MIDTRONICS

CPX-955

Battery Tester

User Manual

Contents

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 tester 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.

Symbols 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 tester 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 tester's touch screen display. Test results can be displayed on the full-color screen, printed, or wirelessly emailed.

Consent to Collection and Use of Data

You agree that Midtronics, Inc. may collect, store, transmit, and use technical data and related information, including but not limited to technical information about this device, system and application software, and accessories, that is gathered periodically to facilitate the provision of product support, product improvements, product development, and other services related to use of this device. If electing to collect personal data (such as e-mail addresses) the user is solely responsible for obtaining any necessary permissions, and agrees to indemnify and hold harmless Midtronics, Inc. its subsidiaries, officers, employees and agents from any liability associated with collecting, storing, and transmitting such personal data.

Controls & Connections

①	Display Screen
②	Cooling Vent
③	Arrow Keys & Power Button
④	Mini-USB Port
⑤	Thermal Printer (optional)
⑥	Temperature Sensor
⑦	VIN Barcode Scanner (optional)
⑧	Clamp Tabs

Main Menu

① Menu Bar

12.74V	Battery Voltage: (if connected)		Controller Internal Battery Status: Blue indicates amount of charge. A lightning icon indicates it's being charged.
	WiFi Signal Strength: Orange when not connected.		Bluetooth Status: Displayed when connected.
	BMIS Connectivity: "X" indicates no connection.		

② Main Menu Selection Area

When displayed, the Screen Arrows show which **ARROW** key on the keypad to press to display other icons or screens. When displayed under a list of options, the Screen Arrows show which keypad arrow to press to highlight a character or item in a list.

Additional Screens

The dots at the bottom or side of a menu or results screen indicate additional screens are available.
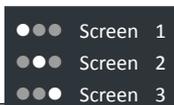
●●● Screen 1 ●●● Screen 2 ●●● Screen 3	Press ◄ or ►
● Screen 1 ● ● Screen 2 ●	Press ▲ or ▼

Main Menu Icons

Icon	Description
Car	For testing batteries that are connected to and installed in a vehicle or batteries that belong to a vehicle and are disconnected.
Battery Test	Test and verify the condition of customer batteries for possible return and/or warranty claim.
History	Access archived test histories or search test history by VIN or by technician.
Messages	Displays alerts and notifications for upcoming tool software updates.
Settings	Setup/adjust: WiFi, printer setup, email settings, user information, default language, display and sound settings, BMIS information, and shop information.

Initial Power Up

The tester will take a few moments when powered up for the first time.

Display

Country	Select the country you are located in.
Language	Select the tester default standard language.
Temperature Units	Select the default temperature units (Fahrenheit/Celsius) used when measuring battery temperature.
Number Separator	Select the default number display using commas or periods separators.

Tap **Next** to continue.

Data Collection Consent

Select **Accept** to Consent to Collection and Use of Test Data.

Date & Time

Use ◀ to return to the Display menu.

|	
Date Format	Select Month/Day/Year (MM/DD/YYYY), or Day/Month/Year DD/MM/YYYY.
Date	Use ▲ or ▼ to advance the month, day, and year. Use ◀ or ▶ to advance left or right and move to **Cancel** or **Next**. Select **Next** to save the date or **Cancel** to exit without saving.
Time Format	Select 12 or 24 Hour Format.
Time	Use ▲ or ▼ to advance the hours, minutes, and AM/PM setting. Use ◀ or ▶ to advance left or right and move to **Cancel** or **Next**. Select **Next** to save the time or **Cancel** to exit without saving.
Time Zone	If available on your tool, select your Time Zone.
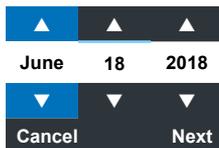
WiFi Settings

Set up the tool's WiFi connection. See "Network" in Chapter 7 – Settings.

> ⚠ **IMPORTANT:** The CPX-955 will not connect to an enterprise network with a user login landing page.
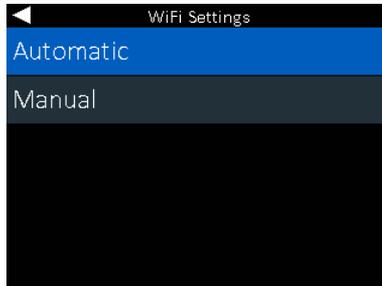
Automatic	The tester searches for any detectable WiFi networks. Select a displayed network is then displayed on the tester screen.
Manual	Manually enter Security, SSID, Password, Encryption, and WEP Keys.

