PRODEMAND

YMMS: 2020 Chrysler Pacifica Hybrid Touring L
Engine: 3.6L Eng
VIN:

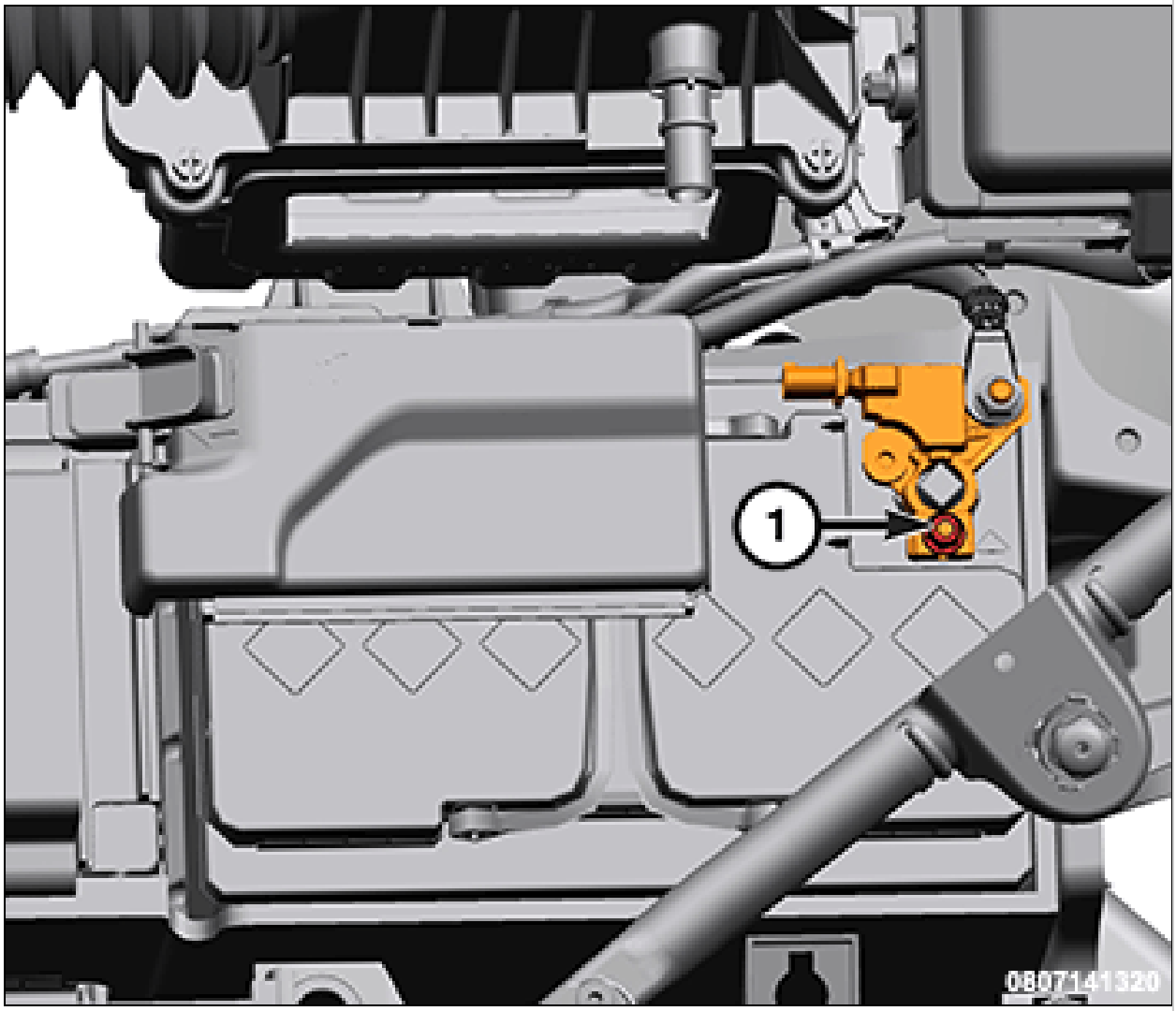
Mar 8, 2021
License:
Odometer:

REMOVAL AND INSTALLATION

CRANKING

REMOVAL

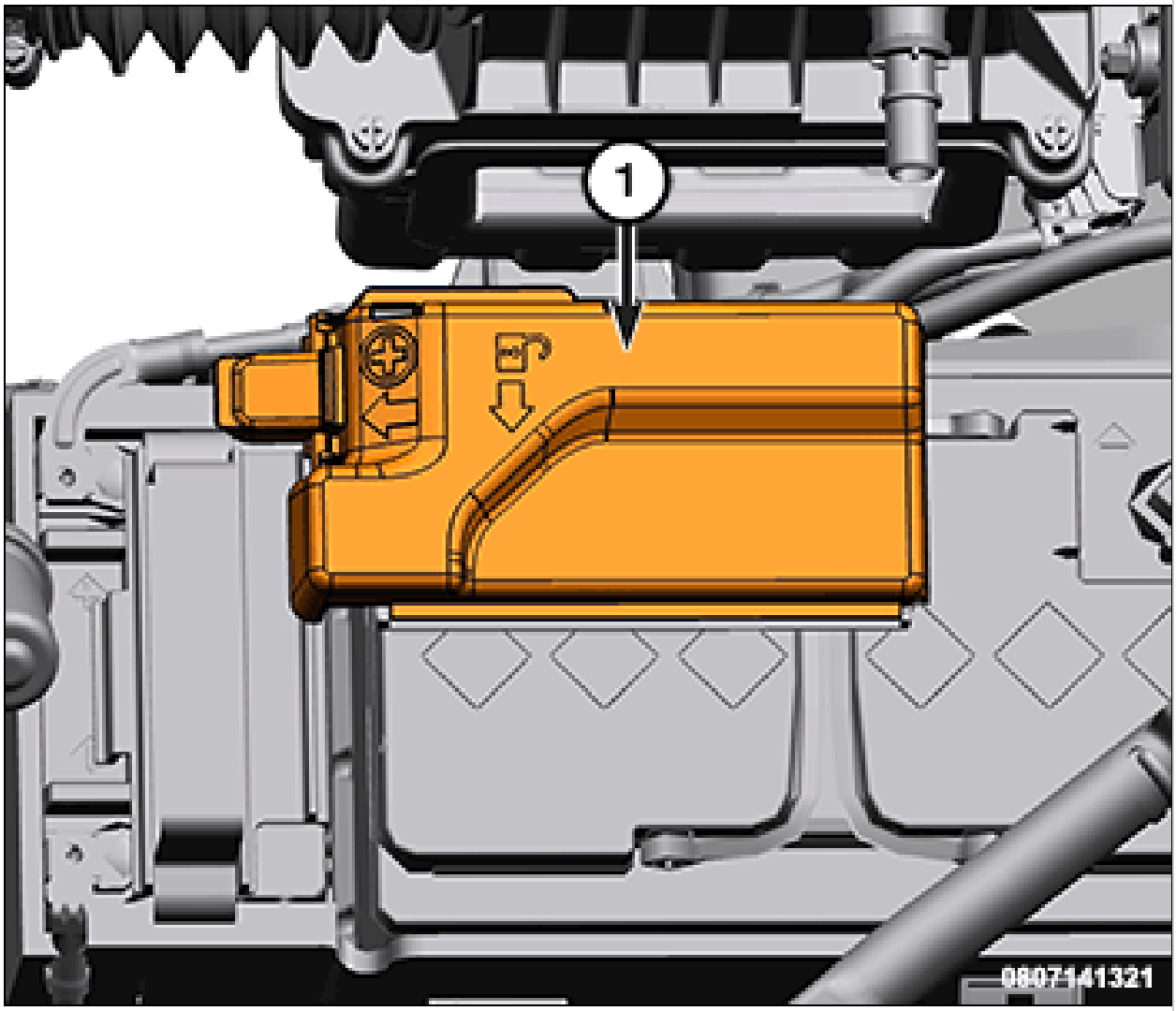
1. Disengage the retainers and remove the air inlet duct. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .



Courtesy of CHRYSLER GROUP, LLC

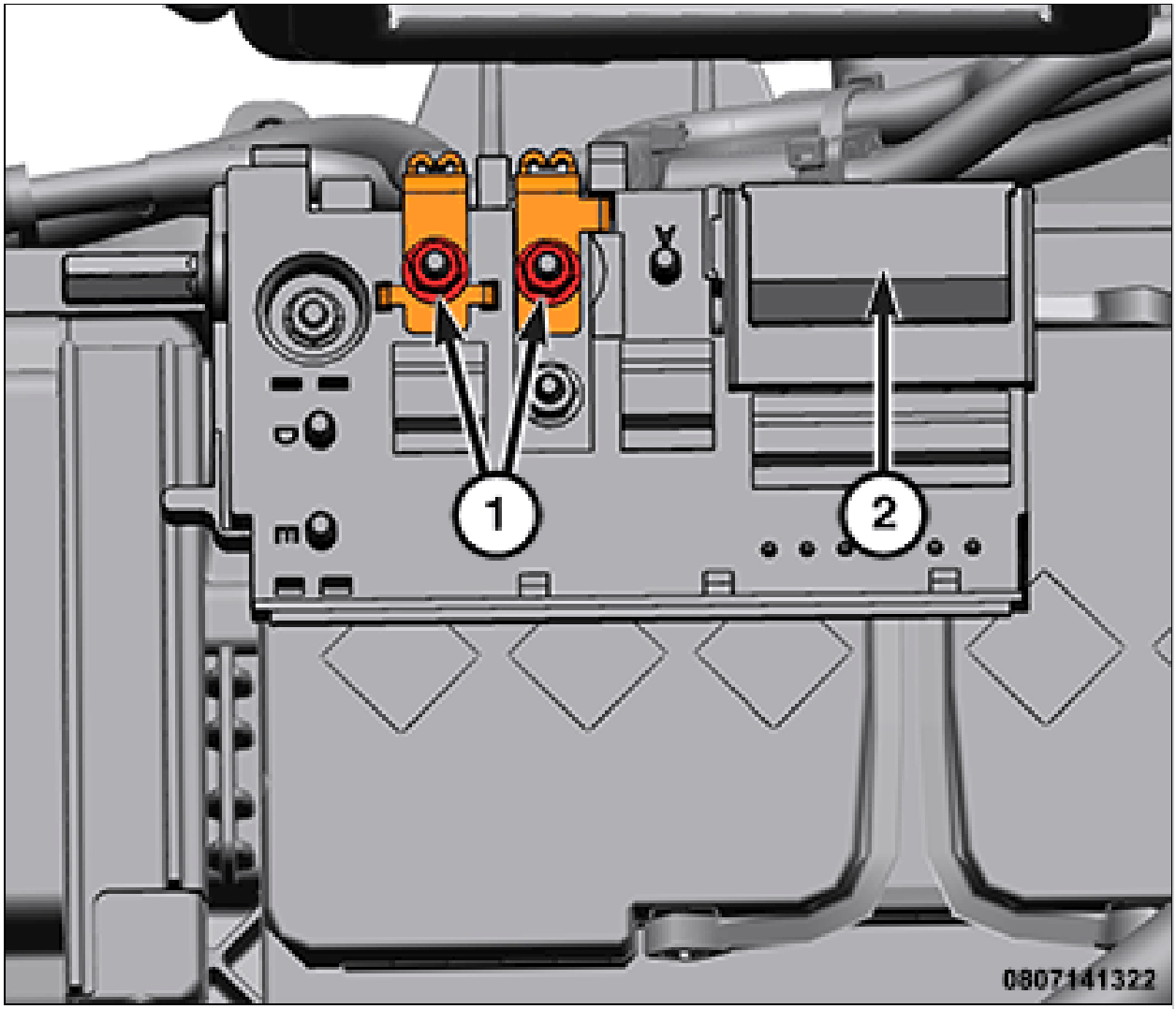
2. Disconnect and remove the Intelligent Battery Sensor (IBS) (1) effectively disconnecting the negative battery cable.

NOTE: *Do not to pry on the IBS to remove as it may damage the sensor*



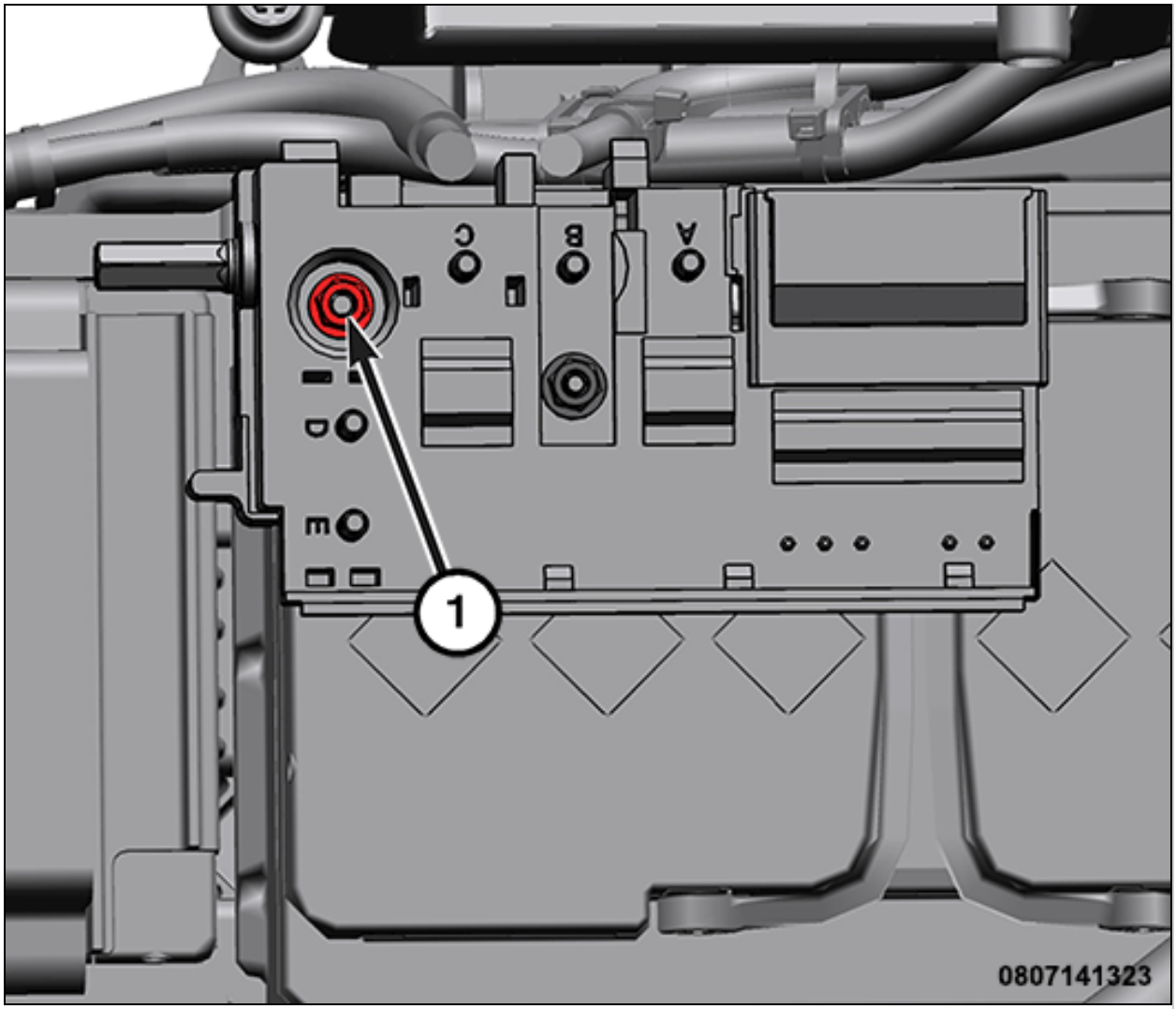
Courtesy of CHRYSLER GROUP, LLC

3. Open the jump post stud cover (1).



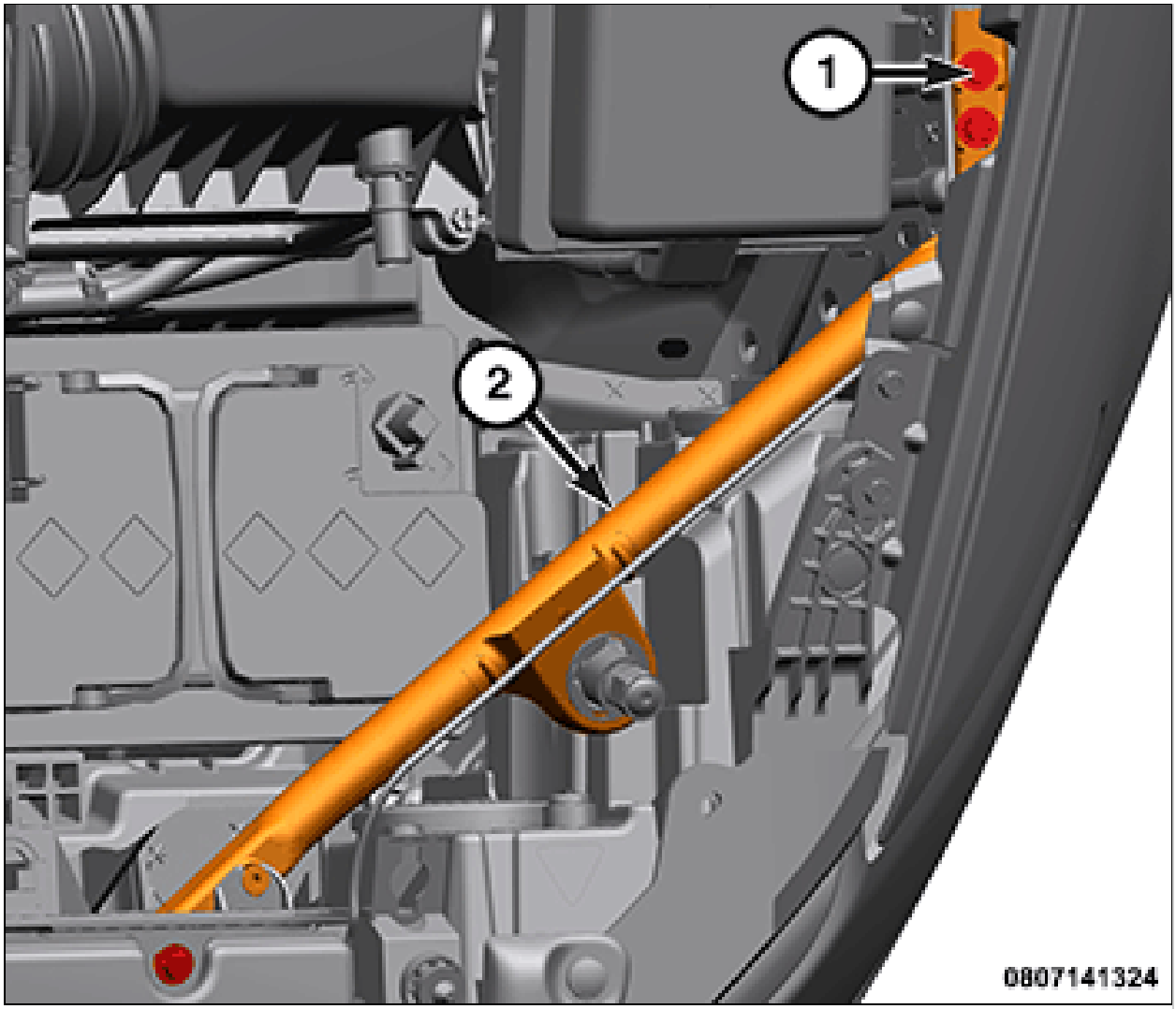
Courtesy of CHRYSLER GROUP, LLC

4. Remove the nuts (1) securing the cables to the pre-fuse assembly.
5. Disconnect the cables connectors (2) from the pre-fuse assembly.



