

# TechConnect

## Can We Talk?



## Vehicle Serial Data Communication Networks

There are many components in a vehicle that rely on information from other sources as well as transmit information to other sources. Serial data communication networks provide a way for various components of the vehicle to "talk" to one another and share information.

GM uses a number of different communication buses to ensure the exchange of information between devices. Some of these buses are different in nature as far as speed, signal characteristics, and behavior, such as the High Speed GMLAN (GM Local Area Network) and Low Speed GMLAN buses. Other buses that have similar characteristics simply operate in parallel. They are used to group together components that interact frequently, such as the Powertrain Expansion and Chassis Expansion buses. This allows them to communicate with each other on a bus with reduced message congestion for a faster and timelier exchange of information than if all vehicle devices were on a single bus.

The majority of information that exists within a given network generally stays local; however, some information must be shared on other networks. Control modules designated as Gateways perform the function of transferring information between the various buses. A Gateway module is connected to at least two buses and interacts with each

network according to its message strategy and transmission models.

Here's an overview of a typical GM serial data communication network on a vehicle.

### High Speed GMLAN

A High Speed GMLAN Bus is used where data needs to be exchanged at a high enough rate to minimize the delay between the occurrence of a change in sensor value and the reception of this information by a control device using the information to adjust vehicle system performance.

The High Speed GMLAN serial data network consists of two twisted wires. One signal circuit is identified as GMLAN-High and the other signal circuit is identified as GMLAN-Low. Data symbols (1's and 0's) are transmitted sequentially at a rate of 500 Kbit/s. The data transmitted over the bus is represented by the voltage difference between the GMLAN-High signal voltage and the GMLAN-Low signal voltage.

When the two wire bus is at rest, the GMLAN-High and GMLAN-Low signal circuits are not being driven and this represents a logic "1." In this state, both signal circuits are at the same voltage of 2.5V. The differential voltage is approximately 0V.

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# Vehicle Serial Data Communication Networks -

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When a logic "0" is to be transmitted, the GMLAN-High signal circuit is driven higher to about 3.5V and the GMLAN-Low circuit is driven lower to about 1.5V. The differential voltage becomes approximately 2.0 V.

### Chassis High Speed GMLAN

The GMLAN Chassis Expansion Bus is a copy of the High Speed GMLAN Bus. In this case, the expansion bus is reserved for chassis components. Other components are grouped together in other expansion busses, such as the GMLAN Object Bus that is used for the enhanced safety system. This implementation splits message congestion between two parallel buses. Communication between the Chassis Expansion Bus and the primary High Speed GMLAN Bus is accomplished by using the Electronic Brake Control Module (EBCM) as the Gateway module.

### Media Oriented Systems Transport (MOST)

The MOST Infotainment network is a dedicated high-speed multimedia streaming data bus independent from GMLAN. The MOST bus is configured in a physical hardwired loop with each device within the bus sending and receiving data on an assigned MOST address in a set order. The radio is the MOST Master and monitors the bus for vehicle configuration, infotainment data messages and errors on the bus.

### CAN Graphical Interface (CGI)

This bus is an example of a sub-system that is used to transfer high-rate display graphics between the radio and the Info Display Module and/or the radio and the HVAC control. Communication between the CAN Graphical Interface Bus and the Low Speed GMLAN Bus is accomplished by using the radio as the Gateway module.

### Mid Speed GMLAN

The Mid Speed GMLAN Bus is similar to the High Speed GMLAN Bus except that it uses a slower transmission rate of 125Kbit/s. This bus is intended for use where the system response time demands that a large amount of data be transmitted

in a relatively short amount of time, such as updating a graphics display. It is usually used for infotainment applications.

### Low Speed GMLAN

A Low Speed GMLAN Bus is used in applications where a high data rate is not required. It is typically used for operator controlled functions where the response time requirements are slower than those required for dynamic vehicle control.

The Low Speed GMLAN Serial Data Network consists of a single wire, ground referenced bus with high side voltage drive. During on road vehicle operation, data symbols (1's and 0's) are transmitted sequentially at the normal rate of 33.3 Kbit/s.

