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# Benchttop Configuration

## User's Guide

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## Table of Contents

Introduction.....	3
Main Display.....	3
Continuous .....	4
Overview .....	4
Procedure.....	4
Sampling.....	6
Overview .....	6
Procedure.....	6
Max/Min .....	8
Overview .....	8
Manual vs. Automatic .....	8
Procedure.....	9
Manual Data Collection.....	9
Automatic Data Collection .....	10
Recipe .....	11
Procedure.....	11
Changing Default Settings.....	12
Symmetrical vs. Asymmetrical Tolerances.....	12
Relative vs. Absolute Tolerances.....	12
Settings .....	13
System.....	13
Measurement.....	14
Configuration .....	14
Recipe.....	14
Continuous.....	14
Sampling.....	14
Max/Min .....	14

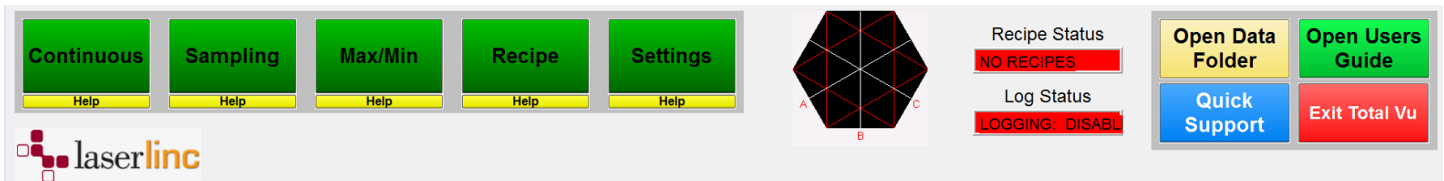
## Introduction

This document is a supplement to the Total Vu User's Guide & Total Vu Manual. It contains information regarding a specific configuration for a benchtop setup using a single, dual, or triple axis gauge. Total Vu is a highly customizable software. Obviously, any changes made to the system after the initial setup will not be reflected in this document.

The Total Vu backup feature can be used to save any changes made to the initial configuration. Press "Ctrl + B" and name the backup. This backup can be restored at any time by pressing "Ctrl + R" and browsing for the correct file. In most cases, only the "Total Vu Configuration" should be restored. If unwanted changes have been made to the recipes, they can also be restored.

The benchtop configuration contains three main utility tabs. The continuous tab is used for continuous data collection at a single point on a part, over a particular region of a part, or along the entire length of a part. The sampling tab is used to sample the diameter at up to 5 points. The max/min tab is used to measure the maximum and minimum diameters over a particular zone of a part, or along the entire length of a part.

