

PE11-037

GM

1-13-2012

ATT_1, Q_07

CSP

11342 bulletin



Bulletin No.: 11342

Date:

Draft: #1

Program Bulletin



CUSTOMER SATISFACTION PROGRAM

SUBJECT: Enhancements for Side Impact Pole Performance

MODELS: 2011-2012 Chevrolet Volt

DRAFT

CONDITION

The 2011 and 2012 model year Chevrolet Volt vehicles passed all Motor Vehicle Safety Standards. A vehicle inspection following a side pole test, however, indicated that the vehicle experienced structural intrusion of approximately 50 mm into the battery, which may rupture the coolant line causing coolant leakage. If a vehicle with a leaking coolant system was left on its side or in an inverted position for an extended period of time, the coolant could flow onto the battery electronic controls on top of the battery pack. If the battery pack had not been depowered, after several days (at least 6 and likely much longer), a short circuit may occur and result in a vehicle fire.

CORRECTION

Dealers are to add a reinforcement bracket to further protect the battery pack in a severe side collision, add a sensor in the reservoir of the battery coolant system to monitor the coolant level, and add a tamper-resistant bracket to the top of the battery coolant reservoir to help prevent potential coolant overfills.

VEHICLES INVOLVED

Involved are **all** 2011 model year and **certain** 2012 model year Chevrolet Volt vehicles.

Important: Dealers are to confirm vehicle eligibility prior to beginning repairs by using the Required Field Actions section in the Global Warranty Management system. Not all vehicles may be involved.

For dealers with involved vehicles, a listing with involved vehicles containing the complete vehicle identification number, customer name, and address information has been prepared and will be provided to US and Canadian dealers through the GM GlobalConnect Recall Reports, or

sent directly to export dealers. Dealers will not have a report available if they have no involved vehicles currently assigned.

The listing may contain customer names and addresses obtained from Motor Vehicle Registration Records. The use of such motor vehicle registration data for any purpose other than follow-up necessary to complete this program is a violation of law in several states/provinces/countries. Accordingly, you are urged to limit the use of this report to the follow-up necessary to complete this program.

PART INFORMATION

Parts required to complete this program are to be obtained from three different sources.

The parts listed in the table below are to be obtained from **General Motors Customer Care and Aftersales** (GMCC&A). Please refer to your “involved vehicles listing” before ordering parts. Normal orders should be placed on a DRO = Daily Replenishment Order. In an emergency situation, parts should be ordered on a CSO = Customer Special Order.

Part Number	Description	Quantity/Vehicle
22920448	Reinforcement Kit, F/Flr Tun	1
22922225	Battery Kit, Drv Mot	1
19260759	Connector, Wrg Harn	1
12378390- US 10953456 - CN	Coolant, Engine	2

The parts listed in the table below are to be obtained from **Partsmaster** by calling 972-438-0523, 7:00 am - 5:30 pm, CT.

Part Number	Description	Quantity/Vehicle
GM801-4-0864	CryoCobalt Drill Bit (3mm (1/8 in))	2
GM801-4-1764	CryoCobalt Drill Bit (6.75mm (17/64 in))	2

The part listed in the table below is to be obtained from **Crest Industries, Inc.** by calling 1-800-822-4100 (U.S.) or J-2 Products at 1-888-880-0025 (Canada), 8:00 am - 4:30 pm ET.

Part Number	Description	Quantity/Vehicle
7770B220	Ashland Pliogrip	1

SERVICE PROCEDURE

Note: The service repairs in this bulletin must be performed at a GM dealership that is authorized to perform Volt repair work. Only Volt certified technicians are to perform the repairs in this bulletin.

Battery Tunnel Reinforcement Installation

Danger: Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed. The High Voltage Disabling procedure includes the following steps:

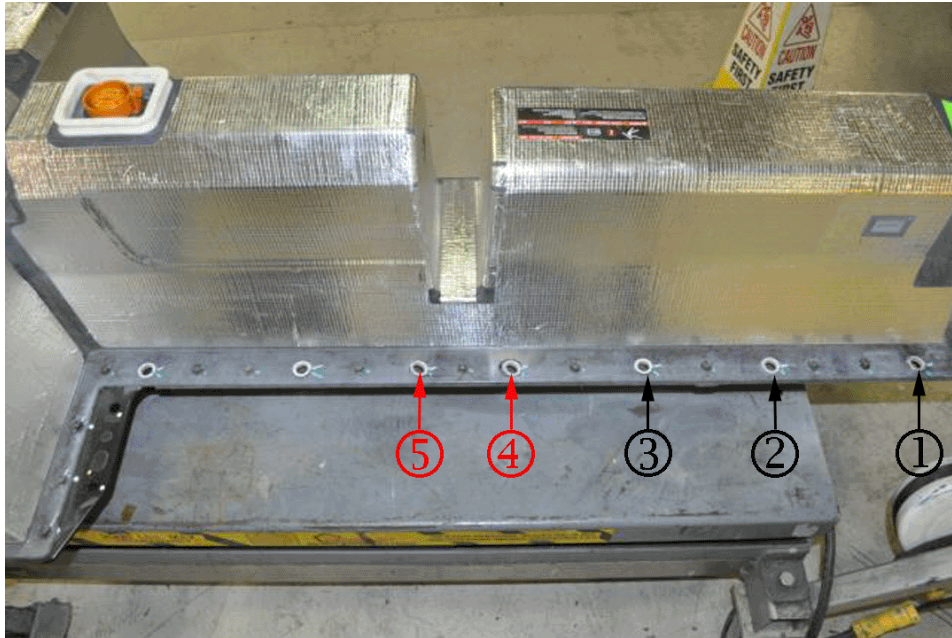
- Identify how to disable high voltage.
- Identify how to test for the presence of high voltage.
- Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed.

Before working on any high voltage system, be sure to wear the following Personal Protection Equipment:

- Safety glasses with appropriate side shields when within 15 meters (50 feet) of the vehicle, either indoors or outdoors.
- Certified and up-to-date Class "0" Insulation gloves rated at 1000V with leather protectors.
- Visually and functionally inspect the gloves before use.
- Wear the Insulation gloves with leather protectors at all times when working with the high voltage battery assembly, whether the system is energized or not.

Failure to follow the procedures may result in serious injury or death.

1. Disconnect and remove the high-voltage battery from the vehicle. Refer to *Drive Motor Battery Replacement and Shipping* in SI.

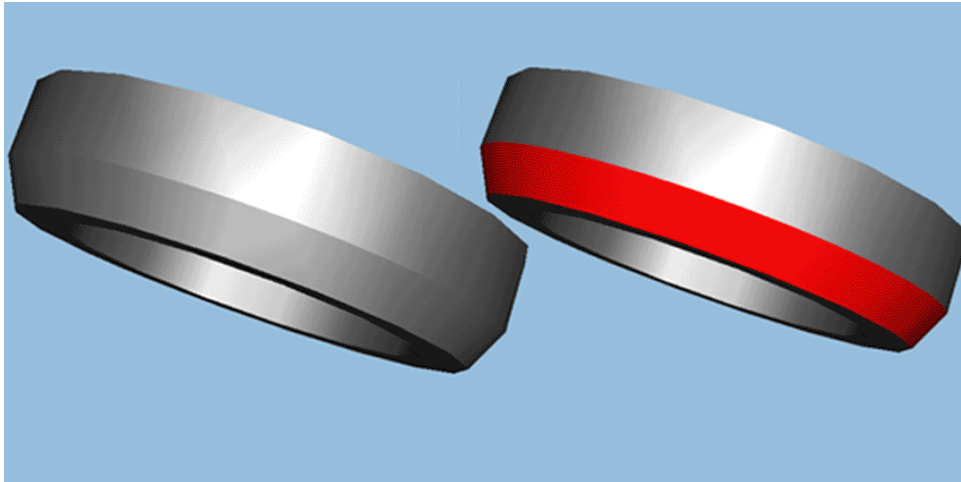


Caution: Do not pry on or contact the battery RESS cover while removing the aluminum crush limiters with screwdriver.

2. Remove the 4th and 5th aluminum crush limiters (indicated with red arrows in illustration) from the driver's and passenger's side of the battery RESS cover.

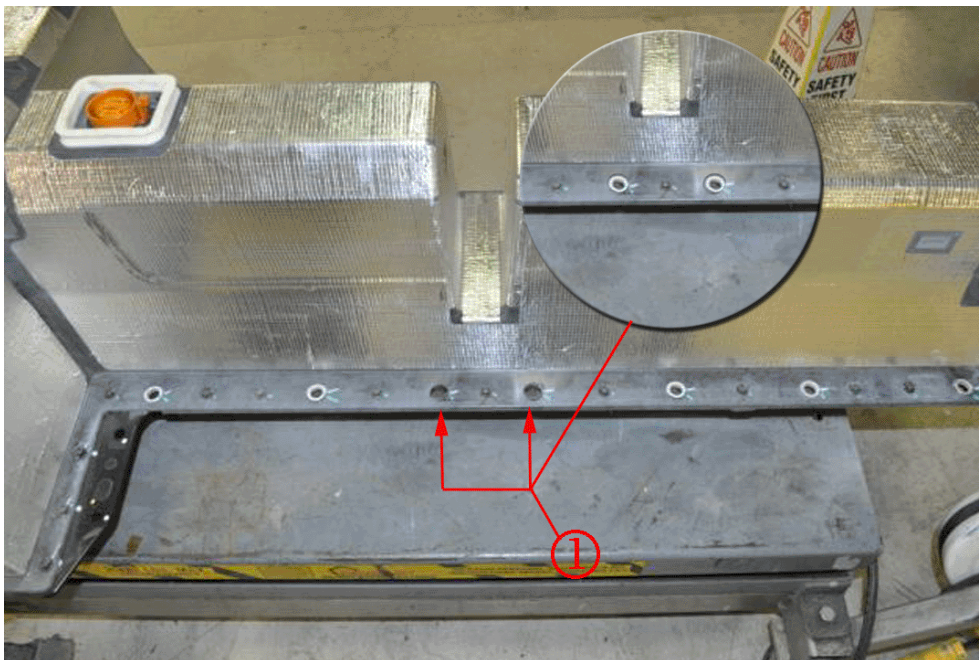


- 2.1 Place the tip of a small flat-blade screwdriver against the bottom of each aluminum crush limiter. Access the bottom of the crush limiter through the hole on the bottom side of the battery RESS cover.
- 2.2 Gently tap the end of the screwdriver with a small hammer. You may have to work around the bottom of the aluminum crush limiter, tapping it in a few locations to completely free the aluminum crush limiter from the cover.



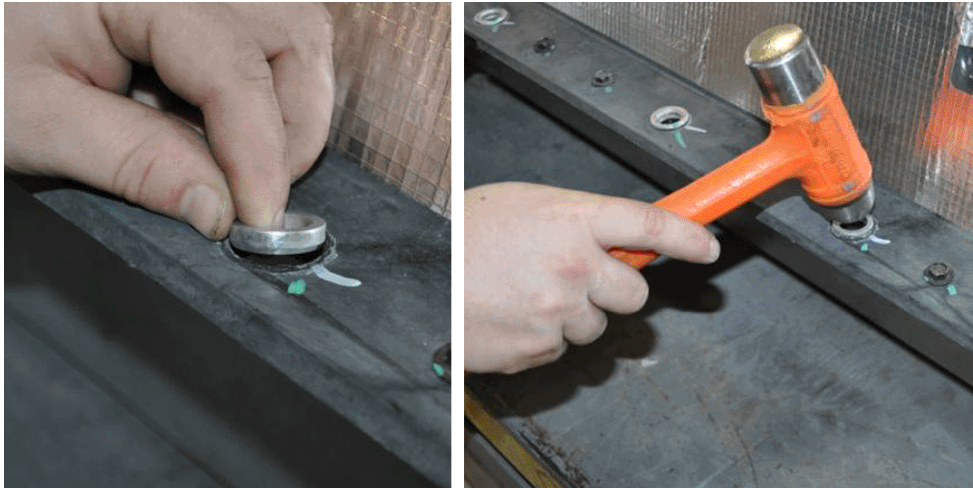
Note: Butyl should only be applied in the chamfer (red face) of the crush limiter. Refer to illustration. Butyl should not be present in the metal-to-metal joint between RESS cover, reinforcement plate and longitudinal rails.

3. Apply butyl on the chamfer of the new aluminum crush limiters, P/N 22917161.

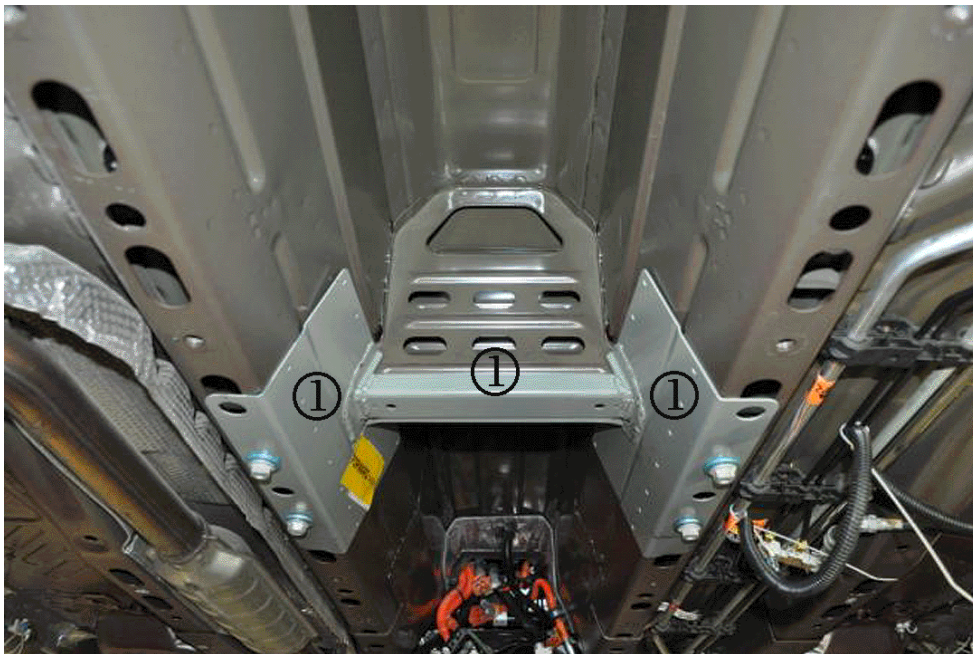


Note: The aluminum crush limiters are chamfered and must be installed with chamfer side down.

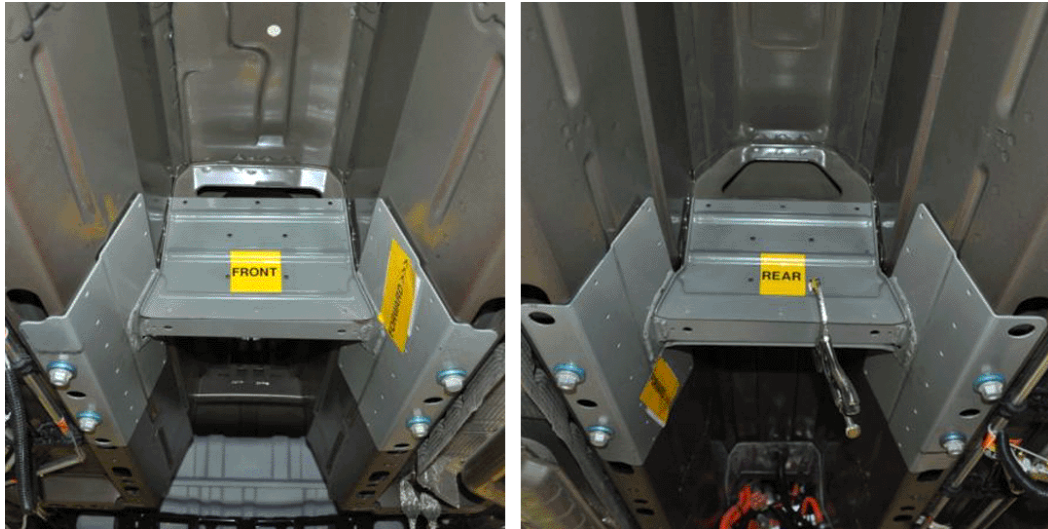
4. Press the four new aluminum crush limiters (1), P/N 22917161, into the battery RESS cover where the aluminum crush limiters were removed.



5. Install the new aluminum crush limiters by tapping lightly and evenly with small hammer.
6. Remove the excess butyl on the RESS cover.



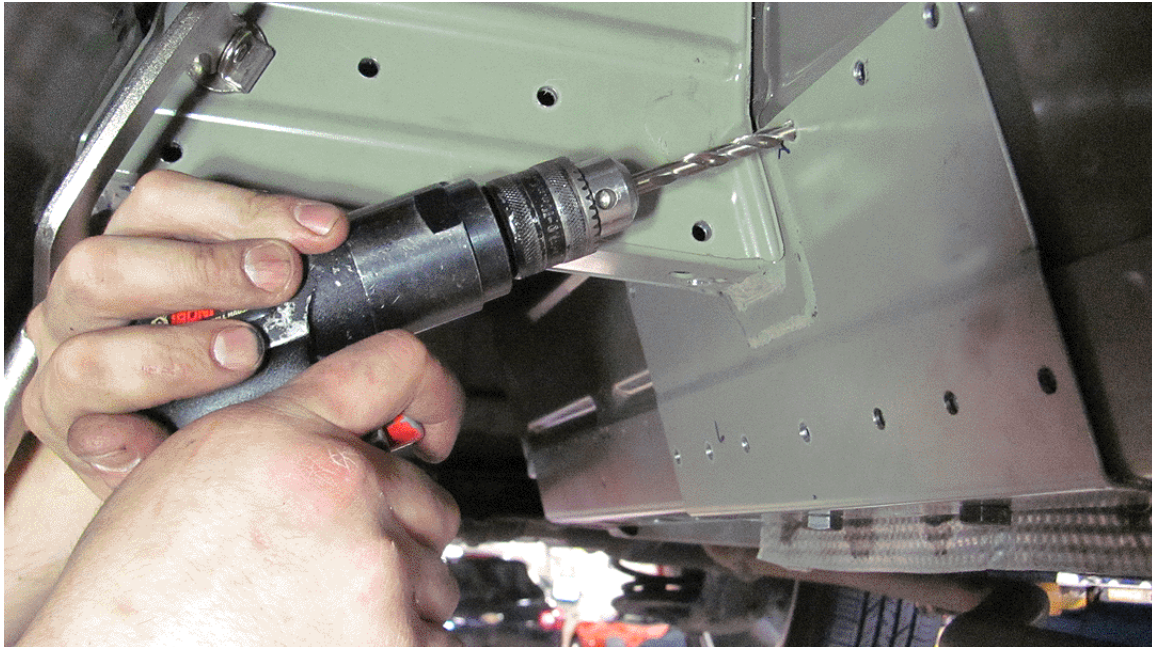
7. Attach the reinforcement assembly (1) to the car body using four of the shorter M10 bolts from the kit. Tighten bolts to 25 Nm (19 lb-ft). Make sure the reinforcement assembly is centered from side to side within the tunnel of the vehicle body.



