

CH-51450-A Oscilloscope Diagnostic Kit with NVH Released as Essential Tool



The essential CH-51450-A NVH Kit

GM has begun shipping the CH-51450-A NVH Kit as an essential diagnostic tool to all GM dealerships. Shipments will continue through July 2015.

The CH-51450 NVH Kit was first released last year as the replacement of the J-38792-A Electronic Vibration Analyzer (EVA). U.S. dealerships with a damaged or missing EVA were the first to receive the new NVH diagnostic oscilloscope kit.

To assemble the NVH diagnostic kit, GM partnered with Pico Technology to develop a GM-specific, 4-channel, PC-based automotive oscilloscope with NVH vibration diagnostics and driveline balancing capabilities. The tool is designed to help identify the slightest chassis & driveline disturbances on today's increasingly sophisticated vehicle architectures.

The CH-51450-A Kit includes a 3-axis accelerometer and interface to provide accurate analysis of vibrations in all directions. Using the display of your existing laptop computer,

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Techline News



GDS 2 Update Enables Users to "Contact Us"

The latest GDS 2 software update (14.0.x) recently released provides users with a new way to provide feedback or ask questions about the diagnostic software application.

Feedback Options

After updating GDS 2 to 14.0.x, users can click the Contact Us button at the bottom of the screen to open an Internet browser that explains two different ways to provide feedback to GM: either through a survey or reporting a specific issue. The Contact Us instructions are dependent on the selection of the diagnostic package. There are different instructions for the various diagnostic packages.

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Customer Care and Aftersales

Full-Size Truck Instrument Panel Cluster Replacement

If the instrument panel cluster (IPC), which is on parts restriction, requires replacement on 2014 Silverado 1500, Sierra 1500; 2015 Silverado, Suburban, Tahoe, Si-



Instrument panel cluster

erra and Yukon models, authorization must be received from the Techline Customer Support Center (TCSC) or the GM Technical Assistance Center (TAC), depending on the reason or replacement (U.S. dealerships only).

Programming Event

If the instrument panel cluster locked up during an SPS Programming event, verify if the instrument panel cluster can be recovered by performing the following steps:

- Do not turn off the ignition. Check that all instrument panel cluster, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
- Attempt to reprogram the instrument panel cluster. Select programming process Replace and Program ECU in TIS2Web.

- If the instrument panel cluster can still not be programmed, turn off the ignition, disconnect the battery and wait for at least two minutes.
- Connect the battery, turn on the ignition, select programming process Replace and Program ECU, and attempt to reprogram the instrument panel cluster. The instrument panel cluster should program.

Refer to #PI1212A for more information.

If the instrument panel cluster programming cannot be completed after following the recommended steps, contact TCSC for further assistance. If the instrument panel cluster is not able to be recovered, TCSC will authorize an instrument panel cluster replacement. GM TAC does not need to be contacted for authorization. After contacting TCSC, contact your ESC with the TCSC case number to order a replacement instrument panel cluster.

Instrument Panel Cluster Conditions

If the vehicle came in with an instrument panel cluster condition, such as inoperative gauges or cluster display malfunctions, and normal diagnostics lead to instrument panel cluster replacement, contact TAC to review the diagnosis. If necessary, TAC will authorize instrument panel cluster replacement.

It is not uncommon for the dealership to receive a different part number than the one ordered due to a normal part number supersession or if the new unit is a remanufactured assembly.

🙏 Thanks to Scott Fibranz

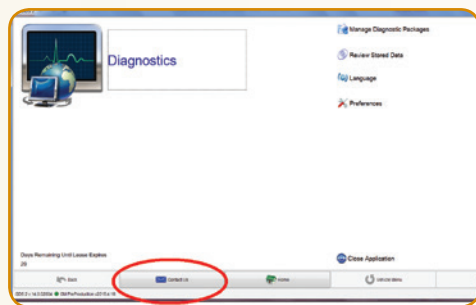
Techline News



GDS 2 Update Enables Users to "Contact Us" continued from page 1

TIP: A diagnostic package must be selected for the Contact Us button to be enabled.

