2004 Cadillac XLR: Service Information: #03-00-89-026: Informational - Pre-Delivery and Service Guide - (Sep 4, 2003)

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Subject:	Pre-Delivery and Service Guide
Models:	2004 Cadillac XLR

The purpose of this service bulletin is to introduce the 2004 Cadillac XLR and describe the actions your Service Department will need to take to ensure that your dealership is able to fully service this exciting new model.

Description

The Cadillac XLR is GM and Cadillac's ambitious entry into the elite luxury roadster class. The two-seat roadster is designed to be an icon for the new era of Cadillac, a product renaissance of vehicles that feature bold design, exhilarating performance and contemporary luxury.

The XLR has been developed on the next generation of GM's performance car architecture, which is specifically designed for open car applications. This world-class vehicle architecture features advanced steel hydroforming, structural backbone "tunnel," an aluminum cockpit structure and cored composite floors, making it exceptionally stiff and lightweight. The result is a chassis and body that provides great structural integrity – the foundation for the car s outstanding agility, comfortable ride and sound safety performance. The luxury roadster also features several exclusive Cadillac

technologies, including a next-generation 4.6L Northstar® V8 engine in its first production rear-wheel-drive configuration. The engine is mated to an electronic five-speed automatic transmission with manual mode in a transaxle configuration.

The XLR's chassis includes advancements such as GM's Magnetic Ride Control active suspension damping, the StabiliTrak® yaw control system and Michelin ZP tires with "run-flat" capability. Adaptive Cruise Control – a radar-based technology that makes driving with cruise control more convenient and comfortable – is integrated within a head-up display, an exclusive feature among luxury roadsters.

Powertrain

The XLR features the all-new 4.6L (LH2) Northstar® V8 engine. This powerplant has been completely re-engineered, marking the first time a Northstar® engine has gone into production in a rear-wheel-drive configuration. The engine features major improvements across the board, not just a transition to rear wheel drive. First-time applications to the Northstar® engine include electronic throttle control, variable valve timing, upgraded engine structure and a close-coupled catalytic converter system. The result is significant enhancements in power and smoothness, with peak horsepower of 320, and an extremely flat torque curve for strong power delivery. The engine is mated to the 5L50-E electronic five-speed automatic transmission with Driver Shift Control in a transaxle configuration. This new transmission makes its debut in the XLR, but comes from proven stock. It is an enhanced version of the 5L40-E unit featured in the Cadillac CTS, modified for additional torque capacity and the unique rear axle location.

Cadillac XLR contains a package of technological features meant to add pleasure and convenience – not complexity – to the experience of driving a luxury roadster. High-technology applications on the XLR include:

Adaptive Cruise Control (ACC)

The XLR is among the first vehicles in the North American marketplace with ACC, which greatly increases the convenience of cruise control. The system uses a radar sensor mounted at the front of the XLR to detect objects in its path. If the lane ahead is clear, the system will maintain the set speed. When slower traffic is detected, the system will automatically adjust to a safe distance by using throttle control and limited braking.

Climate Control Seats

A first-time General Motors application, climate control seats provide personalized cooling and heating for the driver and passenger seats. Airflow and temperature are delivered via a thermo-electric unit and fan mounted in each seat. The leather in the seats is perforated for airflow.

Integrated Navigation/Radio/DVD/Web-Enabled

The XLR is equipped with perhaps the most sophisticated – yet easy to use – entertainment and information system in its segment. Via a 7-inch (17.8 cm) color touch screen mounted in the upper center console, occupants have access to DVD navigation; an eight-speaker world-class Bose® audio system with a six-CD in-dash changer and digital signal processing modes; XM satellite radio broadcasting (not available in Canada); and DVD movies and entertainment (in park position only.)

Keyless Access

The XLR is a “keyless” car. Via electronically controlled locking, access and ignition systems, customers need not even take the key fob out of their pocket or purse to operate the car. Upon touching the

uniquely designed door switch, a series of antenna authorizes the presence of the key fob to unlock and unlatch the door. Vehicle ignition operates via a push-button control on the instrument panel. Before the engine is permitted to start, the system verifies the fob is inside the vehicle and the brake is depressed. Keyless Access eliminates “key fumbling” and provides a level of security beyond that of conventional vehicles.

Retractable Hard Top

The advanced retractable hardtop system transforms the XLR from coupe to convertible with one-button operation. The system was developed and executed by Car Top Systems GmbH of Germany, which has designed roof architectures for some of the most celebrated convertibles in the industry.