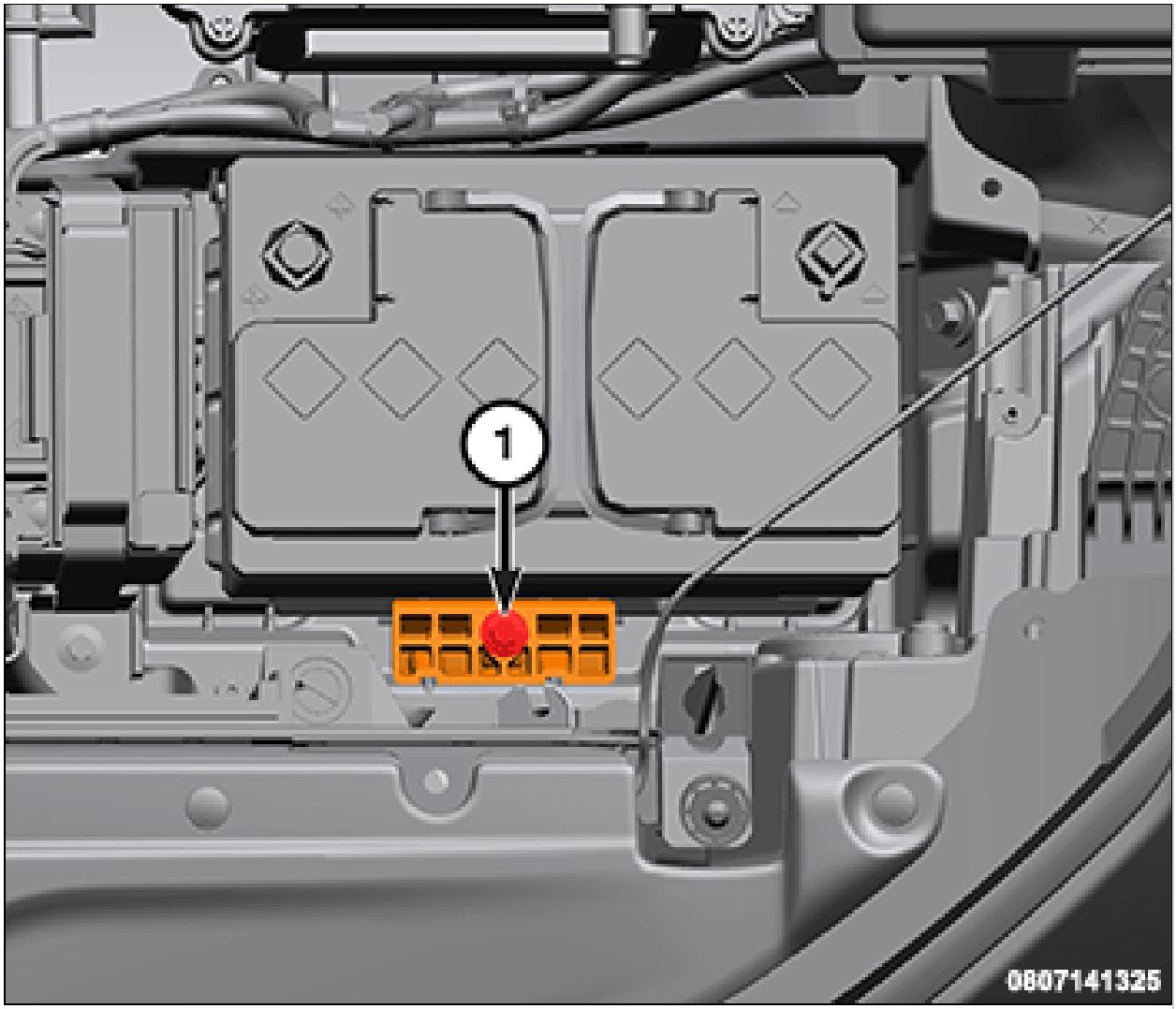
Courtesy of CHRYSLER GROUP, LLC

6. Loosen the nut (1) securing the pre-fuse assembly to the battery.



Courtesy of CHRYSLER GROUP, LLC

7. Remove the three bolts (1) and remove the support bracket (2).



Courtesy of CHRYSLER GROUP, LLC

8. Remove the bolt (1) securing the battery hold down.
9. Remove the battery.
10. If replacing the battery, remove the battery thermal cover from the battery.

INSTALLATION

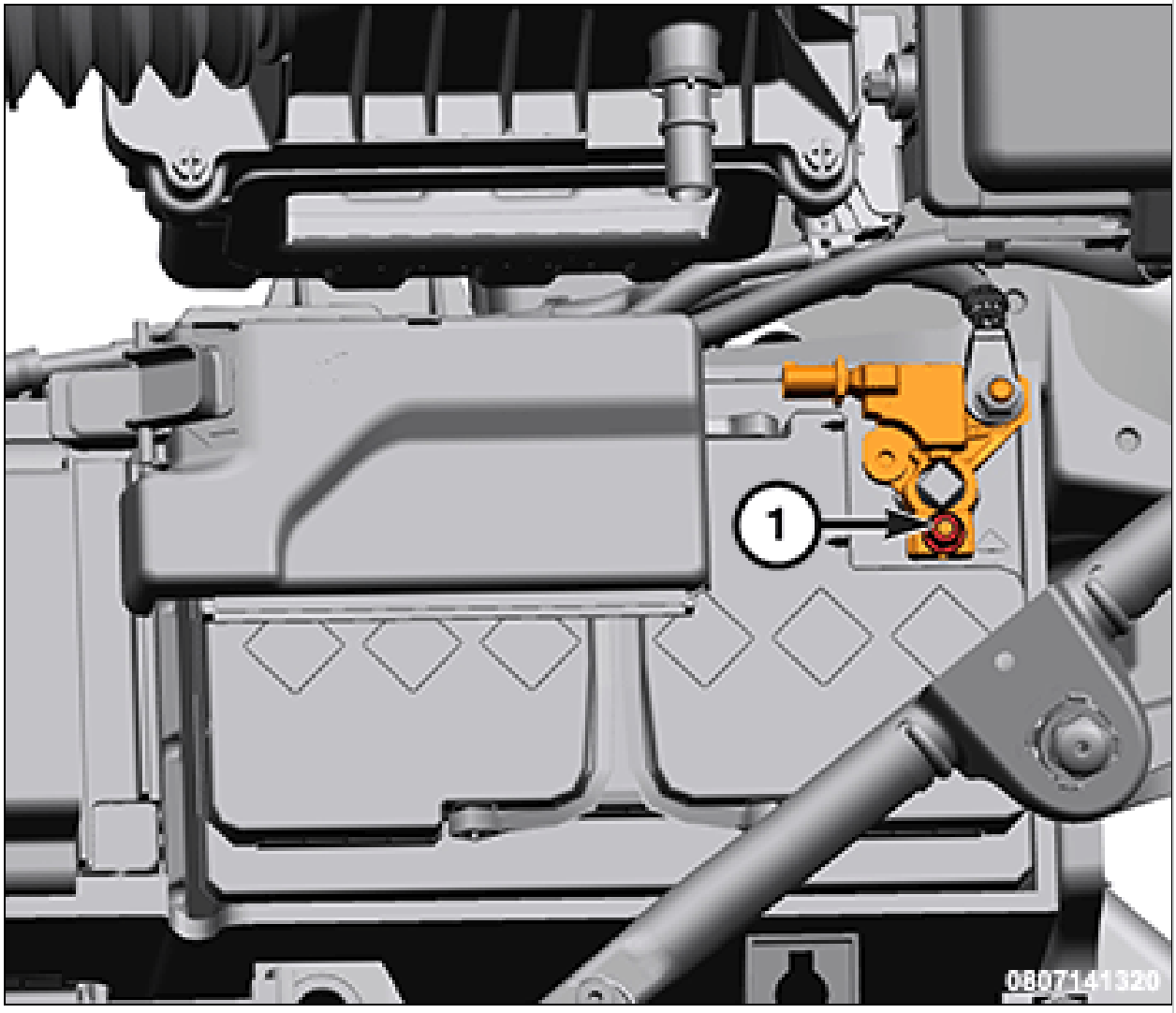
1. If the battery was replaced, install the new thermal cover to the battery.
2. Position the battery to the battery tray.
3. Engage the battery hold down retainer by installing and tightening the hold down bolt while the battery is installed to the tray in the proper position.
4. Install the support bracket and securely tighten bolts.
5. Install the pre-fuse assembly and tighten the cable nuts to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
6. Connect the cable connectors to the pre-fuse assembly.

7. Install the nuts securing the cables to the pre-fuse assembly and tighten to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
8. Close the jump post stud cover.
9. Connect the IBS to the negative battery post and tighten to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
10. Connect the fresh air make up tube.
11. Install the air inlet duct. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .

SUPPLEMENTAL

REMOVAL

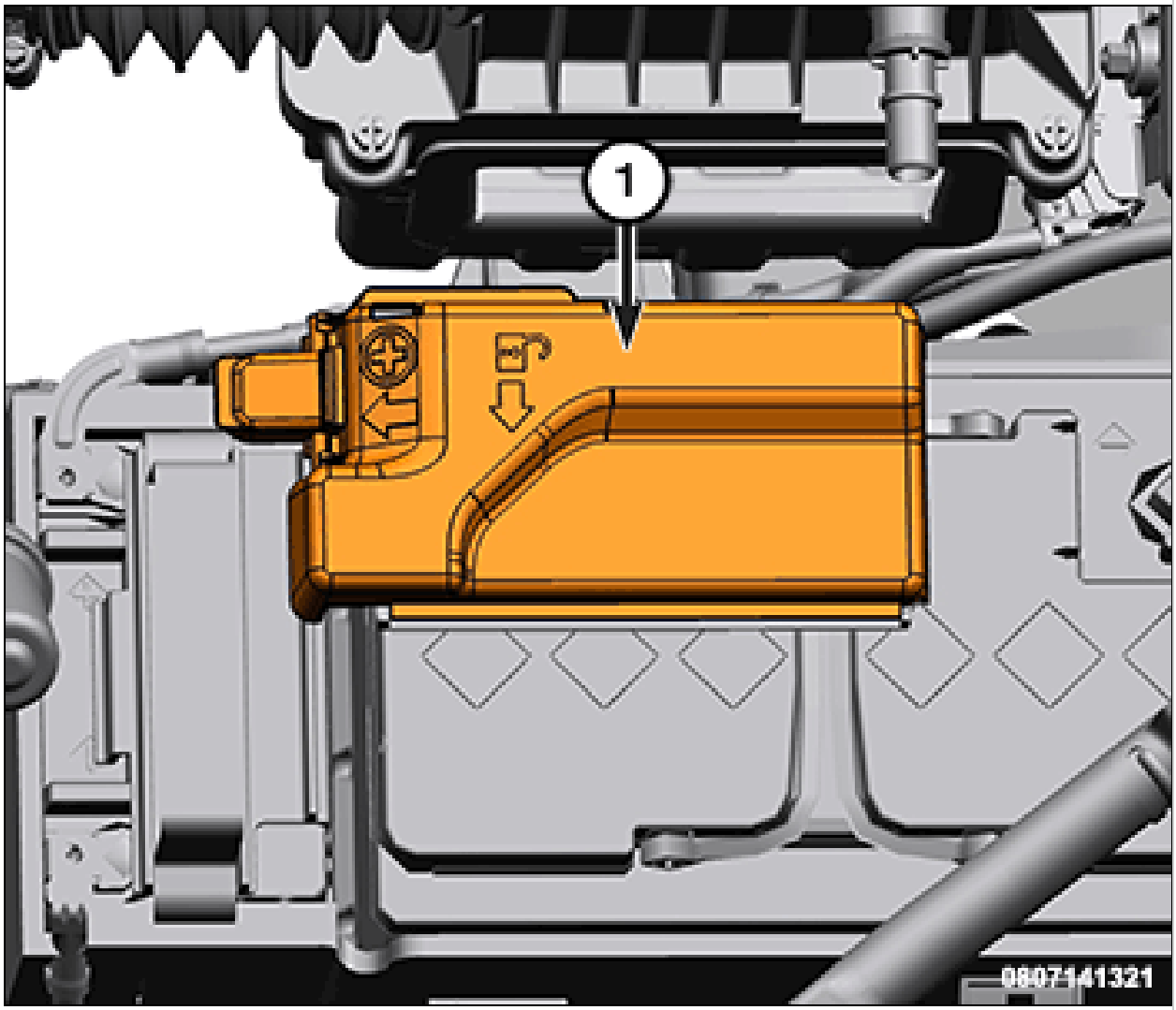
1. Confirm that all electrical accessories are switched off.
2. Switch the ignition to the OFF position.
3. Disengage the retainers and remove the air inlet duct
   Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .



Courtesy of CHRYSLER GROUP, LLC

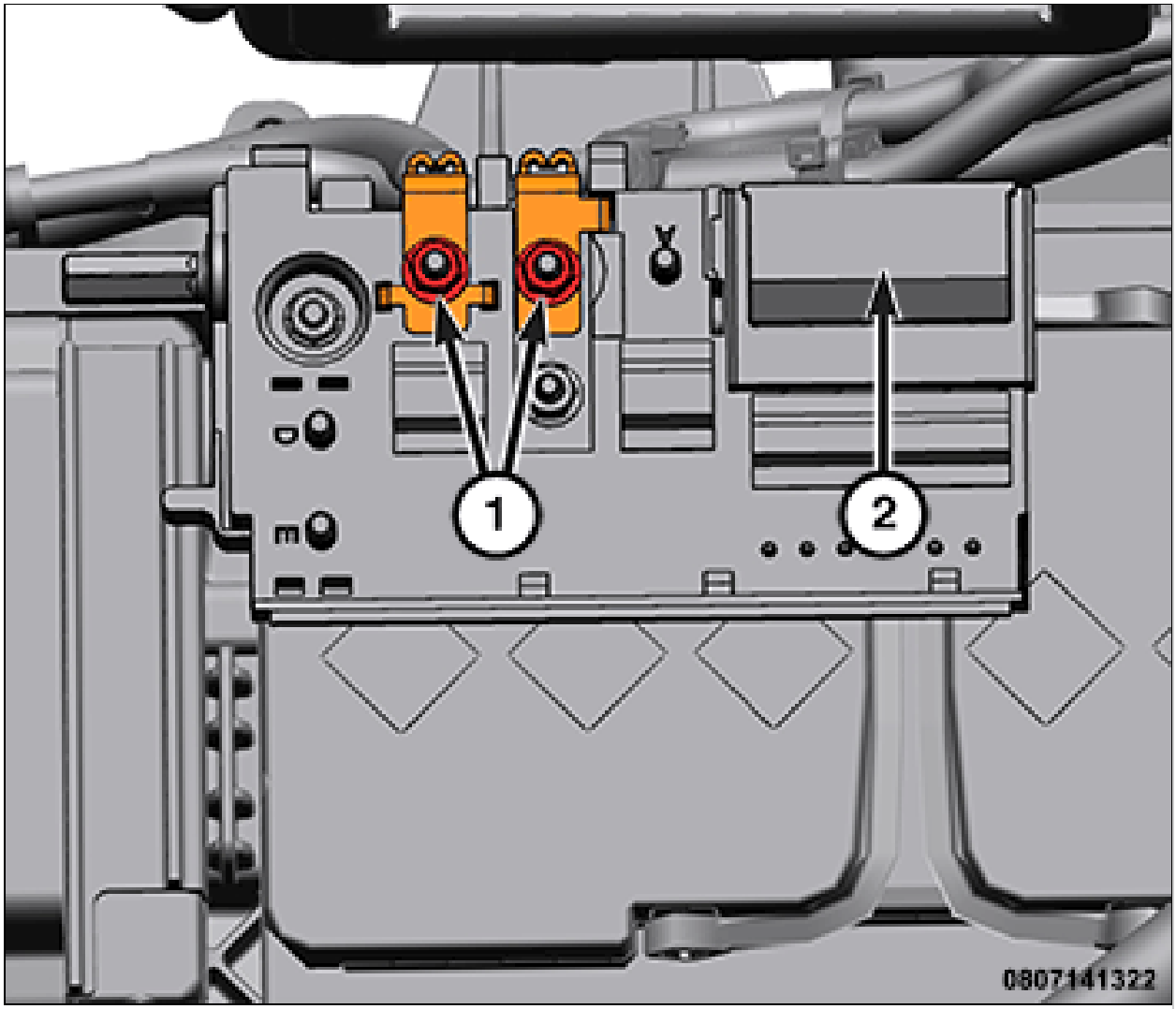
4. Disconnect and remove the Intelligent Battery Sensor (IBS) (1) effectively disconnecting the negative battery cable.

