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DSS-5000

Battery Diagnostic Service System

**For testing 6-volt and 12-volt automotive /
12-volt and 24-volt charging systems.**



User Guide

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Chapter 1: Introduction

Personal Precautions

⚠ DANGER



Risk of explosive gases.
Never smoke or allow a spark or flame in the vicinity of a battery.

Batteries can produce a highly explosive mix of hydrogen gas and oxygen, even when the battery is not in operation. Always work in a well-ventilated area.

⚠ WARNING

Wash hands after handling.

REQUIRED BY CALIFORNIA PROP. 65: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.

Inspect the battery for damage and check the electrolyte level. If the electrolyte level is too low, replenish it and fully charge the battery. Always use the necessary safety precautions when working with batteries to prevent severe injury or death. Follow all manufacturers' instructions and BCI (Battery Council International) safety recommendations, which include the following precautions:

- Battery acid is highly corrosive. If acid enters your eyes, immediately flush them thoroughly with cold running water for at least 15 minutes and seek medical attention. If battery acid gets on your skin or clothing, wash immediately with a mixture of water and baking soda.
- Always wear proper safety glasses or face shield when working with or around batteries.
- Keep hair, hands, and clothing as well as the analyzer cords and cables away from moving engine parts.
- Remove any jewelry or watches before you start servicing the battery.
- Use caution when working with metallic tools to prevent sparks or short circuits.
- Never lean over a battery when testing, charging, or jump starting.

Symbol Conventions

Symbol	Description
	The safety symbol indicates instructions for avoiding hazardous conditions and personal injury.
	The safety symbol with the words **CAUTION**, **WARNING, or DANGER** indicates instructions for avoiding hazardous conditions and personal injury.
	The wrench symbol indicates procedural notes and helpful information.

Description

The analyzer uses function-specific applications accessed through a series of menus and icons to guide users through the battery testing process for consistent testing implementation and accuracy. These are accessed using the Controller's touch screen display. Test results can be displayed on the full-color screen, printed, or wirelessly emailed.

Accessories

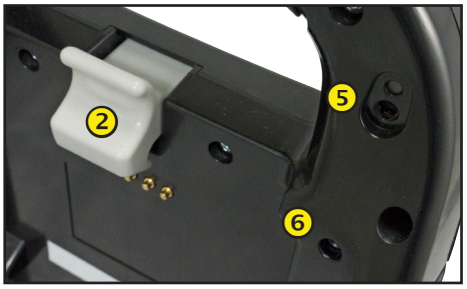
	A033 Lead Post Adapters

Tester Components

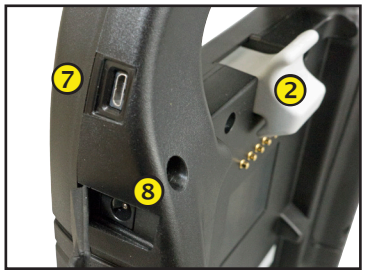
Controller



1. **Carrying Handle:** For carrying the Controller and Tester Pod (when attached).
2. **Controller Release Lever:** Pull to release the Controller from the Tester Pod.
3. **Power Button:** Hold for 2 seconds to turn the Controller on and off independent of the Tester Pod. Flashes when the Controller is being charged.
4. **Touch Screen:** Primary user interface.



5. **Camera & Flashlight:** For VIN scanning and identification.
6. **Temperature Sensor:** For measuring battery temperature.



7. **Micro-USB Port**: For updating and servicing the Controller when a Wi-Fi network is not available.
8. **Power Supply Connection**

Tester Pod



1. **Controller Charging Contacts:** For charging and communicating with the Controller when mounted to the Tester Pod.
2. **Status Indicator LEDs:**

- Power is on	- Clamps reversed
- Tester Pod is communicating with the Controller	

3. **Clamp Storage Mounts**: Use to keep the test clamps protected when the tester is not in use.
4. **Tester Pod Internal Batteries**

Charging Dock



1. **Tester Pod Charging Contacts:** For charging the Tester Pod
2. **Power Supply Connection**

Test Preparation

Inspecting the Battery

Before starting the test visually inspect the battery for:

- Cracked, buckled, or leaking case. If you see any of these defects, replace the battery.
- Corroded, loose, or damaged cables and connections. Repair or replace them as needed.
- Corrosion on the battery terminals, and dirt or acid on the case top. Clean the case and terminals using a wire brush and a mixture of water and baking soda.
- Low electrolyte level. If the electrolyte level is too low, add distilled water to fill up to ½ of the space above the top of the plates and fully charge the battery. Do not overfill.
- Corroded or loose battery tray and hold-down fixture. Tighten or replace as needed.

Testing Out-of-Vehicle

The preferred battery test location is in the vehicle. However, if you plan to test out of the vehicle:

- Always disconnect the negative cable from the battery first and reconnect it last.
- Always use a carry tool or strap to lift and transport the battery.

⚠ WARNING

Failure to properly install lead terminal adapters, or using adapters that are dirty or worn, may cause false test results.

When testing side-post or Group 31 batteries, always use lead terminal adapters provided with the tester—do not test at the battery's steel bolts. To avoid damage, never use a wrench to tighten the adapters more than ¼ turn.

Testing In-Vehicle

The preferred test position is at the battery posts. If you must test at a remote-post location, it should have both a positive and negative post. Otherwise, you must remove the battery and perform an out-of-vehicle test.

At the start of the test, make sure all vehicle accessory loads are off, the key is not in the ignition, and the doors are closed.

Connecting To A Battery

⚠ CAUTION

Do not connect the tester to a voltage source greater than 30 Vdc.

Connect the clamps to the tester: the red clamp to the positive (+) terminal and the black clamp to the negative (–) terminal.

If you connect the clamps in the wrong polarity (positive to negative or negative to positive), the tester displays CLAMPS REVERSED! Reconnect the clamps.

To make sure both sides of the clamps are gripping the terminals, rock each clamp back and forth. A poor connection will prevent testing, and the tester will display the message CHECK CONNECTION. If the message reappears after you have correctly reconnected the clamps, clean the terminals and reconnect.

Setting User Preferences

Before starting your test you may want to customize the use of your analyzer by setting preferences in the Settings (⚙) Menu. The Settings Menu is described in Chapter 10.

Initial Power Up

1. Upon initial power-up, the Language Settings screen is displayed. Tap **Next** to continue.

System Language	Select the Controller default language displayed on the screen.
Test Result Language	Select the Controller default language for all displayed tests and test results.
Email Language	Select the default standard language for the analyzer to use for all tests and results sent via email.
Print Language	Select the default standard language for the analyzer to use for all tests and results printed using a networked printer.

2. A Consent to collect data screen is displayed. Tap the Consent check box and then tap **Next** to continue.
3. Using the displayed keypad template, enter the new user name and password.
4. Tap **Next** to continue.

IMPORTANT: By default, the first user created is assigned Administrator rights. Tap Add User to add additional users. See Chapter 10: Settings to change these defaults.

5. The Date/Time Settings are displayed. Tap **Next** to continue after making any adjustments.

NOTE: By default, the DSS-5000 SUB has been set to the U.S. Central Time Zone.

Select Time Format:	12-hour or 24-hour format
Select Date Format:	DD/MM/YYYY, MM/DD/YYYY, or YYYY/MM/DD
Select Time Zone:	Time zone offset from Greenwich Mean Time
Set Date:	Set the current date
Set Time:	Set the current time in the selected time zone

6. The Test Settings are displayed. Tap **Next** to continue after making any adjustments.

Battery Rating	Default: CCA (Cold Cranking Amps)
Temperature Units	Select Fahrenheit or Celsius
Decimal Separator	Select decimal point or comma

7. The Configured Wi-Fi Networks screen is displayed. By default "subtronics01" is displayed. Tap **Next** to continue.

NOTE: If available, the DSS-5000 SUB will automatically connect to the subtronics01 Wi-Fi network installed at each dealer during initial set-up. This network is for use by Midtronics tools.

SSID = “subtronics01”
Password = “m1dtr0n1c$”
WPA2 security

IMPORTANT: The "subtronics01" network is only available to U.S. dealers.

8. Select the country in which the tool will be used (U.S. or Canada).The BMIS (Battery Management Information System) Account screen is displayed. If the tool has already connected to "subtronics01", the Username and Password are displayed.

   If the username and password are not displayed, enter the correct username and password from the following table.

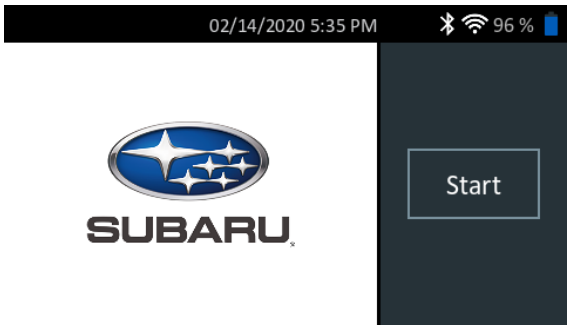
Country	Username	Password
U.S. Dealers	subaru@dss5000.com	subaru1
Canadian Dealers	subarucanada@dss5000.com	subaru1

Press → to continue.

IMPORTANT: If no Wi-Fi connection has been made, follow the procedure described in the Wi-Fi section of Chapter 10: Settings.

