TECHlink

GM

January 2000
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A Monthly Publication for GM Dealership Service Professionals

SI 2000 Hits Dealerships

Service Information 2000 (SI 2000), GM's sophisticated new electronic service information system, is now being shipped to GM dealerships.

Beginning this month, and continuing through March, dealerships will receive an SI 2000 product kit that replaces the Electronic Service System (ESI) discs. It includes the four SI 2000 CDs, the SI 2000 announcement brochure that outlines system hardware requirements as well as an SI 2000 quick reference guide and installation instructions.

Dealerships will receive SI 2000 based on their current level of Techline personal computer (PC) equipment. SI 2000 is being shipped to dealerships with Specified Hardware T-9 systems this month. All other dealers will receive SI 2000 in February or March as the staged rollout continues.

SI 2000 contains all sections of the service manuals from the 1998 model year to the 2000 model year, along with service bulletins and campaigns from 1980 to present. Many of the features and functions of SI 2000 for retrieving and presenting that information are based on service technician feedback, such as:

- a VIN entry feature that provides quick access to service information for a specific vehicle.
- a keyword search function that pulls up information based on common phrases or component descriptions.
- a symptom search function, which helps find information that includes selected symptoms.

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New Ignition Cassette Brings It All Together

In the years GM has been building engines with distributorless ignition systems, several different configurations have been used, largely dictated by geography. In one common approach, the spark plugs for two cylinders share one ignition coil between them. Because both spark plugs fire together, with one cylinder on the power stroke and the other on the exhaust stroke, this has become known as a waste-spark system.

Another system, used on light duty truck V-8 engines and Chevrolet and Pontiac automobiles, has one ignition coil per cylinder, each connected to a single spark plug by a short secondary cable.

New for the 1999 premium V-6 engine and 2000 premium V-8 engines used in Cadillac and Oldsmobile is a new electronic ignition system with one coil per cylinder. The ignition systems derive their names from the engines: PV6 and PV8.

Operation

For each cylinder bank, all of the ignition coils and a coil driver module are incorporated into an assembly known as the ignition cassette. It's installed to the cylinder head cam cover with several bolts. Each ignition coil is connected directly to its corresponding spark plug by a secondary boot and spring, so there is no need for secondary cables.

The Powertrain Control Module (PCM) communicates with the coil driver modules on each cassette. The coil driver modules in turn fire all of the individual ignition coils on their respective cylinders. In this system, the coil

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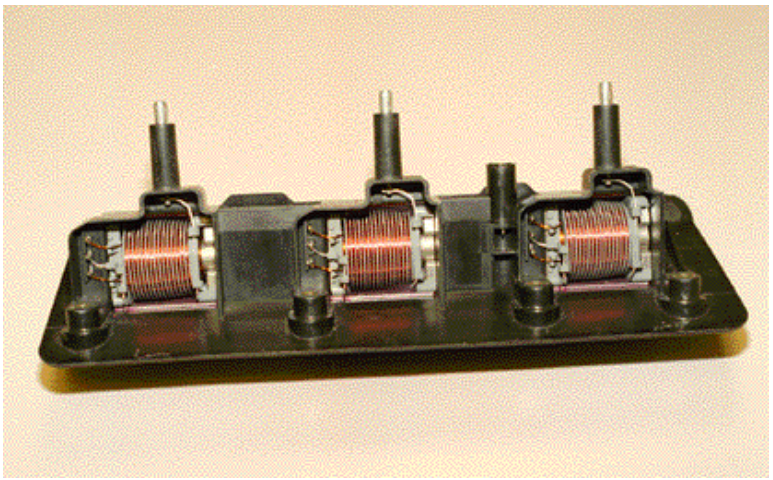
GM Service Operations

driver modules are a minimum function design because many of the features that were required in earlier DIS ignition modules are no longer needed. All dwell and timing commands come entirely from the PCM. The main task of the driver module is limited to turning the coil on and off when commanded to do so by the PCM.

This ignition system uses several sensors. First, the V6 uses a crankshaft position sensor, which contains two separate sets of sensors in one housing. This sensor creates two crankshaft position signals. The V8 engine produces two crankshaft position signals by the use of two separate crankshaft position sensors. These sensors are used to detect crankshaft position and speed. Additionally, both engines have a camshaft position sensor, which is used to determine which cylinder bank to fire for sequencing of fuel and spark timing.