Dealer/Store ID

Enter your Subaru Dealership ID and press **Save**.

Shop Settings

Enter **Shop settings** using the displayed alphanumeric keypad, use ▲▼◄► to highlight the desired alphanumeric character.

Select ⬆ to access the lower case and symbol character maps.

Shop Name	(Blank)
Shop Address	(Blank)
Shop Address 2	(Blank)
City	(Blank)
State	(Blank)
Zipcode	(Blank)

Once all of the alphanumeric characters have been entered, select **Save** or **Esc** to exit without saving.

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 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 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 the clamps are reversed when connected, the tester displays CLAMPS REVERSED! Reconnect the clamps.

Make sure both sides of the clamps are gripping the terminals by rocking each clamp back and forth. A poor connection will prevent testing, and the tester will display a CHECK CONNECTION message. If the message reappears after reconnecting, clean the terminals and reconnect.

Setting User Preferences

Customize the tester by setting preferences in the Settings (⚙) Menu, described in Chapter 7.

2 – Battery Test

Use **Battery Test** to perform Battery Tests on in-vehicle batteries using test parameters selected from battery list or through manual entry of battery parameters.

Battery Test

The CPX-955 provides a battery decision along with additional detailed information on battery cranking and reserve capacity. Press ▲◄►▼ to return to the previous screen, to select options and when necessary, ■ to enter or continue to the next step.

Battery Test

1.   Connect the tester clamps to the battery terminals.

> **NOTE**: The testing process uses Conductance Profiling™ technology to determine battery Cranking and Reserve Capacities. This analysis can take up to 60 seconds to complete.

2.   At the Main Menu select **Battery Test**.

3.   VIN - Enter the last 6 digits of the VIN.

4.   Battery P/N - Choose a battery from the Subaru battery lists or choose to manually enter the battery information.

5.   Location - Choose the **Location** of the Battery, and choose **Next**.

6.   Battery Type - Select the Battery Type being tested.

Battery Type	Flooded	AGM	AGM Spiral	EFB	Gel

7.   Battery Units - Select the Battery Units being used for the battery being tested.

Rating	Description	Range
CCA	**C**old **C**ranking **A**mps (specified by SAE): The amount of current a battery can provide at 0 ºF (–17.8 ºC).	100 to 3000
CA	**C**ranking **A**mps: The amount of current a battery can provide at 32°F (0 ºC).	
JIS	**J**apanese **I**ndustrial **S**tandard test, carried out at -15˚C.	List is Displayed
DIN	**D**eutsche **I**ndustrie-**N**orm	100 to 1000
SAE	**S**ociety of **A**utomotive **E**ngineers - European labeling of CCA	100 to 3000
IEC	**I**nternational **E**lectrotechnical **C**ommission	100 to 1000
EN	**E**uropa-**N**orm: The battery is required to meet a voltage of 7.5V after 10 seconds.	100 to 1700
MCA	**M**arine **C**ranking **A**mps: The amount of current a battery can provide at 32°F (0 ºC).	100 to 3000

8.   Battery Rating - Enter the correct battery rating for the battery being tested. Hold down ▲ or ▼ to increase scrolling speed.

▲
500
▼

Cancel	OK

9.   Battery AH (Ampere Hour) - Select the Battery AH.

Select **Next** to begin testing.

10. Temperature - When prompted, hold the tester temperature sensor 15-30 cm (6 to 12 inches) over the top of the battery being tested.
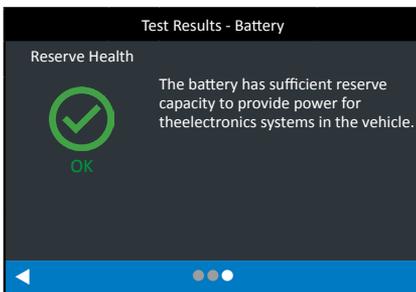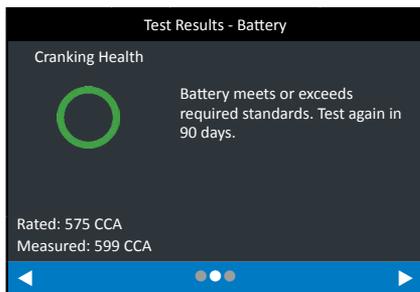

Battery Test Results

The battery test results are displayed as shown below. If applicable, a Battery Warranty Code will also be displayed.

Icons are color-coded to indicate status.