The data symbols to be transmitted over the bus are represented by different voltage signals on the bus. When the Low Speed GMLAN Bus is at rest and is not being driven, there is a low signal voltage of approximately 0.2V. This represents a logic "1." When a logic "0" is to be transmitted, the signal voltage is driven higher to around 4.0V or higher.

### Local Interconnect Network (LIN)

The Local Interconnect Network (LIN) Bus consists of a single wire with a transmission rate of 10.417 Kbit/s. This bus is used to exchange information between a master control module and other smart devices that provide supporting functionality.

### Serial Data Reference

The scan tool communicates over the various buses on the vehicle. When connected to a vehicle, the scan tool will try to communicate with every device that could be optioned into the vehicle. If an option is not installed on the vehicle, the scan tool will display No Comm (or Not Connected) for that optional device.

For information about diagnosing serial data communication network issues, ACDelco offers a number of training courses. To learn more, go to [www.acdelcotechconnect.com](http://www.acdelcotechconnect.com) and click the Training tab.


- Thanks to Rick Balabon

### Volume 20, Number 2 (TS-PU-0002-13)


ACDelco TechConnect is published bi-monthly and online for technicians of Professional Service Center and Key Fleet accounts to provide timely service information, increase knowledge and improve the performance of the service center.

ACDelco 360 represents our mission to look at our businesses at every possible angle to provide value and assistance to our distributors and their customers as well as offer a full circle of support with programs, tools, training and marketing focused on enhancing and growing our partnership successfully.


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ACDelco 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, it cannot be assumed that the information applies to all vehicles or that all vehicles will have that condition.

All materials and programs described in this magazine are subject to change. Submission of materials implies the right to edit and publish. Inclusion in the publication is not necessarily an endorsement of the individual or the company.

TechConnect is published for ACDelco by Sandy Corporation, Troy, MI.

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# Multiple Conditions Caused by Aftermarket Devices Plugged into the Data Link Connector

For everything from saving on automobile insurance to connecting aftermarket cruise control, there are now a number of devices that owners plug into the Data Link Connector (DLC), or Assembly Line Diagnostic Link (ALDL). However, any unauthorized device connected to the DLC may cause a variety of hard-to-diagnose conditions.

Many of the problems caused by devices connected to the DLC are communication issues on the High Speed Controller Area Network (HSCAN) bus. An additional issue with diagnosing these conditions is that many times the device itself may be removed by customers when their vehicle is brought in for service.

Many possible problems are caused by an open connection on the HSCAN bus. For example, if the device only makes connection with one CAN +, it will cause bus errors and strange control module behavior.

## Known Symptoms

The various issues described by customers with their vehicles are often related to high- or low-speed data bus traffic. The conditions can be extremely varied, but some known issues are:

- Radio will not turn off after turning off the vehicle
- Bus or LAN traffic stays active, leading to a discharged battery
- Problems reprogramming control modules either because of interference or the device will not allow the bus to power down
- Interference with OnStar's ability to provide diagnostic data
- Engine and transmission performance issues with the Check Engine light on
- Intermittent stalling
- Reduced power DIC messages and DTCs
- StabiliTrak DIC messages and DTCs
- DTC C0561 (System Disabled Information Stored Invalid Data) in the Electronic Brake Control Module (EBCM) leading to a traction control issue
- No High Speed LAN communication along with various DTC communication U-codes

- Transmission will not shift for one key cycle (TCM in default mode)
- Instrument cluster gauges erratic or flickering
- Check Engine MIL illuminated and numerous DTC communication codes such as U0100 (Lost Communication With Engine Control Module)
- Diesel power-up devices resulting in no power in 4WD Low range
- Service Tire Pressure Monitor System MIL illuminated; cannot relearn the Tire Pressure Monitor System
- Hybrid issues regarding reduced propulsion power DIC messages and service high voltage charging system DIC messages

## Diagnosis

GM Service Information provides a Diagnostic System Check – Vehicle as a starting point for any diagnostic procedure. It calls out that there should not be any aftermarket devices connected or installed that affect the operation of the system. The Diagnostic System Check Instructions also provide further information about aftermarket accessories and their possible negative effect on the vehicle.