Individual Ignition Coils

The Premium V system uses a 24x target wheel, which provides the PCM with crankshaft data every 15 degrees of rotation. Under normal conditions the PCM sees two crankshaft signals and performs a calculation, using both signals, to determine the position of the crankshaft. This type of calculation is referred to as angle based decoding. If, however, there is a problem and one of the crankshaft position signals is lost, the PCM can still determine the crankshaft position by performing a different calculation with the one signal. This is referred to as time based decoding. Although angle based decoding requires two crankshaft signals, it has the benefit of increased accuracy, compared with time based decoding. The PCM determines crankshaft speed by noting the time between falling edges of the crankshaft signal. Increases and decreases in this time value equate to increases and decreases in engine speed.

PV6 Crankshaft Position Sensor

Another unique feature of the Premium V ignition is a dwell event strategy called ramp and fire. This type of current control eliminates the need for the current limiting function, used in earlier ignition systems, in which the

Benefits

Because the secondary leads are eliminated, and all of the ignition components of the Premium V system are contained in a single cassette for each cylinder bank, installation of the ignition system onto the engine is simplified.

The Premium V ignitions maximize the available energy to the spark plug by reducing delivery losses from the coils to the spark plugs. This is accomplished by eliminating the waste spark and secondary leads found on earlier DIS systems. This gained energy is then available to be delivered to the spark plugs.

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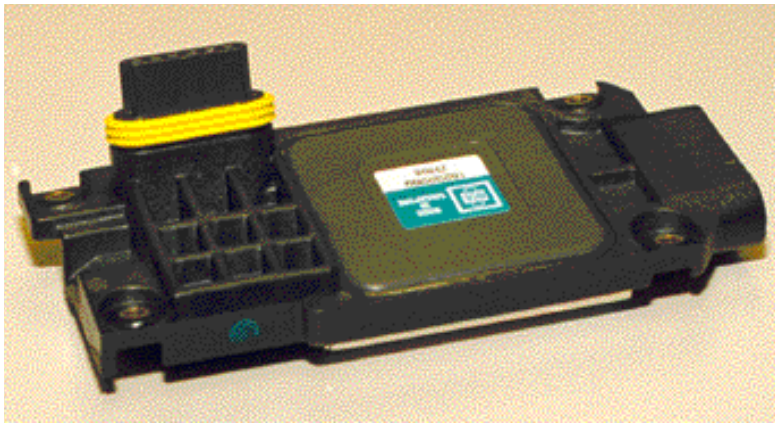
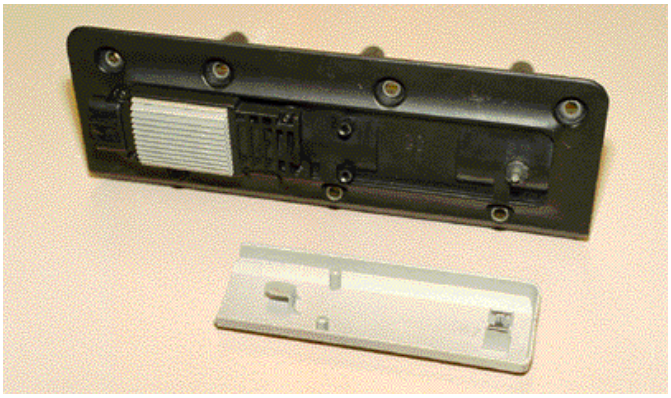
ignition module would ramp the current in the primary coil to a maximum level and hold it there until the firing event. The PCM used in the Premium V system begins dwell at the precise moment needed to ramp the current in the primary winding to the necessary current required for the firing event. Because there is no limiting, the PCM is free to ramp the current to various levels, depending on engine operating conditions. This provides the PCM with the ability to program the amount of energy the ignition coils put. This programmability allows the PCM to increase and decrease the ignition systems performance, based on engine need. By reducing the ignition systems performance, when the need is not there, increases can be gained in ignition system component life.

Service

NOTE: *Initially, all Premium V Ignition systems will be returned for analysis as complete cassette assemblies. For this reason, there are at present no individual service parts available. Do not attempt to disassemble the coil driver module from the cassette; it may destroy important evidence needed for a complete and accurate analysis.*



Ignition Module



PV6 with Beauty Cover Removed

On the PV6 system, the cassettes for front and rear cylinder heads are identical and are interchangeable. On the PV8, the front and rear cassettes are configured differently for appearance but are otherwise identical in function.

The cassette on V6 engines is equipped with a beauty cover, which is a separate part. Use care when removing it. There is a clip at the outboard end and a tab at the coil driver end, which can be broken if removed incorrectly.

