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Allison LCT 1000 Transmission

The Allison LCT 1000 automatic transmission is offered in 3/4- and 1-ton Silverado and Sierra trucks with the 8.1L gasoline and 6.6 Duramax diesel engines. This robust transmission offers five forward speeds and one reverse. The forward and reverse gear ratios are accomplished by five clutches.

TIP: The Allison is unique in having no bands, no sprags, and no roller clutches.

Transmission performance is controlled by six solenoids operated by the Transmission Control Module (TCM), which is linked by a Class 2 data line to the Powertrain Control Module (PCM).

Operating Characteristics

As these unique features suggest, the Allison transmission has some unique operating characteristics. A customer who is familiar with only a lighter-duty drivetrain may interpret perfectly normal operation as a cause for concern.

You can avoid unnecessary diagnosis if you can understand the reasons behind these characteristics. Here are some highlights.

Grade Braking – The primary purpose of the grade-braking feature is to utilize engine braking to slow a heavy vehicle on steep grades, in order to reduce wear on the traditional braking system. The method used to slow the vehicle is by overriding the PRNDL position, effectively pre-selecting the next lower gear range automatically.

TIP: The engine is designed to operate in the dashed red zone on the tachometer but not in the solid red zone. The engine can operate in the dashed red range but cannot produce any power in this range. Do not operate the engine in the solid red zone.

Dashed red zone

When driving downhill on grades with heavy loads, the vehicle's inertia can be great enough to increase vehicle speed and consequently engine speed without applying the throttle. To increase the availability of grade braking and provide for additional engine braking, the engine has been designed to allow operation in the dashed red zone region. Operation in this region is normal and will not damage the engine.

Refer to Service Bulletin 02-07-30-004B.

Tow/Haul and Overdrive Disable – If the vehicle has both Tow/Haul and Overdrive disable features (standard on 2003-04), tap the button once to enable or disable Tow/Haul; press and hold the button to enable or disable overdrive.

TIP: This feature may be added to 2001-02 vehicles by installing a switch and wiring, and reprogramming the transmission control module (TCM).

Refer to Service Bulletin 02-07-30-051A.

Tow/Haul Mode – Tow/Haul (T/H) can be used at any time, even when not towing. Some drivers may not like the T/H shift characteristics when the vehicle is lightly loaded, so normal mode would be selected.

continued on page 3

Service Programming Symbol

A new service programming symbol is now in use. The symbol is used to indicate components that are capable of being programmed or require a service setup.

In SI, you will find the symbol in the upper right corner of the schematic page that includes the component. When you click on the symbol, it will take you to the Control Module Reference table (see the May 2004 TechLink for more details on using this table). The table will guide you to the appropriate procedure.

The service programming symbol may also appear on some components, either on the parts label or embossed on the part itself.

- Thanks to Devin Koski

Programming Labor Time

When the labor time is established for the removal and replacement of a component, the time required to perform programming or setup is included, if applicable. It is not necessary to add other labor hours or include an additional labor operation. All necessary time is included within the R&R labor operation.

- Thanks to Devin Koski

TECHlink GM

Contents

GM Service and Parts Operations

Malibu Outside Temperature Display

In the 2004 Malibu, the outside temperature readout is included in the radio display. When the car is being driven, this indicates the outside temperature, as determined by the outside temperature sensor.

Immediately after startup, the reading depends on several factors, including the amount of time the vehicle was turned off, the vehicle speed, and the value of the outside air temperature sensor.

Started with Key After Being Parked for 3 Hours

The BCM initializes the outside air temperature display to the value of the actual outside air temperature reading.

Started with Key After Being Parked for Less Than 3 Hours, or Anytime When Started with Remote Starter

The BCM initializes the outside air temperature display with the last stored value when the vehicle was shut off. If the outside air temperature is greater than the stored value, the display will not update as long as the vehicle remains below 10 mph (16 kph). When the speed is between 10 and 33 mph (16 and 53 kph), the readout updates after approximately five minutes. And when the speed exceeds 33 mph (53 kph), the update occurs after approximately three minutes.

If the current outside air temperature value is less than the stored value, the lower value will be displayed immediately.

If the temperature sensor performs according to these parameters, everything is OK. Do not attempt to repair or replace anything.

- Thanks to Devin Koski

Corvette Keyless Ignition

The 2005 Corvette keyless access system uses a coded transmitter fob. With the transmitter fob inside the passenger compartment, pressing the START button on the instrument panel starts the engine. The engine is turned OFF by briefly pressing the OFF/ACC button.

TIP: In most respects, this system is identical to the one used on the Cadillac XLR, covered in the February 2004 TechLink. However, there are some differences in the keyless access system when the Corvette is equipped with a manual transmission.

The ignition is not designed to turn off on vehicles equipped with a manual transmission unless the transmission is in Reverse. This means the ignition state will be Key On, Engine Off if the transmission is not in Reverse when the OFF/ACC button is pressed.

This can affect some service procedures because the engine control module (ECM) remains awake in the Key On, Engine Off state.

TIP: When performing any service procedure calling for turning the ignition OFF on a manual transmission car, be sure to place the transmission in Reverse before pressing the OFF/ACC button.

After a reprogramming event or after performing a CKP System Variation Learn Procedure, it's necessary to turn the ignition OFF for a period of time, to allow the data to be written to long term memory. If the transmission is not in Reverse, the data will never be written to long term memory because the ECM is waiting for the ignition state to be OFF.

