TECHlink
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It's not often that a vehicle manufacturer announces an all-new, clean-sheet-of-paper engine. Development costs and manufacturing equipment represent a major investment, so when it happens, it's major news. Early this year, GM is introducing the 4.2L L6 (LL8) Vortec 4200. Yes, you read that right. It's an L6, an *inline* six, the first GM has offered since 1985.

The Vortec 4200 provides 270 hp @ 6000 rpm, the torque is 275 lb-ft @ 3600 rpm, and there's a rev limiter set for 6300 rpm. Other specifications are found in the sidebar on page 5.

The Vortec 4200 is standard equipment in the 2002 Oldsmobile Bravada, GMC Envoy and Chevrolet TrailBlazer. "If you're going to make a different engine configuration choice like going from a V to an inline, your only real opportunity is with an all-new vehicle," said Ron Kociba, GM Powertrain chief engineer for the Vortec 4200. "We are thrilled to offer customers the power of a V8 with the fuel efficiency of a six-cylinder."

Compared with a V engine, an inline offers the simplicity of one cylinder head instead of two, two overhead cams instead of four, one cam drive system rather than two. This flexible architecture lends itself to the possibility of a whole family of engines, including four, five, and six cylinders. This will permit GM to respond quickly to market demands as they arise. An entire family of engines can be machined on the same equipment, a considerable cost savings. Shared systems and components include connecting rods; pistons and rings; cylinder liners; valves, followers, and springs; bearings; cam drive system; and others.

Here's a rundown of some of the significant features of the Vortec 4200.

Extensive Use of Cast Aluminum

The cylinder block, cylinder head, and oil pan are cast of aluminum. The block and head, ordinarily large and heavy components, are lost-foam-cast, a process that yields precision parts with reduced machining. Many fluid passages are cast-in rather than added on or drilled, reducing the potential for leaks.

GM pioneered lost-foam casting in 1987, and has continually refined the process ever since. A Styrofoam assembly that replicates the part to be cast is embedded in sand. When molten aluminum is poured through an opening in the sand, it melts the foam and takes its place. The aluminum cools in the shape of the part, and the sand is removed.

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Techline News

Cadillac Programming Adapter Harness

A new PCM programming adapter harness J-45411 is being sent to all Cadillac dealers for use in programming PCMs on DeVille, Seville and Eldorado models.

You will use this harness to connect your Tech 2 directly to the PCM in these vehicles.

When programming any PCM, it is critical that there be no interruptions during the programming process. On many vehicles, there is a large number of on-board computers (as many as 24 on some cars). If one of these computers should "wake up" during the PCM programming procedure, it could cause permanent damage to the PCM.

The J-45411 harness permits you to isolate the PCM from the vehicle's electrical system, so the behavior of the other on-board computers will not cause an interruption.

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TECHlink GM

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GM Service Operations

GM TechLink is a monthly magazine for all GM retail technicians and service consultants providing timely information to help increase knowledge about GM products and improve the performance of the service department. This magazine is a companion to the GM Edge publication.

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Trunk Release Sensor TrapAlert™ System

A TrapAlert sensor system is being introduced mid-year on the 2001 Impala and Monte Carlo. It provides protection from accidentally being locked inside the trunk. A sensor mounted on the underside of the rear shelf panel inside the trunk monitors the compartment for motion and a difference in temperature compared to ambient.

When motion and a difference in temperature are detected, the reaction of the system depends on the position of the ignition switch.

- If the ignition switch is OFF, the horn will chirp for one minute, the trunk latch will release, and the horn will continue to chirp for one more minute. This process may take up to three minutes to be initialized.

- If the ignition switch is ON, the horn will not sound and the trunk latch will not release. Instead, a light on the TrapAlert sensor in the trunk will illuminate.

Disabling the TrapAlert system may be desirable under certain conditions, such as when the vehicle is

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The J-45411harness connects to the PCM, to an underhood source of battery voltage and ground, and to the Tech 2. A red LED on the harness remains lit as long as the harness is connected to battery voltage and ground.

A yellow LED illuminates to indicate ignition voltage is applied to the PCM. When the switch is toggled on, two green LEDs illuminate to indicate PCM activity.

A complete set of instructions comes attached to the J-45411 harness. Follow these instructions carefully, to avoid problems.

NOTICE: It is critical that all J-45411 connections to the PCM, power and ground stay connected throughout the entire programming procedure. Failure to follow these instructions may cause interruption of the PCM connection, power or ground during programming, and may result in permanent damage to the PCM.

– Dave Roland contributed to this article.