When removing the cassette from the cam cover, you may need to gently pry in several places to loosen the cassette. Just be careful not to damage the perimeter seal. Then lift the cassette straight off the spark plugs. The secondary boots may come off with the cassette or may remain on the spark plugs. In either case, twist the boot to loosen it and remove it with Boot Removal Tool J-43094.

There is a grounding spring installed in the bottom of the cassette to control the generation of RFI. Be sure this spring is present and in good condition when installing the cassette.

When coil drivers become available separately for service, the J-43298 Test Harness will be used to determine whether the coil driver or the ignition coil cassette needs to be replaced. It uses simple blinking LEDs to indicate whether the module is working properly. If it is, an ignition coil is at fault.

We'll cover this tool in detail when it becomes available.

-- Charley Gipe, Delphi

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- a list of DTCs for the selected vehicle.
- and bulletin number, campaign number and document ID searches.

In February and March, updated SI 2000 CDs will be sent to dealerships that have already installed SI 2000. Beginning in the second quarter of 2000, the latest service information will be delivered in incremental satellite broadcasts to each dealership's GM ACCESS server. These updates will need to be downloaded from the ACCESS server to the PC running SI 2000.

For SI 2000 to operate properly, dealerships may need to upgrade or replace their current Techline PCs. The minimum system necessary for SI 2000 includes:

- Pentium II processor
- 64 MB RAM

- 6 GB Hard Drive
- Windows® 98 second edition
- Internet Explorer 4.0 or Netscape Communicator 4.5

(See December *TechLink* for recommended hardware specs for new PCs.)

In addition to the CD based SI 2000, Service Information available via the web also continues to be developed. Currently in the pilot stage, the SI 2000 website will mirror the navigation of SI 2000, and will be available in the coming months.

Since SI 2000 replaces ESI, dealerships also will be notified after the SI 2000 rollout is completed about removing ESI from the dealership's ACCESS server. This ESI removal procedure will be performed automatically.

For information about specified PC hardware, help with installation, or answers to any questions about using SI 2000, contact the Techline Customer Support Center at 1-800-828-6860.

– Lisa Scott, Mike Waszczenko

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Charging System Quick Check

Wintertime puts a heavier than normal load on a vehicle's electrical system. Starters, batteries and generators all get an extra workout when the temperature drops. Here's a quick and simple way to evaluate the condition of a vehicle's charging system.

First, you must be sure the battery is charged and in good condition. A quick way to do that is to use your Midtronics J-42000 battery tester available from GM Dealer Equipment. It's important to confirm the condition of the battery before a charging system test, because a discharged or bad battery can lead to inaccurate test results and a misdiagnosis of the charging system.

Second, be aware that it's a normal characteristic at idle for generator output to be approximately 30% of its full rated output. For instance, a 100 amp generator may be capable of producing only 30 amps at idle. This means that the battery may be called on to provide some of the current needed to operate electrical loads at idle and very slow driving conditions.

This condition may be worsened if the customer has added aftermarket electrical accessories.

Begin your evaluation by determining the generator's rated output. Then, connect a carbon pile to the battery, but don't turn it on yet.

Connect current clamp J-35590 to your digital multimeter and install it to the generator output cable. If there are multiple cables, be sure to include all of them. And be sure to observe the current flow direction arrow on the clamp.

