LaserSoft®
SpeedStat™ PC

LASERSOFT®
SpeedStat™
LASER TECH

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LTI LaserSoft SpeedStat PC 3.x
User's Guide 4th Edition
Part Number 0145000

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Table of Contents

Section 1 - Introducing SpeedStat for Windows PC

Thank you for purchasing SpeedStat software for Windows PC. This software facilitates the collection and storage of speed measurements and then calculates basic statistics from the following Laser Technology, Inc. speed measurement devices:

- TruSpeed Sxb
- TruCAM II
- TruVISION
- UltraLyte
- TruSpeed LR
- TruSpeed Se

NOTE Any files created using previous versions of SpeedStat PC or Windows Mobile are not compatible for use with the newest version of SpeedStat PC. SpeedStat *.ltiss files can be placed in the SpeedStat/Data folder under Documents to be recognized and opened in the software.

Technical Specifications

LaserSoft SpeedStat has been designed to run on Windows operating systems for use in conjunction with Laser Technology speed enforcement instruments.

Specification	Description
Distribution	Download from: • https://www.lasertech.com/SpeedStat.aspx • http://license.lasertechpartners.com/CustomerLogin.aspx
Minimum Required Operating System	Microsoft Windows 7 or newer Computers
Connectivity to PC	• Bluetooth* • Cable (4-pin to DB9 + USB converter or 6-pin to DB9 + USB converter)
Compatible Laser Models	• TruSpeed Sxb (Bluetooth, 4-pin cable) • TruCAM II (6-pin cable) • TruVISION (6-pin cable) • TruSpeed Se (4 pin-cable) • UltraLyte (4 pin-cable) • TruSpeed LR (4 pin-cable)
Supported Languages	English; template is available for translation

* Connectivity to a PC over a 4-pin to DB9 (with USB converter) cable or a 6-pin to DB9 (with USB converter) cable but they may not have Bluetooth communication.

Warranty Information

For purchases including lasers, a copy of the LTI Limited Warranty should have shipped with the order. If needed, please contact LTI to obtain a copy of the LTI Limited Warranty. See the inside front cover for LTI contact information.

Laser Setup/Connection Notes

TruSpeed Sxb

- <u>Bluetooth</u> - Ensure that the laser is in speed mode (not survey mode), with the vehicle indicator displaying through the scope. The laser Bluetooth function needs to be turned on with "BT_On" selected. For wireless communication, bring extra batteries. To pair the laser to a PC, go to Control Panel/Hardware and Sound/Devices and Printers and then click "Add a Device." If the laser is powered on and within range of the PC, it should display in the list of devices as an option. Select the laser and enter the Bluetooth PIN code: 6912.

- <u>Cable</u> - The only requirement for setup is to attach the laser to a PC using an LTI 4-pin to DB9 cable or an LTI 6-pin to DB9 cable. If the PC does not have a DB9 port, a DB9 to USB converter will work to make the connection.

TruCAM II/TruVISION

- <u>Bluetooth</u> - These models do not have Bluetooth.

- <u>Cable</u> - The only requirement for setup is to attach the laser to a PC using an LTI 4-pin to DB9 cable or an LTI 6-pin to DB9 cable. If the PC does not have a DB9 port, a DB9 to USB converter will work to make the connection.

UltraLyte/TruSpeed LR/TruSpeed Se

- <u>Bluetooth</u> - These models do not have Bluetooth.

- <u>Cable</u> - The only requirement for setup is to attach the laser to a PC using an LTI 4-pin to DB9 cable or an LTI 6-pin to DB9 cable. If the PC does not have a DB9 port, a DB9 to USB converter will work to make the connection.

Comm Settings

After a laser is connected to a PC and before the data collection session begins, the connection to the laser can be tested in Comm Settings within SpeedStat.

To test the connection to a laser in Comm Settings:

1. Ensure the laser is connected to the PC .

2. Open SpeedStat.

3. Click ⇄ from the menu bar.

4. The Select Serial Port screen displays (Figure 1A).
   - Comm port: Select a COM port from the drop-down menu.
     It may be necessary to try more than one until data comes in.
   - Input: Select the laser in use.

5. Fire the laser and if the connection exists, the laser serial string will display in the Laser data field (Figure 1B).
   If no data displays, change the COM port and try again.

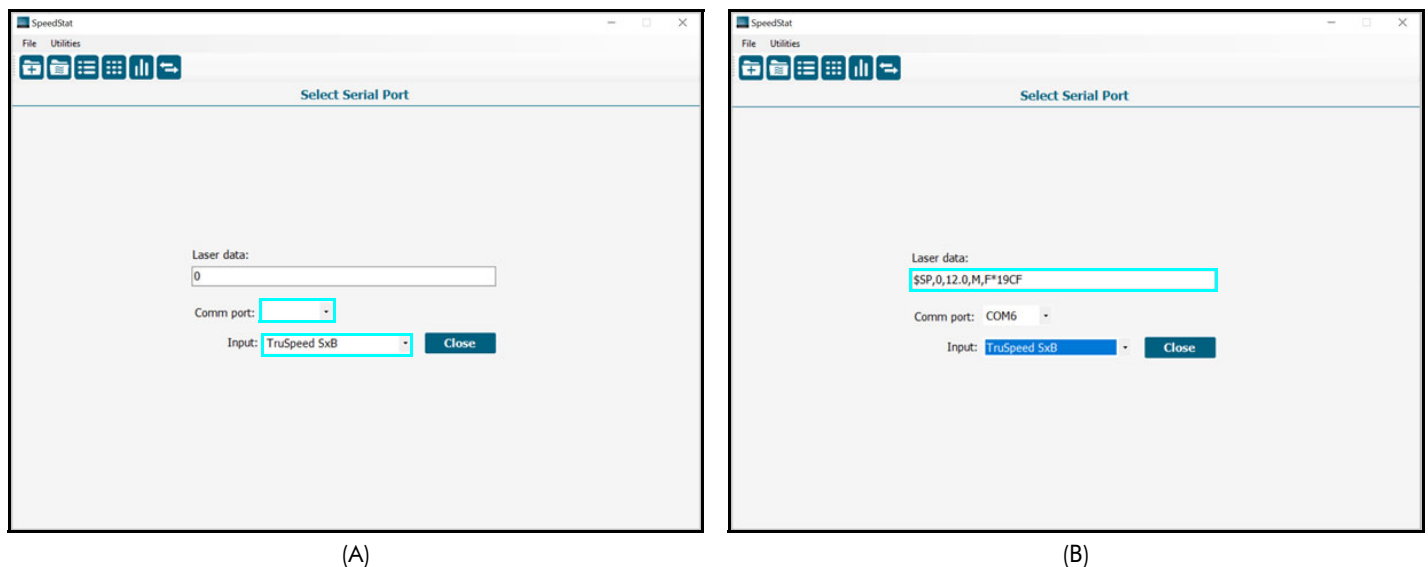(A)   (B)

Figure 1

If all COM ports have been tried and no laser data is displaying in the Laser data field, try the following troubleshooting tips:

- For cabled connections, ensure that the 4-pin (or 6-pin) end is securely and correctly connected to the laser. Also ensure the DB9 end is securely and correctly connected to the PC, or in the USB converter, if one is in use.

- For Bluetooth connections, verify that the Bluetooth feature in the laser is turned on and set to BT_On.

- For Bluetooth connections, ensure that the laser is paired to the PC. Lasers can only be paired to one device at a time.

- Ensure that the laser batteries are fresh. Be aware that Bluetooth connections use more battery than cabled connections. When batteries get low, the laser may fire but may not have enough power to send data out the serial port to the PC.

Serial Data Format

The SpeedStat app accepts data from LTI instruments that use a data format which is based on the NMEA 0183 Standard for Marine Electronic Navigational Devices, Revision 2.0. For more detailed information about serial data format, refer to the user's manual that shipped with the LTI instrument.

Section 2 - Get Started with SpeedStat

This section describes the download and installation procedure necessary to get started with SpeedStat. It explains where to find the software, install it, and then launch it. Once the application has been successfully launched, follow the instructions in this section to understand the main menu and configure the settings.

Install & Launch SpeedStat

To install SpeedStat PC:

1. This software may be downloaded for free from:
   https://lasertech.com/product/speedstat/
   Or from Laser Technology's License Manager site. When you purchase the software from Laser Technology, you will receive an automated email that contains your password to access License Manager. Upon logging in you can click the "Download Software" link to access the installation file: https://www.lasertech.com/License-Manager.aspx and then click "License Manager Login".