## Main Display



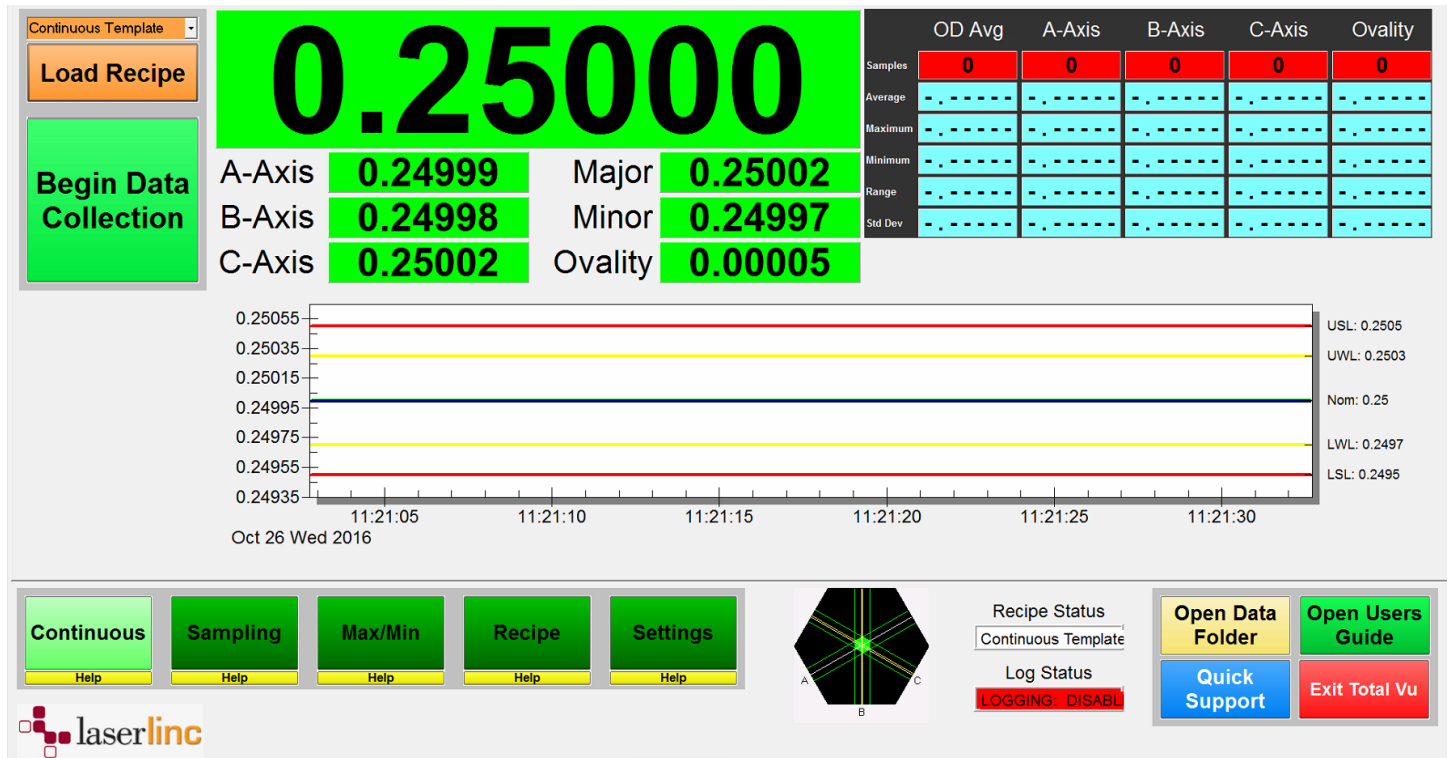
The main display is located at the bottom of the screen and is always visible. Green buttons on the left are used to navigate between the tabs. The light green tab button indicates which tab is currently visible. Help buttons are located below each tab button to give a basic description and operating procedure for each tab.

A position display is located in the center to show how the part is centered within the field. This display may look different depending on the number of axes in the gauge.

To the right of the position display is a recipe status window to display the recipe that is currently loaded. A log status window displays how many lines are in the current log file during data collection.

On the right side of the main display are four main buttons used to open the folder where all data is stored, open this user's guide, open LaserLinc's quick support application, and to shut down the software. Note that the quick support software can only be used with internet access to the PC.

## Continuous



## Overview

The continuous tab is used for continuous data collection at a single point on a part, over a particular region of a part, or along the entire length of a part. In most cases, this tab will be used for a part-by-part inspection. It will produce one data log and one set of statistics per part.

Live measurements can be seen at the top of the screen. The measurement at the top of the screen is the average diameter of all axes. This measurement is also displayed on the trend chart at the bottom of the tab. All other displayed measurements will depend on the gauge.

When a part is in the field of view for all axes, the trend chart at the bottom of the continuous tab will begin updating. By default, it will display the last 30 seconds of data and will be scaled to the specification limits. To change the scaling of either axis, right-click on the trend chart and select the "Axes" tab. Edit the X-axis scale and Y-axis scale.

## Procedure

To begin, select a recipe in the drop down menu at the top left corner of the screen and click "Load Recipe". Next, click "Begin Data Collection." This button will start SPC and data logging, as well as reset the trend chart. It will also lock the operator out of all other tabs until data collection has ended. Live statistics can be seen in the table at the top right of the screen (bottom left for single axis configuration).

During data collection, the operator may pause data collection, reset data collection, or end data collection. Pausing data collection will stop SPC, data logging, and the trend chart. Data may be paused for any amount of time before resuming or ending data collection. Resetting the data will clear all SPC data as well as the current log file. Ending data collection will stop SPC and close the log file for viewing and editing.