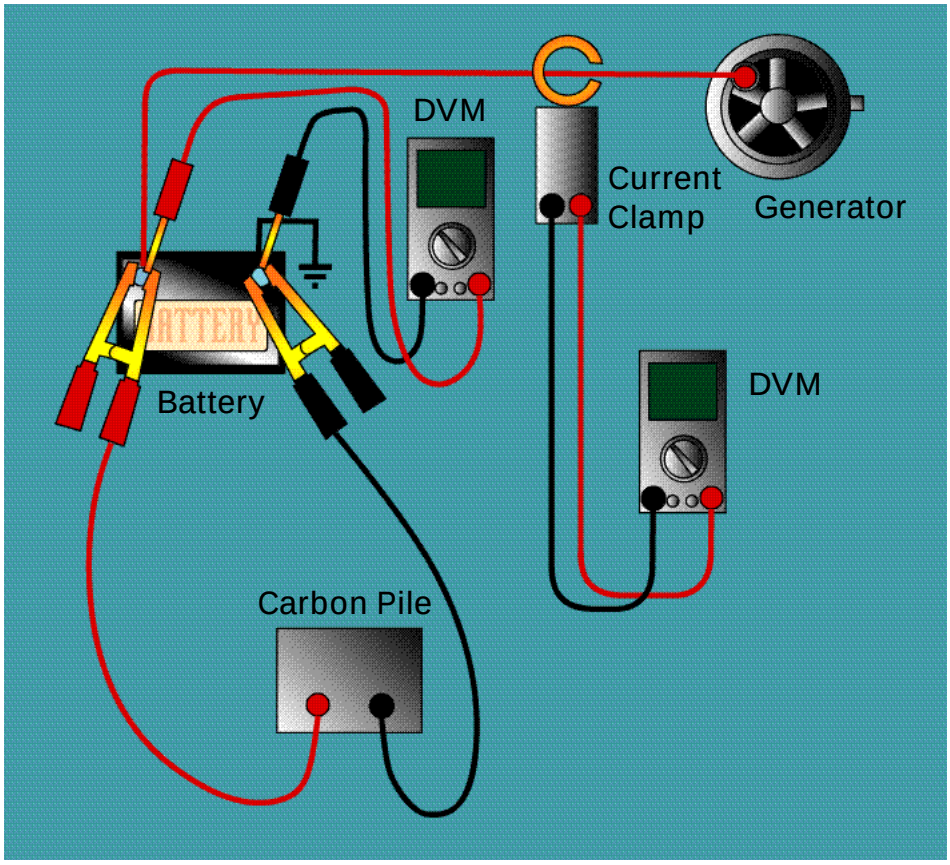
And finally, connect a voltmeter across the battery. Initially it will indicate the battery voltage. Now start the engine and allow it to idle. Be sure all accessories are off, to avoid false low voltage readings.

Observe the voltmeter. If it moves up at all, the generator has started charging. If the voltage drops when the engine is started and does not rise after 10 or more seconds, the generator is not charging.

Increase the engine speed to 2,500 rpm and note the voltmeter reading. Any value between 13 and 16 volts indicates that the voltage regulator is performing properly.

Apply a load with the carbon pile and increase it until the generator output amp reading reaches its maximum. Maintain 2,500 rpm. The ammeter reading should be at least 70% of the generator's rating. If it isn't, check the appropriate service manual for further diagnostics.

if more than one generator has been put on the vehicle. Charging systems with high resistance remote voltage and temperature sense circuits, which connect to the S or D terminal of the regulator, can be the cause of an over charge condition. A poor ground at the generator, a loss of voltage at the BAT terminal of the generator or a loss of the appropriate voltage signal to the L or B terminal of the regulator can be the cause of a no-charge condition. Refer to the service manual for more detail on how to diagnose these circuits.



Nearly all generators are serviced today by generator replacement.

If you do experience a no-charge or over-charge condition, use the J-41450B generator tester to determine whether the problem is in the generator or the vehicle system. If the generator tests good with the J-41450B but didn't operate properly when tested without it as described above, the problem is in the vehicle wiring or control system.

Be sure to check vehicle wiring, which can be the cause especially

Another condition you may be asked to check out is generator magnetic whine. A certain amount of whine is considered normal. To be sure if you're dealing with an exceptional amount, begin by comparing the sound with similar vehicles.

If the noise is excessive, loosen the drive belt and loosen the generator mounting fasteners. Then tighten them to torque in the correct sequence according to the service manual.

– Charley Gipe and Rick Overman

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Time-Sert Thread Repair Kit

Nobody has to tell you that stripped threads are both a major headache and a major inconvenience. In traditional cast iron engine components, you've been able to drill out the damaged threads and install a threaded insert.

Time - Sert Tools

Now that GM is using aluminum blocks in V6 and V8 engines in selected Cadillac, Oldsmobile, Pontiac and Chevrolet vehicles, you've got a different kind of challenge -- threads in aluminum are different from those in cast iron.

Threads are cut into cast iron with a threading die, resulting in sharp peaks and roots. Aluminum is softer, so threads are rolled, with rounded peaks and roots. This results in a stronger thread but it doesn't have the finished, machined look you're accustomed to. In fact, a rolled thread may look stripped to the untrained eye.

You need to look at the bolt if you suspect a stripped thread. Bits of aluminum trapped between the bolt threads is a sure sign of stripped threads.

NOTE: *To avoid thread damage in aluminum components, avoid using an impact wrench to loosen fasteners.*

Kent-Moore has released a series of thread repair kits for aluminum. See the accompanying sidebar for details. Call 1.800.345.2233 for ordering information.

Some holes are threaded right from the top. Others, like cylinder head bolt holes, are drilled deep into the block and threaded near the bottom. This provides good clamping forces without distorting the cylinder bores. Bottom-threaded holes require a step drill that creates two diameters -- a smaller, deeper hole for the threads and a larger diameter hole for clearance above the threads.

