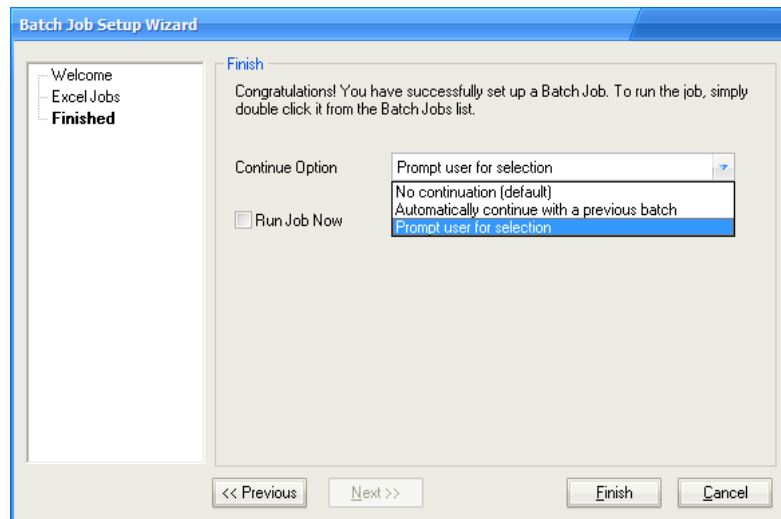
Most batch jobs assume they are starting with a blank template and then executing several Excel Jobs until the template is full. Each Excel Job fills in a section or worksheet in your final report until it is complete. However, in certain cases, you may want to run multiple Batch Jobs to create different sections on the same overall report.

Much like the **Use report as template on subsequent batch runs** checkbox allows you to re-use the same template rather than having two separate Excel Jobs in order to run batch jobs, there is an option to allow Batch Jobs to operate on the same Excel spreadsheet as well. On the **Finish** screen is a list of options that can be chosen.

**No continuation (default)** – This option operates normally. It passes the step number normally to the Excel Job in each step. If the Excel Job was setup using the **Use report as template...** checkbox, it will use the template spreadsheet on the first step and the report spreadsheet on subsequent steps until the report is built.

**Automatically continue with a previous batch** – This option still passes in the step number to each Excel Job. However, for the first step, it also passes in an override flag that tells the Excel Job to use the report as the template even though it is the first step. This allows one Batch Job to lead to another and operate on the same final report without restarting.

**Prompt user for selection** – This option will allow you to choose either option at run time when you launch the Batch Job. This option can be useful if you have a few Batch Jobs that will create your report but you do not always run them in the same order. If this option is set, then when you run the Batch Jobs, Buddy will ask you whether you want to continue with an existing report as the template (continue with a previous batch) or start with a clean template. Choosing **Yes** continues with a previous batch and **No** starts with a clean template.

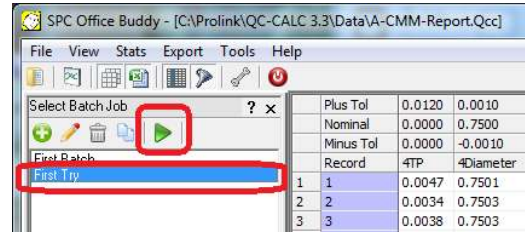


## Batch Jobs

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### 7.5 Run the Batch Job

Running a Batch Job is extremely easy since it contains all of the selections and requires no further choices. Simply highlight the Batch Job in the list and press the green **Play** button. Hint: you can double click the Batch Job and it will run. During the running of a Batch Job you will see a lot of screen flashing as the data is moved between software products until all jobs are complete.



**Speed Issue:** Be sure the Excel template file is in **Normal** view and NOT in **Page Layout**. Page Layout view makes the job very slow!

# 8. Running Jobs from Windows

## 8.1 Running Batch Jobs from Windows

### 8.1.1 Introduction

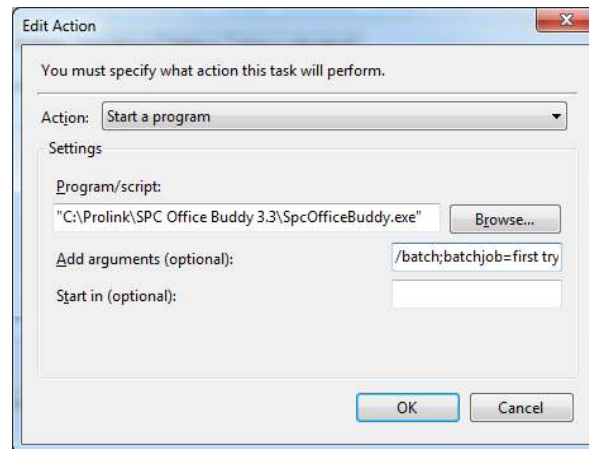
Now that you have created a Batch Job to produce one large report across multiple files, you might want to trigger this batch job using **Windows Task Scheduler** found under the Administrator Tools. This section describes how to write and periodically run command files using Windows **Scheduled Tasks**.

### 8.1.2 Command Line Structure

The command line structure is very simple and an example follows. The command line contains the keyword `"/batch;` followed by one item that tells Buddy which batch job to run. The command line item is not case sensitive.

```
"C:\Prolink\SPC Office Buddy 3.4\SpcOfficeBuddy.exe"  
/batch;batchjob=first try.sjo
```

Using Windows 7 Task Scheduler we chose Buddy as the **Program/script** and added the batch job to run in the **Add arguments** area.



### 8.1.3 Make the Batch File

If you wish, you can create a Windows batch command file (.BAT) using Notepad or a similar text editor. Using Notepad, create a file and save it on your desktop and give it a name like Buddy.bat. A quick way to get started is to copy the example above and paste it into your Notepad file, then simply change the parameter values to suit your particular needs. If you would like to run multiple Batch Jobs together, copy the example multiple times specifying different Batch Jobs in each step. When you run the batch file, Buddy will appear more than once as each step in the batch is run.

Remember, you can run a simple one line batch file any time you want to run Batch Jobs. This means you can create a batch file and have it run automatically using Windows Scheduled Tasks even though you are not joining multiple files.

### 8.1.4 Run the File

Run your newly created batch file by double clicking the file name you just finished. If you saved the batch file on your desktop, simply double click it and you'll see the Buddy splash screen and eventually the Excel spreadsheet containing your results. While running, you'll also see a black DOS screen. This will disappear when the batch file has finished.

# Running Jobs from Windows

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If any of the required parameters are omitted, Buddy will open normally and ignore all batch commands. Therefore, if this is happening, something is wrong with your batch command.

## 8.2 Running Excel Jobs from Windows

### 8.2.1 Introduction

Now that you have seen how to use the built in Batch Job system, you may wish to use the older Windows (DOS) batch system to accomplish the same thing running multiple Excel Jobs in a row. This section describes how to write and periodically run DOS command files using Windows **Scheduled Tasks**.

### 8.2.2 Command Line Structure

The command line structure is very simple and an example follows. The command line must contain several items that tell Buddy what to do during the run. The command line items are mostly not case sensitive except the filter names so be careful.

#### Command Line Structure

buddy.exe /batch; database=; exceljob=; recfilter=; dimfilter=; subgroup=

Item	Option	Explanation
buddy.exe	required	This is the name of the Buddy program including the path where it was installed. With a normal installation, you'll enter:  "C:\Prolink\SPC Office Buddy 3.4\SPCOfficeBuddy.exe"
/batch	required	This tells Buddy you want to run in batch mode and that other parameters will follow.
Database	required	This is the QC-CALC database name you wish to use as the source of your data during this run. The name is not case sensitive. The typical installation path and name are:  C:\Prolink\QC-CALC 3.4\data\Part18.qcc
ExcelJob	required	This is the name of the Excel Job you created and wish to run. The name is not case sensitive.
RecFilter	optional	RecFilter is the record filter to apply before running the Excel job. Buddy will apply this filter just before running the job and therefore reduce the number of records used. If omitted, "Show All" is used. The filter name <u>is</u> case sensitive. Therefore "cav 1" and "Cav 1" are not the same filter.  <b>NOTE:</b> See <a href="#">Dynamic Filtering with Ask Filters</a> on page <a href="#">88</a> for more options.
DimFilter	optional	If you would like to apply a dimension filter during the run, enter it here. Just before Buddy begins to run, it uses this filter to reduce the number of dimensions (columns) used. If omitted, "Show All" is used. The filter name <u>is</u> case sensitive so be careful to enter the exact characters of the filter name.
SubGroup	optional	A number between -1 and 15. 1-15 are the subgroup size. <ul style="list-style-type: none"><li>• Use 0 to use the QC-CALC file subgroup size (typically 5).</li><li>• Use -1 to subgroup across rows (Minitab).</li><li>• If omitted, non-numeric, or less than -1, 1 is used.</li><li>• If higher than 15, 15 is used.</li></ul>

## Running Jobs from Windows

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Each parameter is entered as a name=value pair separated by semicolons.

e.g.

```
"C:\Prolink\SPC Office Buddy 3.4\SPCOfficeBuddy.exe"  
/batch; database=C:\Prolink\QC-CALC 3.4\data\MyPart.qcc;  
exceljob=cmm batch; recfilter=MyRecs; dimfilter=MyDims
```

### Notes:

- Double quotes were added around the Buddy's file path and name. This is required since the DOS portion of Windows has difficulty with long file names and <space> characters in the name.
- Be sure you insert a <space> before the /batch parameter.
- The command line shown above is actually one long line, but it is shown as three separate lines because of line wrapping (display only).

### 8.2.3 Make the Batch File

You must create a Windows batch command file (.BAT) using Notepad or a similar text editor. Using Notepad, create a file and save it on your desktop and give it a name like Buddy.bat. Be sure Notepad doesn't name it "Buddy.bat.txt" as this will not work. You can ensure no .TXT is added by selecting "All Files" in the **Save as type** area when you save the file.

A quick way to get started is to copy the example above and paste it into Notepad. Then simply change the parameter values to suit your particular needs. If you would like to run multiple Excel Jobs together, simply copy the example multiple times specifying different QCC files, filters, and/or Excel Jobs in each step. When you run the batch file, Buddy will appear more than once as each step in the batch is run.

Remember, you can run a simple one line batch file any time you want to run jobs without having to remember the parameters. This means you can create a batch file and have it run automatically using Windows Scheduled Tasks even though you are not joining multiple files.

### 8.2.4 Run the File

Run your newly created batch file by double clicking the file name you just finished. If you saved the batch file on your desktop, simply double click it and you'll see the Buddy splash screen and eventually the Excel spreadsheet containing your results. While running, you'll also see a black DOS screen. This will disappear when the batch file has finished.

If any of the required parameters are omitted, Buddy will open normally and ignore all batch commands. Therefore, if this is happening, something is wrong with your batch command.

### 8.2.5 Dynamic Filtering with Ask Filters

Normally, you specify the optional record filter to use in your batch by adding the "RecFilter=xyz" parameter to the batch script. However, in certain cases, you may be running several filters of the same type.

For example, if you have a 16 cavity mold, you may want to filter on each of the 16 cavities and run 16 different jobs to create a large report on all your grouped data. To do this manually in Buddy, you typically create one filter called "Cavity Ask Me" and tell the filter to ask you the cavity on which to filter. When you click the filter in Buddy, it immediately pops up and asks you which cavity to filter, you type a number, click **OK**, and the data is filtered. For more information on using Ask filters, please see ["Filter On" Explained](#) on page 93.

## Running Jobs from Windows

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This is very convenient as it saves you from having to create 16 different filters (cavity = 1, cavity = 2, cavity = 3, etc). However, in batch mode you are not interacting with the Buddy screens and therefore cannot specify the cavity number via the popup dialog box that would normally appear.

To solve this issue and allow you to use Ask filters, the batch parameter allows you to specify the answers to your Ask filters through the command line interface. This is done by adding parentheses after the filter name and entering the value that would have been entered in the box in Buddy.

Using the example above, you could specify:

```
RecFilter=Cavity Ask Me(5)
```

This example would filter on cavity 5 and then run the Excel Job in the batch. If you ran several jobs in a row for each cavity, it may look like the following:

```
Buddy.exe /batch; database=C:\MyPart.qcc; exceljob=batch1; recfilter=Cavity Ask Me(1)
Buddy.exe /batch; database=C:\MyPart.qcc; exceljob=batch2; recfilter=Cavity Ask Me(2)
Buddy.exe /batch; database=C:\MyPart.qcc; exceljob=batch3; recfilter=Cavity Ask Me(3)
```

If you have a filter that has more than one ask value, simply separate the values with commas. For example, your filter criteria may be:

```
        Cavity = Ask-Value
AND     Employee = Ask-Value
```

In this case, simply add the second value to the list:

```
RecFilter=Cavity Ask Me(5,Joe)
```

This would filter on both Cavity = 5 and Employee = Joe before running the Excel Job.

### 8.2.6 Scheduled Tasks

Your batch file can be run automatically by using *Scheduled Tasks* found in the *Control Panel*. Simply select your .BAT file to run and set the day and time to run it. The procedure is:

1. Press the **Start** button and select **Control Panel** from the Start menu
2. Double click the **Scheduled Tasks** option
3. Click **Add Scheduled Task**
4. Use the **Browse** button to find your batch file
5. Give your task a name and select the day, week, month to run
6. Select the time on the next panel
7. Enter your user name and password
8. Click the **Finish** button

Your batch file will now run as set without you having to remember to run it.

## Running Jobs from Windows

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### 8.2.7 Tips and Troubleshooting

1. If you double click your batch file and the black DOS screen flashes quickly, (and nothing productive appears to happen) it may mean that the path to Buddy is spelled incorrectly. Make sure you have double quotes around the path to Buddy if it contains <space> characters.
2. Double quotes are only required around the initial path to the SPCOfficeBuddy.exe file. All parameters after the “/batch;” command can contain <space> characters without the need for quotes.
3. When running multiple jobs in a batch that update the same Excel spreadsheet, make sure only the last job has the option to **Show Excel after job** checked. Otherwise earlier jobs will leave the spreadsheet open causing any jobs that follow to fail when they try to save the spreadsheet (since it is Read Only when already open).
4. Test your batch file before adding it to the *Scheduled Tasks*. This will ensure you are getting the desired results under normal circumstances. If it works when you double click it, there is no reason it will not work in the *Scheduled Tasks*.
5. When creating an Excel Job, it is possible to specify the same file path and name for both the template and the output report. In this case, Buddy will automatically save the new report over the existing template file. This is not desirable in most cases since you are overwriting the template and will need to recreate it the next time you wish to run the job. However, in the case of multiple steps, it is often much easier to do it this way.

As an example, start with the master “template.xls” that contains all the tags. The first job in the batch saves it as “report.xls” so the original template remains intact. However, each successive job opens “report.xls” as the template and saves it as “report.xls”. This is safe to do since you are simply updating the same spreadsheet with new data.




# 9. Advanced Topics

## 9.1 Exporting & Importing Excel Jobs

There are times when you will want to share Excel jobs and Excel templates with friends and customers. This brief section describes how to export and import the jobs.


### 9.1.1 Exporting Excel Jobs

Click the **Export** button () when you want to give a copy of one or more Excel Jobs to a colleague. Since each Excel job is made up of an Excel file (template) and the job itself, Buddy includes both files in the transfer file for each Excel job you export and saves all of it to a zip file. When the receiver imports the job, he has everything he needs.

On the screen that appears, choose the Excel Job(s) you wish to Export and click the **Export** button.

**Hint:** You can choose multiple jobs by holding down either the SHIFT or CTRL keys while clicking in the list per the Windows standard.

### 9.1.2 Importing Excel Jobs

Pressing the **Import** button () provides a method for adding an Excel job to your local machine. Browse to the zip file given to you and click the **Open** button. The list of Excel Jobs found within the zip file will be displayed. Choose which Excel Jobs you wish to import and click the **Import** button.

**Hint:** You can choose multiple jobs by holding down either the SHIFT or CTRL keys while clicking in the list per the Windows standard.

The [Excel Jobs Folder](#) described on page [133](#) is used during the importing of Excel Jobs. There are 3 folders involved with each job:

- The Excel Jobs Folder                    where your jobs are located
- The Default Template Folder            where you keep your Excel templates
- The Default Report Folder                where the final report is saved

When someone Exports an Excel Job and gives the file to you, there is a good chance their file locations will not match your folder structure. Buddy attempts to convert the folder locations of the imported job to match your file folders as best as it can. Here is how it works:

#### Excel Jobs

For every \*.job file found in the .zip file, Buddy tests to see if the job name exists in your Excel Job folder. If it finds a duplicate name you are asked if you wish to rename or overwrite the job. The job is written to the folder found in your **Tools – Options – Excel Jobs – Excel Jobs Folder** setting.

#### Excel Templates

The Excel template associated with the Excel job found in the .zip file has a drive and folder path added to it. If the drive letter is a: b: c: d: e: or f:, Buddy assumes this is a local drive and copies the Excel template to your local hard drive.

If the drive letter is higher than f: Buddy tells you that it appears to be a network path and asks if you would like to use the copy on your network (assuming it exists). If yes, Buddy does not copy the template and instead uses the one found on your network. If no, Buddy first looks to see if the folder specified in the Excel

## **Advanced Topics – Exporting & Importing Excel Jobs**

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Job exists on your local PC. If so, it copies the template to this folder. If not, it copies the template to your Default Template Folder.

### **Report Folder**

The report folder found in the transfer files is tested to see if it exists. If so, it is used to store your reports. If not, you will be asked if you want Buddy to create it. If yes, it will attempt to create the folder assuming you have permission to do so. If no, it will redirect the report output to your local default report directory.