**Pause Data  
Collection****Reset Data****End Data  
Collection**

Once data collection has ended, “Begin Data Collection” becomes visible and the process can be repeated.

## Sampling

5 Point Template

Load Recipe

Begin Data Collection

**0.24999**

A-Axis **0.24998** Major **0.25002**  
 B-Axis **0.24998** Minor **0.24997**  
 C-Axis **0.25002** Ovality **0.00005**

	Value	Samples	Average	Maximum	Minimum	Range	Std Dev
Sample	-----	0	-----	-----	-----	-----	-----
Sample	-----	0	-----	-----	-----	-----	-----
Sample	-----	0	-----	-----	-----	-----	-----
Sample	-----	0	-----	-----	-----	-----	-----
Sample	-----	0	-----	-----	-----	-----	-----

Continuous Sampling Max/Min Recipe Settings

Recipe Status: 5 Point Template  
Log Status: LOGGING: DISABL

Open Data Folder Open Users Guide  
Quick Support Exit Total Vu

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### Overview

The sampling tab is used to sample the diameter at up to 5 points. In most cases, this tab will be used to collect data for a batch of parts. Each part will have one entry into SPC data and one line in the data log.

Live measurements can be seen at the top of the screen. The measurement at the top of the screen is the average diameter of all axes. This measurement is also displayed on the trend chart to the right. All other displayed measurements will depend on the gauge.

The data table at the bottom of the sampling tab will only show the number of points allowed by the recipe. In the picture above, the 5 point template recipe is loaded and all 5 points are visible.

### Procedure

To begin, select a recipe in the drop down menu at the top left corner of the screen and click "Load Recipe". The tab will now display the correct number of points available to sample for that recipe. Next, click "Begin Data Collection." This button will start SPC and data logging. It will also lock the operator out of all other tabs until data collection has ended.

Move the part in the scanner until the laser beam is on the point of interest, then click the first “Sample” button. Move the part to the next point and click the next “Sample” button. When all points have been sampled, a line will be added to the data log. Place the next part in the scan field and repeat sampling until all parts have been measured.

During this process, the operator may choose to reset the data or end data collection. Resetting the data will clear all SPC data as well as erase and restart the current data log. Ending data collection will end the batch of parts. Once data collection has ended, “Begin Data Collection” becomes visible and the process can be repeated.

## Max/Min

Max/Min Template

**Load Recipe**

**Begin Manual Data Collection**

**Begin Auto Data Collection**

# 0.25000

A-Axis	0.24999	Major	0.25002
B-Axis	0.24999	Minor	0.24998
C-Axis	0.25002	Ovality	0.00004

	Average	Max	Min	Range
Value	0.25000	0.25003	0.24999	0.00004
Samples	5	5	5	5
Average	0.25000	0.25003	0.24998	0.00004
Maximum	0.25000	0.25003	0.24999	0.00004
Minimum	0.25000	0.25002	0.24998	0.00004
Range	0.00000	0.00000	0.00000	0.00000
Std Dev	0.00000	0.00000	0.00000	0.00000

Continuous | Sampling | **Max/Min** | Recipe | Settings

Help | Help | Help | Help | Help

Recipe Status: Max/Min Template

Log Status: LOGGING: DISABL

Open Data Folder | Open Users Guide

Quick Support | Exit Total Vu

### Overview

The max/min tab is used to measure the maximum and minimum diameters over a particular zone of a part, or along the entire length of a part. In most cases, this tab will be used to collect data for a batch of parts. Each part will have one entry into SPC data and one line in the data log.

Live measurements can be seen at the top of the screen. The measurement at the top of the screen is the average diameter of all axes. This measurement is also displayed in the chart at the bottom of the tab during data collection. All other displayed measurements will depend on the gauge.

The data table on the right contains SPC from all parts in the current batch. The row labeled “Samples” shows the number of parts that have been measured in the current batch. This will also correspond to the number of entries in the current data log.

### Manual vs. Automatic

Manual data collection is used to collect the maximum and minimum diameters over a particular zone of a part. The operator will press a button to start the data collection interval, slide the part through the scanner, and then press a button to end the data collection interval. During manual data collection, the operator has the option of discarding a bad part after the scan is complete.