8. Locate the front and rear plates to the car body and hold in position using two hand clamps or “C” clamps. Make sure the front and rear plates are centered from side to side on the tunnel reinforcement of the vehicle body.



9. Center punch all of the holes in the plate and reinforcement assembly before drilling the 3mm (1/8 in) pilot holes.
10. Drill 3mm (1/8 in) pilot holes into the vehicle body through the 20 existing holes in the front and rear plates. The three lower holes per plate will also go through the reinforcement assembly.



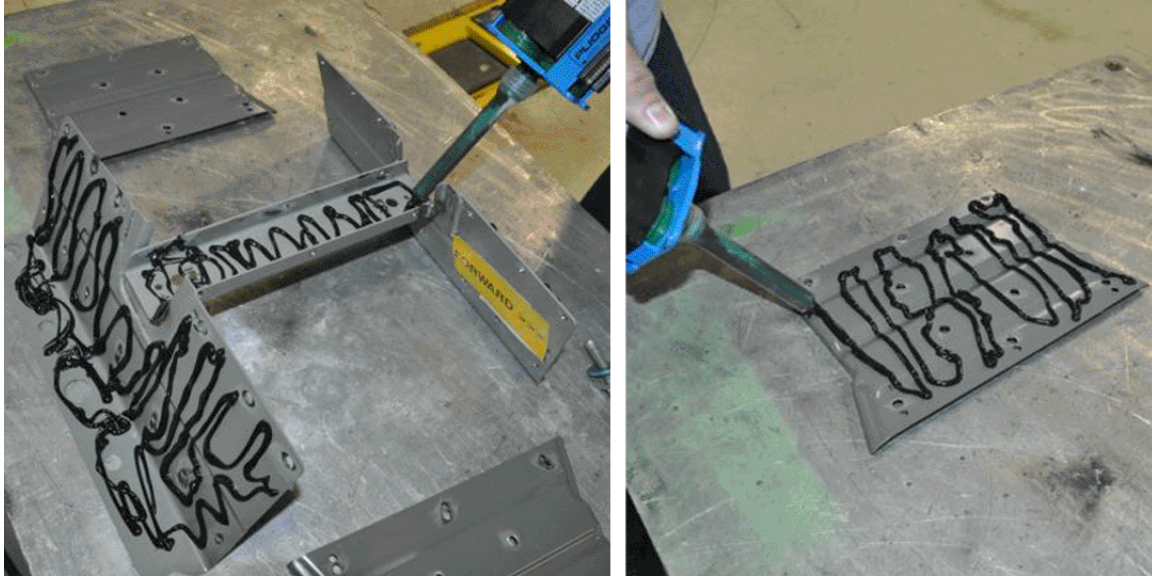
11. Drill 6.75mm (17/64 in) holes through the 20 pilot holes.
12. Remove the clamps and the front and rear plates. Set aside the plates.

Caution: Place a 20mm (51/64 in) drill stop on drill bits to ensure drill does NOT enter the vehicle beyond 19 mm (¾ in) in depth to avoid vehicle damage.

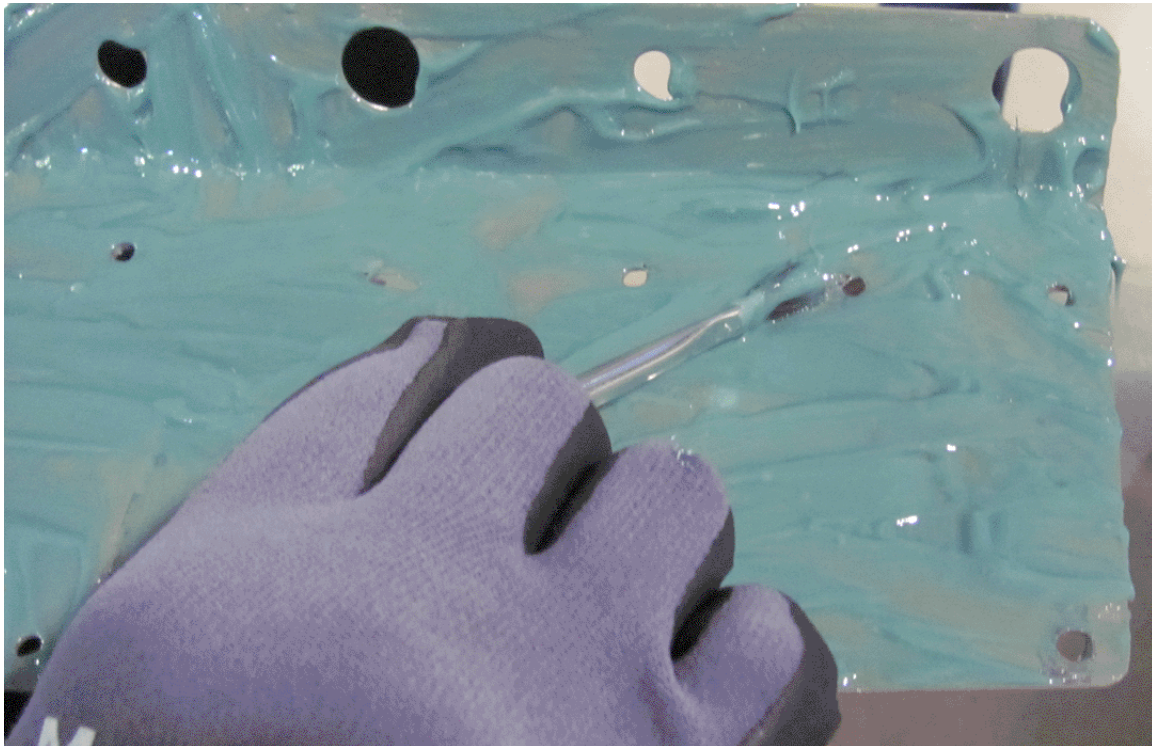
13. Drill 3mm (1/8 in) pilot holes into the vehicle body through the 28 existing holes in the reinforcement assembly. Do not allow the drill bit to enter the vehicle body beyond 19 mm (¾ in) in depth for the six upper holes per side.

Caution: Place a 20mm (51/64 in) drill stop on drill bits to ensure drill does NOT enter the vehicle beyond 19 mm (¾ in) in depth to avoid vehicle damage.

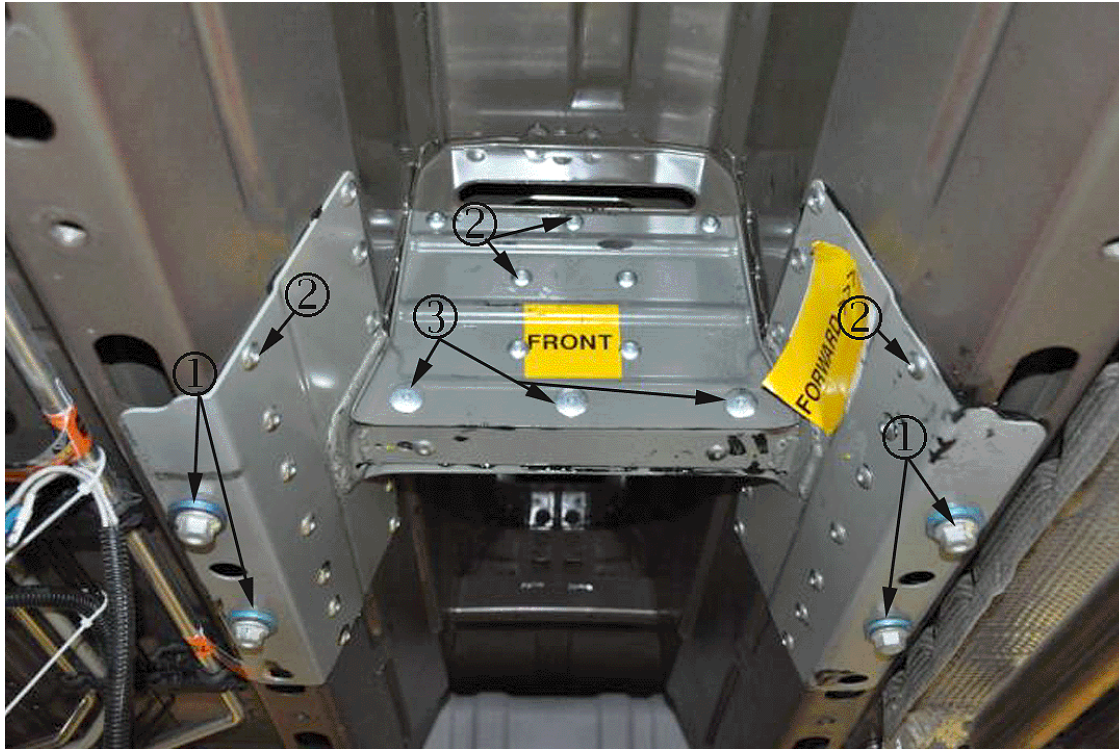
14. Drill 6.75mm (17/64 in) holes through the 28 pilot holes from step 13. Use a drill stop or otherwise do not allow the drill bit to enter the car body beyond 19 mm (¾ in) in depth for the six upper holes per side.
15. Remove the four M10 bolts and the reinforcement assembly from the vehicle body. Set aside the reinforcement assembly and the bolts.
16. Deburr all of the drilled holes in the front and rear plates, the reinforcement assembly, and the vehicle body. Remove any metal shavings from the surfaces of the front and rear plates, the reinforcement assembly, and the vehicle body.
17. Clean all mating surfaces of the front and rear plates, the reinforcement assembly, and the vehicle body using isopropyl (rubbing) alcohol and a clean, lint-free cloth. Allow the alcohol to dry.



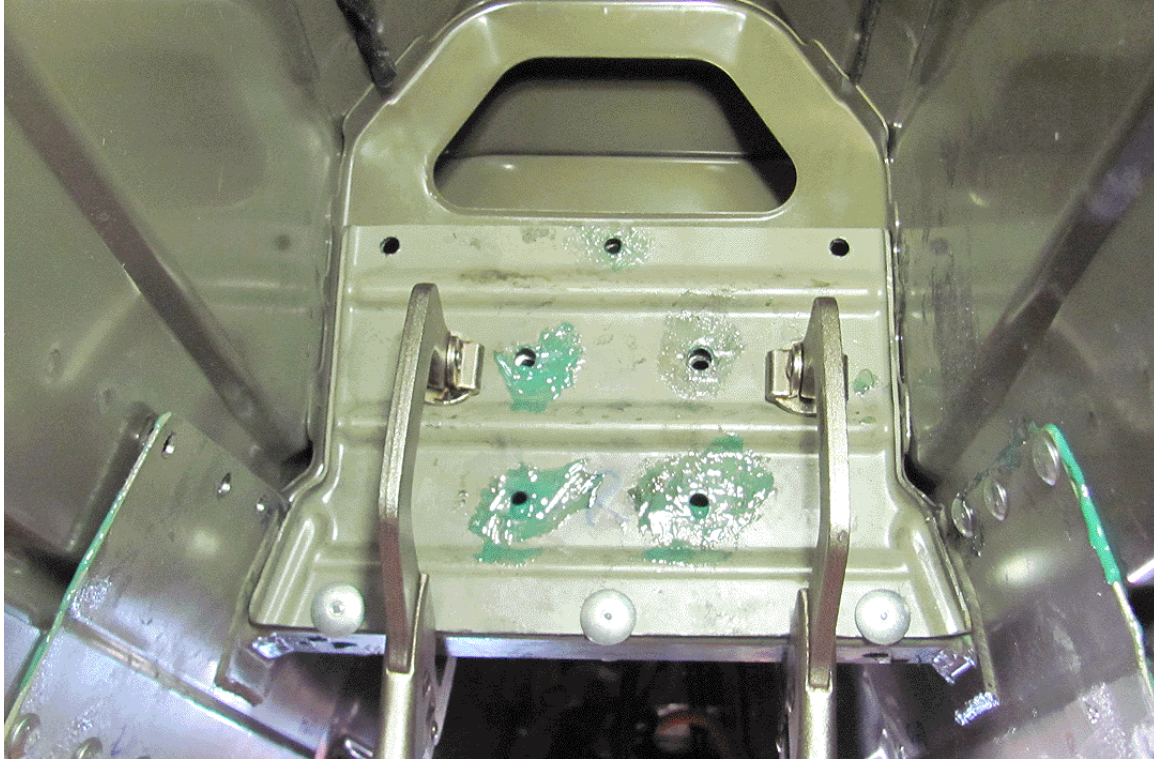
18. Apply approximately 5mm (3/16 in) beads of Pliogrip 7770 (or 7770B) 2-part epoxy in the patterns shown onto the reinforcement assembly and the front and rear plates. Use a new mixing and dispensing tip, and ensure that both components of the epoxy are dispensing and mixing from the dispensing tip prior to applying the epoxy to the parts.



19. Coat drill holes and exposed metal with Pliogrip 7770 (or 7770B) 2-part epoxy using a brush as shown in illustration.



20. Re-attach the reinforcement assembly to the vehicle body using four of the shorter M10 bolts (1) removed from the high-voltage battery. Tighten bolts to 25 Nm (19 lb-ft). Make sure the reinforcement assembly is centered from side to side within the tunnel of the vehicle body. Ensure that the 6.75mm (17/64 in) holes drilled into the reinforcement assembly are aligned.

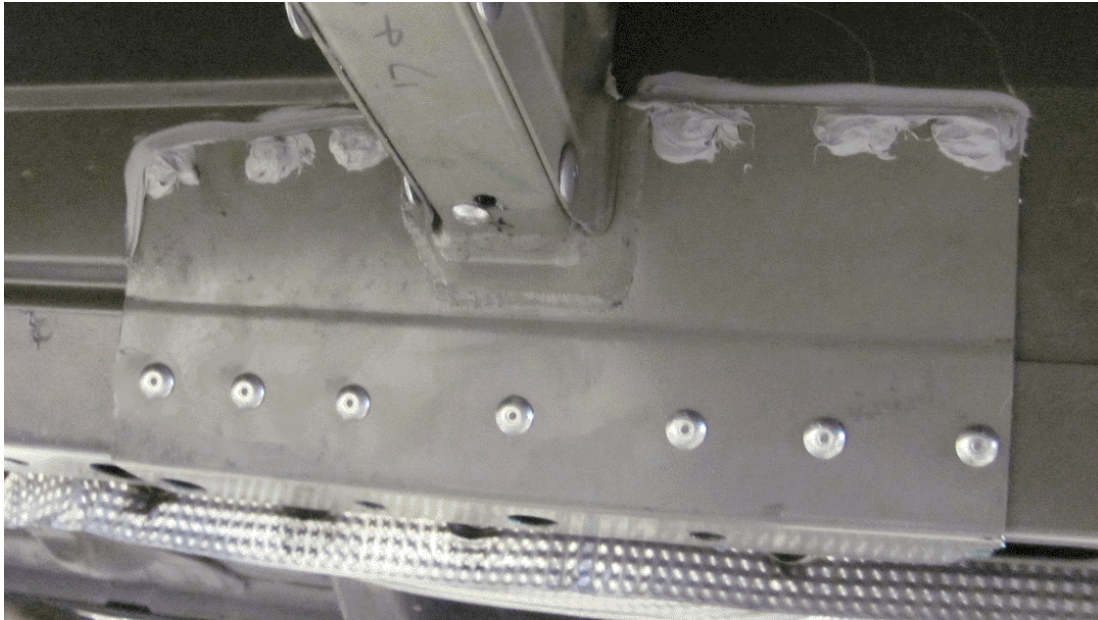


Caution: To ensure the rivets are installed correctly, use two hand clamps or "C" clamps to hold the plates into position. Make sure the rear plate is pressed against the vehicle body in each location as each rivet is being installed.

21. Re-locate the rear plate and install a minimum of two rivets (2), P/N 11561547, through any of the upper 6.75mm (17/64 in) holes. Make sure the rear plate is pressed against the vehicle body in each location as each rivet is being installed.
22. Re-locate the front plate and apply a minimum of two rivets (2), P/N 11561547, through any of the upper 6.75mm (17/64 in) holes. Make sure the front plate is pressed against the vehicle body in each location as each rivet is being installed.
23. Install the remaining 28 rivets (2), P/N 11561547, through the 6.75mm (17/64 in) holes. Make sure the reinforcement or plate is pressed against the vehicle body in each location as each rivet is being installed.

Note: The six longer rivets (3), P/N 11569698 are located in bottom of the front and rear plates.

24. Install the six rivets (3), P/N 11569698, through the lower 6.75mm (17/64 in) holes that were also drilled through the reinforcement assembly. Ensure the plate is pressed against the reinforcement assembly in each location as each rivet is being installed.
25. Grind flush any rivet mandrels that did not break off flush with the rivet head.
26. Wipe off any excess epoxy that squeezed out around the reinforcement assembly or around the front and rear plates.



27. Apply RTV on and around each of the six upper rivet heads along each side of the reinforcement assembly. The other rivet head locations do not require sealer.

Caution: Remove and **discard** the four short M10 bolts from the reinforcement assembly. Discard the M10 and M8 bolts removed from the high-voltage battery. The battery tunnel reinforcement kit, PN 22920448, contains new M8 and M10 bolts. Use the new bolts to install the high-voltage battery to avoid vehicle damage.