If immediate help with GDS 2 is needed, contact the Techline Customer Support Center at 1-800-828-6860 (English) or 1-800-503-3222 (French).



New Contact Us button

The survey option instructions presented after selecting Contact Us explain how to provide feedback on several Techline applications. To complete an online survey on GDS 2, click the Surveys button at the top of the TIS2Web home page. From the list of surveys, select GDS 2.

To report a specific issue or concern, click the Feedback button at the top of the TIS2 Web home page. In the

Feedback Type drop-down menu, select GDS 2, and then provide the specific information requested.

New Features

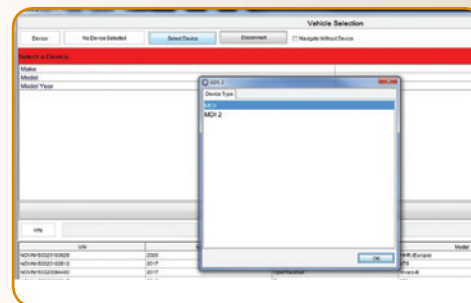
Release 14.0.x also updates the Select Device button. Clicking this button prompts the user to select a device type (e.g. MDI, MDI 2) before selecting a J2534 device.

In addition, the DTC displays have changed. For a single module DTC display, the DTC summary screen and DTC display screen are now combined into one screen, reducing the number of screens to view and consolidating DTC information.

🙏 Thanks to Chris Henley



Specific issue feedback form



Device type selection

CH-51450-A Oscilloscope Diagnostic Kit with NVH Released as Essential Tool

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this system combines fast capture and analysis of vehicle data with a clear easy-to-read presentation of results and actions. Recordings can be captured while on a road test for analysis as well as saved to the laptop's hard drive for further review back at the dealership.

The software is compatible with Windows Vista and Windows 7.

When performing driveline balancing analysis, step-by-step procedures are provided for pinion flange, dual hose clamp and trial weight balancing.

TIP: The CH-51450-A Kit contains a 3-axis accelerometer, whereas the original CH-51450 kit included a single-axis accelerometer. For a limited time (August –December 2015), dealerships with a CH-51450 Kit may purchase a 3-axis accelerometer sensor and interface (CH-51450-KP134) for \$298.70 (USD) through 1-800-GM-TOOLS.

The kit works with the Multiple Diagnostic Interface (MDI) or any J2534 interface to acquire vehicle data. It also can be used without a scan tool, which may be particularly useful for older non-OBV vehicles.

The tool's recording feature is defaulted to capture 50 seconds of data. Begin capturing data by pressing the "Start Recording" button. While data will continue to scroll through the window, it will only capture what is visible on the screen when the "Stop Recording" button is pressed. The data can be manually saved to the PC's hard drive to be played back later for analysis or sharing.

The test drive trace recording default is a maximum of 50 seconds. However, up to 500 seconds of data can be recorded. An unlimited number of road tests, stored as laptop data files, can be attached to customer records. The data files also can be emailed, making it easier to get assistance from the GM Technical Assistance Center during NVH diagnosis.

NVH Training Courses

The following GM Training courses are available that include overview, set-up and demonstration of the CH-51450 NVH Kit:

13042.12W – Noise, Vibration and Harshness (Web course)

13042.14D1 – Noise, Vibration and Harshness 1 (VCT course)

13042.14D2 – Noise, Vibration and Harshness 2 (VCT course)

13042.13V – PicoScope Noise, Vibration, and Harshness Diagnostics Overview (NVH oscilloscope video)

13042.14H – Noise, Vibration and Harshness (Hands-on course)

