General Motors Powertrain Application

1981 - 2004

Vetronix Corporation

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Some Things You Should Know

WARNING!

Exhaust Gas

When performing any checks with the engine running in an enclosed space such as a garage, be sure there is proper ventilation. Never inhale exhaust gases; they contain carbon monoxide, a colorless, odorless, extremely dangerous gas which can cause unconsciousness or death.

WARNING!

Avoiding Injury

Always set the parking brake securely and block the drive wheels before performing any checks or repairs on the vehicle.

Important—Please Read

The Tech 1, Tech 1A, and MTS 3100 are designed for use by trained service personnel only. They have been developed for the sole purpose of diagnosing and repairing automotive electronic systems. With the help of the tester, the information presented in this manual and the appropriate automotive service manual, qualified personnel should be able to diagnose and repair electronic control systems.

Disclaimer

Every attempt has been made to provide complete and accurate technical information based on factory service information available at the time of publication. However, the right is reserved to make changes at any time without notice.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at his own expense.

Using This Application with the MTS 3100

The MTS 3100 diagnoses OBD systems in a similar manner as the Tech 1/Tech 1A but with the addition of data display enhancements. All tester adapters required to perform OBD system diagnostics are described in this operator's manual. Be sure to read the vehicle coverage tables for proper adapter configuration before connecting to the vehicle's diagnostic data link connector.

When used alone in the MTS 3100, the operation of the cartridge and the vehicle identification screens, test menus, and data screens are as described in this manual.

When this application is used with the MTS 3100 in conjunction with a program card, vehicle identification screens, test menus, diagnostic trouble codes, and diagnostic data parameters can be viewed in full-screen Enhanced Mode displays. Refer to the Enhanced Mode operating instructions in the program card operator's manual for further detail.

A Note about Tech 1 and Tech 1A Testers

The Tech 1 was originally introduced as an OEM scan tool in 1984. The Tech 1 Series A (Tech 1A) was released in 1989 and is an updated version of the Tech 1. After 19 years of successful distribution Vetronix decided to retire the Tech 1 and Tech 1 A in 2003. This further established the MTS 3100's foothold in the automotive service industry.

Please note that while every attempt has been made to ensure the cartridge based software applications work on the Tech 1 and Tech 1A testers, Vetronix strongly recommends that Tech 1 and Tech 1A owners update to the MTS 3100 tester.

Tech 1 and Tech 1A owners now qualify for special discounts on any MTS 3100 tester purchase. Please contact our customer support department for program details: 800-321-4889 Ext 4.

Important—Please Read

When you are using this manual to diagnose a vehicle, take the time to determine the type of tester that you are working with and be sure you are using the correct cables and adapters. Doing so may prevent misuse of application cartridges and incorrect vehicle diagnosis. Refer to Chapter 4 for complete information on the correct cables and adapters to use depending on which tester you have and the vehicle you are diagnosing.

Using This Manual

Reading through this manual before putting your MTS 3100 to work introduces you to all of its capabilities and tell you how to use them immediately. The application software is designed to reduce time-consuming reference to manuals as much as possible. Once you are familiar with the software and its operation, you'll be able to spend more time diagnosing and less time reading. Later, if questions arise, a quick glance at the flow chart for the test you are performing is probably all you need.

The flow charts in this manual consist of screen displays enclosed in boxes. The displays are arranged in the order in which they appear while using the software. Keys on the tester keypad are shown in the manual as white letters in small black boxes. At the end of each test mode description, there is a list of the active tester keys and their functions in that particular test.

Note that if you are using the MTS 3100, the display looks different for vehicle selection and data list software. Otherwise, the diagnostic routines are the same Tech 1/1A displays as those shown in this manual. Refer to the MTS 3100 Operator's Manual for examples of MTS 3100 displays.

Most display screens require input from you, such as YES, NO, or EXIT. To respond when the tester asks for information, just press the appropriate key on the tester keypad. Although there are exceptions, pressing EXIT generally takes you back to the previous screen or to the beginning of a process.

Please read Chapter 2 before beginning diagnostics for the first time.

Table of Contents

1. GM POWERTRAIN APPLICATION DESCRIPTION

The GM Powertrain application is used with the Tech 1, Tech 1 Series A (Tech 1A), or MTS 3100 tester to diagnose and troubleshoot problems related to the vehicle electronic engine, transmission, or powertrain control system and its control module(s). Depending on the vehicle and system being tested, the electronic control module is referred to as one of the following:

- Engine Control Module (ECM)
- Transmission Control Module (TCM)
- Powertrain Control Module (PCM)
- Vehicle Control Module (VCM)
- Body Control Module (BCM) [1985-89 Cadillac Only]
- Automatic Transfer Case (ATC) Control Module
- Alternate Fuel Engine Control Unit (AFECU)

The ECM and TCM systems are combined in vehicles equipped with a PCM or VCM.

The Vetronix testers are extremely easy to use and provide on-screen directions for most vehicle and test mode selections. In most cases, items are selected by simply choosing an item from a menu displayed on the tester screen and pressing the corresponding key on the tester keypad.

OPERATING MODES

The test modes available vary according to the specific configuration of the vehicle being tested and the system you wish to test. Before testing can begin, the tester asks you to enter certain information such as the model year, the type of vehicle being tested, the system you wish to test, and other specific information. How to enter the information is explained in Chapter 4.

Once the information is entered, a Select Mode menu is displayed showing the test modes available for the selected vehicle. Only test modes available for the selected vehicle are displayed in the menus. Not all test modes described in this manual are available for every vehicle.

OBD CONTROLS MODE

The On-Board Diagnostic (OBD) controls mode provides fast access to output controls supported by the vehicle OBD system. Certain vehicle systems allow the tester to command an output or actuator device to turn on and off, or allow for ECM, TCM, PCM, or VCM memory resets and adaptive learn strategies. The tester that is used with this software is capable of bi-directional communication which controls the device under test, or it can cause the device under test to change state by controlling input/output electronics. Providing quick and efficient diagnostic software tools like these is the purpose of this mode.

INFORMATION MODE

The Information mode displays helpful information about the vehicle or system under test. This information may include MIL Status, System Status, VIN Identification, and Calibration Identification.

2. OPERATING PRECAUTIONS

INTRODUCTION

This chapter explains precautions that are very important when using Vetronix testers and application software with a vehicle. Failure to observe these precautions could affect the operation of the tester, the accuracy of data and tests, and at times your safety.

Read all of this chapter before you operate the tester and application software (cartridges). Safeguards have been built into the tester to protect you, the vehicle, and the tester from any hazards. Misuse or improper securing of the vehicle could lead to unsafe conditions.

PRECAUTIONS FOR ALL APPLICATIONS

PROTECT AGAINST REVERSE POLARITY

CAUTION! 	If power is applied to the tester and the Tech 1A or Tech 1 display remains blank or the green LED on the MTS 3100 does not illuminate when turned off, reverse polarity in the cigarette lighter may be present. Damage to the tester could occur. **DO NOT** connect the ALDL/DLC cable to the vehicle. Verify that the center contact of the vehicle's cigarette lighter has +12 volts and that the outer contact is grounded.

PROTECT AGAINST VOLTAGE SPIKES

CAUTION!

Due to the possibility of voltage spikes that could damage the vehicle or tester, do not connect or disconnect the tester while the ignition key is ON or while the engine is running.

INSTALL/REMOVE CARTRIDGES WITH TESTER OFF

CAUTION!

Do not install or remove application or auxiliary cartridges while power is applied to the tester.

To change or add a cartridge, do the following:

1. Turn the ignition OFF.
2. Disconnect the tester power source—either the cigarette lighter power plug or the ALDL/DLC Cable—from the vehicle.
3. For the MTS 3100, press # EXIT to turn the tester OFF.
4. Change or install the cartridge(s).
5. Reconnect the tester power source—either the cigarette lighter power plug or the ALDL/DLC Cable.
6. Turn the ignition ON.

APPLY PARKING BRAKE

WARNING!

OBD CONTROLS MODE OPERATION

Use care when performing these tests. If used incorrectly, these test can result in personal injury or damage to the ECM, TCM, PCM, VCM, ATC, or AFECU or vehicle. **ALWAYS PUT THE PARKING BRAKE ON AND BLOCK THE WHEELS WHEN USING THIS TEST MODE.**

PROTECT SNAPSHOT DATA

CAUTION!

Snapshot data is retained in tester memory for up to 24 hours, even if the tester is disconnected from the vehicle.

If you remove or change master cartridges, or power up the tester without a master cartridge or with a different master cartridge, you will lose the snapshot data.

PRECAUTIONS FOR GM POWERTRAIN APPLICATION

CONNECT GM/GEO TO CORRECT DLC

CAUTION!

For 1989-1993 GEO vehicles (rebadged Suzuki vehicles), there are three 3-pin ALDL/DLC connectors on the vehicle colored White, Orange, and Green. When testing the ECM/TCM use the White connector only. NEVER USE THE GREEN CONNECTOR. Connecting the MTS 3100, Tech 1A or Tech 1 to the Green ALDL connector may severely damage the tester.

CHECK TESTER INDUCED DTCs

CAUTION!

Any ALDL/DLC device may interrupt normal vehicle communications and cause vehicle Diagnostic Trouble Codes to be set. Always check and clear all codes after using any ALDL/DLC device.

- For 1992-1994 and possibly later Corvette, CCM and ABS codes may be set when using Powertrain output tests.
- For 1990 E-Body vehicles, it is possible to set code 552 “BCM KEEP ALIVE MEMORY FAILURE” when clearing Diagnostic Trouble Codes.
- For 1990-1994 and possibly later vehicles equipped with BCMs, a BCM-ECM communication fault code or transmission PRNDL DTC may be set when operating some of the OBD Controls.

Check for trouble codes at the start and at the end of testing. If there are codes set at the end of testing—but not at the start—you may assume that they are caused by the tester and should be cleared and ignored.

AVOID SPECIAL OR 10K MODE OPERATION

CAUTION!

Fuel injected vehicles should not be driven in the **Special** (10K) mode. Use the **Open** (Road Test) mode instead.

Special or 10K mode causes a fuel injected engine to idle at 1,000 RPM, advances overall spark 7 to 10 degrees more than commanded, and masks/creates cold driveability conditions.

Diesel engines experience very early TCC engagement in 10K mode.

Carbureted engines experience spark knock, rough idle, and may even stall when using 10K mode.

LIMIT AIR SOLENOID OPERATION

CAUTION!

Continuous activation of the AIR management system can cause overheating and damage to the catalytic converter. To prevent this damage, the tester automatically deactivates the AIR management system twenty seconds after it has been activated by the operator in Test Mode F4. You must be cautious not to continuously reactivate the AIR solenoid after the tester has automatically deactivated it; otherwise, damage to the catalytic converter may occur.

LIMIT FIELD SERVICE OPERATION

CAUTION!

FIELD SERVICE, MIN-T RICH MODE OPERATION, AND "BACKUP FUEL AND SPARK"

This mode should ***not be operated continuously for more than two minutes*** at a time because heat damage to the catalytic converter could result.

3. VEHICLE COVERAGE

Use this section to assist you in operating your Vetronix tester and application software. It covers everything needed to get your tester connected to the vehicle and begin performing the system diagnostic functions. It is suggested that you read this manual completely before operating the tester and the application software.

VEHICLE COVERAGE

1981 VEHICLE COVERAGE

1981 PASSENGER CARS					
VEHICLE MAKE	**8TH VIN**	**ENGINE SIZE**	**FUEL SYSTEM**	**ELECTRONIC CONTROL**	**ENGINE MFG**
6	9	6.0L V8	MD/DFI	DFI	6
6	6	6.0L V8	4-Bbl	Full	6
1,4 2	3 T	3.8L V6 4.9L V8	4-Bbl Turbo 4-Bbl Turbo	Full Full	4 2

1981 PASSENGER CARS (CONTINUED)

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
1,2,3,4,7	A	3.8L V6	2-Bbl	Full	4
3,4,6	4	4.1L V6	4-Bbl	Full	4
4	B	5.7L V8	4-Bbl	Full	4
1,7	9	1.6L 4-cyl.	2-Bbl	Full	1
1,2,3,4	5	2.5L 4-cyl.	2-Bbl	Full	2
1,2,3,4	X	2.8L V6	2-Bbl	Full	1
1	Z	2.8L V6	2-Bbl	Full	1
1,2	K	3.8L V6	2-Bbl	Full	1,7
3	F	4.3L V6	2-Bbl	Full	3
2,4,7	S	4.3L V6	2-Bbl	Full	2
1,2,3,4,7	J	4.4L V8	2-Bbl	Full	1,7
2,7	W	4.9L V8	4-Bbl	Full	2
1,2,3,4,7	H	5.0L V8	4-Bbl	Full	1,7
2,3,4	Y	5.0L V8	4-Bbl	Full	3
1	6	5.7L V8	4-Bbl	Full	1
1	L	5.7L V8	4-Bbl	Full	1

1982 VEHICLE COVERAGE

1982 PASSENGER CARS

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
TBI:					
2,4	0	1.8L 4-cyl.	TBI	EFI	2
1,2,3,4	R	2.5L 4-cyl.	TBI	EFI	2
1,2	2	2.5L 4-cyl.	TBI	EFI	2
1,2	7	5.0L V8	TBI	CFI	1
1	8	5.7L V8	TBI	CFI	1
Carbureted:					
1,2,7	C	1.6L 4-cyl.	2-Bbl.	Min-T or Full	1
1,2,3,4,6	G	1.8L 4-cyl.	2-Bbl.	Full	1
1,3,4	B	2.0L 4-cyl.	2-Bbl.	Full	1
3	8	4.3L V8	2-Bbl.	Olds-L & C	3
3,4	Y	5.0L V8	4-Bbl.	Olds-L & C	3
4	3	3.8L V6	4-Bbl. Turbo	Full	4
1,2	F	2.5L 4-cyl.	2-Bbl.	Full	2
1,2,3,4	5	2.5L 4-cyl.	2-Bbl.	Full	2
3,4	E	3.0L V6	2-Bbl.	Full	4
1,2,3,4,7	A	3.8L V6	2-Bbl.	Full	4
2,3,4,6	4	4.1L V6	4-Bbl.	Full	4