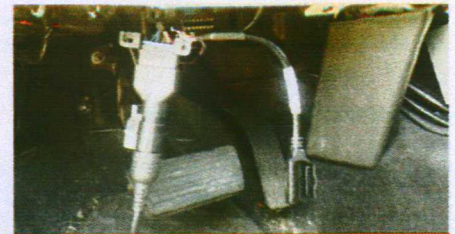
During diagnosis, if nothing else can be identified as the root cause of the condition, check for a device plugged into the DLC.

If a device is available, attempt to duplicate the condition. Remove the device to determine if the condition is eliminated. If confirmed, inform the customer of the issue and that it will be necessary to work with the supplier of the device for further resolution. If the condition is not eliminated, continue with the normal diagnostics.

## Possible Devices

Connected devices may be used for such things as tracking and/or maintenance interval scheduling (more common on fleet and rental vehicles), insurance monitoring that automatically keeps track of the vehicle's driving record, aftermarket cruise control, police speed checking (RADAR or LIDAR) and other aftermarket components.

Sometimes, an aftermarket device has another DLC on it and the rest of the harness is tucked out of sight underneath the instrument panel, making it not completely obvious to the technician while still allowing diagnostic tools to be used.



Aftermarket device with a DLC connector



Aftermarket cruise control interface at the DLC



Fleet tracking interface at the DLC

## OnStar

Certain aftermarket devices connected to the DLC may interfere with OnStar's ability to perform a diagnostic probe when requested (via a blue button call) by a subscriber. These devices also prohibit the ability to gather diagnostic and tire pressure data for a subscriber's scheduled OnStar Vehicle Diagnostic (OVD) e-mail.

These aftermarket devices use the vehicle's serial data bus to perform data requests and/or information gathering. When these devices are requesting data, OnStar is designed not to interfere with any data request being made by these devices as required by OBD II regulations.

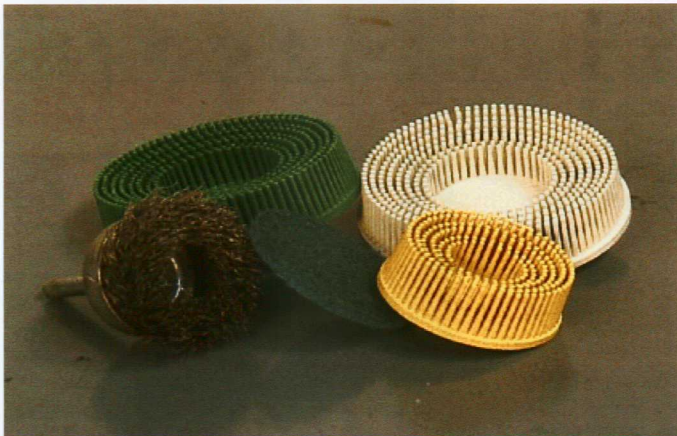
- Thanks to B.J. Lackey

# Cleaning Engine Gasket Sealing Surfaces

When cleaning engine gasket sealing surfaces or cleaning parts from an engine that are to be reused, do not use surface conditioning discs. These discs can cause damage to the sealing surface or generate debris that will cause damage to bearing surfaces in cast iron and aluminum engine blocks. In fact, these discs should not be used on any sealing surfaces, including transmissions, transfer cases and axles.

The feel of the sealing surface is critical, not the appearance. After proper cleaning of an engine, there will be indentations from the gasket left in the cylinder head with all the gasket material removed. The new gasket will fill these small indentations when it is installed.