9. The Location Selection screen (Admin Only) is displayed. Scroll to find the correct location or tap 🔍 to search for a specific location. Tap **Next** to continue.

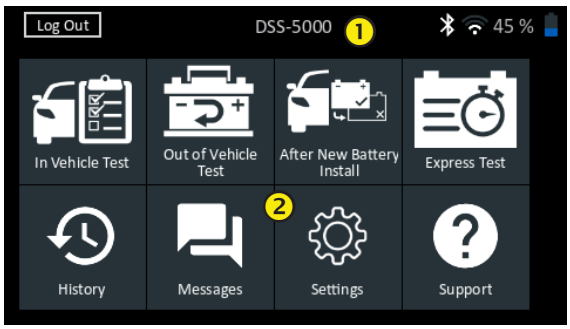
10. The login screen is displayed.



11. Tap **Start** to access the Main Menu.

Main Menu

Two different Main Menus can be displayed, depending on whether the Client ID is Canadian. If the Client ID is Canadian, the following Main Menu is displayed:



If a Canadian Client ID is not being used, the following Main Menu is displayed:



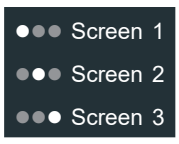
① Menu Bar

Log Out	Log out current user	93%	Controller internal battery level
Bluetooth	Bluetooth connectivity status		Controller internal battery status
Wi-Fi	Wi-Fi signal strength	12.65V	Connected battery voltage

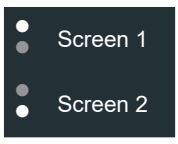
② Main Menu Selection Area

Additional Screens

The dots at the bottom or side of a menu or results screen indicate additional screens are available. Use your finger to swipe left, right, up or down across the Controller screen to view all of the results.



Swipe Horizontally



Swipe Vertically

Main Menu Icons

Icon	Description
 In Vehicle Test	Automates battery testing for quickly testing vehicles using the fewest steps. A VIN is required and a Warranty Code is generated for all Replace Battery decisions.
 Out of Vehicle Test	For testing out-of-vehicle customer batteries for possible return.
 After New Battery Install	For testing newly installed batteries in a vehicle. Also includes vehicle electronics reset information after battery installation.
 Warranty Extension	For testing eligible vehicles with an Authorization Code under the Warranty Extension Program.
 Inventory Test	For maintaining and charging batteries of vehicles in inventory.
 Express Test	For quickly testing batteries in vehicles in for service. A VIN is optional; however, a VIN is required to generate a Warranty Code for Replace Battery decisions.
 History	Access archived test histories or search test history by VIN or by technician.
 Messages	Displays alerts and notifications for upcoming tests and activities including scheduled tests, tool software updates and maintenance opportunities.
 Settings	Setup/adjust: Wi-Fi, printer setup, email settings, user information, default language, display and sound settings, BMIS information, shop information, and connected devices. Also access to tester software version information.
 Support	Access the analyzer Self-Test and a digitized version of the Instruction Manual.

Chapter 2: In Vehicle Test



Use In Vehicle Test to perform Battery Tests on in-vehicle batteries using test parameters determined by vehicle VIN or year, make, and model of the vehicle being tested.

At any time during the test tap ◀ to return to the previous screen or to return to the Main Menu.

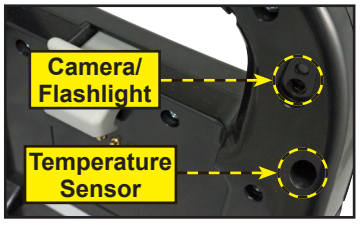
Battery Test

1. Connect the Tester Pod test clamps to the battery (Red to positive [+], Black to negative [–]).
2. Remove the Controller from the Tester Pod.
3. On the Controller at the Main Menu tap **In Vehicle Test**. Graphics of the three steps required to perform the test are displayed followed by the Acquire VIN screen.
4. Use the camera built into the back of the Controller handle to scan the VIN barcode.

NOTE: To provide additional light in low-light situations, tap the icon to turn on the built-in flashlight.

For best results, use the barcode located on the driver's side door frame. For manual entry, the VIN is also displayed behind the windshield on the driver's side dashboard.

NOTE: Refer to Appendix B for recommended scanning procedures and VIN scanning help.



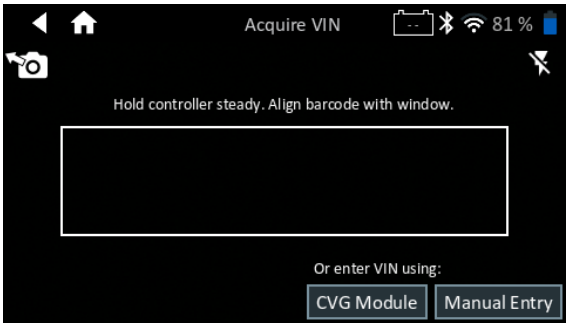
Controller



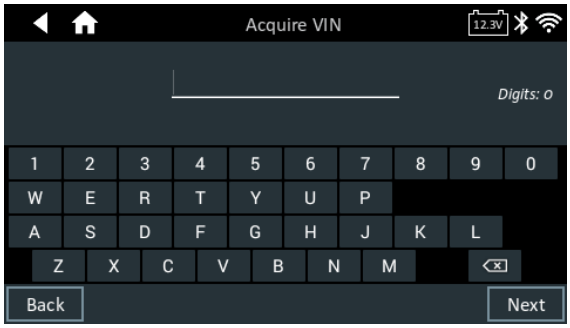
Driver Door Frame



Windshield



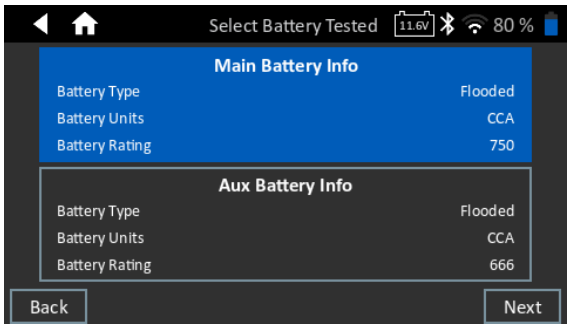
Manual Entry: Use Manual Entry if the battery being tested is not listed. Use the on-screen keypad to manually type the 17-digit VIN and tap **Next**.



The displayed digit counter will count up the alphanumeric characters as they are being entered on the keypad.

Tap > to continue to the Edit Battery Information screen.

5. If it is a Dual Battery, the Select Battery Tested screen is displayed. Select the Main or Aux Battery box, and then click Next.



6. The Edit Battery Information screen displays vehicle and battery information based on the VIN.

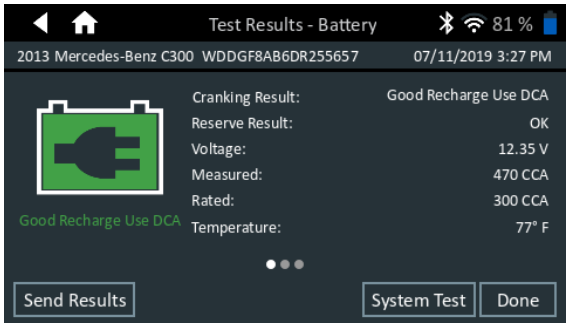
If the displayed information is correct, tap **Next** to begin the Battery Test. Tap on the corresponding box to edit the parameter information.



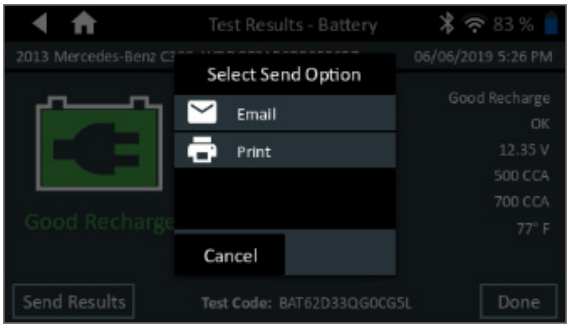
See Appendix A at the back of this manual for parameter descriptions.

Battery Test Results

IMPORTANT: A Warranty Code is generated for all Replace Battery decisions.



To print or send the test results to a configured printer tap **Send Results.**



To return to the Home Screen, tap **Done** or **System Test** to continue with the System Test.

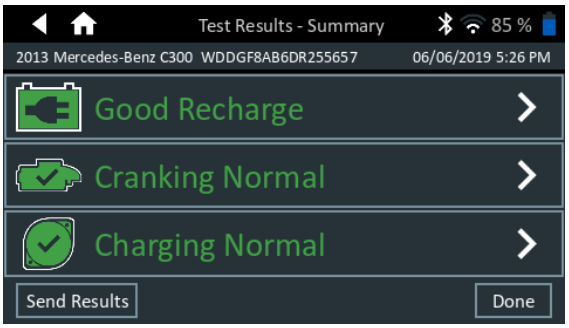
Decision	Cranking Health	Reserve Capacity	Description
Good Battery	Good Battery	Good Battery	Battery meets or exceeds required standards.
	Good Battery	Unknown Reserve	Battery meets or exceeds required standards.
	Good Recharge	Good Battery	Battery is good, but low on charge. Fully charge the battery for optimal performance and life. Check for causes of low charge.
Good Recharge Using GR8	Charge & Retest	Good Battery	
	Good Recharge	Unknown Reserve	
Conditions Not Met	No Test	No Test	System conditions have prevented a test of the battery reserve capacity. Before attempting any retest, ensure all vehicle accessory loads are off, the key is not in the ignition, and the doors are closed.
Charge & Retest	Charge & Retest	Unknown Reserve	Battery requires charge to determine condition.