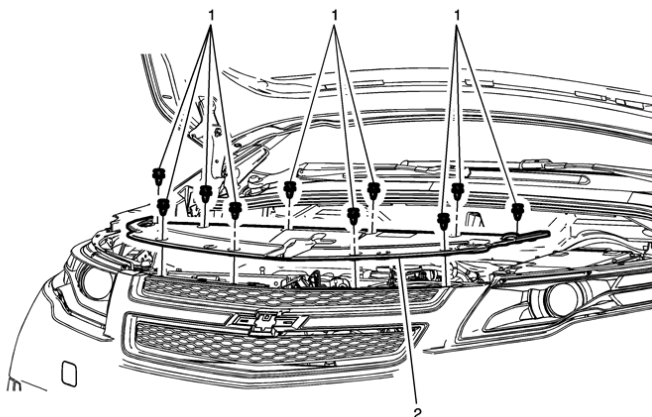
28. Remove the four M10 bolts from the reinforcement assembly. Discard the M10 bolts.

29. Re-connect and re-install the high voltage battery using the 18 new M10 bolts, P/N 11588740, and four new M8 bolts, P/N 11588724. Refer to *Drive Motor Battery Replacement and Shipping* in SI.

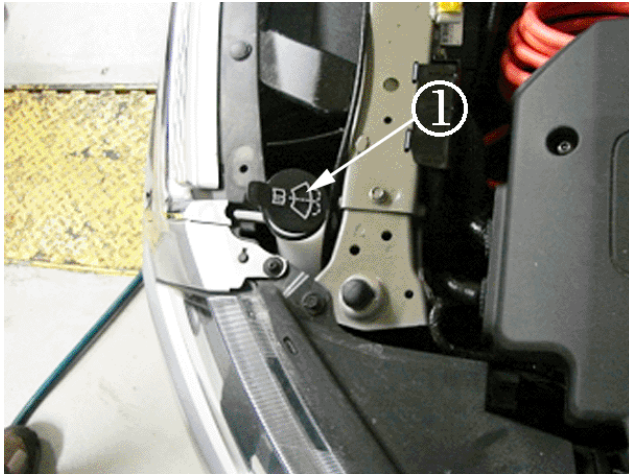
30. Lower the vehicle. Refer to *Lifting and Jacking the Vehicle* in SI.

HV Battery/Inverter Surge Tank Replacement and Coolant Level Sensor Jumper Harness Installation

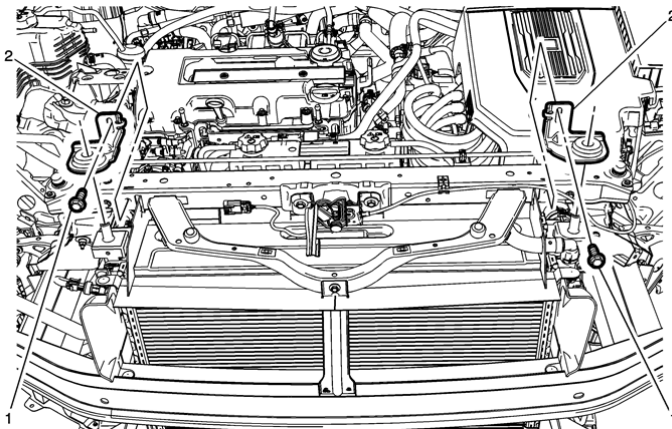
1. Remove battery reservoir cap from coolant surge tank.



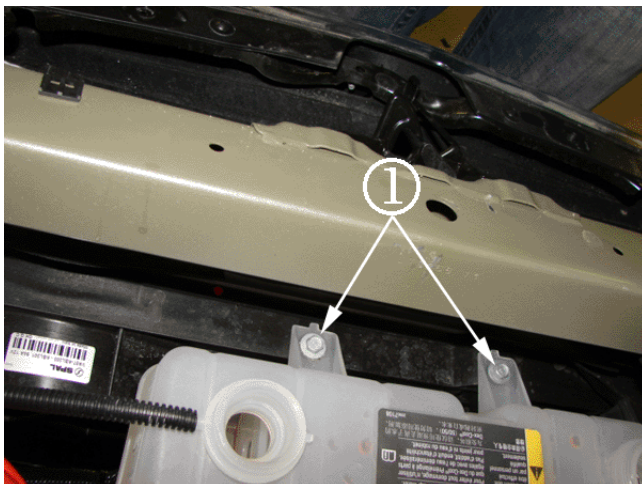
2. Remove front compartment sight shield.



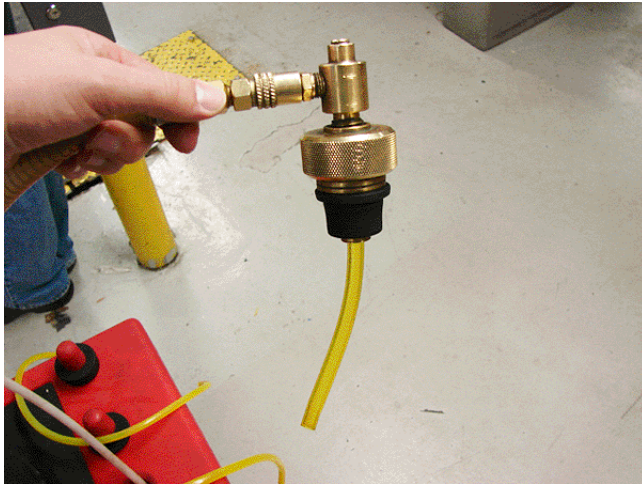
- 3. Remove windshield washer filler tube (1) by pulling up on it.



- 4. Remove radiator mounts (2).



- 5. Push radiator stack rearward and remove the coolant surge tank fasteners (1).



6. Suck out power inverter module cooling system reservoir using the Vac-N-Fill system with 152 mm (6 in) hose extension.
7. Clamp shut power inverter module cooling system reservoir hoses.



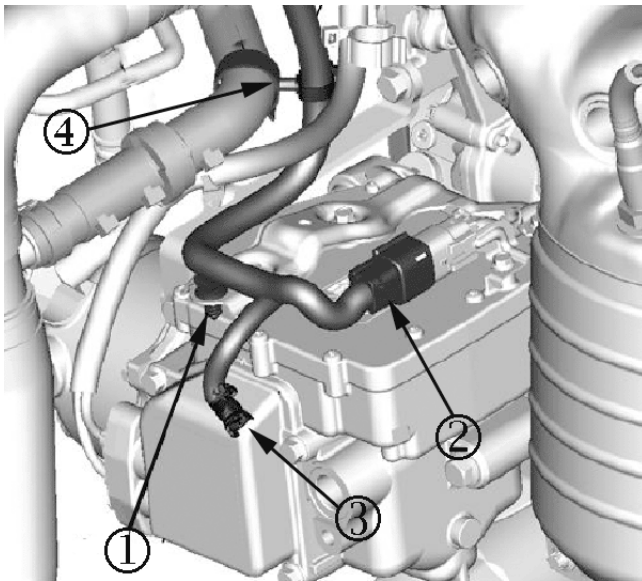
8. Disconnect all hoses for both reservoirs of the coolant surge tank.
9. Remove the coolant surge tank.
 - 9.1 Remove engine/intake cover.



9.2 Remove A/C refrigerant pressure sensor connector (1).

9.3 Wiggle coolant surge tank out of engine compartment.

10. Install coolant level sensor jumper harness.



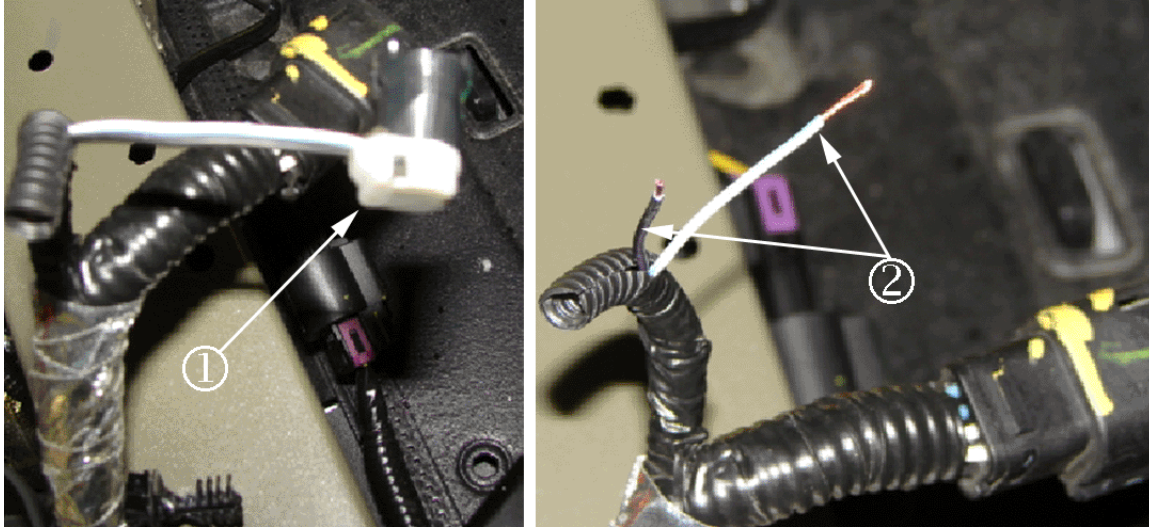
10.1 Unplug refrigerant temperature sensor (3).

10.2 Pull out wire harness.

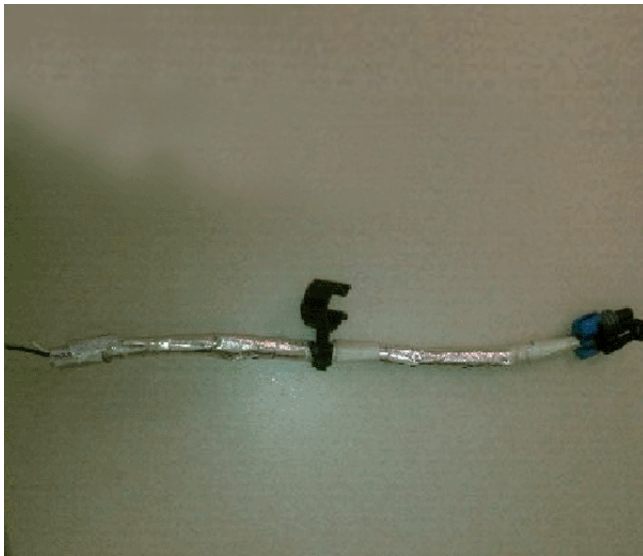
10.3 Unseat Christmas tree retainer (1).

10.4 Disconnect compressor connector (2).

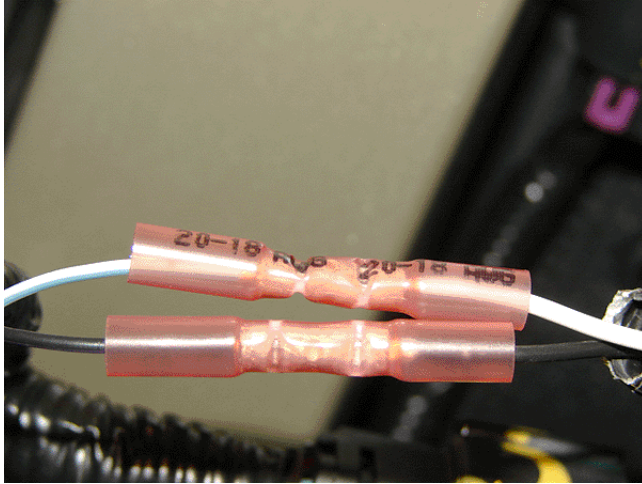
10.5 Remove harness clip from hose (4).



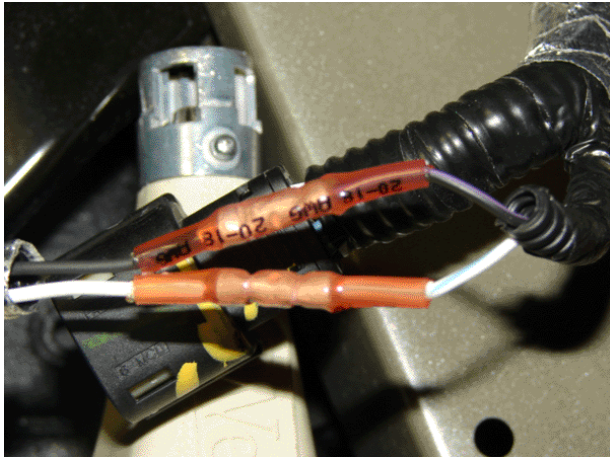
10.6 Cut off the wires at the back of the refrigerant temperature sensor (1) connector and strip 13 mm (1/2 in) of insulation from the two wire ends (2).



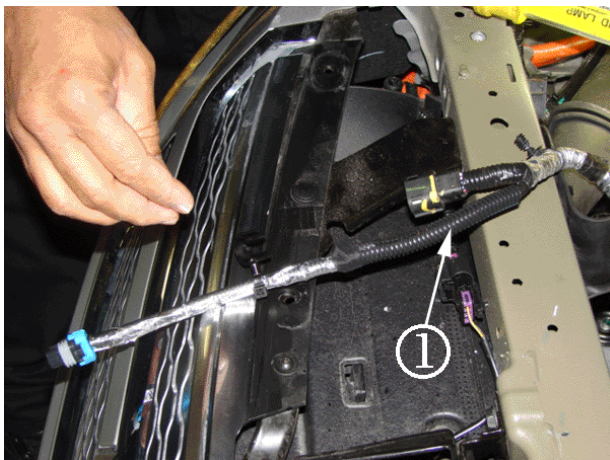
10.7 Locate the coolant level sensor jumper from service kit 19260759 and strip 13 mm (1/2 in) of insulation from the two wire ends.



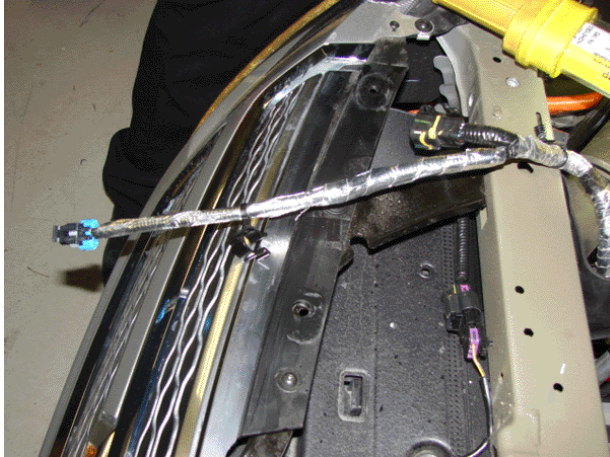
- 10.8 Crimp connect white and black wires on provided new kit harness to the white/blue and black/violet wires respectively using the splice clip provided in the service kit. Refer to the instructions provided in the kit for proper procedure and tools.



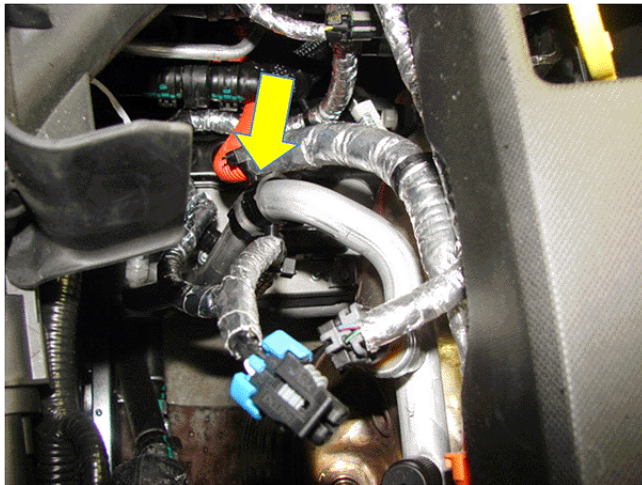
- 10.9 Apply heat to the splice clip/heat shrink to seal it to the wire insulation. Proper tools must be used to protect the wire insulation from excess heat.



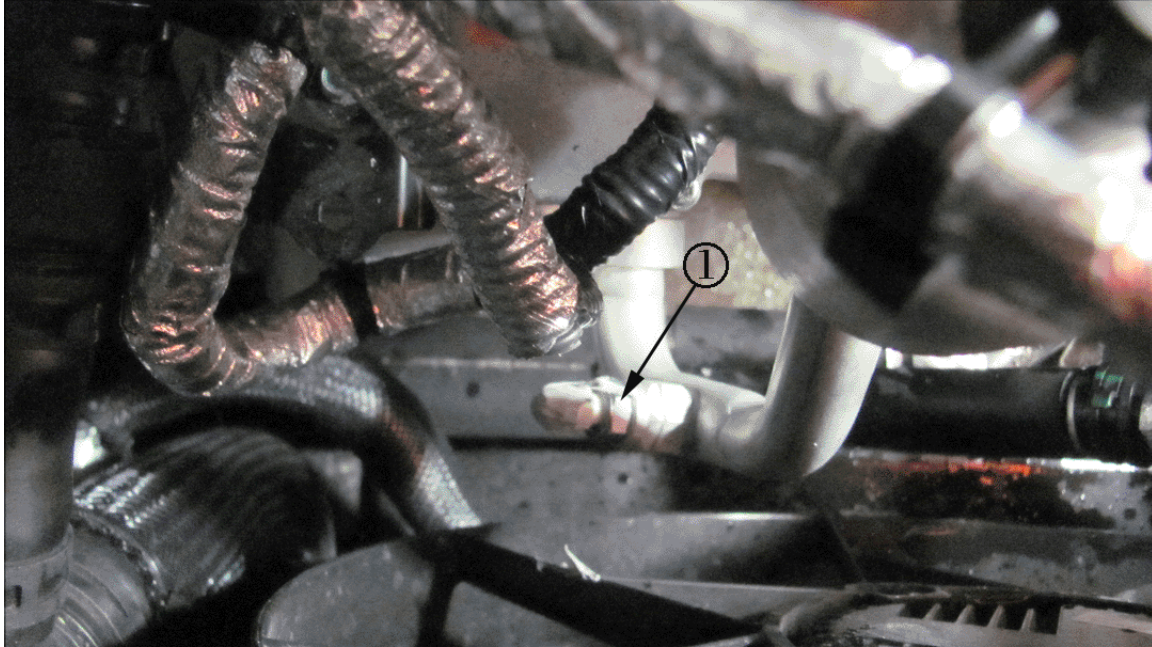
- 10.10 Install corrugate tube (1) that is provided in the service kit over harness splice. Corrugate should overlap existing harness corrugate on both sides.