High-Intensity Discharge (HID) Headlamps

The XLR is equipped with HID lighting technology for superior visibility. This highly efficient technology represents the leading edge of lighting systems in production today, providing outstanding visibility.

OnStar®

The XLR is the only vehicle in its class equipped with OnStar®, GM’s revolutionary information and communications service. This includes the latest in voice activation that will operate in English and French and with the top up or down, which up until now was a technology under development. OnStar® automatically calls for help in case of a crash. This advanced crash notification technology is a new innovation, a step beyond the OnStar® s existing system that calls for assistance in the event of an air bag deployment. It also can be used to summon routine or emergency assistance, to get routing assistance, or for a

variety of concierge services.

Chassis/Suspension and Brakes

Advanced-technologies incorporated in the chassis system of the XLR include the following:

Magnetic Ride Control

This is a state-of-the-art suspension system that uses magneto-rheological real-time damping to provide exceptional responsiveness and increased wheel contact with the road, regardless of the surface. The reduced wheel bounce ensures an even ride by virtually eliminating undesirable body motions.

Anti-Lock Braking System (ABS)

ABS with dynamic electronic brake proportioning across the rear axle provides for optimum braking and control under the most demanding conditions. With the addition of a brake analog sensor (BAS), this ABS system is one of the most sophisticated in the industry.

GM Local Area Network (LAN)

The LAN provides a high-speed communication bus linking critical onboard electronic control systems for instantaneous interaction of Stabilitrak®, Magnetic Ride Control, ABS, Traction Control and Powertrain Control and ACC.

MagnaSteer

This variable-effort steering system affords drivers unparalleled

control on the highway and effortless low-speed maneuverability for parking in an exceptionally smooth power steering system.

Michelin ZP Tires

These tires have an advanced “run flat” technology that eliminates the need for a spare and provides outstanding overall tire performance. This technology consists of self-supporting sidewalls that allow the tires to maintain safe function during and after a loss of pressure for up to 202 km (125 mi) of continuous driving. The ZP technology has been specifically tuned for the XLR and features overall performance superior to many competing run-flat systems.

Tire Pressure-Monitoring System (TPM)

This system transmits air pressure measurements from each tire to the driver information center.

Double Wishbone Suspension

The suspension features all-aluminum components and a tubular stabilizer bar.

Hydraulic Mounts

The mounts are fitted on the front and rear for the powertrain module, minimizing noise transfer and vibration.

Communications Systems

The GM LAN system links the critical vehicle control functions in a high-speed bus that transfers data in real-time. With this high-speed

link, information is being transferred rapidly via a multiplex line. This greatly reduces the need for dedicated wires for individual functions.

In effect, critical control functions can share information virtually in real time: for example, yaw rate and steering angle information can be shared instantly with the antilock brake system and Stabilitrak®.

The modules on the GM LAN are:

- Engine Control Module (ECM)
- Transmission Control Module (TCM)
- ABS/TCS
- Adaptive Cruise Control
- Magnetic Ride Control/Stabilitrak®/Magnasteer®
- The diagnostic functions provided by OnStar® (all other OnStar® functions are on the Class 2 system).
- Body Control Module, which is the gateway between GM LAN and the Class 2 functions, relaying information from the GM LAN modules to those on the Class 2 system – which include more customary functions such as instrumentation, gauges, window operation, etc.

Class 2 System

The lower-speed Class 2 system houses the functions that do not require ultra high-speed computing power and communication. These functions include the following:

- Amplifier, which includes digital signal processing (DSP) modes for optimum reception in the infotainment systems and voice communication functions.
- Keyless Access: This module communicates with the key fob via radio signal to identify the driver and unlock the door. It also interfaces with the BCM, which actually sends the

command to unlock the door once the system has authorized entry.
    - Column Lock Module (CLM): This function, which locks and unlocks the steering column, is a European requirement and is included only for export vehicles.
    - HVAC controller: Includes all climate control modules.
    - Safety Devices Module (SDM): Controls the dual-stage airbag deployment, seat-deployed head and thorax side airbags, and seat belt functions, including seat belt pretensioners.
    - Instrument Panel Cluster (IPC) including the Driver Information Center (DIC) and the gauges, telltales and chimes: There are 168 occupant information functions performed by this module alone, including 111 messages in the Driver Information Center.
    - S-Band/Vics receptivity.
    - Driver Door Module: The window motor control, mirror position, window express up/down and driver door control.
    - Driver Door Switch: The switch controlling the window and mirror.
    - Passenger Door Module: The window motor control, mirror position control, window express up/down and passenger door control.
    - Memory Seat Module: Personalization of seat and recliner positions; i.e eight-way power positioning control, two-zone lumbar control, and memory settings for two different drivers.
    - Head Up Display (HUD)
    - Navigation/Radio/DVD
    - Six-disc CD changer control module
    - Retractable hardtop controller
    - OnStar®