Automatic data collection is used to collect the maximum and minimum diameters over the entire length of a part. The data collection interval begins automatically when a part enters the field, and ends automatically when a part leaves the field. During automatic data collection, the operator is not able to discard individual part data.

## Procedure

### *Manual Data Collection*

To begin, select a recipe in the drop down menu at the top left corner of the screen and click “Load Recipe”. Next, click “Begin Manual Data Collection”. This will lock the operator out of all other tabs until data collection has ended.

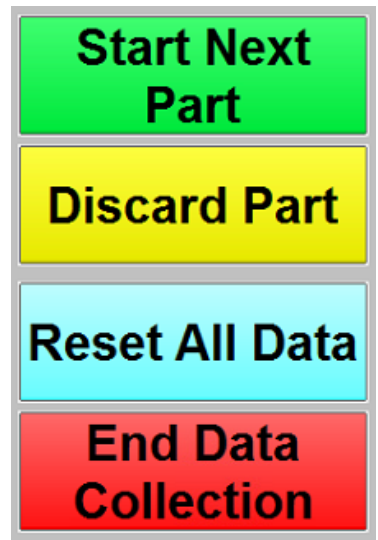
Move the part so that the laser is at the beginning of the zone to scan. To start data collection of the first part, select “Start Next Part”. This will begin the data collection interval for the first part and begin looking for the maximum and minimum diameters. Move the part through the gauge until the laser is at the end of the zone. When complete, select “End Part”.

At this point, the operator has four options. Clicking “Start Next Part” will start the data collection interval for the next part. It will also accept data from the previous part into SPC and the current data log as long as the data has not already been discarded.

Clicking “Discard Part” will delete the data from the previous part and prevent it from entering SPC and the current data log.

Clicking “Reset All Data” will clear all data from SPC and the data log for all parts in the current batch.

Clicking “End Data Collection” will stop SPC and close out the data log for viewing and editing. It will also accept the final part data into SPC and the current data log as long as the data has not already been discarded. Clicking this button signifies the end of the current batch of parts.



### ***Automatic Data Collection***

To begin, select a recipe in the drop down menu at the top left corner of the screen and click “Load Recipe”. Next, click “Begin Automatic Data Collection” to enable automatic part detection. It will also lock the operator out of all other tabs until data collection has ended.

Slide the part through the gauge at the desired speed. When the part enters the field, the scanner will begin looking for maximum and minimum diameters. When the part leaves the field, the average, maximum, minimum, and range of all values in the interval will automatically be entered into SPC and the current data log.

To finish data collection for the current batch, click “End Data Collection”. Note that this button is only visible when there is no part in the field.

## Recipe

**Current Recipe**

Continuous Template

**Save As New Recipe**

**Save Over Current Recipe**

**Continuous**

Load Template

OD		Ovality	
USL	0.00050	USL	0.010
UWL	0.00030	UWL	0.008
Nominal	0.25000		
LWL	0.00030		
LSL	0.00050		

**Max/Min**

Load Template

**Sampling**

1 Point	2 Point	3 Point	4 Point	5 Point
Load Template	Load Template	Load Template	Load Template	Load Template

**Continuous** **Sampling** **Max/Min** **Recipe** **Settings**

Recipe Status  
Continuous Template

Log Status  
LOGGING: DISABL

Open Data Folder Quick Support

Open Users Guide Exit Total Vu

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## Procedure

The recipe tab is used to create new recipes using the available templates, or to edit an existing recipe.

To create a new recipe, load the appropriate template by clicking “Load Template” in the appropriate category. Clicking this button will uncover the specifications for that template. Edit the specifications for USL, UWL, and Nominal. The LWL and LSL will automatically populate based on symmetrical tolerances once the recipe has been saved. Click “Save As New Recipe”, and name the new recipe.

To edit an existing recipe, load the appropriate recipe out of the Continuous, Sampling, or Max/Min tab. Next, go to the Recipe tab. The specifications are now visible. Edit the specifications for USL, UWL, and Nominal. The LWL and LSL will automatically populate based on symmetrical tolerances once the recipe has been saved. Click “Save Over Current Recipe” to permanently save the new specifications.