- 10.11 Completely wrap new corrugate with aluminum heat tape. If aluminum heat tape is not available, use black electrical tape.
- 10.12 Reinstall the wire harness.
- 10.13 Install harness clip on hose in specified area.
- 10.14 Replug the compressor connector.
- 10.15 Reseat the Christmas tree retainer (replace if damaged).



- 10.16 Install new harness clip on the A/C line above existing harness clip.



10.17 Put RTV (dime sized dab) over exposed refrigerant temperature sensor (1) to cover exposed leads.

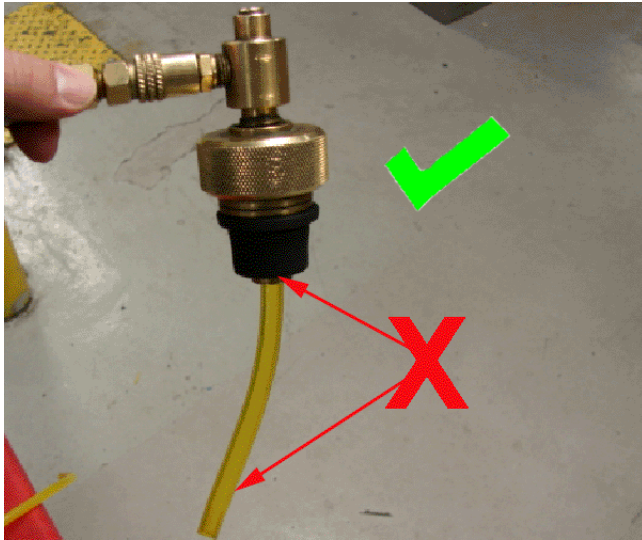
11. Connect coolant level sensor to new coolant surge tank.
12. Reconnect all coolant surge tank hoses.
13. Push radiator toward the engine and secure the vehicle left side coolant bottle mount by installing and tightening the 1 bolt.
14. Remove manual clamp from power inverter module cooling system reservoir hoses.

Note: Vac-N-Fill equipment must be used along with proper coolant. The Power Electronics / Charging and Battery Cooling systems require a 50/50 mix of DEX-COOL[®] and de-ionized water. This mixture is available in a pre-mix with bitterant, P/N 12378390 USA, P/N10953456, Canada. The pre-mixed coolant is no longer available without the bitterant chemical. Refer to P/I #PIP4910.

15. Vac-N-Fill power inverter module cooling system reservoir.



15.1 Install reservoir overflow port cap. You may have to remove the overflow tubing to install the cap.



15.2 Pull vacuum (at least 15 in Hg) for five (5) minutes. USE THE VAC-N-FILL EQUIPMENT WITHOUT THE 152 MM (6 IN) HOSE EXTENSION (X).

15.3 Fill while under vacuum.

15.4 Remove reservoir overflow port cap.

15.5 Install overflow tubing and reservoir cap.

Note: Vac-N-Fill equipment must be used along with proper coolant. The Power Electronics / Charging and Battery Cooling systems require a 50/50 mix of DEX-COOL[®] and de-ionized water. This mixture is available in a pre-mix with bitterant, P/N 12378390 USA, P/N10953456, Canada. The pre-mixed coolant is no longer available without the bitterant chemical. Refer to P/I #PIP4910.

16. Vac-N-Fill battery system at reservoir.



16.1 Install reservoir overflow port cap. You may have to remove the overflow tubing to remove the cap.

16.2 Pull vacuum (at least 15 in Hg) for 5 minutes.

16.3 Fill while under vacuum.

16.4 Again pull vacuum (at least 15 in Hg) for 5 minutes.

16.5 Fill to top of reservoir.

16.6 Reinstall battery MSD and reenergize system.

16.7 Connect 12V charger to vehicle and energize.

Do not attempt to order the calibration number from GM Customer Care and Aftersales. The calibration numbers required for this service procedure are programmed into control modules via a Multiple Diagnostic Interface (MDI) and TIS2WEB with the calibration update. When using the MDI for reprogramming, ensure that it is updated with the latest software version. Use **TIS2WEB on or after 02/XX/12** to obtain the calibration. If you cannot access the calibration, call the Techline Customer Support Center and it will be provided.

For step-by-step programming instructions, please refer to SI and the Techline Information System (TIS) terminal.

17. Verify that there is a battery charge of 12 to 15 volts. The battery must be able to maintain a charge during programming. Only use an approved Midtronics® PSC 550 Battery Maintainer (SPS Programming Support Tool EL-49642) or equivalent to maintain proper battery voltage during programming.

18. Reprogram the Battery Energy Control Module (K15) and Hybrid Powertrain Control Module 2 (K114B). Refer to SI and Service Programming System (SPS) documentation for programming instructions.

18.1 Connect the MDI to the vehicle. Connect the MDI to the programming terminal with a cable.

18.2 Select J2534 MDI and Reprogram ECU from the Select Diagnostic Tool and Programming Process screen.

Note: Turn the vehicle ON to Service Mode. The Service Mode can be attained by pressing and holding the power button for 5 to 8 seconds WITHOUT depressing the brake pedal.

18.3 Select SEQ Programming Sequence Battery Energy Control Module (K15) Hybrid Powertrain Control Module 2 (K114B) from the Supported Controllers screen. Refer to *Module Programming Table* for module programming order and module description information.

18.4 Follow the on-screen instructions.

Caution: The Coolant level will drop below reservoir during this process. If it does, do not break vacuum, but use the Vac-N-Fill equipment to fill the reservoir. Next, re-establish the 15 in Hg vacuum for the remainder of the fill procedure. You may have to fill the reservoir several times during this procedure to prevent a low coolant condition, which will induce air into the system. If at the end of the procedure, the fluid level is below the reservoir, fill the reservoir and repeat the MDI/GDS Hybrid/EV Battery Pack Coolant Pump Bleed Procedure.

19. Run MDI/GDS “Hybrid/EV Battery Pack Coolant Pump Bleed Procedure” test **while maintaining the 15 in Hg vacuum throughout** the process. This procedure will take about an hour to complete.

19.1 Adjust (remove or add) coolant level to max fill line.

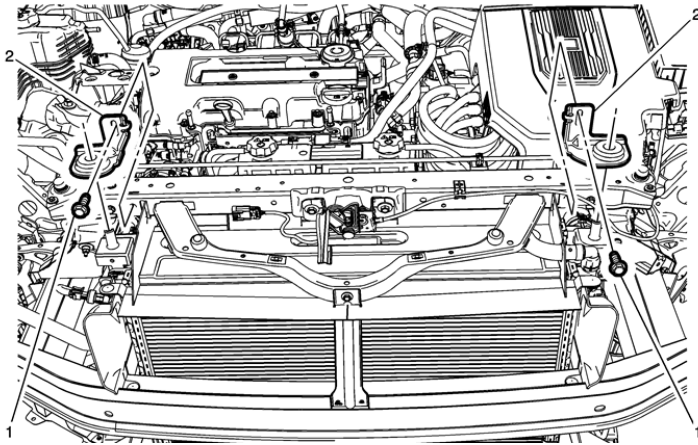
19.2 Remove reservoir overflow port cap.

19.3 Install overflow tubing and reservoir cap.

20. Clear diagnostic codes (DTCs) if necessary.

21. Disconnect the low voltage battery charger.

22. Turn vehicle off.



23. Reinstall radiator mounts (2). Tighten bolts to 22 Nm (16 lb -ft)

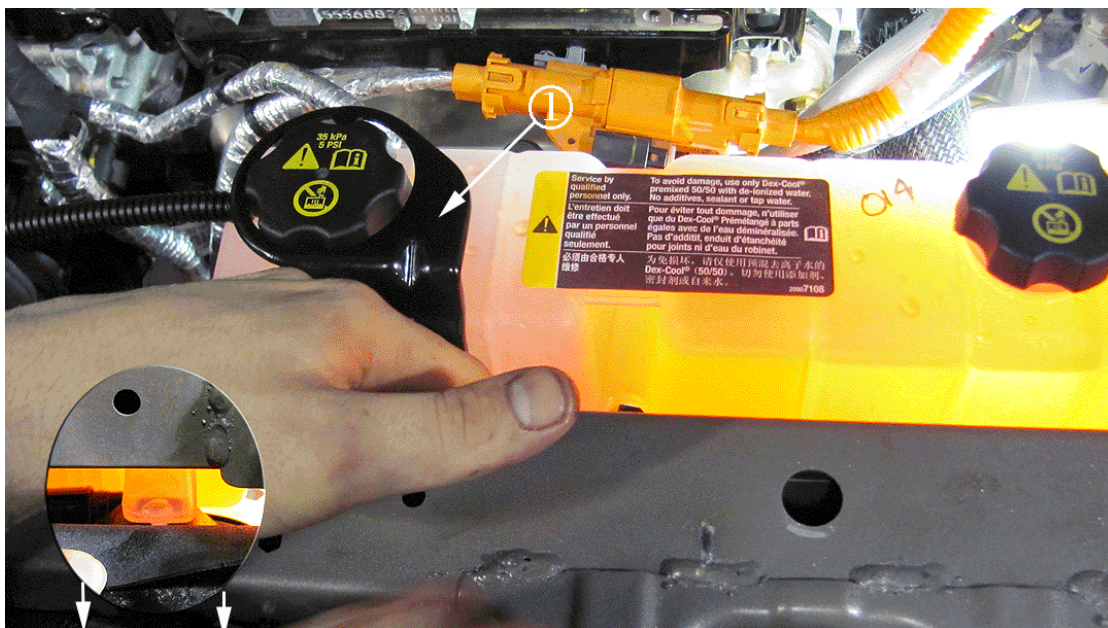
24. Reinstall windshield washer filler tube.

24. Reinstall engine/intake cover.

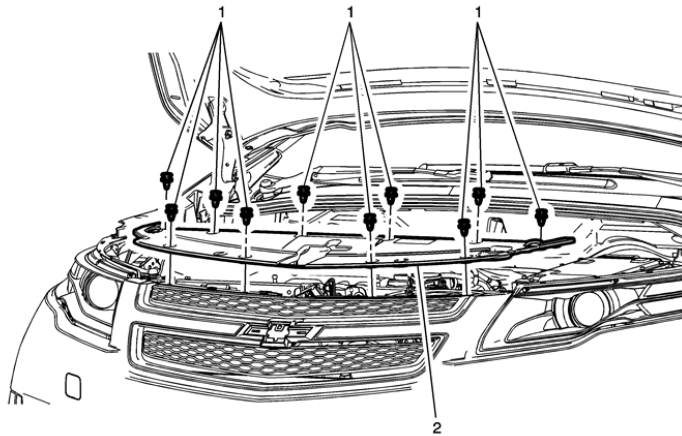
25. Reconnect A/C refrigerant pressure sensor connector.

26. Road test the vehicle in Mountain Mode with the vehicle in Low Gear for approximately 5 miles (8 km). When performing the 5 mile (8 km) mile drive cycle, drive vehicle in slalom (side to side motion) to purge any remaining air.

27. Re-check coolant level. Ensure it is at the max fill line.



28. Install locking bracket (1) on vehicle right side reservoir securing the bracket and the reservoir with the bolt provided in the kit. Tighten bolt from front side of tie bar.



- 29. Reinstall front compartment sight shield.
- 29. Wash the vehicle.
- 30. Check tire pressure. Add air to tires if required.
- 31. Fully charge the high-voltage battery before returning the vehicle to the customer.

COURTESY TRANSPORTATION – For US and Canada

The General Motors Courtesy Transportation program is intended to minimize customer inconvenience when a vehicle requires a repair that is covered by the New Vehicle Limited Warranties. The availability of courtesy transportation to customers whose vehicles are within the warranty coverage period and involved in a product program is very important in maintaining customer satisfaction. Dealers are to ensure that these customers understand that shuttle service or some other form of courtesy transportation is available and will be provided at no charge. Dealers should refer to the General Motors Service Policies and Procedures Manual for Courtesy Transportation guidelines.

WARRANTY TRANSACTION INFORMATION

Submit a transaction using the table below.

Labor Code	Description	Labor Time	Net Item
V----	Install Battery Reinforcement Brkt, Coolant Sensor, Coolant Tank	8.0	*
T----	Battery Charge, Tire Inflate, & Vehicle Wash	0.7	N/A

* The amount identified in "Net Item" should represent the actual cost of the 4 drill bits and adhesive (plus shipping) required to perform the repair, not to exceed \$78.00 USD, \$81.86 CAD.

CUSTOMER NOTIFICATION – For US and Canada

General Motors will notify customers of this program on their vehicle (see copy of customer letter included with this bulletin).

CUSTOMER NOTIFICATION – For Export

Letters will be sent to known owners of record located within areas covered by the US National Traffic and Motor Vehicle Safety Act. For owners outside these areas, dealers should notify customers using the attached sample letter.

DEALER PROGRAM RESPONSIBILITY

All unsold new vehicles in dealers' possession and subject to this program must be held and inspected/repaired per the service procedure of this program bulletin before customers take possession of these vehicles.

Dealers are to service all vehicles subject to this program at no charge to customers, regardless of mileage, age of vehicle, or ownership, from this time forward.

Customers who have recently purchased vehicles sold from your vehicle inventory, and for which there is no customer information indicated on the involved vehicle listing, are to be contacted by the dealer. Arrangements are to be made to make the required correction according to the instructions contained in this bulletin. A copy of the customer letter is provided in this bulletin for your use in contacting customers. Program follow-up cards should not be used for this purpose, since the customer may not as yet have received the notification letter.

In summary, whenever a vehicle subject to this program enters your vehicle inventory, or is in your facility for service in the future, you must take the steps necessary to be sure the program correction has been made before selling or releasing the vehicle.



February 2012

Dear Volt Owner:

As you are aware, General Motors has been working with the National Highway Traffic Safety Administration (NHTSA) to determine the cause of a post-crash electrical fire that occurred after NHTSA crash tested a Chevrolet Volt.

The 2011 and 2012 model year Chevrolet Volt vehicles passed all Motor Vehicle Safety Standards. A vehicle inspection following a side pole test, however, indicated that the vehicle experienced structural intrusion of approximately 50 mm into the battery, which may rupture the coolant line causing coolant leakage. If a vehicle with a leaking coolant system was left on its side or in an inverted position for an extended period of time, the coolant could flow onto the battery electronic controls on top of the battery pack. If the battery pack had not been depowered, after several days (at least 6 and likely much longer), a short circuit may occur and result in a vehicle fire.

This letter is to inform you that we are now ready to implement our solution to this issue. We are announcing a Customer Satisfaction Program to enhance your vehicle's structural integrity and battery coolant system. This will improve battery pack protection after a severe crash.

Your Chevrolet dealer will add a reinforcement bracket to further protect the battery pack in a severe side collision, add a sensor in the reservoir of the battery coolant system to monitor the coolant level, and add a tamper-resistant bracket to the top of the battery coolant reservoir to help prevent potential coolant overfills. Of course, this service will be performed for you at no charge.

To limit any possible inconvenience, we recommend that you contact your dealer as soon as possible to schedule an appointment for this modification. By scheduling an appointment, your dealer can ensure that the necessary parts will be available on your scheduled appointment date. Upon request, your dealer will also provide you with shuttle service or some other form of courtesy transportation while your vehicle is at the dealership for this modification.

If you have any questions that your dealer is unable to answer, please contact your Volt advisor. The contact information is 877-4-VOLT-INFO (877-486-5846) or Voltda101@gmexpert.com.

We sincerely regret any inconvenience or concern that this situation may cause you. We want you to know that we will do our best, throughout your ownership experience, to ensure that your Chevrolet Volt provides you many miles of enjoyable driving.

Jim Moloney
General Director,
Customer and Relationship Services


PE11-037

GM

1-13-2012

ATT_1, Q_07

Emergency Response

Electric Vehicle Safety Training is a project of the National Fire Protection Association 



Chevrolet

As part of its Electric Vehicle Safety Training project, the National Fire Protection Association (NFPA) is working with General Motors and Chevrolet to help prepare the nation's fire service and other first responders for the growing number of electric vehicles on the road.



Chevrolet is a global automotive brand, with annual sales of about 3.5 million vehicles in more than 130 countries. **OnStar**, a wholly-owned subsidiary of General Motors, is the leading provider of in-vehicle safety, security and communication services.

Online training now available: NFPA, Chevrolet, and OnStar have launched [online Electric Vehicle Safety Training for the 2011 Chevrolet Volt](#), an extended-range electric vehicle that hit the roads last fall. The training features an inside look at the vehicle's technology and safety systems. [Online safety training for the Chevy Volt.](#)

Downloadable materials from Chevrolet

- [Chevrolet Volt Emergency Response Guide](#) (PDF, 2 MB)
- [Chevrolet Volt Emergency Responder Quick Reference Page Training Class Reference](#) (PDF, 8 MB)
- [Chevrolet Volt Emergency Responder Quick Reference Guide](#) (PDF, 601 KB)
- [General Motors High Strength Steel Reference Guide](#) (PDF, 674 KB)

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Funded with a grant from the Department of Energy.

#PIT4610C: (Hybrid) Emergency First Responders Information - keywords 2 2-mode HP2 mode two two-mode - (Aug 23, 2011)

Subject: (Hybrid) Emergency First Responder Information

Models: 2011-2012 Chevrolet Volt

2009-2011 Cadillac Escalade

2008-2011 Chevrolet Tahoe Hybrid

2008-2011 GMC Yukon Hybrid

2009-2011 Chevrolet Silverado Hybrid

2009-2011 GMC Sierra Hybrid

with Two-Mode Hybrid System (RPO HP2)



The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

[Condition/Concern:](#)

Some Emergency Personnel may inquire about First Responder Information as it relates to the Twomode Hybrid Tahoe and Yukon. Emergency Personnel Information is provided to assist First Responders in learning about vehicles and/or systems that may affect how they perform in an emergency situation.

[Recommendation/Instructions:](#)

Most First Responder Guides for GM vehicles can be accessed via the web @ <http://www.gmstc.com> and selecting the first responder link in the Left lower corner of the page. There you will find the information guide for the Chevrolet Volt, and GMC Yukon & Sierra, Chevrolet Tahoe & Silverado and Cadillac Escalade Two-mode vehicles as well as other GM hybrid vehicles.