Idle Air Control System Testers

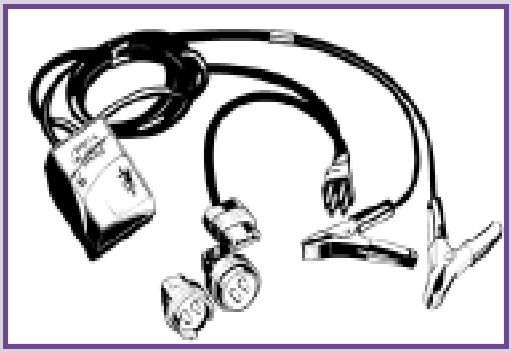
The idle air control system on GM engines uses a stepper motor-controlled valve to maintain engine idle rpm based on inputs from the PCM.

The PCM controls the IAC valve motor, to retract or extend the IAC valve pintle from its seat. When the pintle is retracted, more air is allowed to bypass the throttle plate, increasing idle rpm. Idle rpm is decreased when the pintle is extended toward the seat, reducing airflow.

The IAC motor runs forward or backward in steps, as commanded by the PCM. There is no position feedback from the IAC to the PCM, so the PCM operates by keeping track of counts, not actual IAC position. Your Tech 2 display shows these counts only, not actual IAC position.

It is occasionally necessary to check the operation of the IAC motor as a part of a diagnostic procedure. First, you need a device to check whether the signals from the PCM are getting to the IAC motor, and you also need a device to determine whether the IAC motor is capable of responding to commands.

A number of testers are available from various service tool suppliers. Here is a list of IAC testers that have been evaluated by GM Service Operations and have been found acceptable. Your dealership must have one of these tools in your essential tool set.



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on a car ferry, when the vehicle is being towed, or when items are being loaded into the trunk through the folding rear seat. With the ignition switch ON, press the disable switch on the TrapAlert sensor for two seconds. The horn will chirp once to verify the system is disabled, and the light on the disable switch will begin to flash.

When the system is disabled, the Trunk Open telltale on the instrument panel will flash for one minute each time the ignition is turned on. When the trunk is opened or the disable switch is pressed again, the system will reset to enabled status and resumes normal operation.

A system label on the decklid notifies the owner of the system and its operation.

The BCM monitors the status of the TrapAlert sensor through the trunk ajar switch signal circuit. If the BCM detects a problem, a DTC will set and the Service Vehicle Soon telltale will illuminate.

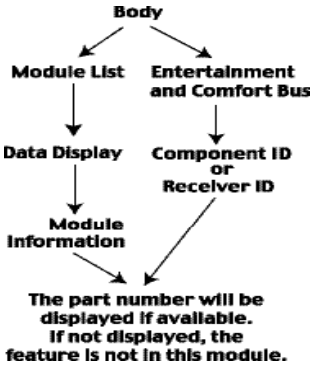
Vehicles that are equipped with the TrapAlert system will not have the manual release handle on the trunk latch, with the exception of police vehicles.

- Dave Nowak and Brian Preusser contributed to this article.

Locating Body Module Part Numbers

Here's a shortcut to use when you need the GM part numbers of a body module in a vehicle -- IP cluster, BCM, or radio, for instance. Instead of disassembling the vehicle to access the module, simply connect your Tech 2.

NOTE: Your Tech 2 will display the number if it can. Due to variations between vehicles, this procedure may not work on certain components.



Connect your Tech 2, enter Diagnostics, and "build" the vehicle. Select Body. In the Body menu, you will proceed one of two ways, depending on vehicle. See the chart.

The next time you're in a vehicle with your Tech 2, hook it up and practice this procedure. Then, when you actually need it, you'll know what to do,

- Steve Apklng and Mark Stesney contributed to this article.

Kent Moore	J-37027-A
OTC	3320 (Kent Moore J-37800)
Thexton	398
CTI	222L
SnapOn	CCT222K
MAC Tools	60965-3320
MAC Tools	43757-J37027A
NAPA/Balkamp	700-2028

Here's a typical IAC check, using the J-37027-A. Other testers work similarly. Check the operating instructions for your specific tester for details.

To check the operation of the IAC motor, with the ignition off, hook up the tester to the motor connector. Then connect the red and black battery clips to the positive and negative battery posts. The red LED on the tester will light to indicate a proper connection.

Set the motor to minimum idle by moving the paddle switch on the tester to "low" for about 20 seconds. The flashing red LED verifies pulses are being fed to the valve motor.

Now, with the engine running, move the paddle to "high" and the idle speed should increase. Move it to "low" and the idle speed should decrease.

If the idle speed does not increase or decrease using the tester, turn the ignition off, and remove and inspect the IAC motor. The pintle on the motor should move in and out as you cycle the tester from "high" to "low."

A word of caution -- be sure never to push or pull on the pintle of an IAC valve motor that has been in service or you could damage the threads on the worm drive.

To check the driver transistors in the output stage of the PCM, hook up the system monitor to the vehicle's IAC harness connector.

