PowerSensor®
Micro490™
Digital Battery Analyzer

For testing 12 volt automotive batteries and for testing 12 and 24 volt charging systems.

INSTRUCTION MANUAL

Rotunda
EQUIPMENT AND SPECIAL SERVICE TOOLS

Rotunda # 162-00004

TABLE OF CONTENTS

CAUTION!

Because of the possibility of personal injury, always use extreme caution when working with batteries.

INITIAL SETUP

The Dealer P&A Code must be entered into the Micro490 to get an ACES approval code for warranty purposes. The *first* time you connect to a battery, you will be prompted to enter your Dealer P&A Code into the tester.

Use the up/down arrow buttons to scroll to the correct character, then press the ENTER button to select and move to the next digit. The Dealer P&A Code will be stored in the memory of the tester until changed.

To verify your Dealer P&A Code is correct, or to change it later if necessary, press and hold the PRINT button to activate the Option Menu. Scroll to P&A Code; then press the ENTER button to select.

BATTERY TESTING

Prior to Testing

If Testing In Vehicle

- At the beginning of a test sequence, make sure all vehicle accessory loads are off and the **ignition is in the off position**.

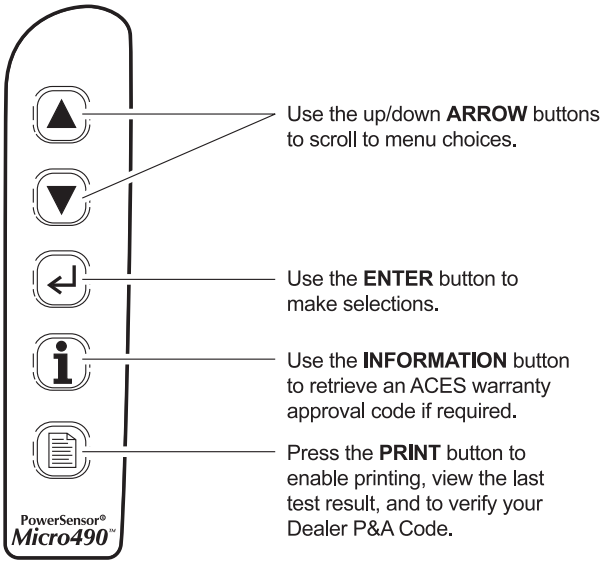
Connecting the Tester

- Connect red clamp to positive (+) terminal.
- Connect black clamp to negative (–) terminal.
- To ensure a proper connection, rock the clamps back and forth. The tester requires both sides of the clamp to be firmly connected prior to testing. A poor connection will prevent testing and a CHECK CONNECTION message will appear. If this occurs, clean the terminals and reconnect.

Note: If the vehicle is equipped with multiple batteries, disconnect the ground cable of the battery being tested in the vehicle, and conduct an "OUT OF VEHICLE" test.

Note: The Micro490 cannot be used to perform "IN VEHICLE" charging system tests on vehicles that have the ground cable disconnected.

Keypad



Battery Test Results

(See Page 5 for “Special Messages and Features”)

GOOD BATTERY	Return to service.
GOOD—RECHARGE	Fully charge the battery and return to service.
CHARGE & RETEST	Fully charge battery and retest. *Failure to fully charge the battery before retesting may cause false readings.*
REPLACE BATTERY	Replace battery. If testing in-vehicle, a REPLACE BATTERY result may mean a poor connection between the vehicle’s cables and the battery. Disconnect the battery cables and retest at the battery terminals before replacing the battery.
BAD CELL–REPLACE	Replace battery.

ACES Approval Code

If the battery test result is REPLACE BATTERY or BAD CELL–REPLACE, press the INFORMATION button and the tester will prompt you for the RO Number. Use the up/down arrow buttons to scroll to the correct character, then press the ENTER button to select and move to the next digit. Then the tester will prompt

you to use the same procedure to enter the Line Number of the RO. Then press the ENTER button to view the ACES Approval Code. Pressing the ENTER button again will display the DTC Code. Both codes will be needed on the warranty claim for battery replacements.