Decision	Cranking Health	Reserve Capacity	Description
Replace Battery	Replace Short	Replace Battery	Battery fails to meet industry accepted standards.
	Charge & Retest	Replace Battery	Battery is low in charge and shows low reserve capacity. Low reserve capacity will compromise the battery's ability to provide system current and hold a charge.
	Good Battery	Replace Battery	Battery is good for cranking purpose but shows low reserve capacity. Low reserve capacity will compromise the battery's ability to provide system current and hold a charge.
	Good Recharge	Replace Battery	
	Replace Battery	Good Battery	Battery fails to meet industry accepted standards
	Replace Battery	Replace Battery	
	Replace Battery	Unknown Reserve	
Short Replace	Replace Short	Good Battery	
	Replace Short	Unknown Reserve	

System Test

1. Start the engine and let it idle.
2. Tap **Next**. The analyzer tests the alternator output.
3. When prompted, turn on the high beam headlights and ventilation blower fan, then rev the engine to between 2000 to 3000 rpm.
4. While holding engine revs, tap **Next** to test the alternator output.
5. When prompted turn off the loads and the engine.
6. Tap **Next** to display the test results.

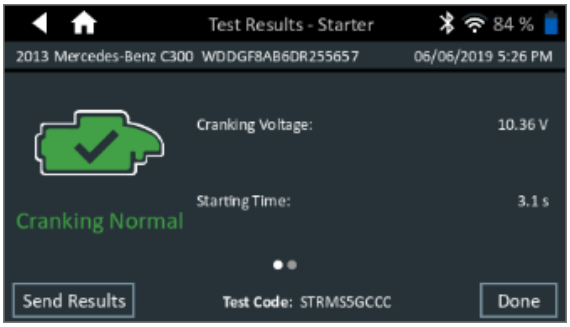
Test Results-Summary

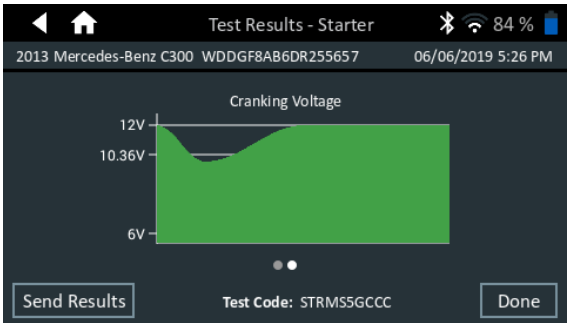


A Test Results-Summary screen is displayed following a System Test. Tap > to view detailed test results for each part of the test.

To send the test results to a configured printer or via email tap **Send Results.** To return to the Home Screen, tap **Done** or to return to the Main Menu.

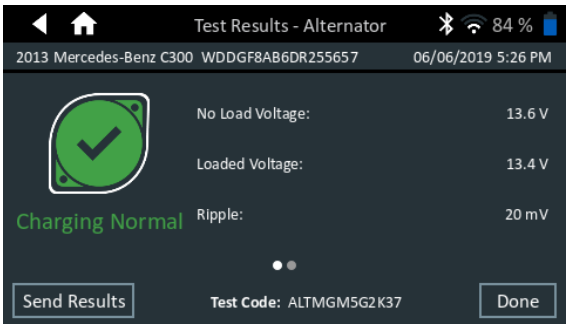
Starter Test Results

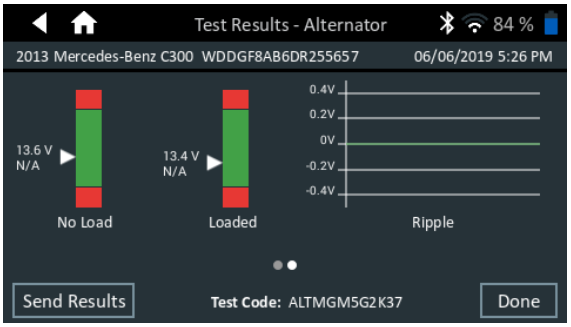




Decision	Action
 Cranking Normal	The starter voltage is normal and the battery is fully charged.
 Low Voltage	The starter voltage is low and the battery is fully charged.
 Charge Battery	The starter voltage is low and the battery is discharged. Fully charge the battery and repeat the starter system test.
 Replace Battery	The battery must be replaced before testing the starter.
 Low Current	The starter voltage is high but the cranking amps are low.
 Invalid Test	The engine didn't start and the test was aborted or the vehicle's starting profile was not detected and the Starter Test was skipped.

Alternator Test Results





Decision	Action
 CHARGING NORMAL	The output from the alternator is normal.
 NO OUTPUT	No output detected. Check belts to ensure alternator is rotating when engine is running. √ Check alternator connections to the battery. Clean or replace if necessary and retest. √ If the belts and connections are in good working condition, replace alternator or external voltage regulator.
 LOW OUTPUT	Alternator not providing enough current to power electrical loads and charge the battery. √ Check belts to ensure the alternator is rotating with the engine running. √ Check alternator connections to and from the battery. If loose or heavily corroded, clean or replace the cable and retest.
 HIGH OUTPUT	Alternator voltage to the battery exceeds normal limits of a functioning regulator. √ Check for loose and normal ground connections. If no connection problems are found, replace the regulator. The normal high limit of a typical automotive regulator is 14.5 volts +/–0.5. Refer to the manufacturer specifications for the correct limit, which may vary by vehicle type.

Test Results - Diode

Decision	Action
 EXCESSIVE RIPPLE	One or more diodes in the alternator are not functioning or there is stator damage, which is shown by an excessive amount of AC ripple current supplied to the battery. √ Make sure the alternator mounting is sturdy and that the belts are in good shape and functioning properly. If the mounting and belts are good, replace the alternator.
 OPEN PHASE	Replace the alternator.
 OPEN DIODE	
 SHORTED DIODE	

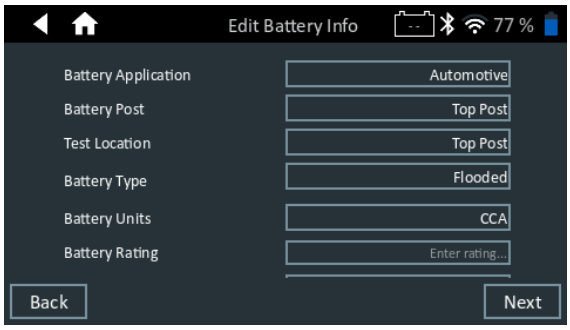
Chapter 3: Out Of Vehicle Test



Use Out Of Vehicle Test to test and verify the condition of customer batteries that are out-of-vehicle for possible return and/or warranty claim. No VIN is required and a Warranty Code is not created.

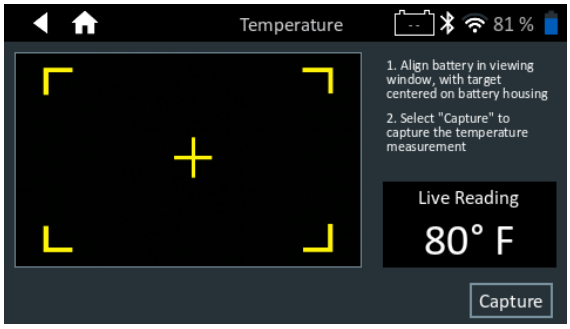
At any time during the test tap ◀ to return to the previous screen or 🏠 to return to the Main Menu.

1. Connect the Tester Pod test clamps to the battery (Red to positive [+], Black to negative [–]).
2. Remove the Controller from the Tester Pod.
3. On the Controller at the Main Menu, tap **Out Of Vehicle Test**.
4. The Edit Battery Information screen is displayed. If the displayed information is correct, tap **Next** to begin the Battery Test. Tap on the corresponding box to edit the parameter information.



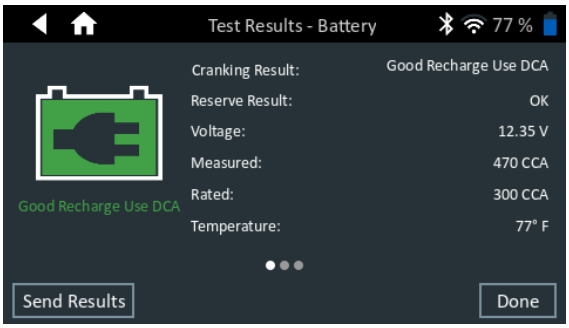
NOTE: See Appendix A at the back of this manual for parameter descriptions.

5. Align the temperature sensor on the Controller over the battery and tap **Capture**. The test begins when the temperature is successfully captured.