1982 PASSENGER CARS (CONTINUED)

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
1,2,3,4	X	2.8L V6	2-Bbl.	Full	1,7
1,2,3,4	Z	2.8L V6	2-Bbl.	Full	1
1,2	1	2.8L V6	2-Bbl.	Full	1
1	K	3.8L V6	2-Bbl.	Full	1
1,2,3,4,7	J	4.4L V6	2-Bbl.	Full	7
1,2,3,4,7	H	5.0L V8	4-Bbl.	Full	1,7
1	L	5.7L V8	4-Bbl.	Full	1
Cadillac:					
6	9	6.0L V8	MD/DFI	DFI	6
6	8	4.1L V8	MD/DFI	DFI	6

1983 VEHICLE COVERAGE

1983 PASSENGER CARS AND TRUCKS

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PASSENGER CARS					
TBI:					
1,2	S	5.0L V8	TBI	CFI	1
1	8	5.7L V8	TBI	CFI	1
2,3,4	0	1.8L 4-cyl.	TBI	EFI	2
1,2,3,4,6	P	2.0L 4-cyl.	TBI	EFI	1
1,2,3,4	R	2.5L 4-cyl.	TBI	EFI	2
1,2	2	2.5L 4-cyl.	TBI	EFI	2
Carbureted:					
1,2,7	C	1.6L 4-cyl.	2-Bbl.	Min-T	1
6	6	6.0L V8	4-Bbl.	Full	6
3,4,6	4	4.1L V6	4-Bbl.	Full	4
4	8	3.8L V6	4-Bbl. Turbo	Full	4
3,4	E	3.0L V6	2-Bbl.	Full	4
1,2,3,4,7	A	3.8L V6	2-Bbl.	Full	4

1983 PASSENGER CARS AND TRUCKS (CONTINUED)

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
2	L	2.8L V6	2-Bbl.	Full	1
1,2,3,4	X	2.8L V6	2-Bbl.	Full	1,7
1,2,3,4	Z	2.8L V6	2-Bbl.	Full	1
1,2	1	2.8L V6	2-Bbl.	Full	1
1	9	3.8L V6	2-Bbl.	Full	1
1,2,3,4,7	H	5.0L V8	4-Bbl.	Full	1,7
1	6	5.7L V8	4-Bbl.	Full	1
1,2,3,4,6	B	2.0L 4-cyl.	2-Bbl.	Full	1
1,2	F	2.5L 4-cyl.	2-Bbl.	Full	2
1,2,3,4	5	2.5L 4-cyl.	2-Bbl.	Full	2
3	9	5.0L V8	4-Bbl.	Olds-L & C	3
3,4	Y	5.0L V8	4-Bbl.	Olds-L & C	3
Cadillac:					
6	9	6.0L V8	DFI	DFI	6
6	8	4.1L V8	MD/DFI	DFI	6
TRUCKS					
Carbureted:					
C,T	A	1.9L 4-cyl.	2-Bbl.	Isuzu	Isuzu
C,T	B	2.8L V6	2-Bbl.	Full	C
C,T	M	5.7L V8	4-Bbl.	Full	C
C,T	P	5.7L V8	2-Bbl.	Full	C
C,T	D	4.1L 6-cyl.	2-Bbl.	Chevy Truck	C

1984 VEHICLE COVERAGE

1984 PASSENGER CARS AND TRUCKS

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PASSENGER CARS					
PFI:					
3,4	3	3.8L V6	MFI	PFI	4
4	9	3.8L V6	SFI Turbo	PFI	4
2,4	J	1.8L 4-cyl.	MFI Turbo	PFI	2
TBI:					
1	8	5.7L V8	TBI	CFI	1
1,2,3,4,6	P	2.0L 4-cyl.	TBI	EFI	1

1984 PASSENGER CARS AND TRUCKS (CONTINUED)

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
2,3,4	0	1.8L 4-cyl.	TBI	EFI-Pont	GM-Brazil
1,2,3,4	R	2.5L 4-cyl.	TBI	EFI-Pont	2
1,2	2	2.5L 4-cyl.	TBI	EFI-Pont	2
Carbureted:					
1,2,7	C	1.6L 4-cyl.	2-Bbl.	Min-T	1
3	9	5.0L V8	4-Bbl.	Olds-Full	3
3,4	Y	5.0L V8	4-Bbl.	Olds-Full	3
3,4	E	3.0L V6	2-Bbl.	Full	4
1,2,3,4,7	A	3.8L V6	2-Bbl.	Full	4
3,4	4	4.1L V6	4-Bbl.	Full	4
1,2,3,4,6	B	2.0L 4-cyl.	2-Bbl.	Full	1
2	L	2.8L V6	2-Bbl.	Full	1
1,2,3,4	X	2.8L V6	2-Bbl.	Full	1,7
1,2,3,4	Z	2.8L V6	2-Bbl.	Full	1
1,2	1	2.8L V6	2-Bbl.	Full	1
1	9	3.8L V6	2-Bbl.	Full	1
1,2	G	5.0L V8	4-Bbl.	Full	1
1,2,3,4,7	H	5.0L V8	4-Bbl.	Full	1,7
1	6	5.7L V8	4-Bbl.	Full	1
Cadillac:					
6	9	6.0L V8	MD/DFI	DFI	6
6	8	4.1L V8	DFI	DFI	6
TRUCKS					
Carbureted:					
C,T	A	1.9L 4-cyl.	2-Bbl.	Isuzu Truck	Isuzu
C,T	D	4.1L 6-cyl.	2-Bbl.	Chevy Truck	C
C	B	2.8L V6	2-Bbl.	Full	C
C,T	F	5.0L V8	4-Bbl.	Full	C
C,T	L	5.0L V8	4-Bbl.	Full	C
C,T	E	5.7L V8	4-Bbl.	Full	C

1985 VEHICLE COVERAGE

1985 PASSENGER CARS AND TRUCKS

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PASSENGER CARS					
PFI:					
2,3,4	L	3.0L V6	MFI	PFI-Buick	4
3,4	3	3.8L V6	MFI	PFI-Buick	4
4	9	3.8L V6	SFI (Turbo)	PFI-Buick	4
1,2	S	2.8L V6	MFI	PFI-Chevy	1
1,2,3,4,6	W	2.8L V6	MFI	PFI-Chevy	1
1,2	F	5.0L V8	TPI	PFI-Chevy	1
1	8	5.7L V8	TPI	PFI-Chevy	1
2	9	2.8L V6	MFI	PFI-Pont	2
2,4	J	1.8L 4-cyl.	MFI Turbo	PFI-Pont	2
1,2,4	Z	4.3L V6	TBI	CFI	1
1,2,3,4,6	P	2.0L 4-cyl.	TBI	EFI	1
2,3,4	0	1.8L 4-cyl.	TBI	EFI-Pont	2
1,2,3,4	R	2.5L 4-cyl.	TBI	EFI-Pont	2
2,3,4	U	2.5L 4-cyl.	TBI	EFI-Pont	2
1,2	2	2.5L 4-cyl.	TBI	EFI-Pont	2
Carbureted:					
1,2,7	C	1.6L 4-cyl.	2-Bbl.	Min-T	1
3	9	5.0L V8	4-Bbl.	Olds-Full	3
3,4	Y	5.0L V8	4-Bbl.	Olds-Full	3
3,4	E	3.0L V6	2-Bbl.	Full	4
1,2,3,4	A	3.8L V6	2-Bbl.	Full	4
1,2,3,4	X	2.8L V6	2-Bbl.	Full	1
1,2	G	5.0L V8	4-Bbl.	Full	1
1,2,3,4	H	5.0L V8	4-Bbl.	Full	1
1,2	6	5.7L V8	4-Bbl.	Full	1
Cadillac DFI:					
6	8	4.1L V8	DFI-Long	DFI	6
6	8	4.1L V8	DFI-Trans	DFI	6
TRUCKS					
TBI:					
C,T	E	2.5L 4-cyl.	TBI	EFI-Pont	C
Carbureted:					
C,T	A	1.9L 4-cyl.	2-Bbl.	Isuzu Truck	Isuzu

1985 PASSENGER CARS AND TRUCKS (CONTINUED)

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
C,T	D	4.1L 6-cyl.	2-Bbl.	Chevy Truck	C
C,T	B	2.8L V6	2-Bbl.	Full	C
C,T	N	4.3L V6	4-Bbl.	Full	C
C,T	F	5.0L V8	4-Bbl.	Full	C
C,T	L	5.7L V8	4-Bbl.	Full	C

1986 VEHICLE COVERAGE

1986 PASSENGER CARS AND TRUCKS

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PASSENGER CARS					
PFI:					
2,3,4	L	3.0L V6	MFI	PFI-Buick	4
3,4	3	3.8L V6	MFI	PFI-Buick	4
3,4	B	3.8L V6	MFI	PFI-Buick	4
3,4	B	3.8L V6	MFI	GM30	4
4	7	3.8L V6	SFI (Turbo)	PFI-Buick	4
2	9	2.8L V6	MFI	PFI-Pont	1
1,2	S	2.8L V6	MFI	PFI-Chevy	1
1,2,3,6	W	2.8L V6	MFI	PFI-Chevy	1
1,2	F	5.0L V8	MFI	PFI-Chevy	1
1	8	5.7L V8	MFI	PFI-Chevy	1
2,4	J	1.8L 4-cyl.	MFI (Turbo)	PFI-Pont	2
TBI:					
2,3,4	0	1.8L 4-cyl	TBI	PFI-Pont	2
1,2,3,4	R	2.5L 4-cyl.	TBI	PFI-Pont	2
2,3,4	U	2.5L 4-cyl.	TBI	PFI-Pont	2
1,2	2	2.5L 4-cyl.	TBI	PFI-Pont	2
1,2,3,4,6	P	2.0L 4-cyl.	TBI-Auto	EFI	1
1,2,3,4,6	1	2.0L 4-cyl.	TBI	EFI	1
1,2	Z	4.3L V8	TBI	CFI	1
Carbureted:					
1,2,7	C	1.6L 4-cyl.	2-Bbl.	Min-T	1
3	9	5.0L V8	4-Bbl.	Olds-Full	3
1,2,3,4,6	Y	5.0L V8	4-Bbl.	Olds-Full	3

1986 PASSENGER CARS AND TRUCKS (CONTINUED)

VEHICLE MAKE	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
1,2,3,4	A	3.8L V6	2-Bbl.	Full	4
1,2,3,4	X	2.8L V6	2-Bbl.	Full	1
1,2	G	5.0L V8	4-Bbl.	Full	1
1,2,3,4	H	5.0L V8	4-Bbl.	Full	1
1	6	5.7L V8	4-Bbl.	Full	1
Cadillac DFI:					
6	8	4.1L V8	DFI	DFI	6
6	8	4.1L V8	DFI	GM30	6
TRUCKS					
TBI:					
C,T	E	2.5L 4-cyl.	TBI	EFI-Pont	2
C,T	Z	4.3L V6	TBI	CFI	C
C,T	R	2.8L V6	TBI	CFI	C
Carbureted:					
C,T	N	4.3L V6	4-Bbl.	Full	C
C,T	F	5.0L V8	4-Bbl.	Full	C
C,T	L	5.7L V8	4-Bbl.	Full	C

1987 VEHICLE COVERAGE

1987 PASSENGER CARS AND TRUCKS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PASSENGER CARS						
PFI:						
1,7	--	9	1.5L 4-cyl.	MFI (Turbo)	PFI-GMP4	Isuzu
2,4	J,N	M	2.0L 4-cyl.	MFI (Turbo)	PFI-GMP4	2
1,2,3,4,6,7	A,J,L	W	2.8L V6	MFI	PFI-GMP4	1
1,2	F	S	2.8L V6	MFI	PFI-Chevy	1
2	Fiero	9	2.8L V6	MFI	PFI-Pont	2
2,3,4	N	L	3.0L V6	MFI	PFI-Buick	4
2,3,4	E	3	3.8L V6	MFI	GM30	3,4

1987 PASSENGER CARS AND TRUCKS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
2,3,4 4	A,C,H G	3 7	3.8L V6 3.8L V6	MFI SFI (Turbo)	PFI-Buick PFI-Buick	4 4
1,2 1,2	F F,Y	F 8	5.0L V8 5.7L V8	TPI TPI	PFI-GMP4 PFI-GMP4	1 1
TBI: 1,3,4,6,7	J,L	1	2.0L 4-cyl.	TBI	EFI-GMP4	1
2,3,4	J	K	2.0L 4-cyl.	TBI	EFI-Pont	2
2,3,4 1,2,3,4	N A,P	U R	2.5L 4-cyl. 2.5L 4-cyl.	TBI TBI	EFI-GMP4 EFI-GMP4	2 2
1,2	B,G	Z	4.3L V6	CFI	EFI-Chevy	1
Carbureted: 1,7	--	7	1.5L 4-cyl.	2-Bbl.	Isuzu	Isuzu
1,2,7	T	C	1.6L 4-cyl.	2-Bbl.	Min-T	1
1,2,3,4	G	A	3.8L V6	2-Bbl.	Full	4
1,2,3,4,6 3,6	B,D,G D,G	Y 9	5.0L V8 5.0L V8	4-Bbl. 4-Bbl.	Olds-Full Olds-Full	3 3
1,2,3,4 1 1	B,F,G G B	H G 6	5.0L V8 5.0L V8 5.7L V8	4-Bbl. 4-Bbl. 4-Bbl.	Full Full Full	1 1 1
Cadillac DFI: 6	V	7	4.1L V8	DFI	GM35	6
6	C	8	4.1L V8	DFI	DFI	6
6	E,K	8	4.1L V8	DFI	E/K GM30	6
TRUCKS						
TBI: C,T	Truck	E	2.5L 4-cyl.	TBI	EFI-GMP4	2
C,T	Truck	R	2.8L V6	TBI	EFI	C
C,T C,T C,T C,T	Truck Truck Truck Truck	Z H K N	4.3L V6 5.0L V8 5.7L V8 7.4L V8	TBI TBI TBI TBI	EFI EFI EFI EFI	C C C C