CHARGING SYSTEM TEST

If the In-Vehicle test was selected, following the battery test you will be prompted to press the ENTER button to begin the charging system test. Do not shut down the vehicle during the test. All electrical accessories should be in the “OFF” condition. If any electrical loads are switched during the test, it can adversely effect the results (e.g. engine cooling fan or glow plugs).

The tester will prompt you to start the engine, then display the live charging system voltage as well as a charging system result.

Charging Voltage: Normal
The system is showing normal output from the alternator. No problem detected.

Charging Voltage: Low
Refer to the vehicle’s service manual for proper diagnosis and repair procedures. Further testing is necessary to determine corrective action.

Charging Voltage: High
Refer to the vehicle’s service manual for proper diagnosis and repair procedures. Further testing is necessary to determine corrective action.

SPECIAL MESSAGES AND FEATURES

Surface Charge Removal

If surface charge is detected while testing in the vehicle, the tester will prompt you to turn on the headlights to remove the surface charge. Follow the instructions on the display. After detecting the removal of the surface charge, the tester will automatically resume testing.

Temperature Compensation

If necessary, the tester will prompt the user to choose if the battery temperature is above or below 32°F. Choose above or below 32°F as appropriate by pressing the up or down arrow button; then press the ENTER button to make the selection.

BEFORE CHARGE and AFTER CHARGE Test

If necessary, the tester will ask the user if the battery has just been charged. Make the appropriate selection by pressing the up or down arrow button; then press the ENTER button to make the selection.

Note: When testing a battery installed in a vehicle that has recently been driven, use the BEFORE CHARGE test.

Computer or Ignition Noise

The SYSTEM NOISE message will be displayed if the tester detects computer or electrical noise that may skew the results. Verify that all vehicle accessories (including underhood and dome lights) are off and that the ignition switch is in the "OFF" position. If the SYSTEM NOISE message appears repeatedly, disconnect the battery ground cable from the vehicle system, and retest after selecting "OUT OF VEHICLE TEST" option in the menu.

Note: The Micro490 cannot be used to perform "IN VEHICLE" charging system tests on vehicles that have the ground cable disconnected.

ADDED CAPABILITY

Viewing Test Results

To view the last test result with the tester disconnected from the battery, press and hold the PRINT button to activate the Option Menu. Use the up/down arrow buttons to scroll to VIEW RESULTS; then press the ENTER button to select. Use the ENTER button to scroll through the test results.

Voltmeter

The Micro490 can also function as a voltmeter if necessary. The operating range of the voltmeter is 0 through 30 VDC.

IMPORTANT: The Micro490 circuit boards may be damaged if tester is connected to sources exceeding 30 VDC, or to any AC voltages.

To use the voltmeter function, press and hold the PRINT button. Then use the arrow buttons to scroll to the appropriate section; then press the ENTER button to make the selection.

Use the red and black clamps as probes. The tester cannot detect negative voltage. If the tester is connected in reverse polarity, the tester will shut off. To turn off the voltmeter function, disconnect from the voltage source and press the PRINT button. The tester will automatically shut off if 0 VDC is detected for 1 minute.

Optional–Printing Test Results

The Micro490 also has the ability to print the last test result using infrared (IR) output at the top of the tester and the IR receiver of the optional Hewlett Packard printer, part number HP 82240B, which is available from Rotunda (Rotunda Item number is 162-00010). With the printer on, align the IR output from the Micro490 with the receiver on the printer and press and hold the PRINT button to activate the Option Menu. Use the up/down arrows to scroll to PRINT RESULTS; then press the ENTER button to make the selection.

Notes:

1. *The tester will continue to send data once the ENTER button is pressed. If the tester output and the printer input are not aligned, all the data may not print. If data has not printed, press the PRINT button to cancel the print job. Verify unobstructed alignment between the tester and printer; then try to print the test results again.*

2. *It takes approximately 30 seconds to print the full test results. While printing, the actual results will be shown on the screen.*

******CAUTION******
Once a new test is initiated by connecting to the battery, the last test results in memory will be lost.

Refer to the printer manual that comes with the printer for more detailed printer information.

Note: Thermal paper may discolor or fade over time. Store in a cool, dry place.

