Techline News

MDI 2 Available through GM Tools and Equipment

The GM MDI 2 released earlier this year is the next generation Global Diagnostic Interface tool for both current and future GM vehicles. It’s a compact communication module with increased processing power and security that manages the transfer of data between a vehicle’s onboard network and a service technician’s PC.

Available through GM Tools and Equipment

The new MDI 2 is not an essential tool, so it has not been shipped automatically to all GM dealerships.

Engine Concerns Resulting from Improper Service

Following the recommended vehicle maintenance schedule is critical to proper engine operation over the life of a vehicle. Performing the required maintenance procedures on all GM vehicles reduces the possibility of engine oil sludge build-up, contamination and/or any other conditions that may result in poor engine performance and internal engine damage.

Vehicles that have a lack of scheduled maintenance, have improper service performed, or have aftermarket calibrations installed are not covered under the new vehicle warranty.

Scheduled Maintenance

There are a number of conditions that will be evident if a vehicle’s recommended maintenance has not been followed.

Oil Filter – An oil filter may be blocked by debris and oil sludge if regular maintenance is neglected. On vehicles equipped with an oil filter cartridge, inspect the cap for sludge. Also check the oil filter pleats for heavy debris or sludge as well as any holes, tears or signs of improper installation. Check the cap for a missing seal too.

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The GM MDI 2 kit (EL-52100) is available for purchase at the Special Service Tools website, gmtoolsandequipment.com, or by calling 1-800-GM-TOOLS. The tool comes with a two year supplier warranty.

Designed for the Future

The MDI 2 is the main diagnostic tool for GM models — including Global Architecture, or Global A, vehicles — and was designed to handle future vehicle protocols and architectures as well. It’s expected to be the diagnostic communication tool used in dealerships for many years to come, but it also is backward compatible, so it can be used to perform Pass-Through programming on all vehicles built since 1996.

Current plans call for the original MDI, introduced in 2007, to continue to be supported. However, the MDI will not work on future Global B models.

The MDI 2 supports diagnostic applications — GDS 2, Data Bus Diagnostic Tool, and Tech2Win — as well as Pass-Through programming applications — TIS2Web–SPS.

EL-52100 MDI 2 Kit

The MDI 2 connects to the vehicle via the J1962 connector using a DLC cable. Connection between the MDI 2 and the PC running the GDS 2 software can be accomplished via a standalone connection (USB), the dealership network (CAT5), or through a new Point-to-Point wireless Wi-Fi interface feature (a simple plug & play).

The EL-52100 MDI 2 kit includes:

- MDI 2 Unit
- SAE J1962 DLC Cable
- 10-ft. USB A to USB B Cable
- Ethernet Cable
- D-Link Wireless USB Adapters (Dongles) (Optional; for wireless connection)

MDI Manager Software

The MDI Manager must be installed on the PC in order to configure, update and run the diagnostic applications. The MDI Manager software is used to set up the configuration of the MDI 2 and to update the firmware on the MDI 2. Visit the TIS2Web/Global TIS website to determine if an updated version of the MDI Manager software is available.

Dealerships considering new purchases should look into the MDI 2 for its many advantages. For more information, go to gmtoolsandequipment.com.

Thanks to Chris Henley and Kent Woiak

Inoperative Sunroof and Sunshade

The sunroof glass (RPO C3U) and sunshade may be inoperative on some 2016 CT6, Malibu (VIN Z) and 2017 LaCrosse and XT5 models. DTCs B3664 (Sunroof Position Select Switch High Signal Circuit), B369B (Sunroof Sunshade Position Select Switch Circuit), B369C (Sunroof Tilt Position Select Switch Circuit), U1517 (BCM Lost Communication with Sunroof Sunshade Motor Module) and/or U151B (BCM Lost Communication with Sunroof Control Module) may be set.

Inspect the sunroof wiring harness for a loose connection by wiggling the harness while operating the sunroof motor. If the sunroof motor cuts off while wiggling the harness, replace the sunroof wiring jumper harness. If all sunroof motor functions work properly, continue with further diagnostics as outlined in the appropriate Service Information. Do not replace the sunroof motor or sunshade motor for this condition.