If the engine is started or the ignition is turned back to RUN under the assumption that the ignition had been turned off after the procedure, the write is aborted and all of the learned information is lost.

In the case of an ECM reprogramming or replacement, it could appear that the ECM did not properly program. With a CKP learn, the ECM will not store the learned values, which may cause DTCs to set.

TIP: If battery voltage drops below 9v, electronic control modules shut down.

- Thanks to Morgan Chemello and Bob Vandenbush

Condition	Button Press	What Happens
Engine OFF, ignition OFF	Press START	Ignition ON, engine starts
Automatic Transmission in Park, engine running	Press OFF/ACC	Engine OFF, ignition OFF, RAP enabled for up to 20 minutes.
Automatic Transmission in Park, engine OFF, ignition OFF	Press OFF/ACC	ACC enabled.
Manual Transmission in Reverse, engine running	Press OFF/ACC	Engine OFF, ignition OFF, RAP enabled for up to 20 minutes.
Manual Transmission not in Reverse, engine running	Press OFF/ACC	Key On, Engine Off
Either transmission, engine OFF, ignition OFF:	Press OFF/ACC	ACC enabled
Either transmission, engine OFF, ignition OFF:	Press OFF/ACC for 5 seconds	Key On, Engine Off

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Allison LCT 1000 Transmission — from page 1

When the vehicle is not heavily loaded, some drivers switch from Normal to T/H mode during closed throttle downshifts from highway speeds to help slow the vehicle and then switch back to Normal mode after they've stopped.

If T/H is not used when towing or when heavily loaded, the driver can expect higher transmission sump temperatures, more wear and tear on the brake system, and increased shift cycling.

T/H shift mode significantly changes the transmission's shift pattern to reduce cycling and to deliver better performance, control, and cooling when towing/hauling heavy loads.

For instance:

- Upshift points are raised at light to mid throttle position to use more of the engine's available power for accelerating. Downshift points are raised to enhance engine braking to help slow the vehicle.
- During deceleration, the torque converter clutch (TCC) remains applied at closed throttle to much lower vehicle speeds to significantly improve the effect of engine braking.
- During acceleration, the TCC is applied in 2nd range and remains applied in 3rd, 4th, and 5th. This improves the drivetrain efficiency and significantly lowers transmission sump temperature when towing heavy loads. The combination of applying the TCC in 2nd range and the raised upshifts and closed throttle downshifts results in more positive shift feel when operating in this pattern. This is especially true when operating the vehicle while lightly loaded. In Normal mode, TCC generally applies only in higher ranges and is dependent on throttle position.

Refer to SI Document 1480544.

Overdrive Disable – The selector button is located on the end of the column shift lever. The Overdrive Disable is turned on and off by pressing and holding the button at the end of the column shift lever until the IP indicator light illuminates. The Overdrive Disable feature prevents the transmission from shifting into 5th gear. Overdrive disable can be activated in either Normal or Tow/Haul mode.

TIP: Be careful not to inadvertently select the Overdrive Disable function when only the Tow/Haul function is intended. If so, the driver could sense that grade braking is not working due to the fact that when in normal mode, grade braking will not command downshifts below 4th range.

Park Pawl – The Allison transmission is equipped with a park pawl designed to hold 26,000 lbs GCVW. The transmission incorporates much larger parts than other automatic transmissions, and the lever effort to shift the vehicle out of park may be higher than lighter duty vehicles. An occasional clunk may be heard when the selector lever is moved from Drive or Reverse to Park. This is normal and there is no damage occurring during these shifts.

Clutch Operation – The Allison is a clutch-to-clutch transmission. When shifting from one range to another, the transmission drops one clutch and brings another clutch on to complete the transition to the new range. In order to accomplish this smoothly, the hand-off from the off-going clutch to the on-coming clutch has to be timed precisely.

If the on-coming clutch gets capacity before the off-going clutch is released, the shift has a tie-up feel. Under this scenario, three clutches momentarily have capacity at the same time. When this occurs, the operator of the vehicle may experience a head bob (a sensation where the vehicle momentarily slows down). As soon as a tie-up shift is sensed by the transmission, the off-going clutch is immediately dropped to minimize the shift feel.

If the off-going clutch drops capacity before the on-coming clutch gains capacity, the shift will flare. Under this scenario, only one clutch momentarily has capacity, resulting in the transmission being in a neutral gear state. This will result in an increase in engine speed during the shift and a shift bump caused by a loss of acceleration. As soon as a flare shift is detected, the transmission will utilize torque management to control engine speed until the on-coming clutch gains capacity.

TIP: Both tie-up and flare shifts can be experienced during the adaptive process (See Adaptive Shift Controls below). This is normal as the transmission controls learn the environment under which shifts are being performed. Shift quality will improve as more shifts of each type are made.

Cold Operation – When the transmission is cold, transmission fluid becomes more viscous and flows more slowly. This change in transmission fluid viscosity results in the on-coming clutch filling more slowly and the off-going clutch exhausting more slowly. Due to different flow paths for the oil in the transmission, this difference in timing is not the same for both the on-coming and off-going clutches. To compensate for these differences, the electronic controls will modify on-coming clutch fill times and off-going clutch exhaust times as sump temperatures change, using a process known as characterization.