2. Double-click the SpeedStatPC_v3.x.exe file to install.

3. Click through the prompts to complete installation.

4. Click the SpeedStat desktop icon to launch the program (Figure 2).

Figure 2

Program Licensing

Upon any purchase of SpeedStat, Laser Technology generates a customer account on its License Manager website (http://license.lasertechpartners.com/CustomerLogin.aspx) that allows you to generate license keys. When SpeedStat is launched, the licensing screen displays. SpeedStat can be used for 30 days from the date of download before a license key is required. Tap the Demo button to proceed past the licensing screen and use the program. At the end of 30 days, SpeedStat cannot be used without a license key.

About the 30-day Trial

- The Demo button is in the center of the licensing screen, underneath the field where the license key is entered. The text display above the button changes depending on how many days are left in the trial. In Figure 3, the screen shows "Demo 30 days left".

- SpeedStat is fully functional during the trial period. Files created during this time are accessible throughout the trial and can be re-accessed when the program is licensed.

- Contact an authorized dealer near you to purchase a license key or call LTI for more information (1-800-790-7364 or 1-303-649-1000).
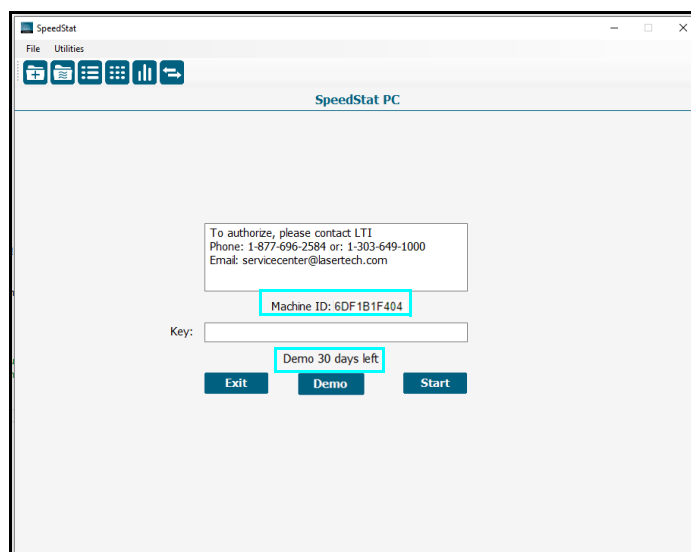

Figure 3

NOTE Copy or notate the Machine ID value. It will be entered on the "Obtain License Key" page (see next page).

To Generate a License Key

1. Notate the temporary password you received from licensing@lasertechpartners.com and open License Manager, http://license.lasertechpartners.com/CustomerLogin.aspx.

2. Enter the email address associated with your purchase and the temporary password.
   Click [Submit] to log in (Figure 4A).

   NOTE If you do not have your temporary password, click the [Request Password] link at the top of the screen.
   Once successfully logged in, the "Obtain License Key" page displays (Figure 4B).

(A)   (B)
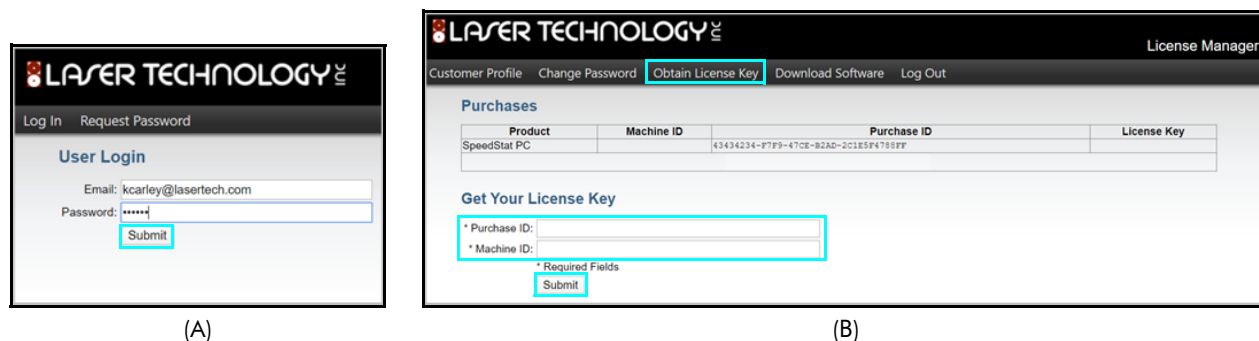
Figure 4

3. On the "Obtain License Key" page, your purchase is displayed (Figure 4B).
   Enter the Machine ID and Purchase ID to create the license key:

   - **Machine ID**: Copy and paste (or type in) the Machine ID from the SpeedStat
     licensing screen (Figure 3 on previous page) to the Machine ID field in License Manager (Figure 4B).
   - **Purchase ID**: Copy the Purchase ID from the Purchases Table and paste it in the Purchase ID field
     in License Manager (Figure 4B).

4. Click [Submit] and the license key is created and displays below the fields. It is also included
   in the Purchases table above (Figure 5C).

(A)   (B)

(C)
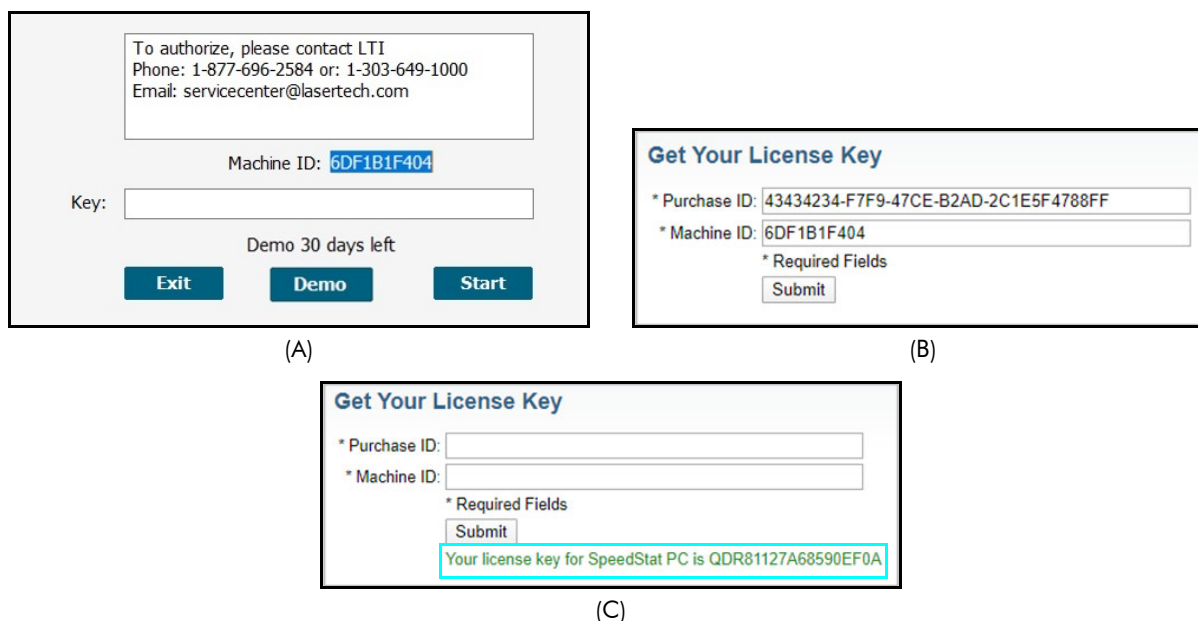
Figure 5

5. Enter the license key into the Key field on the SpeedStat licensing screen and click [Start] (Figure 6).
    The SpeedStat Main Menu will be displayed .
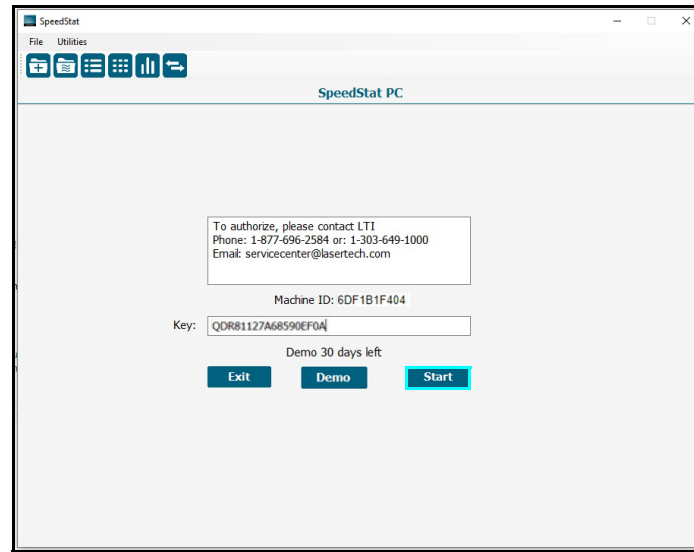
Figure 6

NOTE If an incorrect key is entered, the SpeedStat main menu will not be displayed.
Instead, the display will return to the SpeedStat licensing screen.