When you start the engine and run it at idle, the LEDs should flash, showing that pulses are coming from the PCM. As rpm changes, a properly functioning system will continue to flash the LEDs between red and green, with them never being off.

If an LED doesn't flash, or flashes only one color, then the IAC motor is not receiving a proper signal from the driver transistor in the PCM. In this case, first check the circuits for faults. Start by moving the harness. If the LEDs begin to flash, the harness may be faulty or there may be poor terminal contact at a connector.

Be sure to follow the diagnostic steps called out in the engine controls section of the service manual before replacing any components.

The motor tester also can be used to set a higher idle for running other checks and testing. Just move the paddle switch to "high" to achieve the desired rpm, up to a maximum of about 2500 rpm.

After testing, be sure to reduce idle rpm to normal speed before turning the engine off and disconnecting the IAC tester.

Verify your repairs by starting the engine and checking for proper idle control by the IAC motor.

– Jack Woodward contributed to this article.

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New Engine continued from page 1

Block

Cylinders consist of pressed-in cast iron liners; the outside of the liner and inside of the block are machined for optimal heat transfer. After installation, liners are machined to a 1.5 mm thickness for weight savings.

Water jacket passages are designed for high coolant velocity and even heat transfer for superior cooling, while low volume provides for quick warmup.

Because of its length, an L-6 engine requires special attention to maintain the necessary rigidity. On the Vortec 4200 block, this is accomplished in several ways. First, the block is a deep skirt design, in which the sides of the block extend below the crank centerline. Second, a ladder-like bearing beam joins the seven powdered metal main bearing caps. And, the cast aluminum oil pan bolts to the block and the transmission bell housing, contributing to stiffness and reducing noise and vibration.

Oil Pan

The oil pan features a dry, cast-in passage running from side to side. On four-wheel-drive models, this tube provides a path for the front drive axle. By passing the shaft through the oil pan instead of under it, the engine can be mounted lower in the vehicle, allowing a more compact package, improving handling dynamics, and allowing greater styling flexibility.

The four-wheel-drive differential bolts to one side of the pan and the front axle disconnect to the other, causing gear and drive noises to be damped by the engine and its mounts, before reaching the passenger compartment. The pan also contains mounting pads for the A/C compressor.

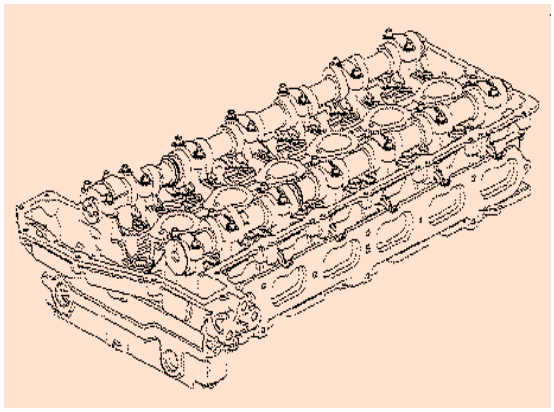
The pan is sealed to the block, front cover, and rear seal housing with RTV. A separate oil cooler is not required. A sensor checks the oil level at each startup, for added protection.

The oil pan is equipped with several "jackscrew" holes to assist removal. Simply screw in several retaining bolts that were just removed, to pop the oil pan loose. This same feature is also used on the cam cover.

On the subject of engine oil, the 4200 requires 7 quarts of oil. Oil change intervals are determined by the GM Oil Life™ system, and under ideal conditions may run up to 12,000 miles. There is no dust detection, though. So it's up to the customer to determine if the vehicle has been operated under severe conditions, which requires more frequent oil change intervals.

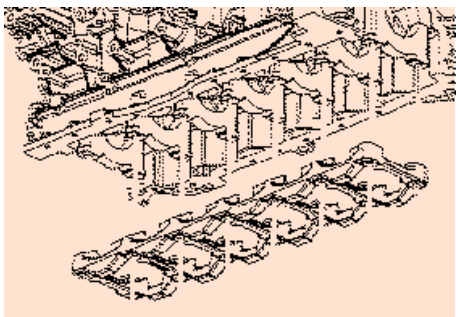
Cylinder Head

Dual overhead camshafts, four valves per cylinder, and roller-follower valve actuation



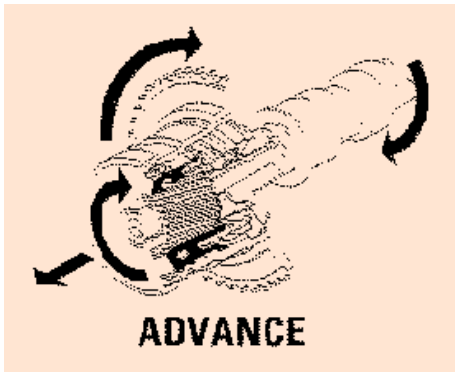
Cylinder Head

are hallmarks of premium passenger car engines, but are rare in trucks. The Vortec 4200 has them all.