NOTE: *Do not to pry on the IBS to remove as it may damage the sensor*



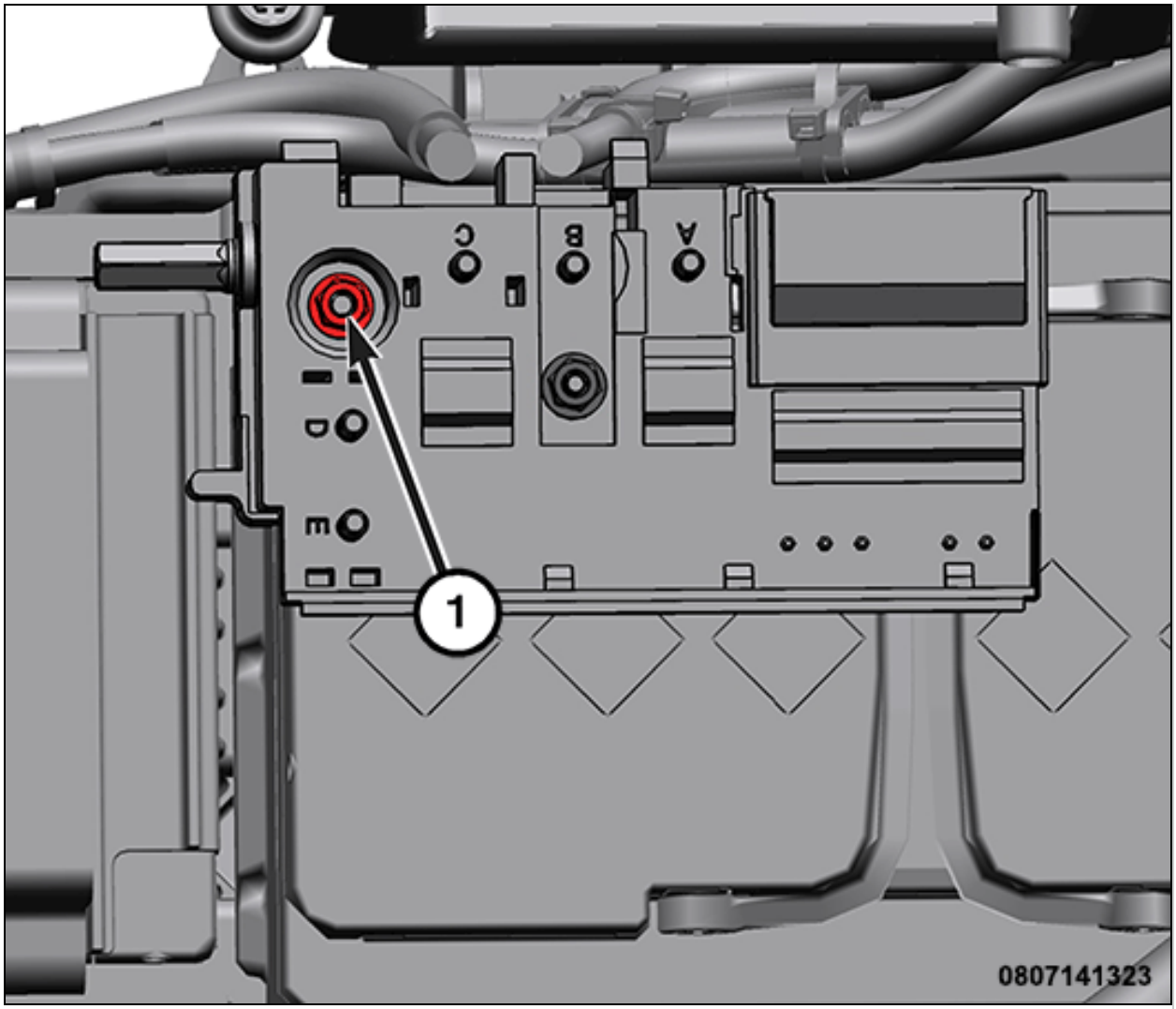
Courtesy of CHRYSLER GROUP, LLC

5. Open the jump post stud cover (1).



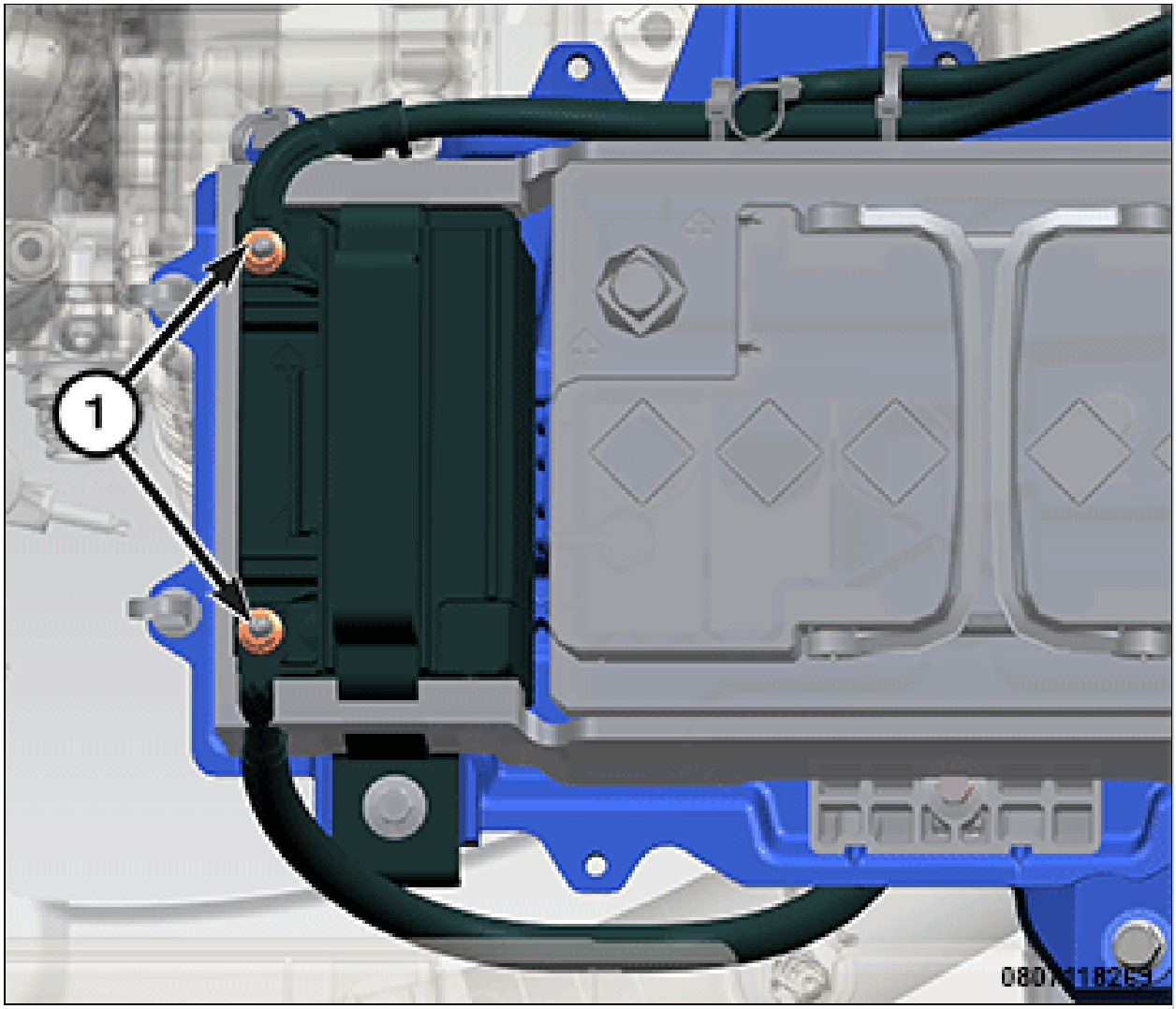
Courtesy of CHRYSLER GROUP, LLC

6. Remove the nuts (1) securing the cables to the pre-fuse assembly.
7. Disconnect the cables connectors (2) from the pre-fuse assembly.



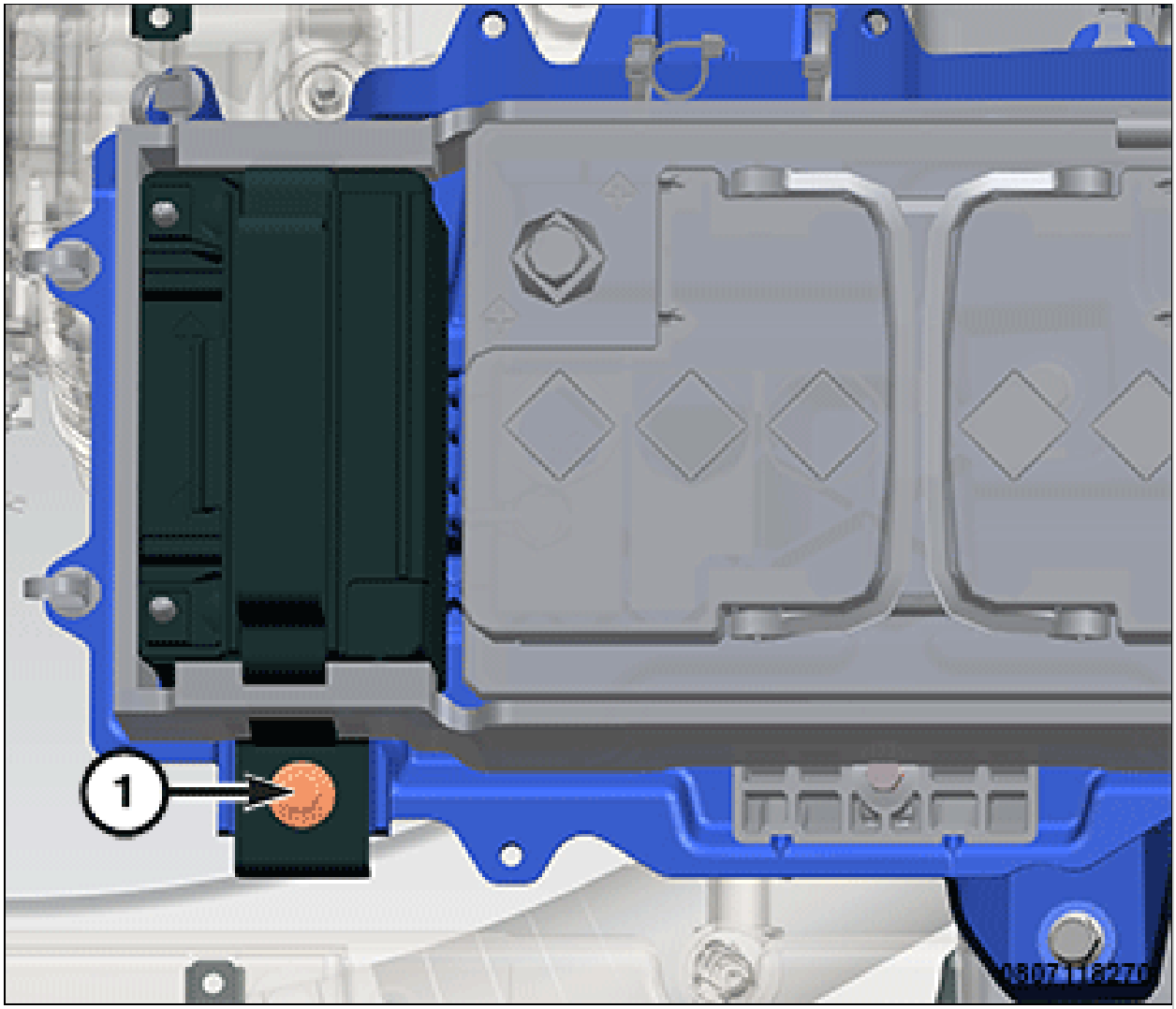
Courtesy of CHRYSLER GROUP, LLC

8. Loosen the nut (1) and remove the pre-fuse assembly from the battery.



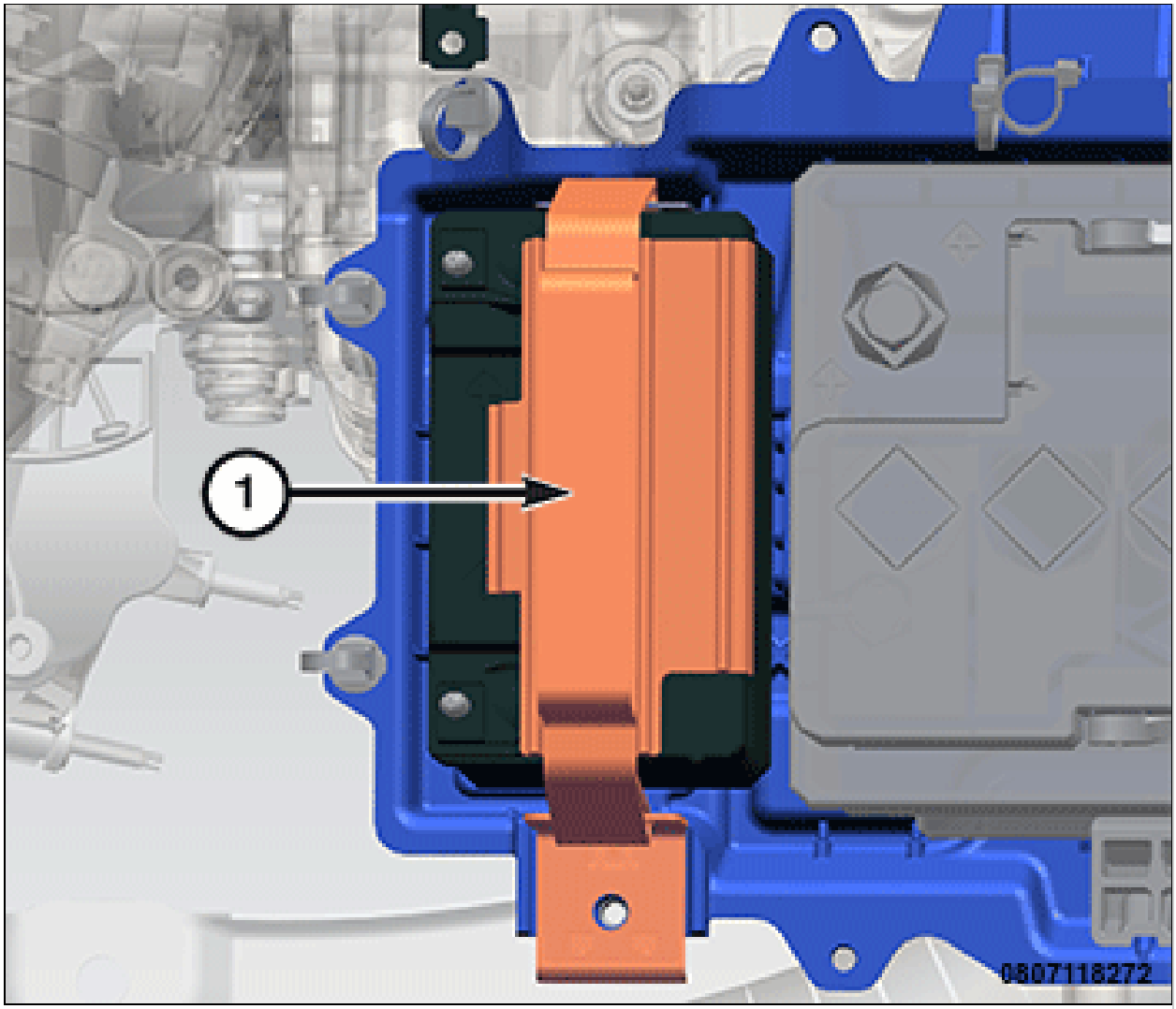
Courtesy of CHRYSLER GROUP, LLC

9. Disconnect the supplemental negative and positive battery cables (1) and position aside.



Courtesy of CHRYSLER GROUP, LLC

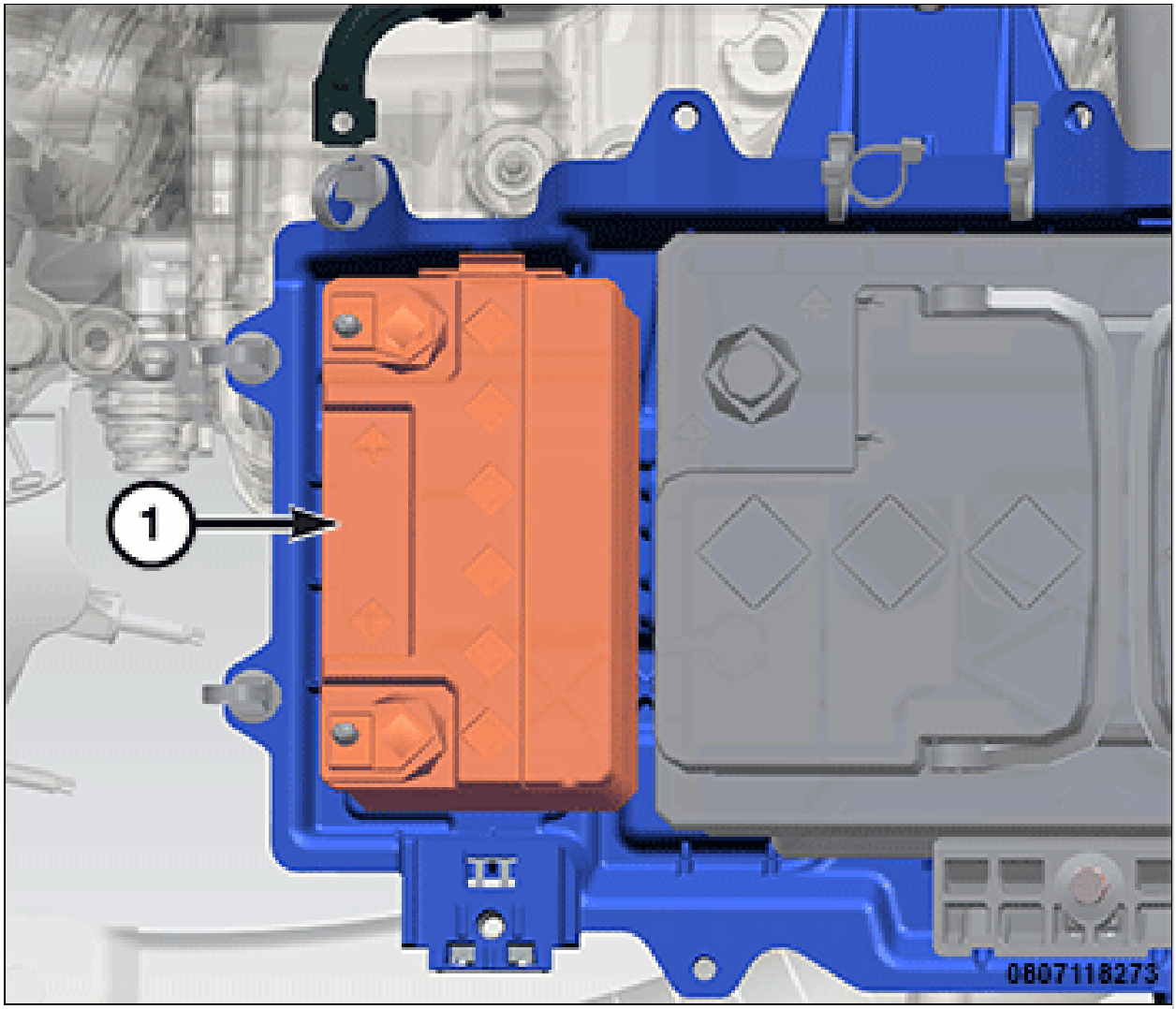
10. Remove the battery hold down nut (1).



Courtesy of CHRYSLER GROUP, LLC

11. Remove the battery hold down bracket (1).

WARNING: *Wear a suitable pair of rubber gloves when removing a battery by hand. Safety glasses should also be worn. If the battery is cracked or leaking, the electrolyte can burn the skin and eyes.*



Courtesy of CHRYSLER GROUP, LLC

12. Remove the supplemental battery (1) from the vehicle.

INSTALLATION

WARNING: *Wear a suitable pair of rubber gloves when removing a battery by hand. Safety glasses should also be worn. If the battery is cracked or leaking, the electrolyte can burn the skin and eyes.*

1. Install the battery hold down bracket into position and tighten the battery hold down nut to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
2. Connect the positive battery cable to the supplemental battery and tighten to the proper specification. Refer to TECHNICAL SPECIFICATIONS.

3. Connect the negative battery cable to the supplemental battery and tighten to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
4. Install the pre-fuse assembly and tighten the cable nuts to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
5. Connect the cable connectors to the pre-fuse assembly.
6. Install the nuts securing the cables to the pre-fuse assembly and tighten to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
7. Close the jump post stud cover.
8. Connect the IBS to the negative battery post and tighten to the proper specification. Refer to TECHNICAL SPECIFICATIONS.
9. Install the air inlet duct. Refer to BODY, AIR CLEANER, REMOVAL AND INSTALLATION .
10. Connect the negative battery cable to the charging battery.

STANDARD PROCEDURE

BATTERY CHARGING

Battery charging is the means by which the battery can be restored to its full voltage potential. A battery is fully-charged when:

- The Midtronics (special tool #GR8-1220KIT-CHRY, AGM Battery Tester/Charger Station) tester indicates battery is GOOD.
- All of the battery cells are gassing freely during battery charging.
- An Open-circuit voltage of the battery is 12.65 volts or above.

WARNING: *Never exceed twenty amperes when charging a cold (-1° C [30° F] or lower) battery. The battery may arc internally and explode. Personal injury or vehicle damage may result.*

WARNING: *If the battery shows signs of freezing, leaking, loose posts, do not test, assist-boost, or charge. The battery may arc internally and explode. Personal injury or vehicle damage may result.*

WARNING: *EXPLOSIVE HYDROGEN GAS FORMS IN AND AROUND THE BATTERY. DO NOT SMOKE, USE FLAME, OR CREATE SPARKS NEAR THE BATTERY. PERSONAL INJURY OR VEHICLE DAMAGE MAY RESULT.*

WARNING: *THE BATTERY CONTAINS SULFURIC ACID, WHICH IS POISONOUS AND CAUSTIC. AVOID CONTACT WITH THE SKIN, EYES, OR CLOTHING. IN THE EVENT OF CONTACT, FLUSH WITH WATER AND CALL A PHYSICIAN IMMEDIATELY. KEEP OUT OF THE REACH OF CHILDREN.*

CAUTION: *Always disconnect and isolate the battery negative cable before charging a battery. Do not exceed sixteen volts while charging a battery. Damage to the vehicle electrical system components may result.*

CAUTION: *Battery electrolyte will bubble inside the battery case during normal battery charging. Electrolyte boiling or being discharged from the battery vents indicates a battery overcharging condition. Immediately reduce the charging rate or turn off the charger to evaluate the battery condition. Damage to the battery may result from overcharging.*

CAUTION: *The battery should not be hot to the touch. If the battery feels hot to the touch, turn off the charger and let the battery cool before continuing the charging operation. Damage to the battery may result.*

After the battery has been charged to 12.65 volts or greater, perform a load test to determine the battery cranking capacity, for the proper battery load test procedures. Refer to BATTERY, STANDARD PROCEDURE. If the battery will endure a load test, return the battery to service. If the battery will not endure a load test, it is inoperative and must be replaced.

CHARGING A COMPLETELY DISCHARGED BATTERY

The following procedure should be used to recharge a completely discharged battery. Unless this procedure is properly followed, a good battery may be needlessly replaced.

1. Measure the voltage at the battery posts with a voltmeter, accurate to 0.10 volt. If the reading is below 10 volts, the battery charging current will be low. It could take some time before the battery accepts a current greater than a few milliamperes. Such low current may not be detectable on the ammeters built into many battery chargers.
2. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable. Connect

the Midtronics (special tool #GR8-1220KIT-CHRY, AGM Battery Tester/Charger Station).

> **NOTE:** *Some battery chargers are equipped with polarity-sensing circuitry. This circuitry protects the battery charger and the battery from being damaged if they are improperly connected. If the battery state-of-charge is too low for the polarity-sensing circuitry to detect, the battery charger will not operate. This makes it appear that the battery will not accept charging current. See the instructions provided by the manufacturer of the battery charger for details on how to bypass the polarity-sensing circuitry.*

3. Battery chargers vary in the amount of voltage and current they provide. The amount of time required for a battery to accept measurable charging current at various voltages is shown in the Charge Rate Table. If the charging current is still not measurable at the end of the charging time, the battery is inoperative and must be replaced. If the charging current is measurable during the charging time, the battery may be good and the charging should be completed in the normal manner.