## Abrasives Cause Engine Damage



**Do not use surface conditioning disks.**

Abrasive pad or bristle devices — typically made of woven fiber or molded bristles — should not be used because:

- Abrasive pads will produce fine grit that the oil filter will not be able to remove from the oil. This grit is abrasive and has been known to cause internal engine damage. Abrasive pads can easily remove enough material to round cylinder head surfaces, which can affect the gasket's ability to seal, especially in the narrow seal areas between the combustion chambers and coolant jackets.
- Abrasive pads, wire, and rubber finger wheels can remove enough metal to affect cylinder head, block, oil pan rail, and intake manifold runner flatness, which can cause coolant and oil leaks and air leaks. It takes about 15 seconds to remove 0.203mm (0.008 in.) of metal with an abrasive pad.
- Abrasive pads, rubber finger wheels and wire wheels with high-speed grinders produce air-borne debris that can travel throughout the shop and contaminate other work being performed outside of the immediate work area.

When using surface conditioning discs that contain abrasives, aluminum oxide (a common component of sandpaper) is dislodged from the disc along with metal particles from the engine component. Even the finger-type discs, which

don't appear to have any type of abrasive material, contain aluminum oxide. The presence of aluminum oxide in engine oil has been shown to cause premature engine bearing failure, in some cases, in as little as 1,000 miles (2,200 km) or less after the repair has been made.

Surface conditioning discs also may grind the component material and imbed it into the disc. This can result when more aggressive grinding of the gasket surface takes place.

Any debris from these surface conditioning discs cannot be properly cleaned from the oil passages with shop air or solvents.

## Recommended Cleaning Procedures

GM recommends the use of a plastic razor blade or plastic gasket scraper to clean the gasket surface on engine components that are to be reused. Do not use a metal razor blade, which can easily gouge the sealing surface, especially on aluminum components.

When using a razor blade-type gasket scraper, use a new razor blade for each cylinder head and corresponding block surface. Hold the blade as parallel as possible to the gasket surface to ensure that the razor blade does not gouge or scratch the gasket surfaces. Do not gouge or scrape the combustion chamber surfaces or any engine-sealing surface during the cleaning process.

To properly clean the sealing surface prior to reassembly, GM Low VOC Cleaner, part number 19287401 (in Canada, part number 88901247), should be sprayed on the mating surface. Avoid getting solvent in any area other than the mating surface to be cleaned. Allow it to soak in for several minutes to loosen the old RTV sealer/gasket material before using a razor blade or non-metallic scraper to remove all loose sealer/gasket material.

For additional information, refer to GM Bulletin #00-06-01-012D.

– Thanks to Randy McCrite

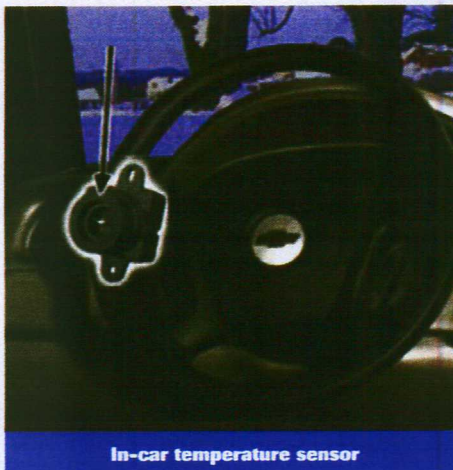


**Abrasive discs can remove enough metal to cause leaks.**

## New Interior Comfort Controls Seminar

If you ever wondered why the temperature actuator does not move when the temperature setting is changed or if the sensor in the headliner has anything to do with temperature control performance, check out the latest ACDelco Interior Comfort Controls seminar (S-AC07-04.01SEM).

Using real-world scenarios based on vehicles from several manufacturers, the seminar covers all aspects of the Heating, Ventilation, and Air Conditioning (HVAC) system. It reviews the inputs and outputs that enable HVAC operation and those that can affect HVAC performance. It also highlights a number of service tools and techniques, such as actuator installation, and diagnostic procedures for systems from several manufacturers.



In-car temperature sensor

### Controls and Communication

The seminar covers how the modern HVAC system features new sensors, actuators, control strategies and in-vehicle communication networks.