Crank Bearing Structural Ladder

The generous spaces between valves, combined with high velocity coolant flow, provide excellent cooling at the spark plug and exhaust valve seats. Exceptional air flow and mixture motion also contribute to the Vortec 4200's high torque and horsepower output, with impressive fuel economy. Although the compression ratio is high, premium fuel is not required.



Variable Valve Timing

Be aware that the cylinder head bolts can be reused, if you ever have to remove a head for service.

Variable Valve Timing

This is a first for GM truck engines. VVT is provided by a hydraulically operated phaser on the exhaust cam. Exhaust valve timing can be changed over a 25° range, depending on rpm and operating conditions. High output is achieved without sacrificing response and drivability. Also, because valve overlap is optimized, there's no need for a separate EGR system.

VVT is controlled by the PCM, operating a control valve that directs engine oil to the appropriate passage in the phaser. A piston and internal helical spline change cam timing relative to the drive sprocket.

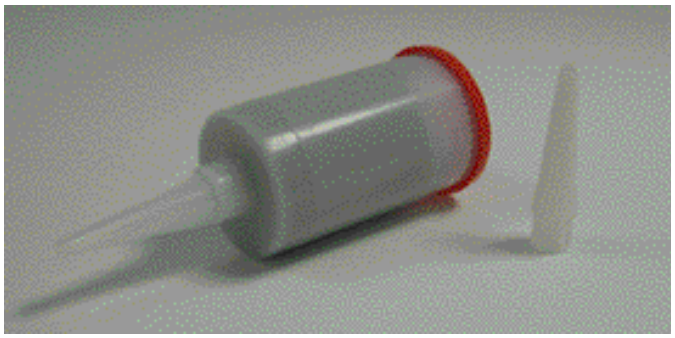
The pair of overhead camshafts is driven by a timing chain. A timing chain guide and a hydraulically operated tensioner guide the chain around a 29-tooth sprocket on the crankshaft and 58-tooth sprockets on the cams. When assembling the cam drive system, you must take care to align the camshafts properly, observe the timing marks, and ensure that the cam phaser is fully advanced. The service manual has details.

A camshaft cover made of SMC tops the engine. The cover contains the PVC system, oil fill cap, and spark plug wells. It's retained and isolated by a system of 21 fasteners and grommets and a silicone seal. Essentially, the cover "floats" on the cylinder head, retaining oil and suppressing noise. The cover has an expected service life in excess of 150,000 miles.

Crankshaft, Rods, and Pistons

An inline six-cylinder crankshaft offers a design challenge due to its length and natural tendency to twist. Torsional vibration, a natural wave of flexing from end to end, must be dealt with. The crankshaft has computer derived counterweights and features main bearings of 70mm diameter. The torsional vibration challenge was met with a dual-frequency harmonic balancer. It's made of three metal discs separated by rubber inserts of different thicknesses, and is bolted to the front of the crankshaft.

The crankshaft is sealed at



RTV 12478521 with metered nozzle

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the front with a Teflon, radial lip seal pressed into the front cover. It contacts the torsional damper's hub.

At the rear, a Teflon seal in the rear cover contacts the crankshaft with a wide lip, spreading the load over a large surface. The rear cover provides sealing with the block and with the oil pan as well.

RTV silicone sealant is used on the oil pan, and front and rear covers of the Vortec 4200, due to its ability to withstand GM Powertrain's most grueling sealing tests. You must use GM 12478521, not a substitute RTV. This required sealant comes in a caulk gun applicator with a pre-cut 3 mm metered nozzle. The cartridge contains 150 grams of sealant. Don't try to save leftover sealant; throw the cartridge away and use a fresh one for each job. Plan to work quickly once you've opened the applicator; you should have the component in place within 10 minutes.

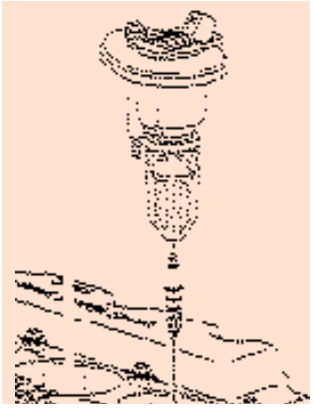
Connecting rods are steel, formed from powder metal, and hot forged. After machining, the cap is fractured from the rod portion, providing an accurate method of locating the cap to the rod. Aluminum clad steel bearing inserts are fitted. At the upper end, the piston is attached with a free floating wrist pin.