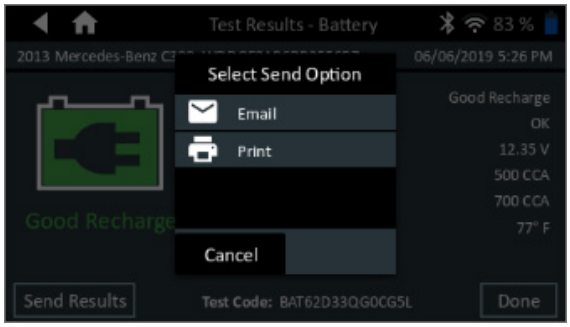
Battery Test Results

The test results are displayed on the Controller screen.



NOTE: See Battery Test Results in Chapter 2: In Vehicle Test for a full explanation of all possible test outcomes.

To send the test results to a configured printer tap **Send Results**. Tap **Email** to send the results via email. Tap **Done** or 🏠 to return to the Main Menu.



Chapter 4: Inventory Test



Use Inventory Test to test and charge batteries in vehicles in the dealership inventory.

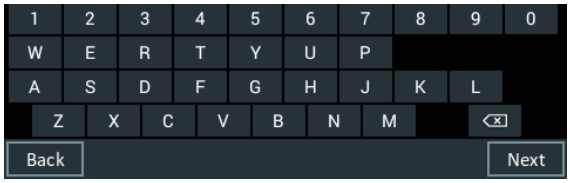
At any time during the test tap ◀ to return to the previous screen or to return to the Main Menu.

1. Connect the charger clamps to the appropriate battery posts.
2. At the Main Menu, tap Inventory Test. The Auth Code screen is displayed.
3. Use a connected bar code scanner to scan the VIN bar code, usually located on the driver's side door frame. The VIN can also be entered manually.

   For best results, use the barcode located near the bottom of the driver's side door frame. The VIN is also displayed behind the windshield on the driver's side dashboard.

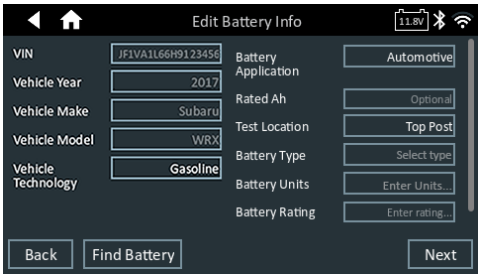
NOTE: Refer to Appendix B for recommended scanning procedures and VIN scanning help.

Manual Entry: Use the on-screen keypad to manually type the 17-digit VIN and tap Next.

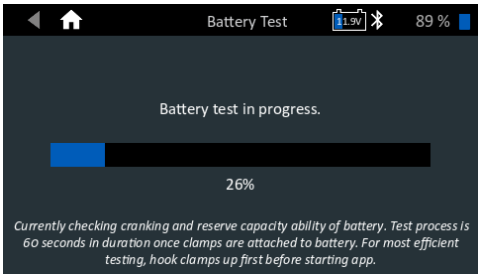


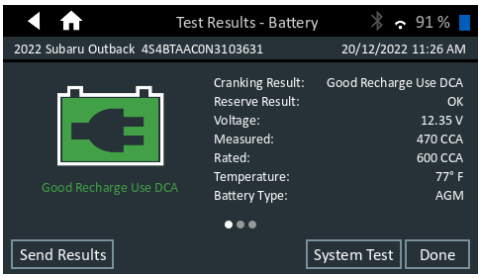
The displayed digit counter will count up the alphanumeric characters as they are entered on the keypad.

4. The Edit Battery Information screen displays vehicle information based on the VIN.



5. If the Replacement Battery Selection screen displays, tap the correct battery information or **None of the above** if the correct battery information is not listed.
   If None of the above is selected, the Battery Information screen will display.
6. If the Battery Information screen displays, tap the correct battery selection then tap **Next** to run the battery voltage test.
7. A test is performed to determine the charge level of the battery. The test results are then displayed on the Test Results screen.





Chapter 5: Warranty Extension



Use Warranty Extension to test batteries in eligible vehicles with an Authorization Code under the Warranty Extension Program.

At any time during the test, tap ◀ to return to the previous screen or ⌂ to return to the Main Menu.

1. Connect the charger clamps to the appropriate battery posts.
2. At the Main Menu, tap **Warranty Extension.** The Auth Code screen is displayed.
3. Use a connected barcode scanner to scan the Auth Code, displayed as a Transfer code on the DSS-5000 and proceed to step 4. To enter the Auth Code manually, proceed to step 6.
4. Scan the VIN code from the DSS.
5. A Warning message appears. If the displayed Auth Code is correct, tap **Yes** to verify the Auth Code and proceed to VIN entry.

   Once the Auth Code is authenticated from the VIN scan, the Edit Battery Info is displayed. Proceed to Step 9 below.

   The Edit Battery Information screen displays vehicle information based on the VIN associated with the authorization code.
6. Use the on-screen keypad to manually type the 10-digit Auth Code and tap **OK**.
   The Acquire VIN screen is displayed.

   The digital counter will count up the alphanumeric characters as they are entered on the keypad.
7. Tap Manual Entry to enter VIN manually. Use the on-screen keypad to manually type the 17-digit VIN.

   The displayed digital counter will count the alphanumeric characters as they are entered on the keypad.

   Depending on the VIN, the **Edit Battery Information** screen displays vehicle and battery information based on the VIN.
8. If the Replacement Battery Selection screen is displayed, tap the battery chemistry information for the replacement battery before moving on to the Edit Battery Information screen.
   The Replacement Battery Selection screen displays battery options.

   If the battery option is not listed, tap **None of the above**.
9. At the Edit Battery Info screen, the battery info fields cannot be edited for scanned transfer Auth Code. Tap **Continue** to begin the Battery Test.

   For manually entered authorization codes, the Edit Battery Info fields can be edited.
   Tap the box across from each displayed parameter and select the correct information from the displayed list.
10. Verify the displayed information is correct. If yes, tap **Continue** to begin the Battery Test.
    If no, tap **Reset** to reset the parameters to the factory defaults.

    The entered value will be matched to the VIN and used for future testing.
    Always confirm battery CCA in case the battery was changed between battery tests.

    The charger performs a series of tests to determine the overall condition of the battery before applying a charge. Those steps include: measuring the ambient battery temperature, Cranking Health, Reserve Capacity, Charge Acceptance, and applying a Load Test to the battery. The test results are then displayed on the charger screen.
11. Tap **Warranty Extension Detail** to view the DCA Warran-

Field	Description
DCA Warranty Code	23-character code generated from the results of the Warranty Extension test.
DSS Warranty Code	23-character code retrieved from a QR code, it is used when Scan Transfer Code is selected, on the contrary it will be blank.
Auth Code	11-character code with the prefix SB, it is typed when Enter Auth Code Manually is selected.

Chapter 6: After New Battery Install



Use After New Battery Install to test a newly installed battery in a vehicle. Where applicable the process will also include a Reset Electronics checklist.

At any time during the test tap ◀ to return to the previous screen or to return to the Main Menu.

1. Connect the Tester Pod test clamps to the battery (Red to positive [+], Black to negative [–]).
2. Remove the Controller from the Tester Pod.
3. On the Controller at the Main Menu tap **After New Battery Install**.

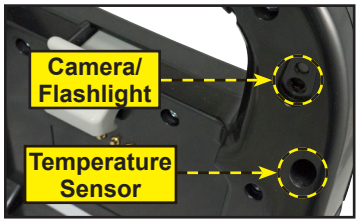
   Archived "Replace Battery" test results for any vehicle less than two (2) days old are displayed. Select the record of the vehicle being tested or tap **Skip**.

   Otherwise the Acquire VIN screen is displayed.
4. Use the camera built into the back of the Controller handle to scan the VIN barcode.

NOTE: To provide additional light in low-light situations, tap the icon to turn on the built-in flashlight.

For best results, use the barcode located on the driver's side door frame. For manual entry, the VIN is also displayed behind the windshield on the driver's side dashboard.

NOTE: Refer to Appendix B for recommended scanning procedures and VIN scanning help.



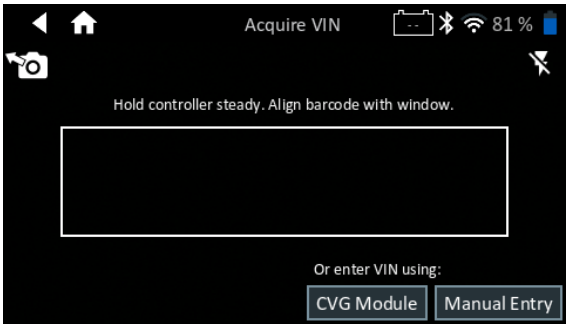
Controller



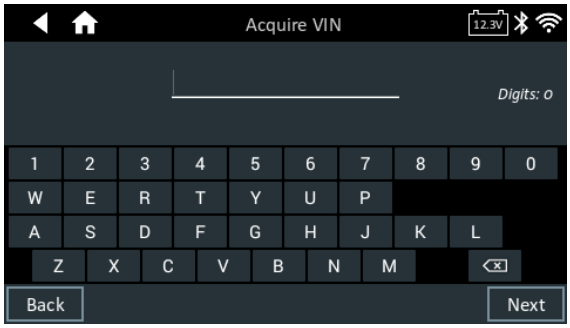
Driver Door Frame



Windshield



Manual Entry: Use the on-screen keypad to manually type the 17-digit VIN and tap **Next**. Use Manual Entry if the battery being tested is not listed.