If replacing the sunroof wiring jumper harness:

- Disable the SIR system.
- Lower the headliner from the rear up to the B-pillar. Only perform the steps in the headliner replacement procedure that will lower the headliner enough to gain access to the part.
- Disconnect the sunroof wiring jumper harness from the sunroof window motor to the headliner harness.
- Connect the new sunroof wiring jumper harness starting from the sunroof motor while re-clipping it to the headliner down to the headliner harness.

TIP: Do not change the wiring harness routing location. Correct harness routing is critical for proper air bag deployment.

In addition, if the sunroof motor and sunroof mechanism get out of sync, the sunroof may operate erratically. To resynchronize the motor and sunroof mechanism, perform the Sunroof Motor/Actuator Initialization/Teach Process. If the process is not carried out completely, the sunroof may stop and reverse slightly when it gets to the location where it needs to push down the windscreen. Make sure to complete the process.

Thanks to Dallas Walton and Blake Streling
Engine Concerns Resulting from Improper Service

1. Sludge on cap
2. Sludge on filter pleats
3. Missing cap seal

**Oil Pan** – Improper maintenance can lead to sludge build-up in the bottom of the oil pan. Sludge or debris in the bottom of the pan may block the pick-up tube screen. Some light debris in the oil pump pick-up tube screen should be considered normal. Use your judgement to determine what is or what is not considered normal wear.

1. Sludge in the pan
2. Light debris in the oil pump pick-up tube screen

**Valve Cover and Camshaft** – The valve covers may be blocked at the engine breather, vacuum or oil supply and return ports if regular maintenance has not been performed. Sludge may be seen on the camshaft and camshaft caps. Low oil pressure or a loss of pressure may lead to damage, such as scratches or gouges on the journals or lobes of the camshaft. A lack of oil from lack of maintenance also may create a lifter tappet ticking noise. Check for sludge build-up on the camshaft position actuator solenoids and debris on the solenoid screen.

1. Sludge on the camshaft cap
2. Sludge on the camshaft
3. Scratched lobe

**Improper Service**

The improper service of a vehicle may result in poor engine performance. Also make sure components are properly installed when performing maintenance procedures.

1. Pre-detonation damage
2. Cracked piston land

**Air Filter** – Improper installation of the air filter in the air filter housing or the use of an aftermarket air filter can allow foreign debris to bypass the air filter or the air filter housing outlet ducts and enter the combustion chamber. As result, there may be damage to the piston and cylinder wall.

1. Debris on the solenoid screen
2. Sludge on the camshaft position actuator solenoids

**Bearings** – Main and rod bearing damage may be caused by foreign debris. Dust and debris on the crankshaft, crankshaft bearings, rods or rod bearings can cause the chrome finish of the journals to prematurely wear, increasing clearance and possibly causing low oil pressure or a knocking noise. Scratches on the journals also can lead to a loss of oil pressure.

**Aftermarket Calibrations**

Engine damage may result from incorrect calibrations or other modifications made to the vehicle. Non-GM engine calibrations can be identified using the Tech 2 or GDS 2.

1. Rod damage
2. Rod bearing damage

**Pistons** – Piston damage may be caused by a pre-detonation lean event. Improper engine warm-up, such as from aftermarket cold air filters, can create excessive heat to the pistons and cause them to seize to the cold cylinder walls and crack the piston lands.

Thanks to Tracy Lucas
Part Identification for Next Generation Infotainment Components

The applications of some next generation infotainment components used on 2013-2016 ATS, SRX, XTS; 2014-2016 Regal, LaCrosse, CTS, ELR, Corvette, Impala Silverado LD, Sierra LD; 2015-2016 Escalade models, Colorado, Silverado, Tahoe, Suburban, Canyon, Sierra, Yukon models; 2016 Envision, CT6, Camaro, Cruze, Malibu; 216-2017 Volt; and 2017 XT5 models may not be clear.

Dealership personnel should check that the correct infotainment components are ordered and replaced when making repairs to Integrated Center Stacks (ICS), OnStar modules, Human Machine Interface (HMI) modules, radios, and Driver Information Displays. For example, do not replace the ICS when it is actually the radio that requires replacement.