**NOTE:** All updates to the file folders are updated in your Excel jobs to ensure the job works immediately.

# Advanced Topics – Advanced Record Filter

## 9.2 Advanced Record Filter

### 9.2.1 Criteria Field Explained

<b>And/or</b>	When you enter more than one criterion (line) you can specify how the given criteria are combined with those before it. <b>AND</b> means both criteria have to be satisfied for a record to be included. <b>OR</b> implies the record will be included if either criteria is satisfied. Use parenthesis for grouping criteria when using complex filters to ensure criteria is combined in a manner you'd expect. When you have two or more record criteria in the filter you can switch between <b>And</b> and <b>Or</b> by clicking on the word and a list provides your choice.												
<b>( &amp; )</b>	Parentheses are used to specify the beginning or end of a criteria group. Grouped criteria are first evaluated together before it's combined with other criteria. The examples at the end of this appendix should clarify the use of parentheses.												
<b>Filter On</b>	This is the list of items Buddy provides for you to filter on. You select the <b>Filter On</b> item and add the range of acceptable values. A full definition of each item follows this section. See summary below.												
<b>is (not)</b>	This option allows you to specify whether you want to include records that match these criteria or exclude them. e.g. <b>Lot is = 22</b> versus <b>Lot is not = 22</b> .												
<b>Comparison</b>	This portion of the criteria specifies how the data in the searched record will be compared to your criteria. "=", ">", ">=", "<", and "<=" have the standard meaning, "BETWEEN" lets you specify an inclusive range in which the data must fall to satisfy this criteria. "LIKE" lets you use wildcards to do pattern matching against your data: "*" matches zero or more characters, "?" matches a single character, and "#" matches a single digit. e.g.												
	<table border="0"> <tr> <td>Record number is LIKE 5</td> <td>returns record 5 only</td> </tr> <tr> <td>Record number is LIKE *5</td> <td>returns all records ending with 5</td> </tr> <tr> <td>Record number is LIKE *5*</td> <td>returns all records containing a 5</td> </tr> <tr> <td>Operator is LIKE Laura</td> <td>returns all cases of LAURA, Laura, etc</td> </tr> <tr> <td>Lot is LIKE 2#</td> <td>returns any Lot in the range of 20–29</td> </tr> <tr> <td>Lot is LIKE ?5?</td> <td>returns Lots with a 5 in the tens column</td> </tr> </table>	Record number is LIKE 5	returns record 5 only	Record number is LIKE *5	returns all records ending with 5	Record number is LIKE *5*	returns all records containing a 5	Operator is LIKE Laura	returns all cases of LAURA, Laura, etc	Lot is LIKE 2#	returns any Lot in the range of 20–29	Lot is LIKE ?5?	returns Lots with a 5 in the tens column
Record number is LIKE 5	returns record 5 only												
Record number is LIKE *5	returns all records ending with 5												
Record number is LIKE *5*	returns all records containing a 5												
Operator is LIKE Laura	returns all cases of LAURA, Laura, etc												
Lot is LIKE 2#	returns any Lot in the range of 20–29												
Lot is LIKE ?5?	returns Lots with a 5 in the tens column												
<b>Lower Limit</b>	This is where you specify the lowest acceptable value of the searched record. It can be the only portion of the filter if you are searching for a single item such as <b>Lot is = 22</b> . This field can also contain special keywords selected from its own list.												
<b>And</b>	This is an un-editable field and its only purpose is to make the criteria easier to read. The word "and" is displayed if you select <b>BETWEEN</b> as the comparison type.												
<b>Upper Limit</b>	This field specifies the upper limit for the range if you select <b>BETWEEN</b> as the comparison type. Otherwise it is un-editable.												

### 9.2.2 "Filter On" Explained

The **Filter On** column is a list containing several possible values. Each of these keywords is detailed here. Keep in mind the **Filter On** items also have special

## Advanced Topics – Advanced Record Filter

keywords you can use instead of filtering on a number or text. These values are summarized in the table below with details following.

Filter On	Enter	or Special Key Words
Record Number	number	LAST N RECORDS
Date Only	number	TODAY, LAST_WEEK, etc
Time Only	number	
Date & Time	number	
Number of Fails	number	
Day of the Week		MONDAY, TUESDAY, etc
Assignable Cause or Corrective Action		TRUE or FALSE only
Numeric Factors	number	TRUE or FALSE only
Text Factors	number/text	LAST_VALUE or ASK_VALUE
Dimensions	number	LAST_VALUE or ASK_VALUE

### Filter on Details

<b>Record Number</b>	Using this keyword lets you filter based on the record numbers. You can specify the range of records by entering a Lower and Upper Limit. You can also select the <b>LAST-N-RECS</b> in the Lower Limit column where this word has been added. Use this keyword as a variable whenever you wish the newest X records to always be returned from the end of the database. You will be prompted for the value of N.
<b>Date Only</b>	Using this keyword allows you to ignore the time portion associated with a date. It also lets you specify special keywords such as TODAY, YESTERDAY, THIS-WEEK, THIS-MONTH, THIS-YEAR, LAST-WEEK, LAST-MONTH, and LAST-YEAR. These special keywords let you create a filter that is timeless so when you create your reports for last week's work you can always use the same filter without having to know the actual dates of that week.
<b>Time Only</b>	Using this keyword lets you specify the time of day the part was received. There are no keywords associated with time.
<b>Date and Time</b>	This keyword lets you specify both the date and the time the part was received.
<b>Number of Fails</b>	Each part stored in the database has a fails count saved with it. This keyword allows you to filter on the number of failed dimensions within a part. For example, you can build a filter that only reports the parts containing bad dimensions. The filter would read: <b>Number of Fails is &gt; 0</b>
<b>Day of Week</b>	This keyword allows you to specify the day of the week the part was received. The possible values are SUNDAY – SATURDAY. These values are supplied in the list and cannot be entered by you.
<b>Assignable Cause or Corrective Action</b>	This keyword allows you to specify whether the part has an Assignable Cause or a Corrective Action associated with it. The only possible values are TRUE or FALSE. You can filter all parts that have Causes or Actions assigned to them.
<b>Numeric Factor</b>	Each part saved in the database has Factors saved with it. This keyword lets you specify the value a Numeric Factor must equal to satisfy the criteria. There are two special keywords to

## Advanced Topics – Advanced Record Filter

	<p>discuss for the Numeric Factor and they are:</p> <p>LATEST-VALUE – only parts having the same Numeric Factor as the most recently received part satisfy these criteria. This filter keyword is very important since it allows for dynamic filtering. For example, let's say you are inspecting plastic parts made in a 16 cavity mold and you want to filter on the part just inspected. Normally you would create 16 different filters labeled Cavity 1 through Cavity 16. To filter on each cavity you would click on each filter and instantly see the parts made in Cavity 1. This can be tedious because it is a manual task that humans must perform.</p> <p>The LATEST-VALUE keyword allows Buddy to filter on the part just received from the inspection equipment. What this means is you can request Buddy to automatically filter on the current cavity without touching the filters. This is a very useful tool when full automation is in use. When a problem occurs you know immediately which the offending cavity is.</p> <p>To see the usefulness, turn on the Auto Refresh in the Tools menu and then active a filter with a LATEST-VALUE filter criteria in it. As parts are inspected your active filter shows you all the parts made in Cavity 1 or 2 or 3, etc. Your screen dynamically is changing before your eyes.</p> <p>ASK-VALUE – this keyword is preloaded into the Lower Limit field to assist you with quick lookups. When you click a filter containing this keyword, Buddy asks you to supply the filter value. For example, let's say you have a 64-cavity mold and you do not want to create 64 separate filters. You can create a filter containing a value of ASK-VALUE. The filter might read:</p> <p>Cavity is = ASK-VALUE</p> <p>To activate the filter, click on the filter name and a dialog box asks for the Cavity number and your data is filtered using that value.</p>
<p><b>Text Factor</b></p>	<p>The Text Factors are the same as the Numeric Factors but they allow you to enter text as a value. Everything just discussed in the Numeric Factors above applies to the Text Factors.</p>
<p><b>Dimension</b></p>	<p>You can specify the value of any dimension in the database by selecting the dimension number. You then specify the allowable range for the dimension. You might use this to find all parts within the last 100 inspected parts with a dimension exceeding a particular value.</p>

### 9.2.3 Filter Examples:

The following set of examples is supplied to increase your understanding of the filter use.

#### Example #1

Show only the last 20 records:

and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Record Number	is	=	LAST-20-RECS			

## Advanced Topics – Advanced Record Filter

### Example #2

Show only records received yesterday:

and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Date only	is	=	YESTERDAY			

### Example #3

Assuming Text Factor 5 holds the operator's name, show parts measured by all operators whose names are between "B" and "G" alphabetically:

and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Text Factor 5 - Operator	is	BETWEEN	B	and	G	

### Example #4

Show only records with odd record numbers (ending in 1, 3, 5, 7, or 9):

and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Record Number	is	LIKE	*1			
or		Record Number	is	LIKE	*3			
or		Record Number	is	LIKE	*5			
or		Record Number	is	LIKE	*7			
or		Record Number	is	LIKE	*9			

### Example #5

Assuming you have multiple machines collecting data to the same file and storing the Machine ID in Numeric Factor 2, show only parts collected from the machine that sent the last part.

and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Numeric Factor 2 - Machine	is	=	LATEST-VALUE			

### Example #6

Show parts from this week that had at least one dimension out of spec.

and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Date only	is	=	THIS-WEEK			
and		Number of fails	is	>=		1		

### Example #7

Assuming **Text Factor 5** contains the operator's name and **Numeric Factor 2** contains **Machine**, show parts measured last month, on the 2nd shift (between 3pm and 10pm), on machines 1 or 3, measured by BOB or JOHN.

and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Date only	is	=	LAST-MONTH			
and		Time only	is	BETWEEN	03:00:00 PM	and	10:00:00 PM	
and	(	Numeric Factor 2 - Machine	is	=		1		
or		Numeric Factor 2 - Machine	is	=		3		
and	(	Text Factor 5 - Operator	is	=	BOB			
or		Text Factor 5 - Operator	is	=	JOHN			


### Example #8

Assuming Text Factor 5 holds the operator's name, show parts measured by operators other than Bob, which had at least 1 dimension out of spec and did not have an Assignable Cause or Corrective Action assigned to them:


and/or	(	Filter On:	is (not)	Comparison:	Lower Limit:	and	Upper Limit:	)
		Assignable Causes or Corrective Ac	is	=	FALSE			
and		Number of fails	is	>=		1		
and		Text Factor 5 - Operator	is not	=	BOB			

# 10. File Menu

## 10.1 Open QC-CALC Database

 QC-CALC Real-Time is the source of data used for Buddy. QC-CALC Real-Time was written to read data directly from CMMs, Vision CMMs, and gages. QC-CALC runs in your CMM and saves all inspection results to one common format known as .QCC files. In order to run reports you must open the .QCC file containing your data.

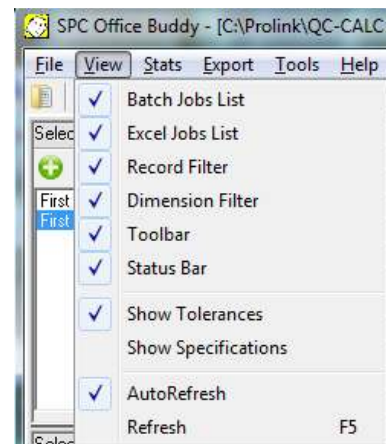
## 10.2 Exit

 This operation will close the Buddy program, but will not close any reports you have open in your charting package.


# 11. View Menu

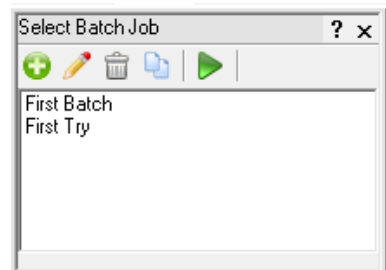
## 11.1 Introduction

The **View** menu has many items to discuss as shown in the picture to the right. We will discuss the purpose of each menu in this section. Each viewable item was made optional to reduce the on-screen clutter.




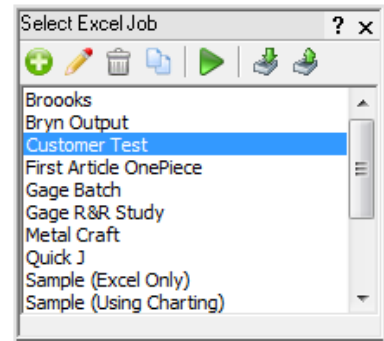
## 11.2 Batch Jobs

 This menu shows the **Batch Jobs** panel allowing you to run a sequence of Excel Jobs. You can **Add, Change, Delete, Copy, & Run** Batch Jobs from here. There are no menu controls for these jobs and therefore, you must "show" this panel to use this functionality. See [Batch Jobs](#) on page [74](#) for details.




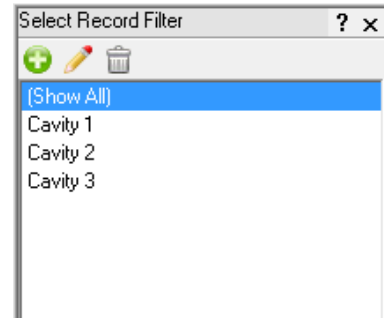
## 11.3 Excel Jobs

 This menu shows the **Excel Jobs** window allowing you to run a sequence of data movement to and from Minitab and Excel. You can **Add, Change, Delete, Copy, & Run** jobs as well as **Import** and **Export** jobs from other users. There are no menu controls for these jobs and therefore, you must “show” this panel to use this functionality. See [Excel Jobs](#) on page 20 for details.




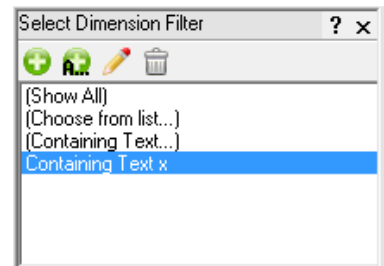
## 11.4 Record Filter

 This menu shows the **Select Record Filter** window to the left of the grid. The record filter is used to reduce the number of records (rows) shown in the grid. When a report is requested, all numbers in the grid are sent to your charting package, so be sure you filter out the records you do not want analyzed. You can filter on date / time / record numbers / trace fields, etc. See [Record Filter](#) on page 16 for more details.



## 11.5 Dimension Filter

 This menu shows the **Select Dimension Filter** window to the left of the data grid. This window is used to control the dimensions (columns) that are displayed. When you are inspecting parts on your CMM QC-CALC Real-Time automatically saves your data with all dimensions selected by default. Buddy uses this same setting for the columns to show in the grid. When you request a Minitab report each column displayed will create a separate Minitab chart. Be sure you reduce the columns to just the dimensions of interest. See [Dimension Filter](#) on page 12 for more details.



## 11.6 Toolbar

This menu controls the visibility of the Toolbar. The buttons on the Toolbar are shortcuts to the most commonly used items.



**File – Open**



**Quick Chart** – This button runs the last report you ran from the **Stats** menu using the data that is currently selected. If any filters are applied and data is also highlighted in the grid, the highlighted data will be used for the report. If no filters are applied and nothing is highlighted in the grid, all available data in the .qcc file will be used.



**View – Batch Jobs**



**View – Excel Jobs**



## File & View Menus

---



**View – Dimension Filter**



**View – Record Filter**



**Tools – Options** – This menu provides a single location to change all of the SPC Office Buddy's settings. See the [Tools – Options](#) section starting on page [128](#) for details.



**File – Exit**

### 11.7 Status Bar

This menu controls the visibility of the **Status** area at the bottom of the Buddy screen. The information shown in this area tells you about the total number of records in the file and any filters that are turned on.

LastWrittenRecord: 100   Record Filter: Cavity 1   Dimension Filter: List

### 11.8 Show Tolerances

This menu controls if the Nominals and Tolerances are shown at the top of the grid. See [The Nominals & Tolerances Header](#) on page [4](#) for more details.

### 11.9 Show Specifications

This **View** menu controls if the Nominals and Specification Limits are shown at the top of the grid. See [The Nominals & Tolerances Header](#) on page [4](#) for more details.

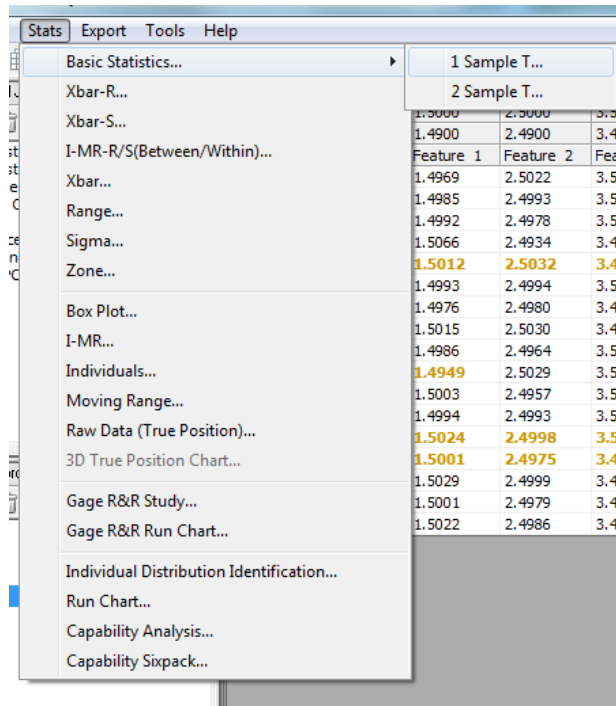
### 11.10 Auto Refresh

With this option enabled the data shown will automatically refresh as more data is added to the .qcc file from QC-CALC Real-Time.

### 11.11 Refresh

This menu will find out if there has been any new data added to the .qcc file and will bring any new values into the grid. Use the **View – Auto Refresh** menu if you would like this to happen automatically all the time.

## 12. Stats Menu



### 12.1 Minitab Charts

The list of supported Minitab charts is shown in the Stats menu to the right. Most of the supported Minitab charts are found in Minitab's **Stat – Control Charts** menu as depicted in the diagrams below.

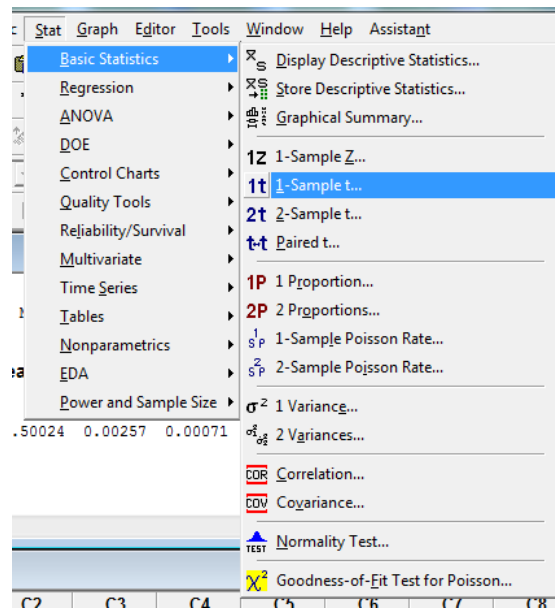
### 12.2 Prolink Charting Option

Optionally, you can purchase a separate charting package from Prolink thereby eliminating the need to run Minitab. Throughout this section each Minitab example is followed by a Prolink Charting equivalent.

- [Basic Statistics](#) pg. [101](#)
- [Variable Charts for Subgroups](#) pg. [102](#)
- [Variable Charts for Individuals](#) pg. [111](#)
- [Quality Tools](#) pg. [115](#)
- [Gage R&R using Excel Jobs - Minitab](#) pg. [124](#)
- [Gage R&R using Excel Jobs – Prolink Charting](#) pg. [125](#)

## 12.3 Basic Statistics

The following basic statistics are supported in Buddy and more may be added from in the future based on customer demand:



- One Sample T
- Two Sample T

### 12.3.1 One Sample T

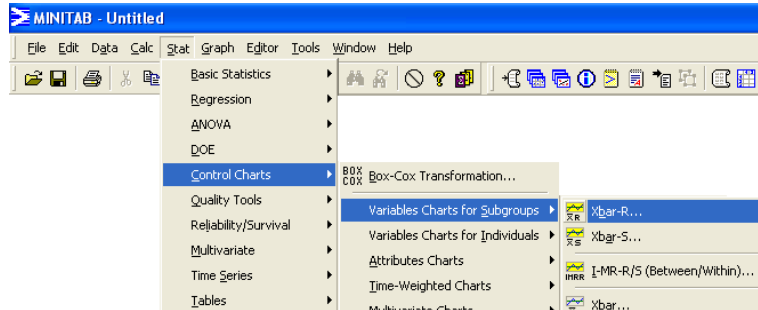
The One Sample T test predicts the probability that all samples in the same column are from the same population.