CH-51450-A Kit Contents
<i>Oscilloscope</i>
GM-branded 4425-19 4-channel PicoScope (with USB cable)
<i>Software</i>
GM NVH & Balancing Software License
GM NVH Quick Start Guide
Bosch Download, Support and Balance Weights Flyer
<i>NVH Accessories</i>
GM 3-axis NVH Interface
3-axis Accelerometer (4 m lead)
Mounting Magnet for Accelerometer
BNC Cable (50 cm) - Blue
BNC Cable (50 cm) - Red
BNC Cable (50 cm) - Green
<i>Balancing Accessories</i>
Optical Tachometer Sensor (includes 1/2" x 24" reflective tape)
Optical Tachometer Power Adapter
BNC Cable (5 m)
Magnetic Mounting Fixture
Measuring Tape
CH-51450-11 Balancing Weight (pack of 10)
CH-51450-12 Balancing Weight (pack of 10)
CH-51450-13 Balancing Weight (pack of 10)
<i>Carry Case</i>
Carry Case with Custom Foam and Branding
<i>Warranty (PicoScope and NVH Interface)</i>
Standard 2-year Warranty

🙏 Thanks to Chuck Berecz

Increased Seat Motor Noise

There may be an increased power seat motor noise when moving the driver or passenger seat forward or backward using the Easy Entry power seat switch or the power seat switch on the 2015 ATS coupe and 2014-2015 ELR compared to vehicles without the Easy Entry feature. The Easy Entry power seat switch is located at the top of the seatback.

Do not replace the seats or motors for this condition. All Easy Entry seats are the same.

The Easy Entry power seat adjustment motors in the ATS Coupe and the ELR are unique. They run at a different rate and produce

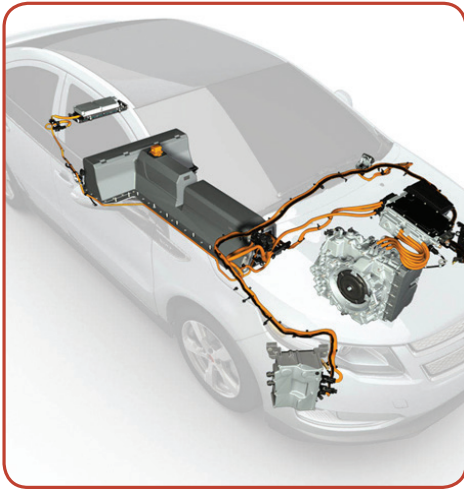
more noticeable noise than other vehicle models without the Easy Entry feature.

Compare the noise level of both seats using the Easy Entry seat switch and the power seat switch on the side of the seat to determine if there is a noticeable difference in the driver and passenger seat. Compare an ATS Coupe to another ATS Coupe or an ELR to another ELR. Do NOT compare the noise level to an ATS Sedan or CTS VIN A Sedan, as those seat motors are different.

🙏 Thanks to Stephen Jacob

Loss of Isolation Testing on High Voltage Systems

The high voltage system in the Volt, ELR and Spark EV is isolated from the vehicle. It has virtually no contact with the low voltage system or chassis of the vehicle. The high voltage battery and each high voltage device have both positive and negative cables or, in the case of the drive motors, three high voltage AC cables. The vehicle chassis is not used to supply a return path for high voltage at any time. During normal operation, high voltage should always be isolated from the vehicle chassis by a certain amount of resistance as a safety precaution.



A loss of isolation can be viewed simply as a short between the high voltage system and the chassis. The Hybrid/EV system monitors several high voltage components for attempted access and loss of isolation, which occurs if the positive or negative high voltage DC circuits or any of the high voltage AC phase circuits lose their isolation from the vehicle chassis. If such a condition were to occur, it may be intermittent and may be related to faults in the high voltage wiring, connections or components.

Insulation Multimeter

Similar to typical 12V vehicle systems, loss of isolation can be as simple as a direct conductor-to-chassis short. However, unlike 12V systems, the potential within high voltage systems means that insulation breakdown is also a cause for loss of isolation. Insulation breakdown typically occurs only when high voltages and/or current is present.

Conditions such as insulation breakdown cannot be diagnosed with a typical digital multimeter (DMM) because high voltage is not used by the DMM when measuring resistance. An Insulation Multimeter (EL-50772), which uses its own built-in high

voltage, must be used to test the isolation capability of high voltage components and circuits.

In addition, monitoring certain scan tool parameters when high voltage is active also may help in identifying which high voltage components and circuits may have lost their chassis isolation.



Insulation Multimeter (EL-50772)

TIP: Always perform the high voltage disable procedure as published in the appropriate GM Service Information before servicing high voltage components and wiring; and always wear the proper personal protective equipment.