1988 VEHICLE COVERAGE

1988 PASSENGER CARS AND TRUCKS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PASSENGER CARS						
PFI: 1,7	--	9	1.5L 4-cyl.	MFI (Turbo)	PFI-GMP4	Isuzu
2,3,4	J,N	M	2.0L 4-cyl.	MFI (Turbo)	PFI-GMP4	2
2,3,4	N	D	2.3L Quad 4	MFI	PFI-GMP4	3
1,6	J	W	2.8L V6	MFI	PFI-GMP4	1
1,2,3,4,7	A,L,W	W	2.8L V6	MFI	PFI-GMP4	1
1,2	F	S	2.8L V6	MFI	PFI-Chevy	1
2	P	9	2.8L V6	MFI	PFI-Pont	2
3,4	N	L	3.0L V6	MFI	PFI-Buick	4
1,6	A	T	3.1L V6	MFI	PFI-GMP4	1
3,4	E	C	3.8L V6	SFI	GM30/GM33	4
2,3,4	C,H	C	3.8L V6	SFI	PFI-GMP4	4
2,3,4	A,C,H	3	3.8L V6	SFI	PFI-Buick	4
1,2 1,2	F F,Y	F 8	5.0L V8 5.7L V8	TPI TPI	PFI-GMP4 PFI-GMP4	1 1
TBI: 2	T	6	1.6L 4-cyl.	TBI	EFI-GMP4	Opel
2	T	K	2.0L 4-cyl.	TBI	EFI-GMP4	Opel
1,3,4,6,7	J,L	1	2.0L 4-cyl.	TBI	EFI-GMP4	1
2,3,4	J	K	2.0L 4-cyl.	TBI	EFI-GMP4	2
2,3,4 1,2,3,4	N A,P	U R	2.5L 4-cyl. 2.5L 4-cyl.	TBI TBI	EFI-GMP4 EFI-GMP4	2 2
1	B,G	Z	4.3L V6	CFI	EFI-Chevy	1
1,2	F	E	5.0L V8	CFI	EFI-Chevy	1
Carbureted: 1,7	--	7	1.5L 4-cyl.	2-Bbl.	Isuzu	Isuzu
1,2,7	T	C	1.6L 4-cyl.	2-Bbl.	Min-T	1
1,2,3,4,6 6	B,D D	Y 9	5.0L V8 5.0L V8	4-Bbl. 4-Bbl.	Olds-Full Olds-Full	3 3

1988 PASSENGER CARS AND TRUCKS (CONTINUED)						
VEHICLE MAKE	**4TH VIN**	**8TH VIN**	**ENGINE SIZE**	**FUEL SYSTEM**	**ELECTRONIC CONTROL**	**ENGINE MFG**
3	G	Y	5.0L V8	4-Bbl.	Olds-Full	3
1,3 1 1	B,G G B	H G 6	5.0L V8 5.0L V8 5.7L V8	4-Bbl. 4-Bbl. 4-Bbl.	Full Full Full	1 1 1
Cadillac DFI: Allante	V	7	4.1L V8	DFI	GM35	6
6	C	5	4.5L V8	DFI	DFI	6
6	E,K	5	4.5L V8	DFI	GM30	6
TRUCKS						
TBI: C,T	Truck	E	2.5L 4-cyl.	TFI	EFI-GMP4	2
C,T	Truck	R	2.8L V6	TFI	EFI	C
C,T C,T C,T C,T	Truck Truck Truck Truck	Z H K N	4.3L V6 5.0L V8 5.7L V8 7.4L V8	TFI TFI TFI TFI	EFI EFI EFI EFI	C C C C
C,T	Truck	C	6.2L V8	Diesel	Diesel	Detroit Diesel

1989 VEHICLE COVERAGE

1989 PASSENGER CARS AND TRUCKS						
VEHICLE MAKE	**4TH VIN**	**8TH VIN**	**ENGINE SIZE**	**FUEL SYSTEM**	**ELECTRONIC CONTROL**	**ENGINE MFG**
PASSENGER CARS						
PFI: 1,7	--	5	1.5L 4-cyl.	SFI (DOHC)	PFI-GMP4	Isuzu
2,3,4	J,N	M	2.0L 4-cyl.	MFI (Turbo)	PFI-GMP4	2
2,3,4	N	A,D	2.3L Quad 4	MFI	PFI-GMP4	3
1,2	F	S	2.8L V6	MFI	PFI-Chev	1
1,2	W	V	3.1L V6	SFI (Turbo)	PFI-Chev	1
1,6 1,6	A,J,L,W A,W	W T	2.8L V6 3.1L V6	MFI MFI	PFI-GMP4 PFI-GMP4	1 1

1989 PASSENGER CARS AND TRUCKS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
1,2,3,4	A,N	N	3.3L V6	MFI	PFI-GMP4	4
3,4	E,Z	C	3.8L V6	SFI	GM30/GM33	4
2,3,4	C,H	C	3.8L V6	SFI	PFI-GMP4	4
2	Trans Am	7	3.8L V6	SFI Turbo	PFI-GMP4	4
1 1,2	F F,Y	F 8	5.0L V8 5.7L V8	TPI TPI	PFI-GMP4 PFI-GMP4	1 1
TBI: 2	Le Mans	6	1.6L 4-cyl.	TBI	EFI-GMP4	Opel
2	Le Mans	K	2.0L 4-cyl.	TBI	EFI-GMP4	Opel
2,3,4	J,L	1	2.0L 4-cyl.	TBI	EFI-GMP4	2
2,3,4	J	K	2.0L 4-cyl.	TBI	EFI-GMP4	2
2,3,4 1,2,3,4	N A	U R	2.5L 4-cyl. 2.5L 4-cyl.	TBI TBI	EFI-GMP4 EFI-GMP4	2 2
1	B	Z	4.3L V6	CFI	EFI-Chevy	1
1,2	F	E	5.0L V8	CFI	EFI-Chevy	1
1 1	B B	E 7	5.0L V8 5.7L V8	CFI CFI	EFI-Chevy EFI-Chevy	1 1
Carbureted: 1,7	--	7	1.5L 4-cyl.	2-Bbl.	Isuzu	Isuzu
1,2,3,4,6 6	B,D D	Y 9	5.0L V8 5.0L V8	4-Bbl. 4-Bbl.	Olds-Full Olds-Full	3 3
Cadillac DFI: 6	V	8	4.5L V8	DFI	GM35	6
6	C	5	4.5L V8	DFI	DFI	6
6	E,K	5	4.5L V8	DFI	GM30	6
TRUCKS						
TBI: C,T	Truck	E	2.5L 4-cyl.	TFI	EFI-GMP4	2
C,T C,T	Truck, KT U-Van	R D	2.8L V6 3.1L V6	TFI TFI	EFI EFI	C C
C,T C,T C,T C,T	Truck Truck Truck Truck	Z H K N	4.3L V6 5.0L V8 5.7L V8 7.4L V8	TFI TFI TFI TFI	EFI EFI EFI EFI	C C C C

1989 PASSENGER CARS AND TRUCKS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
C,T	Truck	P	6.0L V8	TFI	EFI	C
C,T	Truck	C	6.2L V8	Diesel	Diesel	Detroit Diesel

1990 VEHICLE COVERAGE

1990 PASSENGER CARS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PFI: 1	R	5,6	1.6L 4-cyl.	SFI (DOHC)	PFI-GMP4	Isuzu
2	J	M	2.0L 4-cyl.	SFI (Turbo)	PFI-GMP4	CPC
1,2,3,4	L,N	A,D	2.3L Quad 4	MFI	PFI-GMP4	BOC
2,3	W	A,D	2.3L Quad 4	MFI	PFI-GMP4	BOC
2	W	V	3.1L V6	SFI (Turbo)	PFI-GMP4	CPC
1,2	W	T	3.1L V6	SFI	PFI-Chev	CPC
1,2,3,4	A,F,J,L,W	T	3.1L V6	MFI	PFI-GMP4	CPC
3,4	A,N,W	N	3.3L V6	SFI	PFI-GMP4	BOC
4	W	L	3.8L V6	TPI	PFI-GM10	BOC
3,4	E,Z	C	3.8L V6	SFI	GM30/GM33	BOC
2,3,4	C,H	C	3.8L V6	SFI	PFI-GMP4	BOC
1,2	F	7	3.8L V6	SFI (Turbo)	PFI-GMP4	CPC
1,2	F	F	5.0L V8	TPI	PFI-GMP4	CPC
1,2	F	8	5.7L V8	TPI	PFI-GMP4	CPC
1	Y	J	5.7L V8	SFI (DOHC)	PFI-GMP4	Lotus
1	Y	8	5.7L V8	TPI	PFI-GMP4	CPC
TBI: 2	T	6	1.6L 4-cyl.	TBI	EFI-GMP4	Opel
2	T	K	2.0L 4-cyl.	TBI	EFI-GMP4	Opel
2,3,4	J	K	2.0L 4-cyl.	TBI	EFI-GMP4	CPC
1,4	J,L	G	2.2L 4-cyl.	TBI	EFI-GMP4	CPC

1990 PASSENGER CARS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
1	W	R	2.5L 4-cyl.	TBI	EFI-GMP4	CPC
2,3,4 1,2,3,4	N A	U R	2.5L 4-cyl. 2.5L 4-cyl.	TBI TBI	EFI-GMP4 EFI-GMP4	CPC CPC
1	B	Z	4.3L V6	CFI	EFI-Chevy	CPC
1,2	F	E	5.0L V8	CFI	EFI-Chevy	CPC
1 1	B D	E 7	5.0L V8 5.7L V8	CFI CFI	EFI-Chevy EFI-Chevy	CPC CPC
Carbureted: 1,2,3,4,6 6	 B,D D	 Y 9	 5.0L V8 5.0L V8	 4-Bbl. 4-Bbl.	 Olds-Full Olds-Full	 BOC BOC
Cadillac DFI: 6	 V	 8	 4.5L V8	 DFI	 GM35	 BOC
6	C	3	4.5L V8	DFI	DFI	BOC
6	E,K	3	4.5L V8	DFI	GM30	BOC

1990 LIGHT/MEDIUM DUTY TRUCKS AND VANS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PFI: C,T	 Diesel Truck	 C	 6.2L V8	 Diesel	 Diesel	 Detroit Diesel
TBI: C,T	 S,T-Truck	 E	 2.5L 4-cyl.	 TBI	 EFI-GMP4	 CPC
C,T	S,T-Truck	R	2.8L V6	TBI	EFI	C
C,T	U-Van	D	3.1L V6	TBI	EFI	C
C,T C,T C,T C,T	Light Duty Truck	Z H K N	4.3L V6 5.0L V8 5.7L V8 7.4L V8	TBI TBI TBI TBI	EFI EFI EFI EFI	C C C C
C,T C,T C,T C,T	Medium Duty Truck	Z K P M	4.3L V6 5.7L V8 6.0L V8 7.0L V8	TBI TBI TBI TBI	EFI EFI EFI EFI	C C C C

1991 VEHICLE COVERAGE

1991 PASSENGER CARS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PFI:						
1	R	5,6	1.6L 4-cyl.	SFI (DOHC)	PFI-GMP4	Isuzu
8	Z	7	1.9L 4-cyl.	MFI	PFI-GMP4	Saturn
1,2,3	L,N	A	2.3L Quad 4	MFI	PFI-GMP4	BOC
2,3,4	N,W	D	2.3L Quad 4	MFI	PFI-GMP4	BOC
1	W	T	3.1L V6	Variable Fuel	PFI-GMP4	CPC
1,2,3,4	A,F,J,L,W	T	3.1L V6	MFI	PFI-GMP4	CPC
3,4	A,N	N	3.3L V6	SFI	PFI-GMP4	BOC
1,2,3	W	X	3.4L V6	DOHC	PFI-GMP4	CPC
3,4	E,Z	L	3.8L V6	TPI	PFI-GMP4	BOC
4	W	L	3.8L V6	TPI	PFI-GM10	BOC
4	C	L	3.8L V6	TPI	PFI-GMP4	BOC
2,3,4	C,H	1	3.8L V6 S/C	MFI	PFI-GMP4	BOC
2,3,4	H	C	3.8L V6	SFI	PFI-GMP4	BOC
1,2 1,2	F F	F 8	5.0L V8 5.7L V8	TPI TPI	PFI-GMP4 PFI-GMP4	CPC CPC
1	Y	J	5.7L V8	SFI (DOHC)	PFI-GMP4	Lotus
1	Y	8	5.7L V8	TPI	PFI-GMP4	CPC
TBI:						
2	T	6	1.6L 4-cyl.	TBI	EFI-GMP4	Opel
8	Z	9	1.9L 4-cyl.	TBI	EFI-GMP4	Saturn
2	T	K	2.0L 4-cyl.	TBI	EFI-GMP4	Opel
2,3,4	J	K	2.0L 4-cyl.	TBI	EFI-GMP4	CPC
1,4	J,L	G	2.2L 4-cyl.	TBI	EFI-GMP4	CPC
1	W	R	2.5L 4-cyl.	TBI	EFI-GMP4	CPC
2,3,4 1,2,3,4	N A,W	U R	2.5L 4-cyl. 2.5L 4-cyl.	TBI TBI	EFI-GMP4 EFI-GMP4	CPC CPC
1,2	F	E	5.0L V8	CFI	EFI-Chevy	CPC
1 1	B D	E 7	5.0L V8 5.7L V8	CFI CFI	EFI-Chevy EFI-Chevy	CPC CPC