Integrated Body Control Module

The Body Control Module is basically the heart of the electrical

system, acting as the gateway between the high-speed GM LAN and the Class 2 system. As such, it performs several functions, including:

- Converting signals from the GM LAN functions to Class 2.
- Relaying information and requests from Class 2 functions to GM LAN functions: i.e. transmission and engine oil life resets, vehicle security passwords, driver identifier, airbag status, outside air temperature, etc.

The BCM also controls many of the basic vehicle functions on Class 2, often interfacing with other modules on the system. These functions include:

- Twilight
- DRL
- Parade Dimming
- Export
- Low Current HDLP
- Headlamp Rundown Protection
- Lock Motor Control
- Battery Rundown Protection
- Theater Dimming of Interior Lights
- Load Management

A unique feature of the BCM is its incorporation of a fuse center, which usually is a stand-alone unit, to conserve space and reduce part count – a battery cable to the fuse box has been eliminated, for example.

Diagnostics

Service diagnostics are performed on all of the Class 2 systems via one of two splices or 12-pin plug-in ports located for easy access: one under the left side kick panel and one of the right side panel. A

technician simply plugs in a test instrument which allows any device in the system to be isolated and analyzed, cutting diagnostic time as much as 40 percent in many cases.

The OnStar® module on the GM LAN is available to download diagnostic and software changes for the high-speed functions. In this mode, OnStar® essentially acts as a gateway, eliminating the need to process diagnostic information from high-speed to low-speed and low-speed to high-speed systems through the BCM since OnStar® is also on Class 2, where it performs its various safety, security and information functions.

Servicing Requirements

Fluids and Lubricants

Many of the fluids and lubricants specified for the XLR differ from those used in other Cadillac products. Please ensure that only correct fluids and lubricants are used. Damage may result from use of incorrect materials. The following chart summarizes some of the most critical. Please refer to Service Information (SI) and the Owner's Manual for a complete list.

Location	Fluid/Lubricant	Quantity
Fuel	Recommend premium fuel will operate on regular unleaded fuel	Tank capacity: 70L (18.5 gal)
Engine Oil with Filter	Oil meeting GM standard GM4718M. Mobile 1 is used on the original oil fill	7.6L (8 qt)

Engine Coolant	DEX-COOL® 50% concentration	14L (14.8 qt)
Auto Trans Oil	DEXRON® III	9L (9.5 qt)
Rear Axle	SAE 75W-90 API, GL5, synthetic axle lubricant (GM P/N 12378261(in Canada, 10953455)) and limited slip additive (GM P/N 1052358 (in Canada, 992694)	
Convertible Top Fluid	GM P/N89022748 (in Canada, 30579887) (Saab convertible top fluid, Saab part number 3032356)	
Brakes	Delco Sumpreme 11® Brake Fluid GM P/N12377967 (in Canada, 89021320) or equivalent DOT-3 brake fluid	
Power Steering	GM power steering fluid (US P/N 89021184, Canada P/N89021186)	

Diagnostic Tools

Tech 2® diagnostic

CANDi module

Service Support

- Paint: The original equipment paint is supplied by Dupont. Refinish paint is available from local distributors.
- Audio System: The radio, navigation system, CD player and DVD player are serviced by SPECMO (in Canada, ACDelco Radio Centres).
- Cluster: The IP cluster is serviced by SPECMO (in Canada, ACDelco I & D Centres).

Pre-Delivery Instructions

Delivery Condition

Vehicles are delivered in the following condition:

- Paint Protection. A plastic film known as “transseal” is applied to external horizontal painted surfaces to provide protection from ultra violet light, fallout and chemical attack from bird droppings, etc. This covering is to be removed within 6 months of the vehicle build date. For assistance in removing the protective coating, please contact 1-800-307-7218 in the US or 972-286-7890 in Canada.
- Foam shipping blocks are attached to both doors. These protect the vehicle during shipping and storage. These blocks should not be removed until the vehicle is readied for customer delivery.
- Interior protection package should be removed when the vehicle is prepared for delivery and consists of:
    - Seat covers on the driver and passenger seats
    - Plastic film on the front floor carpets
    - Steering wheel plastic film
    - Plastic protective tape on the driver and passenger door sill plates