Passive and Active Isolation Testing

The vehicle uses passive and active isolation testing to determine the amount of isolation between the high voltage and the chassis.

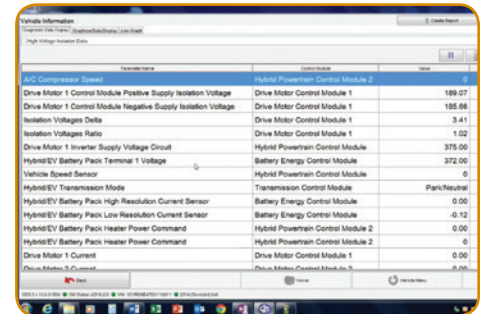
Passive isolation testing is performed within the Power Inverter Module (PIM) and tests whenever the high voltage main contactors are closed. Using a high impedance resistor network, passive isolation detection monitors all high voltage components. Real-time status of passive isolation detection can be determined by observing the delta between the Positive Supply Isolation Voltage and Negative Supply Isolation Voltage scan tool parameters. The parameters are displayed by any of the Motor Control Modules.

Active isolation testing is performed by the Hybrid Powertrain Control Module 2 and tests after the high voltage main contactors open. Using an injected AC signal, active isolation detection monitors the internal Hybrid/EV battery pack and the charging system (DC) high voltage circuits.

Status for the prior active isolation detection event can be determined by observing the Hybrid Powertrain Control Module 2 Isolation Test Resistance scan tool parameter. Real-time status observation requires the HPCM2 scan tool control function Hybrid/EV Battery Pack Isolation Test.

Scan Tool Parameters

Monitoring certain scan tool parameters when high voltage is active may help to identify which high voltage components and circuits have lost their chassis isolation. The Vehicle Information selection within the HPCM2 scan tool Data Display contains many parameters related to isolation diagnosis.



Vehicle Information Data Display

The Drive Motor 1 Control Module Positive Supply Isolation Voltage and Drive Motor 1 Control Module Negative Supply Isolation Voltage parameters provide a real-time indication of isolation status. The parameters will shift in respect to one another relative to the level of isolation loss. The greater the delta, or difference, between parameters, the less isolation exists between high voltage and the vehicle chassis.

Certain isolation loss concerns may only appear during high moisture environmental conditions. Driving the vehicle through an underbody spraying-style car wash while monitoring the delta between the Positive Supply Isolation Voltage and the Negative Supply Isolation Voltage scan tool parameters may reveal an isolation loss concern.

Isolation loss also might only occur when a high voltage device is active. Use the High Voltage Component Test Method table and operate each HV component while monitoring the delta between the Positive Supply Isolation Voltage and the Negative Supply Isolation Voltage scan tool parameters.

Diagnosis with an Insulation Multimeter

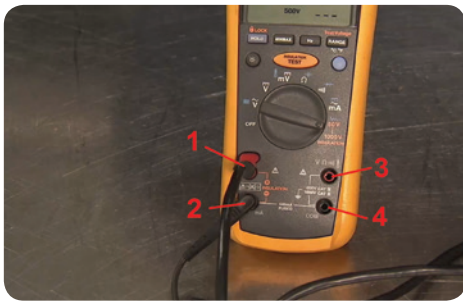
The EL-50772 Insulation Multimeter tests the isolation capability of high voltage components and circuits. For correct test results, the functions of the insulation multimeter must be used properly.

- Plug into the correct ports (1, 2) for insulation testing. Do not use ports (3, 4) for insulation testing.

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Loss of Isolation Testing on High Voltage Systems

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Plug into the insulation ports (1, 2)

TIP: It is critical that the correct ports (1, 2) are used for insulation testing. This is easy to get wrong, especially if the EL-50772 is used for standard DMM testing too. Do not use ports 3 and 4 for insulation testing. Also, if port 1 and port 4 are mistakenly used, continuity testing will still function, but the insulation test will always appear to pass.

- Always test at the 500V range.
- With the test leads not connected to anything, press and hold the insulation test button to know how your meter displays an infinite measurement. The EL-50772 will display 550M Ω when measuring an open circuit while set to the 500V range.