Green:	All test parameters were completed and have passed.	**Red:**	The battery has failed the test.
Yellow:	Some test parameters may require further testing.	**Gray:**	Insuffcient data to perform the test.
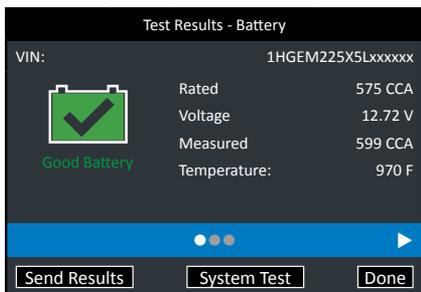
Test Results - Battery Test

NOTE: See Appendix B for complete parameter descriptions.

Select **Send Results** displayed at the bottom of the tester screen to send the test results to the optional built-in printer or via email.
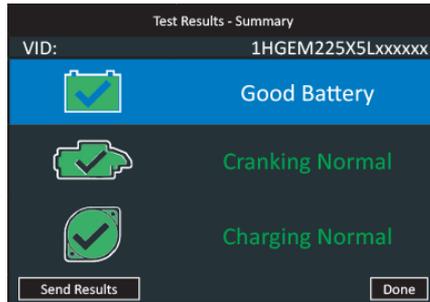Select **Done** to return to the Main Menu. Select **System Test** to continue testing.

Press ▲▼◄► to return to the previous screen, to select options and when necessary, ■ to enter or continue to the next step. Use **Back** to return to the Main Menu.

System Test

11. If you have an external amp clamp avaible, put it around the negative cable.
     Press **Skip** or **Next**.

12. Start the vehicle's engine and let it idle.

13. Ensure all accessories (High Beam headlights/ventilation blower etc.) are off and select **Next.**
     The tester tests the alternator output.

14. When prompted, rev and hold the engine to between 2000 to 3000 rpm.
     The tester tests the alternator output again.

15. When prompted, idle the engine and select **Next**.

16. Turn on the high beam headlights and ventilation blower. Select **Next**.
     The tester tests the alternator output.

17. When prompted, rev and hold the engine to between 2000 to 3000 rpm.
     The tester tests the alternator output again.

18. When prompted, idle the engine and select **Next.**

19. If you used an amp clamp, now insert the measured voltage. Press **Next**.

System Test Results

System Test Results - Example

NOTE: See Appendix B for complete description of possible test result.

The Test Results - Summary screen is displayed following a System Test. Select the Battery, Cranking, or Alternator Test to view detailed test results for each part of the test.

Test Results - Cranking		Test Results - Charging	
Cranking Voltage	12.72 V	No Load Voltage	12.72 V
Starting Time	2.33 s	Loaded Voltage	14.23 V
Cranking Normal		Charging Normal	
◀	Done	◀	Done
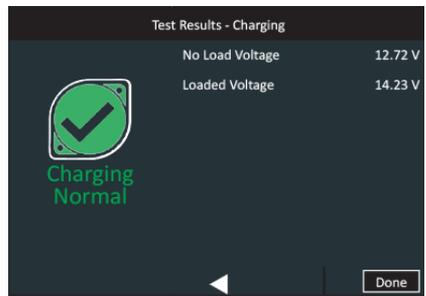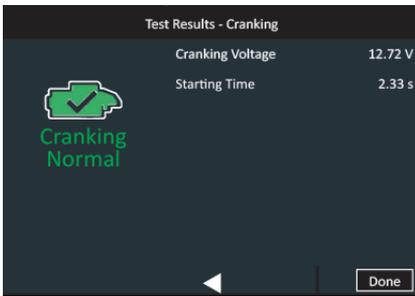
3 – New Battery Test

New Battery Test

Use **New Battery Test** to test and verify the condition of new, uncycled batteries. Press ▲▼◄► to return to the previous screen, to select options and when necessary, ■ to enter or continue to the next step. Use **BACK** to return to the Main Menu.

Battery Test

1. Connect the tester clamps to the battery terminals.

2. At the Main Menu, select **New Battery**.

3. <u>VIN</u> - Enter the last 6 digits of the VIN.

4. <u>Battery P/N</u> - Choose a battery from the Subaru battery lists.

5. <u>Location</u> - Choose the **Location** of the Battery, and choose **Next**.

6. <u>Battery Type</u> - Select the Battery Type being tested.