Characterization uses the individual transmission adaptive shift parameters and adds a differential factor for cold transmission fluid. Additionally, the adaptive process is turned off during cold temperature operation, so shift quality is optimized during warmed up operation where the majority of drive time will be spent.

When temperatures are very cold, the transmission will inhibit certain ranges. The chart below shows range availability as a function of transmission sump temperature.

Sump Temperature	Range(s) available
Above 5° F (-15° C)	All ranges
-13° to 5° F (-25 to -15° C)	1st thru 4th ranges only
-31° to -13° F (-35 to -25° C)	2nd and 3rd ranges only
-31° F (-35° C) or lower	2nd range only

Torque converter clutch operation will be inhibited when transmission sump temperature is below certain levels. The gas-powered trucks will inhibit torque converter clutch operation below 68° F (20° C) transmission sump temperature, and the diesel-powered trucks will inhibit torque converter clutch operation below 86° F (30° C) transmission sump temperature.

Shifts may be more noticeable with a cold transmission. This slight difference in shift quality is normal.

Heater Performance Mode – On diesel-powered trucks, a feature to shorten engine/cab warm-up times is provided. This feature raises part throttle upshift points (2-3, 3-4, 4-5) to increase engine speed when cold weather conditions are detected. Under these conditions it is normal when the upshifts seem to hang or be delayed.

Adaptive Shift Controls – The Allison transmission is equipped with adaptive shift controls, which continually compares key shift parameters to pre-programmed ideal shift conditions. The transmission makes adjustments in order to approach the ideal shift for vehicle speed, load, and road conditions. During this process, some shifts may feel different as the transmission determines optimum settings for a particular shift.

Shift Stabilization – The shift stabilization feature minimizes shift busyness, or hunting between ranges. The transmission is designed to determine before making an upshift whether the engine will be able to maintain vehicle speed in the next higher range. If it senses that it will not, it will prevent the upshift from occurring.

4 Wheel Drive Operation – When operating in 4LO, there is a very deep gear ratio reduction and the resulting shift feel will be exaggerated. Sometimes a grinding noise may be noticed when going to Park from Drive in 4LO. The deep gear ratio causes the internal parts to be still rotating for a short period of time after the vehicle comes to a stop. The operator should wait 1 to 2 seconds after coming to a stop before engaging Park.

- Thanks to John Janssen

Malibu Fuel Tank Cap

The fuel tank cap for the 2004 Malibu and Malibu Maxx is not interchangeable with the fuel cap on the previous (Classic) Malibu model.

2004 Malibu and Malibu Maxx Fuel Tank Cap	Previous (Classic) Malibu Fuel Tank Cap
22729974 or 10331673	10326370 or 10372245

- Thanks to David McGillis

Oil Life System Reset Procedures – Cars

Many GM cars and trucks are equipped with an oil life system that determines when an oil change is required. After the oil has been changed, it's necessary to reset the system.

Procedures for resetting 2001 through 2005 passenger cars are published here. Trucks were published last month.

The information for this article is the same as you will find in the applicable owner or service manual.

To find this information in 2001-4 eSI service manuals:

Select the vehicle

Select category General Information

Select category Maintenance and Lubrication

Select category Maintenance and then GM Oil Life System-Resetting.

Beginning with 2005 this information will only be found in owner manuals. To find this information in eSI owner manuals:

Select the vehicle

Select Owner Manual

Select Service and Appearance Care

Select Checking Under the Hood

Select Description and Operation

Select Engine Oil Life System

TIP: You may be able to use the Search function using the words Oil Life System

Resetting.

TIP: You can find copies of charts for earlier models on the TechLink website on the Internet at http://service.gm.com. Look for the February and March 2000 issues and the May and June 2003 issues.

2001 - 04 Seville
2001 - 05 DeVille

1. Turn the ignition to ON but with the engine off.
2. Display the Oil Life message by pressing the Info button.
3. Press and hold the Reset button until the display shows 100% Engine Oil Life. This resets the oil life index.

2001-02 Eldorado

1. Turn the ignition to Run but with the engine off.
2. Display the OIL LIFE LEFT message by repeatedly pressing the SKIP INFO button.
3. Press the NO INFO RESET button until the display show 100% Engine Oil Life. This resets the oil life index.

2003 - 05 CTS

Base Audio System

1. Press the up or down arrow on the INFO button located to the right of the DIC display to access the DIC menu.
2. Once XXX% ENGINE OIL LIFE menu item is highlighted, press and hold the CLR button.
3. The percentage will return to 100, and the oil life indicator will be reset.
4. Repeat the steps if the percentage does not return to 100.

Navigation System

1. Turn the system on by pressing the PWR/VOL knob once. The PWR/VOL knob is located to the lower left of the DIC display.
2. Press the INFO button located to the left of the display to access the Vehicle Info menu.
3. Turn the TUNE/SEL knob located to the lower right of the display until Engine Oil Life is highlighted. Press the knob once to select it.
4. Once XXX% Engine Oil Life is displayed, press the multi-function button next to the Reset prompt in the upper right corner of the display.
5. The percentage will return to 100, and the oil life indicator will be reset.
6. Repeat the steps if the percentage does not return to 100.

2004 - 05 SRX

Base Audio System

Press the CLR button on the right of the DIC display to acknowledge the Change Engine Oil message. This will clear the message from the display and reset it. To reset the oil life indicator, use the following steps.