### 12.3.2 Two Sample T

The Two Sample T test predicts the probability that all samples between two columns are from the same population. Since this test is performed on two columns, Buddy uses all combinations of column pairs when more than two columns are sent to Minitab. For example, if you highlight 3 columns, Buddy will run the test 3 times; once for columns 1 & 2, once for columns 2 & 3, and once for columns 3 & 1.

## 12.4 Variable Charts for Subgroups

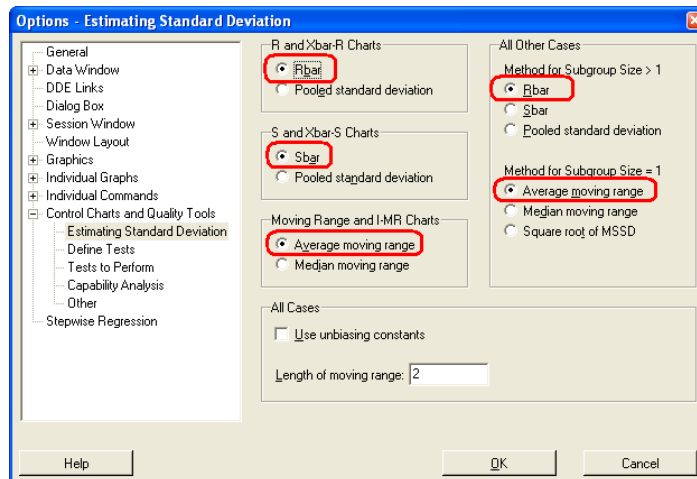
Variables control charts for subgroups plot statistics from measurement data, such as length or pressure, for subgroup data. Variables control charts for individuals, time-weighted charts, and multivariate charts also plot measurement data. Attributes control charts plot count data, such as the number of defects or defective units.



- [Xbar-R](#) pg. [103](#)
- [Xbar-S](#) pg. [104](#)
- [I-MR-R/S \(Between/Within\)](#) pg. [105](#)
- [Xbar](#) pg. [107](#)
- [Range](#) pg. [108](#)
- [Sigma](#) pg. [109](#)
- [Zone](#) pg. [110](#)

### 12.4.1 Making Minitab Equivalent to Prolink Charting

Buddy and QC-CALC estimate Sigma using the settings shown in the picture below. Please set Minitab's default settings by choosing **Tools – Options – Control Charts and Quality Tools – Estimating Standard Deviation**.

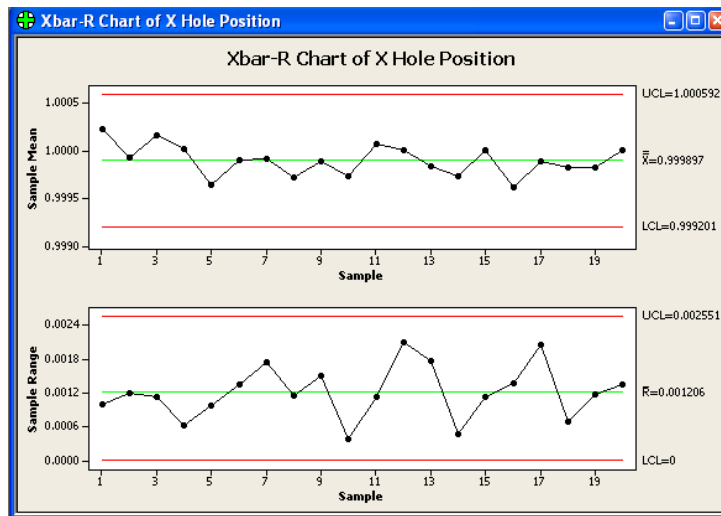


## 12.4.2 Xbar-R

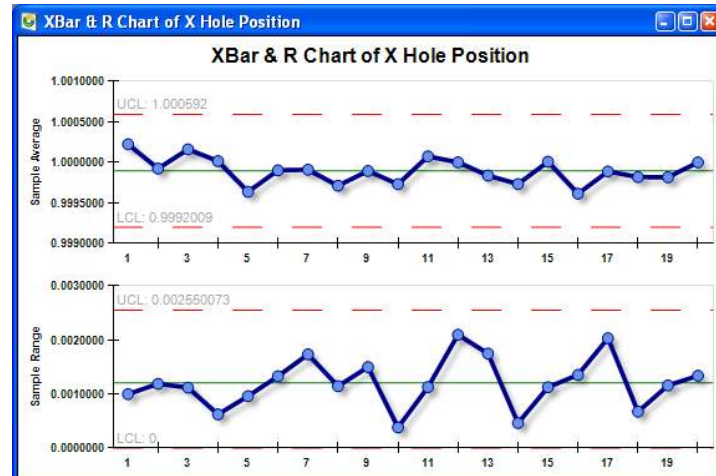
The Xbar-R chart displays a control chart for Subgroup Means (an Xbar chart) and a control chart for Subgroup Ranges (an R chart) in the same graph window. The Xbar chart is drawn in the upper half of the screen; the R chart in the lower half. Seeing both charts together allows you to track both the process level and process variation at the same time, as well as detect the presence of special causes.

Xbar-R charts are typically used to track the process level and process variation for samples of size 8 or less, while Xbar and S charts are used for larger samples. By default, Minitab's Xbar-R chart bases the estimate of the process variation,  $s$ , on the average of the subgroup ranges. Please see the [Making Minitab Equivalent to Prolink Charting](#) section on page 102 for more details.

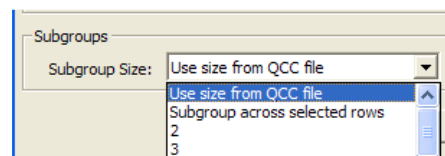
### Minitab



### Prolink Charting



With either charting package, the Subgroup Size is determined by your selection just before you clicked **OK**

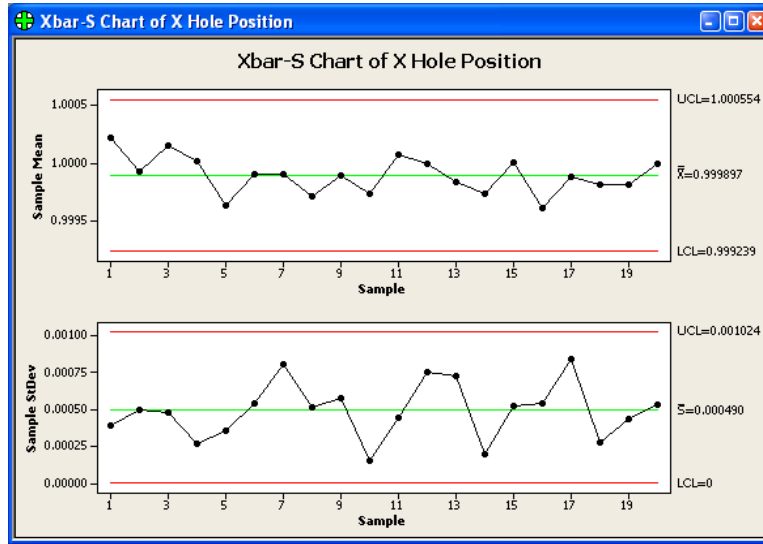


## 12.4.3 Xbar-S

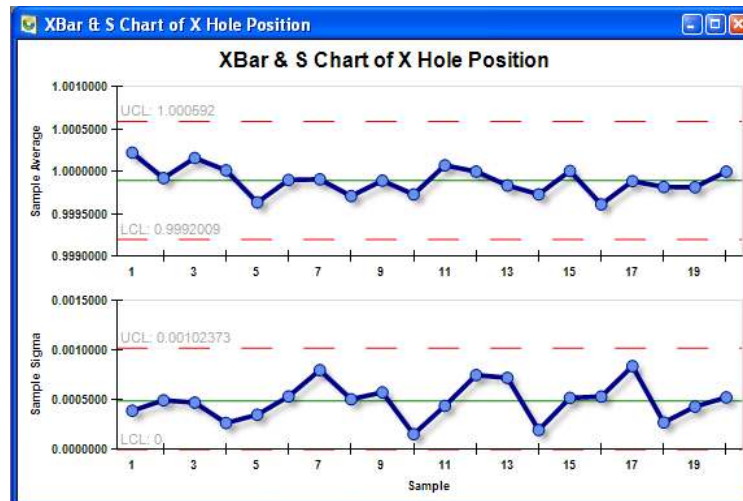
The Xbar-S charts displays a control chart for Subgroup Means (an Xbar chart) and a control chart for Subgroup Standard Deviations (an S chart) in the same graph window. The Xbar chart is drawn in the upper half of the screen; the S chart in the lower half. Seeing both charts together allows you to track both the process level and process variation at the same time, as well as detect the presence of special causes.

Xbar and S charts are typically used to track process variation for samples of nine or more, while Xbar and R charts are used for smaller samples. By default, Minitab's Xbar and S Chart bases the estimate of the process variation,  $s$ , on the average of the subgroup standard deviations. This matches what Prolink Charting does, but you can also use a pooled standard deviation, or enter a historical value for  $s$  in Minitab.

### Minitab



### Prolink Charting

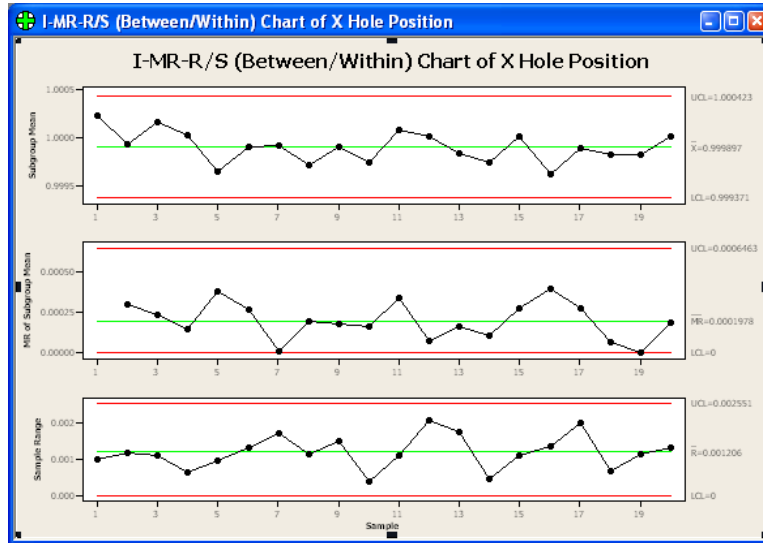


## 12.4.4 I-MR-R/S (Between/Within)

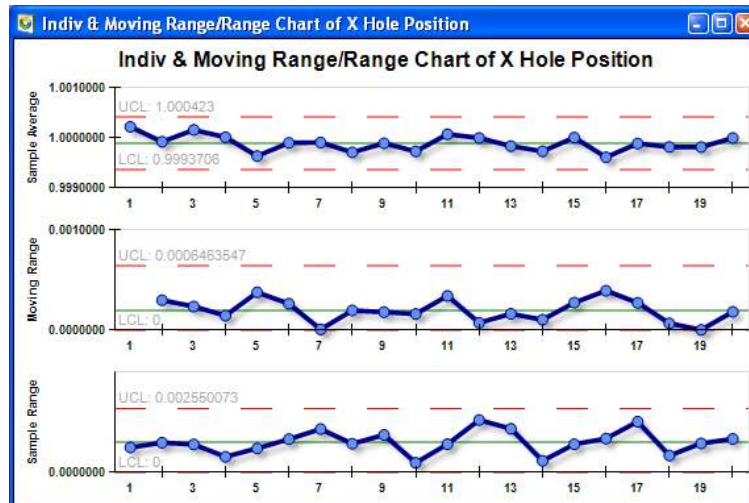
The I-MR-R/S (Between/Within) Chart produces a three-way control chart using both between-subgroup and within-subgroup variations. An I-MR-R/S chart consists of:

- An individuals chart of Mean
- A moving range chart
- An R chart or S chart

### Minitab



### Prolink Charting



When collecting data in subgroups, random error may not be the only source of variation. For example, if you sample five parts in close succession every hour, the only differences should be due to random error. Over time, the process could shift or drift, so the next sample of five parts may be different from the previous sample. Under these conditions, the overall process variation is due to both between-sample variation and random error.

Variation within each sample also contributes to overall process variation. Suppose you sample one part every hour, and measure five locations across the

part. While the parts can vary hour to hour, the measurements taken at the five locations can also be consistently different in all parts. Perhaps one location almost always produces the largest measurement, or is consistently smaller. This variation due to location is not accounted for, and the within-sample standard deviation no longer estimates random error, but actually estimates both random error and the location effect. This results in a standard deviation that is too large causing control limits that are too wide, with most points on the control chart placed very close to the centerline. This process appears to be too good, and it probably is. You can solve this problem by using I-MR-R/S (Between/Within) to create three separate evaluations of process variation:

### **12.4.5 Individuals chart:**

The Individual Chart charts the mean from each sample on an individuals control chart, rather than on an Xbar chart. This chart uses a moving range between consecutive means to determine the control limits. Since the distribution of the sample means is related to the random error, using a moving range to estimate the standard deviation of the distribution of sample means is similar to estimating just the random error component. This eliminates the within-sample component of variation in the control limits.

### **12.4.6 Moving range chart:**

Charts the subgroup means using a moving range to remove the within-sample variation. Use this chart, along with the Individuals chart, to track both process location and process variation, using the between-sample component of variation.

### **12.4.7 R chart or S chart:**

Charts process variation using the within-sample component of variation. Whether Minitab displays an R chart or an S chart depends on the chosen estimation method and the size of the subgroup. If you base estimates on the average of subgroup ranges, then an R chart will be displayed. If you base estimates on the average of subgroup standard deviations, then an S chart will be displayed. If you base estimates on the pooled standard deviation and your subgroup size is less than nine, an R chart will be displayed. If you base estimates on the pooled standard deviation and your subgroup size is nine or greater, an S chart will be displayed.

If you specify historical groups, the display of an R or S chart is based on the minimum of the mode sample size for all historical groups. If you base estimates on the pooled standard deviation and the minimum of the mode sample sizes is less than ten, an R chart is displayed. Otherwise, Minitab displays an S chart if you estimate using pooled standard deviation or an R chart if you estimate using  $\bar{R}$ .

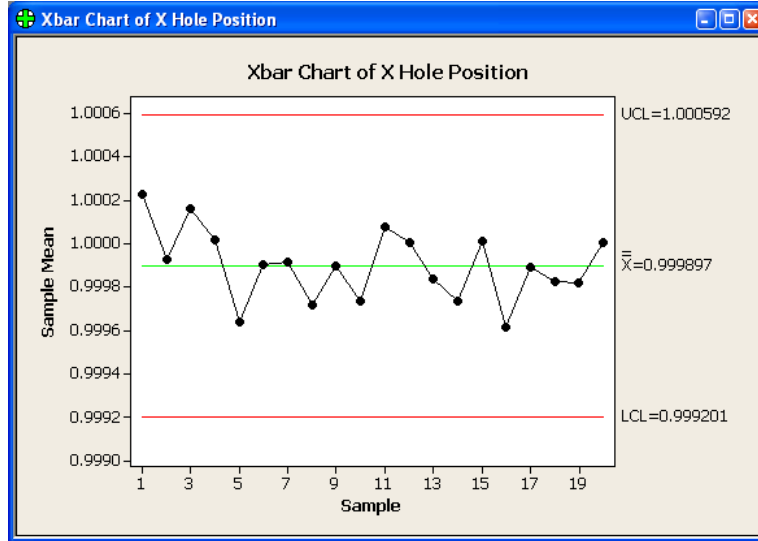
Thus, the combination of the three charts provides a method of assessing the stability of process location, the between-sample component of variation, and the within-sample component of variation.



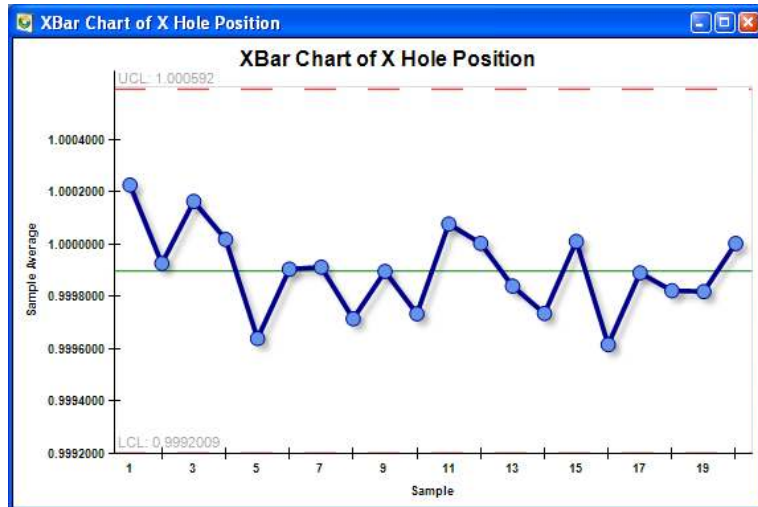
## 12.4.8 Xbar

A control chart of subgroup means. You can use X charts to track the process level and detect the presence of special causes. By default, Minitab's X chart estimates the process variation,  $s$ , using a pooled standard deviation. You can also base the estimate on the average of the subgroup ranges or standard deviations, or enter a historical value for  $s$ .