It highlights that the operation of the air conditioning compressor is managed by the Engine Control Module (ECM)

along with other engine controls to ensure the engine runs efficiently under various driving conditions. For example, some systems have the ECM deactivate the compressor clutch relay when the engine throttle nears wide-open position to reduce the mechanical load the compressor places on the engine when the demand for engine power is at its greatest.

Other aspects of system operation also are reviewed, such as the latest networked configurations that use a dedicated HVAC control module to manage communication with the HVAC controls as well as other vehicle systems.

### Case Studies

A number of case studies provide insight into how to best approach HVAC diagnosis and repairs. For example, one case points out how to diagnose a poor A/C performance condition where the engine cooling fans are inoperative, and another covers a condition with the automatic climate controls defaulting to a full cold or full hot position.

Additional information reviews heater core leaks and electrolysis. Electrolysis should be checked any time repeat repairs have occurred.

### Training Opportunities

In addition to the Interior Comfort Controls seminar, ACDelco offers a variety of Web-based training courses and instructor-led, hands-on classes. To review the latest training courses available, log in to the ACDelco Learning Management System by visiting [www.acdelcotechconnect.com](http://www.acdelcotechconnect.com) and clicking the Training tab.

To learn when ACDelco seminars will be scheduled in your area, contact your local ACDelco distributor.

– Thanks to Rick Balabon

## Air Conditioning Service Tips

Keep these tips in mind about system performance and protection during air conditioning repairs.

### Seals

ACDelco recommends replacing O-rings and seal washers during joint service. Most ACDelco replacement parts come with the necessary seals required.

When new O-rings are installed, lubricate both the O-ring and the threaded joint with mineral oil to maintain the seal's ability to properly seat as well as prevent corrosion of the joint thread. Do not use PAG oil to lubricate the joints since it is hydroscopic and may cause joint threads to corrode.

### Lubrication

Use PAG oil only when replacing an air conditioning compressor. Do not use ester oil. Be sure the PAG oil meets or exceeds OEM specifications for viscosity, additives, and type.

The amount of PAG oil used in the air conditioning system is critical to proper operation. Follow the proper oil balancing procedure before compressor installation to avoid premature compressor replacement failure.

Since PAG oil is hydroscopic, do not expose it to the atmosphere for prolonged periods, which will contaminate the oil with moisture. Systems that have been contaminated by sealants may require replacement of the receiver dryer/accumulator as well as refrigerant flushing.

### Leak Detection

Major or repeat compressor failure is often due to an insufficient amount of refrigerant. Failure to correct leaks at the source will quickly fail replacement compressors. ACDelco refrigerant dye is approved by all OEM compressor manufacturers. Use the

dye to help determine the leak location for both active and passive leaks.

### Filters and Screens

When a compressor fails, contamination is distributed throughout the refrigerant system. The type of failure determines the extent of cleanup. Flushing is only recommended after severe failure modes.

OEM screens/filters should be inspected and replaced and auxiliary filters also should be installed to provide additional screen capacity for the TXV/orifice.

Suction-line screens are recommended when installing a service compressor for added protection. This low cost, highly effective protection can be implemented with any compressor where the manufacturer does not provide a factory screen.

– Thanks to Rick Balabon

## Professional Service Center Program for 2013

ACDelco continuously strives to improve the Professional Service Center (PSC) program, delivering benefits that help grow your business, serve your customers better and make it more profitable. Many features have been added recently, including labor reimbursement and new tools to reach your customers electronically.

The ACDelco PSC program accounts are tiered in three levels, depending on the amount of annual ACDelco purchases. All levels offer great benefits, with the White and Blue levels offering even more for your business. The following new levels became effective February 1, 2013:

- **Red Level** – purchases of less than \$18,000 per year (Average Month: Less than \$1500)
- **White Level** – purchases of \$18,000-\$41,999 per year (Average Month: \$1500-\$3499)
- **Blue Level** – purchases of at least \$42,000 per year (Average Month: More than \$3500)

PSC accounts have the opportunity to move up to the next level by increasing monthly purchases. ACDelco monitors and adjusts accounts upward as the required purchases are attained. Accounts are only adjusted downward on an annual basis each February. However, accounts are moved upward each month by purchasing four consecutive months at the next level.