Pistons are made of hyper-eutectic aluminum alloy and use a steel upper ring and a cast iron second ring. The wrist pin bores are offset, requiring installation arrows on the piston crowns.

Manifolds

The intake manifold is made of two pieces of injection molded nylon, reinforced with glass. The two pieces are vibration welded together. This design provides lower weight and better airflow than a metal manifold. The manifold runners curve up and around the fuel rail for the Multec II injectors.

A diecast aluminum throttle body is attached to the intake manifold. The throttle valve is mounted in sealed needle bearings and is operated by a wraparound DC brush motor. There are two throttle position sensors. The throttle position is controlled by the electronic motor, under direction of the PCM. The PCM obtains information



Coil-on-Plug Ignition System

from two accelerator pedal sensors, operated by the driver's foot. This is a "drive by wire" system and has no mechanical link.

The Electronic Throttle Control (ETC) has complete control of throttle functions. This means there is no need for a separate idle air control system, and the cruise control function is also included.

The exhaust manifold is a one piece 6-2-1 runner design. The runners are shaped to minimize turbulence and heat transfer. A crossover pipe is not needed.

EASY SERVICE

Most components are in easily accessible locations. The oil filter installs from the bottom, at the right front corner. Each spark plug is installed, along with its ignition module and coil, in the center of the cam cover. With the ignition module removed (one fastener) the plug is readily accessible with a short extension. The AC 41-965 spark plugs feature an extended hex, about 1 1/4 inches long, for easier removal.

Two knock sensors are located low on the left side of the engine, while the cam position sensor is located on the right side of the cylinder head, and is sealed with an O-ring. The engine will continue to run on either the cam position sensor or crankshaft position sensor if the other one fails.

An advanced Powertrain Control Module is mounted to the intake manifold. This location minimizes the lengths and junctions in the engine wiring. There are three 65-pin connectors. The new PCM is installed in a small aluminum box, only 5 inches square, and consists of two microprocessors. There are 11 engine sensors. The PCM manages fuel, ignition, electronic throttle, cam phaser, and starter engagement. And it also contains an internal knock sensor module.

The fuel pressure test port is located under the driver's floor pan near the fuel filter.

A special function on the Tech 2 will permit actuating the cam phaser and throttle position for test purposes.

There is no need for a separate PCV valve, although there is a crankcase ventilation system, including an oil separator built into the block.

Special Service Tools

Despite its sophisticated design, and up-to-date features, the Vortec 4200 requires fewer than a dozen unique essential tools. One of these is a TimeSert thread repair kit, similar to those used on the Gen III and PV6 and PV8 engines.

Exchange Program

The Vortec 4200 will be subject to an exchange program through August, 2001. During that time, certain external components may be serviced and replaced following service manual procedures. Components not on the serviceable list will require an engine exchange. It will be necessary to contact the Technical Assistance Center when replacement is involved. A bulletin containing full details will be released shortly.

Training

Three training courses are under development for the Vortec 4200 engine. These include:

- 4200 Engine Familiarization Knowhow Kit 16340.20V

- 4200 Camshaft Position Actuator System Operation and Diagnosis, course 16340.30D

- Technology Closeup Seminar, featuring 4200 Engine Removal, course 10250.13D

Other

The Vortec 4200 is so smooth and quiet in operation that the PCM is programmed to prevent the starter from engaging when the engine is running.

An L6 engine is inherently balanced, and eliminates the forces and vertical shake associated with V6 engines. Vibration is effectively eliminated form steering wheel, seats, and passenger compartment components.

Kevin Hogle and Marty Case contributed to this article.

SPECIFICATIONS

Type	**4.2L L6**
Displacement	**4160cc**
Bore/Stroke	**93 x 102 mm**
Compression Ratio	**10.0:1**
Valve Configuration	**DOHC, 4 valves/cylinder, variable exhaust timing**
Valve Lifters	**Roller followers, with stationary hydraulic lash adjusters**
Firing Order	**1-5-3-6-2-4**
Fuel System	**SFI**
Ignition System	**Coil-on-plug, platinum plugs**

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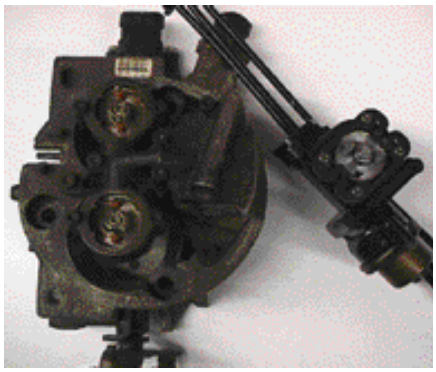
Performance Diagnosis, Part 2 – Fuel Injectors