### Minitab



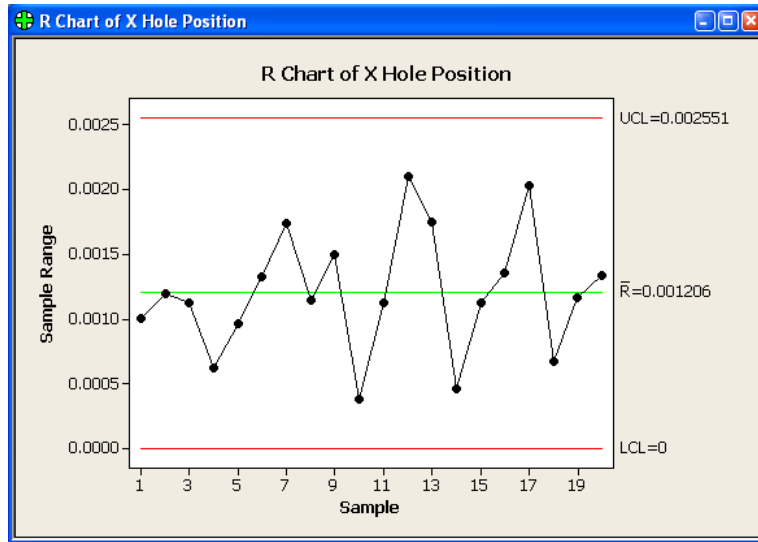
### Prolink Charting



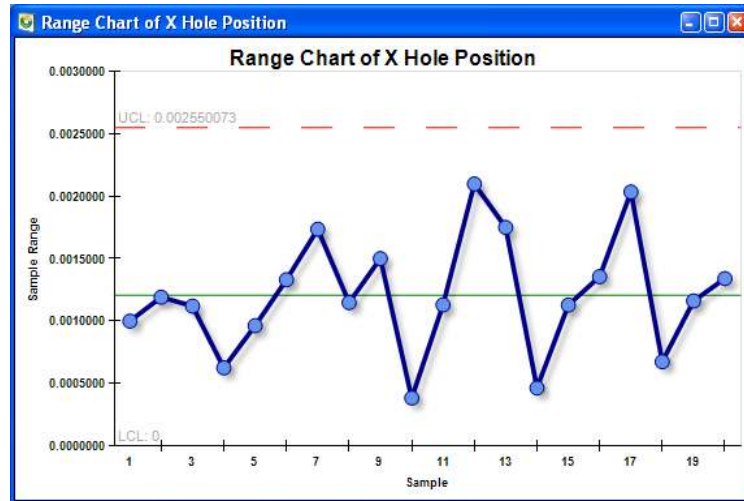
## 12.4.9 Range

A control chart of subgroup ranges. You can use R charts to track process variation and detect the presence of special causes. R charts are typically used to track process variation for samples of size 8 or less, while S charts are used for larger samples. By default, an R chart bases the estimate of the process variation,  $s$ , on the average of the subgroup ranges. You can also use a pooled standard deviation, or enter a historical value for  $s$ .

### Minitab



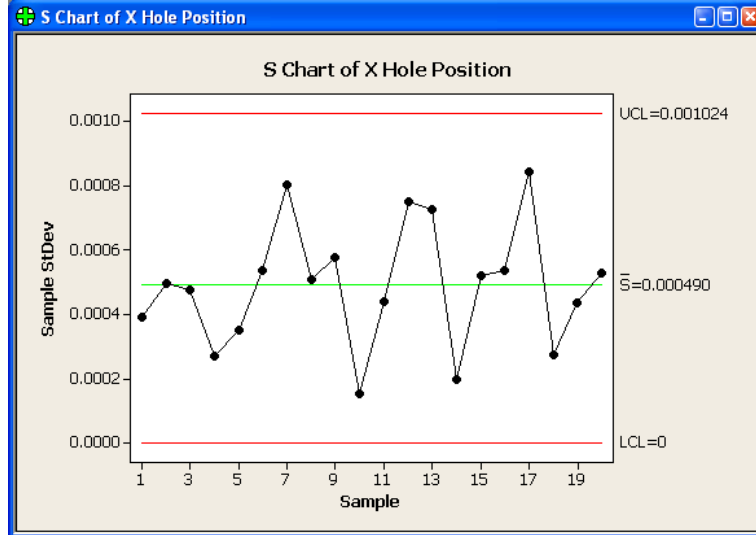
### Prolink Charting



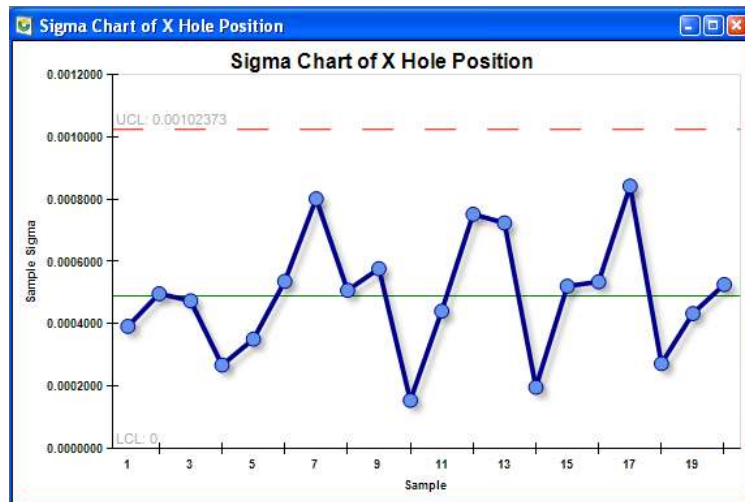
## 12.4.10 Sigma

A control chart of subgroup standard deviations. You can use S charts to track the process variation and detect the presence of special causes. S charts are typically used to track process variation for samples of 9 or more, while R charts are used for smaller samples. By default, Minitab's S Chart command bases the estimate of the process variation,  $s$ , on the average of the subgroup standard deviations. You can also use a pooled standard deviation, or enter a historical value for  $s$ .

### Minitab



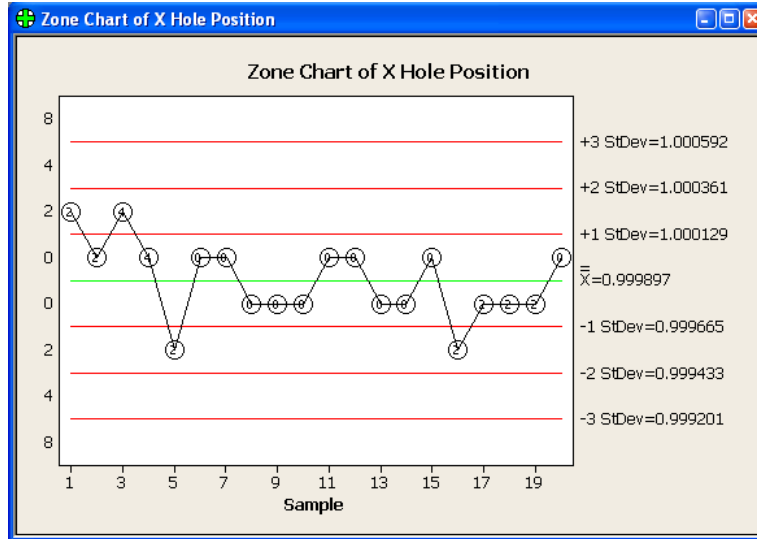
### Prolink Charting



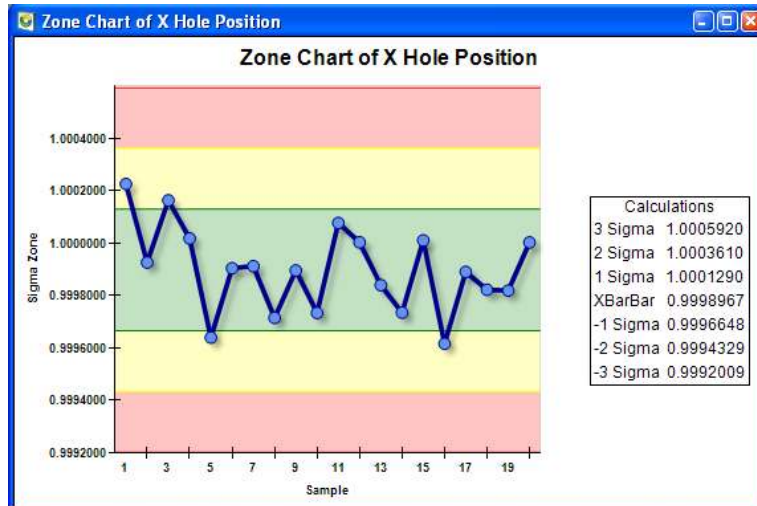
## 12.4.11 Zone

As a hybrid between an Xbar (or individuals) chart and a CUSUM chart, a Zone chart plots a cumulative score based on "zones" at 1, 2, and 3 standard deviations from the center line. Zone charts are usually preferred over Xbar or individuals charts because of their utter simplicity: a point is out of control simply, by default, if its score is greater than or equal to 8. Thus, you do not need to recognize the patterns associated with non-random behavior as on a Shewhart chart. This method is equivalent to four of the standard tests for special causes in an Xbar or Individuals chart.

### Minitab



### Prolink Charting



You can modify the zone chart weighting scheme to provide the sensitivity needed for a specific process. For example, you may want one set of weights during the initial SPC phase for detecting special causes. Then you may want to change the weights when the process is in control and it is more important to detect drift.

You can display a chart based on subgroup means or individual observations. With data in subgroups, the mean of the observations in each subgroup is

## The Stats Menu

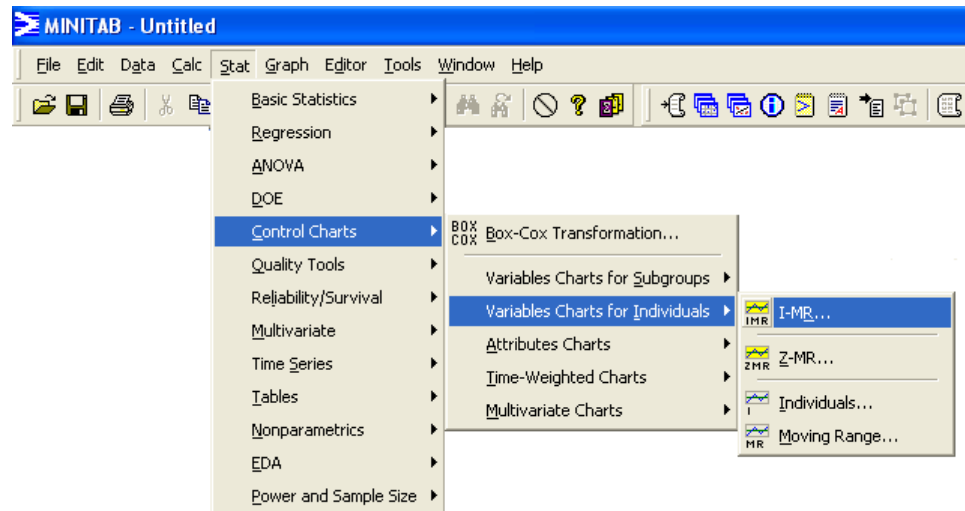
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calculated, and then plotted on the chart. When subgroup sizes are unequal, Minitab generates a standardized zone chart. By default, the process standard deviation,  $s$ , is estimated using a pooled standard deviation. You can also base the estimate on the average of subgroup ranges or subgroup standard deviations, or enter a historical value for  $s$ .

With individual observations, a point is plotted for each observation. By default,  $s$  is estimated using  $MR / d_2$ , the average of the moving range divided by an unbiasing constant. Moving ranges are artificial subgroups created from the individual measurements. The moving range is of length 2, since consecutive values have the greatest chance of being alike. You can also estimate  $s$  using the median of the moving range, change the length of the moving range, or enter a historical value for  $s$ .

### 12.5 Variable Charts for Individuals

Variables control charts for individuals plot statistics from measurement data, such as length or pressure, for individuals data. Variables control charts for subgroups, time-weighted charts, and multivariate charts also plot measurement data. Attributes control charts plot count data, such as the number of defects or defective units.

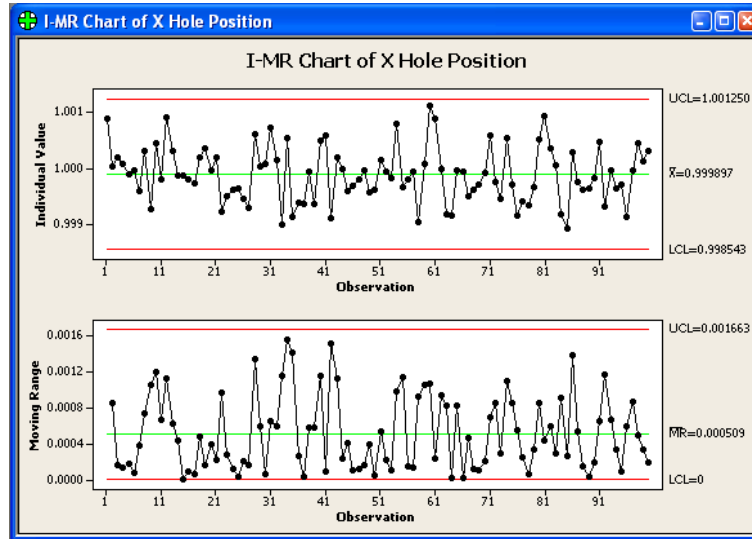


- [I-MR](#) pg. [112](#)
- [Individuals](#) pg. [113](#)
- [Moving Range](#) pg. [114](#)

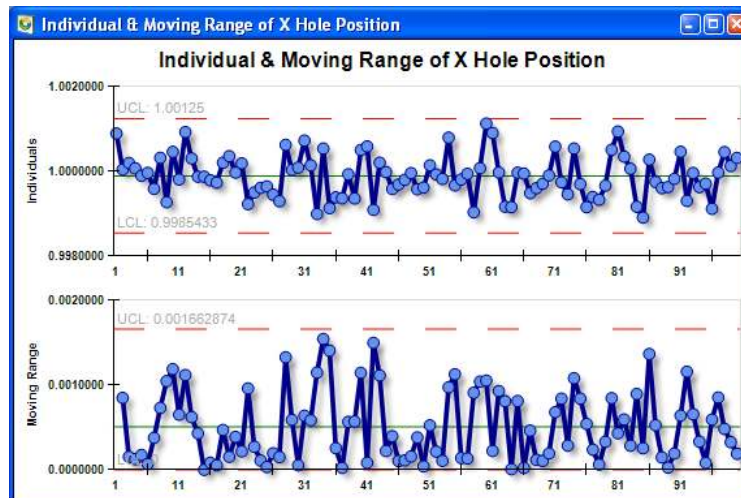
## 12.5.1 I-MR

An I-MR chart is an Individuals chart and Moving Range chart in the same graph window. The Individuals chart is drawn in the upper half of the screen; the Moving Range chart in the lower half. Seeing both charts together allows you to track both the process level and process variation at the same time, as well as detect the presence of special causes.

### Minitab



### Prolink Charting

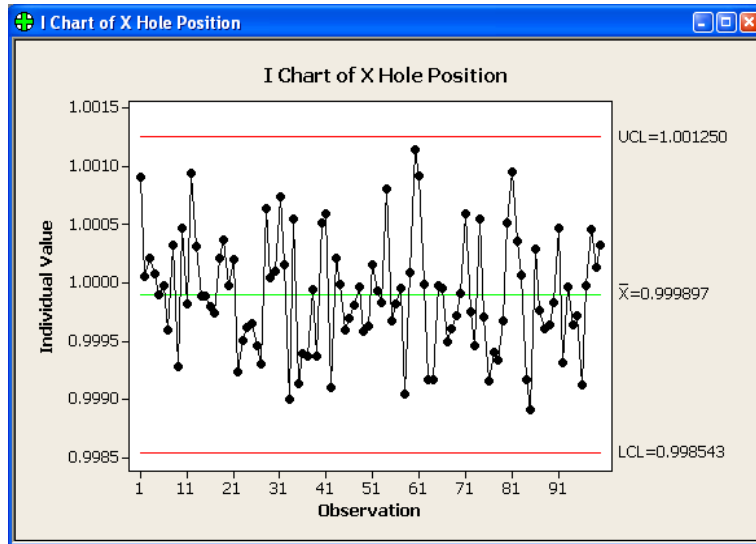


By default, the I-MR Chart estimates the process variation,  $s$ , with  $MR / d_2$ , the average of the moving range divided by an unbiasing constant. The moving range is of length 2, since consecutive values have the greatest chance of being alike. You can also estimate  $s$  using the median of the moving range, change the length of the moving range, or enter a historical value for  $s$ .

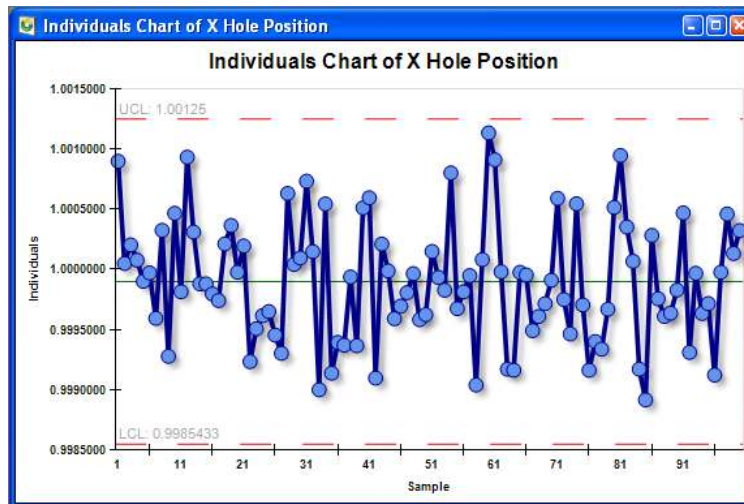
## 12.5.2 Individuals

An Individuals chart is a control chart of individual observations. You can use individual charts to track the process level and detect the presence of special causes when the sample size is 1. By default, individuals chart estimates the process variation,  $s$ , with  $MR / d_2$ , the average of the moving range divided by an unbiasing constant. Moving ranges are artificial subgroups created from the individual measurements. By default, the moving range is of length 2, since consecutive values have the greatest chance of being alike. You can also estimate  $s$  using the median of the moving range, change the length of the moving range, or enter historical values of  $s$ .

### Minitab



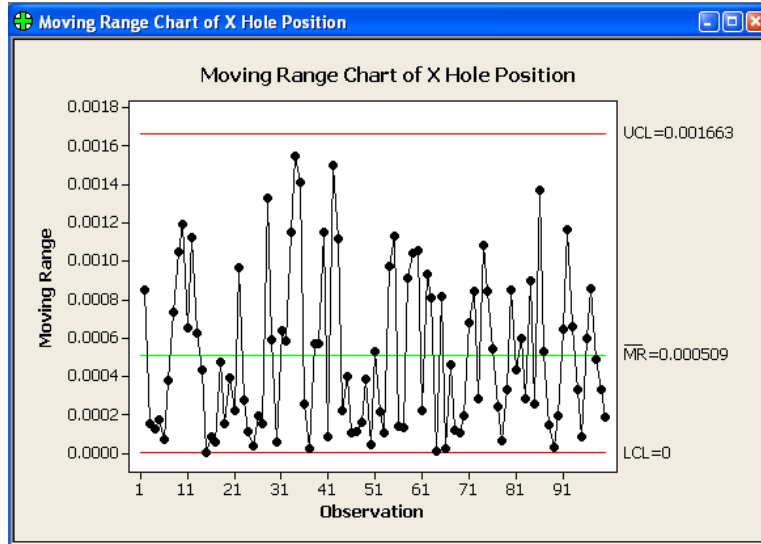
### Prolink Charting



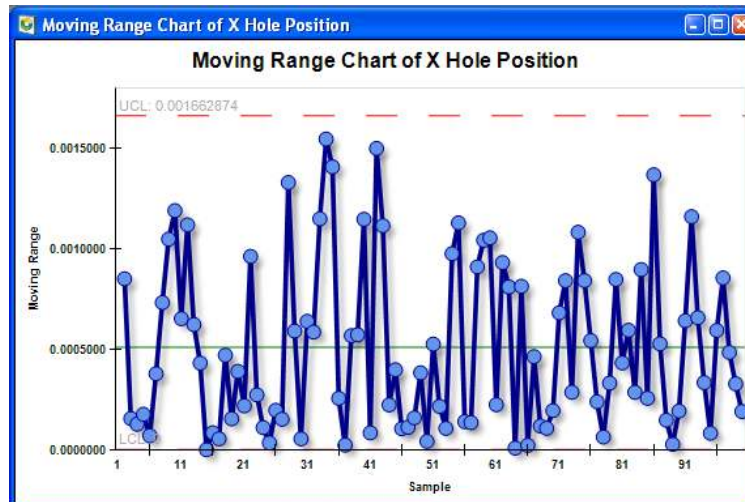
## 12.5.3 Moving Range

A moving range chart is a chart of "moving ranges" - ranges calculated from artificial subgroups created from successive observations. You can use moving range charts to track the process variation and detect the presence of special causes when your sample size is 1.