- With the test leads connected together, press and hold the insulation test button to see how your meter displays continuity. The EL-50772 will display 0.0 Ω .
- When performing insulation testing, a good ground reference is needed. When possible, use an alligator clamp to attach the ground lead. Typically, the reference point will be to the vehicle chassis, except cable testing, which requires connection to the cable shield termination at the connector and not to the chassis.



Set the meter to the 500V range.

- Verify the ground connection prior to every test measurement at a suitable

ground location near the test point. The EL-50772 should display 0.0 Ω , indicating continuity.

- When testing components with large capacitance or inductance, such as certain modules and larger motor stators, it may be necessary to hold the insulation test button for a few seconds until the maximum resistance value is displayed.

Video Demonstration (U.S.)

For more information about loss of isolation testing, check out the March 2015 edition of the Emerging Issues seminar (10215.03D). It includes a video demonstration using an insulation multimeter.

Training Courses (Canada)

- 18421.16H – Electric Vehicle Battery Diagnosis & Service
 - 18420.05D1 and 18420.05D2 – Electric Vehicle Systems Diagnosis and Service
- 🙏 Thanks to Steve Falko and Joe Ciagala

OnStar and XM Antenna Malfunctions

On some 2015 Escalade, Silverado, Suburban, Tahoe, Sierra and Yukon models equipped with a high-frequency painted antenna assembly, one or more of the following symptoms may be present:

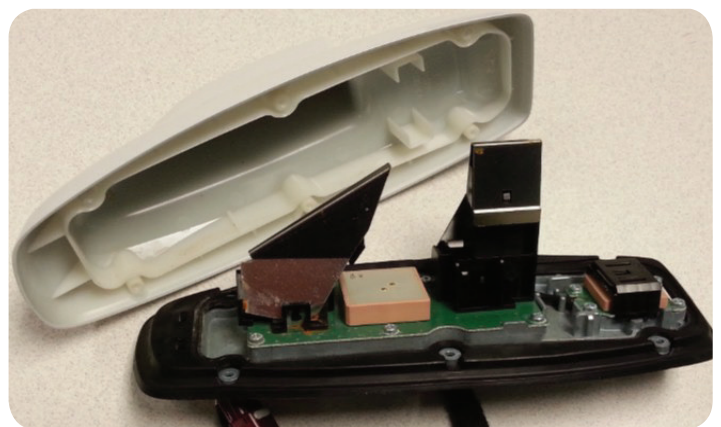
- Visible water leak or signs of water intrusion from the antenna base
- Red OnStar LED
- Unable to connect to OnStar
- OnStar unable to locate the vehicle
- OnStar has inaccurate GPS location
- No GPS or inaccurate GPS location on the navigation radio display

These conditions may be accompanied by DTC B2462-02, B2462-04, B2470-02, B2470-04, B125C-01, B125C-02, or B125C-04.

Water intrusion into the antenna assembly may result in any of the conditions listed above. If these conditions are encountered, replace the antenna and use the new updated antenna cover.

Do not remove the cover from the base. Mask and spray paint the cover to match as necessary.

Do not use any sealants on the antenna or its seals/gaskets.



High-frequency painted antenna assembly and cover

TIP: The painted antenna cover is not intended to be removed. Do not remove the antenna cover, as this may compromise the sealing performance. Do not reuse the original antenna painted plastic cover. The latest service parts include updated covers.

🙏 Thanks to Brian Ouelette

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General Motors service tips are intended for use by professional technicians, not a "do-it-yourselfer." They are written to inform those 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 information applies to your vehicle or that your vehicle will have that condition. See a General Motors dealer servicing your brand of General Motors vehicle for information on whether your vehicle may benefit from the information.

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Water Leak Diagnostic Tips

A water leak into the cab, water staining of the headliner or water on the floor may be found on some 2015 Colorado or Canyon models.