The displayed digit counter will count up the alphanumeric characters as they are being entered on the keypad.

Tap > to continue to the Edit Battery Information screen.

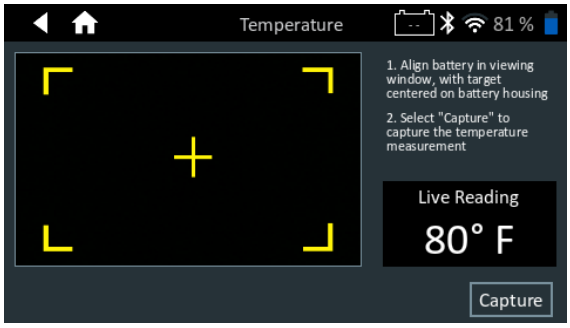
5. The Edit Battery Information screen displays vehicle and battery information based on the VIN.

   If the displayed information is correct, tap **Next** to begin the Battery Test. Tap on the corresponding box to edit the parameter information.

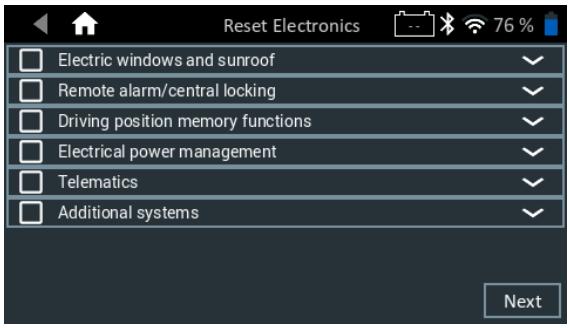


NOTE: See Appendix A at the back of this manual for parameter descriptions.

6. Align the temperature sensor on the Controller over the battery and tap **Capture**. The test begins when the temperature is successfully captured.



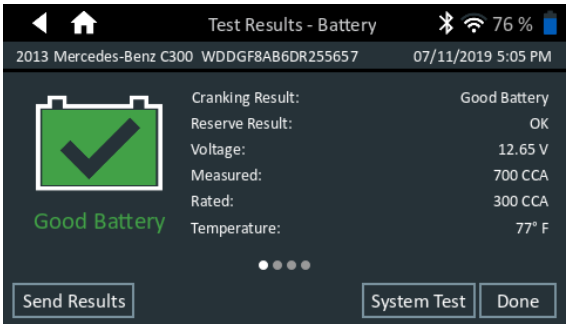
7. For some specific vehicles, a Reset Electronics checklist may be displayed.



Use this checklist to confirm that the vehicle electronics are functioning properly following a new battery installation.

8. Tap **Next** to display the test results on the Controller screen.

Battery Test Results



To print or send the test results to a configured printer tap **Send Results.** To return to the Home Screen, tap **Done** or **System Test** to continue with the System Test.

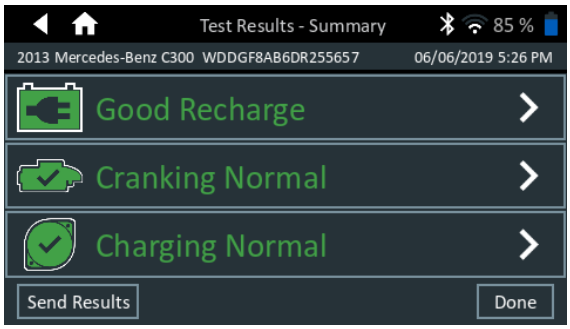
Decision	Cranking Health	Reserve Capacity	Description
Good Battery	Good Battery	Good Battery	Battery meets or exceeds required standards.
	Good Battery	Unknown Reserve	Battery meets or exceeds required standards.
	Good Recharge	Good Battery	Battery is good, but low on charge. Fully charge the battery for optimal performance and life. Check for causes of low charge.
Good Recharge Using GR8	Charge & Retest	Good Battery	
	Good Recharge	Unknown Reserve	
Conditions Not Met	No Test	No Test	System conditions have prevented a test of the battery reserve capacity. Before attempting any retest, ensure all vehicle accessory loads are off, the key is not in the ignition, and the doors are closed.

Decision	Cranking Health	Reserve Capacity	Description
Charge & Retest	Charge & Retest	Unknown Reserve	Battery requires charge to determine condition.
Replace Battery	Replace Short	Replace Battery	Battery fails to meet industry accepted standards.
	Charge & Retest	Replace Battery	Battery is low in charge and shows low reserve capacity. Low reserve capacity will compromise the battery's ability to provide system current and hold a charge.
	Good Battery	Replace Battery	Battery is good for cranking purpose but shows low reserve capacity. Low reserve capacity will compromise the battery's ability to provide system current and hold a charge.
	Good Recharge	Replace Battery	
	Replace Battery	Good Battery	Battery fails to meet industry accepted standards
	Replace Battery	Replace Battery	
	Replace Battery	Unknown Reserve	
Short Replace	Replace Short	Good Battery	
	Replace Short	Unknown Reserve	

System Test

1. Start the engine and let it idle.
2. Tap **Continue**. The analyzer tests the alternator output.
3. When prompted, turn on the high beam headlights and ventilation blower fan, then rev the engine to between 2000 to 3000 rpm.
4. While holding engine revs, tap **Next** to test the alternator output.
5. When prompted turn off the loads and the engine.
6. Tap **Continue** to display the test results.

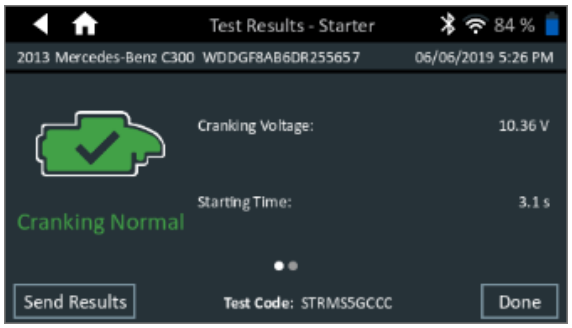
Test Results-Summary

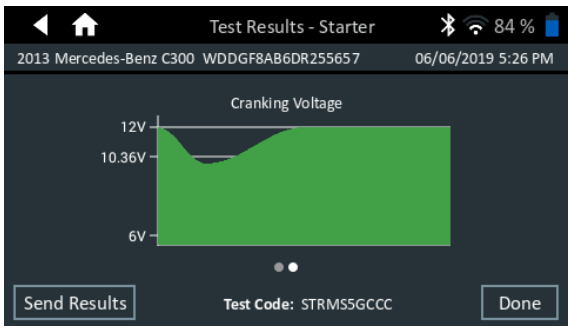


A Test Results-Summary screen is displayed following a System Test. Tap > to view detailed test results for each part of the test.

To print or send the test results to a configured printer tap **Send Results.** To return to the Home Screen, tap **Done** or to return to the Main Menu.

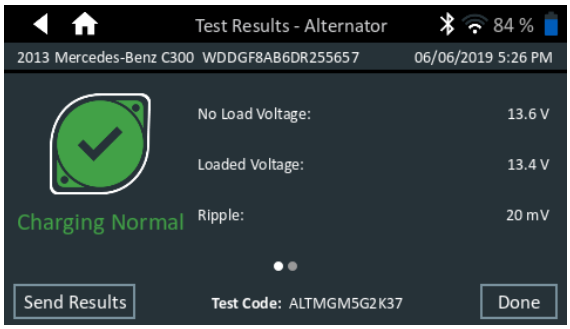
Starter Test Results

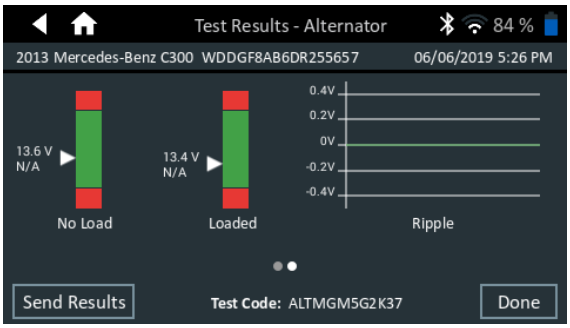




Decision	Action
Cranking Normal	The starter voltage is normal and the battery is fully charged.
Low Voltage	The starter voltage is low and the battery is fully charged.
Charge Battery	The starter voltage is low and the battery is discharged. Fully charge the battery and repeat the starter system test.
Replace Battery	The battery must be replaced before testing the starter.
Low Current	The starter voltage is high but the cranking amps are low.
Invalid Test	The engine didn't start and the test was aborted or the vehicle's starting profile was not detected and the Starter Test was skipped.

Alternator Test Results





Test Results - Alternator

Decision	Action
CHARGING NORMAL	The output from the alternator is normal.
NO OUTPUT	No output detected. Check belts to ensure alternator is rotating when engine is running. √ Check alternator connections to the battery. Clean or replace if necessary and retest. √ If the belts and connections are in good working condition, replace alternator or external voltage regulator.
LOW OUTPUT	Alternator not providing enough current to power electrical loads and charge the battery. √ Check belts to ensure the alternator is rotating with the engine running. √ Check alternator connections to and from the battery. If loose or heavily corroded, clean or replace the cable and retest.
HIGH OUTPUT	Alternator voltage to the battery exceeds normal limits of a functioning regulator. √ Check for loose and normal ground connections. If no connection problems are found, replace the regulator. The normal high limit of a typical automotive regulator is 14.5 volts +/–0.5. Refer to the manufacturer specifications for the correct limit, which may vary by vehicle type.