For assistance contact: servicecenter@lasertech.com or call 1-877-696-2584.
Please provide your name, company name, purchase ID (if known) as well as
the Machine ID displayed on the SpeedStat licensing screen.

Section 3 - Collect Data

About the Main Menu

Figure 7 shows the SpeedStat main menu.

Figure 7

File Menu	• **Collect** – Start a new data collection session. • **Main** – Leave current screen and return to the Main Menu. • **Exit** – the program.
Utilities Menu	• **Comm Settings** – Verify communication between the laser and the PC. • **About SpeedStat PC** – See the current version for SpeedStat that is installed on the PC as well as LTI contact information.
⊞	Start a new data collection session.
🗁	Display list of saved data collection sessions and open one.
☰	Display data collection session summary statistics.*
▦	Display data collection session grid of measurements, includes option to delete any records from the session.*
📊	Review, filter, save and print normal and cumulative distribution curves for a data collection session.*
⇆	Verify communication between the laser and the PC.
Collect	Start a new data collection session.
Saved Files	Display the list of saved data collection sessions and open one.
Exit	Exit the program

*These options are only available if a data collection session is open.

Start a Data Collection Session

To start a data collection session:

1. Open SpeedStat and click [Collect] from the Main Menu (Figure 8).

2. Enter/select the following on the Data Collection screen (Figure 9):
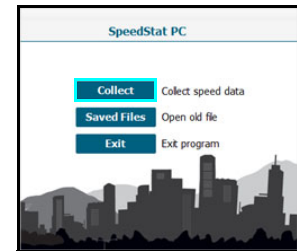
Figure 8
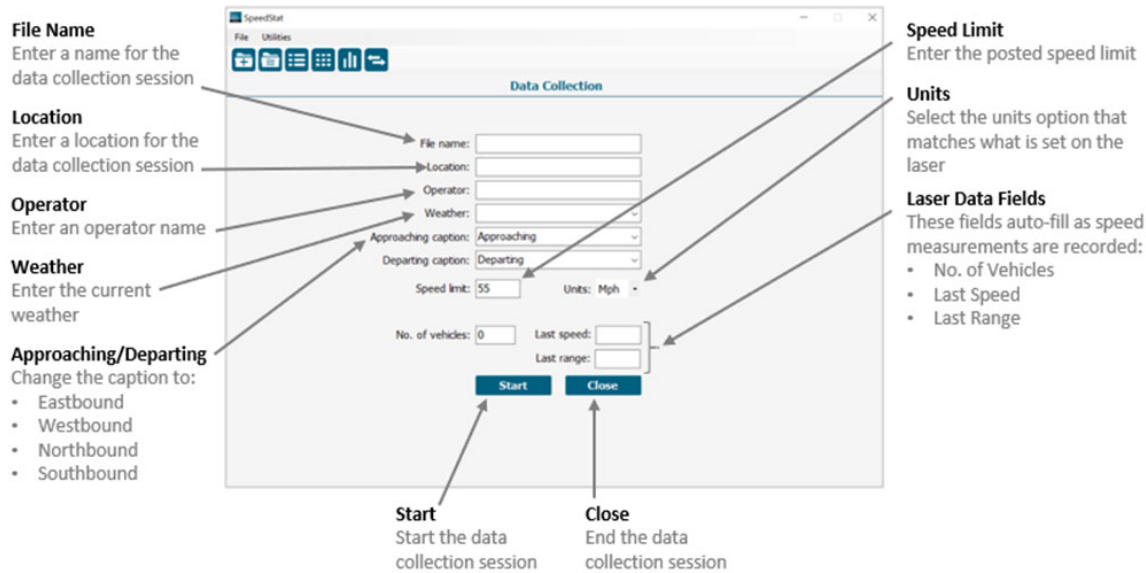
Figure 9

3. Click [Start] to begin recording speed measurements (Figure 10A).

4. Fire the laser and capture a speed measurement (Figure 10B). Observe that the Laser Data Fields display data (No. of Vehicles = 1, Last Speed = 65, and Last Range = 1,085.6). Repeat this step until done. All of the data is automatically stored as it is collected.

5. Click [Close] to end the data collection session.
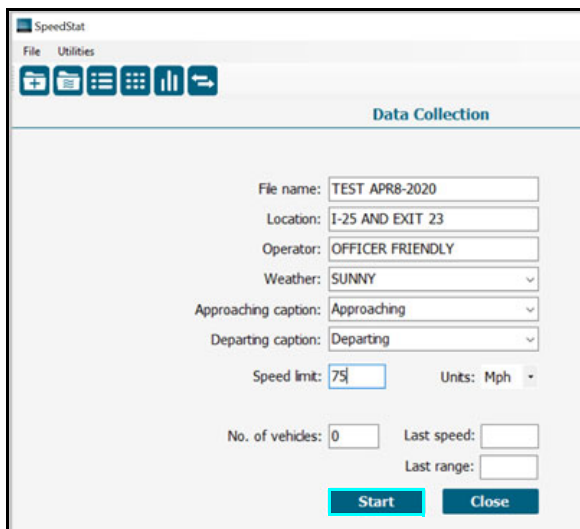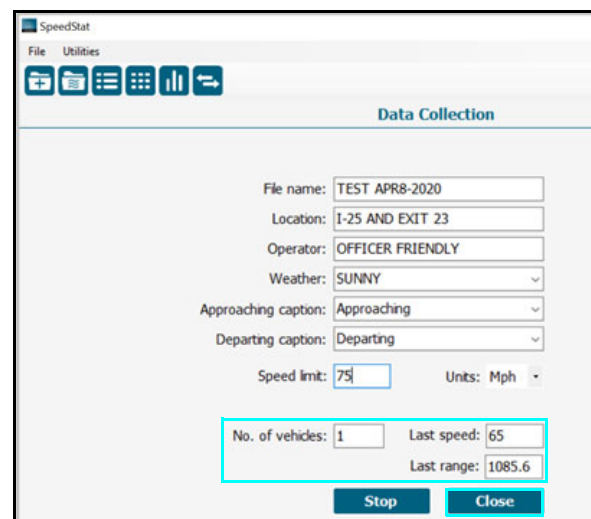
(A)   (B)

Figure 10

Manage Saved Data Collection Sessions

Saved Data Collection files can be accessed, edited, or deleted within SpeedStat.

Open and Edit a Saved Data Collection Session

1. Open SpeedStat and then click [Saved Files] (Figure 11A).
2. Click to highlight the data collection session to open and click [Open] (Figure 11B).
   The Summary Statistics screen displays (Figure 12A).