1991 PASSENGER CARS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
Cadillac DFI: 6	V	8	4.5L V8	DFI	GM35	BOC
6	C	B	4.9L V8	DFI	DFI	BOC
6	E,K	B	4.9L V8	DFI	GM30	BOC

1991 LIGHT/MEDIUM DUTY TRUCKS AND VANS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PFI: T	Syclone-AWD	Z	4.3L V6	Turbo	PFI-GMP4	PAS
C	Diesel Truck	C	6.2L V8	Diesel	Diesel	Detroit Diesel
TBI: C,T	S-Truck	E	2.5L 4-cyl.	TBI	EFI-GMP4	CPC
C,T	S-Truck	A	2.5L 4-cyl.	TBI	EFI-GMP4	CPC
C,T	S,T-Truck	R	2.8L V6	TBI	EFI	C
C,T	U-Van	D	3.1L V6	TBI	EFI	C
C,T	S,T-Truck	Z	4.3L V6	TBI	EFI	C
C,T C,T C,T C,T	Light Duty Truck	B,Z H K N	4.3L V6 5.0L V8 5.7L V8 7.4L V8	TBI TBI TBI TBI	EFI EFI EFI EFI	C C C C
C,T C,T C,T	Light Duty Truck	B,Z K N	4.3L V6 5.7L V8 7.4L V8	TBI TBI TBI	EFI-GMP4(PCM) EFI-GMP4(PCM) EFI-GMP4(PCM)	C C C
C,T C,T C,T	Medium Duty Truck	Z P M	4.3L V6 6.0L V8 7.0L V8	TBI TBI TBI	EFI EFI EFI	C C C

1992 VEHICLE COVERAGE

1992 PASSENGER CARS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PFI: 1	R	6	1.6L 4-cyl.	MFI	IEFI	Isuzu
1	R	8	1.8L 4-cyl.	MFI	IEFI	Isuzu
8	Z	7	1.9L 4-cyl.	MFI	PFI-GMP4	Saturn
2	J	H	2.0L 4-cyl.	MFI	PFI-GMP4	CPC
1	J,L	4	2.2L 4-cyl.	MFI	PFI-GMP4	CPC
1,2,3	L,N	A	2.3L Quad 4	MFI	PFI-GMP4	BOC
2,3	N	D	2.3L Quad 4	MFI	PFI-GMP4	BOC
2,3,4	N	3	2.3L SOHC	MFI	PFI-GMP4	BOC
1	W	T	3.1L V6	Variable Fuel	PFI-GMP4	CPC
1,2,3,4	A,F,J,L,W	T	3.1L V6	MFI	PFI-GMP4	CPC
2,3,4	A,N	N	3.3L V6	MFI	PFI-GMP4	BOC
1,2,3	W	X	3.4L V6	MFI	PFI-GMP4	CPC
2,3,4	C,H	1	3.8L V6 S/C	MFI	PFI-GMP4	BOC
2,3,4	C,E,H,W	L	3.8L V6	MFI	PFI-GMP4	BOC
1,2	F	F	5.0L V8	MFI	PFI-GMP4	CPC
1,2	F	8	5.7L V8	MFI	PFI-GMP4	CPC
1	Y	J	5.7L V8	MFI	PFI-GMP4	CPC
1	Y	P	5.7L V8 HO	MFI	PFI-GMP4	CPC
TBI: 1,7	M	6	1.0L 3-cyl.	TBI	IEFI	Suzuki
7	M	9	1.3L 4-cyl.	TBI	IEFI	Suzuki
2	T	6	1.6L 4-cyl.	TBI	EFI-GMP4	Opel
8	Z	9	1.9L 4-cyl.	TBI	EFI-GMP4	Saturn
1,3,4	A,W	R	2.5L 4-cyl.	TBI	EFI-GMP4	CPC
1	B	Z	4.3L V6	TBI	EFI-GMP4	CPC
1,2	F	E	5.0L V8	TBI	EFI-Chevy	CPC
1,3,4	B	E	5.0L V8	TBI	EFI-Chevy	CPC
6	D	E	5.0L V8	TBI	EFI-Chevy	CPC

1992 PASSENGER CARS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
6	D	7	5.7L V8	TBI	EFI-Chevy	CPC
1,4	B	7	5.7L V8	TBI	EFI-Chevy	CPC
Cadillac DFI/SFI: 6	V	8	4.5L V8	DFI	GM35	BOC
6	C	B	4.9L V8	DFI	DFI	BOC
6	E,K	B	4.9L V8	DFI	GM30	BOC

1992 LIGHT/MEDIUM DUTY TRUCKS AND VANS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
PFI: 4	U-Van	L	3.8L V6	MFI	PFI-GMP4	BOC
T	Syclone	Z	4.3L V6	Turbo	PFI-GMP4	PAS
C	Diesel Truck	C	6.2L V8	Diesel	Diesel	Detroit Diesel
C,T	Medium Duty Truck	U	6.5L V8	Diesel	J1587	Isuzu
TBI: 1	Tracker	U	1.6L 4-cyl.	TBI	IEFI	Suzuki
C,T	S-Truck	A	2.5L 4-cyl.	TBI	EFI-GMP4	CPC
C,T	S,T-Truck	R	2.8L V6	TBI	EFI	C
C,T	U-Van	D	3.1L V6	TBI	EFI	C
C,T	Light Duty Truck	B,Z	4.3L V6	TBI	EFI	C
C,T	Light Duty Truck	H	5.0L V8	TBI	EFI	C
C,T	Light Duty Truck	K	5.7L V8	TBI	EFI	C
C,T	Light Duty Truck	N	7.4L V8	TBI	EFI	C
C,T	Light Duty Truck	B,Z	4.3L V6	TBI	EFI-GMP4(PCM)	C

1992 LIGHT/MEDIUM DUTY TRUCKS AND VANS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
C,T	Light Duty Truck	K	5.7L V8	TBI	EFI-GMP4(PCM)	C
C,T	Light Duty Truck	N	7.4L V8	TBI	EFI-GMP4(PCM)	C
C,T	Medium Duty Truck	Z	4.3L V6	TBI	EFI	C
C,T	Medium Duty Truck	P	6.0L V8	TBI	EFI	C
C,T	Medium Duty Truck	M	7.0L V8	TBI	EFI	C
CPI: C,T	Light Duty Truck	W	4.3L V6 HO	CPI	EFI	C

1993 VEHICLE COVERAGE

1993 PASSENGER CARS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
MFI: 1	M	5	1.0L 3-cyl.	MFI	IEFI	Suzuki
1	R	6	1.6L 4-cyl.	MFI	IEFI	Isuzu
1	R	8	1.8L 4-cyl.	MFI	IEFI	Isuzu
8	Z	7	1.9L 4-cyl.	MFI	PFI-GMP4	Saturn
2	J	H	2.0L 4-cyl.	MFI	PFI-GMP4	CPC
1,3,4	A,J,L,W	4	2.2L 4-cyl.	MFI	PFI-GMP4	CPC
1,2,3	L,N	A	2.3L Quad 4	MFI	PFI-GMP4	BOC
2,3	N	D	2.3L Quad 4	MFI	PFI-GMP4	BOC
2,3,4	N	3	2.3L Quad 4	MFI	PFI-GMP4	BOC
1,2,3,4	A,F,J,L,W	T	3.1L V6	MFI	PFI-GMP4	CPC
1,2,3,4	W	T	3.1L V6	MFI	SFI-66	CPC

1993 PASSENGER CARS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
2,3,4	A,N	N	3.3L V6	MFI	PFI-GMP4	BOC
1,2	F	S	3.4L V6	MFI	SFI-66	CPC
1,2,3	W	X	3.4L V6	MFI	PFI-GMP4	CPC
2,3,4	C,H	1	3.8L V6 S/C	MFI	PFI-GMP4	BOC
2,3,4	C,E,H,W	L	3.8L V6	MFI	PFI-GMP4	BOC
1	Y	J	5.7L V8	MFI	PFI-GMP4	CPC
1,2	F,Y	P	5.7L V8 HO	MFI	PFI-GMP4	CPC
TBI: 1,7	M	6	1.0L 3-cyl.	TBI	IEFI	Suzuki
7	M	9	1.3L 4-cyl.	TBI	IEFI	Suzuki
2	T	6	1.6L 4-cyl.	TBI	EFI-GMP4	Opel
8	Z	9	1.9L 4-cyl.	TBI	EFI-GMP4	Saturn
1	B	Z	4.3L V6	TBI	EFI-GMP4	CPC
1,3	B	E	5.0L V8	TBI	EFI-Chevy	CPC
6	D	7	5.7L V8	TBI	EFI-Chevy	CPC
1,3,4	B	7	5.7L V8	TBI	EFI-Chevy	CPC
Cadillac DFI/SFI: 6	C	B	4.9L V8	DFI	DFI	CAD
6	E,K	B	4.9L V8	DFI	GM30	CAD
6	D	7	5.7L V8	TBI	EFI-Chevy	CPC

1993 LIGHT/MEDIUM DUTY TRUCKS AND VANS

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
MFI: C,T	U-Van	L	2.3L Quad 4	MFI	PFI-GMP4	BOC
C,T	U-Van	L	3.8L V6	MFI	PFI-GMP4	BOC
T	Syclone	Z	4.3L V6	Turbo	PFI-GMP4	PAS
C	Diesel Truck	C	6.2L V8	Diesel	GMCM	Detroit Diesel

1993 LIGHT/MEDIUM DUTY TRUCKS AND VANS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
C	Diesel Truck	C	6.2L V8	Diesel	PCM-6	Detroit Diesel
C,T	Diesel Truck	U	6.5L V8	Diesel	J1587	Isuzu
TBI: 1	Tracker	U	1.6L 4-cyl.	TBI	IEFI	Suzuki
C,T	S-Truck	A	2.5L 4-cyl.	TBI	EFI-GMP4	CPC
C,T	S,T-Truck	R	2.8L V6	TBI	EFI	C
C,T	U-Van	D	3.1L V6	TBI	EFI	C
C,T	S,T-Truck	Z	4.3L V6	TBI	VCM	C
C,T	Light Duty Truck	Z	4.3L V6	TBI	GMCM	C
C,T	Light Duty Truck	Z	4.3L V6	TBI	EFI-GMP4(PCM)	C
C,T	Light Duty Truck	Z	4.3L V6	TBI	PCM-6	C
C,T	Medium Duty Truck	Z	4.3L V6	TBI	EFI	C
C,T	Light Duty Truck	H	5.0L V8	TBI	GMCM	C
C,T	Light Duty Truck	H	5.0L V8	TBI	PCM-6	C
C,T	Light Duty Truck	K	5.7L V8	TBI	GMCM	C
C,T	Light Duty Truck	K	5.7L V8	TBI	PCM-6	C
C,T	Light Duty Truck	K	5.7L V8	TBI	EFI-GMP4(PCM)	C
C,T	Medium Duty Truck	P	6.0L V8	TBI	EFI	C
C,T	Medium Duty Truck	M	7.0L V8	TBI	EFI	C
C,T	Light Duty Truck	N	7.4L V8	TBI	GMCM	C

1993 LIGHT/MEDIUM DUTY TRUCKS AND VANS (CONTINUED)

VEHICLE MAKE	4TH VIN	8TH VIN	ENGINE SIZE	FUEL SYSTEM	ELECTRONIC CONTROL	ENGINE MFG
C,T	Light Duty Truck	N	7.4L V8	TBI	EFI-GMP4(PCM)	C
CMFI: C,T	Light Duty Truck	W	4.3L V6 HO	CPI	EFI	C

1994 VEHICLE COVERAGE

1994 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
A	Century Special, Century Custom	4	2.2L MFI	UART	GM
N	Skylark Limited, Skylark Custom	3	2.3L SFI	UART	GM
W	Regal Custom, Regal Limited	M	3.1L SFI	UART	GM
N	Skylark Custom, Skylark Limited, Skylark Gran Sport	M	3.1L SFI	UART	GM
A	Century Special, Century Custom	M	3.1L SFI	UART	GM
W	Regal Gran Sport, Regal Custom, Regal Limited	L	3800 SFI	UART	GM
C	Park Avenue	L	3800 SFI	UART	OBD II-C2/ GM-16
H	Le Sabre Custom, Le Sabre Limited	L	3800 SFI	UART	OBD II-C2/ GM-16
C	Park Avenue Ultra	1	3800 SFI	UART	OBD II-C2/ GM-16
D	Roadmaster	P	5.7L SFI	UART	GM
B	Roadmaster, Roadmaster Estate, Roadmaster Limited	P	5.7L SFI	UART	GM

1994 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	Seville STS	9	4.6L PFI	UART	GM
K	Seville SLS	Y	4.6L PFI	UART	GM
E	Eldorado Touring Coupe	9	4.6L PFI	UART	GM
E	Eldorado	Y	4.6L PFI	UART	GM
K	DeVille Concours	Y	4.6L PFI	UART	GM
K	DeVille	B	4.9L SFI	UART	GM
D	Fleetwood, Fleetwood Brougham	P	5.7L SFI	UART	GM