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



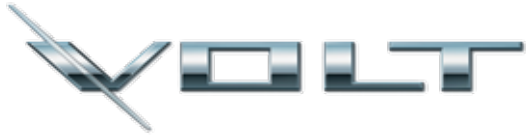
WE SUPPORT
VOLUNTARY
TECHNICIAN
CERTIFICATION

Chevrolet Volt

Quick Reference Sheet

Vehicle Identification

The Chevrolet Volt badging is one method of identifying the vehicle. The vehicle's logo is located on the right-front and left-front fenders as well as the deck lid.



A unique Liquid Crystal Display (LCD) instrument panel cluster assists in identifying the Chevrolet Volt.

Instrument Panel Cluster

Energy Display



High Voltage Cables - DO NOT CUT ZONES

DANGER: Do NOT cut the orange high voltage 360 volt cables. Cutting these cables can result in serious injury or death. No matter what disable method you have performed, always assume the high voltage cables and components contain high voltage.



Vehicle - DO NOT CUT ZONES

DO NOT CUT HERE. Side curtain air bags and lift gate hold open struts.



DO NOT CUT HERE. The Volt battery has 360 volt electrical potential at all times. It is inside the center tunnel and under the rear seat area.

Do NOT cut the:

- Front seat back on the outboard area, contains side air bags.
- B pillar near the rocker, contains the seat belt pretensioner.
- Outboard area of the front seat lower frame, houses an additional seat belt pretensioner.

WARNING: Do NOT cut into the vehicle until the 12V electrical system has been disabled. Cutting into the vehicle prior to disconnecting and isolating the 12V electrical energy sources may cause air bag deployment resulting in serious injury.

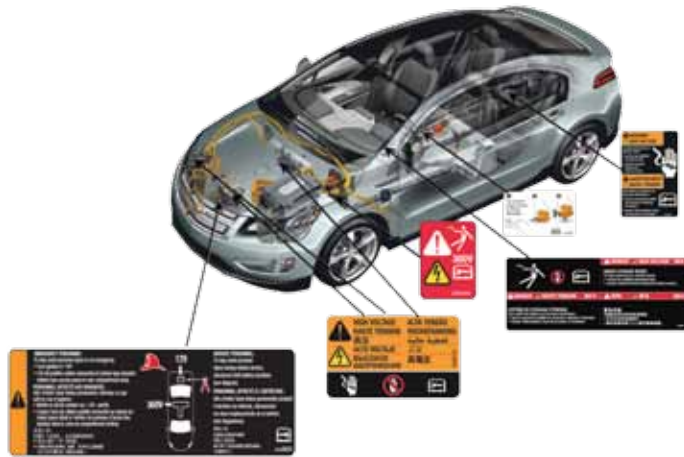
GM Service Technical College provides this QR free of charge to First Responders. This sheet can be displayed in a classroom as long as it is represented as GM information and is not modified in any way.

For information regarding modification of GM's First Responder Information for other uses, contact GM's Licensing Manager at: GM Licensing Program Headquarters • 5775 Enterprise Ct. • Warren, MI 48092 • Attn: Licensing Coordinator

High Voltage Labels

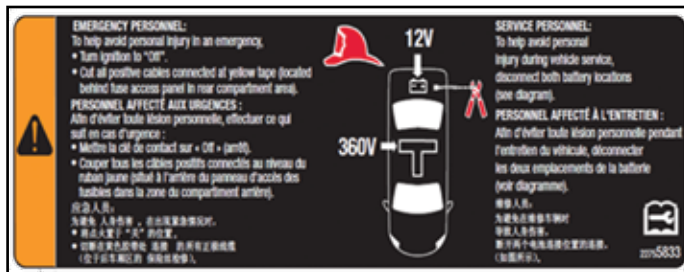
The Chevrolet Volt features a series of high voltage labels that enable quick identification of potential electrical hazards. The labels are attached on each high voltage component.

The labels are color coded to indicate the potential high voltage state



High Voltage Labels

The emergency / service personnel warning label is affixed at the front of the engine compartment and provides specific procedures for emergency personnel.



High Voltage Labels

The high voltage danger labels are red and indicate that high voltage is present at all times. These labels are located on the high voltage battery.



High Voltage Labels

The high voltage warning labels are orange and indicate a potential shock hazard if high voltage is not properly disabled. The labels are located on all high voltage components with the exception of the high voltage battery which utilizes the danger label.



High Voltage Labels & First Responder Tags

The First Responder cable cut tag is wrapped around the low voltage positive battery cable and is located in the rear compartment behind the fuse panel door. To help ensure that low voltage is not holding the high voltage contactors closed, cut the cable before any extrication work is performed.



The Volt has labels to help First Responders safely disable the vehicle in an emergency situation. The cable cut tag is yellow and wraps around the low voltage positive cable to indicate where emergency personnel must cut the cable.



To Disable the 12V Power

1. Press the Start button on the center instrument panel to turn OFF the ignition.
2. Cut the 12V positive battery cable at the yellow tag cut position. The cable is identified by the yellow First Responder tag. The tag is located behind the left rear closeout panel in the rear compartment of the vehicle.

Note: After disabling 12V power, wait 1 minute to allow any un-deployed air bag reserve energy to dissipate.

Important:

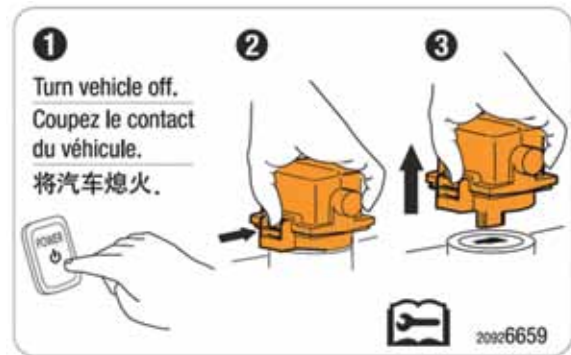
Cut through the red positive low voltage cable on each side of the tag to remove a section of the cable to ensure they cannot inadvertently reconnect.



Disabling a Volt

The Manual Service Disconnect (MSD) may also be removed to further ensure the high voltage system is disabled within the battery. The MSD physically interrupts the high voltage cables internal to the battery. There is a label that illustrates the removal of the MSD which is located underneath the center console box.

Note: There is high voltage in the battery even if the MSD is removed.



Charging System

In the event a Volt is involved in an incident while the battery charger is plugged in for charging the battery, remove the charge cord from the car using the charger cord handle at the charge port in the left front fender. If that cannot be accomplished, the electrical power to the charge cord should be terminated at the source.



High Strength Steel

The Volt has been designed to protect the occupant(s) during a collision. The body structure is nearly 80% high strength steel. The occupant 's are protected from front, rear and side impacts by a structural cage created by the underlying vehicle structural design. Additional crumple zones protect the occupant with front, side and rear rails that are designed to crush in a crash.



First Responder Field Scenarios

Standard Operating Procedures:

Size-Up, Approach, Immobilize, Extinguish



Vehicle on Fire

✓ **NO** increased risk to first responders



Vehicle Immersion in Water

✓ **NO** increased risk of shock hazard

High Voltage Disconnect Procedure

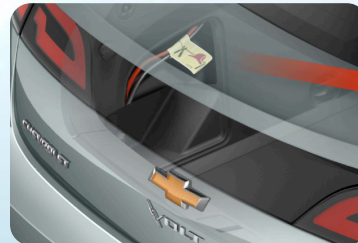
1 Turn Vehicle OFF
(push Start/Stop button – gauges turn off)



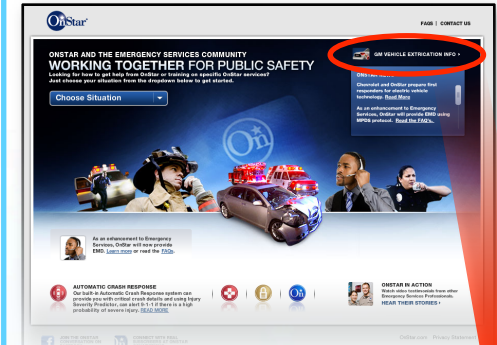
2 Access 12V Cut Locations
(left side of trunk)



3 Cut and Remove Section of 12V Cable



Resources/Information



www.onstar.com/publicsafety



www.gmstc.com



www.evsaftytraining.org

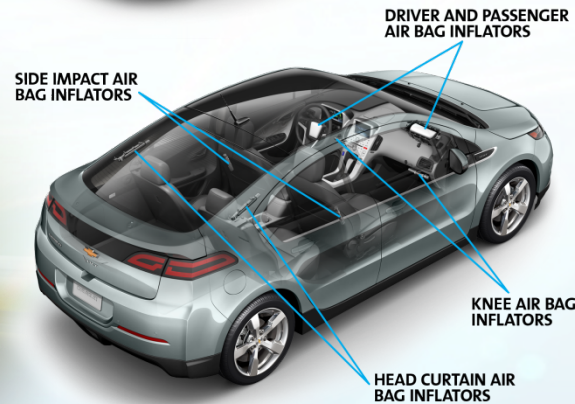
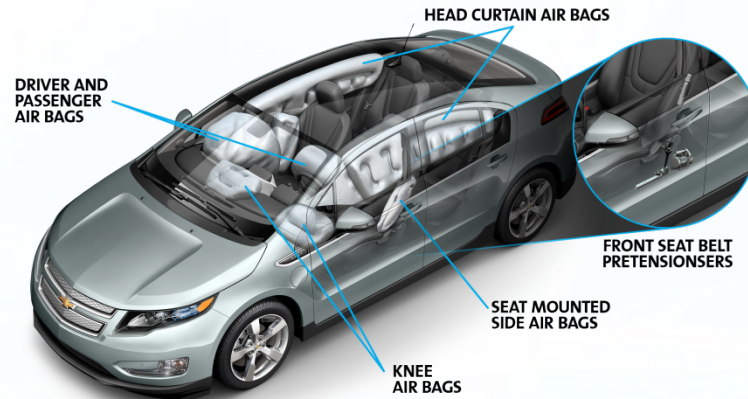
Sealed Battery Pack, Electrically Isolated System



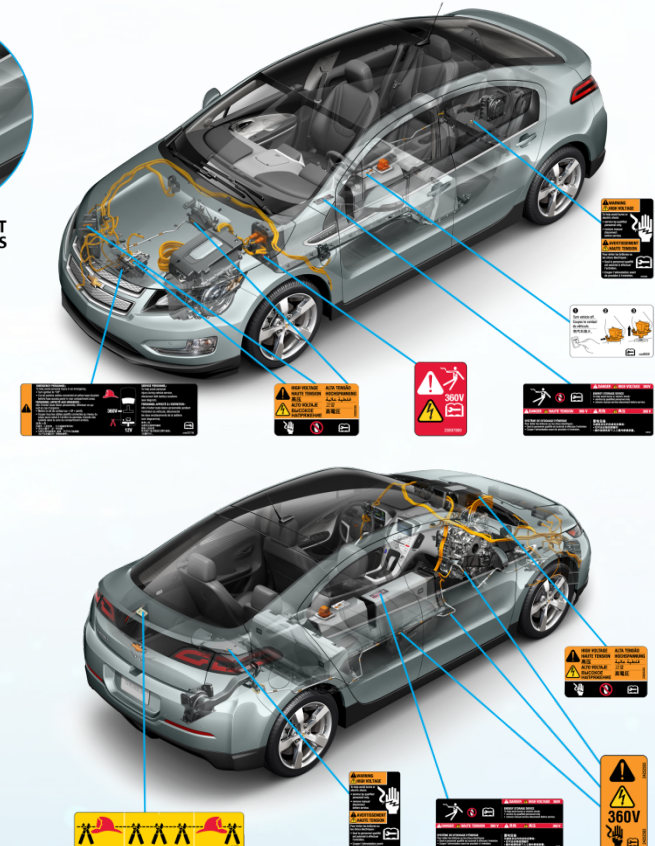
HIGH STRENGTH STEEL



AIR BAG & INFLATOR LOCATIONS



HIGH VOLTAGE LABELS



2011 Chevrolet Volt

Emergency Response Guide



GM Service Technical College provides First Responder Guides (FRG) and Quick Reference (QR) Sheets *free of charge* to First Responders. FRGs and QRs can be displayed in a classroom as long as they are represented as GM information and are not modified in any way.

The intent of this guide is to provide information to help you respond to emergency situations involving Chevrolet Volt vehicles in the safest manner possible. This guide contains a general description of how the Chevrolet Volt vehicle systems operate, identifies the location of the unique badging, and includes illustrations of the unique components. The guide also describes methods of disabling the high voltage system and identifies cut zone information.



The Chevrolet Volt is a front-wheel drive, four-passenger electric vehicle with extended-range capability. The vehicle is propelled exclusively by electric motors. The Volt uses high voltage energy that is stored in the high voltage battery as its primary power source. However, once the battery capacity is reduced, the gasoline engine drives a generator which produces electricity to power the vehicle.

Vehicle Identification

The Chevrolet Volt badging is one method of identifying the vehicle. The vehicle's logo is located on the right-front and left-front fenders as well as the deck lid.



Vehicle Identification (continued)

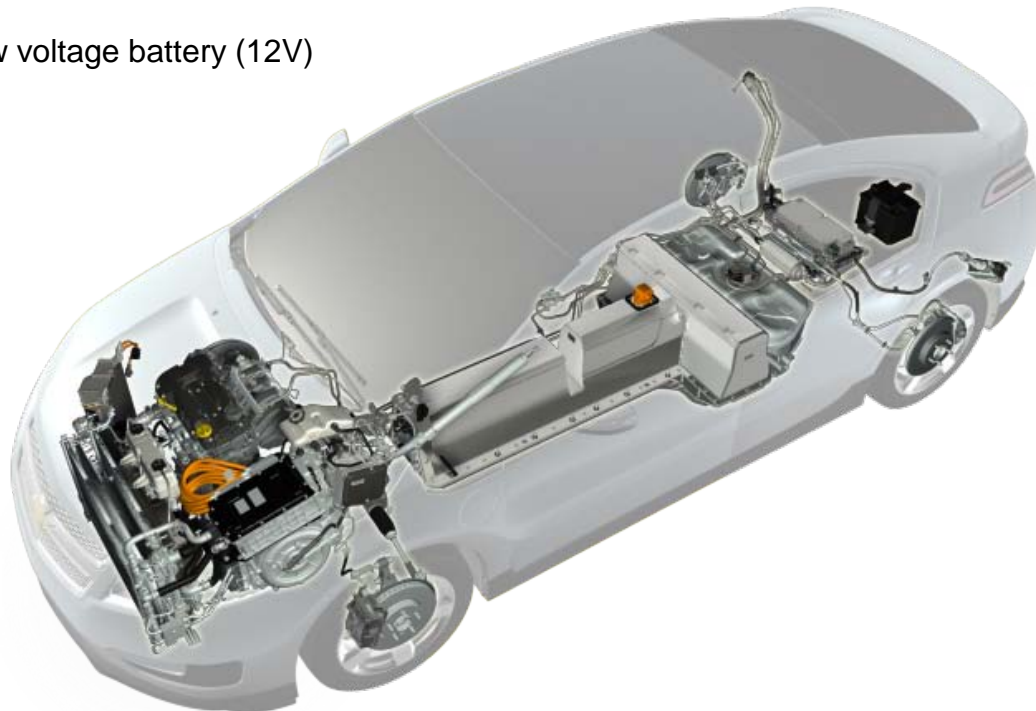
A unique Liquid Crystal Display (LCD) instrument panel cluster assists in identifying the Chevrolet Volt.



System Components

The Chevrolet Volt propulsion system is composed of the following components and systems:

- High voltage battery
- Absorbent Glass Mat (AGM) low voltage battery (12V)
- Power inverter module
- Accessory power module
- High voltage battery charger
- 1.4 Liter Engine
- 4ET50 transmission



High and Low Voltage Batteries

The high voltage battery, also known as the drive motor battery, is a system of many components that operate together to provide the energy required for vehicle propulsion. High voltage contactors, internal to the battery pack, turn on and off to control the output of the high voltage battery.



High Voltage Battery

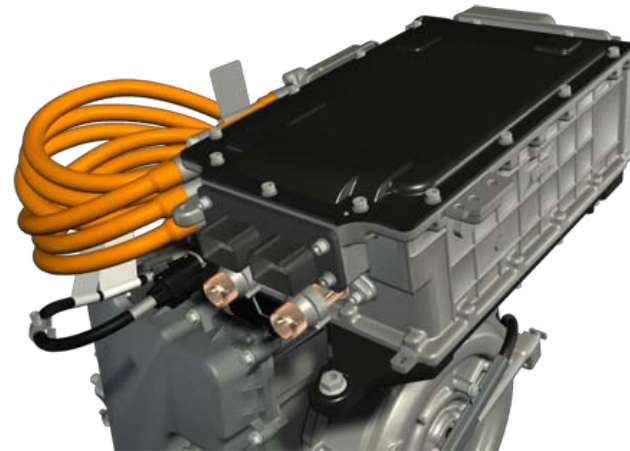
The Chevrolet Volt's low voltage system (12V) utilizes an AGM lead acid battery. The battery is located in the rear compartment underneath the load floor. The low voltage energy is utilized by vehicle modules to control the high voltage battery contactors. Severing the low voltage cables should cause the system to open the contactors. The low voltage (12V) cable cut location is found behind the left rear closeout panel in the rear compartment of the vehicle.



Low Voltage AGM Battery

Power Electronics

The power inverter module is located on the drivers side of the engine compartment and is mounted on top of the transmission. The module changes the high voltage direct current into 3 phase alternating current. This 3-phase electrical energy is provided to the motors within the transmission for vehicle propulsion.



Power Inverter Module



Accessory Power Module

The accessory power module is located in the rear compartment beneath the load floor. The module replaces the belt-driven generator common to conventional vehicles. The module converts high voltage DC electrical energy into low voltage DC electrical energy to provide the energy needed for the vehicle systems.

Charging System

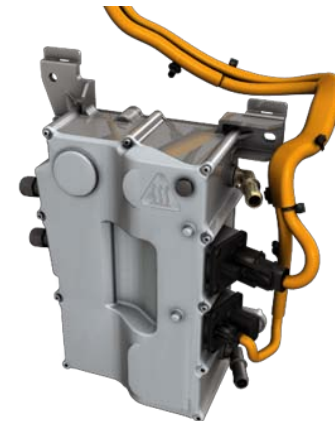
The Chevrolet Volt features an onboard high voltage charging system that recharges the high voltage battery. The system utilizes a unique cord to connect the vehicle to an electrical receptacle. The charger is located behind the passenger headlamp assembly and bumper fascia. The charger converts household AC into DC voltage to charge the onboard battery.