CHARGE RATE TABLE	
Voltage	Hours
16.0 volts maximum for Advanced Glass Mat (AGM) battery	up to 4 hours
14.0 to 15.9 volts	up to 8 hours
13.9 volts or less	up to 16 hours

CHARGING TIME REQUIRED

The time required to charge a battery will vary, depending upon the following factors:

- **Battery Capacity** - A completely discharged heavy-duty battery requires twice the charging time of a small capacity battery.
- **Temperature** - A longer time will be needed to charge a battery at -18°C (0°F) than at 27°C (80°F). When a fast battery charger is connected to a cold battery, the current accepted by the battery will be very low at first. As the battery warms, it will accept a higher charging current rate (amperage).
- **Charger Capacity** - A battery charger that supplies only five amperes will require a longer charging time. A battery charger that supplies 20 amperes or more will require a shorter charging time.
- **State Of Charge** - A completely discharged battery requires more charging time than a partially discharged battery. Electrolyte is nearly pure water in a completely discharged battery. At first, the charging current (amperage) will be low. As the battery charges, the specific gravity of the electrolyte will gradually rise.

The Battery Charging Time Table gives an indication of the time required to charge a typical battery at room temperature based upon the battery state of charge and the charger capacity.

BATTERY CHARGING TIME TABLE			

Charging Amperage	5 Amps	10 Amps	20 Amps
Open Circuit Voltage	Hours Charging @ 21°C (70°F)		
12.25 to 12.49	6 hours	3 hours	1.5 hours
12.00 to 12.24	10 hours	5 hours	2.5 hours
10.00 to 11.99	14 hours	7 hours	3.5 hours
Below 10.00	18 hours	9 hours	4.5 hours

GR8 BATTERY TESTER / CHARGER

Always use the Midtronics GR8 Instruction Manual that was supplied with the tester as a reference. If the Instruction Manual is not available the following procedure can be used:

> **WARNING:** *Always wear appropriate eye protection and use extreme caution when working with batteries.*

BATTERY TESTING

> **CAUTION:** *When testing the auxiliary battery (if equipped), BOTH battery negative cables must be disconnected (refer to IBS disconnect procedure before disconnecting the main battery negative cable).*

1. If testing the battery OUT-OF-VEHICLE, clean the battery terminals with a wire brush before testing. If the battery is equipped with side post terminals, install and tighten the supplied lead terminal stud adapters. Do not use steel bolts. Failure to properly install the stud adapters, or using stud adapters that are dirty or worn-out may result in false test readings.
2. If testing the battery IN-THE-VEHICLE, make certain all of the vehicle accessory loads are OFF, including the ignition. Connect the Midtronics GR8 directly to the battery posts.

> **NOTE:** *When testing multiple batteries disconnect the auxiliary battery (if equipped) ground cable before testing the main battery to avoid false battery test results.*

3. Using the ARROW key, select **in** or **out** of vehicle testing and press ENTER to make a selection.
4. If not selected, choose the Cold Cranking Amp (CCA) battery rating. Or select the appropriate battery rating for your area (see menu). The tester will then run its self programmed test of the battery and display the results. Refer to the test result table noted below.
5. While viewing the battery test result, press the CODE button and the tester will prompt you for the last 4 digits of the Vehicle Identification Number (VIN). Use the UP/DOWN arrow buttons to scroll to

the correct character; then press ENTER to select and move to the next digit. Then press the ENTER button to view the SERVICE CODE. Pressing the CODE button a second time will return you to the test results.

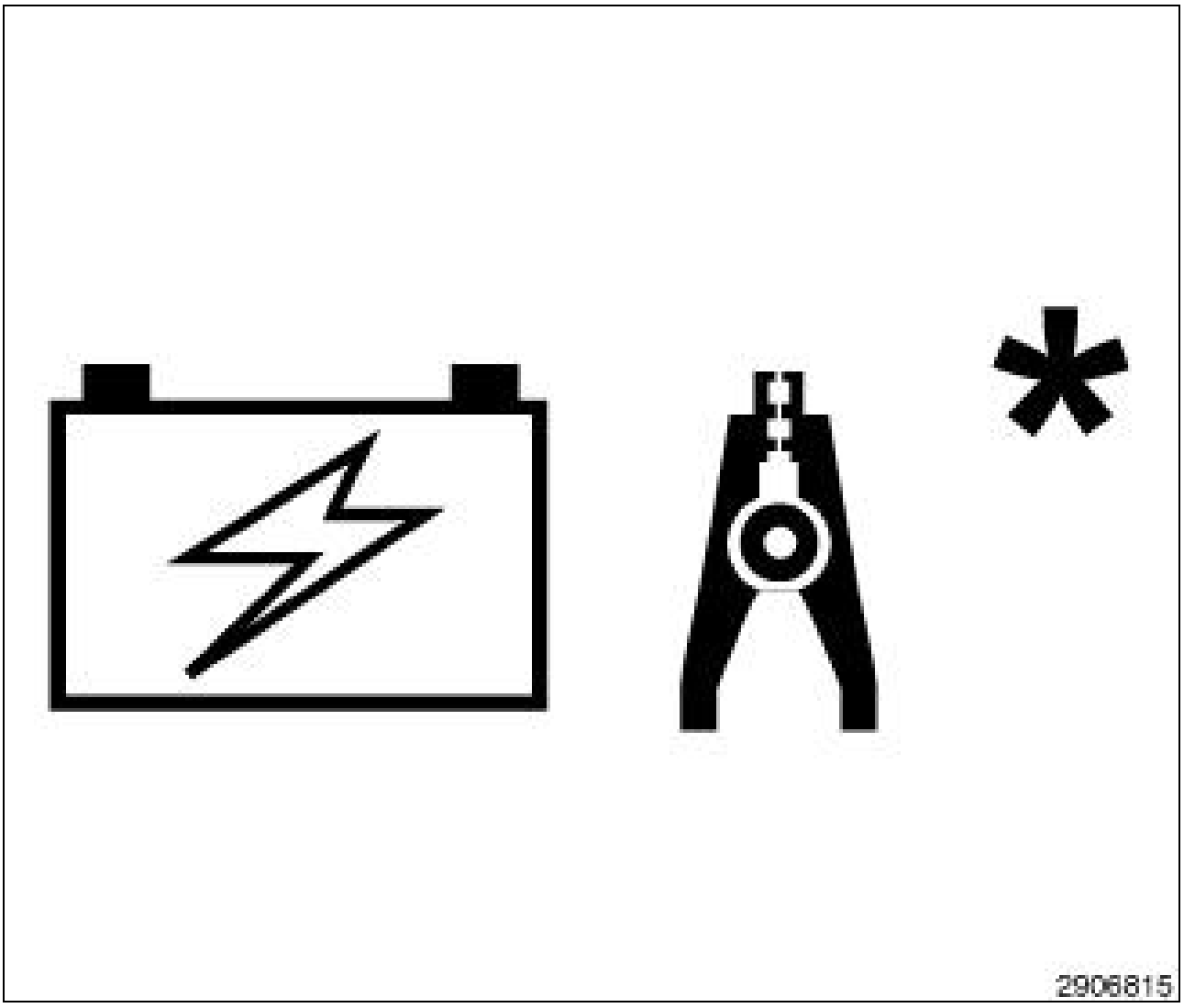
NOTE: *The SERVICE CODE is required on every warranty claim submitted for battery replacement.*

QUICK REFERENCE GUIDE

Inspect the battery for damages and check the electrolyte level. Always use the necessary safety precautions when working with batteries to prevent possible serious or fatal injury. Follow all manufacturers' instructions and BCI (Battery Council International) safety recommendations, which include the following precautions:

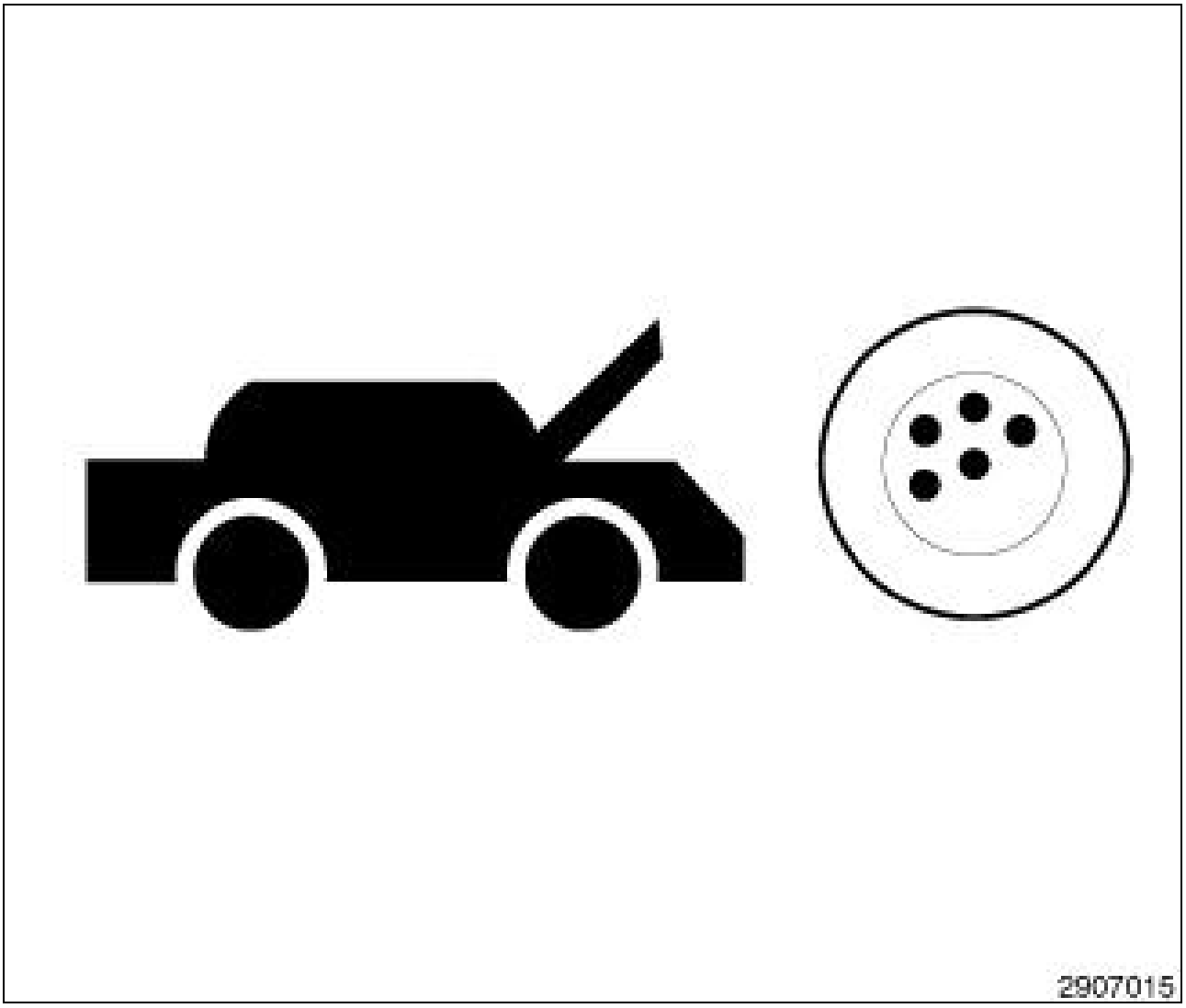
MAIN MENU

The Main Menu is the starting point for all tools and utilities, which are depicted as icons. Some icons lead directly to the function they represent, while others are menu icons that lead to two or more options.



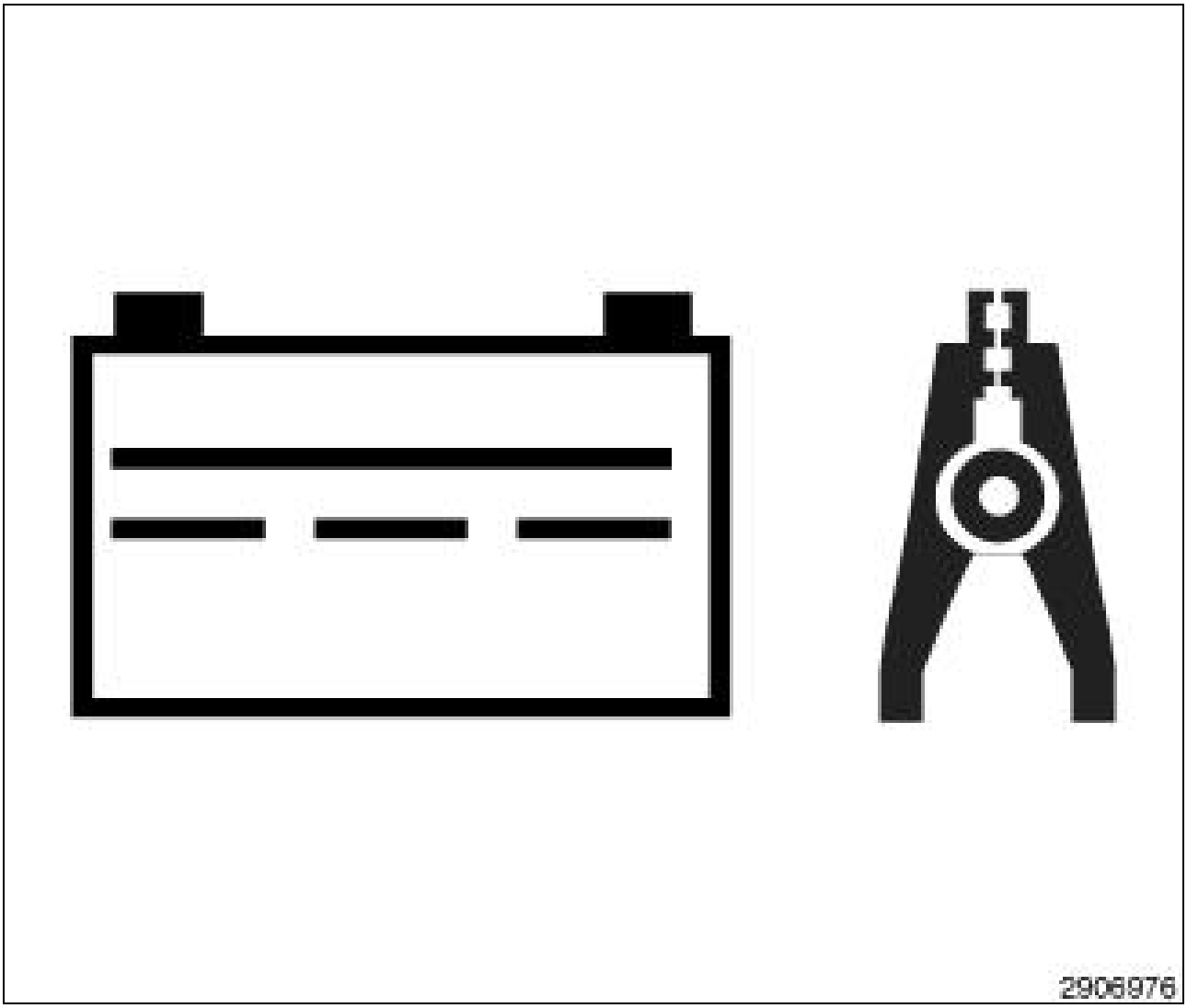
Courtesy of CHRYSLER GROUP, LLC

Automatically tests, charges, and provides battery decision using the information selected in a series of screens. Start here to generate warranty codes.



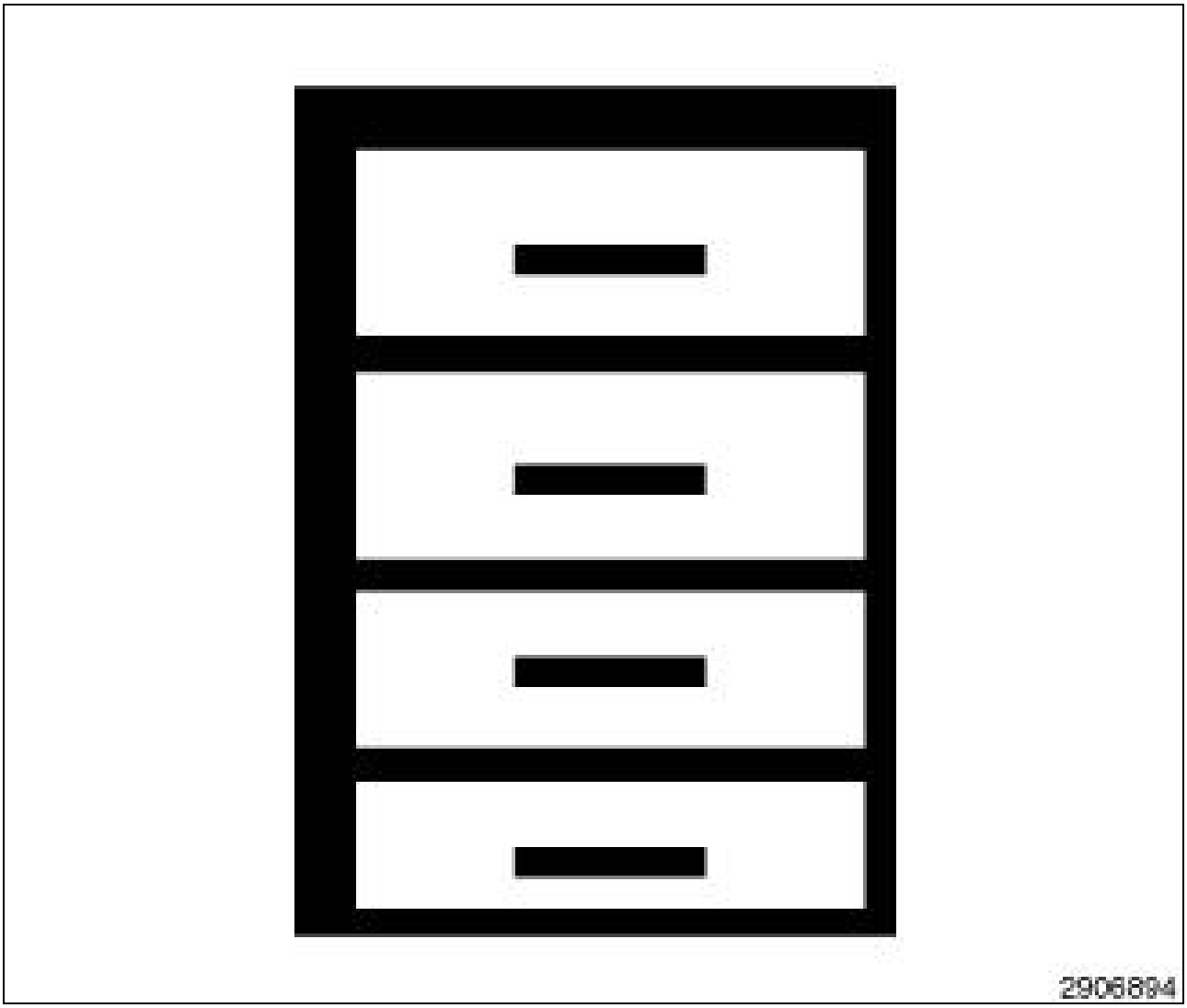
Courtesy of CHRYSLER GROUP, LLC

Tests the starting and charging systems.