1994 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
L	Beretta, Corsica	4	2.2L MFI	UART	GM
J	Cavalier, Cavalier RS, Cavalier VL/RS	4	2.2L MFI	UART	GM
W	Lumina	4	2.2L MFI	UART	GM
L	Beretta, Beretta Z26	A	2.3L SFI	UART	GM
J	Cavalier, Cavalier RS, Cavalier Z24	T	3.1L PFI	UART	GM
W	Lumina, Lumina Euro	T	3.1L PFI	UART	GM
L	Corsica, Beretta, Beretta Z26	M	3.1L SFI	UART	GM
W	Lumina Euro, Lumina Z34	X	3.4L SFI	UART	GM
F	Camaro	S	3.4L SFI	UART	GM
B	Caprice Classic, Caprice Classic LS	W	4.3L PFI	UART	GM
F	Camaro Z28	P	5.7L SFI	UART	GM
B	Caprice Classic, Impala, Caprice	P	5.7L SFI	UART	GM

1994 CHEVROLET PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Y	Corvette ZR-1	J	5.7L SFI	UART	OBD II-C2/ GM-16
Y	Corvette	P	5.7L SFI	UART	OBD II-C2/ GM-16

1994 GEO PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M	Metro XFI	6	1.0L TBI	UART	GM
M	Metro	6	1.0L TBI	UART	GM
S	Prizm/LSI	6	1.6L MFI	UART	GM
S	Prizm/LSI	8	1.8l MFI	UART	GM

1994 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
A	Cutlass Ciera S	4	2.2L MFI	UART	GM
N	Achieva SC, Achieva SL	A	2.3L SFI	UART	GM
N	Achieva S, Achieva SC, Achieva SL	D	2.3L SFI	UART	GM
N	Achieva S	3	2.3L SFI	UART	GM
N	Achieva S	M	3.1L SFI	UART	GM
N	Achieva S, Achieva SC, Achieva SL	M	3.1L SFI	UART	GM
A	Cutlass Ciera S, Cutlass Ciera SL, Cutlass Cruiser S, Cutlass Cruiser SL	M	3.1L SFI	UART	GM
W	Cutlass Supreme, Cutlass Supreme S	M	3.1L SFI	UART	GM

1994 OLDSMOBILE PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
W	Cutlass Supreme, Cutlass Supreme S	X	3.4L SFI	UART	GM
C	98 Regency Elite	1	3800 SFI	UART	OBD II-C2/ GM-16
C	98 Regency, 98 Regency Elite	L	3800 SFI	UART	OBD II-C2/ GM-16
H	88 Royale, 88 Royale LS	L	3800 SFI	UART	OBD II-C2/ GM-16

1994 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Sunbird LE, Sunbird SE	H	2.0L PFI	UART	GM
N	Grand Am SE	3	2.3L SFI	UART	GM
N	Grand Am GT	A	2.3L SFI	UART	GM
N	Grand Am GT, Grand Am SE	D	2.3L SFI	UART	GM
J	Sunbird LE, Sunbird SE	T	3.1L PFI	UART	GM
N	Grand Am GT, Grand Am SE	M	3.1L SFI	UART	GM
W	Grand Prix SE	M	3.1L SFI	UART	GM
W	Grand Prix SE	X	3.4L SFI	UART	GM
F	Firebird	S	3.4L SFI	UART	GM
H	Bonneville SE, Bonneville SSE	L	3800 SFI	UART	OBD II-C2 /GM-16
H	Bonneville SSEI	1	3800 SFI	UART	OBD II-C2 /GM-16
F	Firebird Formula/ Trans Am	P	5.7L SFI	UART	GM

1994 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L MFI	UART	GM
Z	SL2	7	1.9L MFI	UART	GM
Z	SW2	7	1.9L MFI	UART	GM
Z	SC1	9	1.9L TBI	UART	GM
Z	SL	9	1.9L TBI	UART	GM
Z	SL1	9	1.9L TBI	UART	GM
Z	SW1	9	1.9L TBI	UART	GM

1994 CHEVROLET/GMC C/K PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	GMT400 C/K1500, GMT400 C/K2500, Sierra C/K1500, Sierra C/K2500	Z	4.3L TBI	UART	GM
C/K	GMT400 C/K1500, GMT400 C/K2500, GMT400 C/K3500, Sierra C/K1500, Sierra C/K2500	H	5.0L TBI	UART	GM
C/K	GMT400 C/K1500, GMT400 C/K2500, GMT400 C/K3500, Sierra C/K1500, Sierra C/K2500, Sierra C/K3500	K	5.7L TBI	UART	GM
C/K	GMT400 C/K2500, GMT400 C/K3500, Sierra C/K2500, Sierra C/K3500	F	6.5L TC Diesel	UART	GM
C	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C1500, Sierra C2500, Sierra C3500	P	6.5L Diesel	UART	GM

1994 CHEVROLET/GMC C/K PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	GMT400 K1500, GMT400 K2500, GMT400 K3500, Sierra K1500, Sierra K2500	P	6.5L Diesel	UART	GM
C	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C1500, Sierra C2500, Sierra C3500	S	6.5L TC Diesel	UART	GM
K	GMT400 K1500, GMT400 K2500, GMT400 K3500, Sierra K1500, Sierra K2500, Sierra K3500	S	6.5L TC Diesel	UART	GM
C	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C2500, Sierra C3500	N	7.4L TBI	UART	GM
K	GMT400 K2500, GMT400 K3500, Sierra K2500, Sierra K3500	N	7.4L TBI	UART	GM

1994 CHEVROLET/GMC C/K SUBURBAN & UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	Suburban C1500 2WD, Suburban C2500 2WD	K	5.7L TBI	UART	GM
K	Suburban K1500 4WD, Suburban K2500 4WD	K	5.7L TBI	UART	GM
K	K1500 Blazer, Yukon	K	5.7L TBI	UART	GM
C	Suburban C1500 2WD, Suburban C2500 2WD	F	6.5L TC Diesel	UART	GM
K	Suburban K1500 4WD, Suburban K2500 4WD	F	6.5L TC Diesel	UART	GM
K	K1500 Blazer, Yukon	S	6.5L TC Diesel	UART	GM

1994 CHEVROLET/GMC C/K SUBURBAN & UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	Suburban C1500 2WD, Suburban C2500 2WD	N	7.4L TBI	UART	GM
K	K1500 Blazer, Suburban K1500 4WD, Suburban K2500 4WD	N	7.4L TBI	UART	GM

1994 CHEVROLET/GMC/OLDSMOBILE S/T PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
S	S10 Pickup, Sonoma	4	2.2L MFI	UART	GM
S/T	S10 Blazer, Jimmy S1500	W	4.3L CMFI	UART	GM
S/T	S10 Pickup, Sonoma	W	4.3L CMFI	UART	GM
S/T	S10 Pickup, Sonoma	Z	4.3L TBI	UART	GM
S/T	S10 Blazer, Jimmy S1500	Z	4.3L TBI	UART	GM
T	Bravada	W	4.3L CMFI	UART	GM

1994 CHEVROLET/GMC M/L AND G VANS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M/L	Astro Van, Safari, Safari XT	W	4.3L CMFI	UART	GM
M/L	Astro Van, Safari, Safari XT	Z	4.3L TBI	UART	GM
G	G10 Van, G20 Van, G30 Van, G20 Sportvan, Vandura G1500, Vandura G2500, Vandura G3500, Rally Wagon G2500, Rally/Vandura G3500	Z	4.3L TBI	UART	GM

1994 CHEVROLET/GMC M/L AND G VANS (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G10 Van, G20 Van, G30 Van, G20 Sportvan, G30 Sportvan, G30 Sportvan/Van, Vandura G1500, Vandura G3500, Rally Wagon G2500, Rally/Vandura G2500	H	5.0L TBI	UART	GM
G	G10 Van, G20 Van, G20 Sportvan, G20 Sportvan/Van, G30 Van, G30 Sportvan, G30 Sportvan/Van, Vandura G1500, Vandura G2500, Vandura G3500, Rally Wagon G2500, Rally Wagon G3500, Rally/Vandura G3500	K	5.7L TBI	UART	GM
G	G10 Van, G30 Van, G20 Sportvan, Vandura G1500, Vandura G2500, Rally Wagon G2500, Rally/Vandura G2500	P	6.5L Diesel	UART	GM
G	G20 Van, G30 Van, G30 Sportvan, Vandura G3500, Rally Wagon G2500, Rally Wagon G3500, Rally/Vandura G2500, Rally/Vandura G3500	Y	6.5L Diesel	UART	GM
G	G30 Van, G30 Sportvan, Vandura G1500, Vandura G2500, Vandura G3500, Rally Wagon G2500, Rally/Vandura G3500	N	7.4L TBI	UART	GM

1994 GEO SPORT UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E	Tracker	6	1.6L MFI	UART	GM
J	Tracker	6	1.6L MFI	UART	GM
E	Tracker	U	1.6L TBI	UART	GM
J	Tracker	U	1.6L TBI	UART	GM

1994 CHEVROLET APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Lumina APV	D	3.1L TBI	UART	GM
U	Lumina APV	L	3.8L MFI	UART	GM

1994 OLDSMOBILE APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Silhouette	D	3.1L TBI	UART	GM
U	Silhouette	L	3.8L MFI	UART	GM

1994 PONTIAC APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Trans Sport	D	3.1L TBI	UART	GM
U	Trans Sport	L	3.8L MFI	UART	GM

1995 VEHICLE COVERAGE

1995 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
A	Century Custom, Century Special	4	2.2L MFI	UART	GM
N	Skylark Custom/ Limited/Gran Sport	D	2.3L MFI	UART	GM
A	Century Custom, Century Special	M	3.1L SFI	UART	GM
W	Regal Custom, Regal Limited	M	3.1L SFI	UART	GM
N	Skylark Custom/ Limited/Gran Sport	M	3.1L SFI	UART	GM
H	Le Sabre Limited, Le Sabre Custom	L	3800 SFI	UART	OBD II-C2/ GM-16
W	Regal Custom, Regal Gran Sport, Regal Limited	L	3800 SFI	UART	GM
C	Park Avenue Ultra, Park Avenue	1	3800 SFI	UART	OBD II-C2/ GM-16
G	Riviera	1	3800 SFI	UART	OBD II-C2/ GM-16
G	Riviera	K	3800 SFI	UART	OBD II-C2/ GM-16
B	Roadmaster	P	5.7L SFI	UART	GM
P	Roadmaster, Roadmaster Estate, Roadmaster Limited	P	5.7L SFI	UART	GM

1995 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E	Eldorado Touring Coupe	9	4.6L SFI	UART	GM
K	Seville STS	9	4.6L SFI	UART	GM
E	Eldorado	Y	4.6L SFI	UART	GM

1995 CADILLAC PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	DeVille Concours, Seville SLS	Y	4.6L SFI	UART	GM
K	DeVille	B	4.9L DFI	UART	GM
D	Fleetwood, Fleetwood Brougham	P	5.7L SFI	UART	GM

1995 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Cavalier, Cavalier LS	4	2.2L MFI	UART	OBD II-C2/ GM-16
L	Beretta, Corsica	4	2.2L MFI	UART	GM
L	Beretta, Beretta Z26, Corsica	M	3.1L SFI	UART	GM
W	Lumina, Lumina LS, Monte Carlo LS	M	3.1L SFI	UART	GM
W	Lumina LS, Monte Carlo Z34	X	3.4L SFI	UART	GM
F	Camaro	S	3.4L SFI	UART	OBD II-C2 GM-16
B	Caprice Classic	W	4.3L SFI	UART	GM
B	Caprice Classic, Impala	P	5.7L SFI	UART	GM
F	Camaro Z28	P	5.7L SFI	UART	OBD II-C2/ GM-16
Y	Corvette	P	5.7L SFI	UART	OBD II-C2/ GM-16
Y	Corvette ZR-1	J	5.7L SFI	UART	GM-16

1995 GEO PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M	Metro/LSI	6	1.0L TBI	UART	GM
M	Metro/LSI	9	1.3L TBI	UART	GM

1995 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
A	Ciera SL	4	2.2L MFI	UART	GM
N	Achieva S, Achieva SC, Achieva SL	D	2.3L MFI	UART	GM
A	Ciera Cruiser SL, Ciera SL	M	3.1L SFI	UART	GM
N	Achieva S, Achieva SC, Achieva SL	M	3.1L SFI	UART	GM
W	Cutlass Supreme, Cutlass Supreme S	M	3.1L SFI	UART	GM
W	Cutlass Supreme, Cutlass Supreme S	X	3.4L SFI	UART	GM
H	88 Royale LS	1	3800 SFI	UART	OBD II-C2/ GM-16
C	98 Regency Elite	1	3800 SFI	UART	OBD II-C2/ GM-16
C	98 Regency Elite	K	3800 SFI	UART	OBD II-C2/ GM-16
H	88 Royale, 88 Royale LS	K	3800 SFI	UART	OBD II-C2/ GM-16
G	Aurora	C	4.0L SFI	UART	OBD II-C2/ GM-16
G	Aurora	I	3800 SFI Turbo	UART	OBD II-C2/ GM-16

1995 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Sunfire SE	4	2.2L MFI	UART	OBD II-C2/ GM-16
J	Sunfire SE, Sunfire GT	D	2.3L MFI M/T	UART	OBD II-C2/ GM-16
J	Sunfire GT	D	2.3L MFI A/T	Class 2	OBD II-C2
N	Grand Am SE, Grand Am GT	D	2.3L MFI	UART	GM
N	Grand Am SE, Grand Am GT	M	3.1L SFI	UART	GM
W	Grand Prix SE, Grand Prix GTP	M	3.1L SFI	UART	GM
F	Firebird	S	3.4L SFI	UART	OBD II-C2/ GM-16
W	Grand Prix SE, Grand Prix GT	X	3.4L SFI	UART	GM
H	Bonneville SE, Bonneville SSEI	1	3800 SFI	UART	GM or OBD II-C2/ GM-16
H	Bonneville SE, Bonneville SSE	K	3800 SFI	UART	GM or OBD II-C2/ GM-16
F	Firebird	K	3800 SFI	Class 2	OBD II-C2
F	Firebird Formula/ Trans Am	P	5.7L SFI	UART	OBD II-C2/ GM-16