### Minitab



### Prolink Charting



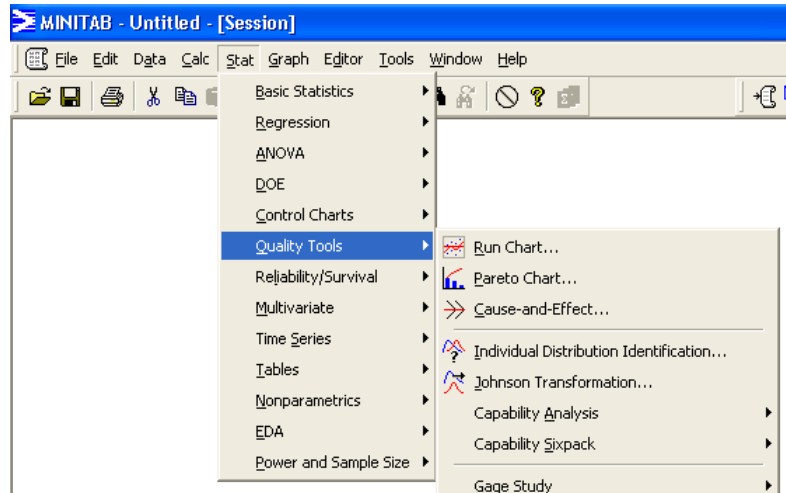
By default, Moving Range chart estimates the process variation,  $s$ , with  $MR / d_2$ , the average of the moving range divided by an unbiasing constant. The moving range is of length 2, since consecutive values have the greatest chance of being alike. You can also estimate  $s$  using the median of the moving range, change the length of the moving range, or enter a historical value for  $s$ .



### 12.6 Quality Tools

Minitab offers several graphical tools to help you explore and detect quality problems and improve your process:

- Run charts detect patterns in your process data, and perform two tests for non-random behavior.
- Multi-vari charts present analysis of variance data in graphical form to give you a "look" at your data.



- [Individual Distribution Identification](#) pg. [116](#)
- [Run Chart](#) pg. [117](#)
- [Capability Analysis \(normal\)](#) pg. [118](#)
- [Capability Analysis \(non-normal\)](#) pg. [119](#)
- [Capability Sixpack](#) pg. [120](#)
- [Raw Data \(True Position\) Charts \(2D\)](#) pg. [121](#)
- [True Position Charts \(3D\)](#) pg. [122](#)
- [Gage R&R Study](#) pg. [123](#)

### 12.6.1 Individual Distribution Identification

This will run a goodness of fit test to try and identify the best distribution fit for your data. If the data is non-normal, this is a helpful way to determine how to treat it when trying to get statistical charts such as a Sixpack or Capability Analysis. The result of this test is a set of charts and a Goodness of Fit test in the Minitab Session window. If the P value for Normal is above 0.05, then the data is considered normal as is the case below.

Goodness of Fit Test

Distribution	AD	P	LRT	P
Normal	0.449			0.233
Lognormal	0.446			0.236
3-Parameter Lognormal	0.151	*		0.066
Exponential	5.945			<0.003
Weibull	0.937			0.015

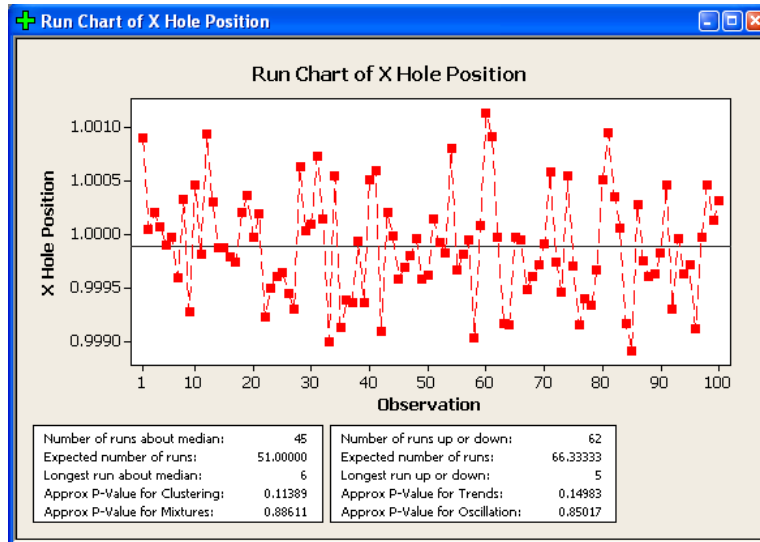
If the data is considered to be non-normal, most customers take the largest P value from the list and use that distribution when running a non-normal Sixpack or Capability Analysis report.

Fortunately, you can tell Buddy to do this for you automatically. When doing so, Buddy will first run Minitab and create the Goodness of Fit test. It will then read the results, choose the best P-value (or optionally present you with a list from which to choose), and run your Sixpack or Capability Analysis with the correct distribution. This fully automatic feature is explained more in the section called Minitab (non-normal data) version 16 or Higher.

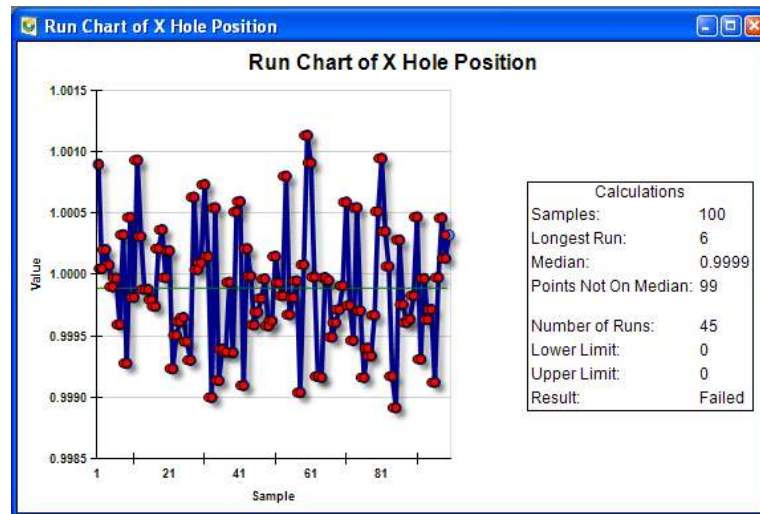
## 12.6.2 Run Chart

Use Run Chart to look for evidence of patterns in your process data, and perform two tests for non-random behavior. Run Chart plots all of the individual observations versus the subgroup number, and draws a horizontal reference line at the median. When the subgroup size is greater than one, Run Chart also plots the subgroup means or medians and connects them with a line.

### Minitab



### Prolink Charting

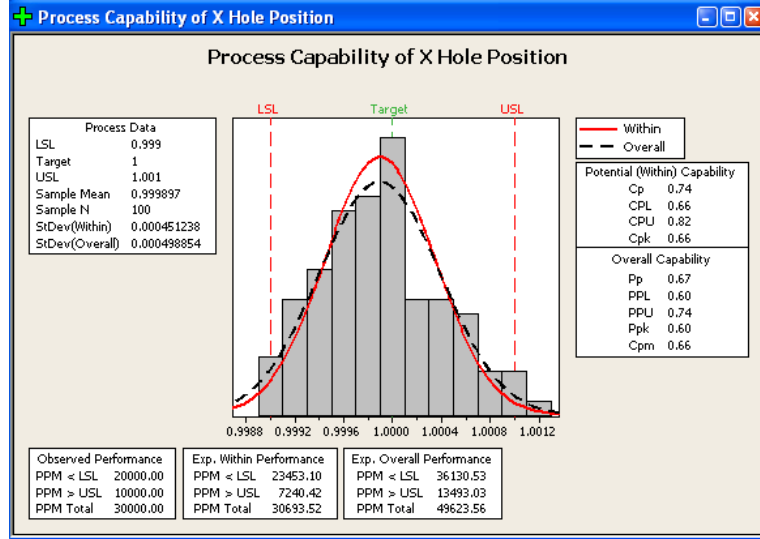


The two tests for non-random behavior detect trends, oscillation, mixtures, and clustering in your data. Such patterns suggest that the variation observed is due to special causes - causes arising from outside the system that can be corrected. Common cause variation is variation that is inherent or a natural part of the process. A process is in control when only common causes affect the process output.

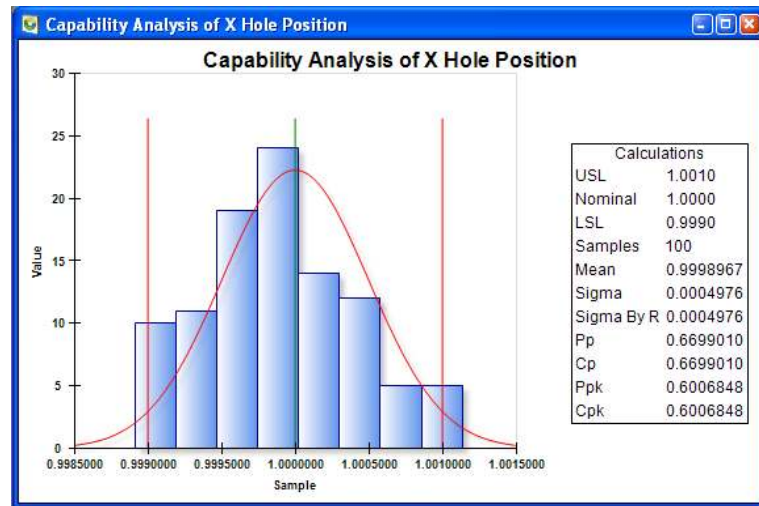
## 12.6.3 Capability Analysis (normal)

Use Capability Analysis (Normal) to produce a process capability report when your data are from a normal distribution or to transform the data to follow normal distribution using Box-Cox transformation. The report includes a capability histogram overlaid with two normal curves, and a complete table of overall and within capability statistics. The two normal curves are generated using the process mean and within standard deviation and the process mean and overall standard deviation.

### Minitab



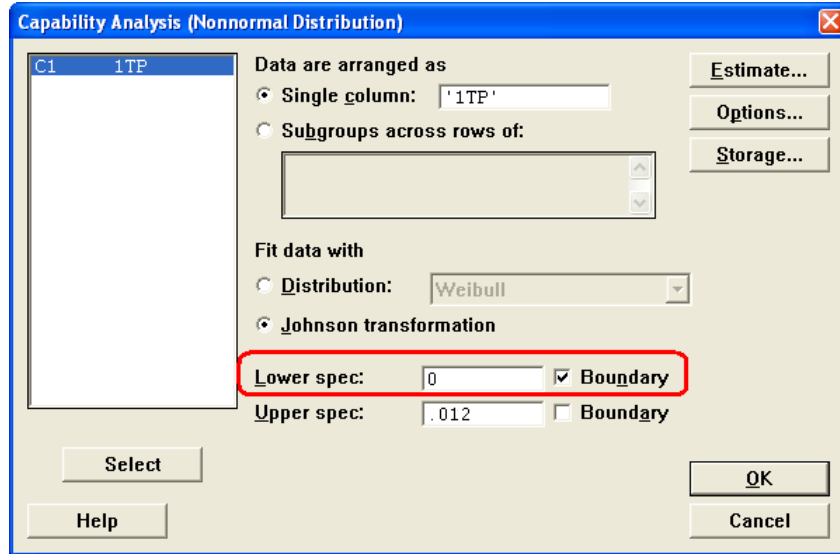
### Prolink Charting



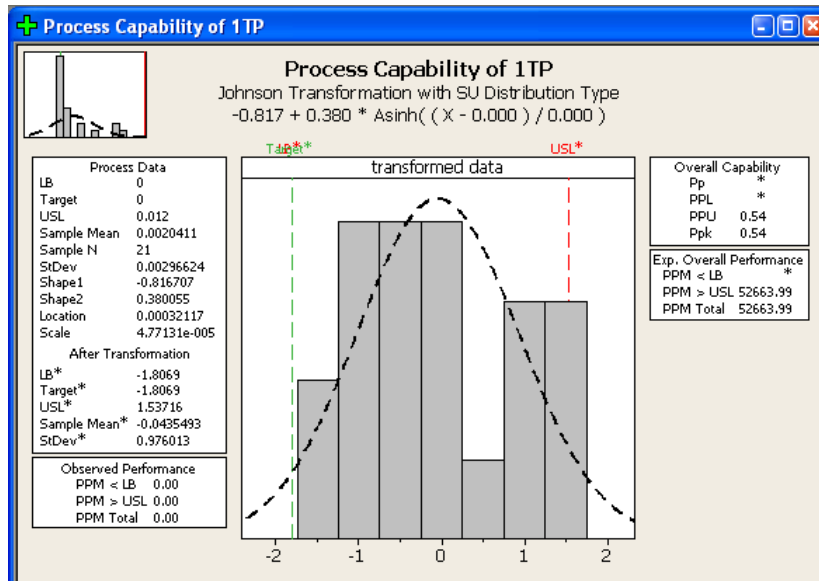
The report also includes statistics of the process data, such as the process mean, the target (if you enter one), the within and overall standard deviation, and the process specifications; the observed performance; and the expected within and overall performance. So the report can be used to visually assess whether the data are normally distributed, whether the process is centered on the target, and whether it is capable of consistently meeting the process specifications.

### 12.6.4 Capability Analysis (non-normal)

Capability Analysis (non-normal) is used to produce a process capability chart when your data has a single-sided tolerance. Normally, you would set a boundary when all of the data falls on one side of nominal. Below we show an example of running a Minitab report with the lower boundary set. See [Minitab Non-normal data](#) on page 7 for details when non-normal data is analyzed. Also read [Process Capability/Sixpack Options](#) on page 130.



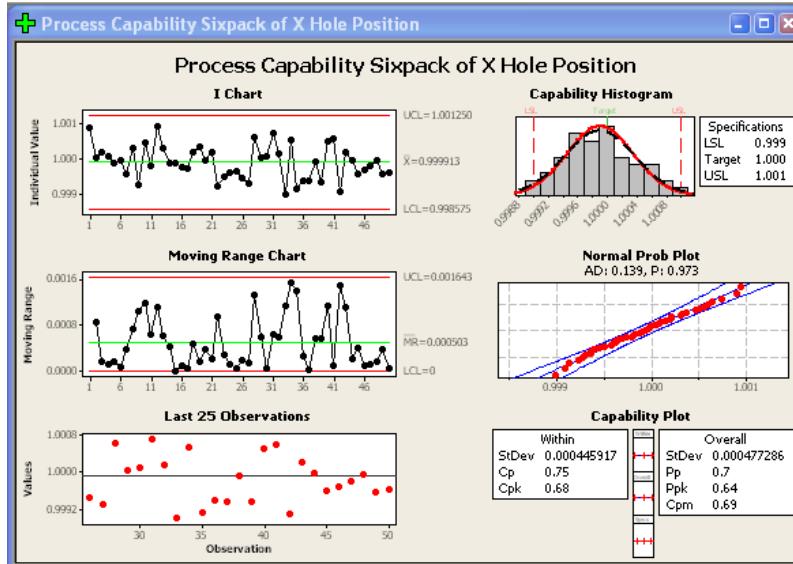
QC-CALC automatically checks the lower boundary checkbox on all positive single-sided dimensions and checks the upper boundary for all negative single-sided dimensions. The Minitab report includes a capability histogram overlaid with one normal curve. A typical chart is shown below.



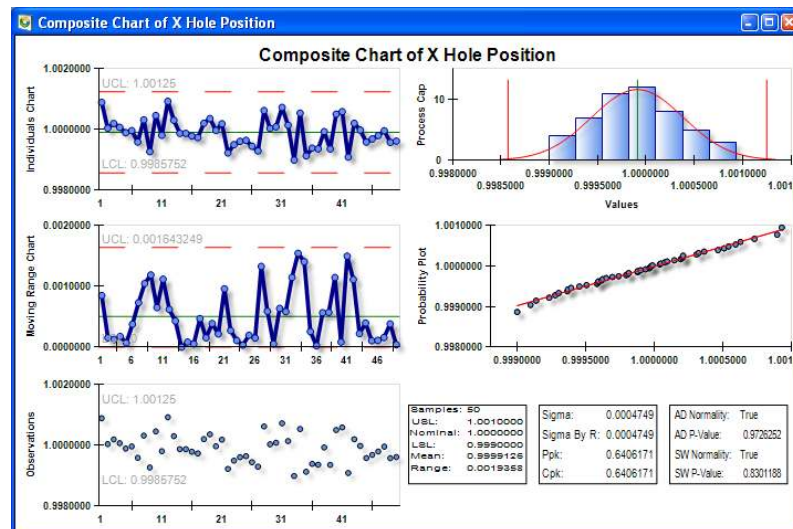
## 12.6.5 Capability Sixpack

Use to produce process capability report when your data follows a normal distribution. See [Minitab Non-normal data](#) on page 7 for details when non-normal is analyzed.