TROUBLESHOOTING

If the tester display does not illuminate:

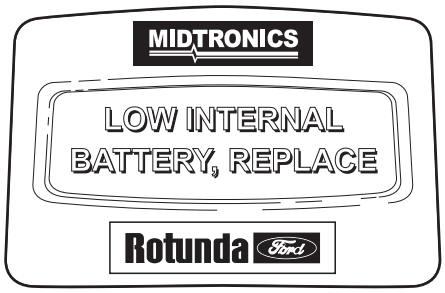
- Check connection to the battery under test.
- Battery may be too low to power the tester (below 1.0 volts). Fully charge the battery and retest.
- Internal 9-volt battery may need to be replaced. Replace the 9-volt battery and retest.
- If the tester does not power up when the PRINT button is pressed and held, replace the 9-volt battery.

Trouble with Printing

- Make sure the printer is on. A red dot is shown on the printer switch when the HP printer is on.
- If the printer is on and won't print, check the display of the Micro490. The tester display will show that printing is in progress and show the test results as they are printed.
- If the tester is showing that it is sending data as described above, abort the print, turn off the printer and replace the batteries. The printer requires 4 AA batteries for operation. Once the batteries are replaced, turn on the printer, align the tester and printer IR ports, and try to print the test results again.
- Direct sunlight interferes with the IR interface. If the printer is not receiving the signal, remove the tester and printer from direct sunlight.
- If the characters printed aren't clear or some characters are missing, replace the batteries and retry.
- If unable to print after ensuring the tester is functioning, verify printer is on, batteries are good, and IR ports are aligned; then check the printer manual for further instructions or call Midtronics for additional assistance.
- To perform a self-test of the printer, hold down the form feed button while turning the printer on. The printer will print all available characters and a battery rating number, where 5 is the highest charge.

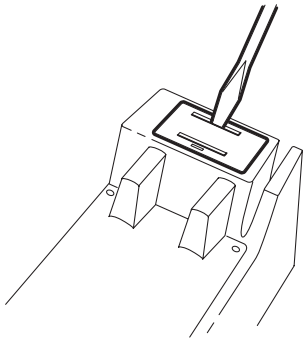
INTERNAL BATTERY REPLACEMENT

The Micro490 uses a 9-volt battery (alkaline recommended) to allow testing of batteries down to 1 volt. Should the 9-volt internal battery require replacing, the display will show a LOW INTERNAL BATTERY message when tester is connected to a 12-volt battery.

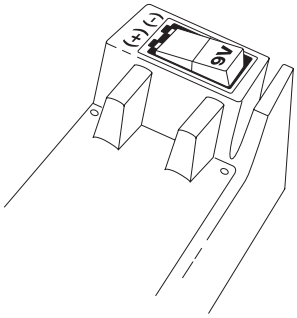


It is recommended to replace the 9-volt battery as soon as the message is displayed. The Micro490 can only test batteries down to 5.5 volts when the internal 9-volt battery is not functioning or has been removed.

To replace the battery, remove the cover to the battery door using a small flat screwdriver.



Remove the old battery and insert a new 9-volt battery; ensure the positive and negative terminals are placed correctly.



Snap the back cover into place.

Have you ever:

- **Forgotten to write down a battery DTC code?**
- **Wished you could retest a vehicle to check the code numbers but the car is long gone?**
- **Wished you could remember the details of a battery diagnostic test?**

If you answered *yes* to any of these questions, it's time to put the power of printing to work for you with the Micro490 printer!

The Micro490 automatically stores the last test result. The purchase of this optional printer will allow you to print the test results as well as print the ACES and DTC codes for your permanent record.

The Micro490 with optional Hewlett Packard Infrared Printer allows you to print test results without making any printer connections. The printer comes with a heavy-duty carrying case that can also house the Micro490.

To order:

Hewlett Packard
IR Printer & Carrying Case
Rotunda Item Number: 162-00010
Price: $299.00

Contact:
Rotunda Dealer Supplies Center
P.O. Box 5450, Dept. RDS
Detroit, MI 48202-9979

or

Call Toll Free:
800-ROTUNDA or
800-768-8632 (Press 2)