Contact your local ACDelco representative to discuss how to meet new purchase levels — by identifying ACDelco product lines, specific SKUs and more — that will help grow your business.

### Opportunity Reports

ACDelco generates a number of reports to help service centers maximize their PSC program benefits. Access the PSC Opportunity Report at [acdelco360.com](http://acdelco360.com).

Each Opportunity Report includes:

- Recap of purchases by product line (purchase date lags approximately 30 days)
- Recap of ey points, including lifetime earnings

- Recap of training usage
- Recap of Internet leads

### Program Benefits

Professional Service Center accounts receive a variety of benefits, including:

- **Training** – Unlimited Web-based training, access to instructor-led courses, GM ASEP, tools and equipment discounts
- **Rewards** – Up to 5% ACDelco Rewards
- **Consumer Assurance** – Participation in the program includes covered parts and labor in the event of an ACDelco product failure
- **Marketing Support** – Access to the ACDelco Advantage website
- **Discounts** – Eligibility for the GM Vehicle Supplier Discount and much more

Go to [www.acdelcotechconnect.com](http://www.acdelcotechconnect.com) and click the PSC Program tab for more information.

– Thanks to Jill Brown

## ACDelco Announces New Part Enhancements

ACDelco has recently introduced several new and enhanced parts covering spark plugs, brake pads and starters.

### Double Platinum Spark Plug #41-962

The new double platinum spark plug (19299585/41-962) covers many older applications currently covered by spark plug 41-110. The new spark plug is a high quality double platinum spark plug that covers many GM truck applications where double platinum plugs were used in production, including 1999-2007 Chevrolet Silverado and GMC Sierra models equipped with 4.8L/5.3L/6.0L engines and 2000-2006 Chevrolet Suburban/Tahoe and 2000-2003 GMC Yukon.



brake effectiveness of the pads for immediate performance improvement that reduces the break-in period. The coating is applied to the friction surface during manufacturing using a highly controlled process to ensure uniform coverage and applied density. The new coating does not alter any previously published on-car burnish recommendations. However, it significantly increases the effectiveness during initial braking as well as throughout the life of the brake pad. After installing these brake pads, the coating may exhibit a slight amount of visible airborne gasses as it transfers material onto the brake rotor surfaces. This will occur for a very brief time period during the burnish procedure and will then subside.

### New Professional Starter for Duramax Diesels

A new ACDelco Professional starter, part number 337-1123, is available for many 2001-2010 full-size GM trucks and vans equipped with the Duramax Diesel 6.6L V-8. The starter features 100% all-new components with no core charge. The new starter is offered in addition to ACDelco Professional starter 336-1737A.

### Delco Supreme Brake Fluid Discontinued

ACDelco has discontinued Delco Supreme 11 brake fluid (part number 10-4043). ACDelco DOT 3 GMW brake and clutch fluid (part number 10-4090) is recommended to be used in its place. This new product is a hydraulic brake fluid designed for use where a DOT 3 motor vehicle brake fluid is recommended by the manufacturer.

– Thanks to Rick Balabon

### Police Vehicle Brake Pads

ACDelco police vehicle brake pads now feature a proprietary new surface coating that improves the pre-burnish

## TechTips

The following technical tips provide repair information about specific conditions on a variety of vehicles. If you have a tough or unusual service repair, the **Diagnostic Hotline** can help. Call **1-800-825-5886, prompt #2**, from 8 a.m. to 8 p.m. ET Monday-Friday, to speak with a technical expert with the latest OEM information.

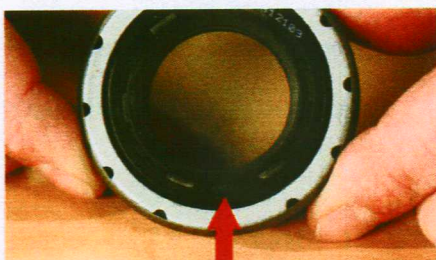
### New Full-size Truck Front Axle Shaft Seal Installation

1998-2013 Chevrolet and GMC 1500 series four-wheel-drive and all-wheel-drive trucks

A new front axle shaft seal has been released for service repairs that has several changes to be aware of during installation.