The vehicle charge port provides the interface between the cords, plug, and the charger.

In the event a Volt is involved in an incident while the battery charger is plugged in for charging the battery, remove the charge cord from the car using the charger cord handle at the charge port in the left front fender. If that cannot be accomplished, the electrical power to the charge cord should be terminated at the source.



Vehicle Charge Port



High Voltage Charger

Powertrain



The 4ET50 transmission is a fully automatic, front-wheel drive transaxle, variable-speed, electronic controlled transmission. The transmission contains two electric motor / generators that are utilized to:

- Propel the vehicle
- Generate / recapture energy
- Start the internal combustion engine

The Chevrolet Volt uses an internal combustion 1.4L engine. The engine does not directly propel the vehicle, but operates only to spin the drive motor / generator.

System Operation

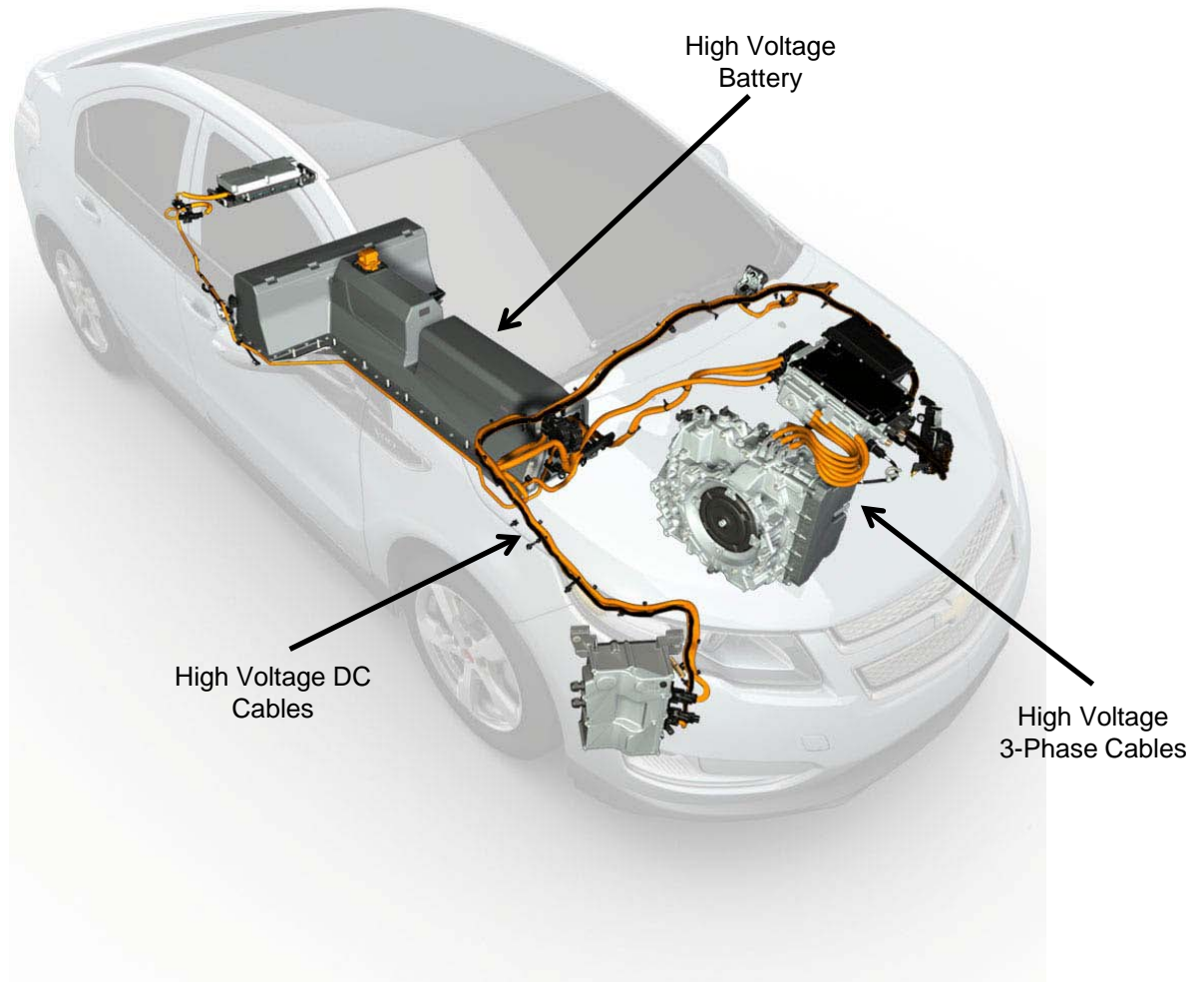
The Chevrolet Volt is an Extended Range Electric Vehicle (EREV) that uses an electric propulsion system to drive the vehicle. Stored electrical energy is used in electric mode to propel the vehicle. The vehicle operates up to 64 kilometers (km) or 40 miles (mi) until the battery has reached a low state of charge. Once the stored electrical energy is reduced, the vehicle automatically enters extended-range mode. The gasoline engine drives the generator which produces electricity for vehicle propulsion.



System Operation (continued)

There are two separate electrical systems, low voltage and high voltage. The low voltage system is similar to a conventional vehicle. The high voltage electrical system distributes 360 volts Direct Current (DC) between the high voltage components and 3-phase Alternating Current (AC) to the transmission.

The high voltage cables are orange in color to easily identify the potential existence of high voltage. High voltage cables that are routed through non-orange conduit are identified with high voltage warning labels.

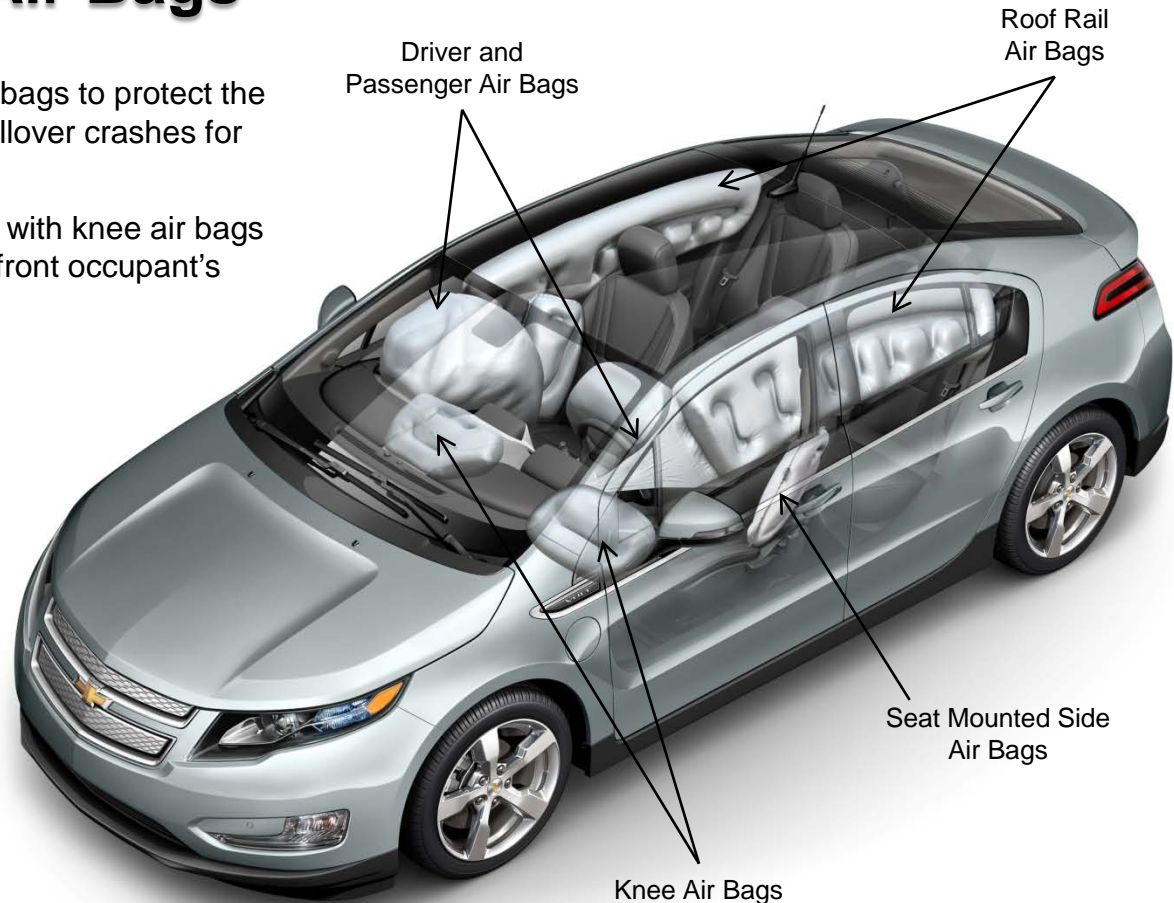


Chevrolet Volt Air Bags

The Volt is equipped with eight air bags to protect the occupant in front, rear, side and rollover crashes for 360° of protection.

The Volt is one of the few vehicles with knee air bags which helps reduce injuries to the front occupant's legs.

There are dual pretensioner seatbelts that work together with the air bag system to protect the occupant in the event of a crash.



Air Bag Deployment

The contactors within the high voltage battery are commanded open whenever one or more airbags deploy. This interrupts the 360 volt electrical system and discontinues current flow through the high voltage cables.

This vehicle is equipped with dual-stage air bags and the appearance of deployed air bags does not ensure all stages of the air bags have deployed.

Therefore, disabling 12 volt power is essential to ensure personal safety even if the airbags in the vehicle appear to have been deployed. After disabling 12 volt power, wait 1 minute to allow any un-deployed air bag reserve energy to dissipate.



DC Voltage Classifications

Chevrolet Volt vehicles use 360 volts which may be higher than you have encountered - they **MUST** be approached with caution.



Voltage Classifications

The Chevrolet Volt has two voltage levels:

- **Low voltage** – from 0 to 30 volts DC or 0 to 15 volts AC
- **High voltage** – any voltage greater than 60 volts DC or 30 volts AC

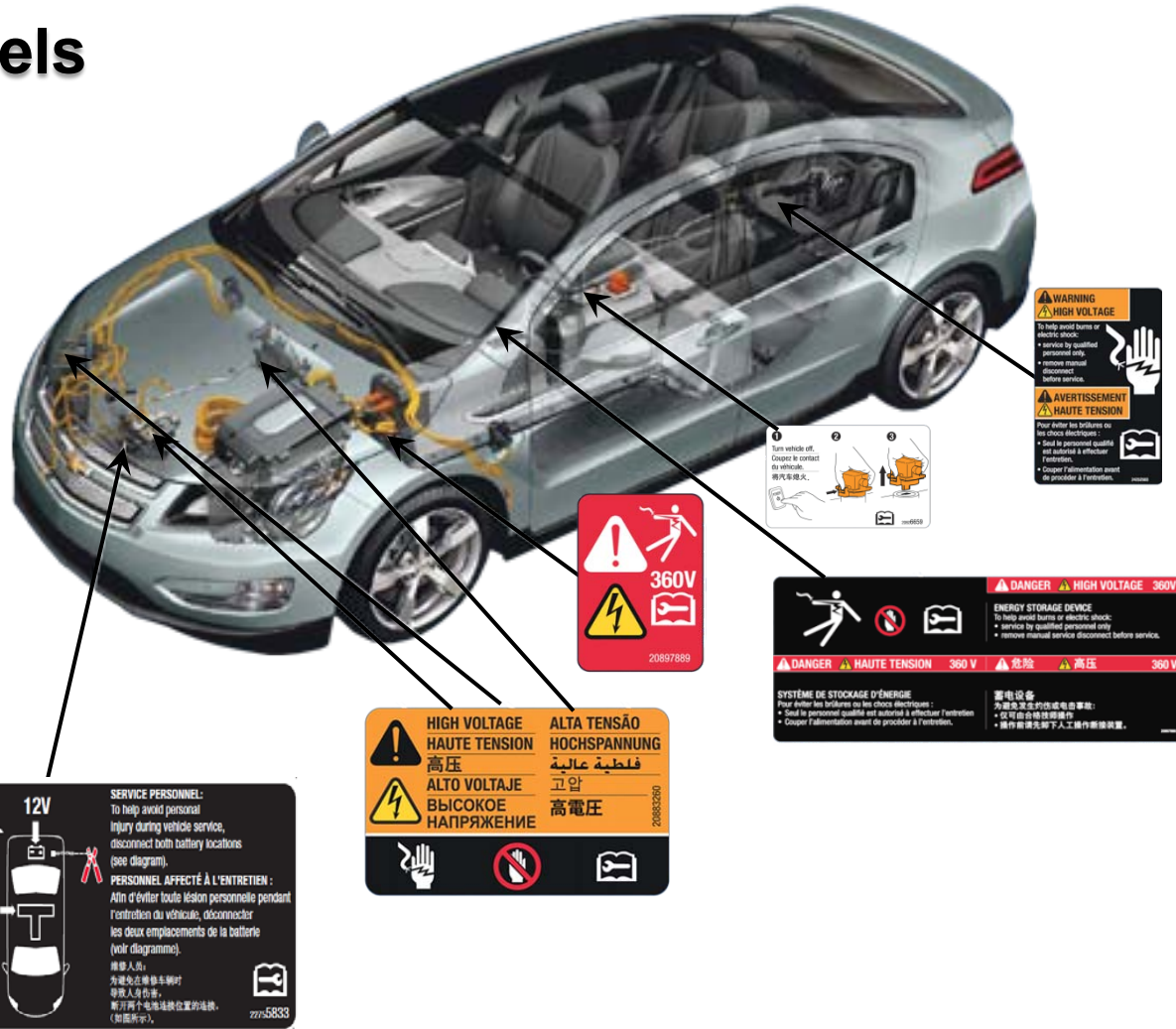
Classification	Low Voltage	High Voltage
Voltage Ranges	DC ≤ 30v AC ≤ 15v	DC > 60v AC > 30v RMS

Color coding identifies the different levels. Orange identifies high voltage cables.

High Voltage Labels

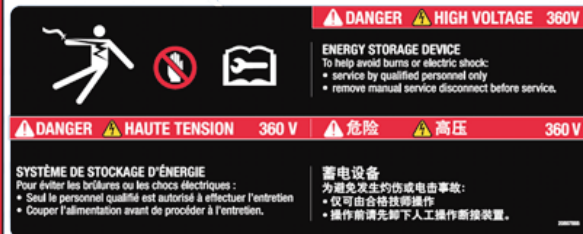
The Chevrolet Volt features a series of high voltage labels that enable quick identification of potential electrical hazards. The labels are attached on each high voltage component.

The labels are color coded to indicate the potential high voltage state



High Voltage Labels

The emergency / service personnel warning label is affixed at the front of the engine compartment and provides specific procedures for emergency personnel.



The high voltage warning labels are orange and indicate a potential shock hazard if high voltage is not properly disabled. The labels are located on all high voltage components with the exception of the high voltage battery which utilizes the danger label.

EMERGENCY PERSONNEL:
To help avoid personal injury in an emergency,
• Turn Ignition to "Off".
• Cut all positive cables connected at yellow tape (located behind fuse access panel in rear compartment area).

PERSONNEL AFFECTÉ AUX URGENCES :
Afin d'éviter toute lésion personnelle, effectuer ce qui suit en cas d'urgence :
• Mettre la clé de contact sur « Off » (arrêt).
• Couper tous les câbles positifs connectés au niveau du ruban jaune (situé à l'arrière du panneau d'accès des fusibles dans la zone du compartiment arrière).

应急人员：
为避免人身伤害，在出现紧急情况时，
• 将点火置于“关”的位置。
• 切断在黄色胶带处连接的所有正极线缆（位于后车厢区的保险丝检修）。

SERVICE PERSONNEL:
To help avoid personal injury during vehicle service, disconnect both battery locations (see diagram).

PERSONNEL AFFECTÉ À L'ENTRETIEN :
Afin d'éviter toute lésion personnelle pendant l'entretien du véhicule, déconnecter les deux emplacements de la batterie (voir diagramme).

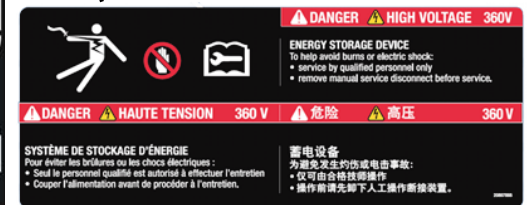
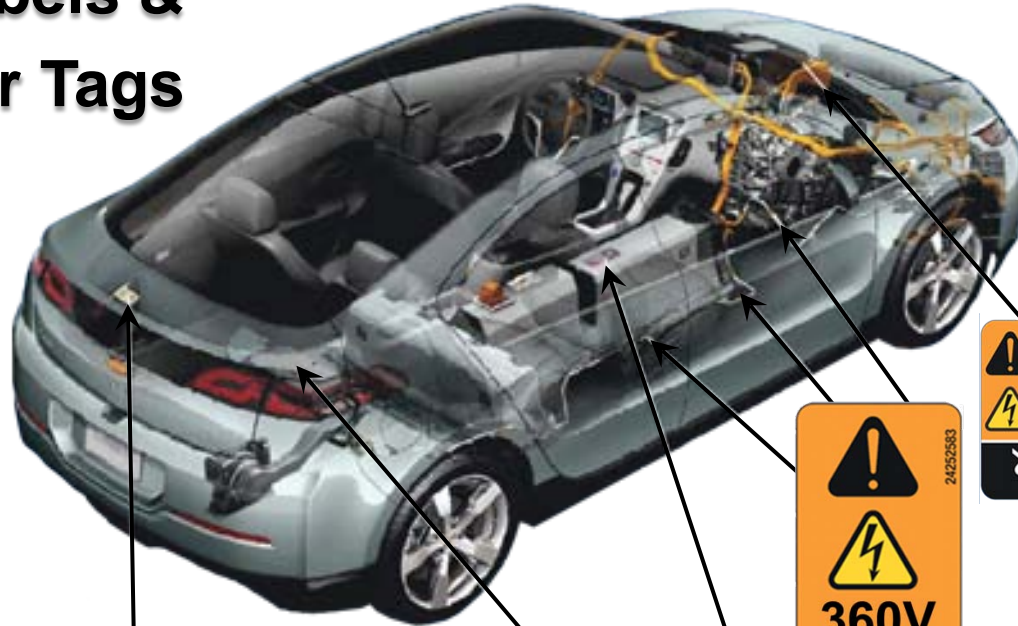
维修人员：
为避免在维修车辆时导致人身伤害，
断开两个电池连接位置的连接。
(如图所示)。

22755833

The high voltage danger labels are red and indicate that high voltage is present at all times. These labels are located on the high voltage battery.