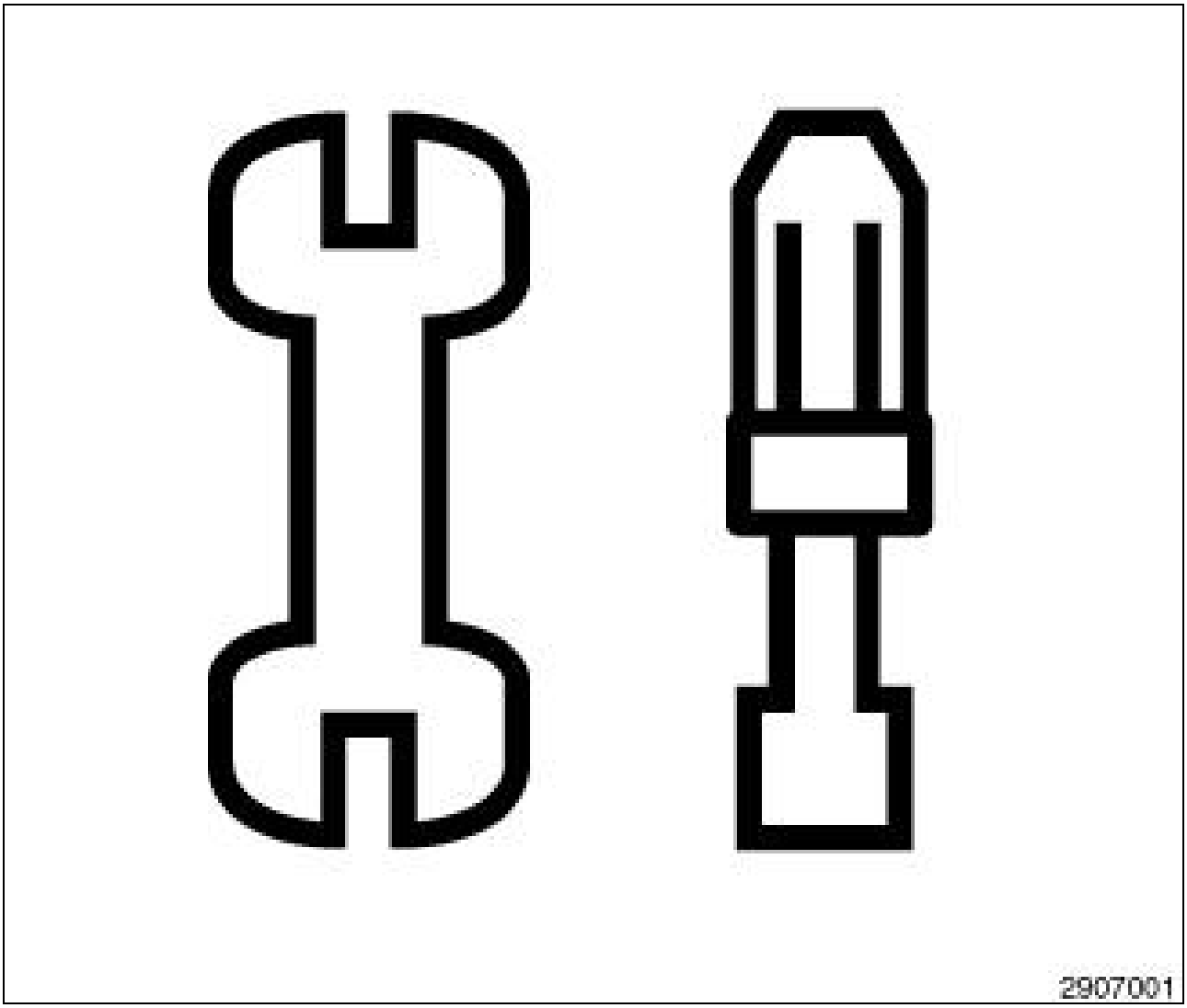
Courtesy of CHRYSLER GROUP, LLC

Maintains battery voltage at 13.5 volts to provide uninterrupted reprogramming of ECUs and retain vehicle system settings.



Courtesy of CHRYSLER GROUP, LLC

Includes a utility to view and print a test counter, a data transfer utility, the software version and date, the Midtronics GR8 serial number for the control module, and current wireless channel.



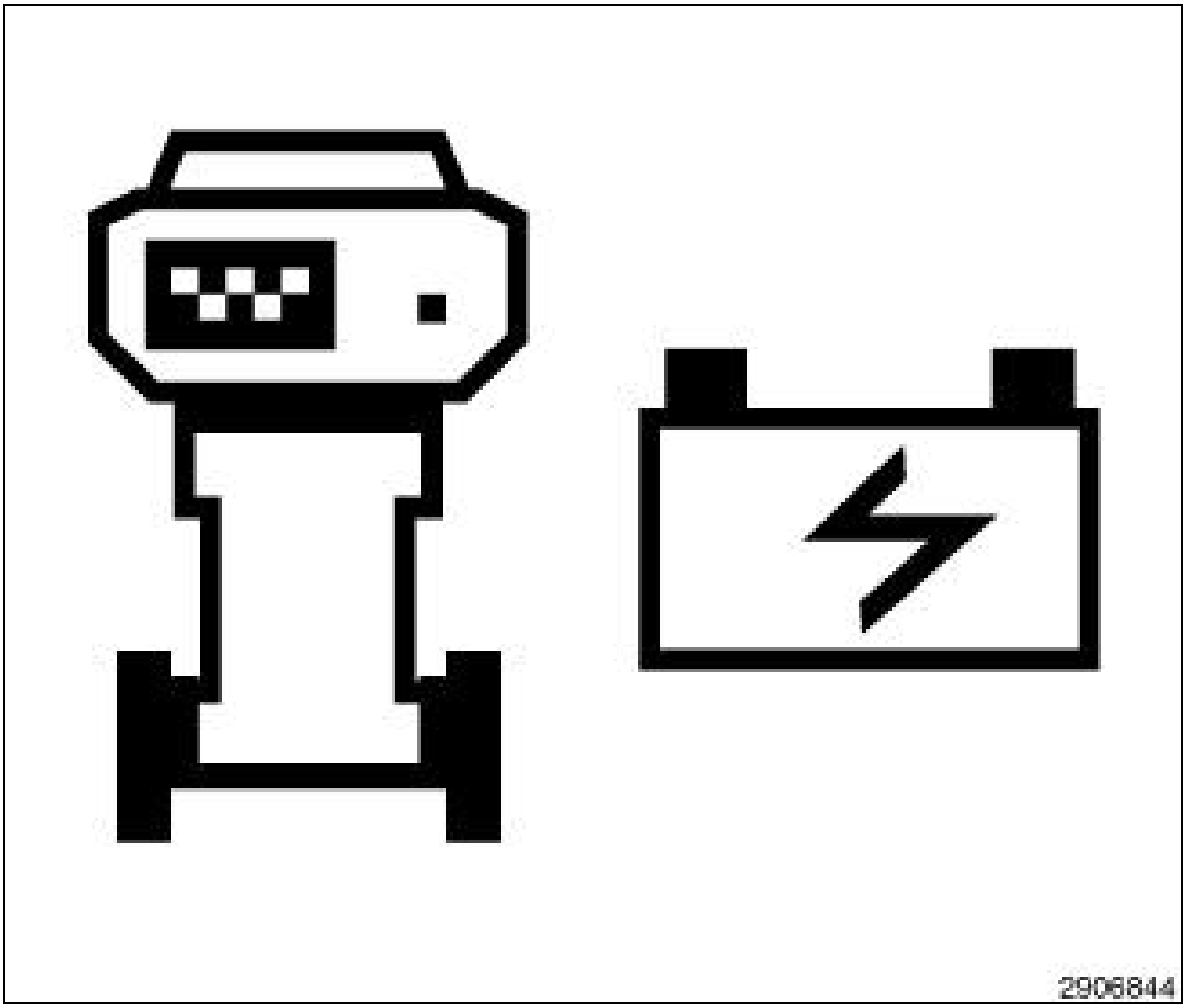
Courtesy of CHRYSLER GROUP, LLC

The Setup Menu allows customized options in the Midtronics GR8 to suit your needs.

Courtesy of CHRYSLER GROUP, LLC

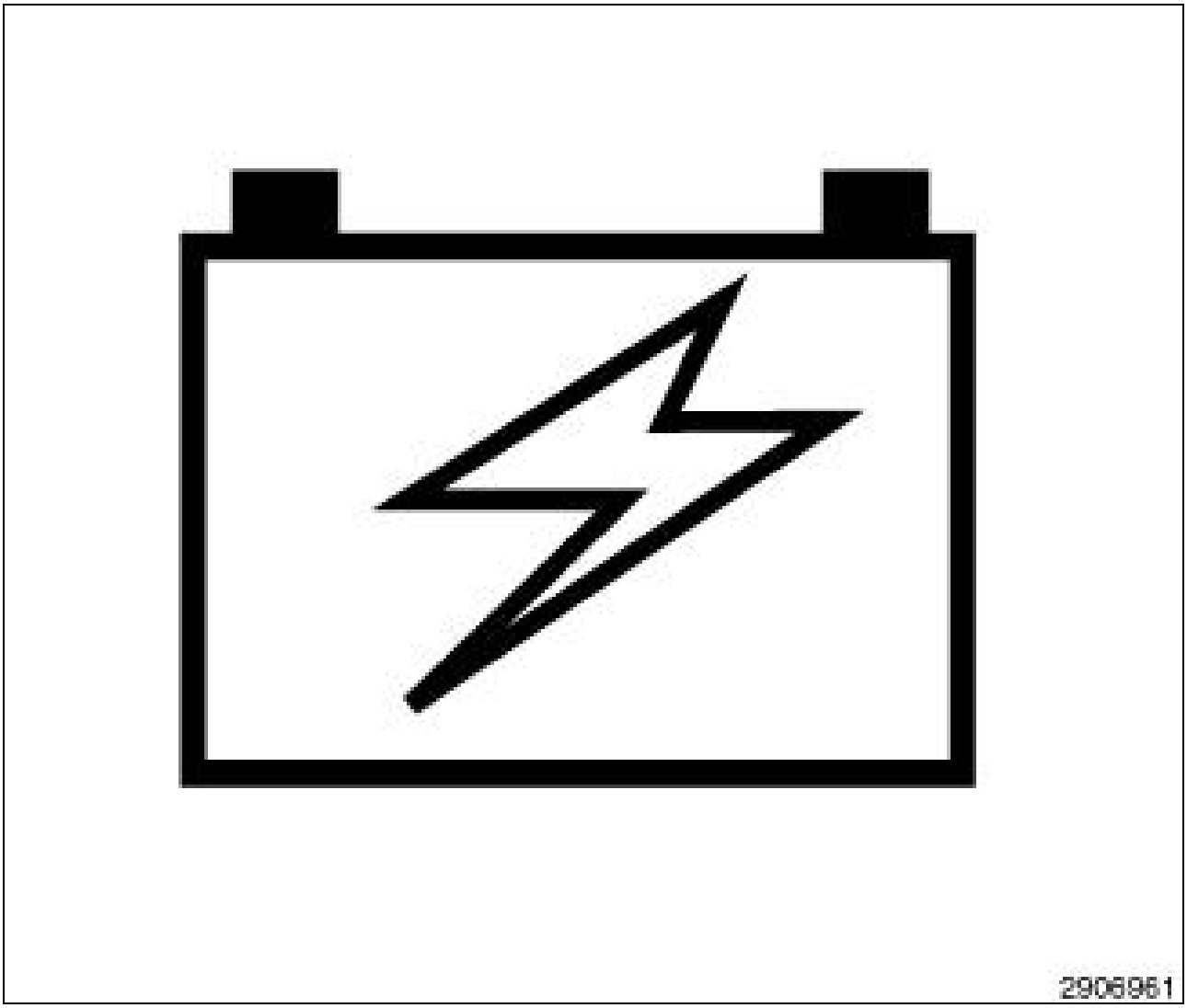
Provides a list of topics and definitions. Also includes Midtronics Customer Service phone numbers.

CHARGE/TEST MENU



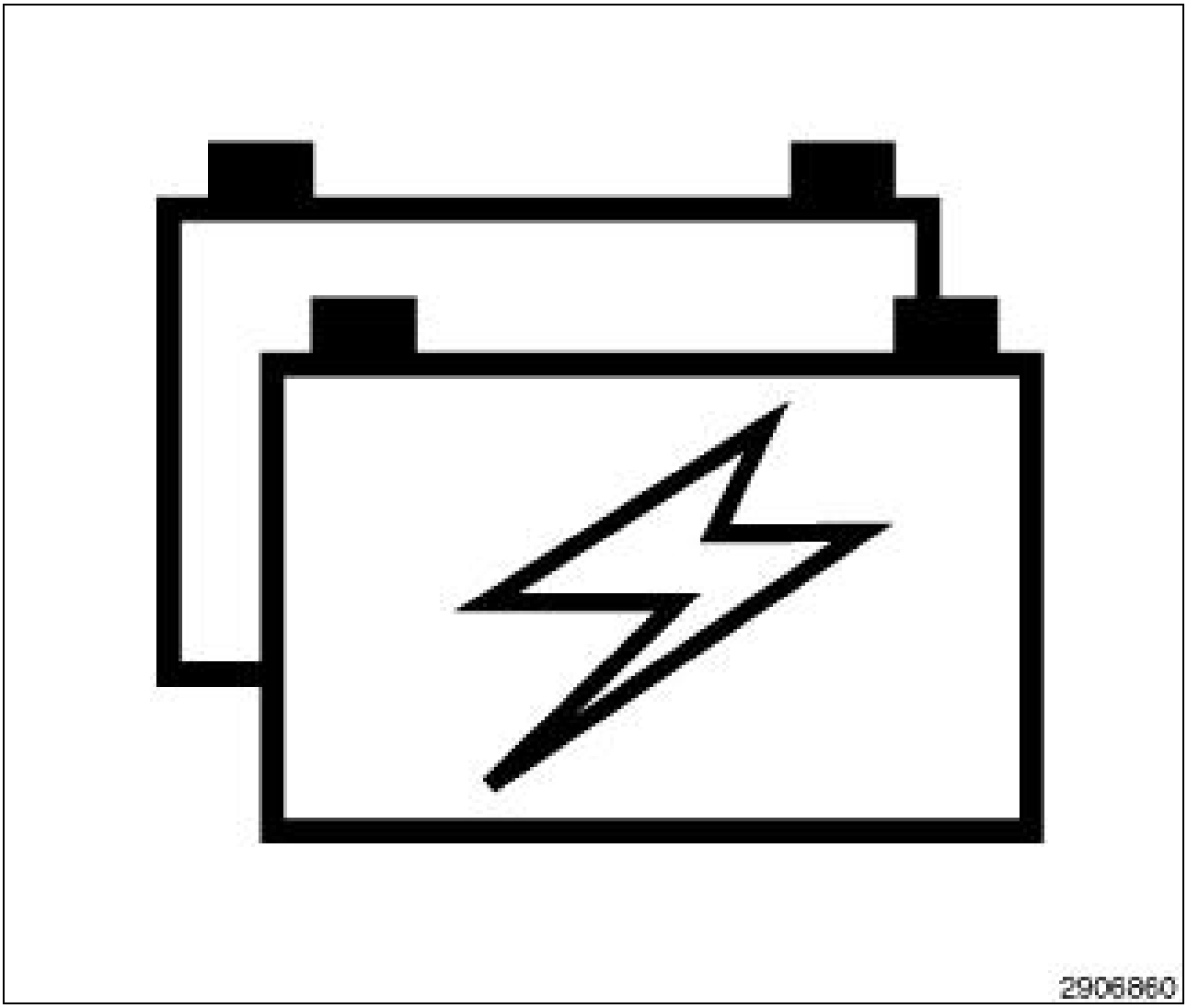
Courtesy of CHRYSLER GROUP, LLC

Automatically tests and charges battery, starting, and charging system. Generates a warranty code for Replace and Bad Cell decisions.



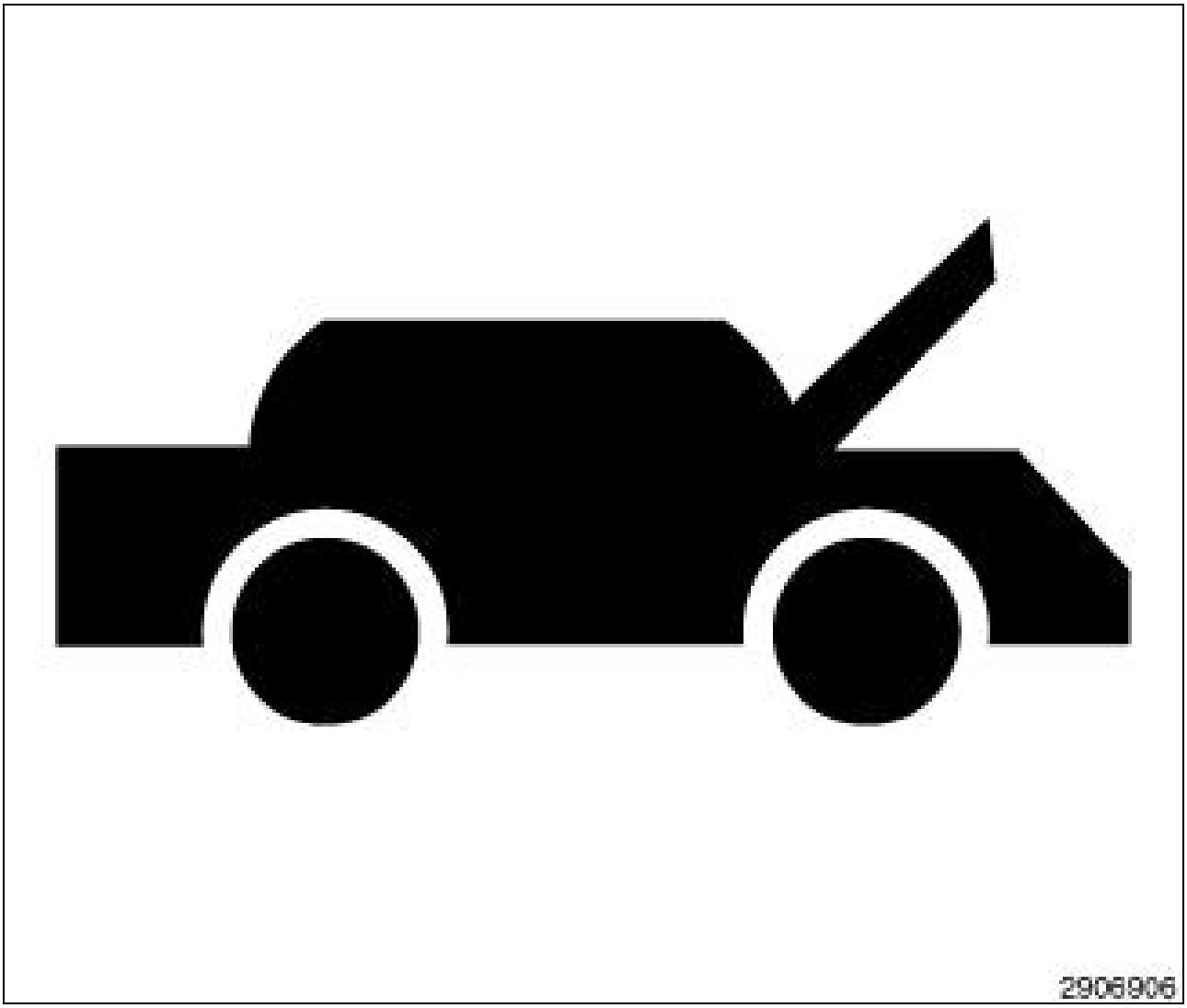
Courtesy of CHRYSLER GROUP, LLC

Pre Delivery Inspection (PDI): For testing delivered vehicles and lot maintenance. Uses the same inputs as a diagnostic charge.