To diagnose these water leak conditions, follow the appropriate procedures in the Service Information for Water Leak Diagnosis. In addition, inspect the following areas:

- **Roof ditch** – Pin holes in the roof ditch sealer at the front and rear may allow water intrusion in the vehicle. At the front, water may run behind the A-pillar trim, along the edge of the instrument panel and drip on the kick panel. At the rear, water may enter on the inside of the glass very close to the roof ditch seam. A void along the seam may allow water to enter in either the front or the rear.
- **Rear glass** – Back glass sealer voids may be caused by hand-installing the back glass. If the glass locating pins are not seated in the locating hole, the glass could be out of position and allow a leak point near the dislocated pin.
- **CHMSL** – Water may travel along the rear header to the roof flange and can enter the vehicle anywhere along the back glass, appearing to be a back glass leak.
- **Windshield** – If the windshield is not located properly, the locating pin could slide below the locating hole, allowing the windshield to set low. If the windshield is too low, the VIN plate will be covered.
- **Cowl seam** – Water may accumulate on the floor. Inspect the front of the dash/bulkhead for leaks at the mid area and also near the floor along the seam of the front of the dash-to-bulkhead. The front of the dash has two tooling hole plugs that may allow water if not installed correctly.
- **HVAC drain tube** – Water may soak the front floor area on either side if the drain tube is dislocated. It is more likely to be reported during A/C operation in high humidity conditions.
- **A-pillar area** – Inspect for missing sealer at the door hinges. Also inspect for a weld-through condition along the outer pillar/bulkhead-to-fender support that leads straight to the inside of the front bulkhead. There are also three welds on the top of the pillar/bulkhead for the fender bracket. The baffles hold the water in the pillar/bulkhead where it pools while seeping into the cab through the harness rosebud holes. Also inspect the pillar plug or the door boot not being seated.
- **Water collecting in the sill area** – The door may freeze in areas with large temperature swings or water may run onto the driver's foot when opening the door. This is a water management issue that is being reviewed by Engineering.
- **PRV (Pressure Relief Valve)** – Water runs along the back panel and down to the front foot area if the valve is not fully seated.

🙏 Thanks to Ernest Haller

Special Edition Paint Codes

Dealerships may have difficulty locating the correct paint code for the following special edition vehicle models:

- 2003–2005 Deville - Mary Kay Edition
- 2003–2004 Seville - Mary Kay Edition
- 2004 XLR - Neiman Marcus Edition
- 2006–2011 DTS - Mary Kay Edition
- 2007–2011 STS - Mary Kay Edition
- 2009–2015 CTS, SRX - Mary Kay Edition
- 2013–2015 ATS, XTS - Mary Kay Edition
- 2011 Camaro Convertible - Neiman Marcus Edition
- 2013 Camaro - Hot Wheels Edition
- 2015 Camaro - Green Flash Edition

When performing exterior body refinish/paint repairs on any of these vehicles, use the following paint codes:

- 2003 Mary Kay Cadillac models – paint code WA-160E: Mary Kay Pink Pearl
- 2004–2007 Mary Kay Cadillac models – paint code WA-983L: Mary Kay Pink Pearl III
- 2004 Neiman Marcus Cadillac XLR – paint code WA-111B: Majestic Amethyst Metallic
- 2008–2015 Mary Kay Cadillac models – paint code WA-590Q: Mary Kay Pink Pearl
- 2011 Neiman Marcus Chevrolet Camaro convertible – paint code WA-724S: Mystic Bronze Tri-coat (exterior body color); paint code WA700T, Ghost stripes (hood and decklid)
- 2013 Hot Wheels Chevrolet Camaro – paint code WA-720S: Kinetic Blue (exterior body color); paint code WA-799U: Performance Red, Red stripe (wheels and front bumper)
- 2015 Green Flash Camaro models – paint code WA-136X: Unripened Green