Battery Type	Flooded	AGM	AGM Spiral	EFB	Gel

7. <u>Battery Units</u> - Select the Battery Units being used for the battery being tested.

| Rating	Description	Range
CCA	**C**old **C**ranking **A**mps (specified by SAE): The amount of current a battery can provide at 0 ºF (–17.8 ºC).	100 to 3000
CA	**C**ranking **A**mps: The amount of current a battery can provide at 32°F (0 ºC).	
JIS	**J**apanese **I**ndustrial **S**tandard test, carried out at -15˚C.	List is Displayed
DIN	**D**eutsche **I**ndustrie-**N**orm	100 to 1000
SAE	**S**ociety of **A**utomotive **E**ngineers - European labeling of CCA	100 to 3000
IEC	**I**nternational **E**lectrotechnical **C**ommission	100 to 1000
EN	**E**uropa-**N**orm: The battery is required to meet a voltage of 7.5V after 10 seconds.	100 to 1700
MCA	**M**arine **C**ranking **A**mps: The amount of current a battery can provide at 32°F (0 ºC).	100 to 3000

8. <u>Battery Rating</u> - Enter the correct battery rating for the battery being tested. Hold down ▲ or ▼ to increase scrolling speed.

▲
500
▼
Cancel   OK

9. <u>Battery AH (Ampere Hour)</u> - Select the Battery AH.

    Select **Next** to begin testing.

10.   Temperature - Hold the tester temperature sensor over the battery being tested.
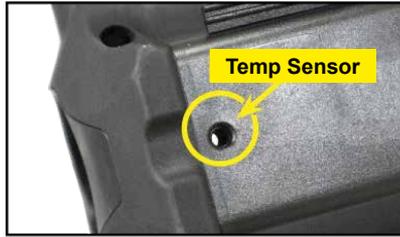
Select **Capture** to lock in the live temperature reading and begin the battery test.

Battery Test Results

The battery test results are displayed. For a New battery test, no Battery Warranty Code will be displayed.
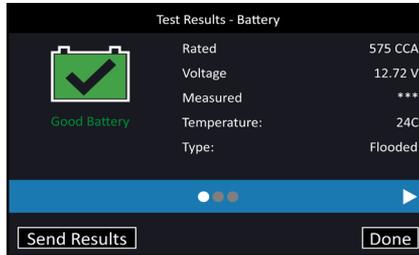
To print or send the test results to a configured printer select **Send Results**. Select **Done** to return to the main screen.

> **NOTE**: The Measured Cranking Value is not shown in instances of a new battery test.

4 – History

Use **History** to access the tool usage history and a vehicle history based on VIN.

History

Press ▲◄►▼ to return to the previous screen, to select options and when necessary, ■ to enter or continue to the next step.

1.   At the Main Menu, select **History**. The Tool History screen is displayed.

2.   Select a vehicle record to view the results or select **Search Options** to search for records.

3.   Select the Battery Test to view detailed test results for each part of the test.

> **NOTE:** See Battery Test Results in Chapter 2 – Battery Test for test result screens and descriptions.

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

5 – Messages
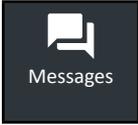
Messages

The **Messages** function displays alerts and notifications for upcoming tool software updates.

Select ◄ to return to the previous screen or 🏠 to return to the Main Menu.

Accessing Messages

A number is displayed next to the Messages icon when the tester has received any critical messages.

② Unread Critical Messages

② Read Critical Messages

6 – Settings

Settings

Use **Settings** to setup and adjust the tester display and time, shop and administrative settings and network connectivity.

Press ▲◄►▼ to return to the previous screen, to select options and when necessary, ■ to enter or continue to the next step.
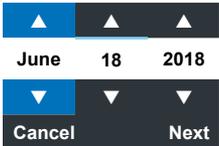
Tool

Display
Use ◄ to return to the Tool Settings menu.

Country	Select the country you are located in.
Language	Select the tester default standard language.
Temperature Units	Select the default temperature units (Fahrenheit/Celsius) used when measuring battery temperature.
Number Separator	Select the default number display using commas or periods separators.

Date & Time
Use ◄ to return to the Tool Settings menu.

Date Format	Select Month/Day/Year (MM/DD/YYYY), or Day/Month/Year DD/MM/YYYY.
Date	Use ▲ or ▼ to advance the month, day, and year. Use ◄ or ► to advance left or right and move to **Cancel** or **Next**. Select **Next** to save the date or **Cancel** to exit without saving. ▲ ▲ ▲ June 18 2018 ▼ ▼ ▼ Cancel Next
Time Format	Select 12 or 14 Hour Format
Time	If available on your tool, use ▲ or ▼ to advance the hours, minutes, and AM/PM setting. Use ◄ or ► to advance left or right and move to **Cancel** or **Next**. Select **Next** to save the time or **Cancel** to exit without saving. ▲ ▲ ▲ 10 46 AM ▼ ▼ ▼ Cancel Next
Time Zone	If available on your tool, select your Time Zone.