1995 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L MFI	UART	GM
Z	SL2	7	1.9L MFI	UART	GM
Z	SW2	7	1.9L MFI	UART	GM
Z	SC1	8	1.9L MFI	UART	GM
Z	SL	8	1.9L MFI	UART	GM

1995 SATURN PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SL1	8	1.9L MFI	UART	GM
Z	SW1	8	1.9L MFI	UART	GM

1995 CHEVROLET/GMC C/K PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	GMT400 C1500, GMT400 C2500, Sierra C1500, Sierra C2500	Z	4.3L TBI	UART	GM
C/K	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C1500, Sierra C2500	H	5.0L TBI	UART	GM
C/K	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C1500, Sierra C2500, Sierra C3500	K	5.7L TBI	UART	GM
C	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C1500, Sierra C2500, Sierra C3500	P	6.5L Diesel	UART	GM
K	GMT400 K1500, GMT400 K2500, GMT400 K3500, Sierra K1500, Sierra K2500	P	6.5L Diesel	UART	GM
C/K	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C1500, Sierra C2500, Sierra C3500	S	6.5L TC Diesel	UART	GM

1995 CHEVROLET/GMC C/K PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	GMT400 C1500, GMT400 C2500, GMT400 C3500 Sierra C2500, Sierra C3500	F	6.5L TC Diesel	UART	GM
K	GMT400 K2500, GMT400 K3500, Sierra K2500, Sierra K3500	F	6.5L TC Diesel	UART	GM
C	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C2500, Sierra C3500	N	7.4L TBI	UART	GM
K	GMT400 K2500, GMT400 K3500, Sierra K2500, Sierra K3500	N	7.4L TBI	UART	GM

1995 CHEVROLET/GMC C/K SUBURBAN & UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	Suburban C1500, Suburban C2500	K	5.7L TBI	UART	GM
K	Suburban K1500, Suburban K2500 Yukon	K	5.7L TBI	UART	GM
C/K	Suburban C1500, Suburban C2500	F	6.5L TC Diesel	UART	GM
K	Yukon	S	6.5L TC Diesel	UART	GM
C/K	Suburban C1500, Suburban C2500	N	7.4L TBI	UART	GM

1995 CHEVROLET/GMC/OLDSMOBILE S/T PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
S	S10 Sonoma	4	2.2L MFI	UART	GM
T	S10	4	2.2L MFI	UART	GM
S/T	Blazer, Jimmy, S1500, S10 Sonoma	W	4.3L CMFI	Class2/UART	OBD II-C2
S/T	Jimmy, S1500, S10 Sonoma	Z	4.3L TBI	UART	GM

1995 CHEVROLET/GMC M/L AND G VANS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G10 Van, G20 Van, G30 Van, G20 Sportvan, Vandura G1500, Vandura G2500, Vandura G3500 Rally, Wagon G2500	Z	4.3L TBI	UART	GM
G	G10 Van, G20 Van, G30 Van, G20 Sportvan, G30 Sportvan, Vandura G1500, Vandura G2500, Vandura G3500 Rally	H	5.0L TBI	UART	GM
G	G10 Van, G20 Van, G30 Van, G20 Sportvan, G30 Sportvan, Vandura G1500, Vandura G2500, Vandura G3500, Vandura G3500 Rally, Rally Wagon G2500, Rally Wagon G3500	K	5.7L TBI	UART	GM

1995 CHEVROLET/GMC M/L AND G VANS (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G20 Van, G30 Van, G20 Sportvan, Vandura G1500, Vandura G2500, Vandura G2500 Rally, Rally Wagon G2500	P	6.5L Diesel	UART	GM
G	G20 Van, G30 Van, G30 Sportvan, Vandura G3500, Rally Wagon G2500, Rally Wagon G3500	Y	6.5L Diesel	UART	GM
G	G30 Van, G30 Sportvan, Vandura G1500, Vandura G2500, Vandura G3500, Vandura G3500 Rally, Rally Wagon G2500, Rally Wagon G3500	N	7.4L TBI	UART	GM
M/L	Astro Van, Safari XT	W	4.3L CMFI	UART	GM
M	Astro Van, Safari XT	Z	4.3L TBI	UART	GM
L	Astro Van	Z	4.3L TBI	UART	GM

1995 GEO SPORT UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Tracker	6	1.6L MFI	SDL	GM
E	Tracker	6	1.6L MFI	SDL	GM
J	Tracker	U	1.6L TBI	SDL	GM
E	Tracker	U	1.6L TBI	SDL	GM

1995 CHEVROLET APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Lumina APV	D	3.1L TBI	UART	GM

1995 CHEVROLET APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Lumina APV	L	3.8L MFI	UART	GM

1995 OLDSMOBILE APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Silhouette	D	3.1L TBI	UART	GM
U	Silhouette	L	3.8L MFI	UART	GM

1995 PONTIAC APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Trans Sport	D	3.1L TBI	UART	GM
U	Trans Sport	L	3.8L MFI	UART	GM

1996 VEHICLE COVERAGE

1996 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
A	Century Special	4	2.2L MFI	Class 2	OBD II-C2
N	Skylark Custom/ Limited/Gran Sport	T	2.4L SFI	Class 2	OBD II-C2
A	Century Special, Century Custom	M	3.1L SFI	Class 2	OBD II-C2
N	Skylark Custom/ Limited/Gran Sport	M	3.1L SFI	Class 2	OBD II-C2
W	Regal Custom, Regal Limited	M	3.1L SFI	Class 2	OBD II-C2
C	Park Avenue Ultra	1	3.8L SFI	Class 2	OBD II-C2

1996 BUICK PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	Park Avenue	K	3.8L SFI	Class 2	OBD II-C2
H	Le Sabre Custom, Le Sabre Limited	K	3.8L SFI	Class 2	OBD II-C2
W	Regal Custom, Regal Gran Sport, Regal Limited	K	3.8L SFI	Class 2	OBD II-C2
G	Riviera	1	3.8L SFI	Class 2	OBD II-C2
G	Riviera	K	3.8L SFI	Class 2	OBD II-C2
D	Roadmaster	P	5.7L SFI	Class 2	OBD II-C2
B	Roadmaster, Roadmaster Estate, Roadmaster Limited	P	5.7L SFI	Class 2	OBD II-C2

1996 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	Seville STS	9	4.6L SFI	Class 2	OBD II-C2
K	Seville SLS	Y	4.6L SFI	Class 2	OBD II-C2
E	Eldorado Touring Coupe	9	4.6L SFI	Class 2	OBD II-C2
E	Eldorado	Y	4.6L SFI	Class 2	OBD II-C2
K	DeVille Concours	Y	4.6L SFI	Class 2	OBD II-C2
D	Fleetwood, Fleetwood Brougham	P	5.7L SFI	Class 2	OBD II-C2

1996 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Cavalier, Cavalier LS	4	2.2L MFI	Class 2	OBD II-C2
L	Beretta, Corsica	4	2.2L MFI	Class 2	OBD II-C2
J	Cavalier	T	2.4L MFI	Class 2	OBD II-C2

1996 CHEVROLET PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
L	Beretta, Beretta Z26, Corsica	M	3.1L SFI	Class 2	OBD II-C2
W	Lumina, Lumina LS	M	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo LS, Monte Carlo Z34	X	3.4L SFI	Class 2	OBD II-C2
W	Lumina LS	X	3.4L SFI	Class 2	OBD II-C2
F	Camaro	K	3.8L SFI	Class 2	OBD II-C2
F	Camaro Z28	P	5.7L SFI	Class 2	OBD II-C2
B	Caprice Classic	W	4.3L SFI	Class 2	OBD II-C2
B	Caprice Classic, Impala	P	5.7L SFI	Class 2	OBD II-C2
Y	Corvette	P	5.7L SFI	Class 2	OBD II-C2
Y	Corvette ZR-1	5	5.7L SFI	Class 2	OBD II-C2

1996 GEO PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M	Metro/LSI	6	1.0L TBI	Suzuki	OBD II-C2
M	Metro/LSI	9	1.3L TBI	Suzuki	OBD II-C2
S	Prizm/LSI	6	1.6L MFI	Class 2	OBD II-C2
S	Prizm/LSI	8	1.8L MFI	Class 2	OBD II-C2

1996 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
A	Ciera SL	4	2.2L MFI	Class 2	OBD II-C2
N	Achieva S, Achieva SC, Achieva SL	T	2.4L SFI	Class 2	OBD II-C2
A	Ciera Cruiser SL, Ciera SL	M	3.1L SFI	Class 2	OBD II-C2

1996 OLDSMOBILE PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Achieva S, Achieva SC, Achieva SL	M	3.1L SFI	Class 2	OBD II-C2
W	Cutlass Supreme, Cutlass Supreme S	M	3.1L SFI	Class 2	OBD II-C2
W	Cutlass Supreme, Cutlass Supreme S	X	3.4L SFI	Class 2	OBD II-C2
H	88 Royale	K	3.8L SFI	Class 2	OBD II-C2
C	98 Regency Elite	K	3.8L SFI	Class 2	OBD II-C2
H	88 Royale LS	1	3.8L SFI	Class 2	OBD II-C2
H	88 Royale LS	K	3.8L SFI	Class 2	OBD II-C2
G	Aurora	C	4.0L SFI	Class 2	OBD II-C2

1996 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Sunfire SE	4	2.2L MFI	Class 2	OBD II-C2
J	Sunfire SE, Sunfire GT	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am SE, Grand Am GT	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am SE, Grand Am GT	M	3.1L SFI	Class 2	OBD II-C2
W	Grand Prix SE, Grand Prix GTP	M	3.1L SFI	Class 2	OBD II-C2
W	Grand Prix SE, Grand Prix GTP, Grand Prix GT	X	3.4L SFI	Class 2	OBD II-C2
H	Bonneville SE, Bonneville SSE, Bonneville SSEI	K	3.8L SFI	Class 2	OBD II-C2
H	Bonneville SE	1	3.8L SFI	Class 2	OBD II-C2
F	Firebird	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird Formula/ Trans Am	P	5.7L SFI	Class 2	OBD II-C2

1996 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L PFI	Class 2	OBD II-C2
Z	SL2	7	1.9L PFI	Class 2	OBD II-C2
Z	SW2	7	1.9L PFI	Class 2	OBD II-C2
Z	SC1	8	1.9L MFI	Class 2	OBD II-C2
Z	SL	8	1.9L MFI	Class 2	OBD II-C2
Z	SL1	8	1.9L MFI	Class 2	OBD II-C2
Z	SW1	8	1.9L MFI	Class 2	OBD II-C2

1996 CHEVROLET/GMC C/K PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	GMT400 C1500, Sierra C1500	W	4.3L CSFI	Class 2	OBD II-C2
C/K	GMT400 C1500, GMT400 C2500, Sierra C1500, Sierra C2500	M	5.0L CSFI	Class 2	OBD II-C2
C/K	GMT400 C1500, GMT400 C2500, GMT400 C3500, Sierra C1500, Sierra C2500, Sierra C3500	R	5.7L CSFI	Class 2	OBD II-C2
C/K	GMT400 C2500, GMT400 C3500, Sierra C2500, Sierra C3500	F	6.5L TC Diesel	Class 2	OBD II-C2
C/K	GMT400 C1500, GMT400 C2500, Sierra C1500, Sierra C2500	S	6.5L TC Diesel	Class 2	OBD II-C2
C/K	GMT400 C2500, GMT400 C3500, Sierra C2500, Sierra C3500	J	7.4L SFI	Class 2	OBD II-C2

1996 CHEVROLET/GMC C/K SUBURBAN & UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	C1500 Suburban, C2500 Suburban, C1500 Tahoe, C1500 Yukon	R	5.7L CSFI	Class 2	OBD II-C2
C/K	C1500 Suburban, C2500 Suburban	F	6.5L TC Diesel	Class 2	OBD II-C2
K	K1500 Yukon	S	6.5L TC Diesel	Class 2	OBD II-C2
C/K	C2500 Suburban	J	7.4L TBI	Class 2	OBD II-C2

1996 CHEVROLET/GMC C/K CHASSIS/CREW CAB

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	C2500 Chassis Cab, C3500 Chassis Cab C3500 Crew Cab	R	5.7L CSFI	Class 2	OBD II-C2
C	C2500 Chassis Cab, C3500 Chassis Cab, C3500 HD Chassis Cab, C3500 Crew Cab	F	6.5L TC Diesel	Class 2	OBD II-C2
K	K2500 Chassis Cab, K3500 Chassis Cab, K3500 Crew Cab	F	6.5L TC Diesel	Class 2	OBD II-C2
C	C2500 Chassis Cab, C3500 Chassis Cab, C3500 HD Chassis Cab, C3500 Crew Cab	J	7.4L SFI	Class 2	OBD II-C2
K	K2500 Chassis Cab, K3500 Chassis Cab, K3500 Crew Cab	J	7.4L SFI	Class 2	OBD II-C2

1996 CHEVROLET/GMC/OLDSMOBILE S/T PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
S	S10 Pickup, Sonoma	4	2.2L MFI	Class 2	OBD II-C2
S	Blazer, Jimmy, S10 Pickup, S10 Ext. Cab, S10 Club Coupe, Sonoma, Sonoma Ext. Cab, Sonoma Club Coupe	W	4.3L CSFI	Class 2	OBD II-C2
T	Blazer, Blazer AWD, Bravada AWD, Jimmy, Jimmy AWD, S10 Pickup, S10 Ext. Cab, S10 Club Coupe, Sonoma, Sonoma Ext. Cab, Sonoma Club Coupe	W	4.3L CSFI	Class 2	OBD II-C2
S/T	S10 Pickup, S10 Ext. Cab, S10 Club Coupe, Sonoma, Sonoma Ext. Cab, Sonoma Club Coupe	X	4.3L CSFI	Class 2	OBD II-C2