## Changing Default Settings

### *Symmetrical vs. Asymmetrical Tolerances*

By default, each template recipe is set to have symmetrical tolerances. This means that only the USL, UWL, and nominal can be edited. When the recipe is saved, the LWL and LSL will automatically populate. The LWL will be set to an equal distance from the nominal as the UWL, and the LSL will be set to an equal distance from the nominal as the USL.

To allow asymmetrical tolerances, go to the Settings tab and click "System Configuration". Double click "Recipes", and find the appropriate template. Highlight the specification for "OD" and click "Edit Specification". Uncheck the box next to "Symmetrical Tolerances" and click "OK". Click "Save Changes" and exit out of system configuration. For Sampling templates, there may be multiple OD specifications. The symmetrical tolerances option will need to be unchecked for each individual specification.

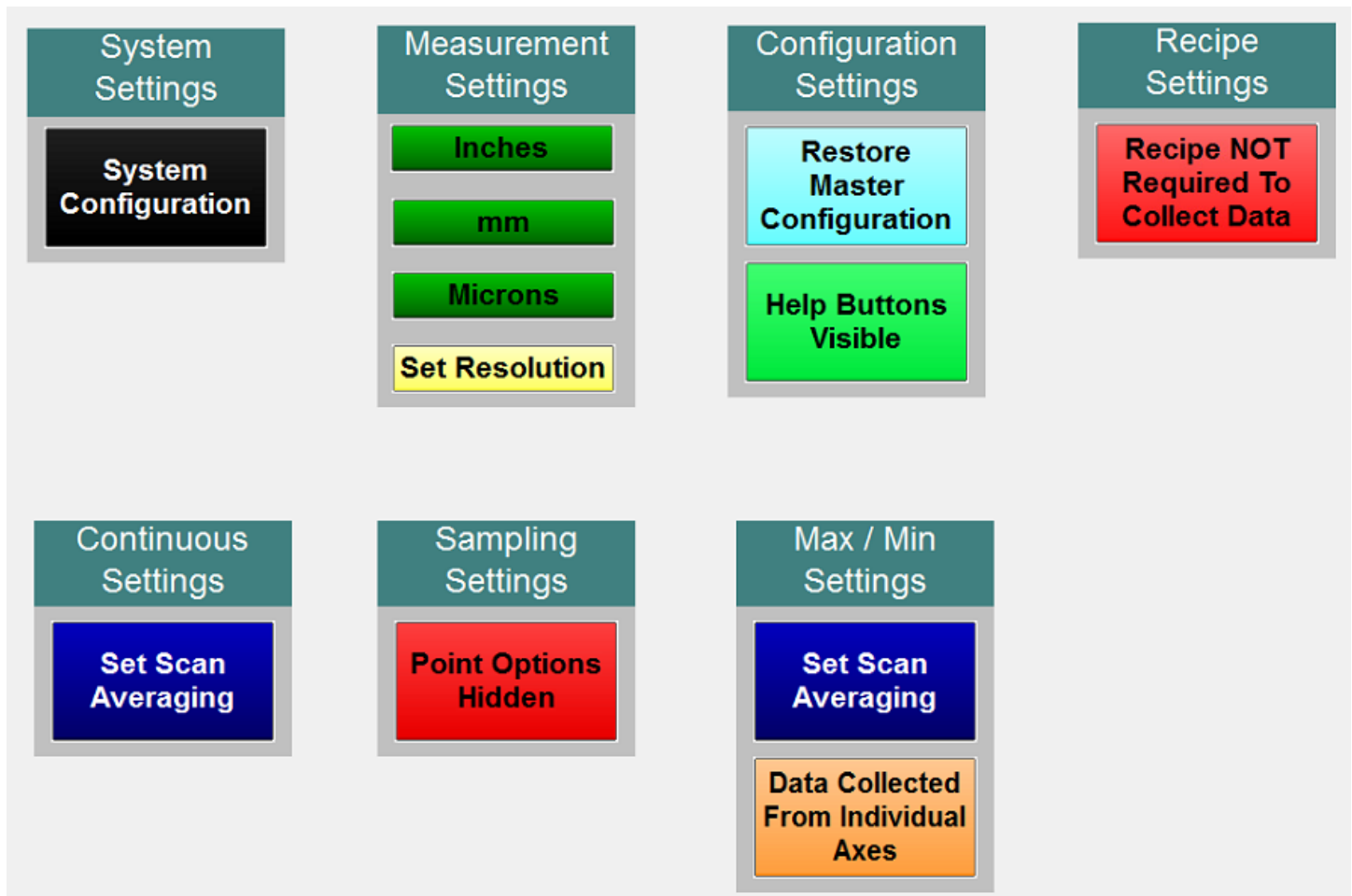
Once this change has been made, the operator will need to edit all specifications (i.e. USL, UWL, Nominal, LWL, and LSL) to correctly edit or create a new recipe.