### Minitab



### Prolink Charting Capability Composite Chart



To confirm process stability, the report includes:

- An Xbar chart (or Individuals chart for individual observations)
- An R chart or S chart (for subgroups size greater than 8)
- A run chart of the last 25 subgroups (or last 25 observations)

To confirm normality, the report includes:

- A histogram of the process data
- A normal probability plot (also Anderson-Darling and P values)

To assess capability, the report includes:

- A process capability plot

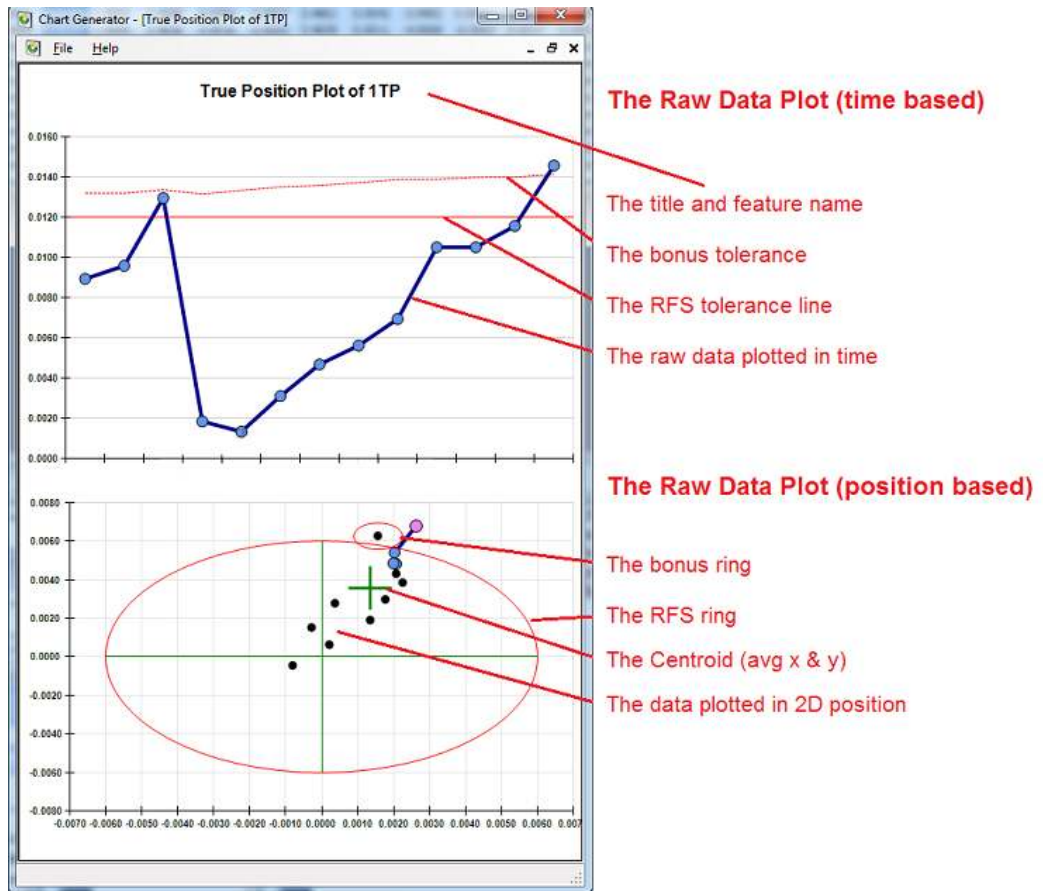
## The Stats Menu

- within and overall capability statistics; Cp, Cpk, Cpm (if you specify a target), Pp, and Ppk

### 12.6.6 Raw Data (True Position) Charts (2D)

QC-CALC Real-Time version 3.3 and above has a special plot type called True Position. The goal of True Position MMC is to relax the positional tolerance of a feature by adding unused size tolerance (bonus) to the position tolerance. Although this method cleverly saves parts from the scrap heap when the position of a hole is “out of spec” in X or Y, it has added a great deal of confusion. When SPC is applied to many true position measurements even more confusion results.

The relationship of a measured feature such as a hole involves joining several characteristics of the feature; namely the hole size, X, Y, and the TP. This relationship is discussed in the QC-CALC Real-Time Training Manual available from Prolink. If you are unfamiliar with QC-CALC's operation you should consult your local QC-CALC user who is generating the data you're using here in Buddy.



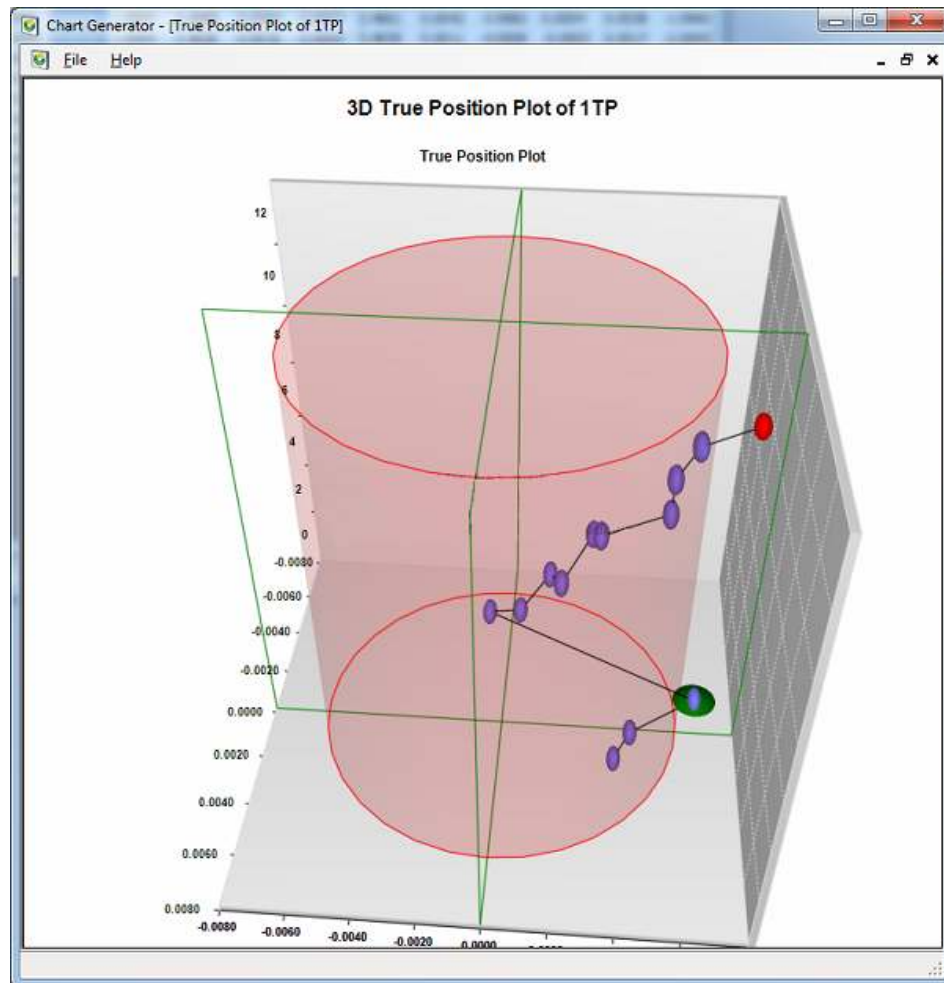
These two charts show the condition of the hole position both in time and in 2D space. Normally, the RFS tolerance ring is round but since you can stretch the plot in any direction, all points are scaled correctly.

### 12.6.7 True Position Charts (3D)

The 3D True Position chart is a combination of the time and position charts discussed on the previous page. This plot is sizable and rotatable (using your mouse) so you can see the relationship between time and position. Time is displayed from bottom to top (most recent part).

- Any point inside the true position cylinder (pink) is within its specified RFS tolerance.
- If the point is outside the cylinder but has a bonus ring large enough to intersect the RFS cylinder, the part is good. The bonus ring is displayed as a green disk around the point and the part is said to be “bought on bonus”.
- If the point is outside the RFS ring and the bonus is not large enough to “buy” the part, it is displayed as a red dot (out of spec).

The goal is to give you a visual representation of the true position location of many parts over time. The math provides a larger Cpk because the bonus tolerance is included in the calculation. The centroid calculation provides a simple offset adjustment based on the average position of many parts.



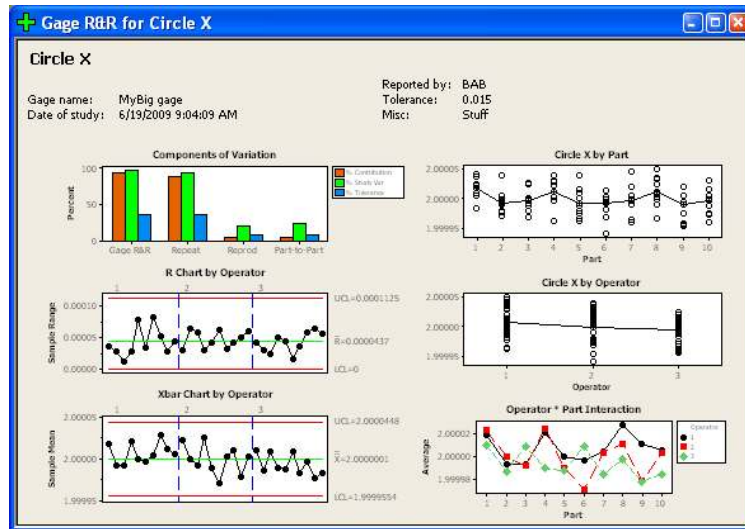


## 12.6.8 Gage R&R Study

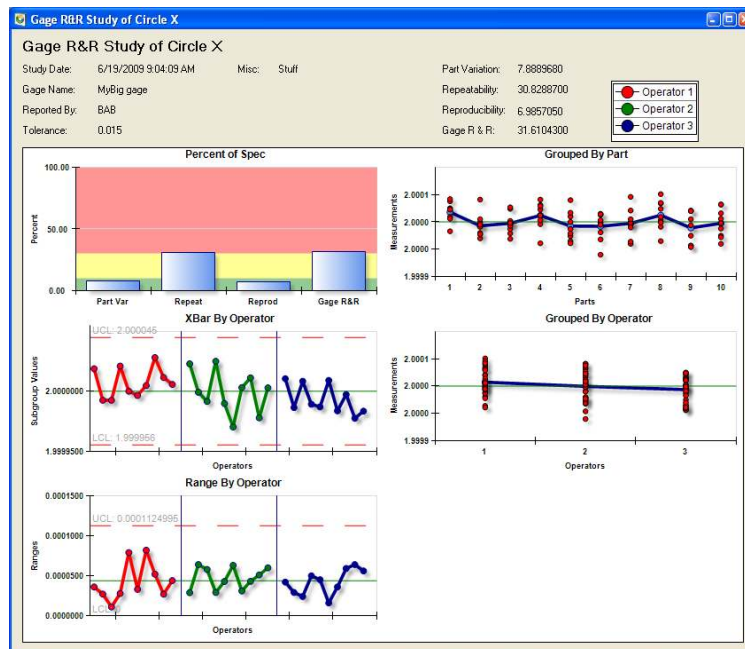
A Gage Repeatability and Reproducibility Study (GR&R) is a method of determining the suitability of a gage or gauging system for measuring a particular process. Every measurement taken has some error associated with it, and if this error is large compared to the tolerance band, the measuring device will frequently accept bad parts and reject good ones. A Gage Repeatability and Reproducibility Study convey 6 basic pieces of information. They are:

- Part Variation
- Repeatability
- Reproducibility
- Repeatability and Reproducibility (R&R)
- Percent of Total Variation
- Percent of Tolerance

### Minitab GR&R

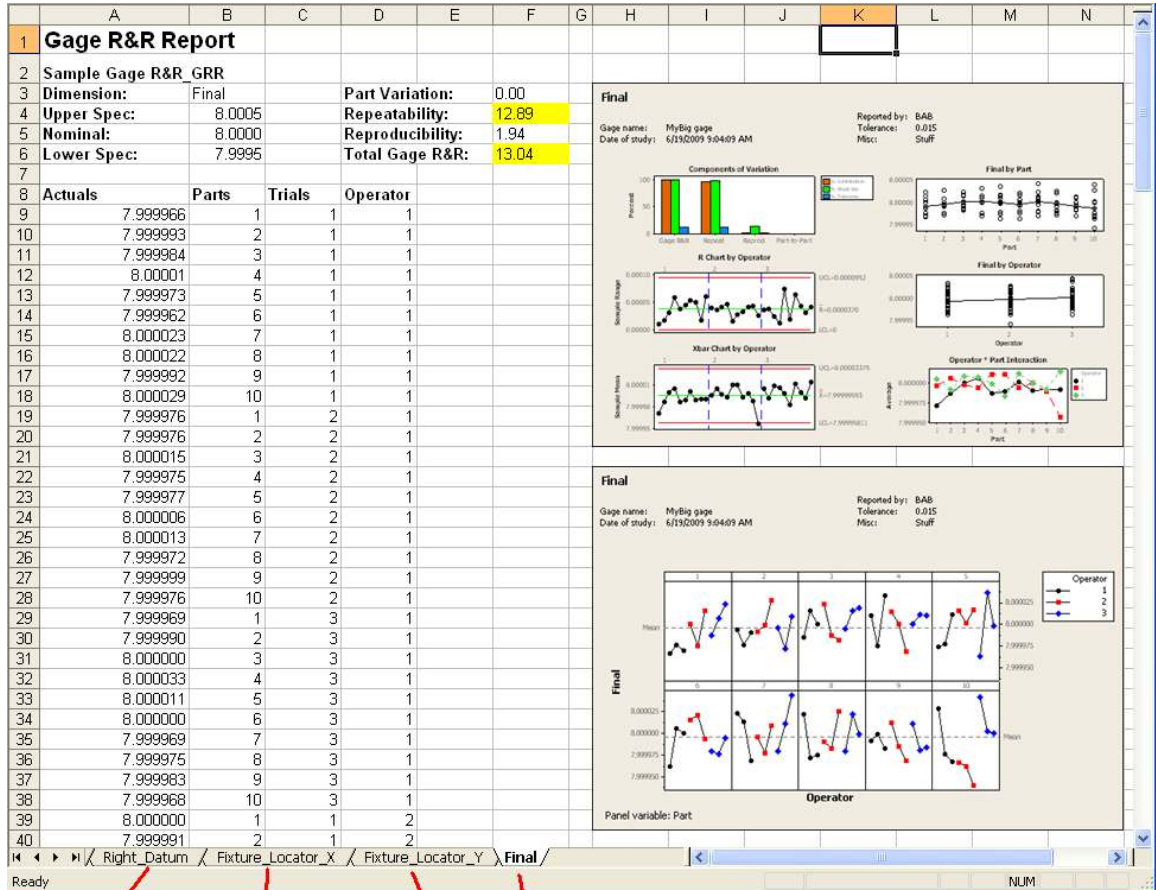


### Prolink Charting GR&R



## 12.7 Gage R&R using Excel Jobs - Minitab

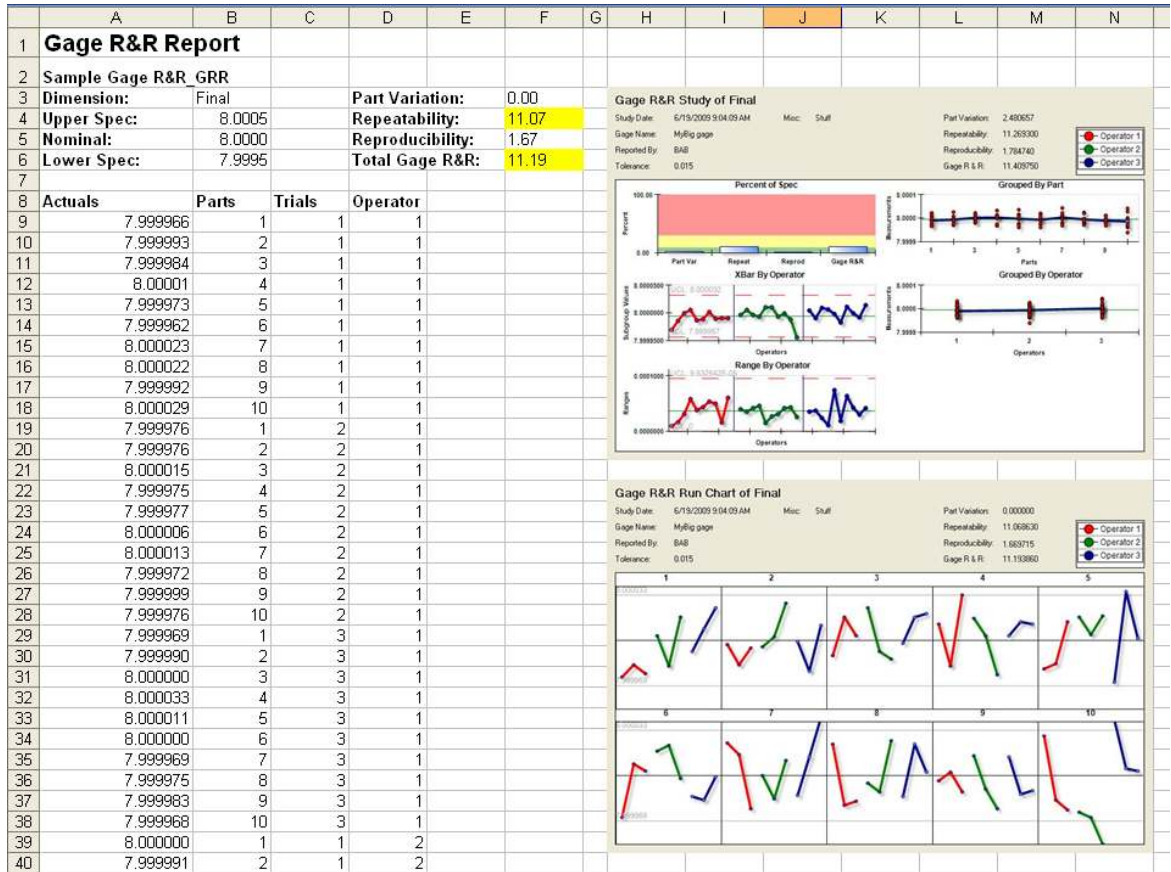
You can run an Excel Job to automate the GR&R report across many dimensions as shown in this example. The Minitab Gage R&R Study and the Gage R&R Run Chart are generated by the Excel Job and placed in this simple workbook with each sheet (tab) being dedicated to one dimension. The calculations were removed from Minitab's session window and placed here for your convenience.



Each spreadsheet contains a complete report of a different dimension.

## 12.8 Gage R&R using Excel Jobs – Prolink Charting

You can run an Excel Job to automate the GR&R report across many dimensions as shown in this example. The Prolink Gage R&R Study and the Gage R&R Run Chart are generated by the Excel Job and placed in this simple workbook with each sheet (tab) being dedicated to one dimension. The calculations were placed here and colorized for your convenience. Note the Study Info was placed at the top of GR&R study.



# 13. Export Menu

## 13.1 Quick Export

This menu is used to repeat the last export no matter what it was. This saves you time by not showing the configuration screen if no settings have changed.

## 13.2 Export to ..

Using this menu choice displays a window where you choose where you want the data to be sent.