The new front axle shaft seal (part number 22761722) has a different appearance than the old seal.

The previous seal has exposed metal facing inward toward the fluid.



Outward facing side of the new seal with the words AIR SIDE

When installing the new seal, the exposed metal should face outward and the black side of the seal should face inward. The words "Air Side" also are molded into the rubber on the outward facing side.

### Use TXL Wire in Wiring Repairs

When making wiring repairs in the engine compartment, TXL wire should be used. TXL wire is designed to provide reliable, high temperature performance in a small diameter with minimal weight. All important aspects in an engine harness. It meets SAE standard J1128 for low voltage primary cable in vehicle electrical systems.

Standard primary wire found in most parts stores cannot withstand the temperatures and physical abuse common in the automotive environment. TXL wire features a multi-stranded copper core and lightweight cross-linked polyethylene insulation. It has a temperature rating of  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ) to  $257^{\circ}\text{F}$  ( $125^{\circ}\text{C}$ ) at 60 volts or less.

TXL wire has the thinnest insulation of the three types of cross-linked polyethylene wire, followed by GXL wire and SXL wire, which has the thickest insulation.

When making wire repairs, refer to GM Service Information for instructions on splicing copper wire using splice sleeves, folded-over wire repair, and correct wire gauge sizes for the proper application.

### Transmission Connector Conditions

2013 ATS (built prior to 12/12/12), 2008-2013 CTS, 2007-2009 SRX and 2006-2011 STS models, equipped with a 6-speed automatic transmission

One or more of the following conditions may be present on these vehicles:

- Check Engine (Service Engine Soon) MIL illuminated
- One or more DTCs set
- Reduced power
- No crank, no start
- Multiple MILs illuminated
- Transmission shifts hard
- Door locks cycle while driving

The Transmission Control Module (TCM) or Engine Control Module (ECM) may not communicate with the scan tool. The cause may be an unseated pin(s) in the transmission connector.

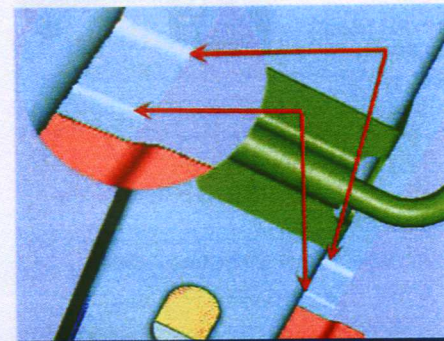
Inspect the transmission connector X1 terminal connections. Disconnect the connector and carefully tug on each wire to ensure the pins are fully seated. A side load on the wires may cause a false positive lock. Repair the connections as necessary.



Check for unseated pin(s) in the transmission connector.

### Rear Frame Rail Sectioning Instructions

2008-2012 Malibu



Frame rail sectioning

When sectioning the rear frame rail on a 2008-2012 Malibu, there may not be any die marks on the vehicle frame rail or the new part as indicated in the GM Service Information. The die marks are not present because the exhaust hanger is attached to the frame where they would have been.

Locate the section that is about 60 mm wide between the exhaust hanger and the rear slot in the rail. Then, follow the sectioning directions in the appropriate Service Information procedure.

It is best to cut rearward of the bracket because of the flange change on the top of the rail.