Deep-threaded holes require use of a drilling fixture to ensure accurate placement of the drilled hole. Follow the instructions in the service manual for complete details. Be sure to use an adequate amount of lubrication for both drilling and tapping the hole.

Step Drill

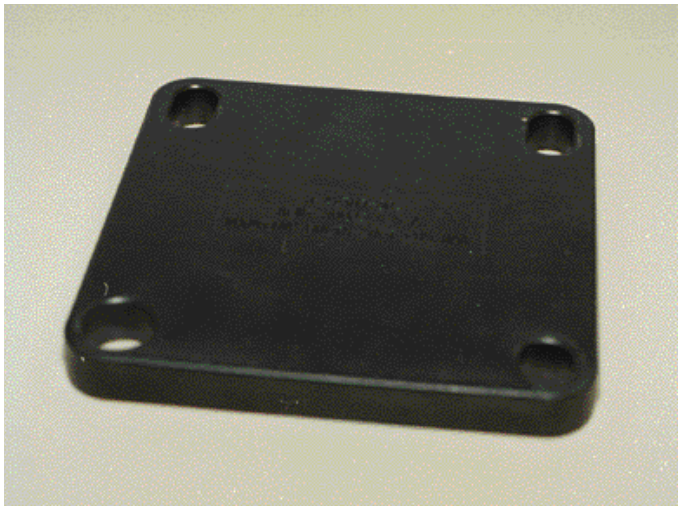
You can use either GM 1052864 or WD-40.

Holes that are threaded all the way to the top require use of a counterbore drill to provide clearance for a flange on the insert.

After tapping the hole, be sure to clear away all metal debris from the hole before installing the insert.

Regardless of the depth of the hole, the threaded insert goes in the same way.

Lubricate the installation driver with the lubricant supplied with the kit. If you look inside the insert, you'll notice that the internal threads are incomplete at the bottom. When you install the insert onto the installation driver, it will go on only so far.



Fixture

Insert

Apply a small amount of Loctite 277 to the outside of the insert. Don't overdo it. Then use the installation driver to install the insert.

When the insert is seated, the driver will become harder to turn. At this point, continued rotation of the driver forms internal threads at the bottom of the insert. This enlarges the outside diameter of the insert and locks it into the threads of the base material.

When you remove the installation driver, the job is completed. You now have carbon steel threads in the aluminum component.

A final precaution. When you assemble the engine and install the bolt into the new insert, be sure to use your torque wrench properly.

-- Dave Roland

Thread repair kits are available under the following tool numbers. Call 1-800-345-2233 for ordering information.

J-42385-100	**5.7 V8**	**Main Cap/Head**
J-42385-200	**5.7 V8**	**Common Fasteners**
J-42385-300	**5.7 V8**	**Fixtures and Hardware**
J-42385-500	**4.0/4.6L V8**	**Main Cap/Head**
J-42385-650	**3.5L V6**	**Common Fasteners**
J-42385-2000	**4.0/4.6L V8**	**Common Fasteners**

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GM Service Technical College

Service training for GM dealership service technicians is undergoing some dramatic changes as we enter the year 2000. These changes take advantage of the latest multimedia technology, bringing more training to the service technician through more convenient and effective delivery methods.

The new GM Service Technical College (GM STC) uses the latest in training technology – including distance learning and Web-based training – to effectively support the complex training requirements for dealership service personnel.

STC Curriculum

The STC curriculum, covering cars, light-duty trucks and medium-duty trucks, is divided into 10 areas:

1. Engine Performance
2. Engine Repair
3. Heating, Ventilation and Air Conditioning
4. Brakes
5. Electrical/Electronics Systems
6. Steering and Suspension
7. Automatic Transmission
8. Manual Drivetrain and Axle
9. Mechanical/Electrical Body Repair
10. Body Structural Repair

Paint Refinish training and certification is offered through GM approved paint suppliers, not GM STC.

The curriculum for each subject area consists of various courses and training methods, including:

- Video training for presenting product introduction/awareness. The GM Service Know-How videos replace the Certified-Plus Training (CPT) programs. This information will typically include new model features and specific repair procedures.
- Web-Based Training (WBT) and Computer-Based Training (CBT), covering product function and theory. WBT is designed to allow students to learn at their own pace in an interactive environment. CBT delivered on CD-ROM will be transferred to WBT in 2000.
- Interactive Distance Learning (IDL), focusing on product diagnostic procedures. Service technicians can interact directly with IDL instructors and receive individualized attention to specific questions. Courses are typically less than two hours long. Longer courses are usually divided in two or more separate broadcasts.
- Hands-on training, where service technicians practice skills and knowledge learned in a performance-based class. The instructor does not lecture to the class environment, but facilitates the class so service technicians can use the time to develop and refine their diagnostic and repair skills.