Control of fuel injectors is one of the major PCM outputs on a gasoline powered engine. Over the years, General Motors has used a variety of electronic fuel injection systems, dating back to Cadillac Digital Injection in the mid 1970s. In the 1980s we saw electronic closed loop fuel injection (using oxygen sensor feedback strategy) gain popularity, driven by government mandates for Corporate Average Fuel Economy and emissions. These systems have included Throttle Body (TBI), Multiport (MFI),



Peak and Hold injectors examples (TBI and CPI) 1-2 Ohms

Central Multiport (CMFI) and Sequential Fuel Injection (SFI), with many variations of each system. Fuel injection systems have evolved over the years to meet newer fuel economy, emissions and performance expectations. However, there are only a few different mechanical designs of fuel injectors and only two different electrical designs. This article will focus on various strategies to test fuel injectors from a mechanical and electrical standpoint.

Fuel Supply Tests

Fuel injectors have a continuous supply of gasoline delivered from the fuel pump and lines. The appropriate beginning tests for any suspected fuel system problem are checks of fuel pressure and quality. Refer to the appropriate service information for fuel pressure testing procedures.

Most quality fuel pressure gauges like the J-29658 will have a valve near the gauge head to bleed the air out of the line for accurate pressure

J-29658 Fuel Pressure Gauge

readings.

An important step in fuel system diagnosis is checking fuel quality. Many fuel injector failures (mechanical or electrical) stem from fuel issues. A fuel sample taken at the fuel rail can quickly confirm the presence of water and the general appearance of the fuel. Discoloration

Rochester Multec injectors (MFI, CSMFI) 12-14 Ohms

and abnormal odors can indicate contamination.

Your Tech 2 provides still another indicator of fuel quality or pressure and volume issues. A Long Term Fuel Trim number in the +4 range or above indicates that the PCM is adding injector on-time to compensate for lean oxygen sensor readings.

In some newer SFI systems, the

Rochester Products "RP" insignia to distinguish Rochester from Bosch in MFI application

PCM has the capability of setting codes for a generic injector circuit malfunction (P1200) or, in some cases, specific injector circuit open or shorted conditions. If an injector, driver or associated circuit does not flat-out fail open or shorted, the codes typically do not set. So, injector coil testing is still appropriate in injector diagnosis.

Injector Resistance Test

Electrically, an injector is a solenoid. Solenoids are simple two-wire devices that move a valve internally with electromagnetism. A solenoid is nothing more than a wire winding around a ferrous post that travels up or down with changes in magnetism. Spring pressure is sometimes used to help return the valve to a closed position.

First, check the resistance of the device. Sequential fuel injectors typically are of the saturated switch driver type. These injectors have a typical resistance of 12 to 14 ohms for Rochester Multec injectors and 14 to 16 ohms for Bosch injectors.

Most older TBI and CMFI systems used injectors of the peak and hold driver type. These injectors have a typical resistance of 1 to 2 ohms.

Resistance measurements may be slightly higher than the normal range when the injector is hot. If the component proves to be open or shorted, the component is failed. However, passing a static resistance check does not mean the injector will not fail during operation. This is the major reason for essential tool J-39021 Fuel Injector Tester.

Injector Electrical Test

The J-39021 is undoubtedly the best way to test an injector's coil for electrical integrity. Also available are the J-39021-210 switch box and injector harness connectors for various engine families.

Setup procedures are critical to the test outcome, specifically choosing the right current selection on the test switch, to avoid damage to the tool or injectors. Be sure to refer to Injector Coil Test procedures in the appropriate service information.

Using the coil test feature of the J-39021, the injector is held on with a constant power and ground at a fixed current level for a few seconds.

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A DVOM is connected to the tool to measure the voltage drop across the injector coil. Remember, during normal operation, fuel injectors are on for only a few milliseconds at a time. By holding the injector on for a few continuous seconds, the coil in the injector is rigorously tested for integrity.

Any substantial change in voltage drop during testing will indicate a change in working resistance of the injector. Typically the voltage drop goes up slightly during the test as the coil heats up. Voltage drops of all injectors should be compared against the average voltage drop. This is the absolutely best test for coil integrity.

Injector Flow Check

Once the coil test is completed, perform a mechanical flow check. There are two different methods, depending on the engine family. For most cars and light trucks, the J-39021 Balance Test is used with the same vehicle setup as above. The DVOM is not necessary for this test. A fuel pressure gauge and Tech 2 are necessary to complete the test.

J-39021 Fuel Injector Tester

NOTE: In CSMFI truck engines, (4.3L, 5.0L and 5.7L 1996 to present) the balance test feature is built into the Tech 2 software under the Powertrain Special Functions, Fuel System heading.