### Product Information

For free technical assistance and product information regarding specific ACDelco products, contact these toll-free information hotlines staffed by ASE-certified technicians:

Brakes – 1-888-701-6169 (prompt #1)

Chassis – 1-888-701-6169 (prompt #2)

Clutches – 1-888-725-8625

Lift Supports – 1-800-790-5438

Shocks – 1-877-466-7752

Starters and Alternators –  
1-800-228-9672

Steering (Pumps, Rack and Pinion, Gears) – 1-866-833-5567

Wiper Blades – 1-800-810-7096

# Training Update

## Training on the Go

ACDelco technical training videos can now be accessed from a mobile device using ACDelco Training's mobile site for iPhone®, iPad® and Android® devices. The mobile site offers technical Videos on Demand (VOD) along with these other mobile capabilities:



- Read status and news articles
- View your training path and records
- Access your schedule and profile
- Access FAQs about the site
- Contact the Help Desk

To access the ACDelco Training mobile site, log on to <http://mobile.acdelcotraining.com> from a compatible

iPhone, iPad, or Android device. The mobile site will launch, along with the option to switch back to the full site.

On the site, users can browse VOD sessions by Category or Popularity, or search to find specific content. The videos will operate the same as they do on a PC.

## How to Take ACDelco Training

Go to [www.acdelcotechconnect.com](http://www.acdelcotechconnect.com) and click the Training tab to log in to the ACDelco Learning Management System (LMS).

- To enroll in courses in your training path, open the home page to view your Training Progress Status Report, select Click Here to Show Detail, and then click the course number and title to view details on a specific course and to launch or enroll in the course.
- To enroll in an Instructor-Led Training (ILT) course (ILTs are full-day hands-on classroom courses), click Take Training > Instructor-Led Training to view the catalog and select a specific course.

- To enroll in a Virtual Classroom Training (VCT) course (VCTs are 1-2 hour live online courses), click Take Training > Virtual Classroom Training to view the catalog and select a specific course.
- To launch a Web-Based Training (WBT) course (WBTs are 1-4 hour self-guided online courses), click Take Training > Web-Based Training to view the catalog and select a specific course.
- To launch a TechAssist (TAS) course (TAS courses are 15-20 minute online presentations on a specific topic), click Take Training > TechAssist to view the catalog and select a specific course.
- To launch a Simulation (SIM) (SIMs require users to complete all repairs for a condition), click Take Training > Simulations to view the catalog and select a diagnostic challenge simulation.

– Thanks to Greg St. Aubin

## Current Instructor-Led Training Courses

The following ILT courses are currently being scheduled:

Course Number	Course Name
S-AC07-02.01ILT	Automotive Air Conditioning Advanced Refrigerant System Diagnostics
S-AC07-03.01ILT	HVAC Control System Operation and Diagnostics
S-DS11-13.01ILT	Vehicle Network Communications-Look who's talking: When modules talk, who is really listening?
S-EL06-04.02ILT	Network Communication Diagnosis
S-EL06-10.02ILT	Electrical Power Management
S-EL06-11.02ILT	Enhanced Automotive Circuit Diagnosis
S-EL06-12.01ILT	Hybrid Technology and Service
S-EL06-13.01ILT	Body Electrical Global Diagnostics
S-EL06-14.01ILT	Advanced Body Control System Electrical Diagnostics

## Current Virtual Classroom Training Courses

The following VCT courses are currently being scheduled:

Course Number	Course Name
S-AC07-02.01VCT	HVAC System Operation and Service Hints
S-AC07-04.01VCT	HVAC System Engine Cooling, Controls and Communication

Course Number	Course Name
S-EP08-02.01ILT	Engine Performance Computer Controls and Ignition System Diagnostics
S-EP08-03.01ILT	Engine Performance Air Induction and Fuel System Diagnostics
S-EP08-04.01ILT	Engine Performance Fault Monitoring and Emission System Diagnostics
S-EP08-06.01ILT	After Combustion Sensors: Is what is in the exhaust making your engine run rough?
S-EP08-08.02ILT	Evaporative Emissions Controls: Why is there always a code but never a leak we can find?
S-EP08-09.01ILT	Spark Generation: Is a lack of spark sending you up in flames?
S-EP08-81.02ILT	Duramax Diesel Operation and Diagnosis
S-SS04-01.01ILT	Vibration Correction Diagnostics

Course Number	Course Name
S-EL06-02.01VCT	Testing Electrical Signal and Control Circuits
S-EL06-03.01VCT	Serial Data Communication Networks
S-EL06-04.01VCT	Communication Network Diagnosis