Test Results - Diode

Decision	Action
 EXCESSIVE RIPPLE	One or more diodes in the alternator are not functioning or there is stator damage, which is shown by an excessive amount of AC ripple current supplied to the battery. √ Make sure the alternator mounting is sturdy and that the belts are in good shape and functioning properly. If the mounting and belts are good, replace the alternator.
 OPEN PHASE	Replace the alternator.
 OPEN DIODE	
 SHORTED DIODE	

Chapter 7: Express Test



Use the Express Test for vehicles in for Quick Lane service. A VIN is required for a Warranty Code to be created. However a Warranty Code is only created for Replace Battery decisions.

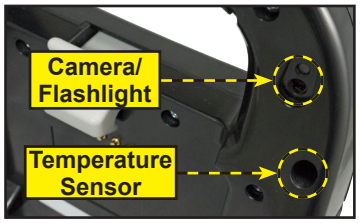
At any time during the test tap ◀ to return to the previous screen or to return to the Main Menu.

1. Connect the Tester Pod test clamps to the battery (Red to positive [+], Black to negative [–]).
2. Remove the Controller from the Tester Pod.
3. On the Controller at the Main Menu tap the **Express Test** icon.
4. Tap **Next** at the Connect Clamps screen. The Acquire VIN screen is displayed along with the option to skip the VIN.
5. Use the camera built into the back of the Controller handle to scan the VIN barcode or tap **Skip** to go to step 6.

NOTE: To provide additional light in low-light situations, tap the icon to turn on the built-in flashlight.

For best results, use the barcode located on the driver's side door frame. For manual entry, the VIN is also displayed behind the windshield on the driver's side dashboard.

NOTE: Refer to Appendix B for recommended scanning procedures and VIN scanning help.



Controller



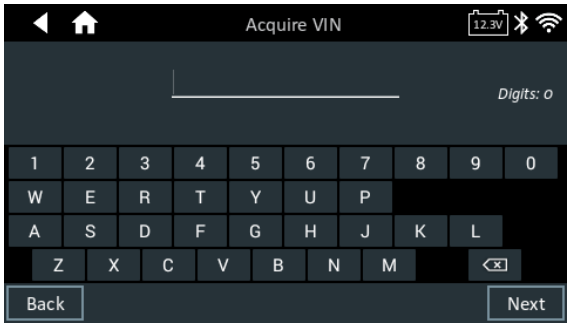
Driver Door Frame



Windshield



Manual Entry: Use the on-screen keypad to manually type the 17-digit VIN and tap **Next**.



The displayed digit counter will count up the alphanumeric characters as they are being entered on the keypad.

Use Manual Entry if the battery being tested is not listed. Tap > to continue to the Edit Battery Information screen.

The displayed digit counter will count up the alphanumeric characters as they are being entered on the keypad.

6. The Edit Battery Information screen displays vehicle and battery information based on the VIN.

NOTE: If the VIN was skipped in step 5, enter the Battery Rating as indicated on the battery label.

If the displayed information is correct, tap **Next** to begin the Battery Test. Tap on the corresponding box to edit the parameter information.

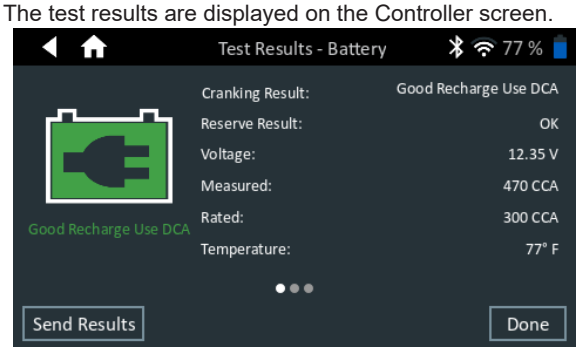


See Appendix A at the back of this manual for parameter descriptions.

NOTE: Tap **Reset** to re-enter the battery rating if a replacement battery has been selected.

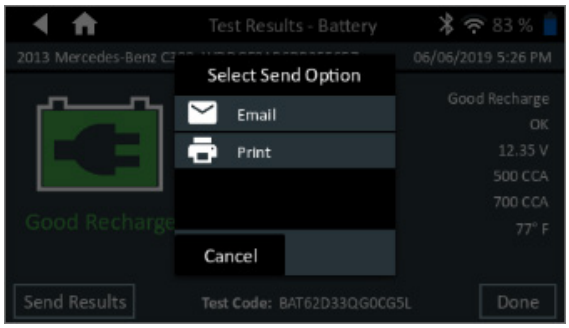
7. Align the temperature sensor on the Controller over the battery and tap **Capture**. The test begins when the temperature is successfully captured.

   The test results are displayed on the Controller screen.



NOTE: See System Test Results in Chapter 2: In Vehicle Test for a full explanation of all possible test outcomes.

8. To send the test results to a configured printer or email address, tap **Send Results**.
9. Tap **Email** to send the results via email or Print to print the results using a configured printer.
10. Tap **Done** or to return to the Main Menu.

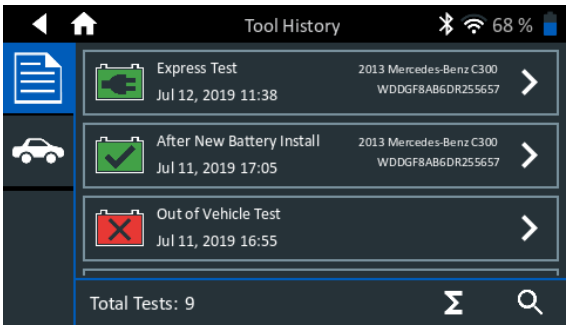


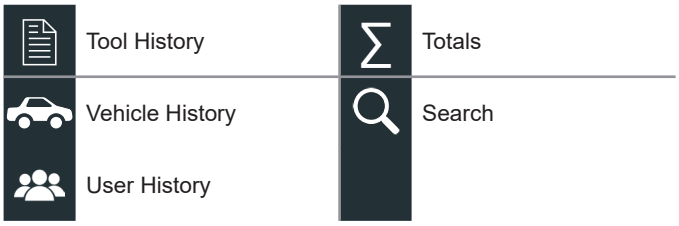
Chapter 8: History



Use History to access the tool usage history, a vehicle history based on VIN, and user histories. The search function can also be used to find test records for specific vehicles and technicians.

At the Main Menu, tap **History**. By default the Tool History screen is displayed.





Tool History



Use Tool History to view test total history as well as in vehicle and out of vehicle test totals. Individual test results are also displayed.

Tap > to view individual test details.

Tap Σ to view Total By Test Decision, Total By Test Type, and Total By Date And Location.

Tap 🔍 to search by RO number.

Tap **Done** to return to the Tool History screen.

Totals By Test Decision

The totals are displayed by possible results for all battery chemistries and potential test results.

Good Battery	Replace Battery
Good Recharge	Short Replace
Charge & Retest	

Totals By Test Type

Displays test totals by test type.

In Vehicle Test	After New Battery Install
Express Test	Out of Vehicle Test

Totals By Date And Location

Displays test totals by time interval. Also displays the number of tests performed in and out of vehicle.

Last 7 Days	In Vehicle
Last 30 Days	Out Vehicle
Last 90 Days	

Vehicle History



Vehicle History displays test totals conducted on specific vehicles based on the VIN. It is also possible to enter a VIN to search for test records for a specific vehicle by tapping the displayed buttons.

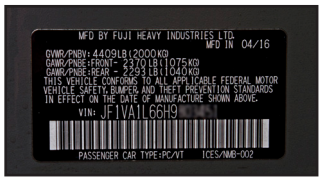
Tap on the records displayed on the right side of the screen to view the individual test results.

Vehicle Select Option

Tap 🔍 to select vehicle search option.

Manual Lookup: Use the on-screen keypad to manually type the 17-digit VIN and tap **Next**.

VIN Scan: Use the camera built into the Controller to capture a VIN barcode, usually located on the driver's side door frame.



User History



User History displays test totals for the user that is currently logged in to the analyzer.

Tap > to view individual test details.

Tap Σ to view Total By Test Decision, Total By Test Type, and Total By Date And Location.

Chapter 9: Messages



The Messages function displays alerts and notifications for upcoming tests and activities. This includes scheduled testing as well as tool software updates and maintenance opportunities.

 Mark Read Or Unread

 Delete Notification

 Perform Message Action

Tap ◀ to return to the previous screen or to return to the Main Menu.



IMPORTANT: An alert is displayed when tester has not communicated with BMIS for more than 24 hours. The "No" option is not available for 30 seconds.