        - Plastic protection on the console and center stack covers
    - A “loose parts” package is provided in the vehicle trunk. This package includes the following components:
        - Floor carpet mats
        - Two key FOBs and two emergency deck lid keys
        - Licence plate attaching screws
        - Getting to Know You Guide and new owner DVD
        - XM Radio (S band radio) antenna (supplied only with option code U2K)
        - Outboard lower air deflectors
    - Tires may be over-inflated for transportation and to prevent storage flat spot. Tire pressure must be reset prior to delivery.
    - The top may not operate if the battery has lost power or the trunk storage barrier is not in place and seated in the retainers. If the top does not operate, push the luggage barrier securely into position. Cycle both the windows fully down and up and hold in the up position for several seconds. If the top fails to operate after this, refer to the service diagnostic procedures in SI.
    - Shock Stuffers: Stuffers are fitted to the front and rear shocks to prevent excessive suspension travel during shipping. These must be removed before the vehicle is driven. A yellow ribbon is attached to each stuffer to help identify them.

Pre-Delivery Requirements

Transseal Removal

The Transseal film should easily peel away from the surface. The vehicle should be moved to a shaded area and the surface should be cool to the touch. The material should be wet to promote easier removal. Once cool and wet, the material should easily be peeled from

the surfaces. Caution should be used in removing material from the rear tonneau cover. The rear tonneau cover is only visible when the top is in the stowed position; hence, the interior of the vehicle is vulnerable to water during removal.

License Plate Installation

Several US states, Canadian provinces and foreign countries require front license plates. When required, the front plate should be attached by using the instructions and hardware furnished. The front fascia has two dimples where the licence plate should be attached.

Set Time Display on Radio

To set the correct time, touch the button with the clock symbol or touch and hold the time display button in the upper right corner of the display. From the clock adjust menu, use the adjust hour and min buttons to set the correct time. Set the display type to 12 H for 12 hour clock. GPS time button will set the clock by the GPS satellite. Use the time zone button to set the correct time zone. Touch the return button to go back to previous page.

Set Navigation System to Proper Area

Press the route hard button. When the route menu appears, press the destination button. Touch the change button under Search Area. The system will display a map with the regions. Identify the current region and press the appropriate button. The states that are included in that region will be identified at the bottom of the display. Push enter to save the change. Push the return button to return to the destination screen.

XM Radio

Customers that order XM Radio and do not want the antenna installed must have the XM module disconnected to remove the XM soft keys from the radio display. The XM Module can be accessed through the trunk behind the close-out curtain. If the XM module is not unplugged and the XM antenna is not connected, it will generate a diagnostic trouble code.

Tire Pressure

Tires may be over-inflated during production. This will prevent flat spotting of tires when left in storage for prolonged periods, but is not suitable for normal driving. Tires should be set to 207 kPa (30 psi) when cold prior to delivery.

Pre-Delivery Check List

Complete the Completely Satisfied Delivery Process and Worksheet. Pay particular attention to the Items listed below:

Additional Attention is Required. Make Sure to Check Prior to Delivery.	
Remove transseal paint film protection, including front tonneau.	
Check contents of “loose items” and install components into vehicle: • Floor mats • Spare key set • Getting to Know You	

guide • New owner DVD	
Removal all interior protection.	
Remove front and rear shock stuffers.	
Install (XMS band) radio antenna, when equipped.	
Set clock time in radio.	
Set navigation area.	
Set tire pressures to specified pressure (refer to tire placard at rear of driver's door).	
Check fluid levels: coolant, engine oil, brake fluid, auto trans oil, power steering, windshield washer fluid. Add fluid if required.	
Install lower air deflectors (2).	

Essential Tools Listing

EN-46326	Flywheel Holding Tool
EN-46327	Timing Chain Retention Tool
EN-46328	Camshaft Holding Tool
J 21867-15	Pressure Hose
J 21867-2	90 Deg fitting for Trans
J 28467-81	Engine Support Adapter
J 33432-A	Transverse Leaf Spring Compressor

J 35589-A	Master Cylinder Bleeder Adapter
J 42055-7	Transmission Support Adapter
J 42128	Axle Shaft Remover
J 42129	Rear Hub Spindle Remover
J 42188-A	Ball Joint Separator
J 42203	Driveline Support
J 42743	Trim Height Adjustment
J 42854	Trim Height Measurement Gauge
J 43631	Ball Joint Separator
J 43822	Shock Replacer
J 45442	Alignment
J 46405	Seal Installer
J 46588	Axle Seal Clamp