High Voltage Labels & First Responder Tags

The First Responder cable cut tag is wrapped around the low voltage positive battery cable and is located in the rear compartment behind the fuse panel door. To help ensure that low voltage is not holding the high voltage contactors closed, cut the cable before any extrication work is performed.



First Responder Labels

GM has implemented the labels shown here to help First Responders safely disable the vehicle in an emergency situation. The cable cut tag is yellow and wraps around the low voltage positive cable to indicate where emergency personnel must cut the cable.



Important:

Cut through the red positive low voltage cable on each side of the tag to remove a section of the cable to ensure the cables cannot inadvertently reconnect.

To Disable the 12V Power

1. Press the Start button on the center instrument panel to turn OFF the ignition.
2. Cut the 12V positive battery cable at the yellow tag cut position. The cable is identified by the yellow First Responder tag. The tag is located behind the left rear closeout panel in the rear compartment of the vehicle.



Note: After disabling 12V power, wait 1 minute to allow any un-deployed air bag reserve energy to dissipate.

Important:

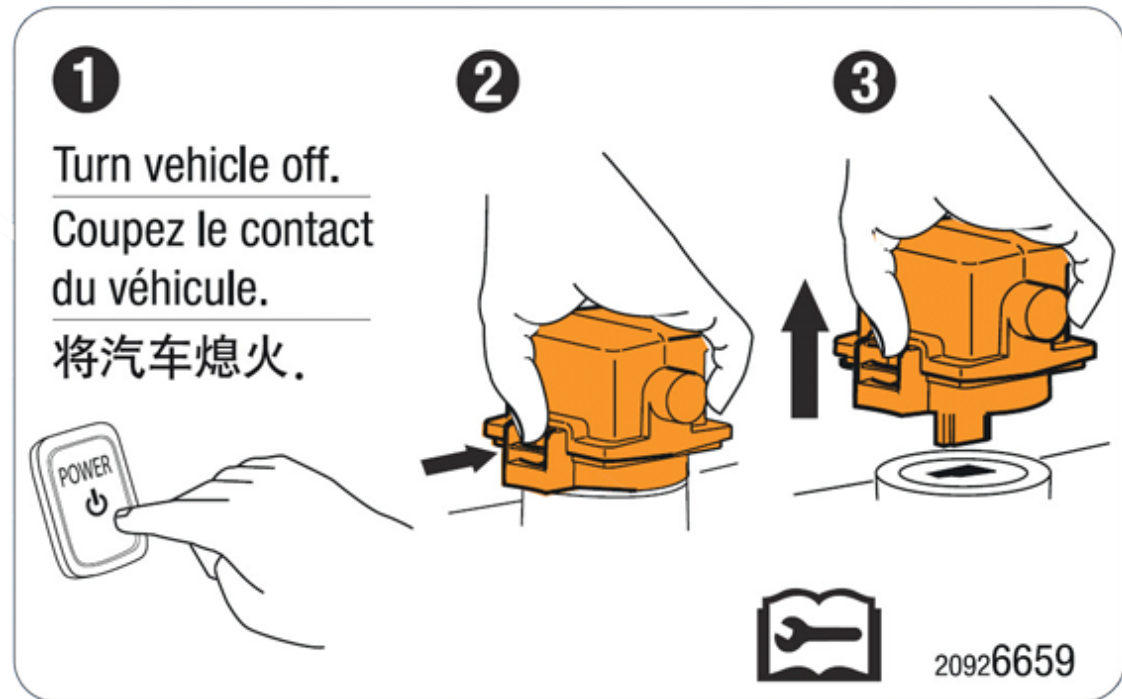
Cut through the red positive low voltage cable on each side of the tag to remove a section of the cable to ensure they cannot inadvertently reconnect.



Disabling a Volt

The Manual Service Disconnect (MSD) may also be removed to further ensure the high voltage system is disabled within the battery. The MSD physically interrupts the high voltage cables internal to the battery. There is a label that illustrates the removal of the MSD which is located underneath the center console box.

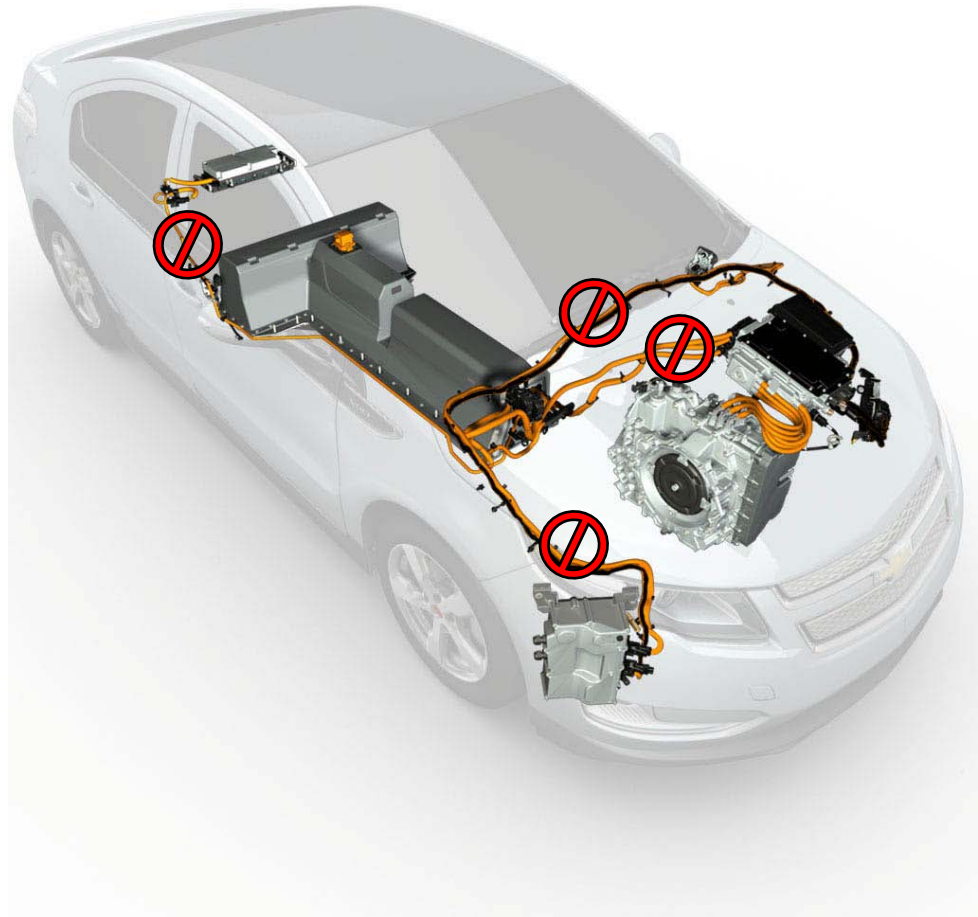
Note: There is high voltage in the battery even if the MSD is removed.



High Voltage Cables - DO NOT CUT ZONES

The high voltage cables in the Chevrolet Volt are highly protected and should not interfere with any extraction procedures. However, performing the disabling procedure prior to work eliminates electrical current flow through the 12 volt system and disables the high voltage electrical system, external to the 360V battery. No further action is required.

DANGER: Do NOT cut the orange high voltage 360 volt cables. Cutting these cables can result in serious injury or death. No matter what disable method you have performed, always assume the high voltage cables and components contain high voltage.



Vehicle DO NOT CUT ZONES

Do NOT cut the:

- Center tunnel area or the area under the rear seats. The 360 volt battery is installed in this area.
- Roof rails near the lift gate hinge. Side curtain air bag inflators and lift gate hold open struts are located in this area
- Front seat back on the outboard area, contains side air bags.
- B pillar near the rocker, contains the seat belt retractor pretensioner. Note: The outboard area of the front seat lower frame houses an additional seat belt pretensioner.

WARNING: Do NOT cut into the vehicle until the 12V electrical system has been disabled. Cutting into the vehicle prior to disconnecting and isolating the 12V electrical energy sources may cause air bag deployment resulting in serious injury.

DO NOT CUT HERE. Side curtain air bags and lift gate hold open struts.



DO NOT CUT HERE. The Volt battery has 360 volt electrical potential at all times. It is inside the center tunnel and under the rear seat area.

High Strength Steel

The Volt has been designed to protect the occupant(s) during a collision. The body structure is nearly 80% high strength steel. The occupant 's are protected from front, rear and side impacts by a structural cage created by the underlying vehicle structural design.

Additional crumple zones protect the occupant with front, side and rear rails that are designed to crush in a crash.



First Responder Considerations

Approaching a vehicle that is plugged in

Upon arriving at a location with the Volt plugged in for charging, you should first unplug the vehicle. If access to unplug the vehicle is unavailable, “remove charge power” from the vehicle. This can be done by turning off the power to the charge station.

Fire

The battery on fire will not explode. If battery cells reach high enough temperature, they vent and release electrolyte. Battery electrolyte is flammable. Use copious amounts of water to cool the battery and extinguish the fire. ABC dry chemical extinguisher will not extinguish a battery fire.

Water

The high voltage battery is sealed and isolated from the vehicle chassis. If the vehicle is immersed in water, you will not be electrocuted by touching the vehicle.

Locate and review the Lithium-Ion Battery Chemistry Material Safety Data Sheet for more information.



Conclusion

General Motors is committed to making your job as safe as possible.

We are confident the information contained in this guide will prove useful as you prepare to assist those involved in an emergency event.



For information regarding modification of GM's First Responder Information for other uses, contact GM's Licensing Manager at: GM Licensing Program Hdqtrs, 5775 Enterprise Ct. Warren, MI 48092, Attn: Licensing Coordinator

PE11-037

GM

1-13-2012

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Second Responder training as
presented to TRAA

Portland 30SE11

POST CRASH TOW AND STORAGE TRAINING FOR CHEVROLET VOLT



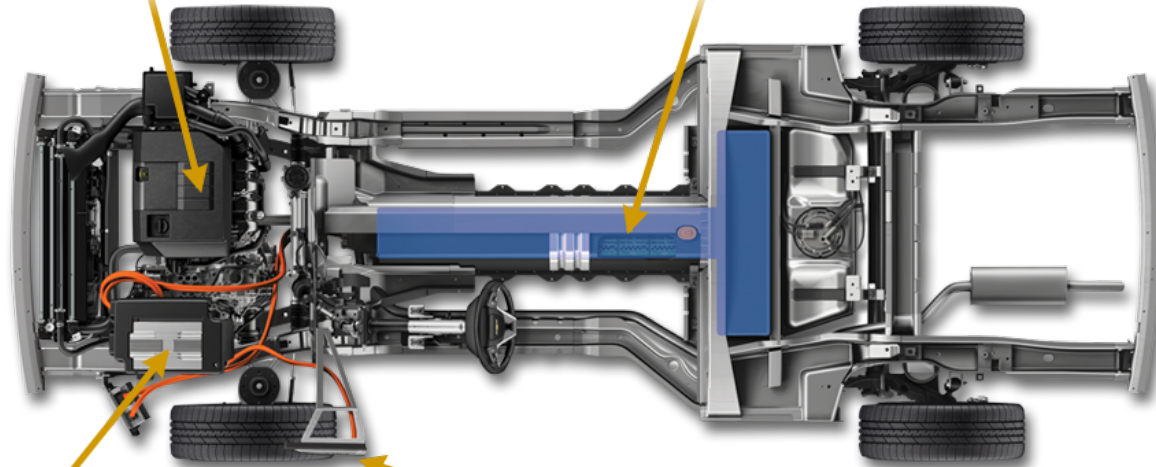
CHEVROLET VOLT POST CRASH TOW/STORAGE TRAINING

- 🔧 Key electrical components on Volt
- 🔧 Safety overview
- 🔧 4-Step safety response to the incident
- 🔧 8-Step proper towing and storage
- 🔧 Clarify fact from fiction
- 🔧 Sources of additional information



Engine Generator

Lithium-Ion Battery



Electric Drive Unit

Charge Port



Key Electrical Components on Volt



SAFETY OVERVIEW

- 🔧 On scene safety
- 🔧 Vehicle labeling
- 🔧 Airbag locations

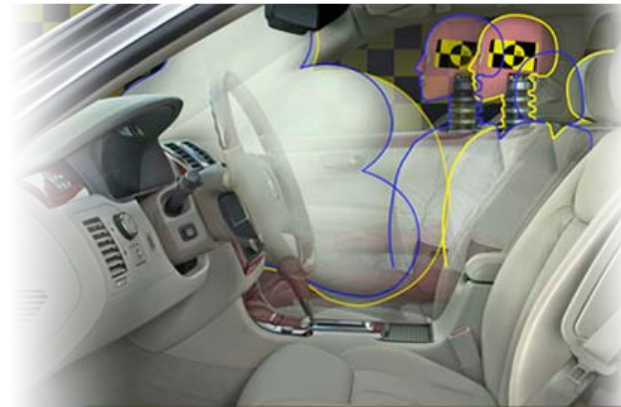
CHEVROLET VOLT CONTINUOUS SAFETY

Protection **Before, During, and After** Vehicle Collisions

Design Safety



Systems to Help Absorb Energy from Impact



Automated Safety



Automati
c
Crash
Respons

Automatic
High Voltage
Shutoff



Fuel Sender
Shutoff



Automatic
Door Unlock

Automatic
Flashers

On Scene Activated Safety After Crash

- ↑ Read important labels
- ↑ Be aware of airbags
- ↑ If vehicle has been in a crash remove Manual Service Disconnect (MSD)
- ↑ Cut 12V Cable if Manual Service Disconnect is not accessible or to disable airbags

Comprehensive Safety

VEHICLE LABELING STRATEGY

Critical Information

EMERGENCY PERSONNEL:
To help avoid personal injury in an emergency,

- Turn ignition to "Off".
- Cut all positive cables connected at yellow tape (located behind fuse access panel in rear compartment area).

PERSONNEL AFFECTE AUX URGENCES :
Afin d'éviter toute lésion personnelle, effectuer ce qui suit en cas d'urgence :

- Mettre la clé de contact sur « Off » (arrêt).
- Couper tous les câbles positifs connectés au niveau du ruban jaune (situé à l'arrière du panneau d'accès des fusibles dans la zone du compartiment arrière).

应急人员：
为避免人身伤害，在出现紧急情况时，

- 将点火置于“关”的位置。
- 切断在黄色胶布处连接的所有正极线缆（位于后车厢区的保险丝检修）。


360V

12V

SERVICE PERSONNEL:
To help avoid personal injury during vehicle service, disconnect both battery locations (see diagram).

PERSONNEL AFFECTÉ À L'ENTRETIEN :
Afin d'éviter toute lésion personnelle pendant l'entretien du véhicule, déconnecter les deux emplacements de la batterie (voir diagramme).

维修人员：
为避免在维修车辆时导致人身伤害，断开两个电池连接位置的连接。（如图所示）。



20965516

Reminder of Location for Cutting 12V Cable



MSD Removal Instructions



HIGH VOLTAGE LABELS

CHEVROLET VOLT

EMERGENCY PERSONNEL:
 To help avoid personal injury in an emergency:
 • Turn ignition to "OFF"
 • Cut all auxiliary cables connected at yellow tape located below knee access panel in rear compartment area.
PERSONNEL AFFECTÉ AUX URGENCES:
 Afin d'éviter toute blessure personnelle, effectuez ce qui suit en cas d'urgence:
 • Mettez le contact sur « OFF » (arrêt).
 • Coupez tous les câbles connectés au niveau de la bande adhésive jaune à l'arrière du compartiment arrière.
 紧急情况时，为帮助避免人员伤亡，请执行以下操作：
 • 将点火开关置于“OFF”位置。
 • 切断后座地板下方膝盖处面板上的黄色胶带处连接的所有辅助电缆。

SERVICE PERSONNEL:
 To help avoid personal injury during vehicle service, disconnect both battery locations (see diagram).
PERSONNEL AFFECTÉ À L'ENTRETIEN:
 Afin d'éviter toute blessure personnelle pendant l'entretien du véhicule, déconnectez les deux emplacements de la batterie (voir diagramme).
 为帮助避免维修车辆时的人身伤害，请断开两个蓄电池位置（参见示意图）。
 服务人员