Accessing Messages

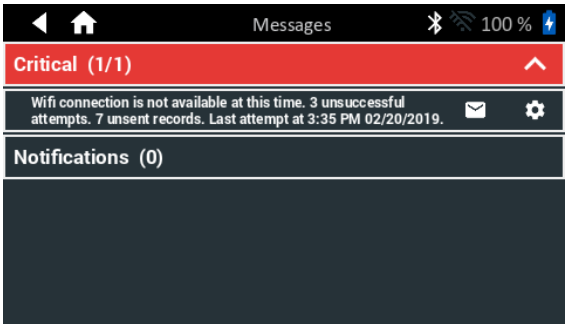


A number is displayed next to the Messages icon when the analyzer has received any critical messages. The number does not include non-critical Notifications.

2 Unread Critical Messages

2 Read Critical Messages

1. Tap **Messages** on the Main Menu screen.



2. Tap to read a message.

   Tap to perform the message action item.

   Tap to delete a message.

3. Tap ∧ to collapse a list of messages or □ to expand the list.

Message Types

Critical: An important action cannot be performed and may require user action.

Notifications: Indicates an action has been performed or data has been sent.

Chapter 10: Settings



Use the Setup options to setup and adjust WiFi, printer setup and selection, email settings, user information, default language, display settings, sound settings, BMIS login information, shop information, user management, connected accessories, and device information.

Tap ◀ to return to the previous screen or to return to the Main Menu.

WiFi



Use WiFi to view, add, and delete wireless networks.

Tap on the WiFi icon to display a list of detected and configured WiFi networks.

Add Network	Delete Selected Network
Connect Highlighted Network	Refresh Network List

Adding A Network

1. Tap ⊕ to add a WiFi network.

   A list of detected wireless networks is displayed with ● next to the selected network.

2. Tap > to access the network Security and IP Settings.

Security	None WEP WPA/WPA2 PSK
IP Address	DHCP Static

3. Tap → to configure the selected network.
4. Once the network has been successfully configured, tap → to return to the list of available configured networks. A ● indicates the selected network.

Deleting A Network

1. Tap a displayed network.
2. Tap 🗑 to delete the network and tap Yes to confirm.

Printer Settings



The Printer Setup function detects and displays a list of connected and available WiFi and Bluetooth printers.



IMPORTANT: The DSS-5000 can only connect to printers on the same wireless WiFi network. This includes the SDS printer installed at many dealerships, which is not on the same subtronics network.



NOTE: WiFi network communication must be successfully established before a printer or printers can be detected and setup.

Tap on the Printer icon to display a list of available printers on the configured WiFi and Bluetooth networks.

Edit Printer Settings	Printer Setup
Delete Selected Network	Configured Printers
Print Test Page	

Adding A WiFi Printer (Admin Only)

1. Tap ⚙ to access the Printer Setup functions.
2. Tap ⊕ to add a WiFi printer.

   Make sure the printer is on and connected to the same wireless network as the analyzer.

3. Tap → to add the printer to the list of eligible printers.
4. Tap > to connect to the selected printer. A message is displayed when the configuration is successful.
5. Tap > to return to the printer list.

Adding A Bluetooth Printer (Admin Only)

1. Tap the + sign to add a Bluetooth printer.
2. Make sure the printer(s) is on.
3. Tap → to add the printer to the list of eligible printers.
4. Tap > to connect to the selected printer.
5. When prompted, enter the device PIN and tap →. A message is displayed when the pairing is successful.
6. Tap > to return to the printer list.

Deleting A Printer (Admin Only)

1. Tap ⚙ to access the Printer Setup functions.
2. Tap a displayed printer.
3. Tap 🗑 to delete the printer and tap Yes to confirm.

Email

Displays all entered email addresses. Addresses can be added, edited, and deleted (Admin Only). Entered email accounts are added to the email address book. Frequently used email addresses can be selected from the displayed address list rather than being re-typed each time.

Add Address	Server Settings
Edit Address	Address Book
Delete Selected Address	Send Test Email

Add Address (Admin Only)

1. Tap to add an email address.
2. Use the displayed keypad to enter the contact name and email address.
3. Tap Add to add the address to the email list or Cancel to exit and return to the email list.

Edit Address (Admin Only)

1. Select a displayed email address by tapping it.
2. Tap to edit the address.
3. Use the displayed keypad to edit the contact name and email address.
4. Tap Add to add the address to the email list or Cancel to exit and return to the email list.

Deleting An Address (Admin Only)

1. Select the email address by tapping it.
2. Tap to delete the address and tap Yes to confirm or Cancel to exit and return to the email list.

Server Settings

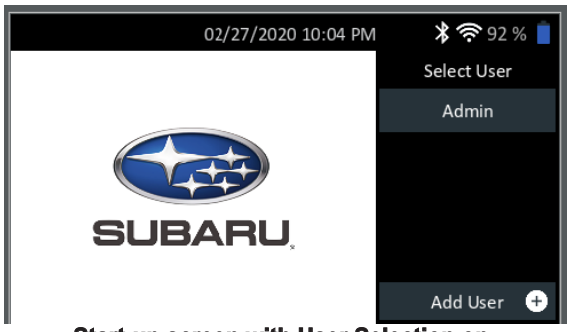
Enter and edit the email settings for sending outgoing email.

1. Tap to access the email server settings.
2. Tap to enter or modify existing server settings including Host, Port, Login, Password, SMTP Authorization, Enable TLS, and From Email Address information.
3. Tap to clear all server settings.
4. Tap to return to the email Address Book.

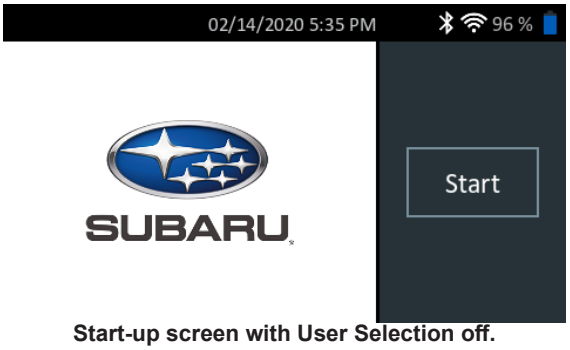
User Settings

Tap the ☐ to turn on or off the Enable User Accounts option. When Enable User Accounts is on, the available user list is displayed on the start-up screen.

User Settings	Delete Users
User Management	



Start-up screen with User Selection on.



Start-up screen with User Selection off.

Language Settings

Use the Language & Input function to select the default system language used by the tool. User defaults also include Test Results, Email, and Print languages.

System Language

Select the default standard language for the analyzer to use on the Controller.

Test Result Language

Select the default language for the analyzer to use for all tests and results displayed on the Controller.

Email Language

Select the default standard language for the analyzer to use for all tests and results sent via email.

Print Language

Select the default standard language for the analyzer to use for all tests and results printed using a networked printer.

Display Settings



Adjust the Controller display including the Brightness, Sleep Time, and Dim Time. Auto Brightness can also be turned on and off.

Brightness

Adjust the display Brightness by tapping and holding the slider, then moving it right or left to make the screen brighter or darker.

Auto Brightness

Enable and disable Auto Brightness by taping the check box.

Sleep Time

Adjust the amount of elapsed time before the Controller goes into a power saving (Sleep) mode. Default = 2 minutes.

Dim Time

Adjust the amount of elapsed time before the Controller goes into a power saving (Dim) mode. Default = 1 minute.

BMIS Login (Admin Only)



Enter and edit BMIS Login and Password information. Log into a BMIS account.

Country	Username	Password
U.S. Dealers	subaru@dss5000.com	subaru1
Canadian Dealers	subarucanada@dss5000.com	subaru1

The Location Selection screen (Admin Only) is displayed. Scroll to find the correct location or tap to search for a specific location. Tap **Next** to continue.

Shop Information (Admin Only)



Access default Shop Information including Store Name, Address, and Phone Number. Also access battery test defaults including rating, Temperature Units, and Decimal Separator. Use also to adjust the tester Date and Time Settings.

	Settings Home		Date/Time Settings
	Test Settings		Create MDCA Log File

Shop Information

Use the onscreen keypad to enter the store name, address, and phone number.

Store Name	Midtronics
Street Address	7000 Monroe
Street Address 2	
City	Willowbrook
State	IL
Zipcode	60527
Phone #	1-630-323-2800

Test Settings

1. Tap to access the test setting defaults. Tap the boxes or icons to change the values.

Battery Rating	CCA
Temperature Units	° F
Decimal Separator	00.00
Create MDCA Log File	

Battery Rating
Default battery rating units used when testing batteries.

Temperature Units
Default temperature units used when measuring battery temperature.

Decimal Separator

Default number display using commas or periods separators.

Create MDCA Log File
The MDCA function is used by Midtronics technical support.

2. Tap to return to the Shop Information screen.

Date/Time Settings

1. Tap to access the Date/Time setting defaults.

Select Time Format	12 Hour
Select Date Format	10/18/2016
Select Time Zone	EST
Set Date	
Set Time	

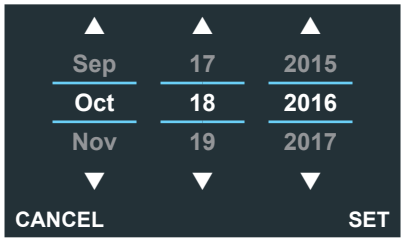
Select Time Format
12 or 24 Hour Format

Select Date Format
Month/Day/Year, Day/Month/Year, or Year/Day/Month

Select Time Zone
Time zone in which the analyzer will be operated.