Refer to the following photos to help in identifying the correct parts.

**Integrated Center Stack (ICS)**
The ICS includes the display and radio control assembly, including the control knobs and buttons for all audio and HVAC functions and the information display.

**OnStar (Telematics Communication Interface Control Module/Vehicle Communication Interface Module)**
The VCIM is used to communicate data and voice signals over the national cellular network. The module may also have the ability to act as a Wireless Local Area Network (WLAN) Wi-Fi hotspot. It also two antenna inputs, a primary cellular signal and a combined GPS/secondary cellular signal.

Do not mistake the VCIM for the HMI.

**Human Machine Interface (HMI)**
The HMI module is responsible for video for the infotainment display, Bluetooth, USB, memory card reader, and speech recognition functions.

**Radio/Tuner**
The radio is the Media Oriented Systems Transport (MOST) BUS master that is responsible for normal wake up and initialization of communication on the network. It communicates with other components and systems within the vehicle via GMLAN and is responsible for receiving all broadcast audio bands.

**Driver Information Display**
The Driver Information Display, used on the Corvette only, includes the touchscreen.

For additional information about the various infotainment components used on GM models, refer to #PIC6095B.

👏 Thanks to Ryan Dorland
Proper Shipping of Hybrid Transmission Returns

A number of 5ET50 electric variable automatic transmissions (RPO MKE) from 2016-2017 Volt and Malibu Hybrid models recently returned to GM have been damaged during shipping due to improperly securing the transmission in the shipping cocoon.

There is a ratcheting strap in the cocoon that must be used to properly secure the transmission. The strap should be placed completely across the transmission; not on one corner or one side.

All electric variable transmissions are on part restriction and must be returned to GM if diagnosis leads to replacement. Components on restriction are returned in order to gather engineering feedback and perform root cause analysis of the failure. It’s critical to this endeavor that the transmissions are returned as they were on the vehicle. Many transmissions are put on a dynamometer for evaluation as well as installed in a vehicle prior to teardown. This evaluation cannot be accomplished if due care is not used to ensure that all components are properly secured and damage does not occur during return shipping.

As part of the restriction program, technicians are required to provide detailed customer comments, conditions, Diagnostic Trouble Codes (DTCs) and other useful information when calling the Technical Assistance Center. For example, freeze frame failure records should be captured along with DTCs. Any DTCs should not be cleared.

To ensure the replacement transmission gets to dealerships undamaged, a new “blue stripe” shipping container is now being used that includes an improved strap.

Thanks to Keith Newbury

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Publisher:
John Meade
GM Customer Care and Aftersales

Editor:
Lisa G. Scott
GM Customer Care and Aftersales

Technical Editor:
Mark Spencer
mspencer@gpstrategies.com

Production Manager:
Marie Meredith

Creative Design:
5by5 Design LLC
dkelly@5by5dzign.com

Fax number:
1-248-729-4704

Write to:
TechLink
PO Box 500
Troy, MI 48007-0500

GM TechLink on the Web:
GM GlobalConnect

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Adding an RKE Transmitter without SPS

Adding a new Remote Keyless Entry transmitter, or key fob, to a vehicle can be done without using the Service Programming System (SPS). In the past, this quick learn procedure required that one previously learned transmitter must be present.

On 2017 XT5, Acadia and Volt models, two previously learned transmitters are required in order to perform the quick learn procedure. The transmitters should be placed in the cup holder.

If two transmitters are not present, the procedure will not be completed and a Remote Learning Pending message will be displayed on the Driver Information Center. The quick learn procedure on these models cannot be performed without the correct number of transmitters. If only one learned transmitter is available, SPS must be used to add a new transmitter.

When using the quick learn procedure to add a transmitter without SPS, verify all mechanical keys operate correctly before beginning any programming procedures.

A total of eight transmitters can be learned to a single vehicle. The quick learn procedure only adds transmitters. It does not erase previously learned transmitters.

Thanks to Christopher Crumb

Service Know-How

10216.07V Emerging Issues – July 14, 2016

A review of the latest service topics from Brand Quality and Engineering, including radio software updates and tips on adhesive parts installation and replacement, including moldings and emblems.

To view Emerging Issues seminars:

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