1 Turn vehicle off.
 Coupez le contact du véhicule.
 将汽车熄火。

2 **3**

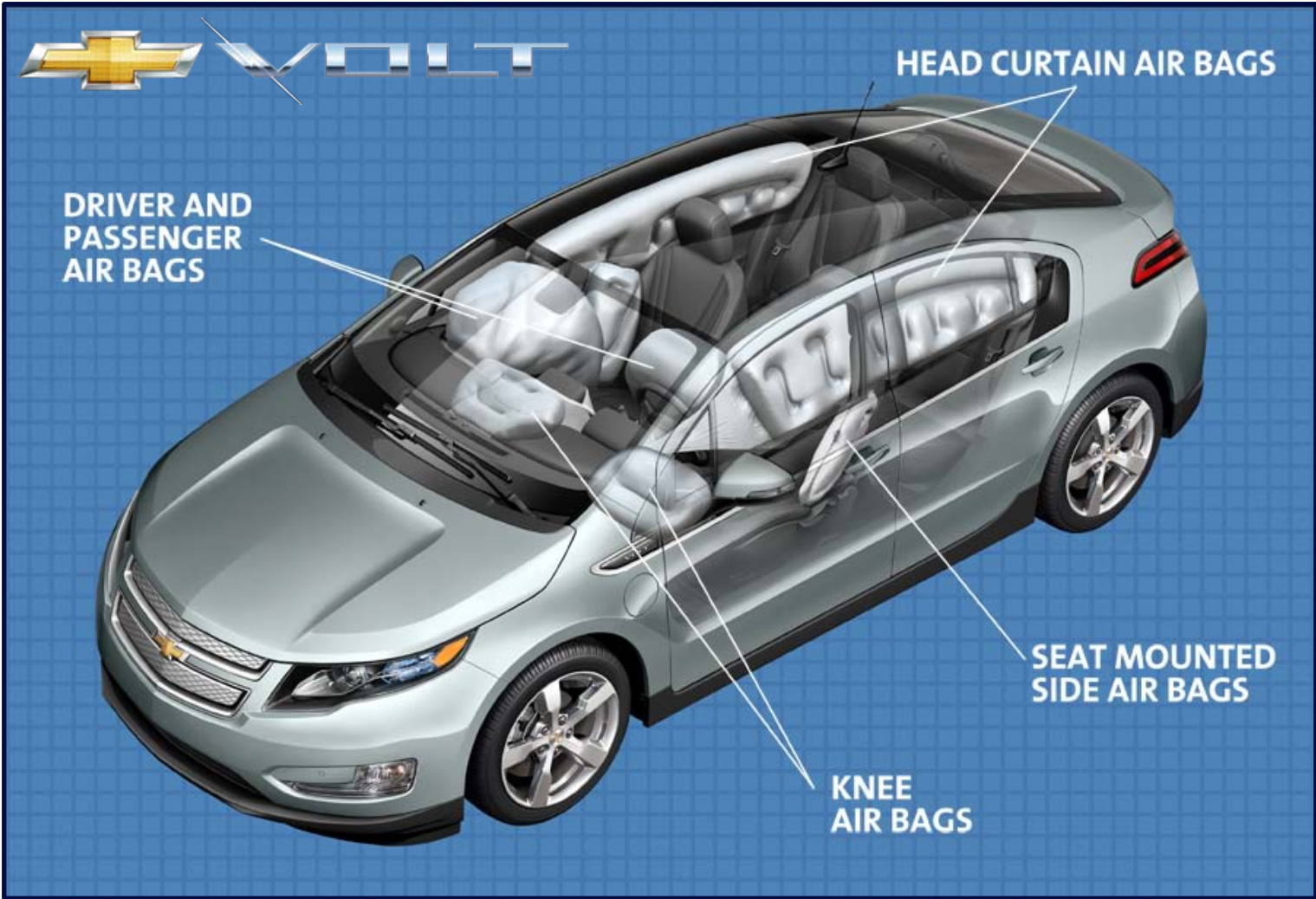
POWER

360V

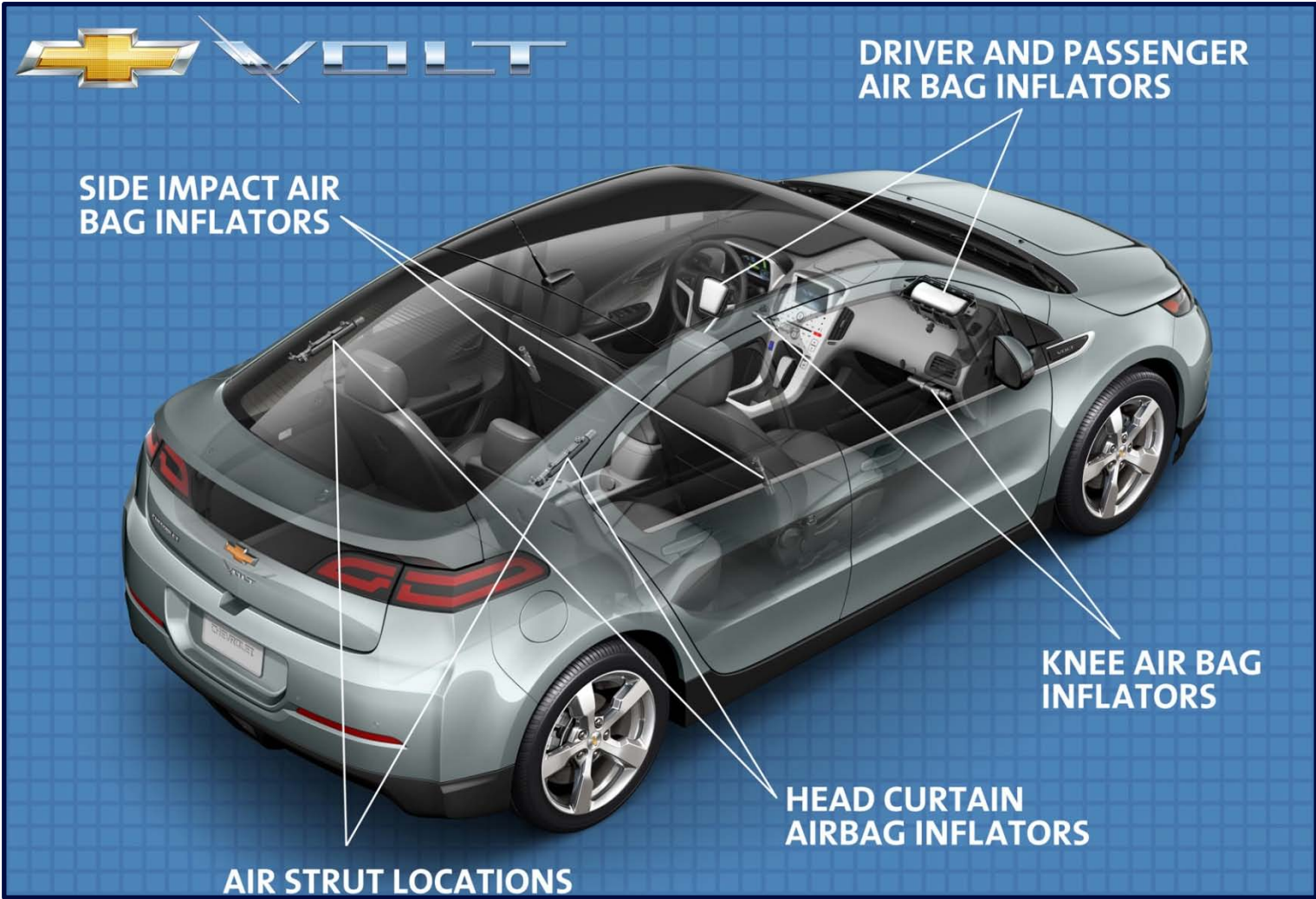
19V

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AIR BAGS



AIR BAG INFLATOR/GAS STRUT LOCATIONS



CHEVROLET VOLT BATTERY ISOLATION PROCEDURE



HIGH VOLTAGE DISCONNECT PROCEDURE

- 1 If Instrument Panel Lights Are On
Turn Vehicle OFF**
(push and hold Start/Stop button – gauges turn off)



HIGH VOLTAGE DISCONNECT PROCEDURE

2 Remove Manual Service Disconnect (MSD)

Open Armrest



Remove Cover

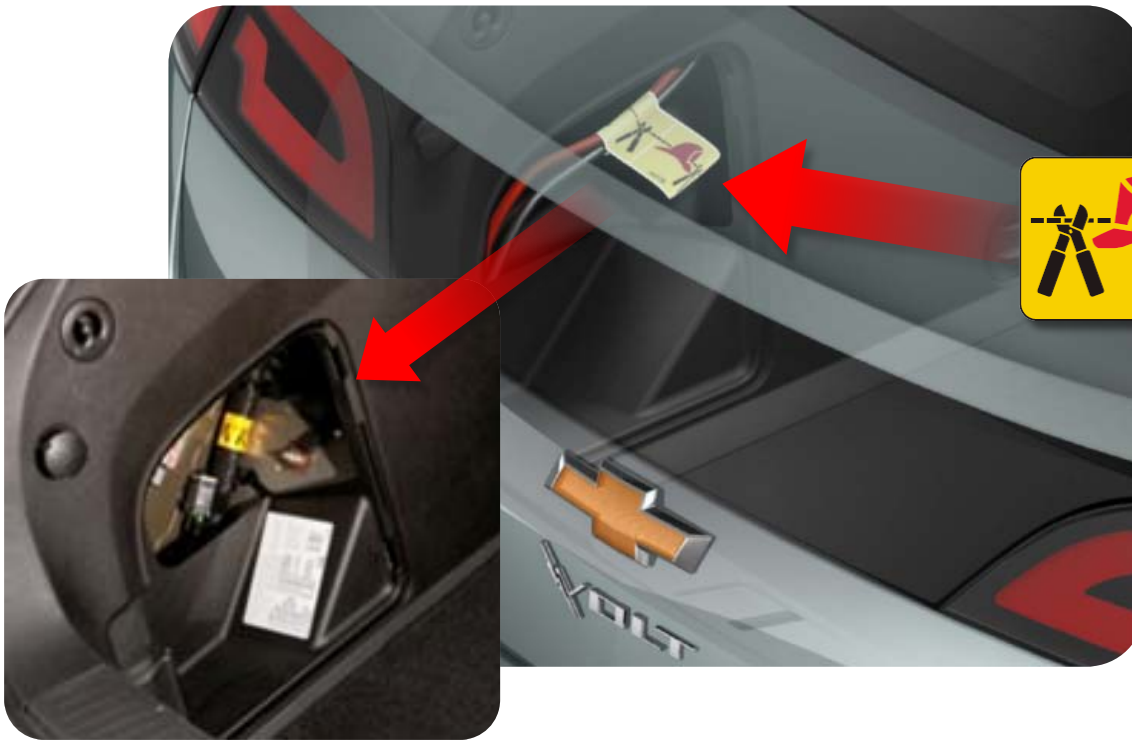


Pull to Remove
Orange MSD



HIGH VOLTAGE DISCONNECT PROCEDURE

3 In Case of Severe Crash Access 12V Cut Locations (left side of trunk)



HIGH VOLTAGE DISCONNECT PROCEDURE

- 4 Remove Section of 12V Cable if Manual Service Disconnect Is Not Accessible or to Disable Airbags



CHEVROLET VOLT TOW PROCEDURE



Volt sits about 2" lower to the ground than many other vehicles, requiring special approach to towing

ENSURE THE VEHICLE IS ON A FLAT SURFACE

- 1 If the vehicle is not on a flat surface, use the front torque box openings to pull the vehicle onto a flat surface.



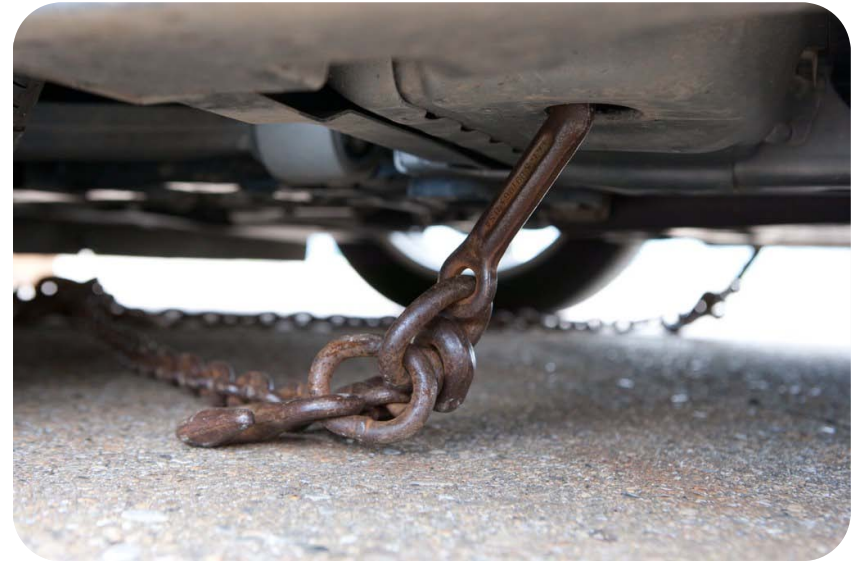
FRONT TIRES MUST BE PROPERLY INFLATED

2 If a front tire is low, inflate to the recommended pressure. If a front tire is damaged, replace with a rear tire.



ATTACH TOW CHAIN HOOKS

3 Place the tow chain hooks into one of the reinforced front torque box openings located just behind the front wheels.



PROTECT FRONT FASCIA FROM DAMAGE

- 4 Place a 4"x 4" wood beam under the front cradle crossmember and on top of both tow chains to ensure the tow chains do not come in contact with the front fascia.



PROTECT FRONT FASCIA FROM DAMAGE

- 5 Ramps are required for the front fascia to clear the flatbed. Ramp height should be approximately 4". When ready to pull vehicle on flat bed, place in Neutral.



PULL VEHICLE ONTO FLAT BED

6 When the front fascia has enough clearance to clear the flatbed, lower the flatbed and finish pulling the vehicle onto the flatbed.



SECURE VEHICLE ON FLAT BED

7 Secure the vehicle using nonabrasive straps through all four wheel openings and secure the straps to the flatbed.



PROPERLY STORE VEHICLE

8

Store damaged vehicles away from other vehicles and away from buildings.



CLARIFY FACT FROM FICTION

- 1 Understand real situation
- 2 Take appropriate action

PERCEIVED ISSUES

Concern:

High voltage batteries will leak dangerous amounts of fluid if damaged



Reality

- Volt battery is not lead acid
- Li-Ion are dry cell batteries
- Electrolyte is absorbed in a medium

PERCEIVED ISSUES

Concern:

Risk of electrocution by touching an HEV/EV involved in a crash or has been submerged



Reality

- High voltage system is completely isolated from the chassis
- Integrated safety systems and basic electrical theory protect occupants and responders

Action: Additional security from MSD removal

PERCEIVED ISSUES

Concern:

It will be difficult to disable the HV electrical system

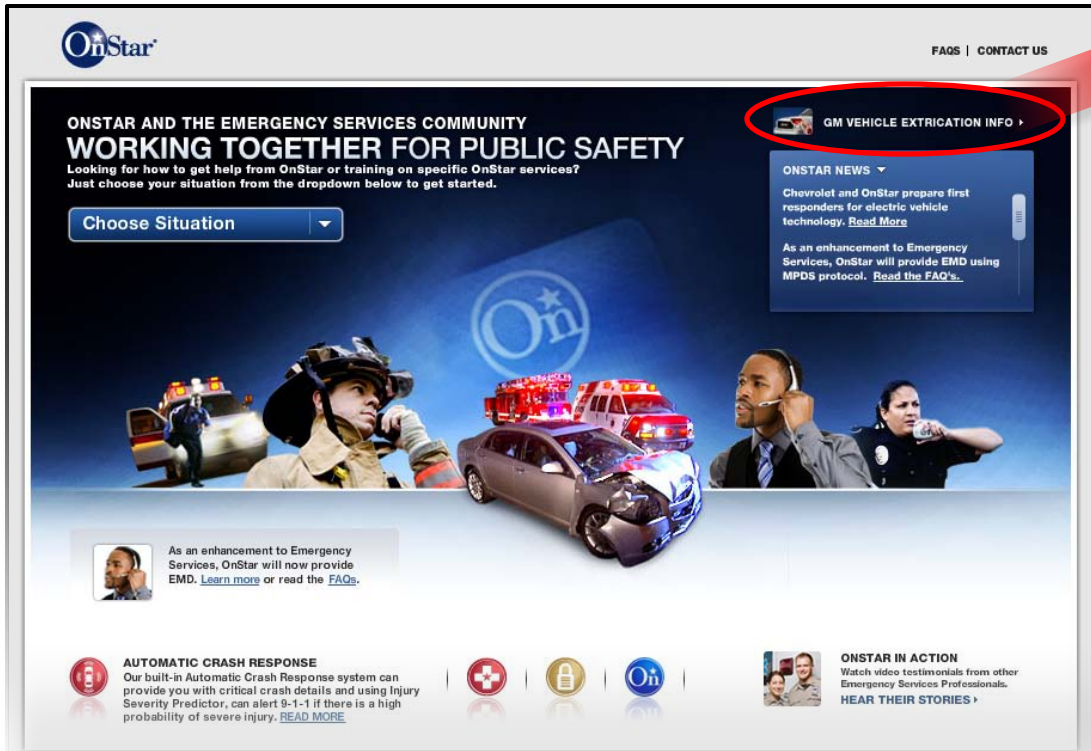


Reality


- Integrated shutdowns in the event of a crash
- Shutting off the vehicle's ignition will shut down HV
- Backed up by 12V battery disconnection

Action: Additional security from MSD removal


RESOURCES/INFORMATION



The screenshot shows the OnStar website's public safety section. At the top left is the OnStar logo. In the top right corner, there are links for 'FAQS' and 'CONTACT US'. The main heading reads 'ONSTAR AND THE EMERGENCY SERVICES COMMUNITY WORKING TOGETHER FOR PUBLIC SAFETY'. Below this, a sub-heading says 'Looking for how to get help from OnStar or training on specific OnStar services? Just choose your situation from the dropdown below to get started.' A 'Choose Situation' dropdown menu is visible. A red circle highlights a link for 'GM VEHICLE EXTRACTION INFO'. Below this link, there is a 'ONSTAR NEWS' section with two articles: one about first responders for electric vehicles and another about EMD using MPDS protocol. At the bottom, there are sections for 'AUTOMATIC CRASH RESPONSE' and 'ONSTAR IN ACTION'.



This screenshot shows the 'TRAINING' section of the Service Technical College website. It features a navigation menu on the left with options like 'HOME', 'TRAINING LOCATIONS', 'ABOUT GM STC', 'CONTACT US / HELP', 'PERSONAL TOOLS', and 'SITE MAP'. The main content area has a 'Home' section with a car image and the slogan 'STEER YOUR FUTURE'. Below this, there are 'NEWS' and 'Stories' sections. A red arrow points from the 'GM VEHICLE EXTRACTION INFO' link in the OnStar screenshot to this page.



This screenshot shows the 'First Responder' training page on the Service Technical College website. It includes a navigation menu on the left and a main content area with the heading 'First Responder'. The text explains that emergency personnel information is provided to assist first responders. Below the text, there are several links for downloadable reference cards, including 'First Responder: Vehicle Support Information Guide', 'Air Bags and Pretensioners in GM Vehicles', and '2004-2007 Chevrolet Silverado and GMC Sierra PMT'. A red arrow points from the 'First Responder' link in the OnStar screenshot to this page.

www.onstar.com/publicsafety

www.evsafetytraining.org

www.gmstc.com

www.recyclemybattery.com