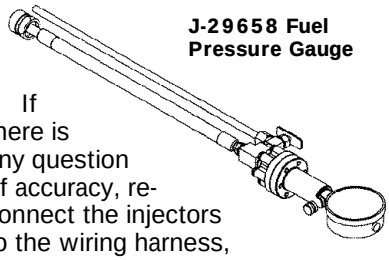
Whether using the J-39021 or the Tech 2 to actuate the injector, the idea is the same.

- The fuel rail is pressurized by actuating the fuel pump with the Tech 2 under Powertrain Special Functions.

- The fuel pump is shut off and the pressure is stabilized and recorded.

- The injector to be tested is actuated with either the Tech 2 or the J-39021 for a measured time interval. Record the stabilized fuel pressure after actuation stops.

- Repeat the procedure for all cylinders.



J-29658 Fuel Pressure Gauge

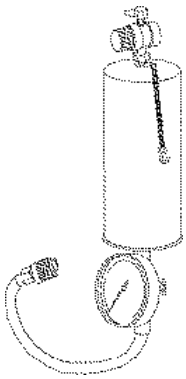
If there is any question of accuracy, reconnect the injectors to the wiring harness, start the vehicle to clear out the combustion chambers, and repeat the test on each injector again.

The J-41990 Fuel Displacement Gauge is a more accurate alternative to a fuel pressure gauge for injector balance testing. This tool was issued in 1998 to Chevrolet, GMC and Oldsmobile dealers for use with CSMFI systems to aid in diagnosing partially clogged poppet nozzles. It has a fuel chamber which is spring loaded. The rise and fall of the chamber is measured with a dial indicator, an effective comparison to the volume of fuel delivered.

This method of flow testing is superior to checking for a pressure drop because the actual fuel flow volume is being measured. The instruction sheet included with the tool details the complete procedure. If the results of the balance test indicate injector flow problems, an alternative to injector replacement may exist.

Injector Cleaning

A new essential tool has been issued for injector cleaning, the J-35800-A cleaning tank. This tool uses a concentration of GM Top Engine Cleaner 12346535 diluted with gasoline. For more information on injector cleaning, refer to Service Know How course #16040.10B, Engine Performance Issues or recent service bulletins.



J-35800-A Cleaning Tank

As you have undoubtedly noticed, we have not pulled out the oscilloscope yet. Next time, we explore injector driver diagnosis using both essential tools and the oscilloscope.

– Craig Blake

TAC Tips

Existing Cam Plate Tool J-23653 Will Not Compress

When servicing or disassembling the steering column on 2001 Silverado, Sierra, Tahoe, Yukon, Suburban and Yukon XL, the existing cam plate tool J-23653 will not compress the cam plates beneath the SIR coil assembly.

These vehicles do not have a lock column, so the new plate is smaller. Use cam tool J-42137 to aid in compressing the cam.

Loud Popping Noise From Rear Suspension Area Over Bumps

This condition affects 2001 S/T Trucks with low mileage. It may be discovered during the predelivery test drive. The parking brake cable may be adjusted too tight. Readjust the parking brake cable using the method established in the 2001 S/T manual in SI 2000, document 723828.

Intermittent Violent Steering Wheel Shake, or Vibration at Road Speed

On 1998-2001 Silverado, Sierra, Tahoe, Suburban, Yukon, and Yukon XL, the steering wheel may shake violently or vibrate at road speed after driving 10 or more miles.

The condition may get worse the longer the vehicle is driven, and may be aggravated by applying the brake.

The customer may advise that the shake or vibration started in the steering wheel and then spread throughout the truck, as they continued to drive the vehicle.

When the concern is duplicated, place your left foot under the brake pedal and lift up on the pedal.

If the shake or vibration goes away, replace the brake booster assembly. If the concern remains, continue with vibration diagnosis as noted in the service manual.

Cruise Control Disengages When Left Turn Signal is Turned On

This condition affects 2000-01 Buick Century and Regal, and will usually occur during lane-change mode.

First follow the recommended diagnostics. Then, replace the multifunction lever/turn signal switch with GMSPO stock.

– GM Technical Assistance

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Bulletins – December 2000

This review of service bulletins released through mid-December lists the bulletin number, superseded bulletin number (if applicable) subject and models.

GENERAL INFORMATION:

00-00-89-025; November 2000 Labor Time Guide Updates; 1996-2001 Passenger Cars and Trucks

00-00-89-027; Eliminating Unwanted Odor in Vehicle; 2001 and Prior Passenger Cars and Trucks

00-00-89-028; October 2000 Bulletin Summary; 2001 and Prior Passenger Cars and Trucks

00-00-90-001; Importance of Chassis Lubrication; 2001 and Prior Passenger Cars and Trucks

HVAC:

00-01-38-010; Proper Positioning of Lower Radiator Baffle when Diagnosing Poor A/C Performance; 2000-01 Chevrolet and GMC C/K Utility Models

SUSPENSION:

00-03-09-003; Rear Suspension Creak/Pop Noise (Install Insulators); 1997-2001 Chevrolet Malibu, Oldsmobile Cutlass

00-03-10-005; Wheel Pressure Sensors Unable to be Reprogrammed after Tire Replacement; 1997-2001 Chevrolet Corvette

ENGINE/PROPULSION SYSTEM:

00-06-01-006A; Engine Tick Noise (Purge Air from Valve Lifters); 1999-2001 Chevrolet Tracker

00-06-01-023; Information on Engine/Balance Shaft "Rattle" Noise; 1992-2000 Chevrolet and GMC C/K, S/T, M/L, G and P Models, 1992-2000 Oldsmobile Bravada

00-06-01-024; Exchange Program for 2001 Model Year; 2001 Chevrolet Silverado and GMC with 6.6L Engine

00-06-01-025; Correct Oil Filter Usage on Duramax 6600 Diesel Engine (RPO LB7); 2001 Chevrolet and GMC

00-06-02-007; Howl Type Noise from Engine (Replace Cooling Fan Clutch); 1999-2000 Chevrolet Tracker

00-06-04-045; Engine "Ticking" Sound (Install Baffles into A.I.R. Hoses); 1998-99 Chevrolet and GMC C/K, G and P Models

00-06-04-047; Engine Reset PTO Speed Returns to Idle (Install Relay); 1998-2001 Chevrolet and GMC C6-7

TRANSMISSION/TRANSAXLE:

00-07-30-018; High Effort to Turn Ignition Key and Remove Shift Lever from Park Position (Replace Transmission Shift Control Cable Assembly and Fasteners); 2000 Chevrolet Impala, Pontiac Bonneville

00-07-30-019; SES Light Illuminated, DTC P1870 (Replace TCC Solenoid Valve); 2000 Chevrolet Cavalier, Pontiac Sunfire

00-07-30-023; High Accelerator Pedal Effort (Replace TV Cable); 1999-2000 Chevrolet Tracker

BODY AND ACCESSORIES:

00-08-42-010; Daytime Running Lamp Inoperative; 1999-2001 Chevrolet and GMC Pickup and Utility Models

00-08-46-004; Re-establishing Communication with OnStar® Center After Battery Disconnect

00-08-48-003; Elimination of Short Cut Method for Stationary Glass Replacement; 2001 Passenger Cars and Trucks

Seat Recliner Shaft Replacement

You may experience repeat failures of the seat recliner handle assembly shaft in 1998-2000 Bravada, Blazer, S10, Jimmy, Envoy, and Sonoma.

A more robust recliner assembly is now available for service.

Old Number	New Number
12473021	12479966
12473022	12479967
12473023	12479968
12473024	12479969
12473025	12479970*

*This part is not yet in stock.

Install the handle with a shorter screw (16 mm or 0.625 in.) with the same screw pitch.

– Dan Oden

Console Shift Indicator Bulb Change

On some 1998-2000 Intrigues, the Console Shift Indicator Bulb may burn out. The bulb may be replaced with heavy duty bulb 9427587, which is bulb type 193. The original bulb is rated at 2,500 hours, compared with 10,000-15,000 hours for the new bulb. The heavy-duty bulb is used in production for the 2001 model year, and is also on the dimmer circuit.

– John Woodrich

Clearing ABS Codes

When clearing ABS codes from 2000-01 S10, Blazer, Sonoma, Envoy, Jimmy and Bravada with KH 325 Anti Lock brake system, follow the service manual procedure. Note that it's necessary to drive the vehicle above 8 mph in addition to using the Tech 2 when clearing the codes and resetting the ABS indicator.

The previous KH 310 system could be cleared with the Tech 2 alone.

– Dan Oden

Weatherstrip Lubricant

Owners of 2000 and early 2001 Impala sedans may comment that the rear door feels like it is stuck if it hasn't been opened for several days. This is caused by the rear door header lip seal sticking to the body or molding in the door opening.

Before attempting to make any adjustments, apply one of the products listed in Dealer Technical Bulletin 99-08-64-016, preferably GM Weatherstrip Lubricant 3634770. One vial contains sufficient lubricant for several vehicles. Apply sparingly to prevent transfer to the owner's hands or clothes.

– Gary McAdam

1999-2001 Tracker Rear Fascia Cover Loose at Edge

Some customers may comment that the plastic push pins which hold the leading edge of the rear fascia cover come loose from contact with rotating car wash brushes. An effective field fix can be made by replacing the plastic push pins with a plastic J-clip p/n 96055263 and screw p/n 30014754. Four screws and J-clips are needed to fix both side attachment points of the rear fascia. A GM Service Bulletin will be released shortly.

In production, the plastic push pins are being eliminated in favor of weld nuts and bolts.

– Don Sherman

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