1. Press the up or down arrow on the INFO button located to the right of the DIC display to access the DIC menu.
2. Once XXX% ENGINE OIL LIFE menu item is highlighted, press and hold the CLR button. The percentage will return to 100, and the oil life indicator will be reset.
3. Turn the key to OFF.

If the Change Engine Oil message comes back when you start the vehicle, or the percentage does not return to 100, the engine oil life system has not reset. Repeat the procedure.

Navigation System

Press the display button to acknowledge the Change Engine Oil message. This will clear the message from the display and reset it. To reset the oil life indicator, use the following steps.

1. Turn the ignition to ON with the engine running.
2. Turn the system on by pressing the PWR/VOL knob located to the lower left of the DIC display
3. Press and hold the vehicle information display button located in the upper right of the screen for 3 seconds to enter the vehicle information menu.
4. Use the scroll up or down display keys to select Engine Oil Life.
5. Press and hold the RESET button on the display. The percentage will return to 100, and the oil life indicator will be reset. Repeat the steps if the percentage does not return to 100.
6. Press the RETURN button on the display to return to the main page.
7. Turn the key OFF.

If the Change Engine Oil message comes back when you start the vehicle, the engine oil life system has not reset. Repeat the procedure.

2004 - 05 XLR
2005 STS

1. Press the up or down arrow to scroll the DIC to show OIL LIFE.
2. Once the XXX% ENGINE OIL LIFE menu item is highlighted, press and hold the RESET button until the percentage shows 100%. Repeat the steps if the percentage does not return to 100.
3. Turn the key to OFF.

If the Change Oil Now message comes back when you start the vehicle, the engine oil life system has not reset. Repeat the procedure.

2001 - 05 Impala
2002 - 05 Monte Carlo

Using the Radio

1. Turn the ignition to ACC or ON, with the radio off.
2. Press and hold the TUNE DISP button on the radio for at least 5 seconds until SETTINGS is displayed.
3. Press the SEEK PTYPE up or down arrow to scroll through the main menu.
4. Scroll until OIL LIFE appears on the display.
5. Press the 1 PREV or 2 NEXT button to enter the submenu. RESET will be displayed.
6. Press the TUNE DISP button to reset. A chime will be heard to verify the new setting and DONE will be displayed for one second.
7. Once the message has been reset, scroll until EXIT appears on the display.
8. Press the TUNE DISP button to exit programming. A chime will be heard to verify the exit.

Using the Accelerator Pedal

1. Turn the ignition to ON, with the engine off.
2. Fully press and release the accelerator pedal 3 times within 5 seconds.
3. If the CHANGE ENGINE OIL message flashes, the system is reset. However, if it stays on, it did not reset. You'll need to repeat the procedure.

2001 - 02 Intrigue
2001 - 03 Grand Prix w/o Trip Computer
2001 - 04 Century and Regal w/o DIC
2005 Century

1. Turn the ignition to RUN, with the engine off.
2. Fully press and release the accelerator pedal slowly 3 times within 5 seconds.
3. If the CHANGE OIL SOON light flashes, the system is resetting.
4. Turn the key to OFF after the light has finished flashing, and then start the vehicle.
5. If the CHANGE OIL SOON light comes back on, the engine oil life system did not reset. Repeat the procedure.

2001 - 04 Regal with DIC

1. Turn the ignition to RUN, with the engine off.
2. Fully press and release the accelerator pedal slowly 3 times within 5 seconds.
3. If the CHANGE OIL SOON light flashes, the system is resetting.
4. Turn the key to OFF after the light has finished flashing, and then start the vehicle.
5. To reset the DIC put the oil life display on the DIC.
6. Press the DIC RESET button for five seconds.
7. If the CHANGE OIL SOON light comes back on, the engine oil life system did not reset. Repeat the procedure.

2001 - 03 Grand Prix with Trip Computer

1. Press the MODE button until the light appears lit next to OIL LIFE.
2. Press and hold the RESET button for three seconds. The oil life percentage should change to 100%.

2004 – 05 Grand Prix

1. Press the options button on the DIC until

ENGINE OIL MONITOR appears on the DIC screen.

2. Press the set/reset button to reset the system.

The next screen indicates that the engine oil monitor has been reset.

If the vehicle is equipped with the trip computer DIC, when the gage button is pressed and the OIL LIFE REMAINING mode appears, it should read 100 % OIL LIFE REMAINING.

3. Turn the key OFF.

If the Change Oil Soon message comes back when you start the vehicle, the engine oil life system has not reset. Repeat the procedure.

2004 – 05 GTO

1. Turn the ignition to RUN, with the engine off.

2. Fully press and release the accelerator pedal slowly 2 times within 5 seconds.

3. Turn the ignition to LOCK.

4. Start the engine.

5. If the CHANGE OIL light comes back on, the engine oil life system did not reset. Repeat the procedure.

2005 Allure and LaCrosse

1. Turn the ignition to RUN, with the engine off.

2. Fully press and release the accelerator pedal slowly 3 times within 5 seconds.

3. Turn the ignition to OFF then start the engine.

4. If the light or message comes back on, the engine oil life system did not reset. Repeat the procedure.

2001 - 03 Aurora

1. With the ignition on, press the SELECT right arrow button on the DIC to OIL so the OIL LIFE percentage is displayed.

2. Press RESET and hold for five seconds. OIL LIFE XXX% will appear and then when the button is released OIL LIFE 100% will be displayed.