(A)   (B)
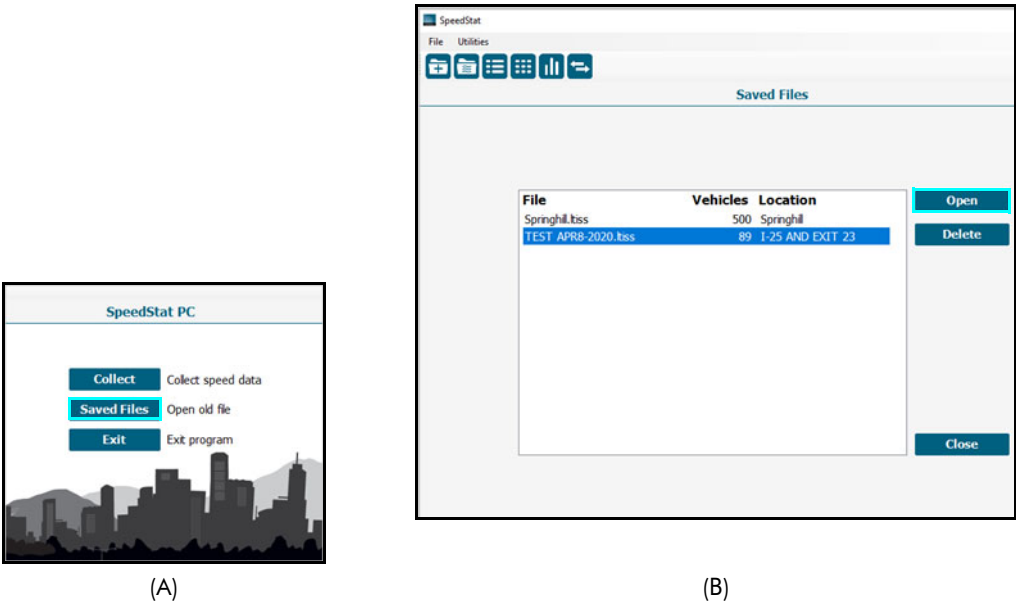
Figure 11

3. Click [Add Data]. The Data Collection screen displays (Figure 12B).
4. Click [Start] and fire the laser until the desired number of speed records has been added to the session.
5. Click [Stop] to end data collection.

(A)   (B)
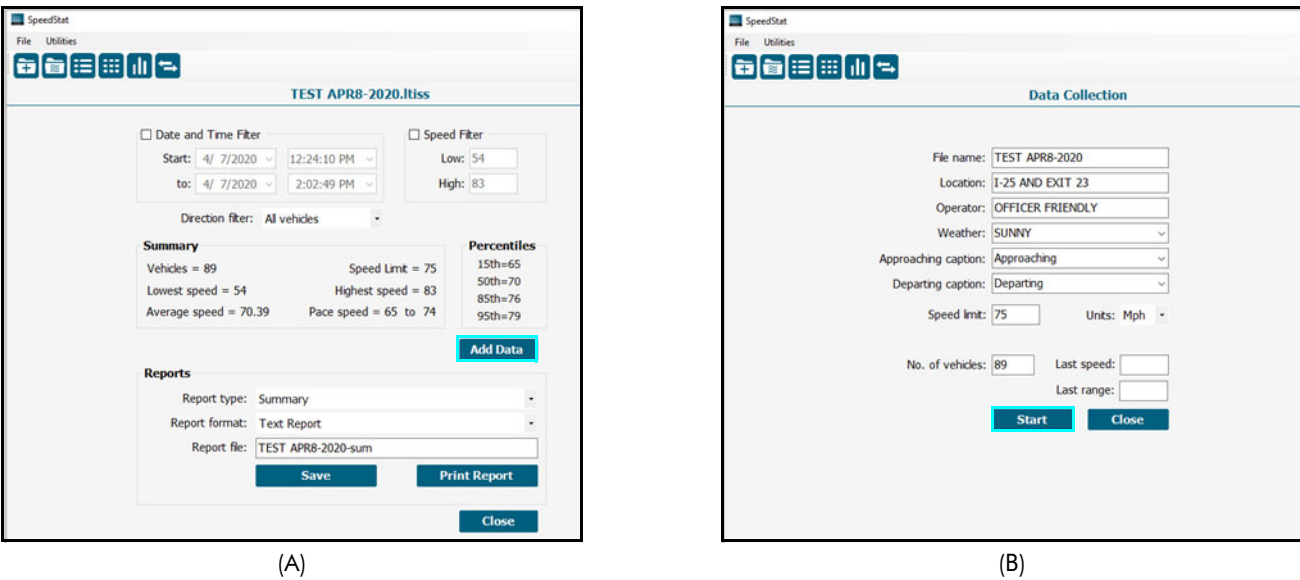
Figure 12

Delete a Single Measurement Record from a Data Collection Session

1. Open SpeedStat and then click [Saved Files] (Figure 13A).
2. Click to highlight the data collection session and click [Open] (Figure 13B).

    Click [⊞] to display the list of measurement records. The Measurements screen displays (Figure 14A).

(A)　　　　　　　　　　　　　　　　　(B)
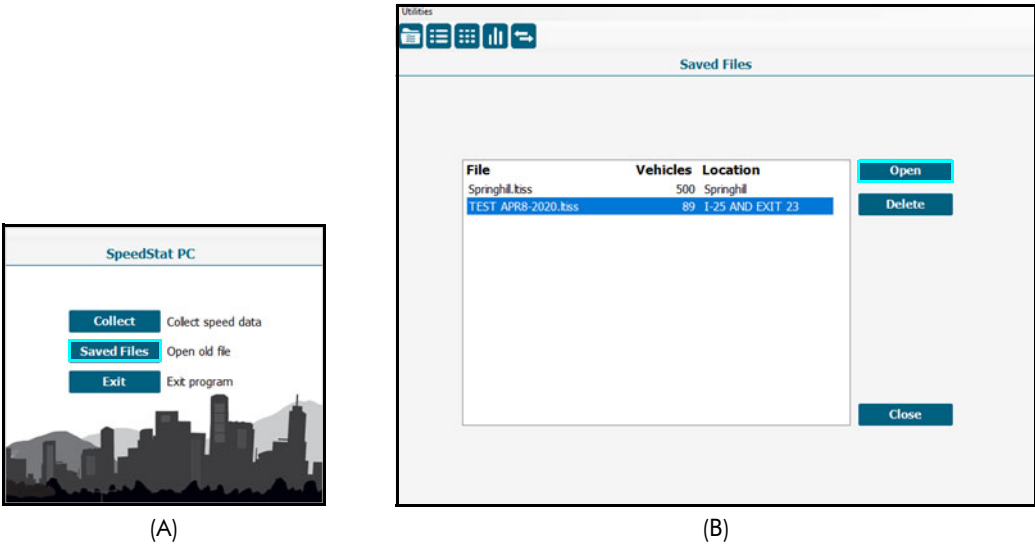
Figure 13

3. Click to select the measurement record and click [Delete] (Figure 14B).
4. Click OK to confirm deletion of the measurement record (Figure 14C).
    NOTE Record deletions cannot be undone.

(A)　　　　　　　　　　　　　　　　　(B)
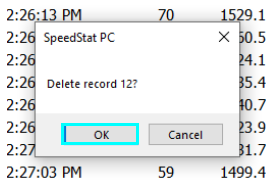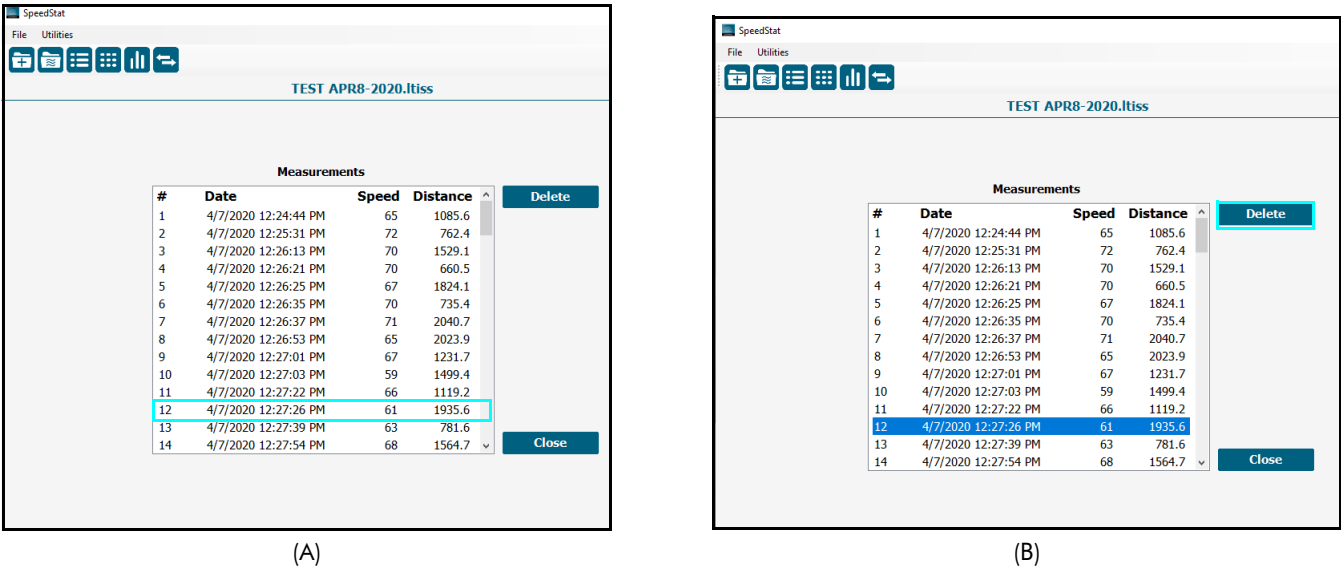
(C)