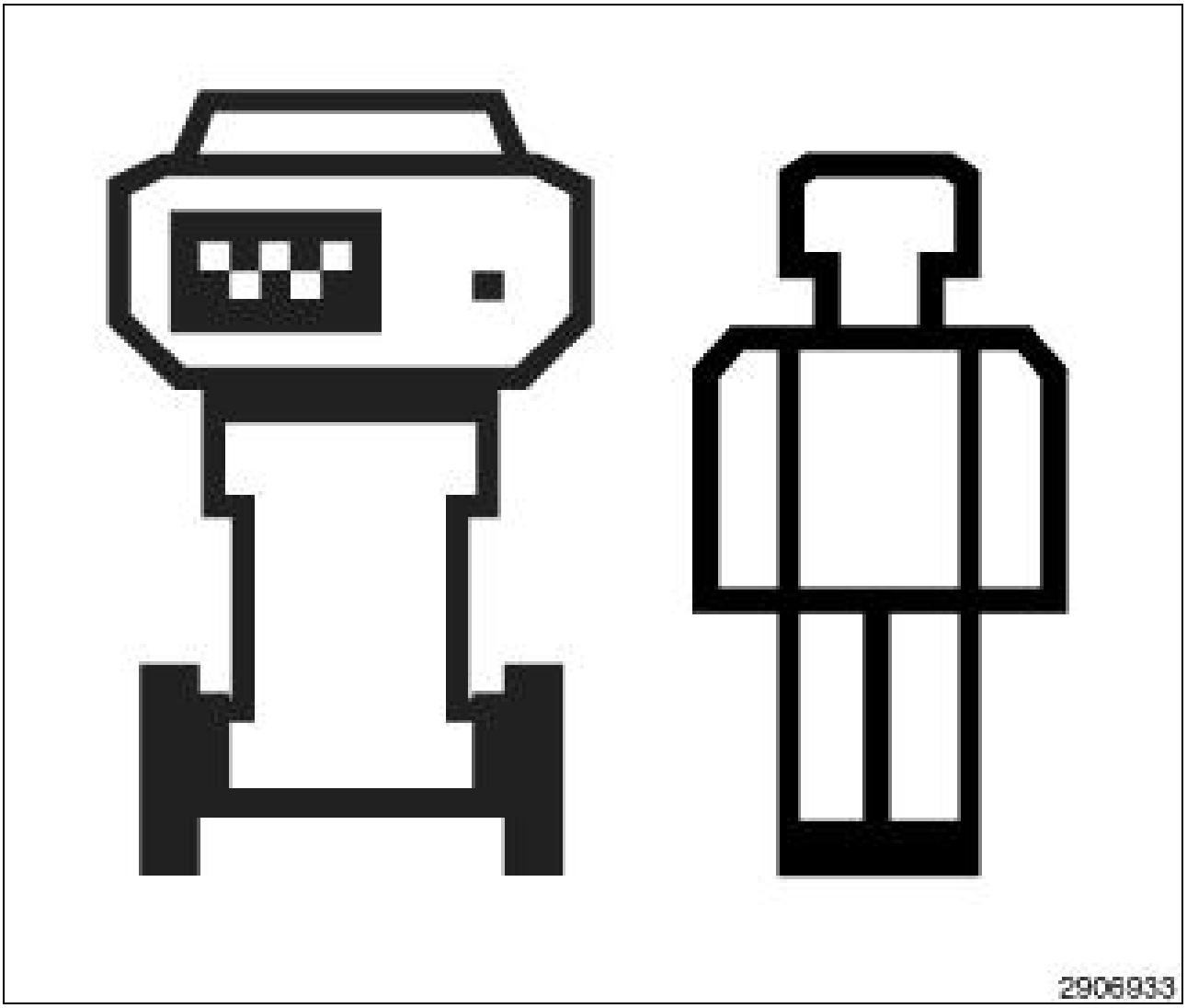
Courtesy of CHRYSLER GROUP, LLC

Dual Battery Charge mode allows the charger to be used with dual battery systems.



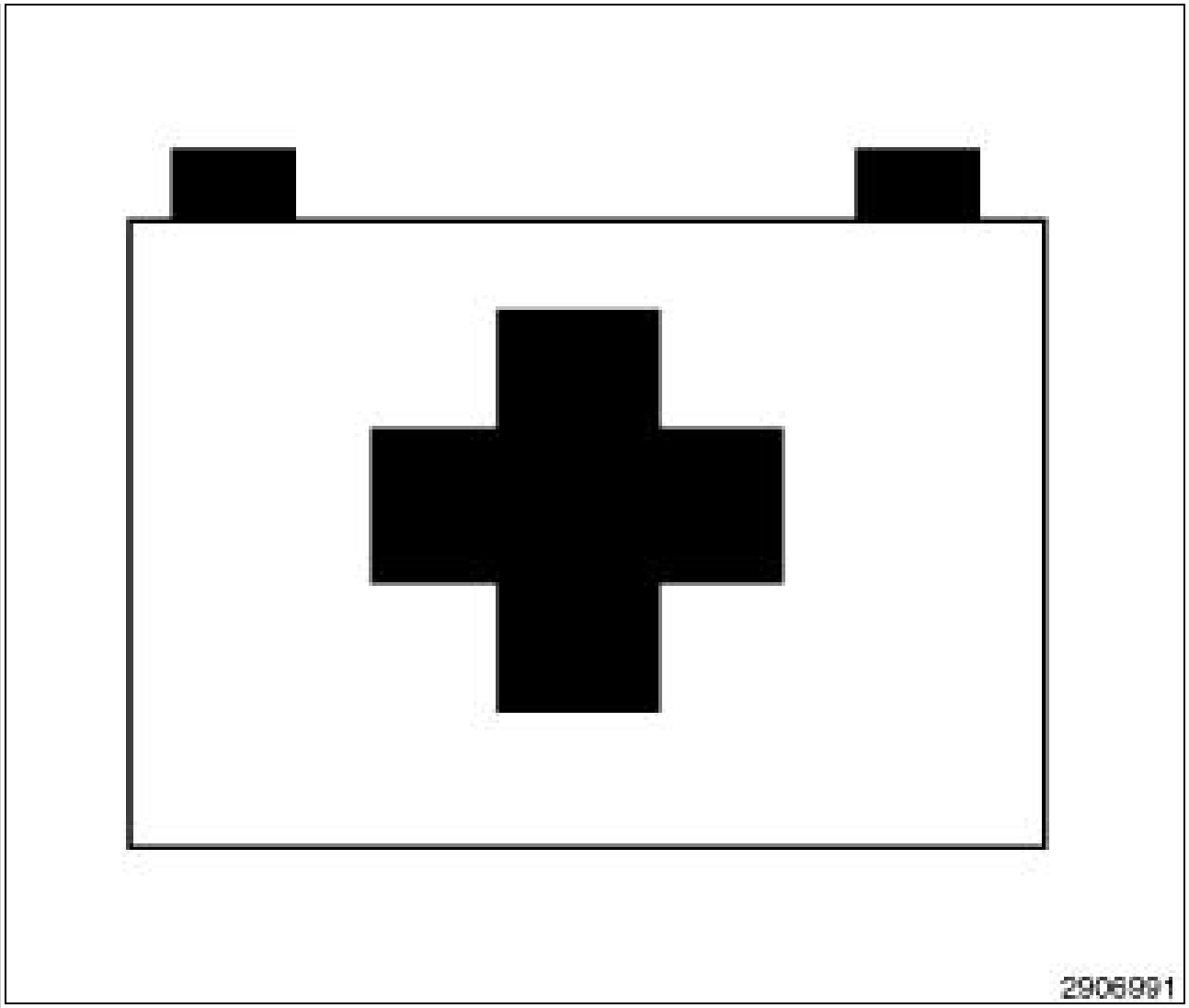
Courtesy of CHRYSLER GROUP, LLC

Makes high output current available to boost charge an in-vehicle battery and assist in starting the engine.



Courtesy of CHRYSLER GROUP, LLC

Provides a timed charge that ranges from 5 to 120 minutes or a continuous charge that ends when the STOP key is pressed.

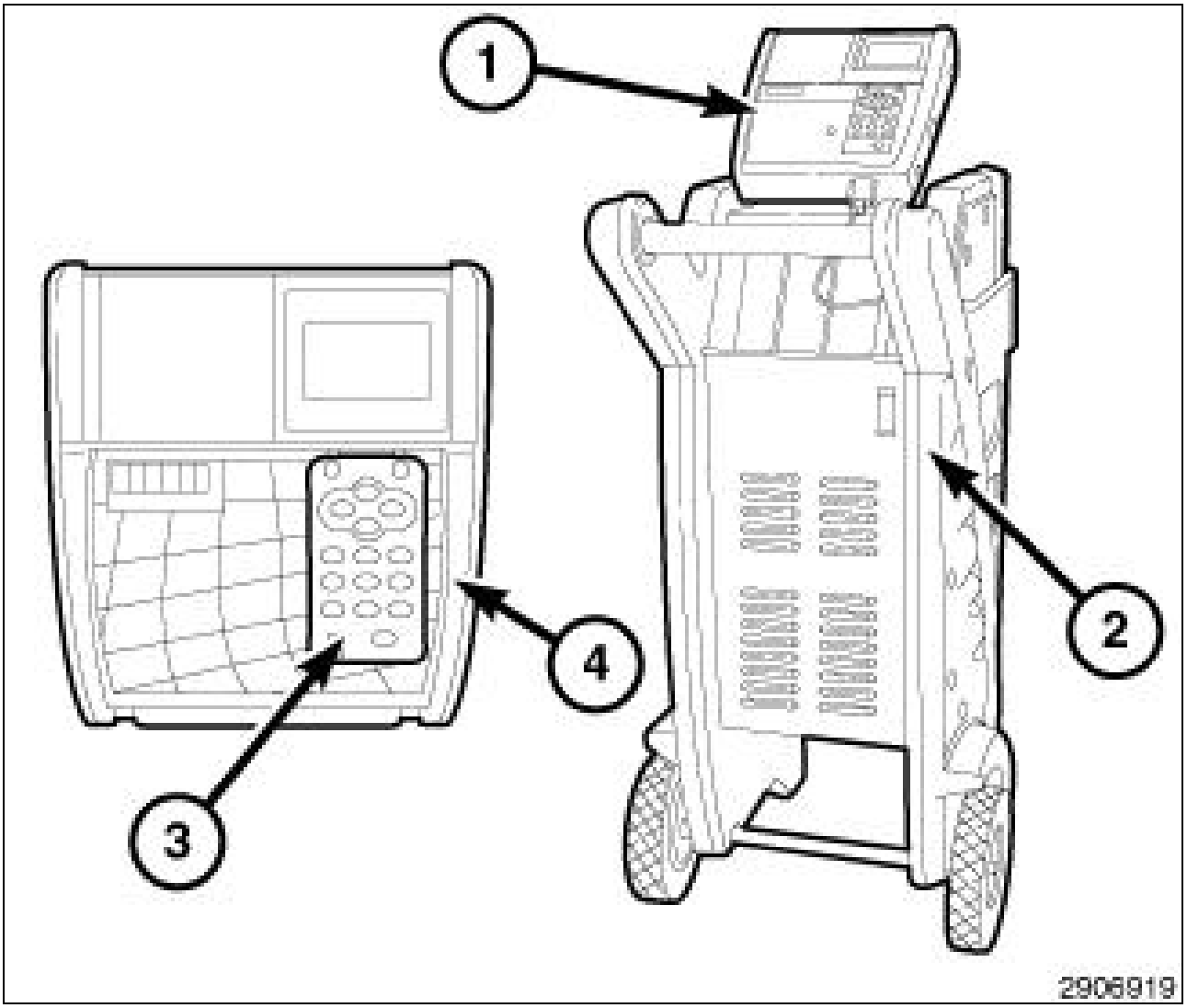


Courtesy of CHRYSLER GROUP, LLC

In this mode the charger can provide a trickle charge for long term, low amp battery charging.

Courtesy of CHRYSLER GROUP, LLC

Generates a 15-digit warranty codes for physically inoperative batteries or customer good will.

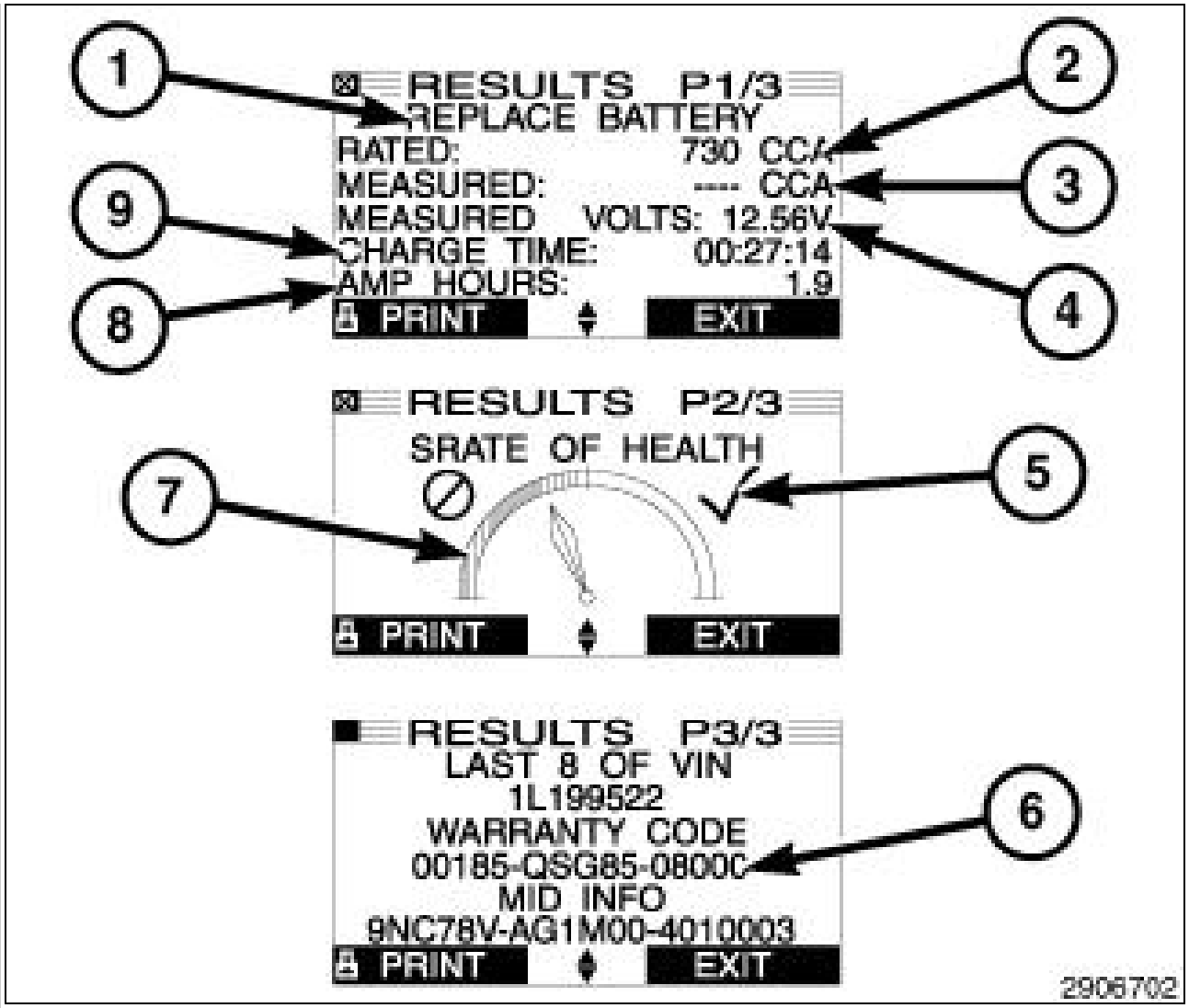


Courtesy of CHRYSLER GROUP, LLC

1. **Control module:** Backlit graphical display and keypad for data entry.
2. **ON/OFF switch:** ON/OFF switch turns power on and off to the GR8.
3. **STATUS light:** Lights in conjunction with beeping alarm to indicate transitions and warnings.
4. **Data card slot:** For future upgrades via a data card. The slot contains a plastic filler card for protection.

REPLACE BATTERY DECISIONS

BATTERY DECISIONS



Courtesy of CHRYSLER GROUP, LLC

1. Battery Decisions
2. Select Rating
3. Measured capacity
4. Measured voltage
5. Good Range

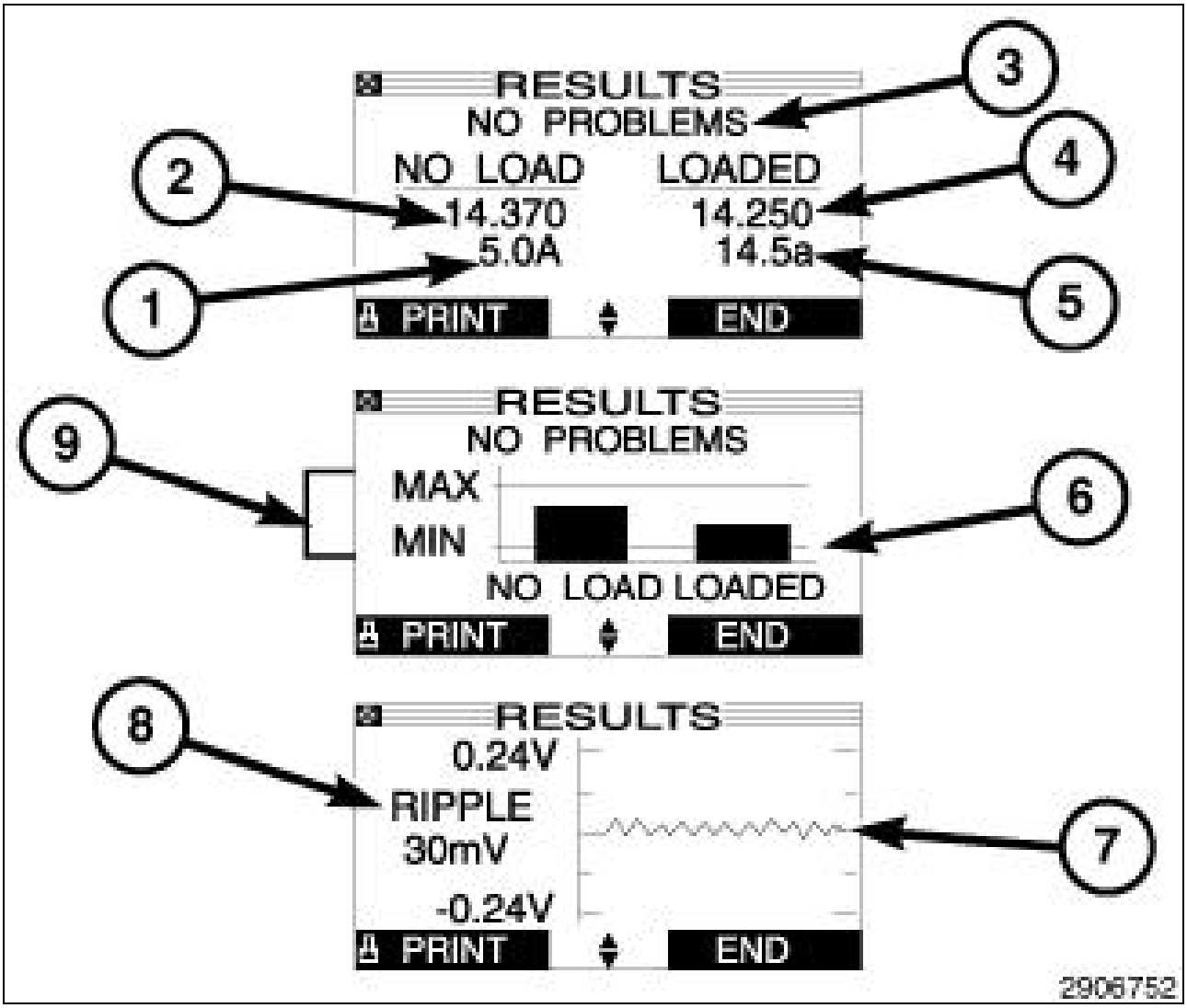
> **NOTE:** *The warranty code screen will only be displayed for REPLACE BATTERY and BAD CELL-REPLACE decisions.*

6. Enter this number into scan tool
7. Replace range

8. Replaced AMP Hours
9. Charging Time

TEST RESULTS-CHARGING SYSTEM

A REPLACE BATTERY or BAD CELL-REPLACE decision gives the option of generating a warranty code. Enter that warranty code into the scan tool in the Midtronics warranty code validation routine.