### *Relative vs. Absolute Tolerances*

By default, all recipes are displayed as tolerances relative to nominal. This means that the specs are displayed as the nominal +/- the acceptable deviation. For example, if the specifications for a particular recipe are 0.250" +/- 0.001" with warning limits at 80%, the operator will enter a nominal of 0.250", a USL of 0.001", and a UWL of 0.0008".

Alternatively, the operator may wish to view and enter specifications as absolute limits. For the above example, the operator would enter a nominal of 0.250", a USL of 0.251", and a UWL of 0.2508". To view and enter specifications in this way, go to the Settings tab and click "System Configuration". Double click "Recipes". Click "View" in the menu bar at the top and select "Limits As Absolute". Exit system configuration. This can be reversed by selecting "Limits As Tolerances".

## Settings



### System

To edit system settings, select “System Configuration”. This page is used to edit the deeper-level settings that control how the system functions. These include settings for scanners, measurements, recipes, actions, attributes, data logging, alarms, and more. This page is often password protected to avoid unwanted changes to the system configuration. For more information on how to change the system settings of a configuration, reference the Total Vu manual in the documents folder in the installation folder, or reference the tutorial videos at the following link.

[http://public.laserlinc.com/docs/Tutorial\\_Videos/](http://public.laserlinc.com/docs/Tutorial_Videos/)

## Measurement

This panel allows the user to select the units for all measurements in the configuration. The light green button shows the current units. To change the units, simply click on the button with the desired units. This button will also change the resolution of all measurements depending on the units selected.

To change resolution, click “Set Resolution”. Select the desired resolution out of the drop down menu and click “OK”. This will change the resolution for all measurements within the configuration.

## Configuration

To restore the configuration to its original setup state, click “Restore Master Configuration”. This button will not change any of the current recipes, but only the Total Vu configuration.

The operator may also choose to hide or show the help buttons on the main display. Toggle the “Help Buttons Visible” / “Help Buttons Hidden” button to make the preferred selection.

## Recipe

There is an option in the system to require a recipe to collect data. If a recipe is required to collect data, the system will not allow the operator to select “Begin Data Collection” until a recipe under the corresponding tab has been loaded. Toggle the button under Recipe Settings to set the system to the preferred state.

## Continuous

To set the scan averaging for the base measurements of the continuous tab, click “Set Scan Averaging” under Continuous Settings. Enter the number of scans to average and click “OK”. Increasing the number of scans to average will lengthen the time interval over which scans are averaged to produce one reading. This will give better repeatability at one static point, but may also average out features of a moving part. It will also decrease the measurement update rate and data collection rate.

## Sampling

There is an option in the system to display buttons on the Sampling tab to manually choose the number of points to sample. To edit this setting, toggle the button under Sampling Settings to set the system to the preferred state.

## Max/Min

To set the scan averaging for the base measurements of the Max/Min tab, click “Set Scan Averaging” under Max/Min Settings. Enter the number of scans to average and click “OK”. Decreasing the scan averaging will increase the number of measurements included in the data pool to find the maximum and minimum diameters, but will also decrease the repeatability of each individual measurement in the data pool.

**2-axis and 3-axis scanners only-** The maximum and minimum diameters of a part can be determined using either the average diameter of the axes or the individual axes. To edit this setting, toggle the “Data Collected From Individual Axes” / “Data Collected From Average OD” button under Max/Min settings.