2001 - 05 Bonneville

1. Display OIL LIFE on the DIC.

2. Press and hold the RESET button for more than five seconds. The oil life will change to 100%.

2001 - 05 LeSabre
2001 - 05 Park Avenue

1. Display OIL LIFE INDEX on the DIC.

2. Press and hold the RESET button on the DIC for more than five seconds. The oil life will change to 100%.

2001 – 05 Corvette

1. Turn the ignition to ON, with the engine off.

2. Press the TRIP button so the OIL LIFE percentage is displayed.

3. Press RESET and hold for two seconds. OIL LIFE REMAIN 100% will appear.

2001 - 02 Camaro
2001 - 02 Firebird

1. Turn the ignition to RUN but with the engine off.

2. Push the Trip/Oil Reset button located on the instrument panel for 12 seconds. The Oil Change light will start to flash to confirm that the system is reset. The reset is completed when the Oil Change light goes out.

2001 - 03 Grand Am
2001 - 03 Alero

1. Turn the ignition to ON.

2. Push the RESET button located in the driver's side instrument panel fuse block. The CHANGE OIL light will start to flash.

3. Press and hold the RESET button again. The reset is complete when you hear the chimes sound and the CHANGE OIL light goes out.

2004 - 05 Grand Am
2004 Alero
2005 Cobalt
2005 Pursuit

1. Turn the ignition to RUN, with the engine off.

2. Fully press and release the accelerator pedal slowly 3 times within 5 seconds.

3. The reset is complete when you hear the chimes and the Change Oil light goes out. If the light stays on and no chime is heard repeat the reset procedure.

4. Turn the key to OFF.

5. Start the engine. If the CHANGE OIL SOON light comes back on, the engine oil life system did not reset. Repeat the procedure.

2005 G6

1. Turn the ignition to RUN, with the engine off.

2. Fully press and release the accelerator pedal slowly 3 times within 5 seconds.

3. When the reset is complete, the Change Oil Soon message can be cleared. Press and hold the Enter button for at least 1 second. An Acknowledged display message will appear for 3 seconds or until the next button is pressed.

4. Turn the key to OFF.

5. Start the engine. If the CHANGE OIL SOON message comes back on, the engine oil life system did not reset. Repeat the procedure.

2004- 05 Malibu

1. Display OIL LIFE RESET on the DIC.

2. Press and hold the ENTER button for at least one second. An ACKNOWLEDGED display message will appear for 3 seconds or until the next button is pressed. This will tell you the system has been reset.

3. Turn the key OFF.

If the Change Oil Soon message comes back when you start the vehicle, the engine oil life system has not reset. Repeat the procedure.

2002-05 Saturn L

1. Turn the ignition to RUN, with the engine off.

2. Fully press and release the accelerator pedal 3 times within 5 seconds.

3. If the CHANGE OIL SOON light is flashing, the system is reset. The light will flash for up to 30 seconds or until the ignition is turned off.

4. If the light comes on again and stays on for 30 seconds at the next ignition cycle, it did not reset. Reset the system again.

2003-05 Saturn Ion

1. Press and release the trip/reset button until the OIL LIFE message is displayed.

2. Press and hold the trip/reset button until a chime sounds 5 times and RESET is displayed in the message center. When the system is reset, the odometer will again be displayed in the message center.

3. Turn the key OFF.

If the CHG OIL message comes back on when you start the vehicle, the system has not reset. Repeat the procedure.

- Thanks to Jerry Garfield

Rendezvous AWD Transmission and Transfer Case Removal

In an LY7 (3.6L) equipped Rendezvous AWD, the complete powertrain (engine, transmission, transfer case and frame) must be removed as a unit. The transmission and transfer case can then be serviced with the powertrain out of the vehicle.

Do not attempt to remove the transmission or transfer case with the engine remaining in the vehicle. Component damage and significant repair delays could occur if the correct procedures are not followed.

IMPORTANT: This applies **only** to Rendezvous LY7 AWD configurations. In all other Rendezvous powertrain configurations (LY7 FWD, LA1 FWD and AWD) the engine remains in the vehicle during transmission and transfer case service procedures. SI covers these repair procedures and their differences.

- Thanks to Russ Gilbert and Kevin Willcock

Labor Time Guide Change

For complete details, refer to Warranty Information Letter 04-03-08-010. Here are the highlights.

A change to the labor time guide effective April 1, 2004 eliminates the labor allowances for the replacement of certain components **in sets**:

- struts
- strut mounts
- wheel bearings
- control arms.

It is very unlikely that both components in a set will fail at the same time. Proper repair order write-up, diagnosis and service procedure will allow the technician to determine which component on the vehicle is the root cause of the customer concern.

Standard strategy-based diagnostics, including test drives to duplicate the customer concern, use of the Chassis Ear and other aids allow the technician to identify the specific side of the vehicle involved in the customer concern. This avoids replacement of both components when only one has failed.

TIP: The defective component causing the customer concern should be the only component replaced.

TIP: Use both the Replace Right and Replace Left labor operations only if both components have failed and require replacement.

IMPORTANT: Parts may be requested returned to the Warranty Parts Center for analysis.