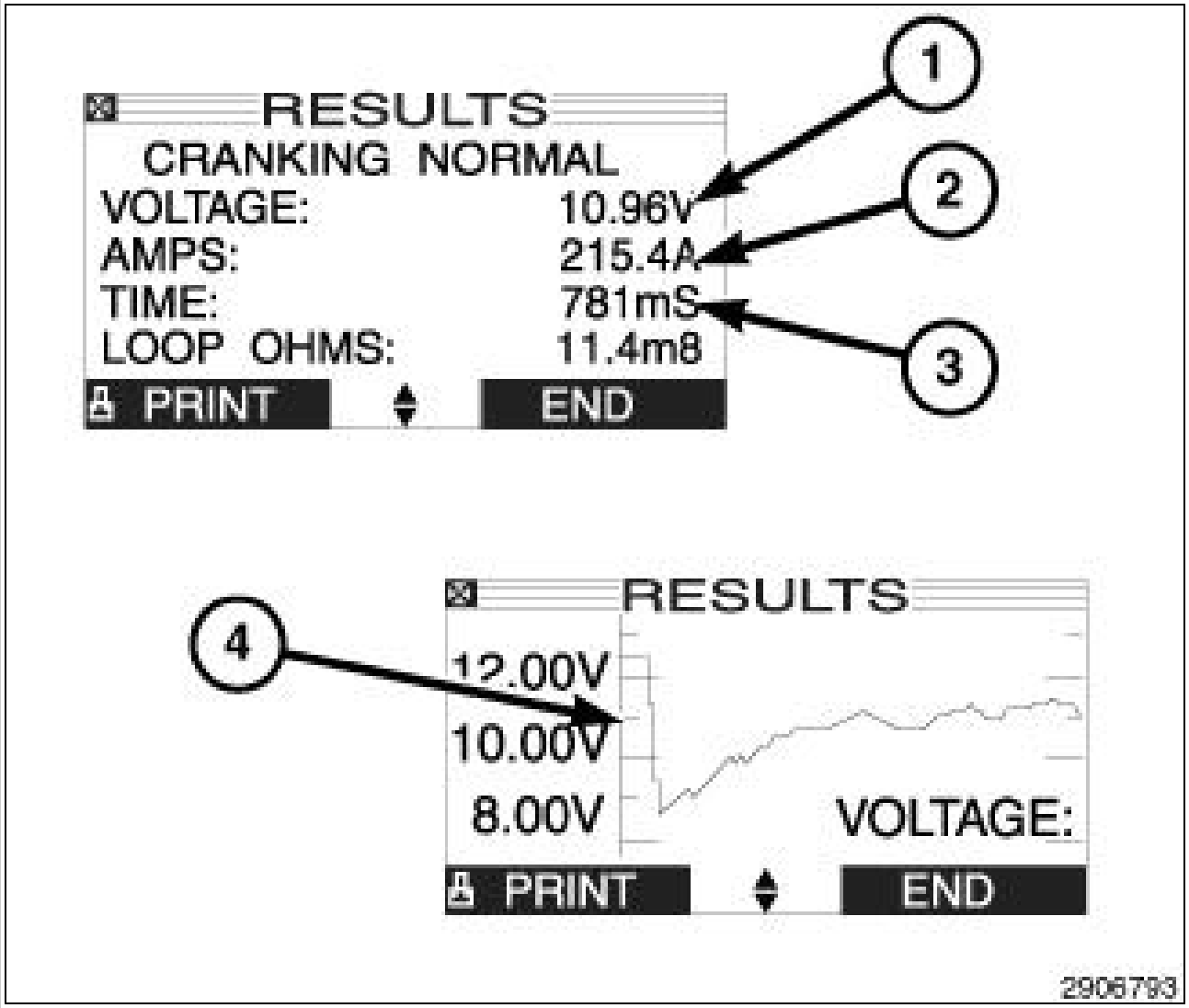


Courtesy of CHRYSLER GROUP, LLC

1. Loads-off current at rev if amp clamp is used
2. Loads-off DC voltage at rev
3. Decision
4. Loads-on DC voltage at rev
5. Loads-on current at rev if amp clamp is used

6. Bar graph of DC voltage within normal range (loads on and off)
7. Graph of diode waveform
8. Peak-to-peak AC voltage
9. Normal DC voltage range

TEST RESULTS-STARTER SYSTEM



Courtesy of CHRYSLER GROUP, LLC

1. Average cranking voltage
2. Average cranking current if amp clamp is used
3. Cranking time in seconds
4. Y axis = System performance: cranking voltage

IGNITION-OFF DRAW TEST

MULTIMEDIA: *A supplement to the article is available.*

The term Ignition-OFF Draw (IOD) identifies a normal condition where power is being drained from the battery with the ignition switch in the OFF position. A normal vehicle electrical system will draw from 5 to 35 milliamperes (0.005 to 0.035 ampere) with the ignition switch in the OFF position, and all non-ignition controlled circuits in proper working order. Up to 35 milliamperes are needed to enable the memory functions for the Powertrain Control Module (PCM), digital clock, electronically tuned radio, and other modules which may vary with the vehicle equipment.
Excessive IOD can be caused by:

- Electrical items left on
- Inoperative or improperly adjusted switches
- Inoperative or shorted electronic modules and components
- An internally shorted generator
- Intermittent shorts in the wiring

If the IOD is over 35 milliamperes, the problem must be found and corrected before replacing a battery. In most cases, the battery can be charged and returned to service after the excessive IOD condition has been corrected.

1. Verify that all electrical accessories are OFF. Turn OFF all lamps, remove the ignition key, and close all doors. If the vehicle is equipped with an illuminated entry system or an electronically tuned radio, allow the electronic timer function of these systems to automatically shut OFF (time out). This may take up to thirty minutes. See the Electronic Module Ignition-OFF Draw Table for more information.

ELECTRONIC MODULE IGNITION-OFF DRAW (IOD) TABLE			
Module	Time Out? (If Yes, Interval And Wake-Up Input)	IOD	IOD After Time Out
Radio	No	200 for 30 minutes after ignition is shut OFF. Base vehicle IOD 25 when bus(es) are down and all modules are in 'sleep' mode.	N/A
Audio Power Amplifier	No	up to 1 milliampere	N/A
Powertrain Control Module (PCM)	No	0.95 milliampere	N/A
Instrument Panel Cluster (IPC)	No	0.44 milliampere	N/A

2. Determine that the under hood lamp is operating properly, then disconnect the lamp wire harness connector or remove the lamp bulb.

3. Turn OFF all electrical accessories.

4. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable.

> **CAUTION:** *Do not open any doors, or turn on any electrical accessories with the lowest milliampere scale selected, or the multi-meter may be damaged.*

5. Connect a 10 gauge jumper wire between the negative battery cable and the negative battery post.
6. Turn the ignition key ON and then OFF and wait for all systems to enter sleep mode. This can take up to 30 minutes.

> **NOTE:** *Do not break the connection between the jumper wire and the battery. If the connection between the negative battery and the negative cable terminal clamp is lost during any part of the IOD test, the electronic timer function will be activated and all of the tests will have to be repeated.*

7. Set an electronic digital multi meter to its highest amperage scale. Connect the multi meter to the battery negative cable terminal clamp and the negative battery, but not on the jumper connection.
8. Remove the jumper wire without breaking the digital multi meter connection.
9. The multi meter leads must be securely clamped to the battery negative cable terminal clamp and the negative battery, but not the jumper wire.
10. The high amperage IOD reading on the multi meter should be very low or nonexistent, depending upon the electrical equipment in the vehicle. If the amperage reading remains high, remove and replace each fuse or circuit breaker in the Body Control Module (BCM) and Power Distribution Center (PDC), one at a time until the amperage reading becomes very low, or nonexistent. Refer to the appropriate wiring information for complete BCM and PDC, circuit breaker, and circuit identification. This will isolate each circuit and identify the circuit that is the source of the high amperage IOD. If the amperage reading remains high after removing and replacing each fuse, disconnect the wire harness from the generator. If the amperage reading now becomes very low or nonexistent, diagnose and repair the Charging System as necessary. After the high amperage IOD has been corrected, switch the multi meter to progressively lower amperage scales and, if necessary, repeat the fuse and circuit breaker remove-and-replace process to identify and correct all sources of excessive IOD. It is now safe to select the lowest milliampere scale of the multi meter to check the low-amperage IOD.
11. Observe the multi meter reading. The low-amperage IOD should not exceed 35 milliamperes (0.035 ampere). If the current draw exceeds 35 milliamperes, isolate each circuit using the fuse and circuit breaker remove-and-replace process. The multi meter reading will drop to within the acceptable limit when the source of the excessive current draw is disconnected. Repair this circuit as required; whether a wiring short, incorrect switch adjustment, or an inoperative component is the cause.

OPEN-CIRCUIT VOLTAGE TEST

A battery open circuit voltage (no load) test will show the approximate state of charge of a battery.

Before proceeding with this test, completely charge the battery. Refer to BATTERY, STANDARD PROCEDURE.

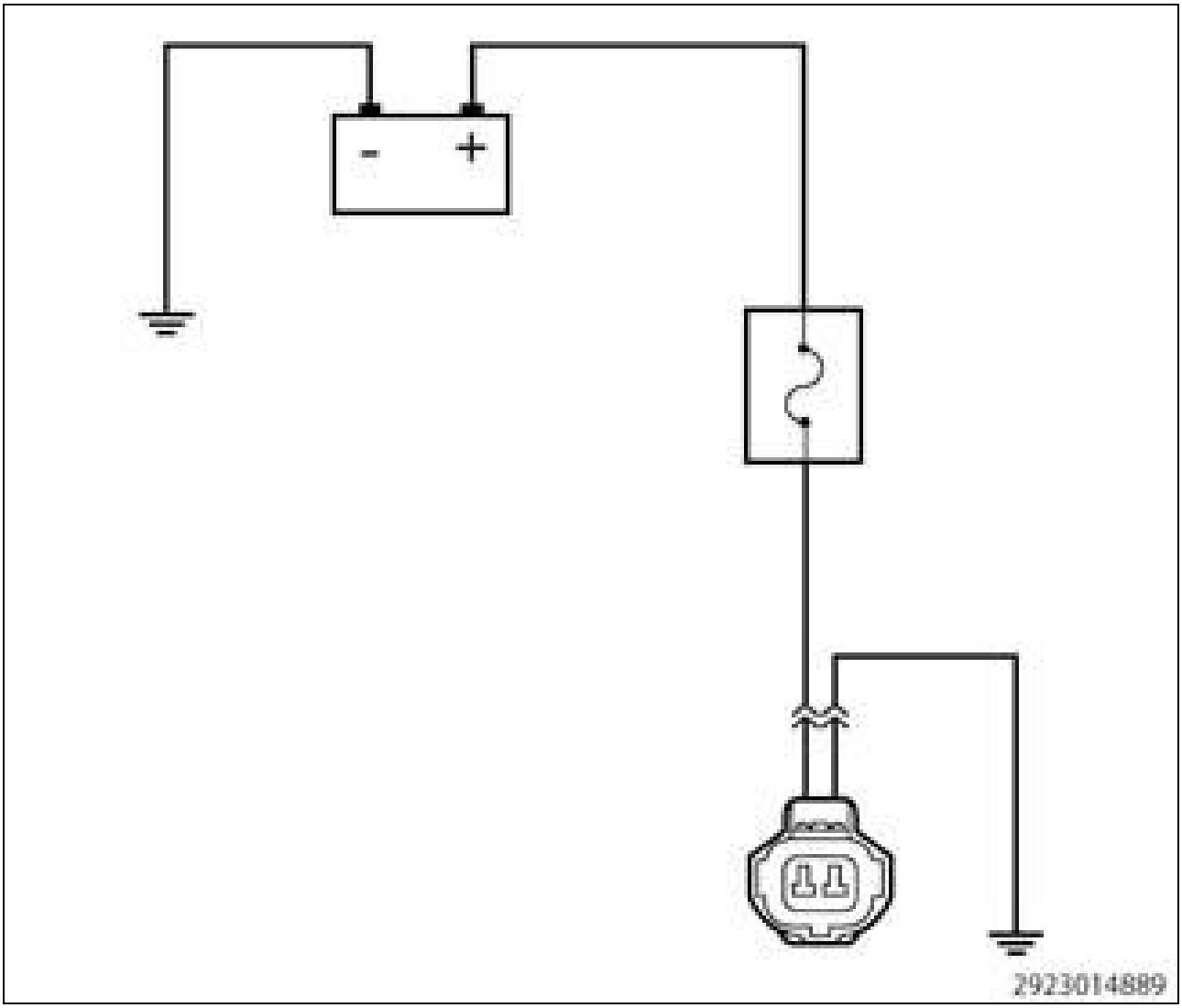
1. Before measuring the open circuit voltage, the surface charge must be removed from the battery. Turn on the headlights for 15 seconds, then allow up to five minutes for the battery voltage to stabilize.
2. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable.
3. Using a voltmeter connected to the battery posts (see the instructions provided by the manufacturer of the voltmeter), measure the open-circuit voltage.

See the Open Circuit Voltage Table. This voltage reading will indicate the battery state of charge, but will not reveal its cranking capacity. If a battery has an open-circuit voltage reading of 12.4 volts or greater, it may be load tested to reveal its cranking capacity.

OPEN CIRCUIT VOLTAGE TABLE	
Open Circuit Voltage	Charge Percentage
11.7 volts or less	0%
12.0 volts	25%
12.2 volts	50%
12.4 volts	75%
12.8 volts or more	100%

CHECK A 12-VOLT FUSED BATTERY B(+) CIRCUIT FOR VOLTAGE

THEORY OF OPERATION



Courtesy of CHRYSLER GROUP, LLC

The purpose of the following procedure(s) is to demonstrate how to check the voltage of a 12-volt fused battery B(+) circuit with a test light or voltmeter.

NOTE: *The circuit shown is an example, and is intended for demonstrational purpose only.*

The following are circuit tests covered in this procedure:

- Testing 12-Volt Fused Battery B(+) Circuit Voltage With A Test Light
- Testing 12-Volt Fused Battery B(+) Circuit Voltage With A Voltmeter

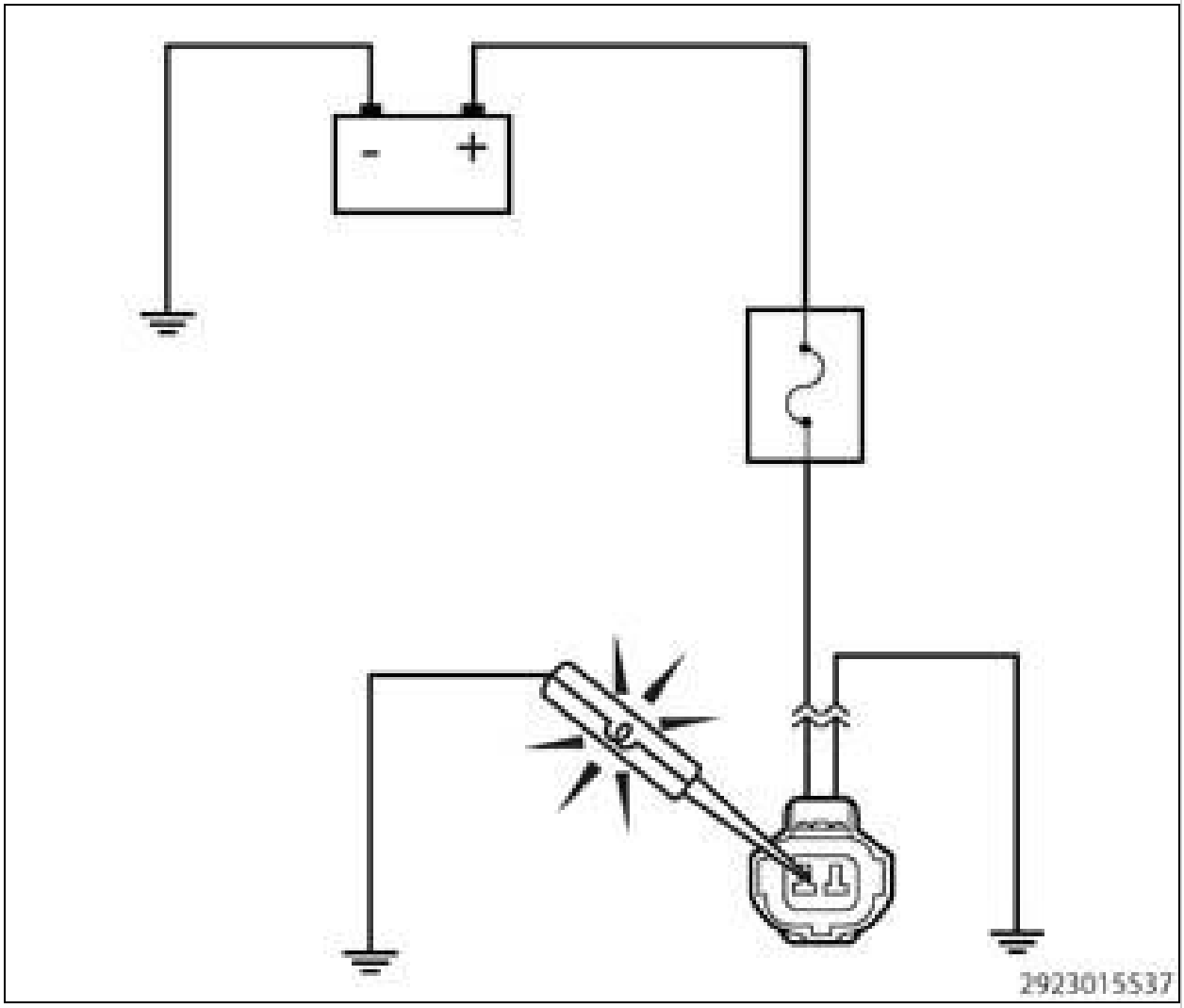
NOTE: *Perform the following test using a known good test light or functioning multimeter.*

Below is a list of possible causes that could be related to a No Voltage condition.

Possible Causes
OPEN CIRCUIT (CHAFED, PIERCED, PINCHED OR BROKEN WIRES)
OPEN FUSE
OPEN IN-LINE CONNECTOR (BENT, PUSHED OUT OR CORRODED TERMINALS)

TESTING 12-VOLT FUSED BATTERY B(+) CIRCUIT VOLTAGE WITH A TEST LIGHT

1.



Courtesy of CHRYSLER GROUP, LLC

NOTE: *Before testing any circuits, first verify the 12-volt test light is operating properly. Connect the 12-volt test light to battery ground or to any other known good ground. Touch*

the lead of the test light to Battery(+). If the test light is operational, it should illuminate brightly.

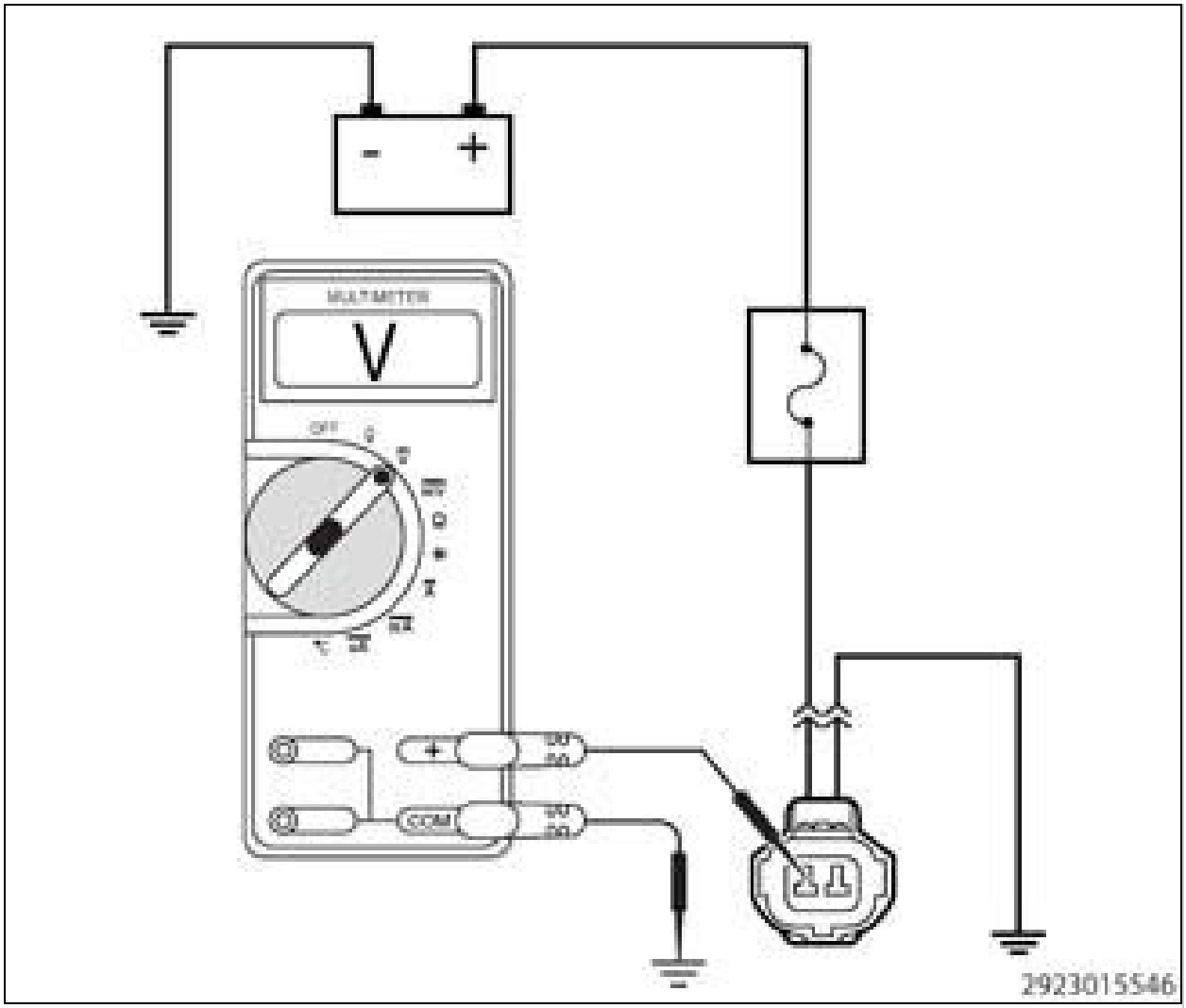
1. Turn the ignition off.
2. Disconnect the wire harness connector from the component that is being tested.