Figure 14

Delete a Saved Data Collection Session

1. Open SpeedStat and then click [Saved Files] (Figure 15A).
2. Click to highlight the data collection session and click [Delete] (Figure 15B).
   NOTE Once a session has been deleted, it cannot be restored.
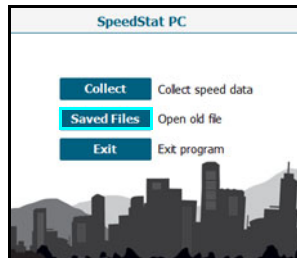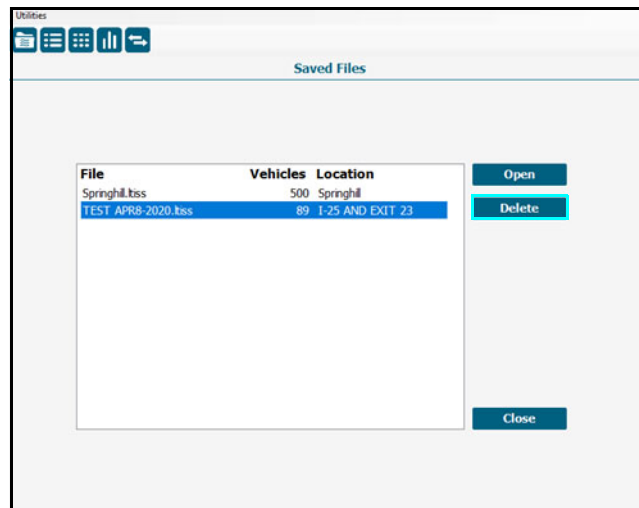
(A)   (B)

Figure 15

Section 4 - Summary Statistics

Once data collection is complete, there are two ways to view Summary Statistics and do some basic filtering of the data.

- At the end of the data collection session, after clicking [Stop], click [Close] and the Summary Statistics screen will automatically display.

- When accessing a saved data collection session, click [Saved Files], then click the file to highlight it, and click [Open]. Any time a data collection session is open, Summary Statistics can be found by clicking ▤ in the menu bar at any time.

Summary Statistics Screen Overview

Figure 16 shows the Summary Statistics screen.

Date & Time Filter
Check the box to set a start and end date/time for values on which to report

Summary
Displays quick stats on the data collection session, including:
- Vehicles
- Speed Limit
- Lowest Speed
- Highest Speed
- Average Speed
- Pace Speed

Report Type
Select a report type:
- Summary
- 15 Min Intervals
- 30 Min Intervals
- 60 Min Intervals

Speed Filter
Check the box to set a low and high range of speed values on which to report

Percentiles
Number of vehicles in the 15th, 50th, 85th, or 95th percentiles

Add Data
Add speed measurements to an existing data collection session

Print Report
Send a report to a printer

Report Format
Select a Report Format:
- Text Report
- Spreadsheet Report

Report File
Change the report file name from what was entered at session start

Save
Save a report

Close
Close Summary Statistics and return to the Main Menu

Figure 16

Review Data & Apply Filters

When the Summary Statistics screen is first displayed, it includes the basic statistics for vehicles that have been observed during the data collection session. Filters permit flexible report generation for a specific subset of vehicles.

Summary

The Summary Statistics screen shows basic statistics about the speed measurement data that was collected. The following values are updated when filters are applied:

- **Vehicles**: The total number of vehicles.

- **Speed Limit**: The value that was entered as the posted speed limit on the Data Collection screen.

- **Lowest Speed**: The slowest speed included in the open data collection session.

- **Highest Speed**: The fastest speed included in the open data collection session.

- **Avg Speed**: (sum of all speeds)/(total number of vehicles)

- **Pace Speed**: Defined as a 10-MPH interval centered on the average speed of observed vehicles. [(Ave speed rounded up) - 5] to [(Avg speed rounded up) + 4]

- **[Close]** Button: Exits the Summary Statistics screen and returns the display to the Main Menu.

Date & Time Filter

The date and time filter filters the data to show a specific date…" and time interval. Allows you to generate a report or graph for a specific date and time interval. As an example, the filter can be set to include a single day from a 4-day collection period, or a specific interval like a "rush hour."

To apply a date & time filter:

1. Open the data collection session to display the Summary Statistics screen (Figure 17A).

2. Check the box next to the Date and Time Filter and enter a start date and time range for specific speed measurements (Figure 17B).

3. Once values are entered, the Summary and percentiles values change to reflect the filter settings (Figure 17C).

Figure 17

Speed Filter

The speed filter filters the data to show a specific range of speeds. Allows for the generation of a report or graph for a specific range of speeds. As an example, the filter can set to exclude any outlying data value, such as a bicycle or a Ferrari going way too fast.

To apply a speed filter:

1. Open the data collection session to display the Summary Statistics screen (Figure 18A).

2. Check the box next to the Speed Filter and enter the Low and High speed values (Figure 18B).

3. Once values are entered, the Summary and percentiles values change to reflect the filter settings (Figure 18C).

Figure 18

Section 5 - Reports

Reports can be generated for any open data collection session. Reports will reflect any filters applied prior to report generation. The available report types are as follows:

- Text Report - *.txt Text Format
- Spreadsheet Report - *.csv Comma Delimited Format

Reports can be generated can be based on the following options:

- Summary
- 15 Min Intervals
- 30 Min Intervals
- 60 Min Intervals
- Graphs (Refer to Page 20 for how to save graph files)

Summary

The Summary report shows the number of vehicles in MPH (or KPH) increments.

To create a Summary report:

1. Open a data collection session to display the Summary Statistics screen (Figure 19A).
2. <Optional> Apply filters.
3. Click the Report Type drop-down menu and select "Summary" from the list of options (Figure 19B).
4. Click the Report Format drop-down menu and select either Text or Spreadsheet report.

(A)   (B)

Figure 19

5.   And then Click:
  •   [Save] to generate and save the report:
     •   Text Report: your file name-sum.txt (Figure 20A).
     •   Spreadsheet Report: your file name-sum.csv (Figure 20B).
     •   Saved reports are found here on the PC: Documents/SpeedStat/Reports/your file name Folder
  •   [Print Report] to send the report directly to a printer.
     NOTE This option prints the report without creating a file.

(A)

(B)

Figure 20

15 Min Intervals

The 15 Min Intervals report shows the number of vehicles in each 2 MPH (or 2 KPH) increments for each 15-minute interval of the data collection session.

To create a 15 Min Interval report:

1. Open a data collection session to display the Summary Statistics screen (Figure 21A).

2. <Optional> Apply filters.

3. Click the Report Type drop-down menu and select "15 Min Interval" from the list of options (Figure 21B).

4. Click the Report Format drop-down menu and select either Text or Spreadsheet report.

5. And then Click:

    *   [Save] to generate and save the report.
        *   Text Report: your file name-15mins.txt (Figure 21C).
        *   Spreadsheet Report: your file name-15mins.csv (Figure 21D).
        *   Saved reports are found here on the PC: Documents/SpeedStat/Reports/your file name Folder.
    *   [Print Report] to send the report directly to a printer.
        NOTE This option prints the report without creating a file.

(A)   (B)

(C)

(D)

Figure 21

30 Min Intervals

The 30 Min Intervals report shows the number of vehicles in each 2 MPH (or 2 KPH) increments for each 30-minute interval of the data collection session.

To create a 30 Min Interval report:

1. Open a data collection session to display the Summary Statistics screen (Figure 22A).

2. <Optional> Apply filters.