- Thanks to Steve Oakley

Top Tier Detergent Gasoline

This information applies to all 2005 and prior General Motors passenger cars and trucks (U.S. and Canada only).

Top Tier Detergent Gasoline, a new class of gasoline with enhanced detergency, will be appearing at retail stations of some fuel marketers. This gasoline meets new, voluntary deposit control standards developed by General Motors, BMW, Honda and Toyota.

The U.S. EPA requires all gasoline sold in the U.S. to contain a detergent additive. However, the requirement is minimal and in many cases is not sufficient to keep engines clean. A higher level of detergent is needed than what is required by the EPA. Top Tier Detergent Gasoline exceeds the detergent requirements imposed by the EPA.

The four corporations recognized the benefits to both the vehicle and the consumer. Also, joining together emphasized that low detergency is an issue of concern to several automotive companies.

All vehicles will benefit from using Top Tier Detergent Gasoline, which will help keep engines cleaner than gasoline containing the lowest additive concentration set by the EPA. Clean engines help provide optimal fuel economy and performance, and reduced emissions. Those vehicles that have experienced deposit related problems would especially benefit from use of Top Tier Detergent Gasoline.

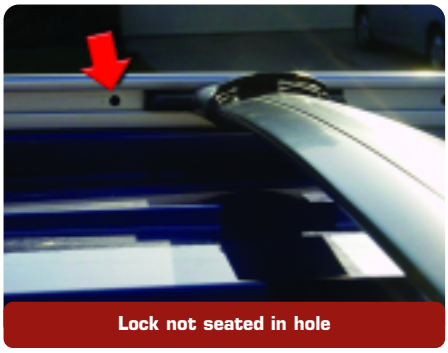
The Top Tier program, begun on May 3, 2004, is a voluntary program initiated by the four automotive companies. Some fuel marketers have already joined, although not all fuel marketers will offer Top Tier Detergent Gasoline. Once fuel marketers make public announcements, a list of all fuel marketers meeting Top Tier standards will be made available. For now, it will be necessary to look for the "Top Tier" designation at the gas pump.

- Thanks to Andy Buczynsky, Jay Dankovich and Jerry Garfield

Equinox Roof-Rails and Cross-Bars

On the 2005 Equinox, incorrect diagnosis of noise and/or functionality of the luggage carrier may result if the cross-bars are not correctly locked in one of the four locking positions (holes). If the cross-bars are outside of the locking positions, the cross-bar locking levers will not completely engage and the cross-bars may rattle.

- Thanks to Chuck Berecz



Lock not seated in hole

Colored Instrument Clusters

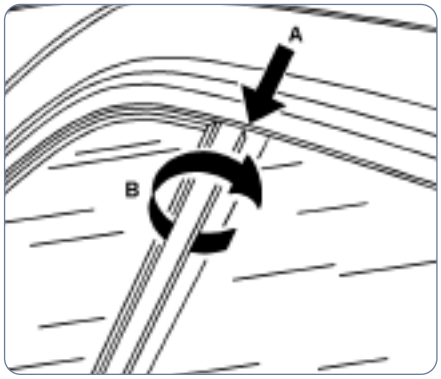
Instrument clusters in the 2004 Pontiac GTO are available in colors; many of them match the exterior color of the car. Here are the part numbers.

Instrument Cluster Color	Part Number	Exterior Color
Cosmos Purple	92174644	Cosmos Purple
Barbados Blue	92174645	Barbados Blue
Yellow Jacket	92174646	Yellow Jacket
Torrid Red	92174647	Torrid Red Phantom Black Quicksilver
Impulse Blue	92174648	Impulse Blue

- Thanks to Art Spong

Windnoise at Right Rear Door

Owners of some 2003-04 DeVilles may comment on a prominent windnoise occurring during vehicle travel at the right rear door. The forward leading edge of the upper division post may have a slight gap to the door glass (A in illustration).



To correct this, finesse the upper end of the moulding inboard (B in illustration) approximately 3/32-in. (1-3 mm) to eliminate the gap. Refer to Service Bulletin 04-08-58-003 for further details.

- Thanks to Bill Denton

Auto Lock Feature

Some owners of 2004 Bonneville GXPs may report that the personalization feature always locks all doors when the transmission is shifted out of park, and always unlocks doors when shifted back into park. This occurs no matter how the driver sets the personalization for Auto Lock/Unlock feature.

TIP: This can be corrected with the Tech 2. Build the vehicle as follows:

- 2004 Pontiac Bonneville GXP
- Body
- DIM
- Special Functions
- Set Options
- DIC Option

Then turn the DIC Present bit on.

Vehicles built after 4-08-04 and VIN 1G2HZ54Y44U244632 do not have this concern.

- Thanks to Kobie Glenn

Fuses Pulled for Shipping

The IPC and radio fuses of the 2004 Pontiac GTO are shipped in a plastic bag in the glovebox along with the owner literature. These fuses should be installed during PDI.

- Thanks to Art Spong

Ground Bolt on Diesel Engine

Some Chevrolet and GMC vehicles with 6.6L (LB7 LLY) diesel engine may exhibit rough idle, clatter noise, stall and/or DTC P1223 through P1244. The fuel injector balance rates fluctuate during the rough idle. The IGN 1 voltage may read 12.9 volts all the time, regardless of rough running condition.