   NOTE: *Check connectors - Clean/repair as necessary.*

3. At this time, leave all in-line connectors connected.
4. Connect the 12-volt test light to a known good ground.
5. Use the test light lead to carefully probe the Battery or Ignition voltage circuit in the harness connector.
6. First check with the ignition off, next check with the ignition on, and lastly check while cranking the engine.
   Does the test light illuminate brightly?
   Yes
   1. The circuit is not open at this time or the condition that originally caused the open may not be present at this time. Continue to monitor the test light and wiggle the wire harness and connectors to check for an intermittent open or excessive resistance condition.
   2. Use the wiring diagram as a guide to trace the circuits and look for any in-line connectors where the open could occur intermittently.
   3. Look for any chafed, pierced, pinched, or partially broken wires.
   4. Look for broken, bent, pushed out or corroded terminals. Verify that there is good pin to terminal contact in the related wire harness connectors.
   5. Perform any Technical Service Bulletins (TSBs) that may apply.

   No
   1. Repair the open in the circuit. Use the wiring diagram as a guide to trace the circuit and look for any in-line connectors where the open could occur.
   2. One method to help isolate the open is to disconnect any in-line connectors and measure the resistance from one side of the in-line connector to the matching component harness connector. If the open goes away, the open is on the other side of the in-line connector.
   3. If this is a fused circuit, make sure to inspect the fuse. If the fuse is open, check the circuit for a short to ground before installing a new fuse. The circuit may have a short to ground causing the fuse to open. This short to ground could be in the wire harness or in one of the components the circuit is supplying voltage to.

2. **TESTING 12-VOLT FUSED BATTERY B(+) CIRCUIT VOLTAGE WITH A VOLTMETER**



Courtesy of CHRYSLER GROUP, LLC

NOTE: *The connector displayed in the graphics are only an example.*

1. Turn the ignition off.
2. Disconnect the wire harness connector from the component that is being tested.

NOTE: *Check connectors - Clean/repair as necessary.*

3. At this time leave all in-line connectors connected.
4. Use a multimeter set to measure DC voltage.
5. Connect the ground lead of the meter to a known good ground.

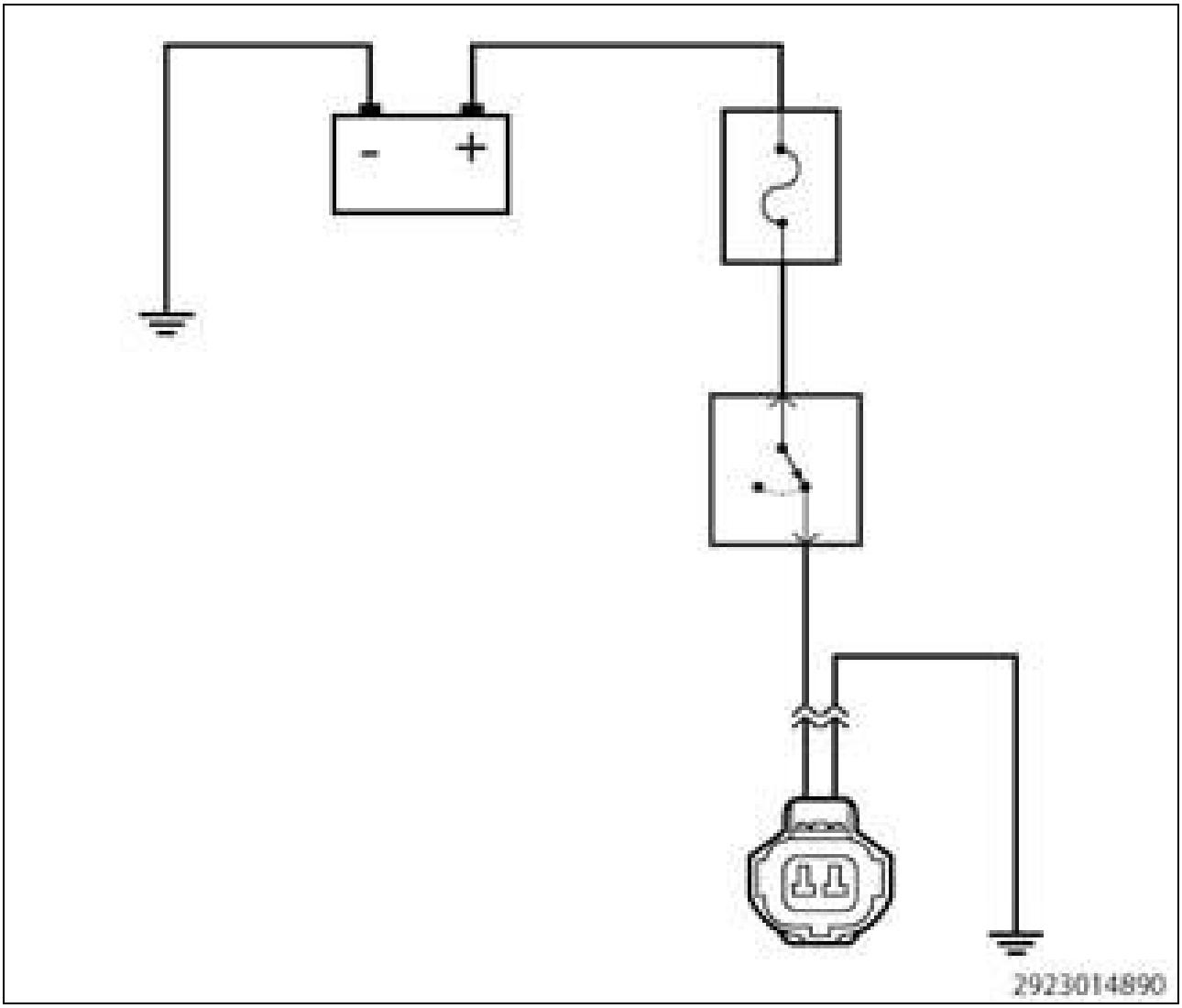
6. Use the positive lead of the multimeter and probe the circuit that is being checked for voltage.

7. Ignition on, engine not running.
   Is the voltage within specifications for this circuit?
   Yes
   1. The circuit is functioning properly or the condition that originally caused the open or short may not be present at this time. Continue to measure the voltage and wiggle the wire harness and connectors while checking for an intermittent open or short.
   2. Use the wiring diagram as a guide to trace the circuits and look for any in-line connectors where the short could occur intermittently.
   3. Look for any chafed, pierced, pinched, or partially broken wires.
   4. Look for broken, bent, pushed out or corroded terminals. Verify that there is good pin to terminal contact in the related wire harness connectors.
   5. Perform any Technical Service Bulletins (TSBs) that may apply.

   No
   1. Repair the open or short to ground in the circuit. Use the wiring diagram as a guide to trace the circuits and look for any in-line connectors where the short could occur.
   2. One method to help isolate the open or short is to disconnect any in-line connectors that the circuit being checked runs through and check for the voltage again. If the voltage is present, the open or short is on the other side of the in-line connector.

CHECK A 12-VOLT SWITCHED BATTERY B(+) CIRCUIT FOR VOLTAGE

THEORY OF OPERATION



Courtesy of CHRYSLER GROUP, LLC

The purpose of the following procedure is to demonstrate how to check the voltage of a 12-Volt switched battery B(+) circuit with a test light or voltmeter.

NOTE: *The circuit shown is an example, and is intended for demonstrational purpose only.*

The following are circuit tests covered in this procedure:

- Testing 12-Volt Switched Battery B(+) Circuit Voltage With A Test Light
- Testing 12-Volt Switched Battery B(+) Circuit Voltage With A Voltmeter

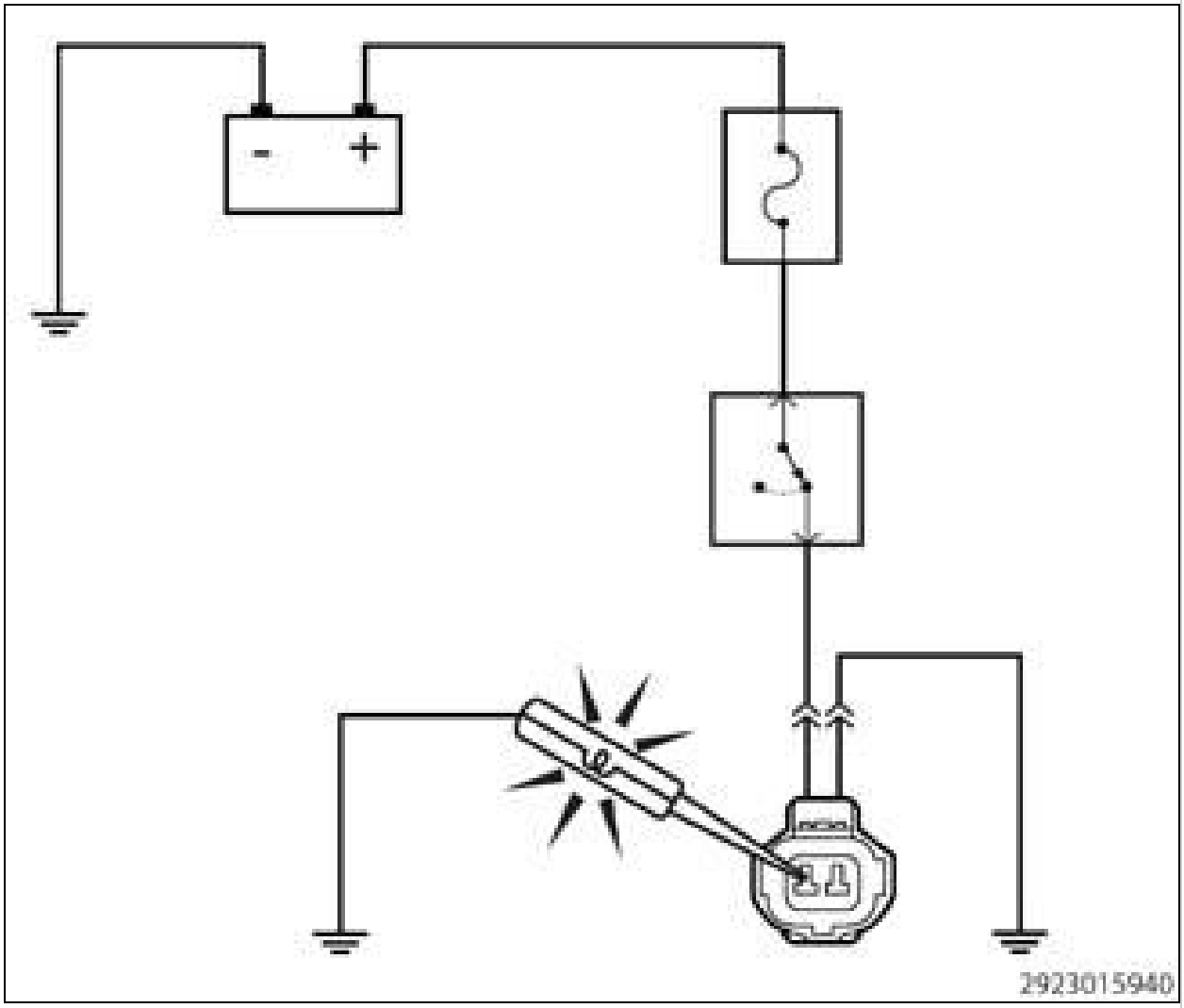
NOTE: *Perform the following test using a known good test light or functioning multimeter.*

Below is a list of possible causes that could be related to a No Voltage condition.

Possible Causes
OPEN CIRCUIT (CHAFED, PIERCED, PINCHED OR BROKEN WIRES)
OPEN FUSE
FAULTY SWITCH
OPEN IN-LINE CONNECTOR (BENT, PUSHED OUT OR CORRODED TERMINALS)

TESTING A 12-VOLT SWITCHED BATTERY B(+) CIRCUIT

1. **TESTING 12-VOLT SWITCHED BATTERY B(+) CIRCUIT VOLTAGE WITH A TEST LIGHT**



Courtesy of CHRYSLER GROUP, LLC

NOTE: *Before testing any circuits, first verify the 12-volt test light is operating properly. Connect the 12-volt test light*

to battery ground or to any other known good ground. Touch the lead of the test light to Battery(+). If the test light is operational, it should illuminate brightly.

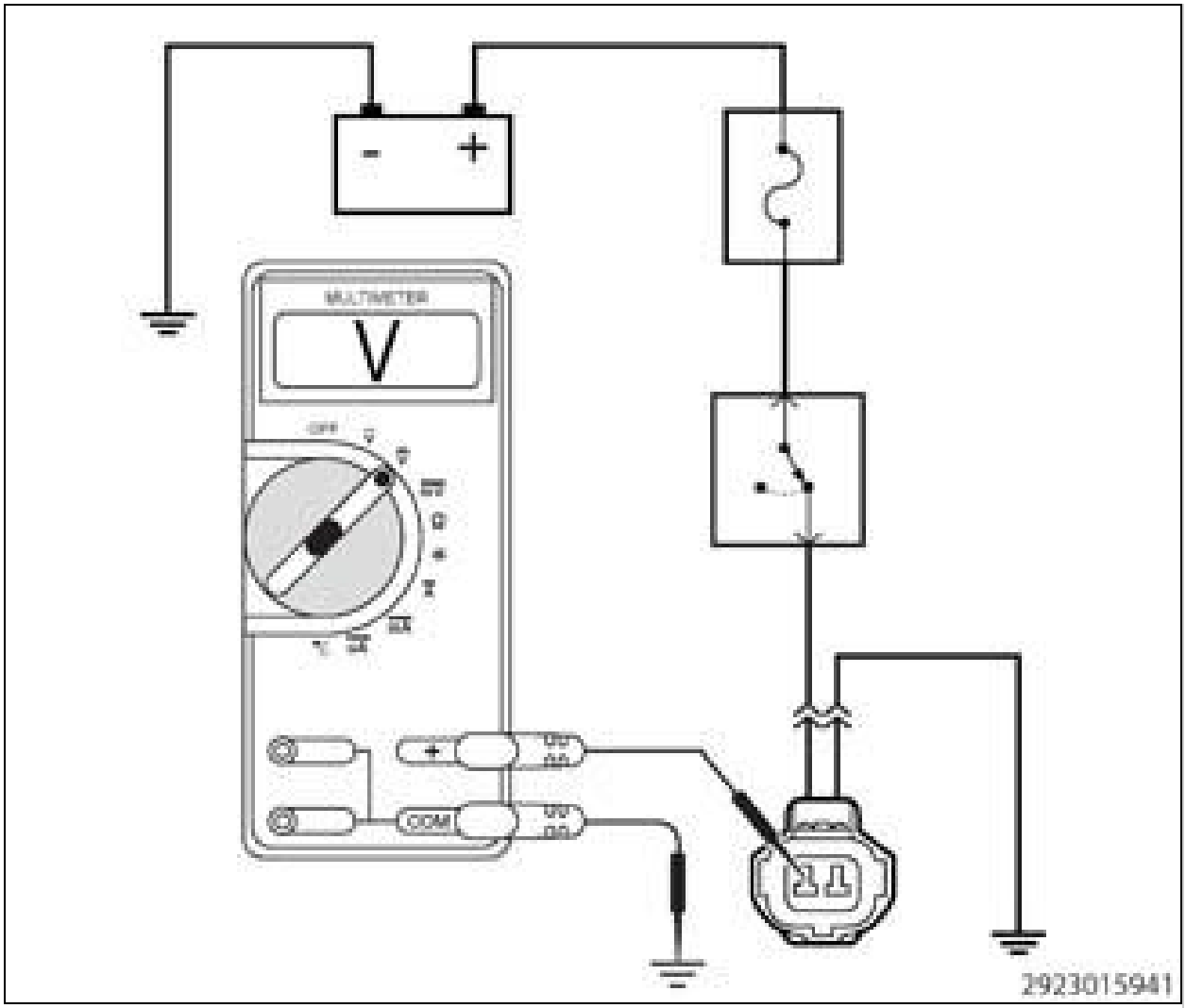
1. Turn the ignition off.
2. Disconnect the wire harness connector from the component that is being tested.

   NOTE: *Check connectors - Clean/repair as necessary.*

3. At this time, leave all in-line connectors connected.
4. Connect the 12-volt test light to a known good ground.
5. Use the test light lead to carefully probe the Battery or Ignition voltage circuit in the harness connector.
6. First check with the ignition off, next check with the ignition on, and lastly check while cranking the engine.
   Does the test light illuminate brightly?
   Yes
   1. The circuit is not open at this time or the condition that originally caused the open may not be present at this time. Continue to monitor the test light and wiggle the wire harness and connectors to check for an intermittent open or excessive resistance condition.
   2. Use the wiring diagram as a guide to trace the circuits and look for any in-line connectors where the open could occur intermittently.
   3. Look for any chafed, pierced, pinched, or partially broken wires.
   4. Look for broken, bent, pushed out or corroded terminals. Verify that there is good pin to terminal contact in the related wire harness connectors.
   5. Perform any Technical Service Bulletins (TSBs) that may apply.

   No
   1. Repair the open in the circuit. Use the wiring diagram as a guide to trace the circuit and look for any in-line connectors where the open could occur.
   2. One method to help isolate the open is to disconnect any in-line connectors and measure the resistance from one side of the in-line connector to the matching component harness connector. If the open goes away, the open is on the other side of the in-line connector.
   3. If this is a fused circuit, make sure to inspect the fuse. If the fuse is open, check the circuit for a short to ground before installing a new fuse. The circuit may have a short to ground causing the fuse to open. This short to ground could be in the wire harness or in one of the components the circuit is supplying voltage to.

2. **TESTING 12-VOLT SWITCHED BATTERY B(+) CIRCUIT VOLTAGE WITH A VOLTMETER**



Courtesy of CHRYSLER GROUP, LLC

NOTE: *The connector displayed in the graphics are only an example.*

1. Turn the ignition off.
2. Disconnect the wire harness connector from the component that is being tested.

NOTE: *Check connectors - Clean/repair as necessary.*

3. At this time leave all in-line connectors connected.
4. Use a multimeter set to measure DC voltage.
5. Connect the ground lead of the meter to a known good ground.

6. Use the positive lead of the multimeter and probe the circuit that is being checked for voltage.

7. Ignition on, engine not running.
   Is the voltage within specifications for this circuit?
   Yes
   1. The circuit is functioning properly or the condition that originally caused the open or short may not be present at this time. Continue to measure the voltage and wiggle the wire harness and connectors while checking for an intermittent open or short.
   2. Use the wiring diagram as a guide to trace the circuits and look for any in-line connectors where the short could occur intermittently.
   3. Look for any chafed, pierced, pinched, or partially broken wires.
   4. Look for broken, bent, pushed out or corroded terminals. Verify that there is good pin to terminal contact in the related wire harness connectors.
   5. Perform any Technical Service Bulletins (TSBs) that may apply.

   No
   1. Repair the open or short to ground in the circuit. Use the wiring diagram as a guide to trace the circuits and look for any in-line connectors where the short could occur.
   2. One method to help isolate the open or short is to disconnect any in-line connectors that the circuit being checked runs through and check for the voltage again. If the voltage is present, the open or short is on the other side of the in-line connector.