3. Click the Report Type drop-down menu and select "30 Min Interval" from the list of options (Figure 22B).

4. Click the Report Format drop-down menu and select either Text or Spreadsheet report.

5. And then Click:

   - [Save] to generate and save the report.
     - Text Report: your file name-30mins.txt (Figure 22C).
     - Spreadsheet Report: your file name-30mins.csv (Figure 22D).
     - Saved reports are found here on the PC: Documents/SpeedStat/Reports/your file name Folder.
   - [Print Report] to send the report directly to a printer.
     NOTE This option prints the report without creating a file.

(A)   (B)

(C)

(D)

Figure 22

60 Min Intervals

The 60 Min Intervals report shows the number of vehicles in each 2 MPH (or 2 KPH) increments for each 1-hour interval of the data collection session.

To create a 60 Min Interval report:

1. Open a data collection session to display the Summary Statistics screen (Figure 23A).
2. <Optional> Apply filters.
3. Click the Report Type drop-down menu and select "60 Min Interval" from the list of options (Figure 23B).
4. Click the Report Format drop-down menu and select either Text or Spreadsheet report.
5. And then Click:
   - [Save] to generate and save the report.
     - Text Report: your file name-60mins.txt (Figure 23C).
     - Spreadsheet Report: your file name-60mins.csv (Figure 23D).
     - Saved reports are found here on the PC: Documents/SpeedStat/Reports/your file name Folder
   - [Print Report] to send the report directly to a printer.
     NOTE This option prints the report without creating a file.

(A)

(B)

(C)

(D)

Figure 23

Normal & Cumulative Distribution Graphs

The Graphs screen displays a representation of an open data collection session. Graphs will reflect any filters that have been applied to the data. Two types of graphs are available:

- **Normal Distribution**: Shows a conventional bar graph of measured speeds (Figure 24A).

- **Cumulative Distribution**: Shows the percentage of vehicles in increasing speed ranges (Figure 24B).
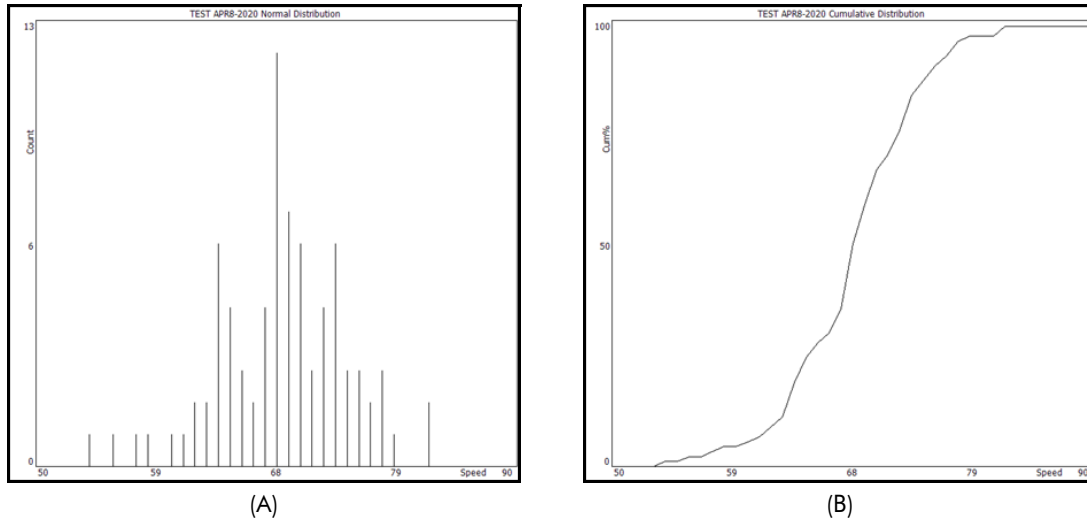

(A)   (B)

Figure 24

Overview

To view the Graphs screen:

1. Open a data collection session file.
2. <Optional> Apply filters.
3. Click [icon] from the menu bar (Figure 25A).
4. The Graphs screen displays (Figure 25B).
5. Apply a Direction filter to include the following:
   - All Vehicles
   - Only Approaching Vehicles
   - Only Departing Vehicles

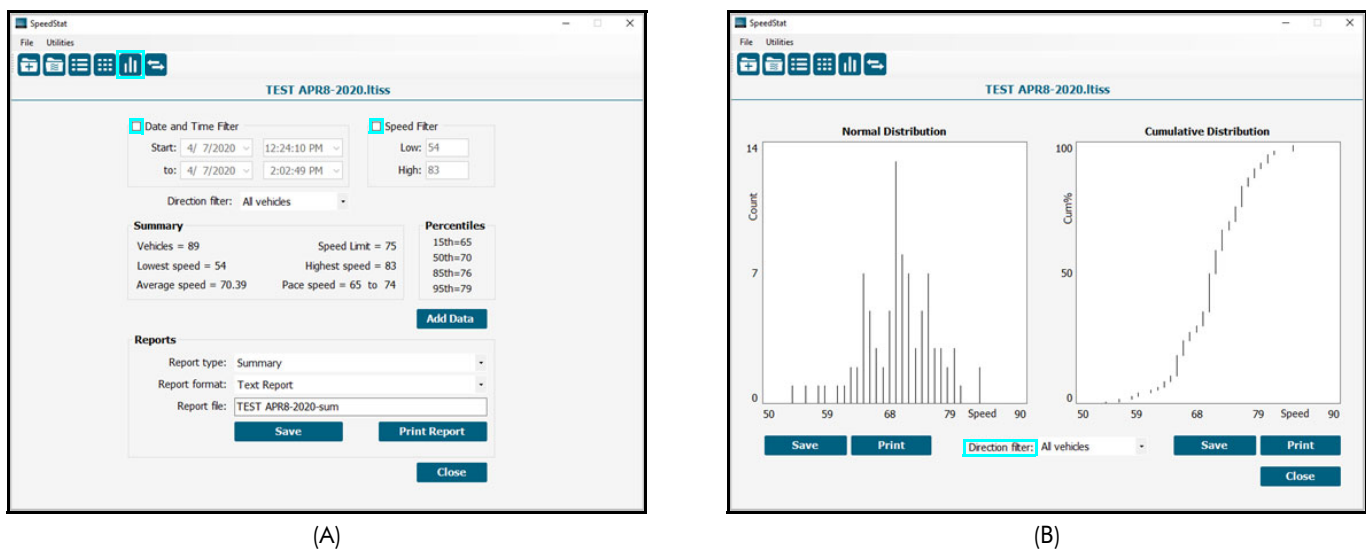

(A)   (B)

Figure 25

6. <optional> Click:
    - [Save] under each graph to save it as an image file that can be printed or emailed.
    - Normal Distribution filename: your file name-normal.bmp (Figure 26B).
    - Cumulative Distribution filename: your file name-cumulative.bmp (Figure 26C).
    - Saved graphs are found here on the PC: Documents/SpeedStat/Reports/your file name Folder
    - Graph Sizes:
        - Small = 150 x 150 dpi
        - Large = 300 x 300 dpi
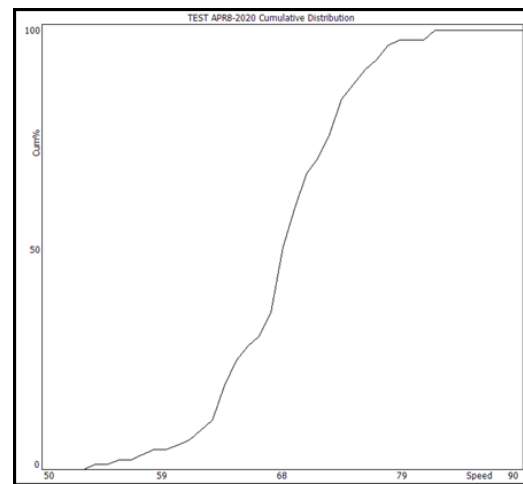   - [Print] under each graph to send to print out the graph image.
7. Click [Close] to leave the Graph screen and return to the SpeedStat Main Menu.
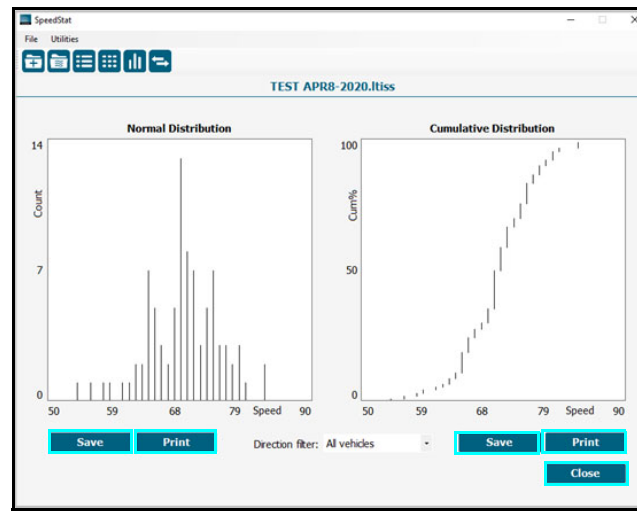
(A)
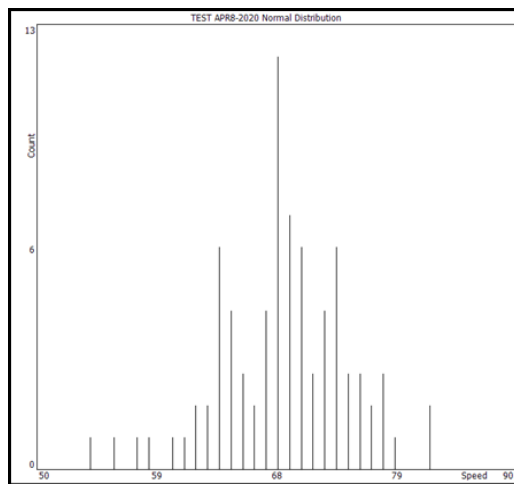
(B)