After completing the published diagnostics, and the concern described above remains, check for a loose ground bolt at the lower right side of the engine block (G102 and/or G106) to correct this concern. Refer to SI for the location of ground bolt.

- Thanks to Jack McVoy

Steering Clunk Noise

Owners of some 2000-04 Pontiac Bonnevilles may comment on a clunk type noise coming from the front of the vehicle during a turning maneuver. This condition may also be felt through the steering wheel when the vehicle is stationary and the wheel is rotated from steering stop to steering stop. This clunk noise will be noticed during low speed acceleration or deceleration, typically in light turns of the steering wheel. A new intermediate steering shaft part number

10367811 is available through GMSPO.

- Thanks to Roger Jantz

Radio Volume

Owners of some 2003-04 Chevrolet and GMC full size trucks and utilities may comment that after the radio has been reprogrammed or replaced, the volume is not as loud at the same volume setting as before.

TIP: This applies only to vehicles with RPO UQ7 without RPO Y91.

A new Audio Calibration part number 10364319 was released to enhance low end volume control resolution. This calibration does not change the upper end of the radio volume control, and the volume will get as loud as the old calibration. But the low end volume control has been changed so that each click of the volume control raises the actual volume at a slower rate than the previous radio calibration.

This is normal and no repairs should be made.

- Thanks to Jim Will

Injector Seal on Diesel Engine

On a 2004 6.6L LLY diesel engine, if a fuel injector compression leak noise or soot around the injector body is found, the injector copper sealing washer and rubber O-ring copper may be damaged or missing.

If the copper sealing washer or the rubber O-ring are required, they are now available through GMSPO using the following part numbers:

Injector copper sealing washer	97327722
Injector rubber O-ring	94013303

TIP: Both of these are ship-direct parts and require a SPAC case.

- Thanks to Jack McVoy and Dave Cox

Shift Lever Interlock

Some 2003-04 Pontiac Aztek models will randomly fail to release the transmission shift handle, and the ignition key must be cycled before the shift handle is enabled. This condition has been identified as a communication issue with the circuits passing through the BCM. At times, the appropriate signal is not understood and the interlock signal is not being sent. This condition is rarely repeated for several key cycles and depends on how many other devices are attempting communications at the same time.

A new Body Control Module (BCM) went into production March 15, 2004 to address this concern. The new part number is 15143352 and replaces 10334030. Only the new part number should be used if the owner is reporting this condition. Service stock for the 10334030 is nearly exhausted and Aztek models for model years 2001-2004 will all be serviced using the new part.

- Thanks to Amy Sutherland

Misfire Code

Some 2004 4.6L (LH2) RWD Northstar engines may set a P0300 misfire code under extremely light engine loads (such as slight downhill, or in Park/Neutral at 1000 -1200 rpm). The condition will be evident in all cylinders when viewing the Tech 2 misfire graph display. The misfire starts in one cylinder, then spreads to the remaining 7 cylinders. This misfire is usually not felt in the vehicle. No other PCM DTC codes will be present.

Inspect the serpentine belt tensioners for clicking / chattering / jumping. As part of your diagnostics, remove both serpentine belts. Then monitor the engine misfires with the Tech 2. Verify the absence of the prior noises. If running the engine with both serpentine belts removed eliminates the concern, replace both serpentine belts. The small changes in the belt/ crankshaft speed are detected as misfires.

- Thanks to Jack McVoy

TACCorner

PI Numbering

At the end of June, a change was made to SI to improve access to information. SI is now being updated daily, Monday through Friday, instead of weekly. PIs (Preliminary Information) are now accessible without the use of a specific VIN. There have also been some minor changes to the PI numbering process.

PI00001 was formerly a PI viewable in SI.

AI00001 was formerly a PI that was not viewable in SI, and must be accessed by calling TAC

The new designations are listed by either P for Powertrain, T for Truck, or C for Car. PIs in this new format will appear as follows:

PI designation	Pertains to
PIP3001	Powertrain, in SI
PIT3001	Trucks, in SI
PIC3001	Cars, in SI
AIP3001	Powertrain, not in SI
AIT3001	Trucks, not in SI
AIC3001	Cars, not in SI

REMINDER: Some issues pertain to both Cars and Trucks, so there could be overlap.

Although not all PIs are accessible through SI, more than 80% of all PIs being written are going into SI daily.