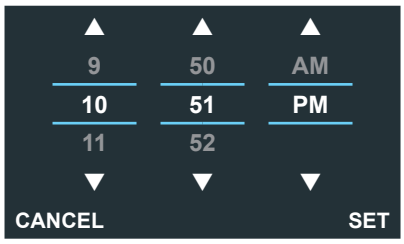
Set Date

Tap ▲ or ▼ to enter the month, day, and year. Tap Set to save the date or Cancel to exit without saving.



Set Time

Tap ▲ or ▼ to enter the hours, minutes, and AM/PM. Tap Set to save the date or Cancel to exit without saving.



2. Tap to return to the Shop Information screen.

Device List

Displays connected and linked accessory devices. Additional devices can also be detected and linked to the analyzer.

Add	Refresh
Delete Paired Device	Enabled

Add Tester Pod

1. Tap to add a device.
2. Move the device to be linked within 30 feet of the Controller, turn on the device, then tap →.
3. A list of detected devices is displayed. Tap > next to the desired device to select it. If the desired device is not displayed, tap to refresh the list.

NOTE: A passkey number is automatically generated once the Bluetooth pairing has been established.

A confirmation message is displayed when the device has been successfully linked.

4. Tap → to return to the Device List screen.

Deleting A Tester Pod

1. Tap next to the base to be deleted.
2. Tap Yes to delete.

Version Information

Use Version Information to display WiFi connection data and DSS Controller software version information.

Factory Reset	Check For Updates
Legal Information	

DSS Serial Number
Wi-Fi MAC Address
Configuration Version
Data Version
DSS Controller Version
Diagnostic Device Version
OS Version

Factory Preset

Use to return the tool to original history and test settings.

IMPORTANT: All previous modifications to the original settings will be overwritten.

Legal Information

Displays software attribution information via the Midtronics website. The analyzer must be connected to the Internet.

Check for Updates

BMIS status is displayed when tester is powered up. Check for tester software updates via the connected WiFi network.

IMPORTANT: An alert is displayed when tester has not communicated with BMIS for more than 24 hours. The "No" option is not available for 30 seconds.

Chapter 11: Support



Use the Support function to access built-in Self-Testing functions or to view a digitized version of the Instruction Manual.

User Manual



Tap the icon to view the analyzer's Instruction Manual.

Self-Diagnostics



Use to test WiFi network and printer connections, Tester Pod diagnostics, Controller display testing, and Controller touch panel testing.



Wi-Fi Self-Diagnostics	Tests connectivity to the BMIS server via the selected Wi-Fi network
Wi-Fi Printer Self-Diagnostics	Use to configure a Wi-Fi printer
Tester Pod Self-Diagnostics	Check connectivity between the Controller and the Tester Pod
Display Self-Diagnostics	Tests Controller pixel display
Touchscreen Self-Diagnostics	Tests Controller touchscreen responsiveness

Appendix A: Battery Information Screen Descriptions



VIN A unique code, including a serial number, used by the automotive industry to identify individual motor vehicles, motorcycles, scooters and mopeds, as defined in ISO 3833.

Vehicle Year Model year that a vehicle was manufactured.

Vehicle Make Vehicle manufacturer

Vehicle Model Vehicle name or number

Vehicle Technology Hybrid, Gasoline, Electric, Start-Stop, Hybrid Start-Stop, Diesel

Battery Installation Single Battery or Dual Batteries

Battery Application Automotive, Marine, Powersport, Group 31, Commercial 4D/8D, Lawn and Garden

Battery Post Top Post, Side Post, Dual Post

Test Location Top Post, Side Post, Remote Post

Battery Type Flooded, AGM (Absorbed Gas Mat), AGM Spiral, Enhanced Flooded

Battery Units

CCA	Cold Cranking Amps: Battery current at 0 ºF (–17.8 ºC).	100 to 3000
CA	Cranking Amps: Battery current at 32°F (0 ºC).	100 to 3000
JIS	Japanese Industrial Standard: Usually printed on battery label.	26A17 to 245H52
DIN(A)	**D**eutsche **I**ndustrie-**N**orm	100 to 1000
SAE(A)	European labeling of CCA	100 to 3000
IEC(A)	**I**nternational **E**lectrotechnical **C**ommission	100 to 1000
EN(A)	**E**uropa-**N**orm	100 to 1700
EN2(A)	**E**uropa-**N**orm	100 to 1700

Battery Rating Enter the Battery Rating Units value.

Notes Enter an RO number here.

Appendix B: Recommended Test Procedure

The Conductance Profiling™ technology determines battery cranking and Reserve Capacity testing. This additional process, can take up to 60 seconds to complete.

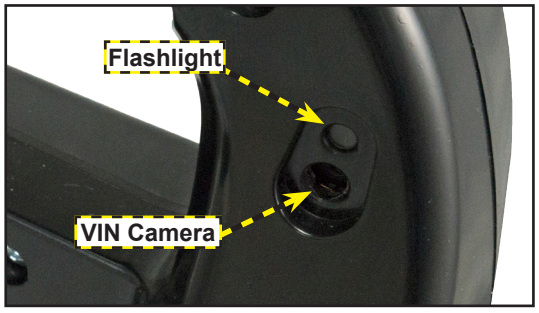
IMPORTANT: Always begin each test by connecting the Tester Pod clamps to the battery being tested. The test begins as soon as the clamps are connected.

VIN Scanning

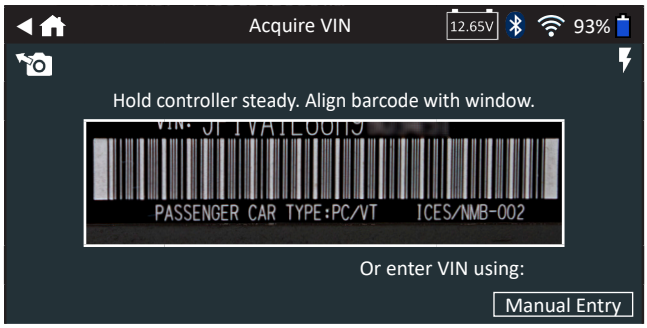
The DSS-5000 uses a camera built into the Controller handle to scan the VIN of the vehicle being tested. This number is then cross-referenced with the original equipment manufacturer's battery specifications stored in the tester's database and displayed on the Controller screen.

Scanning Tips

- **Camera:** Located in the upper left portion on the back of the Controller handle.



- **Hold Steady:** Hold Controller steady when scanning the VIN barcode. This allows the user to clearly see the barcode and allows the camera to focus on it.



- **Fill Viewfinder**: Make sure the entire barcode is visible. Keeping the entire VIN barcode visible while slowly moving the camera closer or further away will help capture.
- **Clean Barcode/Window**: Surface dirt can interfere with the scanning process. If necessary wipe the VIN barcode with a cloth or your finger to remove any surface dirt.
- **Lighting/Glare:** To provide additional light in low-light situations, tap the ϟ icon to turn on the built-in flashlight. If the flashlight, or ambient light, is shining directly onto the VIN barcode, try pivoting the camera up or down slightly to reduce any glare.

PATENTS

This product is made by Midtronics, Inc., and is protected by one or more U.S. and foreign patents. For specific patent information, contact Midtronics, Inc. at +1 630 323-2800.

LIMITED WARRANTY

Midtronics products are warranted to be free of defects in materials and workmanship for a period of one (1) year from date of purchase. Midtronics will, at our option, repair or replace the unit with a re-manufactured unit. This limited warranty applies only to Midtronics products, and does not cover any other equipment, static damage, water damage, overvoltage damage, dropping the unit, or damage resulting from extraneous causes including owner misuse. Midtronics is not liable for any incidental or consequential damages for breach of this warranty. The warranty is void if owner attempts to disassemble the unit or to modify the cable assembly.

SERVICE

To obtain service, contact Midtronics at 866-592-8052. Have your model and serial numbers ready. This first step is critical as we will trouble-shoot the problem(s) over the phone, and many problems are resolved during this step. If the problem cannot be resolved, then the Customer Service Agent will issue you a Return Material Authorization (RMA). This number becomes your tracking number. The final step is to return the unit to Midtronics freight prepaid (you pay), to the attention of the RMA number obtained.

In USA:
Midtronics, Inc.
Attn: RMA # xxxxx (this is the RMA number that you must obtain from Midtronics)
7000 Monroe St.
Willowbrook, IL 60527

In Canada:
Midtronics c/o FTN (FTN is Fed-ex Trade Networks –this is NOT a Midtronics facility)
Attn: RMA # xxxxx (this is the RMA number that you must obtain from Midtronics)
7075 Ordan Drive
Mississauga, ON L5T1K6

Midtronics will service and return the unit using the same type of service as received. If Midtronics determines that the failure was caused by misuse, alteration, accident, or abnormal condition of operation or handling, purchaser will be billed for the repaired product and it will be returned freight prepaid with shipping & handling charges added to the invoice. Midtronics products beyond the warranty period are subject to the repair charges in place at that time. Optional re-manufacturing service is available to return our products to like-new condition. Out-of-warranty repairs carry a 3-month warranty. Re-manufactured units purchased from Midtronics are covered by a 6-month warranty.

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