Print Format
Set the default to include Shop Info and State Of Health (SoH) information on test result printouts. Use ◄ to return to the Display menu.

Include Shop Info	Press ■ to check and uncheck the box. A checked box indicates the shop information will be included on printed test results.
Include SoH Graph	Press ■ to check and uncheck the box. A checked box indicates the State Of Health screen will be included on printed test results.

Dealer/Store ID

Change your Subaru ID.

Version   ⓘ

Use to confirm technical information for internal tester software and hardware.

Config:	Build Number:
Firmware:	Serial Number:
Flash:	MAC ID:
EEPROM:	FCC ID:
Build Date:	

Factory Reset

Reset the device to factory setup, where all user data and history will be deleted.

> **NOTE:** Tool will reset without requesting confirmation when **Factory Reset** is selected. Use with caution.

Shop Settings

Use to enter information about the shop in which the tester will be used.

Shop Name	(Blank)
Shop Address	(Blank)
Shop Address 2	(Blank)
City	(Blank)
State	(Blank)
Zipcode	(Blank)

With the displayed alphanumeric keypad, use ▲▼◄► to highlight the desired alphanumeric character.

Select ⬆ to access the lower case and symbol character maps.

Once all of the alphanumeric characters have been entered, select **Save** or **Esc** to exit without saving.

Network

WiFi

Automatic	The tester searches for any detectable WiFi networks. A list of detected WiFi networks is then displayed on the tester screen. Highlight a displayed network and press ■ to connect. Press ◄ to return to the WiFi Settings screen.
Manual	Manually enter Security, SSID, Password, Encryption. Select **Connect**.

7 – Maintenance & Troubleshooting

Tester Cables

The tester cables that come with your tester are consumable items. Cables are like tires in that the more you use them and the harder you drive them, the shorter their useful life. Here are a few things you can do to protect your tester cables from damage and premature wear:

Cleaning Clamps

•   The grease, dirt, and sulfation that build up on battery terminals are highly corrosive and can damage the clamps over time. Before connecting the clamps, ensure accurate test readings and protect the clamps by cleaning the battery case and terminals using a wire brush and a mixture of water and baking soda.

•   Periodically clean the clamps using a mixture of baking soda and water, or a mild hand-soap, and a small bristle brush.

•   To protect the clamps from oil and dirt, clip them to the Clamp Tab on the back of the tester.

Handling Tester cables

•   Always connect and disconnect the clamps to the battery by opening and closing the clamps. Never pull on the tester cables to remove the battery clamps. Pulling can damage the Y-junction, the cables, and the clamps to the extent that the tester may produce lower-than-expected conductance readings or fail completely.

•   Never carry the tester by the cables. Carrying the tester or swinging it by the cables puts unnecessary strain on the cables and can result in premature failure. Handle the tester with care to get the maximum use from the product.

Storing Tester cables

•   Never wrap the cables around the tester; this puts unnecessary strain on the tester cables.

Because the tester cables are the "tires" of the tester, they have a certain life expectancy and will wear out eventually. However, the abuse examples cited above are not covered under warranty. To ensure the best performance and longest life of the tester cables, attach and remove them with care, and carry the tester and cables together.

If an inspection or change in test results indicate that a cable needs to be replaced these can be purchased via Snap-on through the HART2 webshop using the link in Panex.

Replacing The Internal Battery Pack

1. Turn the tester face down.

2. Use a Phillips screwdriver to remove the screw securing the door to the battery compartment.

Battery Cover Screw

3. Lift the door at the tab and place it aside.

4. Remove the battery pack. Make sure you don't damage the connector on the battery pack or the battery tester. Any damage to the battery, the connector or loose wiring will void the warranty.

5. Insert new battery pack and carefully connect it to the tool.

6. Reposition the door on the battery compartment.

7. Reinsert and tighten the screw.

Appendix A: Test Results Decision Tables

Battery Test Results

> **NOTE:** In "New Battery Test" the Reserve Capacity is not evaluated.

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 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.
		Unknown Reserve	
Charge & Retest	Charge & Retest		Battery requires charge to determine condition.
		Charge & Retest	
Replace Battery	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	Good Battery	Battery fails to meet industry accepted standards

Patents / Warranty / Service

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 two (2) years 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

For Service and support please contact Midtronics via https://www.midtronics.com/customer-support.

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