Individualized Training Plan

Dealership service technicians are placed in the STC curriculum based on their knowledge and skills acquired in previous GM service training courses.

Each service technician's training history from their GM training records is matched to the new STC curriculum, which determines the service technician's Individualized Training Plan (ITP). Any requested changes to a service technician's ITP by the service manager or dealer are reviewed by the STC Curriculum Review Board.

New service technicians without a GM training record will take a Web-based placement assessment for the course requirements of a particular subject area in the STC curriculum. Similar to a test-out, if a score of 85 percent or more is earned, the course requirement is fulfilled. Based on each assessment, an ITP is generated for the service technician.

The ITPs of all service technicians will be available shortly on the new Web-based Training Management System. It includes all the necessary information to manage and track service technician training. In addition to the ITPs, it features a course catalog, enrollment information, scheduling, wait listing, reports and online testing.

Certification

STC certification is obtained in each subject area by completing a one-day assessment that includes both a written test and a hands-on performance evaluation in a particular subject area. Service technicians must complete all the requirements identified in the individualized training plan for a particular subject area, including a designated hands-on training course, before participating in the certification assessment.

GM certification also requires that service technicians receive ASE certification in the same subject area in which they completed STC certification.

Starting in January, a STC Help Desk is available to support the transition from the former Enrollment Calling Center to the new Web enrollment process. Information will be available regarding the STC curriculum, along with assistance on how to enroll and order course materials. The Help Desk can be reached at 1-800-336-0886, Monday through Friday, 8:00 A.M. – 8:00 P.M. EST.

Additional information about the GM Service Technical College can be found on the Web: www.GMSTC.com.

A schedule of the available IDL programs is shipped to GM dealerships each month. The GM Common Training Distance Learning Program Guide and Schedule is addressed to the dealership's appointed GM distance learning site coordinator.

– Jean Hart

Regional Training Centers

The regional training centers in Atlanta, Chicago, Dallas, Detroit, Los Angeles and New York will have 16 satellite sites that will offer hands-on training. The location of the satellite sites were determined based on density/cluster of service technicians and the average commute distance from the dealership to the hands-on training location. The final site locations in each city/state area will be determined in early 2000.

Hands-on training will be offered at the GM Training Centers and satellite locations beginning in February. Since many hands-on training classes have Web-based and IDL prerequisite classes, the Training Center schedules will be light initially.

Regional Training Center	Satellite Location
Atlanta	Orlando, FL
	Charlotte NC
Chicago	Cincinnati, OH
	Minneapolis, MN
Dallas	St. Louis, MO
	Kansas City, KS
	Houston, TX
	New Orleans, LA
	Memphis, TN
Detroit	
Los Angeles	Denver, CO
	Portland, OR
	Livermore, CA
	Phoenix, AZ
New York	Pittsburgh, PA
	Troy, NY
	Harrisburg, PA

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TAC Tips

DTC P0730 After Calibration Change

1999 Cadillac Eldorado, Seville and DeVille models equipped with the 4T80E transmission that have been recalibrated for various conditions using Techline release TIS Data CD 20 may have a DTC P0730, incorrect gear ratio, after recalibrating. This code was not present before the recalibration.

DTC P0730 is caused by an incorrect calibration on TIS Data CD 20. Reinstalling the previous calibration on the vehicle can erase it. Contact the Techline Customer Support Center (TCSC) for information about how to reload the previous Techline CD 18/19 to install the previous calibration. Using the latest Techline release TIS Data CD 24, which includes the correct calibration, also can erase DTC P0730.

New Electronic Two-Stage Orifice in the 2001 Oldsmobile Aurora HVAC System

A new feature on the 2001 Oldsmobile Aurora is the use of an electronic two-stage orifice in the HVAC system. This electronic orifice is used to meter refrigerant flow into the evaporator core, and turned on or off (not pulse width modulated).

When the electronic orifice is commanded off, the orifice opening is 0.062 inches (1.57 mm). When the solenoid is commanded on, the orifice size increases to 0.080 inches (2.03 mm). The intention is to increase the flow into the evaporator core, which reduces the amount of high side pressure in the system at that particular time.

The electronic orifice is controlled by the DIM module. The DIM module looks primarily at three inputs – VSS (vehicle speed), engine RPM, and HVAC system high side pressure – to determine when the orifice should be energized (to increase opening size and flow).