(C)

Figure 26

Creating a Custom Graph

The following instructions will assist with creating a custom graph using Microsoft® Excel.

1. Create a Spreadsheet report (*.csv) of any report type. In this example, the Summary report with no applied filters is used.
2. Open the report in Microsoft Excel.
3. Depending on the selected report:
    - Create a graph using Chart Wizard
    - Create a Pivot Chart report (Data > PivotTable and PivotTable Report).
    - For more information, see Appendix A (Page 22).

Appendix A - Creating Custom Graphs in Excel

Use Summary Data to Create a Graph

The following instructions will assist with creating a custom graph using Microsoft® Excel.

1. Open the Summary report in Excel.

2. Select the data to be included in the graph (Figure 27A).

3. Select Insert from the Menu Bar and then click PivotChart in Excel (Figure 27B).
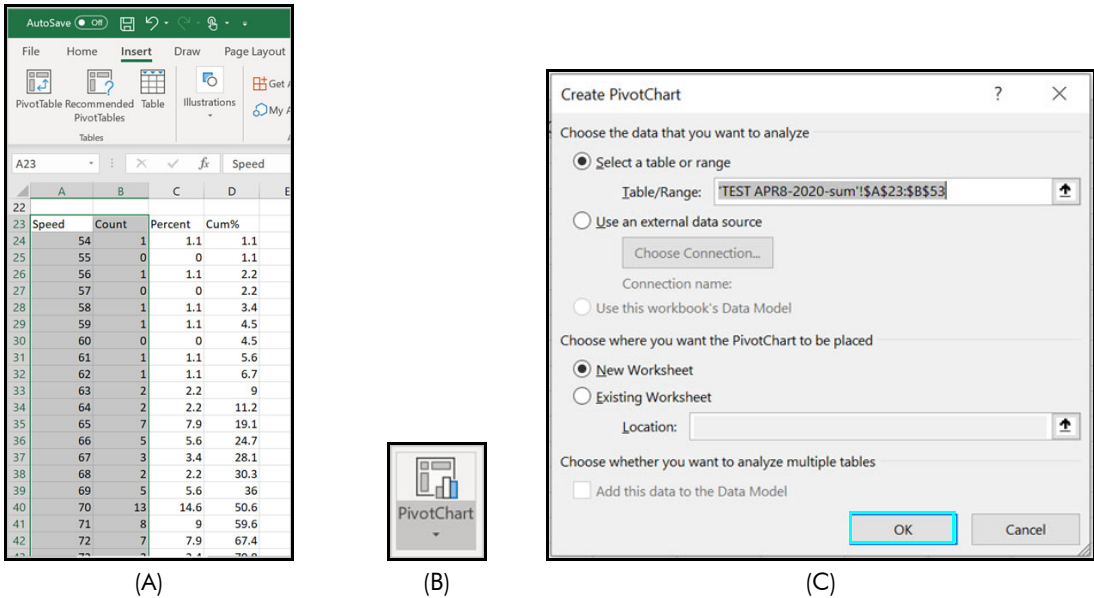

(A)   (B)   (C)

Figure 27

4. Click [OK] (Figure 27C) and Pivot Chart Fields display (Figure 28).
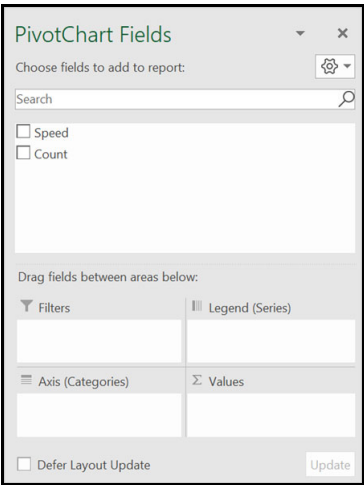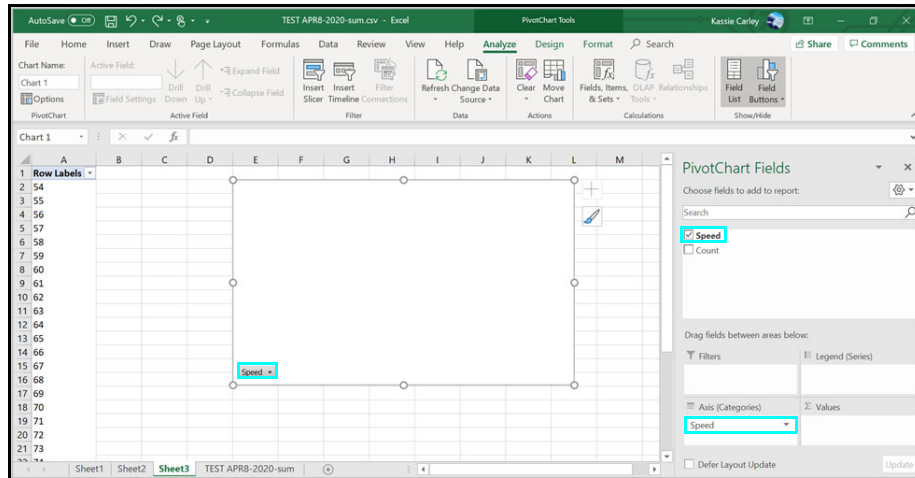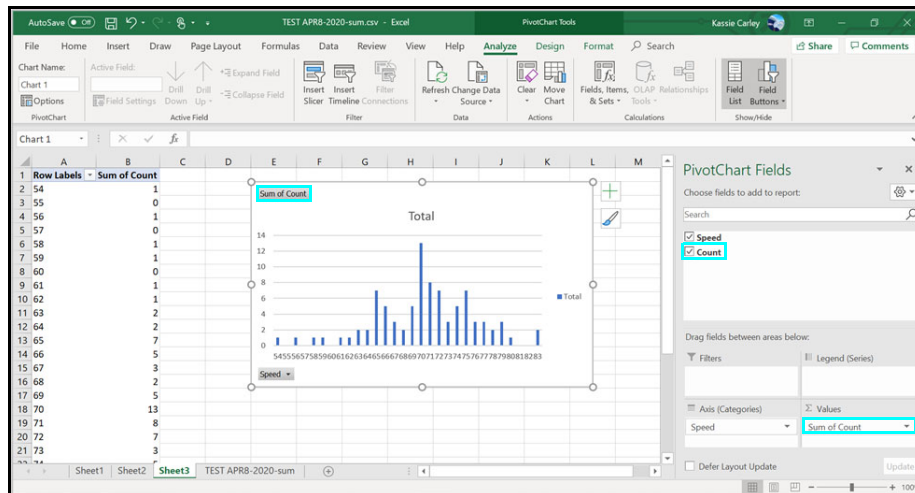

Figure 28

5. Click on the word Speed from the Pivot Chart Fields box and drag and drop it into the Axis field (Figure 29A).

6. Click on the word Count from the Pivot Chart Fields box and drag and drop it into the Values field (Figure 29B).

7. Double-click anywhere on components of the chart to change them such as chart title, legend and axis labels.

(A)

(B)

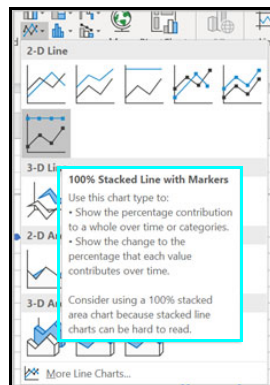Figure 29

Use Interval Data to Create a Graph

The following instructions will assist with creating a custom graph using interval data in Microsoft® Excel.