- Thanks to Sean Garrison

Car Issues -- Fix It Right the First Time

Model Year(s)	Vehicle Line(s) / Condition	Do This	Don't Do This	Reference Information / Bulletin
2001-2004	Aztek, Rendezvous, Venture/Montana/ Silhouette – Pop and/or Rattle in Exhaust Down Pipe	Follow procedure in bulletin using clamp P/N on down pipe to correct rattle/buzz noise.	Don't replace converter assembly for rattle/buzz noise without completing instructions in bulletin.	03-06-05-003
2000-2004	All Cars with 4T40/4T45E and 4T65E – Light On/Various Transmission Codes Stores	Check transmission 20-way connector for secure connection (disconnect and reconnect).	Don't replace transmission, TCC PWM, VSS, PCS or valve body.	02-07-30-022B
1998-2004	Seville – Heated Seat Inoperative	Replace only needed heating element.	Don't replace entire seat cover if heated seat element is inoperative.	01-08-50-002C
2001-2004	Century/Regal – Intermittent SES, ABS or TCS Lamp Illuminated, Engine No Crank/ No Start, Various I/P Cluster Intermittents, DTCs U1000, B1422, B2957, B2958 Set, Shifter Locked in Park (BTSI Inoperative	Check UBEC harness connectors for damage and replace damaged terminals.	Don't replace UBEC, ignition switch, sensing diagnostic module (SDM), body control module (BCM), shifter assembly (Regal) or intermittently inoperative clusters.	03-08-45-004
2000-2004	Cavalier/Sunfire/Alero/Grand Am – Inoperative Sunroof Module	Retime module or replace only motor for inoperative complaints.	Don't replace entire sunroof module assembly.	03-08-67-009A
2003-2004	Cavalier/Sunfire – Air Conditioning Compressor Noisy	Inspect for ground out conditions that can cause A/C compressor noise complaints.	Don't replace A/C compressor for excessive noise complaint without inspecting for ground outs.	03-01-38-012
1999-2004	All Cars and Trucks – Brake Warranty, Service and Procedures	Issue One: Refinish brake rotor. Issue Two: Measure for LRO	Issue One: Don't replace brake rotors. Issue Two: Don't measure for LRO	00-05-22-002D
2003-2004	CTS – Variable Effort Steering (VES) "Service Steering Message," DTC C1241 or C0450	Replace only VES solenoid.	Don't replace entire steering gear.	03-02-36-001
2003	All cars with 4T40/45E, 4T65E and 4T80E – Code P0742	Replace TCC PWM Solenoid	Don't replace transmission, torque converter or valve body assembly.	02-07-30-039C
2000-2003	LeSabre, Park Avenue, Regal, Impala, Monte Carlo, Bonneville, Grand Prix With 3.8L V6 Engine (RPO L36) – Loss of Coolant, Milky Colored Oil	Replace upper intake manifold gasket only.	Don't replace upper intake manifold assembly for coolant leak condition.	03-06-01-016

Truck Issues -- Fix It Right the First Time (new issues in **bold**)

Model Year(s)	Vehicle Line(s) / Condition	Do This	Don't Do This	Reference Information / Bulletin
2002-2004	**Fullsize and Midsize Pickups and Utilities – Labor Operation Assignments for Control Module Reprogramming**	**Use correct labor operation that reflects module being programmed.**	**Don't use K5364, which is for reprogramming a transmission control module (TCM), when reprogramming a TCCM.**	**02-04-21-006D**
2002-2004	Fullsize and Midsize Pickups and Utilities – Sleepy New Venture Gear Transfer Case Control Module	Verify sleepy module as primary cause. Reprogram TCCM with latest software released 3/11/04.	Don't replace encoder motor or transfer case. Replace module only if a C0550 DTC shows as current or in history.	02-04-21-006D
2004	Fullsize Pickups – 6.6L LLY Diesel Engine Injectors	04 LLY Duramax fuel injector is on restriction.	Don't replace LLY Duramax injector prior to contacting TAC.	GM Messenger VSS20040067
2002-2003	Chevrolet Avalanche and Cadillac Escalade EXT – Cargo Covers and Cladding Faded or Stained	Thoroughly clean, dry and treat components with "Armor-dillo." (888)393-4722 or www.armor-dillo.net.	Don't replace cargo covers for this condition.	04-08-111-001
2002-2004	Fullsize and Midsize Pickups and Utilities – Transfer Case CNND Labor Operation	Use Labor Operation K9993 whenever a transfer case issue on a 4WD or AWD vehicle cannot be duplicated or resolved after diagnostic efforts.	Don't use Labor Operation K9992, which is for manual transmission concerns or Labor Operation K9995, which is for automatic transmission concerns.	Service VME VSSM20030117
2002-2004	Fullsize Pickups – Rear Leaf Spring Slap Noise	Replace inserts and rubber washers.	Don't replace leaf spring.	03-03-09-002
2002-2004	All Passenger Cars and Trucks – Air Conditioner Compressor Diagnosis	Follow SI and bulletin for diagnostic information before compressor replacement.	Don't replace air conditioning compressor.	01-01-38-013A 03-01-38-019
2002-2004 (models with HomeLink™ option)	All TrailBlazers, All Envoys, Bravada, Rainier with HomeLink Universal Transmitter – Programming Diagnosis	Use J 41540 – GM Integrated HomeLink Tester. Follow SI and refer customers to Owner's Manual.	Don't replace the HomeLink Transceiver without validating internal fault recognized by J 41540	01-08-97-001B
2002-2004	All TrailBlazers, Envoy, Envoy XL, Bravada – Squeak/Rub/Scrub Type Noise in Steering Column	Lubricate and remove material, per bulletin.	Don't replace upper or lower intermediate shaft.	02-02-35-006A
2001-2004	Fullsize Pickups and Utilities – Servicing Wide Load Mirrors (RPO DPF)	Replace individual parts as needed.	Don't replace complete mirror assembly.	03-08-64-028

Know-How Broadcasts for September

September 9, 2004

10280.09D Emerging Issues	All Eastern Time
- Pontiac, Buick, GMC	12:30 PM
- Chev Cars & Trucks	1:00 PM
- Cadillac, Hummer	1:30 PM

September 23, 2004

10280.21D	Eastern Time
2005 Crossover Sport Vans – New Model Features	9:00 AM 12:30 PM 3:00 PM

– Thanks to Tracy Timmerman