The algorithm in the DIM that controls the electronic orifice also will interpret a maximum threshold pressure as a single input only, and command the electronic orifice on when the maximum pressure value is met. Under this circumstance VSS and engine RPM are not considered. However, this feature is intended to primarily function during a "drive away" mode with the DIM looking at all three inputs. This is the operating mode that will most likely cause the high side system pressure to go higher than desired and necessitate the increase in orifice size.

SIR Coil Noise in TSB 99-02-35-001 Does Not Apply To 1998 Model Year Vehicles

Technical Service Bulletin (TSB) 99-02-35-001 recommends replacing the SIR coil for a noise while turning the steering wheel on 1998-99 Chevrolet Blazer, S-10 Pickup and Astro van models; 1998-99 GMC Jimmy and Safari van models; 1998-99 Oldsmobile Bravada models; 1998 GMC Envoy 4WD and Sonoma models; and 1999 Chevrolet Silverado and GMC Sierra models. This bulletin does not apply to 1998 model year vehicles, only 1999 model year vehicles.

If a 1998 model year vehicle with this condition is encountered, order the SIR coil through normal parts channels as the part numbers listed in the bulletin do not apply to 1998 model year vehicles. An updated bulletin will be released shortly. The current bulletin lists two part numbers: 26049192 or 26072086. Use either part number on 1999 model year vehicles, as both will work.

No Seat Memory or 6-Way Power Seat with Catera Sport Option

Incorrect information in some sales literature indicates that 1999 Catera models with the Sport option include memory and 6-way power seat functions.

1999 Cateras equipped with the Sport option have a seat that features heat and power up/down travel. Recline and fore/aft movements are manually adjusted and there is no memory feature by design.

– GM Technical Assistance Center

Weep No More

2.4L LD9 Coolant Pump Diagnosis and Service

The coolant pump on the 2.4L four-cylinder LD9 engine has been modified over the years to provide more reliable service. Most recently, a number of improvements were made to the pump seal assembly to improve long-term durability. These include the use of a high performance bellows material that was added in 1998 and high performance seal face pairs for the 1999 model year.

Coolant pumps recently obtained from 1999 and 2000 model vehicles that were returned through the Warranty Parts Center are undergoing continuous analysis so that additional improvements can be made based on real-world experience. However, over half of the returned pumps do not show leakage during in-plant testing. Even when installed on a test vehicle and driven for hundreds of miles, many pumps show "no trouble found." (Note: Some of the returned pumps are not the pumps requested. Please be careful to return the correct matching warranty part whenever the WPC issues a return request.)

Many of the returned pumps show a staining around the weep hole. This staining may be the evidence of normal coolant weepage. The weep hole permits the seal to breathe, allowing for expansion and contraction of the fluid and air around the outside of the seal assembly. This area of the pump housing provides a drain path to keep the bearing assembly seal dry. The bearing would fail without it. The weep hole also allows vapor to clear from the area to prevent a crystalline formation. The seal face load springs control a balance of the hydrodynamic film required to lubricate the seal. As the pump stops turning, the spring squeezes most of the coolant from between the faces. This is known as weepage and is normal for automotive seals, so it is normal for a drop or two of coolant to appear at the weep hole. It is not necessary to replace the coolant pump if you are just working on the front of the engine and you

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Bulletins – December 1999

GENERAL INFORMATION:

2000 And Prior Passenger Cars And Trucks; Expediting Parts; Revised 48-05-02C; 99-00-84-021.

1994-2001 Passenger Cars And Trucks; December, 1999 Labor Time Guide Updates; 99-00-89-021

SUSPENSION:

1999-2000 Passenger Cars And Trucks; Improper Tire Pressure; 99-03-10-104.

BRAKES:

1994-2000 Chevrolet And GMC 6-7H Conventional And B7 Bus Models Equipped With Hydraulic Brakes (RPO JE3) And A Manually Operated Parking Brake; Daytime Running Lights (DRL) Flicker (Install Parking Brake Cable Return Spring/Lubricate Components); 99-05-26-001.

ENGINE/PROPULSION SYSTEM:

2000 Chevrolet And GMC C/K 1500 Series Models (Silverado And Sierra) Built At Oshawa Assembly Plant (VIN 1) With 5.3L Engine (VIN T – RPO LM7); Engine Exchange Program For 2000 Model Year; Revised 99-06-01-002A; 99-06-01-002C.