1996 CHEVROLET/GMC M/L AND G VANS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G1500 Chevy Van, G2500 Chevy Van, G1500 Chevy Express, G2500 Chevy Express, G1500 Savana Cargo, G2500 Savana Cargo, G1500 Savana Passngr, G2500 Savana Passngr	W	4.3L CSFI	Class 2	OBD II-C2
G	G3500 Chevy Van, G3500 Commercial, G3500 Rally Camper, G3500 RV Cutaway, G3500 Sportvan, G3500 Vandura, Vandura Special	Z	4.3L TBI	UART	OBDII/ OBD II-C/ GM-16
G	G1500 Chevy Express, G2500 Chevy Express, G1500 Chevy Van, G2500 Chevy Van, G1500 Savana Cargo, G2500 Savana Cargo, G1500 Savana Passngr, G2500 Savana Passngr	M	5.0L CSFI	Class 2	OBD II OBD II-C
G	G3500 Camper Special, G1500 Chevy Express, G2500 Chevy Express, G3500 Chevy RV, G1500 Chevy Van, G2500 Chevy Van, G3500 Chevy Van, G3500 Commercial, G1500 Savana Cargo, G2500 Savana Cargo, G3500 Savana Cargo, G1500 Savana Passngr, G2500 Savana Passngr, G3500 Savana Passngr, G3500 Savana Special	R	5.7L CSFI	Class 2	OBD II-C2
G	G3500 Chevy Van, G3500 Commercial, G3500 Rally Camper, G3500 Rally Wagon, G3500 RV Cutaway, G3500 Sportvan, G3500 Vandura, Vandura Special	K	5.7L TBI	UART	OBD II-C2/ GM-16

1996 CHEVROLET/GMC M/L AND G VANS (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G3500 Chevy Van, G3500 Commercial, G3500 Rally Camper, G3500 Rally Wagon, G3500 RV Cutaway, G3500 Sportvan, G3500 Vandura, Vandura Special	Y	6.5L Diesel	UART	OBD II-C2/ GM-16
G	G3500 Camper Special, G2500 Chevy Express, G3500 Chevy Express, G3500 Chevy RV, G2500 Chevy Van, G3500 Chevy Van, G3500 Commercial, G2500 Savana Cargo, G3500 Savana Cargo, G2500 Savana Passngr, G3500 Savana Passngr, G3500 Savana Special	F	6.5L TC Diesel	Class 2	OBD II-C2
G	G3500 Camper Special, G3500 Chevy Express, G3500 Chevy RV, G3500 Chevy Van, G3500 Commercial, G3500 Savana Cargo, G3500 Savana Passngr, G3500 Savana Special	J	7.4L SFI	Class 2	OBD II-C2
G	G3500 Chevy Van, G3500 Commercial, G3500 Rally Camper, G3500 Rally Wagon, G3500 RV Cutaway, G3500 Sportvan, G3500 Vandura, Vandura Special	N	7.4L TBI	UART	OBD II-C2/ GM-16
M/L	Astro Cargo Van, Astro Passenger Van, Safari XT Cargo Van, Safari XT Passenger	W	4.3L CSFI	Class 2	OBD II-C2

1996 CHEVROLET/GMC MEDIUM DUTY AND P-SERIES FORWARD CONTROL

	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
P42	FWD Control Chassis	W	4.3L CSFI	Class 2	OBD II-C2
	Medium Duty Truck	A	5.7L CSFI	Class 2	OBD II-C2
P42	FWD Control Chassis	R	5.7L CSFI	Class 2	OBD II-C2
P62	School Bus Chassis Commercial Chassis	K	5.7L TBI	UART	OBD II-C2/ GM-16
	Medium Duty Truck	P	6.0L TBI	UART	OBD II-C2/ GM-16
P42	FWD Control Chassis	Y	6.5L Diesel	UART	OBD II-C2/ GM-16
P72	Rear Eng M/H Chassis	Y	6.5L Diesel	UART	OBD II-C2/ GM-16
P32	FWD Control Chassis	F	6.5L TC Diesel	Class 2	OBD II-C2
P72	Rear Eng M/H Chassis	F	6.5L TC Diesel	UART	OBD II-C2/ GM-16
	Medium Duty Truck	M	7.0L TBI	UART	OBD II-C2/ GM-16
P32	FWD Control Chassis	J	7.4L SFI	Class 2	OBD II-C2
P32	FWD Control Chassis	N	7.4L TBI	UART	OBD II-C2/ GM-16
P52	Motor Home Chassis	N	7.4L TBI	UART	OBD II-C2/ GM-16
P62	Commercial Chassis	N	7.4L TBI	UART	OBD II-C2/ GM-16

1996 GEO SPORT UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Tracker	6	1.6L MFI	SDL	OBD II-C2
E	Tracker	6	1.6L MFI	SDL	OBD II-C2

1996 CHEVROLET APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Lumina APV	E	3.4L SFI	Class 2	OBD II-C2

1996 OLDSMOBILE APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Silhouette	E	3.4L SFI	Class 2	OBD II-C2

1996 PONTIAC APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U	Trans Sport	E	3.4L SFI	Class 2	OBD II-C2

1997 VEHICLE COVERAGE

1997 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
H	Le Sabre	K	3.8L	Class 2	OBD II-C2
G	Riviera	K 1	3.8L 3.8L SC	Class 2	OBD II-C2
N	Skylark	M T	3.1L 2.4L	Class 2	OBD II-C2
W	Regal	M K 1	3.1L 3.8L 3.8L SC	Class 2	OBD II-C2
C	Park Avenue/ Ultra	1 K	3.8L SC 3.8L	Class 2	OBD II-C2
W	Century	M	3.1L	Class 2	OBD II-C2

1997 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E	Eldorado (Touring)	9	4.6L	Class 2	OBD II-C2
K	Seville STS	9	4.6L	Class 2	OBD II-C2
K	Concours	9	4.6L	Class 2	OBD II-C2
E	Eldorado	Y	4.6L	Class 2	OBD II-C2
K	Seville SLS	Y	4.6L	Class 2	OBD II-C2
K	DeVille	Y	4.6L	Class 2	OBD II-C2
K	Livery/Hearse/Limo	Y	4.6L	Class 2	OBD II-C2

1997 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Cavalier	4 T	2.2L 2.4L	Class 2	OBD II-C2
F	Camaro	P K	5.7L 3.8L	Class 2	OBD II-C2
N	Malibu	T M	2.4L 3.1L	Class 2	OBD II-C2
W	Lumina	X M	3.4L 3.1L	Class 2	OBD II-C2
W	Monte Carlo	X M	3.4L 3.1L	Class 2	OBD II-C2
Y	Corvette	G	5.7L	Class 2	OBD II-C2

1997 GEO PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M	Metro	6 9	1.0L 1.3L	ISO 9141-2 Suzuki	OBD II-C2
S	Prizm	6 8	1.6L 1.8L	Class 2	OBD II-C2

1997 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Achieva	M T	3.1L 2.4L	Class 2	OBD II-C2
H	Eighty Eight	K	3.8L	Class 2	OBD II-C2
H	Eighty Eight LSS	1	3.8L SC	Class 2	OBD II-C2
G	Aurora	C	4.0L	Class 2	OBD II-C2
N	Cutlass	T M	2.4L 3.1L	Class 2	OBD II-C2
W	Cutlass Supreme	M	3.1L	Class 2	OBD II-C2

1997 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
H	Bonneville	K	3.8L	Class 2	OBD II-C2
N	Grand Am	M T	3.1L 2.4L	Class 2	OBD II-C2
J	Sunfire	4 T	2.2L 2.4L	Class 2	OBD II-C2
F	Firebird	P K	5.7L 3.8L	Class 2	OBD II-C2
W	Grand Prix	M K 1	3.1L 3.8L 3.8L SC	Class 2	OBD II-C2
H	Bonneville SSEi	1	3.8L SC	Class 2	OBD II-C2

1997 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L PFI	Class 2	OBD II-C2
Z	SL2	7	1.9L PFI	Class 2	OBD II-C2
Z	SW2	7	1.9L PFI	Class 2	OBD II-C2

1997 SATURN PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC1	8	1.9L MFI	Class 2	OBD II-C2
Z	SL	8	1.9L MFI	Class 2	OBD II-C2
Z	SL1	8	1.9L MFI	Class 2	OBD II-C2
Z	SW1	8	1.9L MFI	Class 2	OBD II-C2

1997 CHEVROLET/GMC C/K PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	C/K 1500 Pickup 1/2 Ton	W	4.3L	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	M R S	5.0L 5.7L 6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	M R S F J	5.0L 5.7L 6.5L TRB Diesel 6.5L TRB Diesel 7.4L	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton	R F J	5.7L 6.5L TRB Diesel 7.4L	Class 2	OBD II-C2

1997 CHEVROLET/GMC C/K SUBURBAN & UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	C/K 1500 Suburban 2WD/4WD 1/2 Ton	R F	5.7L 6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/4WD 3/4 Ton	R F J	5.7L 6.5L TRB Diesel 7.4L	Class 2	OBD II-C2
C/K	C1500 Tahoe/Yukon 2WD 1/2 Ton	R	5.7L	Class 2	OBD II-C2

1997 CHEVROLET/GMC C/K SUBURBAN & UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	K1500 Tahoe/Yukon (Four Door) 1/2 Ton	R	5.7L	Class 2	OBD II-C2
C/K	K1500 Tahoe/Yukon (Two Door) 1/2 Ton	R S	5.7L 6.5L TRB Diesel	Class 2	OBD II-C2

1997 CHEVROLET/GMC C/K CHASSIS/CREW CAB

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	C2500 Chassis Cab 2WD/4WD 3/4 Ton	R F J	5.7L 6.5L TRB Diesel 7.4L	Class 2	OBD II-C2
C	C3500 HD Chassis Cab 2WD 1Ton	F J	6.5L TRB Diesel 7.4L	Class 2	OBD II-C2
C/K	C3500 Crew Cab/ Chassis Crew Cab 2WD/4WD 1 Ton	R F J	5.7L 6.5L TRB Diesel 7.4L	Class 2	OBD II-C2

1997 CHEVROLET/GMC S/T PICKUP TRUCKS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
S	S10/Sonoma Pickup Ext. Cab/Club Coupe	4 X W	2.2L 4.3L 4.3L	Class 2	OBD II-C2
T	T/Sonoma Pickup Ext. Cab/Club Coupe	X	4.3L	Class 2	OBD II-C2
T	T/Sonoma Pickup Ext. Cab/Club Coupe	W	4.3L	Class 2	OBD II-C2
S/T	Blazer/Jimmy 2WD/4WD	W	4.3L	Class 2	OBD II-C2
T	Bravada AWD	W	4.3L	Class 2	OBD II-C2

1997 CHEVROLET/GMC M/L AND G VANS

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M/L	Astro, Safari, Cargo, Passenger Van	W	4.3L	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W M R	4.3L 5.0L 5.7L	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W M R F	4.3L 5.0L 5.7L 6.5L TRB Diesel	Class 2	OBD II-C2
G	G3500 Chevy Van Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	R F	5.7L 6.5L TRB Diesel	Class 2	OBD II-C2
G	G3500 Chevy Van Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	J	7.4L	Class 2	OBD II-C2

1997 GEO SPORT UTILITY

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E/J	Tracker	6	1.6L	ISO 9141-2 Suzuki	OBD II-C2

1997 CHEVROLET APV

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U/X	Venture	E	3.4L	Class 2	OBD II-C2

1997 OLDSMOBILE APV

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U/X	Silhouette	E	3.4L	Class 2	OBD II-C2

1997 PONTIAC APV

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
U/X	Trans Sport	E	3.4L	Class 2	OBD II-C2

1997 CHEVROLET/GMC TRUCKS AND VANS MEDIUM DUTY AND P-SERIES FORWARD CONTROL

MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
MD Truck	P M	6.0L 7.0L	UART	OBD II-C2/ GM-16
Forward Control Chassis	W R	4.3L 5.7L	Class 2	OBD II-C2
	Y	6.5L	UART	OBD II-C2/ GM-16
Forward Control Chassis	F	6.5L	Class 2	OBD II-C2
	N	7.4L	UART	OBD II-C2/ GM-16
	J	7.4L	Class 2	OBD II-C2
Forward Control Rear Engine Motor Home Chassis	F	6.5L	Class 2	OBD II-C2

1997 CHEVROLET/GMC TRUCKS AND VANS MEDIUM DUTY AND P-SERIES FORWARD CONTROL (CONTINUED)

MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Commercial Chassis	K N	5.7L 7.4L	UART	OBD II-C2/ GM-16
School Bus Chassis	K	5.7L	Class 2 UART	OBD II-C2/ GM-16
Motor Home Chassis	N	7.4L	UART	OBD II-C2/ GM-16

1998 VEHICLE COVERAGE

1998 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Skylark	T	2.4L SFI	Class 2	OBD II-C2
N	Skylark	M	3.1L SFI	Class 2	OBD II-C2
W	Regal	M	3.1L SFI	Class 2	OBD II-C2
W	Century	M	3.1L SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	1	3.8L SC SFI	Class 2	OBD II-C2
G	Riviera	1	3.8L SC SFI	Class 2	OBD II-C2
W	Regal	1	3.8L SC SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	K	3.8L SFI	Class 2	OBD II-C2
G	Riviera	K	3.8L SFI	Class 2	OBD II-C2
H	Le Sabre	K	3.8L SFI	Class 2	OBD II-C2
W	Regal	K	3.8L SFI	Class 2	OBD II-C2