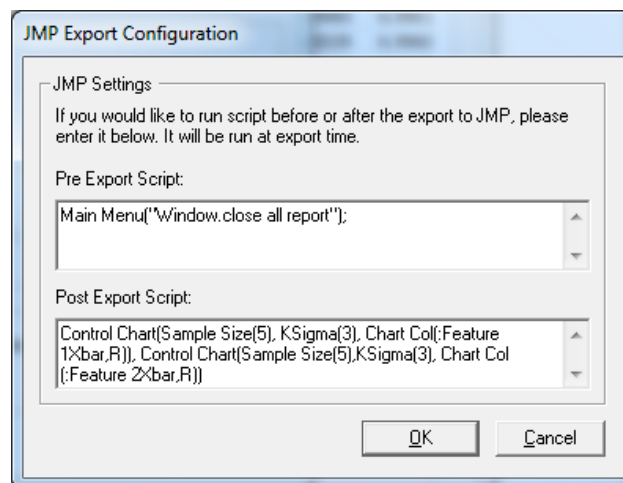
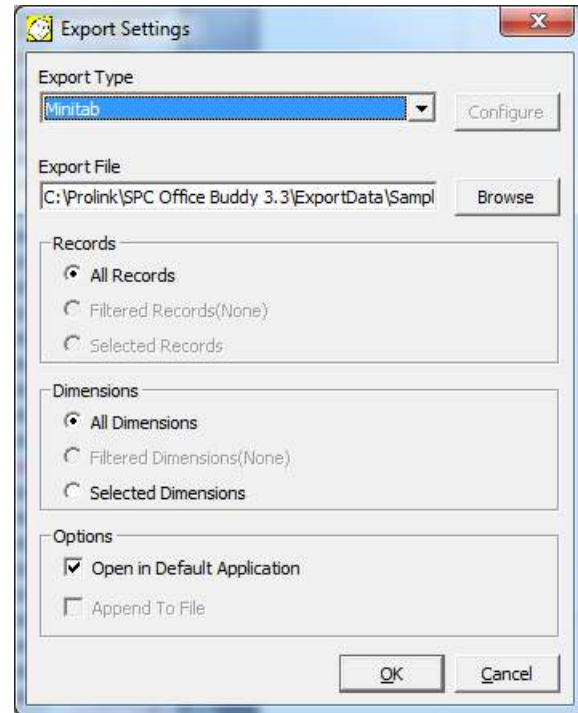
### 13.2.1 Export Type

#### Minitab Export

This option exports the data directly into Minitab, but will not run the Stat reports automatically. Buddy will create a .txt file of whatever name you choose, then open Minitab with that file as a Worksheet. This is an easy way to get your filtered data into Minitab so you can run any of the Stats Buddy does not support.

#### JMP Export

This option exports the data directly into JMP, but will not run any Stats automatically. When JMP is chosen, the **Configure** button is enabled allowing you to control the operation of JMP and the data.



The JMP export can execute a script before and after the export. This script can be any valid JSL (JMP Scripting Language) commands you wish to run. This is very convenient if you have a Journal or other setup you like to run and wish to

## The Export Menu

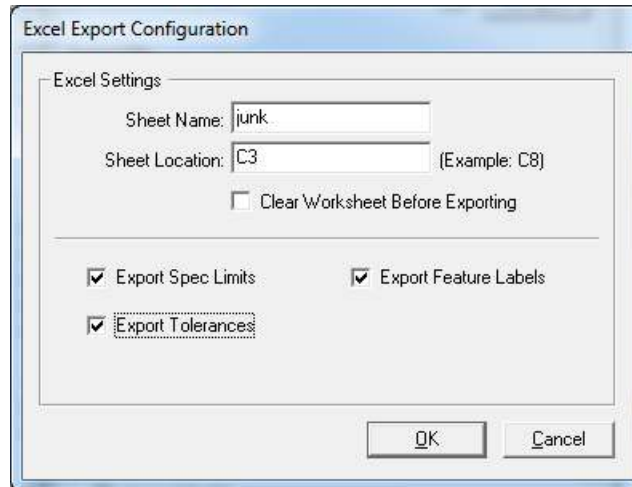
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run it with varying sets of data. Simply paste the script from your JMP window into the JMP Export Configuration window.

When you export your data, JMP will run the script as entered into this screen. The sample script shown first closes all report windows, then exports the data, and finally runs a few control charts on the exported data.

### Excel Export

This option exports the data directly into Excel. When Excel is chosen, the **Configure** button is enabled allowing you to control the operation of the export.



The Excel export is controlled by filling out this window. You can tell Buddy what **Sheet Name** to use, where the **Start Cell** is located, and possibly to clear the Worksheet before sending the data. You can also send the Nominals, Tolerances, and Feature Labels if you wish.

### 13.2.2 Records

The amount of data exported is based on the current filter you have set. For example, if you have a record filter enabled, the **Filtered Records** option is active instead of **All Records**.

### 13.2.3 Dimensions

Likewise, if a dimension filter is active, the **Filtered Dimensions** option is enabled by default instead of **All Dimensions**.

### 13.2.4 Options


#### Open in Default Application

This option will automatically launch the corresponding application for the **Export Type** you chose and show you the data that was exported.

#### Append To File

This option will either append the data at the end of any data currently in the file, or delete the data that is there and start the file over. This option is not available for Minitab.

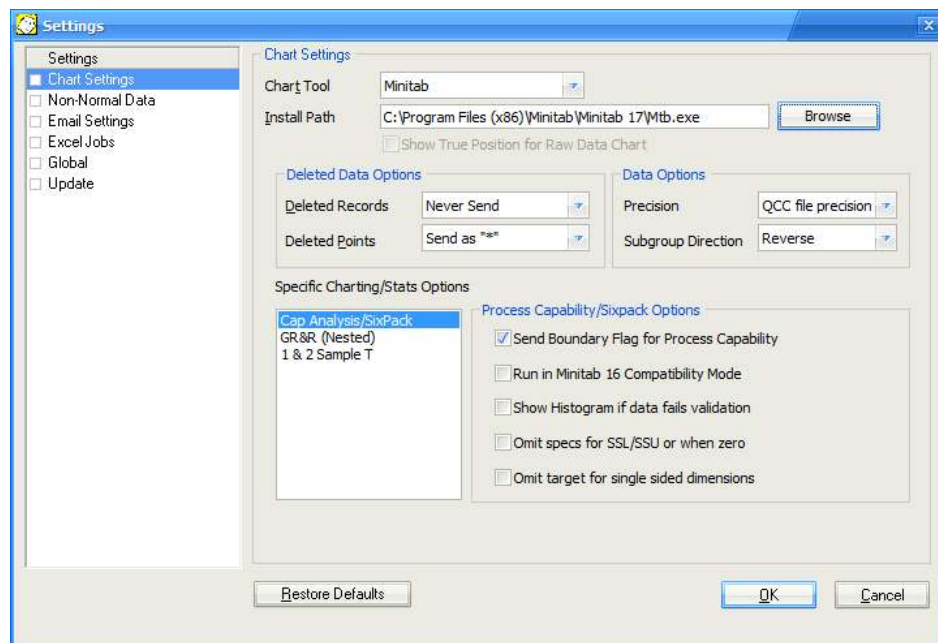
# 14. Tools – Options Menu

 This menu provides a single location to change all of the SPC Office Buddy's settings. Each menu is discussed in the following order:

- [Chart Settings](#) pg. [128](#)
- [Non-Normal Data](#) pg. [131](#)
- [Email](#) pg. [132](#)
- [Excel Jobs](#) pg. [132](#)
- [Global Settings](#) pg. [135](#)
- [Update](#) pg. [136](#)

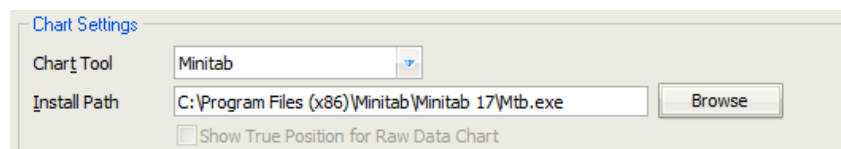
## 14.1 Chart Settings

There are a few settings that pertain to the charting options. You will receive the same charts but might see slight differences between the calculations.



### 14.1.1 Chart Tool

Currently, there are two options for charting; **Minitab** and **Prolink Charting**. If you do not own Minitab, select **Prolink Charting** from the list.



### 14.1.2 Install Path

If for some reason Buddy cannot detect the installation of Minitab, you can use this option to locate the Minitab executable. Prolink Charting should be auto-detected in Buddy's installation path.

### 14.1.3 Show True Position for Raw Data Chart

*(Prolink Charting option only)* Data can be viewed in 2D or 3D true position charts. The source of the data is a QC-CALC file where you must join the dimensions together yielding a complex TP chart. The 2D true position chart shows the data in a time based chart (1D) with an added 2D position chart

## Tools – Options Menu

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beneath it. When you attempt to run the Raw Data (True Position) chart, it will only show a 2D True Position chart if the dimension chosen is a True Position dimension (set up in QC-CALC Real-Time). Otherwise, Buddy will default to a raw data plot. This checkbox allows you to run the Raw Data plot regardless of the dimension(s) you have chosen. It effectively overrides Buddy from running a True Position chart if you happen to have chosen a True Position dimension. To force Buddy to always run Raw Data reports, uncheck this option. Otherwise, it will run the 2D True Position chart when possible.

Please review your QC-CALC Real-Time user manual for creating the true position relationship. Also see the [Raw Data \(True Position\) Charts \(2D\)](#) and [True Position Charts](#) sections on page [121](#) & [122](#) for a discussion of these charts.

### 14.1.4 Deleted Data Options

QC-CALC allows you to delete records (parts) or individual points. They are seen in Buddy as gold colored values. You need to tell Buddy how to deal with these values in your charting package. There are three choices for both **Deleted Records** and **Deleted Points**:

**Always Send** – This option will send the data value to the charting package and there will not be any way to tell from within the charting package that the value should be ignored.

Original	To Stats	Export
1.234	1.234	1.234
1.325	1.325	1.325
1.425	1.425	1.425
1.253	1.253	1.253
1.266	1.266	1.266

**Never Send** – This option will skip any deleted records or points and send nothing for those values. This is pretty straight forward for **Deleted Records** (an entire row will not be sent to the charting package), but for a **Deleted Point** the Stats menu will end up with 1 dimension containing less data than the others.

Original	To Stats	Export
1.234	1.234	1.234
1.325	1.325	1.325
1.425	1.253	
1.253	1.266	1.253
1.266		1.266

**Send as “\*\*”** – This option replaces any deleted values with an “\*\*”. If an entire record is deleted, then the entire row in the charting package is filled with “\*\*”. When a Deleted Point is sent, the value is replaced with an asterisk (\*).

Original	To Stats	Export
1.234	1.234	1.234
1.325	1.325	1.325
1.425	*	*
1.253	1.253	1.253
1.266	1.266	1.266

### 14.1.5 Data Options

#### Precision

You can choose to view a particular number of digits (precision) in QC-CALC. The precision value is saved in the QC-CALC database and Buddy uses it. Normally, the number of digits displayed is sent to the charting software. If you

## Tools – Options Menu

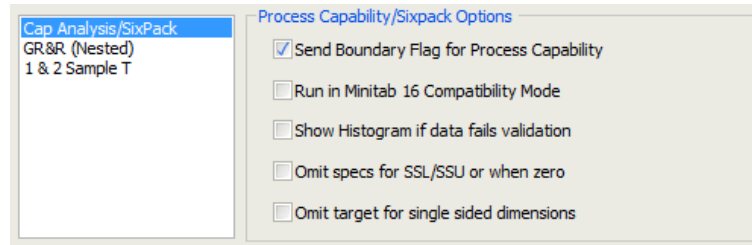
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need full precision sent (recommended), select **Full Precision** instead of the stored **QCC file precision**.

### Subgroup Direction

*(Prolink Charting option only)* This option is only available when using Prolink Charting.

### 14.1.6 Process Capability/Sixpack Options



#### Send Boundary Flag for Process Capability

*(Minitab option only)* When using Minitab for charting Buddy automatically sends the upper and lower specification limits to Minitab. When a Process Capability chart is run in Minitab with a single-sided dimension, the “Boundary” flags are generally checked. If you want Buddy not to check this option, simply uncheck the **Boundary Flag** checkbox on this screen. When you define upper and lower specification limits as boundaries, Minitab sets the expected percentage of values that are out of specifications to \* for a boundary.

#### Run in Minitab 16 Compatibility Mode

*(Minitab option only)* With version 16 of Minitab, support was removed for some commands that Buddy used when running reports, so commands need to be sent differently for those reports when Minitab version 16 is in use. This option tells Buddy to send the commands specific for version 16 of Minitab.

#### Show Histogram if data fails validation

*(Minitab option only)* When running a Capability Analysis, Minitab does not handle the Upper Spec Limit being less than or equal to the Lower Spec Limit very well. If that case happens and this option is enabled Buddy will run a normal Histogram instead of the full Capability Analysis.

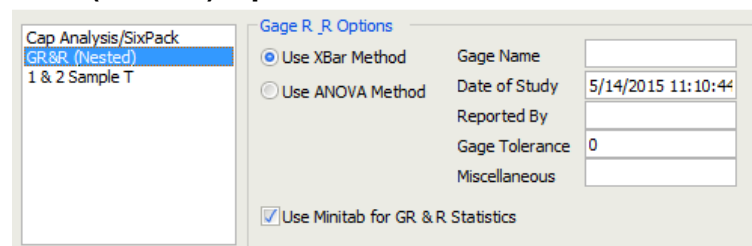
#### Omit specs for SSL/SSU or when zero

*(Capability Sixpack only)* Normally Buddy sends over the data, USL, and LSL and Minitab runs the Sixpack accordingly. If one of the specification limits (not Tolerances) is zero and it is not sent (instead of sending the zero), it is treated differently. With this option checked one or both of the specification limits is omitted in the command file if either of them are zero.

#### Omit target for single sided dimensions

With this option the nominal value will not be included in the command file sent to Minitab.

### 14.1.7 Gage R&R (Nested) Options





## Tools – Options Menu

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### Use XBar Method or Use ANOVA Method

When performing Gage R&R studies you can choose between the Xbar or ANOVA method.

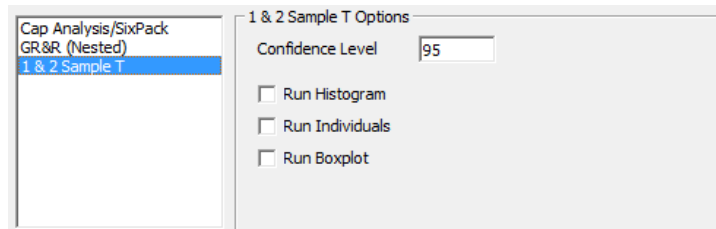
### Gage R&R Info

This information is used to populate the final report to help you identify the study and conditions while performing the study. You should fill out this info before running the study but should you forget, fill it out and rerun the report since it only takes a few seconds to recreate the report.

### Use Minitab for GR&R Statistics

This option controls if Prolink Charting or Minitab's GR&R statistics will be used in the Excel Job. Minitab does not return any other statistical values, so this ONLY applies to the GR&R values that are calculated.

## 14.1.8 1 & 2 Sample T Options



### Confidence Level

When calculating the 1 and 2 Sample T probabilities the Confidence Level is used to set the area under the bell curve that should be taken into account.

### Run Histogram

With this option checked a Histogram chart will be run as the probability prediction for the data is run.

### Run Individuals

With this option checked an Individuals chart will be run as the probability prediction for the data is run.

### Run Boxplot

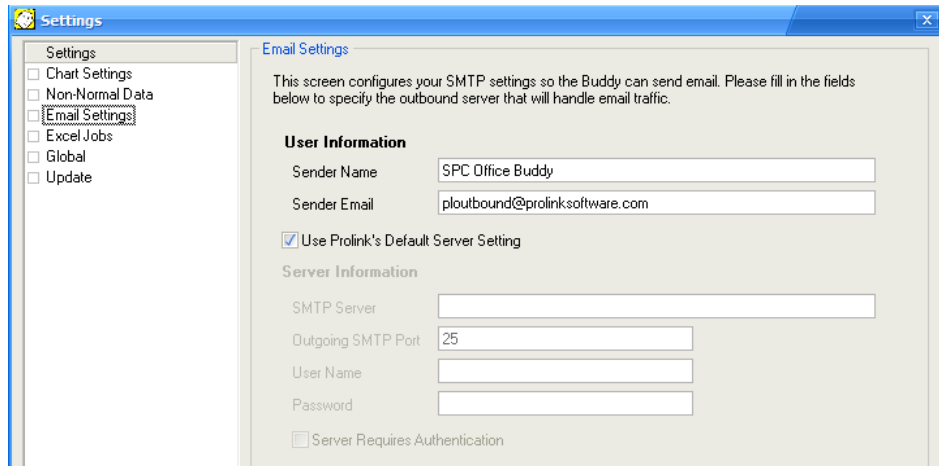
With this option checked a Boxplot chart will be run as the probability prediction for the data is run.

## 14.2 Non-Normal Data

Please see [Non-Normal Charts with Buddy](#) on page 9 for a full explanation of this option.

### 14.3 Email

When using Buddy to email a report to yourself or others, you have two methods of sending your note.



- Use an SMTP Server – Prolink
- Use an SMTP Server – Your company's SMTP server (recommended)

Buddy can act as an independent email program and therefore does not require an interface with your company's internal system such as Outlook or Lotus Notes.

#### 14.3.1 Using Prolink Mail Server

The default setting uses a special account set up on the Prolink website which means no other settings are required. This is done to help Buddy run correctly without the need for further configuration. However, you should change this setting to match your company's mail system. This is because IT departments often block the use of external SMTP servers (such as the Prolink server in this case). Select **Tools – Options – Email Settings** and the following setup screen is shown.

#### 14.3.2 Sender Name

Change **Sender Name** to a name that represents the equipment on which Buddy is running. This tells you which PC sent you the email.

#### 14.3.3 Sender E-Mail

This default address must be **ploutbound@prolinksoftware.com** if you use our server. If you use your own server, change the default address to your email address since it appears in the FROM address of the sent email. This is the address where all Replies are sent.

#### 14.3.4 Using Your Mail Server

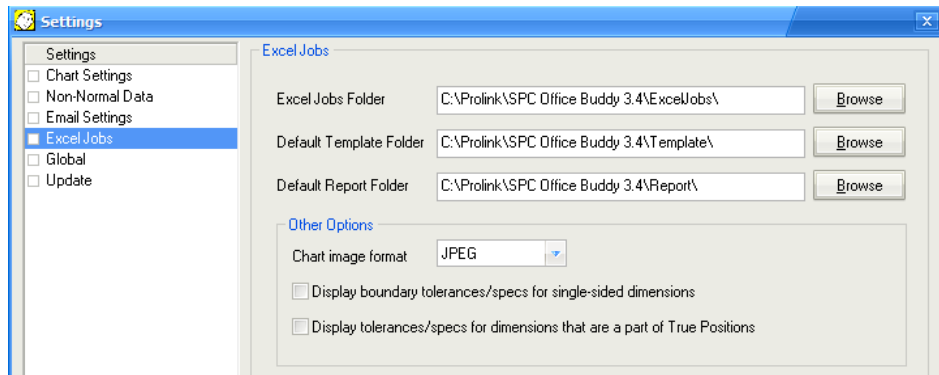
Start by asking your IT Department for the correct **SMTP server** settings. Uncheck **Use Prolink's Default Server Settings** and fill-in the text fields as shown. The answers will vary depending on your company.