1994-2000 Buick LeSabre, Park Avenue, Regal, 1995-1999 Buick Riviera, 1995-2000 Chevrolet Camaro, 1998-2000 Chevrolet Lumina, Monte Carlo, 2000 Chevrolet Impala, 1994-1996 Oldsmobile Ninety – Eight, 1994-1998 Oldsmobile Eighty – Eight, 1998-1999 Oldsmobile Intrigue, 1994-2000 Pontiac Bonneville, 1995-2000 Pontiac Firebird, 1997-2000 Pontiac Grand – Prix With 3.8L Engine (VINs 1, K, L – RPOs L67, L36, L27); Thermostat Design Change; 99-06-02-018.

1997-98 Chevrolet And GMC Bi-Fuel (CNG) C Truck Models; New CNG High Pressure Lock-Off (HPL) Procedures; 99-06-04-054.

1999-2000 Chevrolet And GMC L Van, 1998-2000 Chevrolet And GMC S/T Models, 1998-2000 Oldsmobile Bravada With NVG 136 And NVG 236/246 Automatic Transfer Case (RPOs NP4 And NP8); Diagnostic Information For Transmission Binding And Shuddering; 99-06-04-056.

2000 Chevrolet Impala, Monte Carlo; Body Control Module (BCM) Related Service, Theft Deterrent Re-Learn Procedure; 99-06-04-057.

BODY AND ACCESSORIES:

1999 Chevrolet Tracker; Poor Radio Reception (Replace Antenna Attaching Screws); 99-08-44-010.

1995-2000 Passenger Cars And Trucks; Accessory Receptacle/Cigar Lighter Is Inoperative (Check Aftermarket Device Plug For Short To Ground); 99-08-45-005.

2000 Chevrolet Malibu, 2000 Oldsmobile Alero, 2000 Pontiac Grand Am; Revised Transmitter Programming Procedure; 99-08-52-006.

1996-99 Chevrolet And GMC C/K (Classic) Pickup Models With Rear Side Door (RPO E24); Procedure For Aligning Rear Side Replacement Door Using Bolt-On Hinge Kit(s); 99-08-64-028.

1999 Chevrolet And GMC C/K Models (Silverado And Sierra) Built Prior To March 3, 1999; Front Door Window Rattle (Install Stabilizer Bracket): 99-08-64-029.

notice a drop or a stain.

The best tip is to be sure your diagnosis and repair is driven by the customer's concern. Follow service manual diagnostics. If the customer is actually seeing drops of coolant on the driveway, and you suspect the coolant pump, confirm your diagnosis with a pressure test of the coolant system and replace the pump if necessary. Slight leaks may be improved with the addition of two coolant pellets (GM coolant supplement P/N 3634621, specifically designed for use in aluminum engines) to the coolant system as a first line of defense. Be sure to check that the coolant level is at or above the full line.

Finally, any time the coolant pump is serviced, or any other job is performed that requires removing the timing chain on the 2.4L engine, it is critical that the chain tensioner reset procedure is followed correctly. Technicians have lost freshly repaired engines because the tensioner plunger was not released. The tensioner must be reset to the zero position.

To release the plunger:

- Insert the tensioner plunger assembly into the tensioner housing.
- With the plunger fully extended, turn the assembly upside down on a workbench or other flat surface.
- With the plunger face against the workbench, press firmly on the bottom of the tensioner housing.
- Compress the plunger until it is seated flush in the tensioner.
- Check to be sure the plunger is out of the cylinder at the correct dimension: zero to 1.7mm (0.070 inches)

Then, loosely install the tensioner assembly to the timing chain housing, and install the chain tensioner shoe on the stud. Apply hand pressure to the tensioner shoe until the locking tab seats in the groove in the stud. Then tighten the timing chain tensioner bolts to 10Nm (89 lb. in.).

If the timing chain tensioner plunger is not released from the installation position, engine damage will occur when the engine is started.

To release the plunger:

- Using a flat blade screwdriver or similar tool, press firmly against the face of the tensioner plunger. If the plunger cannot be depressed, the plunger is not properly reset, and the procedure for resetting the timing chain tensioner should be repeated.
- Depress the plunger until it is bottomed out in the bore of the timing chain tensioner.
- Release the plunger. It should press firmly against the back of the timing chain tensioner shoe.

Analysis of pumps returned from the field shows that recent changes made to the coolant pump provide greater reliability. However, proper diagnosis may indicate a pump needs to be replaced. Those pumps that are returned to the WPC continue to be analyzed, and the results are provided to suppliers that produce sub-assemblies such as the bearing and seals, engineering, and the engine plant that makes the pumps. This helps to continue improving our overall reliability and the ownership experience.

– Rich Burrell

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