🙏 Thanks to Matt Bierlein

Bulletin Category	Bulletin Number	Subject	Models
Body Repair	09-08-51-004E	Information on Door and Quarter Panel Paint Appearance	2010-2015 Chevrolet Camaro
Body Systems Body and Accessories	02-08-42-001H	Headlamp, Tail Lamp, License Lamp or Fog/Driving Lamp Damage	2016 and Prior GM Passenger Cars and Trucks
Body Systems Diagnostic Overview, Starting Point, and Programming	15-08-42-002	Police Package Vehicles, Daytime Running Lamps (DRL), Automatic Headlights (AHL), Dome and Courtesy Lamps, Speed Limiter – Programmable Options – Obtaining Calibrations	2007-2014 Chevrolet Tahoe Equipped with RPO PPV and 5W4 – Police or Special Service Options
Body Systems Diagnostic Overview, Starting Point, and Programming	07-08-42-011J	Police Package Vehicles, Daytime Running Lamps (DRL), Automatic Headlights (AHL), Dome and Courtesy Lamps, Trunk Release, Speed Limiter – Programmable Options – Obtaining Calibrations	2006-2013 Chevrolet Impala Equipped with RPO 9C1 or 9C3 – Police Car; 2014-2015 Chevrolet Impala Limited Equipped with RPO 9C1 or 9C3 – Police Car; 2011-2015 Chevrolet Caprice PPV with RPO 9C1 or 9C3
Diagnostic Overview, Starting Point, and Programming Driver Information and Entertainment Engine Engine/Propulsion	12-06-04-002D	Information on Exhaust Fluid Range, Exhaust Fluid Quality Poor, Service Exhaust Fluid System or Service Emission System Driver Information Center Messages	2010-2015 Chevrolet Express, Silverado; 2010-2015 GMC Savana, Sierra
Driver Information and Entertainment Power and Signal Distribution Safety and Security	11-08-49-001O	Transport Mode On Message Displayed in Driver Information Center (DIC) and/or Battery Light is Flashing	2011-2016 Buick Regal; 2012-2016 Buick Verano; 2013-2016 Buick Encore; 2014-2016 Buick LaCrosse; 2010-2016 Cadillac SRX; 2013-2016 Cadillac ATS, XTS; 2014-2016 Cadillac CTS Sedan (VIN A), ELR; 2015-2016 Cadillac Escalade Models; 2016 Cadillac CT6; 2010 Chevrolet Camaro; 2011-2016 Chevrolet Cruze, Volt; 2012-2014 Chevrolet Orlando (Canada); 2012-2016 Chevrolet Sonic; 2013-2016 Chevrolet Spark, Trax; 2014 Chevrolet Silverado 1500; 2014-2016 Chevrolet Caprice PPV, Corvette, Impala, Malibu, Spark EV, SS; 2015-2016 Chevrolet City Express, Colorado, Silverado, Suburban, Tahoe; 2014 GMC Sierra 1500; 2015-2016 GMC Canyon, Sierra, Yukon Models, Yukon XL Models
Engine Engine Propulsion	02-06-01-027C	Information on Higher Than Expected Oil Consumption	2001-2015 Chevrolet Silverado 2500-3500 Series Pickup Models; 2003-2009 Chevrolet Kodiak C4500-C5500 Series Models; 2006-2015 Chevrolet Express 2500-4500 Series Vans; 2001-2015 GMC Sierra 2500-3500 Series Pickup Models; 2003-2009 GMC TopKick C4500-C5500 Series Models; 2006-2015 GMC Savana 2500-4500 Series Vans
Engine Engine/Propulsion General Information Hybrid Propulsion	15-06-123-001	Information on the Use of Stop Leak Additives in the Coolant System	2014-2016 Cadillac ELR; 2011-2016 Chevrolet Volt; 2014-2016 Chevrolet Spark EV
Engine/Propulsion Transmission/ Transaxle	15-06-01-001	Oil Leak at Rear of Engine	2015 Chevrolet Cruze, Sonic
General Information	15-00-89-004	Information Regarding the Differences Between Leakage and Seepage	2016 and Prior GM Passenger Cars and Trucks
Transmission/ Transaxle	14-07-30-001D	Information on Transmission Adaptive Functions and Correcting Low Mileage Harsh Shifts	2015 Cadillac Escalade, Escalade ESV; 2015 Chevrolet Corvette, Silverado; 2015 GMC Sierra, Yukon, Yukon XL

Service Know-How

10215.05D Emerging Issues – May 14, 2015

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