### 14.4 Excel Jobs

The Excel jobs previously discussed have several important settings used to help you share both Excel jobs and Excel templates. When you create your own Excel template you may wish to share your work with others by exporting your Excel Job and having someone else import it to their copy of the SPC Office Buddy. The template and Excel job path on each of your computers may be different making it difficult to share jobs. You must edit the path where the Excel template is stored if it is different from your Buddy's path and vice versa. However,

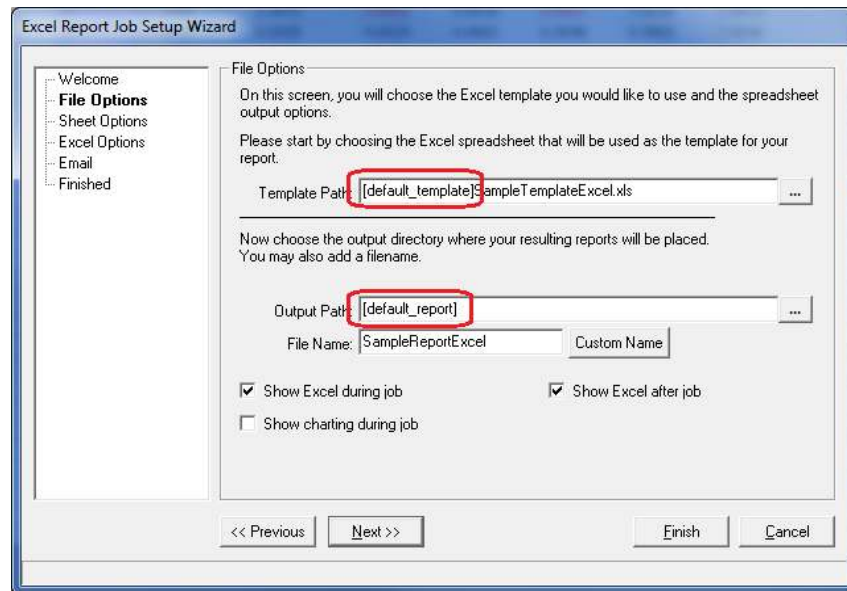
## Tools – Options Menu

[Importing Excel Jobs](#) on page [91](#) describes Buddy's attempt to streamline this process.



### 14.4.1 Excel Jobs Folder

Setting the default path to a shared network path makes sharing jobs between computers much easier. In the previous screen we store our Jobs and Templates on our shared S: drive making them available to others. The final report is saved on the local computer in a folder called Reports located in the SPC Office Buddy install area.



### 14.4.2 Default Template Folder

The **Default Template Folder** option is used in the **File Options** screen of the **Excel Report Job Wizard**. This value is available as a variable within your Excel Jobs called [default\_template]. Entering this variable in the **Template Path** area (or **Output Path** if needed) as shown in the picture below tells Buddy to use the path from the **Tools – Options – File Options** area in place of the variable when the Excel Job runs. If you need to change the path at a later date you will not have to change all of your Excel Jobs as you would if the specific paths were used instead of the variable. Just change this single setting and all Excel Jobs using the [default\_template] variable will automatically adapt to the new path.

### 14.4.3 Default Report Folder

The **Default Report Folder** option is used in the **File Options** screen of the **Excel Report Job Wizard**. This value is available as a variable within your Excel Jobs called [default\_report]. Entering this variable in the **Output Path** area (or **Template Path** if needed) as shown in the picture above tells Buddy to use the

## Tools – Options Menu

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path from the **Tools – Options – File Options** area in place of the variable when the Excel Job runs. If you need to change the path at a later date you will not have to change all of your Excel Jobs as you would if the specific paths were used instead of the variable. Just change this single setting and all Excel Jobs using the [default\_report] variable will automatically adapt to the new path.

### 14.4.4 Other Options

#### Chart image format

You can choose the type of image to be created and used in your Excel Job. The choices are JPEG, EMF, or PNGH.

#### Display Boundary Tolerances/Specs for Single-sided Dimensions

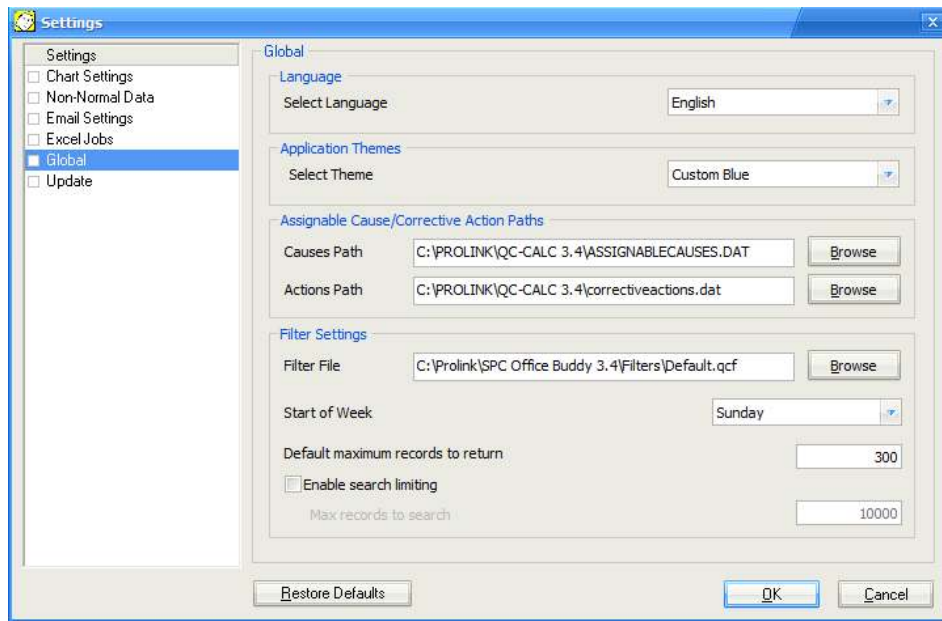
Normally Buddy will leave boundary tolerances or specification limits blank when filling in the cells of an Excel Job. Therefore, if you are running an Excel Job and the job calls for an upper spec limit, the value will be left blank if the dimension in question is a single-sided lower dimension since the upper spec limit is equal to the nominal and is usually zero. However, if you want to display values like the above regardless (to avoid “holes” in the spreadsheet) check this box and Buddy will fill them in appropriately. Upper and Lower Spec limits will be filled in as Nominal. Plus and Minus Tolerances will be filled in as zero.

#### Display Tolerances/Specs for dimensions that are a part of True Positions

When defining a True Position relationship in QC-CALC, the X, Y, and Diameter dimensions are typically assigned along with a TP dimension to form the True Position grouping. During this process, the X and Y dimensions' tolerance types are changed to “non-toleranced” for statistical reasons. However, the original plus and minus tolerance numbers are preserved. By default, (unchecked) Buddy will not show the values for upper spec, lower spec, plus tolerance, and minus tolerance since the dimension is considered to be not tolerance. However, if you check this option, you can choose to have Buddy print the actual tolerances or spec limits to the Excel report (thus ignoring the non-toleranced status).

### 14.5 Global Settings

The **Global** area is used to choose the **Language** Buddy displays in the menus and messages and to change the **Filter Path** used with your record filters.



#### 14.5.1 Language

Choose the language you would like to use when running SPC Office Buddy from the list on the right. You will be prompted to restart Buddy after clicking **OK** so the new language can be loaded.

#### 14.5.2 Application Themes

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

#### 14.5.3 Assignable Cause/Corrective Action Paths

In order for the Assignable Cause and Corrective Action tags to work within the Excel Jobs the location of the Assignable Cause and Corrective Action files that QC-CALC used during the entry of these values must be specified.

#### 14.5.4 Filter Settings

##### Filter File

The record filters created and used in Buddy are unique to each copy of Buddy on your local hard drive. However, you may wish to use your QC-CALC record filters in Buddy. Here we chose to Browse to our installation of QC-CALC 3.4 and use the default filters we create in QC-CALC. This simply means you do not have to create the same filters twice; once in QC-CALC and again in the SPC Office Buddy. You can also share filters with others across a network.

##### Start of Week

With this option you can choose which day of the week starts your week. For example, if you choose a filter for "Last week" and the **Start of Week** is set to Monday, you would get all the data in that file for the previous Monday to the present Monday. The **Start of Week** will be set to Sunday by default.

## Tools – Options Menu

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### Default maximum records to return

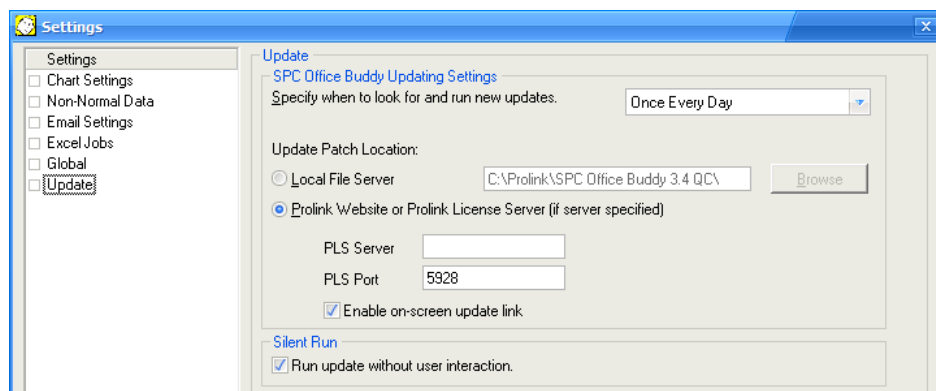
This option is the maximum number of records to return after running the filter. This number applies only when a filter is in effect and cannot be larger than the maximum number of records allowed in the database (2,000,000).

### Enable search limiting

Once this option is enabled you can limit how many records will be searched for results that match the filter criteria by entering the **Maximum records to search** in the box. If this setting is not used then all records in the .qcc file will be searched regardless of how long this search may take.

## 14.6 Update

Buddy has the ability to automatically check for updates to the latest version. There are two ways of getting an update: from the **Prolink Website** ([www.ProlinkSoftware.com](http://www.ProlinkSoftware.com)) or from a **Local File Server**.



### 14.6.1 Specify when to look for and run new updates

You have the option of having Buddy automatically check to see if updates are available. If you do not want Buddy to check for updates automatically, then set the frequency to **Manual**. With the setting at **Manual**, the **Help – Run Update** menu will be the only way to perform the update operation. The choices to check for updates are:

- Manual
- Every Time Program Starts
- Once Every Day
- Once Every Week
- Once Every Month.

### 14.6.2 Update Patch Location

Buddy can be configured to look in multiple locations for the update patch. By default it will look at the Prolink website to see if a new patch is available, but you can also point it to an installation of Prolink License Server or choose a location on your local network.

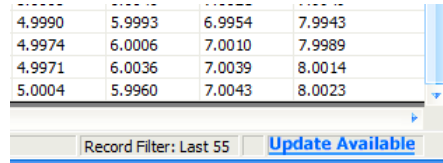
#### Local File Server

If you want to update individual copies using a central location (meaning you control when the updates are downloaded and installed), then you need to visit the Prolink website then download the update to a location where it will be accessible to everyone. After the update has been downloaded, configure all Buddies to check for available updates from that location by setting the **Update Patch Location** to the path where the update has been stored.

## Tools – Options Menu

### Prolink Website or Prolink License Server

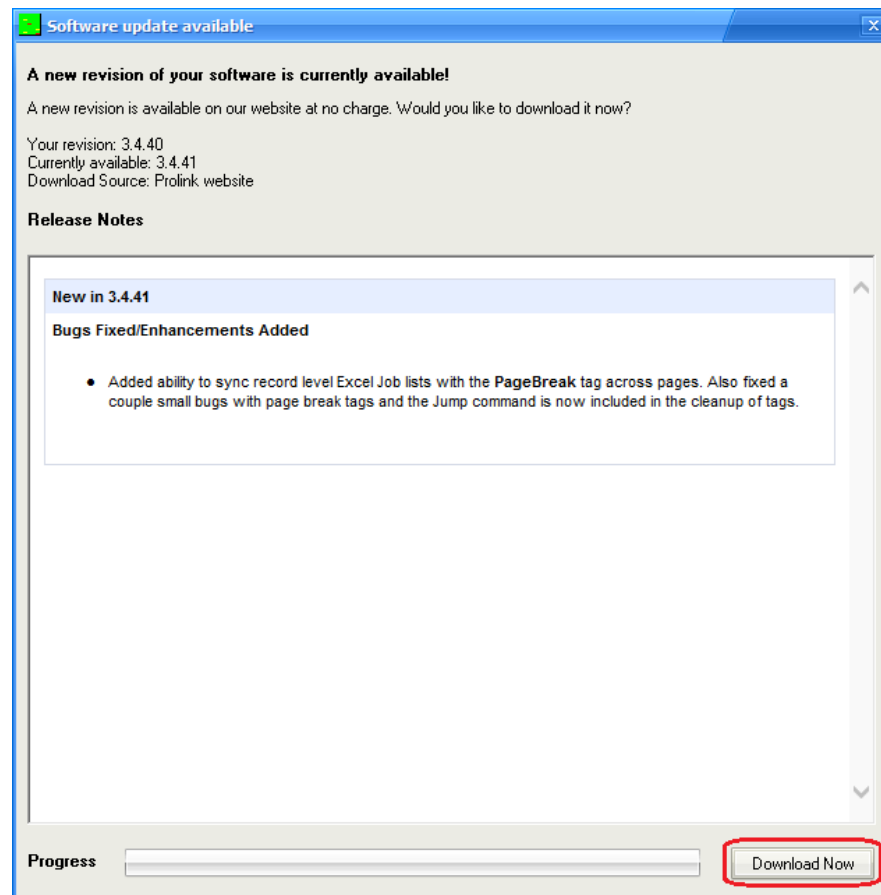
When using the Prolink website or Prolink License Server option, Buddy will continually check to see if a new update is available based on the frequency specified at the top. When a new revision is detected the **Enable on-screen update link** option will cause a link to appear in the lower right corner of the main Buddy screen.



4.9990	5.9993	6.9954	7.9943
4.9974	6.0006	7.0010	7.9989
4.9971	6.0036	7.0039	8.0014
5.0004	5.9960	7.0043	8.0023

Record Filter: Last 55 [Update Available](#)

Clicking on this link shows the **Software update available** screen and lists the **Release Notes** between the revision you are running and the revision available to download. Click the **Download Now** button to download and run the update.



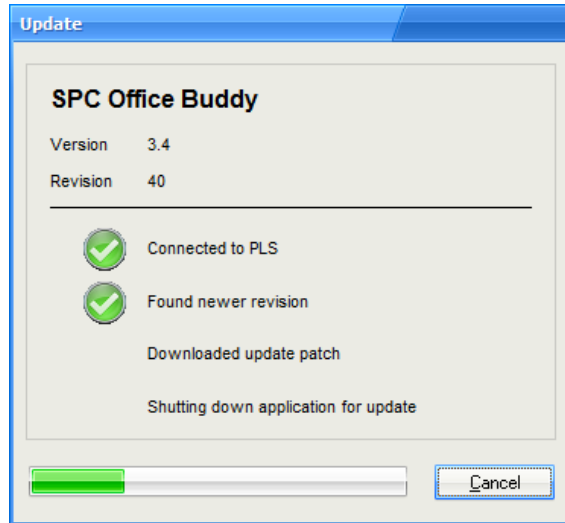
### 14.6.3 Run Update without User Interaction

Using the **Silent Run** option along with the automatic updating will keep Buddy up to date without the operators having to do anything at all. If a needed update was detected when the program started, the update will be downloaded and installed, then the program will start automatically when the updating process is finished.

# 15. Help Menu

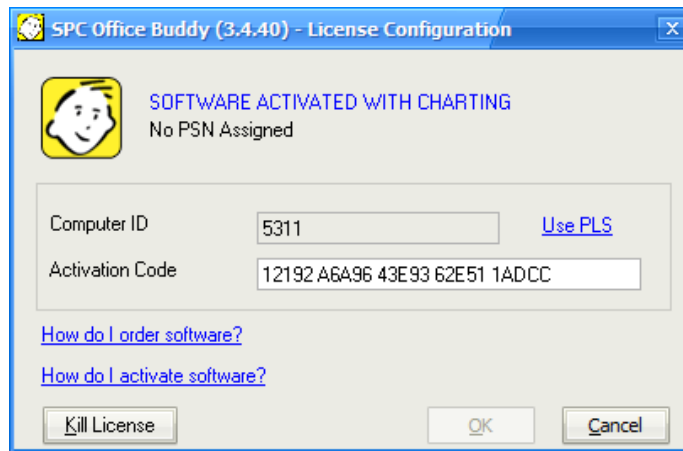
## 15.1 Run Update

This menu option will locate and run the update patch to update your current version of Buddy, if a newer revision is available. See the [Update](#) section on page [136](#) for a description of the Update settings. When this menu is used the following screen will appear so you can monitor the update process:



## 15.2 License Configuration

Most of this window is self-explanatory but various aspects are detailed here.



The top of the license screen displays the status of your license. If you are running an evaluation copy it tells you how many days are left until the evaluation period expires. If it is a full purchased copy that has been activated it reads, "SOFTWARE ACTIVATED".

Your serial number is printed on the second line. From time to time you will supply the serial number to Prolink during phone support or identifying your software on the website. This serial number is also available from the **Help – About SPC Office Buddy** menu.

### 15.2.1 Computer ID

The number that appears in this area is generated by Buddy and is considered your PC's identification number. This helps you identify which copy of Buddy you



## Help Menu

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are working with and it is the origin of the **Activation Code**. If you have purchased multiple copies of Buddy, it makes it easier to identify which copy you are discussing with our support staff or the website.

### 15.2.2 Activation Code

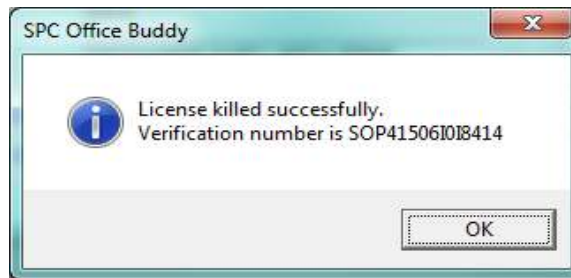
If the **Activation Code** is blank it means you have not activated the software and you are still running an evaluation copy. Your **Activation Code** is issued by our website or by Prolink personnel. The **Activation Code** contains 6 groups of 4 and 1 single character at the end which totals to a 25 character code. This code consists of numbers 0 - 9 and letters A – F. (i.e. 0103 EEF4 ADDD 603B AB2A 9CE9 4). After entering an **Activation Code** and clicking the **OK** button, the **Activation Code** disappears and is replaced by “NO KEY NECESSARY” in order to avoid any confusion. The current software status is displayed at the top of the window.

### 15.2.1 Use PLS

This link is used to license the software by connecting to a Prolink License Server installation. PLS will connect to the website to validate any license changes and will automatically enter the **Activation Code** for you. See the Prolink website ([www.prolinksoftware.com](http://www.prolinksoftware.com)) for more details about PLS.

### 15.2.2 Kill License

This option is used to remove the Buddy license on a particular machine. We use this option to transfer a license from one computer to another. You are asked if you are sure before the license is removed. When successful a dialog box is displayed verifying your action.



You will read this number to a Prolink support staff member to allow you to move the license to a different machine. But in most case this is not required.

- End of Manual -