1. Open the Interval report in Excel.
2. Select the data to be included in the graph (Figure 30A).
3. Select Insert from the Menu Bar and then click the [icon] Line or Area chart option.
4. Select the "100% Stacked Line with Markers" option from the drop-down list (Figure 30B).
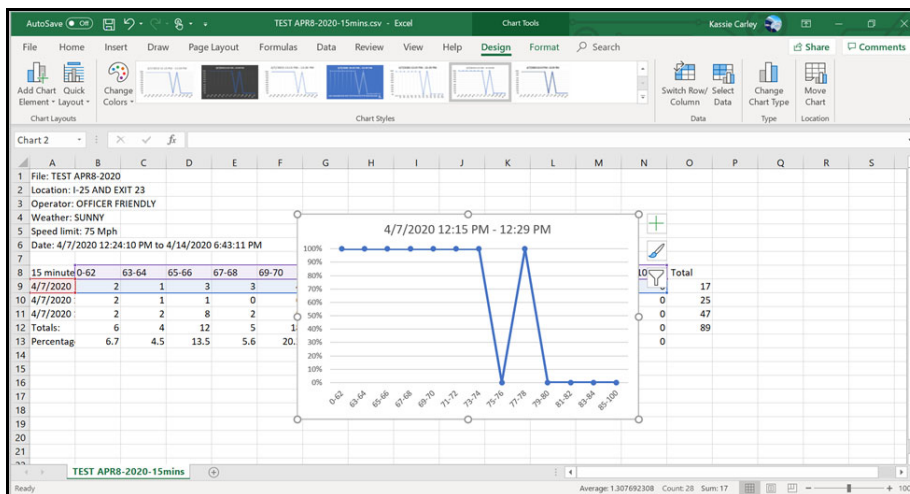5. The graph displays (Figure 30C).

(A)

(B)

(C)

Figure 30

Appendix B - Troubleshooting Tips

| Problem	Solution
No communication between laser and the PC.	• For cabled connections, ensure that the 4-pin end is securely and correctly connected to the laser. Also ensure the DB9 end is securely and correctly connected to the PC, or in the USB converter, if one is in use. • For Bluetooth connections, verify that the Bluetooth feature in the laser is turned on and set to BT_On. • For Bluetooth connections, ensure that the laser is paired to the PC. Lasers can only be paired to one device at a time. • Ensure that the laser batteries are fresh. Be aware that Bluetooth connections use more battery than cabled connections. When batteries get low, the laser may fire but may not have enough power to send data out the serial port to the PC.
An error message was displayed while working in SpeedStat.	Error messages are often self-explanatory. Clear the message and correct the error before proceeding. If the error continues, restart SpeedStat. If the error persists, restart the PC (see above). For persistent error messages, email Laser Technology for support at servicecenter@lasertech.com.
A speed measurement was accidentally deleted.	Reshoot or manually re-add the speed measurement. Speed measurement deletions cannot be undone.

NOTE SpeedStat v3.x is designed for Windows PCs running operating systems 7 or newer.
To check the version of the operating system of the PC, navigate to Windows Settings and then About.
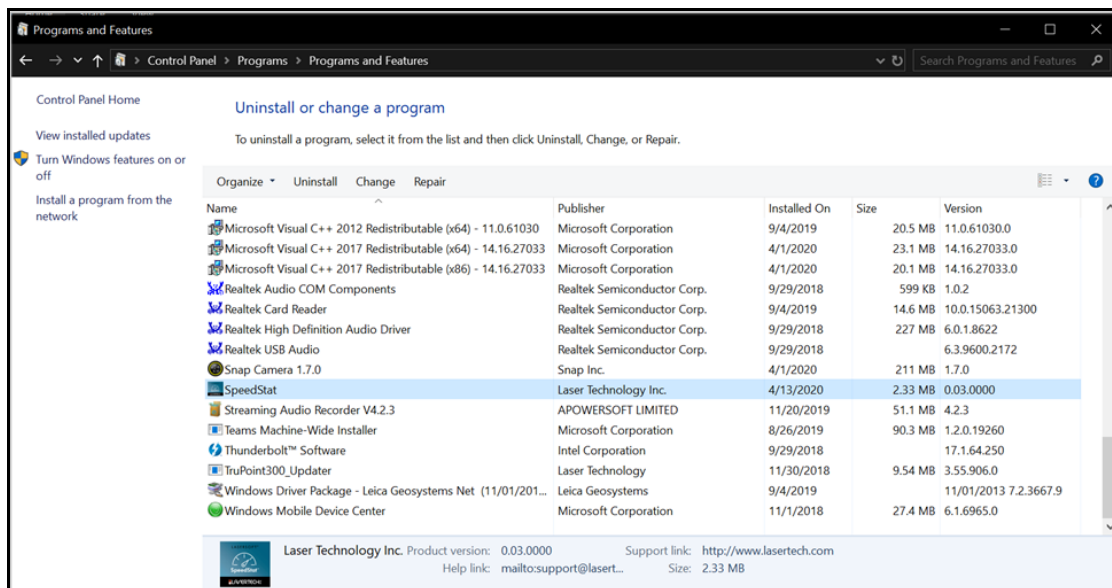
Appendix C - Uninstall SpeedStat

Step 1 - Uninstall SpeedStat:

1. Open Windows Control Panel.
2. Select "Programs" and "Uninstall a Program" (Figure 31A).
3. Select SpeedStat from the list and click "Uninstall" (Figure 31B).
4. Follow the prompts to complete the uninstall.
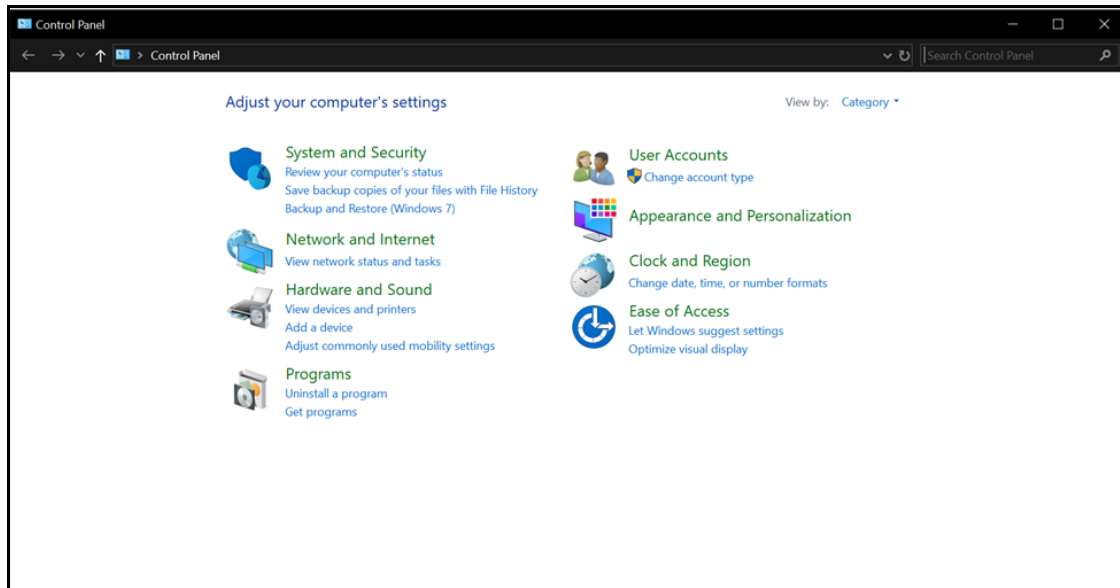
(A)

(B)

Figure 31

Step 2 - Delete Reports and Data

1. Open File Explorer.
2. Navigate to Documents/SpeedStat
3. Delete the SpeedStat folder.