1998 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E	Eldorado	Y	4.6L SFI	Class 2	OBD II-C2
E	Eldorado (Touring)	9	4.6L SFI	Class 2	OBD II-C2

1998 CADILLAC PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	Livery/Hearse/Limo	Y	4.6L SFI	Class 2	OBD II-C2
K	Seville SLS	Y	4.6L SFI	Class 2	OBD II-C2
K	Concours	9	4.6L SFI	Class 2	OBD II-C2
K	Seville STS	9	4.6L SFI	Class 2	OBD II-C2
K	DeVille	Y	4.6L SFI	Class 2	OBD II-C2

1998 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Cavalier	4	2.2L SFI	Class 2	OBD II-C2
J	Cavalier	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	M	3.1L SFI	Class 2	OBD II-C2
W	Lumina	M	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo	M	3.1L SFI	Class 2	OBD II-C2
F	Camaro	K	3.8L SFI	Class 2	OBD II-C2
W	Monte Carlo	K	3.8L SFI	Class 2	OBD II-C2
Y	Corvette	G	5.7L SFI	Class 2	OBD II-C2
F	Camaro	G	5.7L SFI	Class 2	OBD II-C2
M	Metro	6	1.0L	ISO 9141-2 Suzuki	OBD II-C2
M	Metro	2	1.3L	ISO 9141-2 Suzuki	OBD II-C2

1998 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Cutlass	T	2.4L SFI	Class 2	OBD II-C2
N	Achieva	T	2.4L SFI	Class 2	OBD II-C2

1998 OLDSMOBILE PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Cutlass	M	3.1L SFI	Class 2	OBD II-C2
N	Achieva	M	3.1L SFI	Class 2	OBD II-C2
H	Eighty Eight LSS	1	3.8L SC SFI	Class 2	OBD II-C2
H	Eighty Eight	K	3.8L SFI	Class 2	OBD II-C2
W	Intrigue	K	3.8L SFI	Class 2	OBD II-C2
G	Aurora	C	4.0L SFI	Class 2	OBD II-C2

1998 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Sunfire	4	2.2L SFI	Class 2	OBD II-C2
J	Sunfire	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	M	3.1L SFI	Class 2	OBD II-C2
W	Grand Prix	M	3.1L SFI	Class 2	OBD II-C2
H	Bonneville SSEi	1	3.8L SC SFI	Class 2	OBD II-C2
W	Grand Prix	1	3.8L SC SFI	Class 2	OBD II-C2
F	Firebird	K	3.8L SFI	Class 2	OBD II-C2
H	Bonneville	K	3.8L SFI	Class 2	OBD II-C2
W	Grand Prix	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird	G	5.7L SFI	Class 2	OBD II-C2

1998 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L PFI	Class 2	OBD II-C2
Z	SL2	7	1.9L PFI	Class 2	OBD II-C2
Z	SW2	7	1.9L PFI	Class 2	OBD II-C2

1998 SATURN PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC1	8	1.9L SFI	Class 2	OBD II-C2
Z	SL	8	1.9L SFI	Class 2	OBD II-C2
Z	SL1	8	1.9L SFI	Class 2	OBD II-C2
Z	SW1	8	1.9L SFI	Class 2	OBD II-C2

1998 GM LIGHT DUTY TRUCKS/VANS/APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M/L	Astro, Safari/Cargo/ Passenger Van	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy (Four Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy (Two Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy 4WD	W	4.3L SFI	Class 2	OBD II-C2
T	Bravada AWD	W	4.3L SFI	Class 2	OBD II-C2
C	C1500 Tahoe, Yukon 2WD 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	F	6.5L TRB Diesel	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	F	6.5L TRB Diesel	Class 2	OBD II-C2
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C	C3500 HD Chassis Cab 2WD 1 Ton (S&D)	F	6.5L TRB Diesel	Class 2	OBD II-C2

1998 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	C3500 HD Chassis Cab 2WD 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	W	4.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	M	5.0L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	S	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD/ 4WD 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD/ 4WD 1/2 Ton	F	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	M	5.0L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	S	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	F	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	F	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	F	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
E/J	Tracker	6	1.6L	ISO 9141-2 Suzuki	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W	4.3L SFI	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	M	5.0L SFI	Class 2	OBD II-C2

1998 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	R	5.7L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W	4.3L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	M	5.0L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	R	5.7L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	F	6.5L TRB Diesel	Class 2	OBD II-C2
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	R	5.7L SFI	Class 2	OBD II-C2
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	F	6.5L TRB Diesel	Class 2	OBD II-C2
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	J	7.4L SFI	Class 2	OBD II-C2
K	K1500 Tahoe, Yukon (Four Door) 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
K	K1500 Tahoe, Yukon (Two Door) 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2

1998 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	K1500 Tahoe, Yukon (Two Door) 1/2 Ton	S	6.5L TRB Diesel	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	4	2.2L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	X	4.3L SFI	Class 2	OBD II-C2
T	T, Sonoma Pickup, Ext. Cab, Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
T	T, Sonoma Pickup, Ext. Cab, Club Coupe	X	4.3L SFI	Class 2	OBD II-C2
	Light Duty Truck	B	7.4L SFI	Class 2	OBD II-C2
U/X	Silhouette	E	3.4L SFI	Class 2	OBD II-C2
U/X	Trans Sport	E	3.4L SFI	Class 2	OBD II-C2
U/X	Venture APV	E	3.4L SFI	Class 2	OBD II-C2

1998 GM MEDIUM DUTY TRUCKS

MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Forward Control Chassis (S&D)	W	4.3L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)	R	5.7L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)	Y	6.5L IMFI Diesel	UART	OBD II-C2/ GM-16
Forward Control Chassis (S&D)	Y	6.5L EFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)	F	6.5L IEFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)	N	7.4L TBI	UART	OBD II-C2/ GM-16
Forward Control Chassis (D/O)	J	7.4L SFI	Class 2	OBD II-C2
Forward Control Rear Engine Motor Home Chassis	F	6.5L IEFI	Class 2	OBD II-C2
Commercial Chassis	K	5.7L TBI	UART	OBD II-C2/ GM-16

1998 GM MEDIUM DUTY TRUCKS (CONTINUED)

MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Commercial Chassis	N	7.4L TBI	UART	OBD II-C2/ GM-16
School Bus Chassis	K	5.7L TBI	UART	OBD II-C2/ GM-16
Motor Home Chassis	N	7.4L TBI	UART	OBD II-C2/ GM-16
MD Truck	P	6.0L	UART	OBD II-C2/ GM-16
MD Truck	M	7.0L	UART	OBD II-C2/ GM-16

1999 VEHICLE COVERAGE

1999 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
W	Regal	M	3.1L SFI	Class 2	OBD II-C2
W	Century	M	3.1L SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	1	3.8L SC SFI	Class 2	OBD II-C2
G	Riviera	1	3.8L SC SFI	Class 2	OBD II-C2
W	Regal	1	3.8L SC SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	K	3.8L SFI	Class 2	OBD II-C2
G	Riviera	K	3.8L SFI	Class 2	OBD II-C2
H	Le Sabre	K	3.8L SFI	Class 2	OBD II-C2
W	Regal	K	3.8L SFI	Class 2	OBD II-C2

1999 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E	Eldorado	Y	4.6L SFI	Class 2	OBD II-C2
E	Eldorado (Touring)	9	4.6L SFI	Class 2	OBD II-C2

1999 CADILLAC PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	Livery/Hearse/Limo	Y	4.6L SFI	Class 2	OBD II-C2
K	Seville SLS	Y	4.6L SFI	Class 2	OBD II-C2
K	Concours	9	4.6L SFI	Class 2	OBD II-C2
K	Seville STS	9	4.6L SFI	Class 2	OBD II-C2
K	DeVille	Y	4.6L SFI	Class 2	OBD II-C2

1999 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Cavalier	4	2.2L SFI	Class 2	OBD II-C2
J	Cavalier (Alt-Fuel CNG)	4	2.2L SFI	Class 2	OBD II-C2
J	Cavalier	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	M	3.1L SFI	Class 2	OBD II-C2
N	Malibu	J	3.1L SFI	Class 2	OBD II-C2
W	Lumina	M	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo	M	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo	K	3.8L SFI	Class 2	OBD II-C2
F	Camaro	K	3.8L SFI	Class 2	OBD II-C2
F	Camaro	G	5.7L SFI	Class 2	OBD II-C2
Y	Corvette	G	5.7L SFI	Class 2	OBD II-C2

1999 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Cutlass	T	2.4L SFI	Class 2	OBD II-C2
N	Achieva	T	2.4L SFI	Class 2	OBD II-C2
N	Alero	T	2.4L SFI	Class 2	OBD II-C2

1999 OLDSMOBILE PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Cutlass	J	3.1L SFI	Class 2	OBD II-C2
N	Cutlass	M	3.1L SFI	Class 2	OBD II-C2
N	Achieva	M	3.1L SFI	Class 2	OBD II-C2
N	Alero	E	3.4L SFI	Class 2	OBD II-C2
W	Intrigue	H	3.5L SFI	Class 2	OBD II-C2
W	Intrigue	K	3.8L SFI	Class 2	OBD II-C2
H	Eighty Eight LSS	1	3.8L SC SFI	Class 2	OBD II-C2
H	Eighty Eight	K	3.8L SFI	Class 2	OBD II-C2
G	Aurora	C	4.0L SFI	Class 2	OBD II-C2

1999 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Sunfire	4	2.2L SFI	Class 2	OBD II-C2
J	Sunfire (Alt-Fuel CNG)	4	2.2L SFI	Class 2	OBD II-C2
J	Sunfire	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	M	3.1L SFI	Class 2	OBD II-C2
W	Grand Prix	M	3.1L SFI	Class 2	OBD II-C2
N	Grand Am	E	3.4L SFI	Class 2	OBD II-C2
H	Bonneville	K	3.8L SFI	Class 2	OBD II-C2
H	Bonneville SSEi	1	3.8L SC SFI	Class 2	OBD II-C2
W	Grand Prix	1	3.8L SC SFI	Class 2	OBD II-C2
W	Grand Prix	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird	G	5.7L SFI	Class 2	OBD II-C2

1999 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L PFI	Class 2	OBD II-C2
Z	SL2	7	1.9L PFI	Class 2	OBD II-C2
Z	SW2	7	1.9L PFI	Class 2	OBD II-C2
Z	SC1	8	1.9L SFI	Class 2	OBD II-C2
Z	SL	8	1.9L SFI	Class 2	OBD II-C2
Z	SL1	8	1.9L SFI	Class 2	OBD II-C2
Z	SW1	8	1.9L SFI	Class 2	OBD II-C2

1999 GM LIGHT DUTY TRUCKS/VANS/APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M/L	Astro, Safari/Cargo/ Passenger Van	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy (Four Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy (Two Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy 4WD	W	4.3L SFI	Class 2	OBD II-C2
T	Bravada AWD	W	4.3L SFI	Class 2	OBD II-C2
C	C1500 Tahoe, Yukon 2WD 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2

1999 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C	C3500 HD Chassis Cab 2WD 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C	C3500 HD Chassis Cab 2WD 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	W	4.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton Silverado/Sierra	V	4.8L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	M	5.0L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton Silverado/Sierra	T	5.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	S	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD/ 4WD 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD/ 4WD 1/2 Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton Silverado/Sierra	V	4.8L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	M	5.0L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton Silverado/Sierra	T	5.3L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton (Alt-Fuel CNG)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton Silverado/Sierra	U	6.0L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	S	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2

1999 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (Alt-Fuel CNG)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W	4.3L SFI	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	M	5.0L SFI	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	R	5.7L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W	4.3L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	M	5.0L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	R	5.7L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2

1999 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	R	5.7L SFI	Class 2	OBD II-C2
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	J	7.4L SFI	Class 2	OBD II-C2
K	K1500 Tahoe, Yukon, Escalade (Four Door) 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
K	K1500 Tahoe, Yukon (Two Door) 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
K	K1500 Tahoe, Yukon (Two Door) 1/2 Ton	S	6.5L TRB Diesel	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	4	2.2L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	X	4.3L SFI	Class 2	OBD II-C2
T	T, Sonoma Pickup, Ext. Cab, Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
T	T, Sonoma Pickup, Ext. Cab, Club Coupe	X	4.3L SFI	Class 2	OBD II-C2
	Light Duty Truck	B	7.4L SFI	Class 2	OBD II-C2
U/X	Silhouette	E	3.4L SFI	Class 2	OBD II-C2
U/X	Montana	E	3.4L SFI	Class 2	OBD II-C2
U/X	Venture APV	E	3.4L SFI	Class 2	OBD II-C2

a. Equipped with Delco PCM.

1999 GM MEDIUM DUTY TRUCKS

MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Forward Control Chassis (S&D)	W	4.3L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)	R	5.7L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)	Y	6.5L IMFI Diesel	UART (TCM)	OBD II-C2/ GM-16
Forward Control Chassis (S&D)	Y	6.5L EFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)	F	6.5L IEFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)	J	7.4L SFI	Class 2	OBD II-C2
Forward Control Rear Engine Motor Home Chassis	F	6.5L IEFI Diesel	Class 2	OBD II-C2
Commercial Chassis	K	5.7L TBI	UART	OBD II-C2/ GM-16
School Bus Chassis	K	5.7L TBI	UART	OBD II-C2/ GM-16
MD Truck	D	7.4L SFI	Class 2	OBD II-C2
P12 Motorhome/ MD Truck	B	7.4L SFI	Class 2	OBD II-C2

2000 VEHICLE COVERAGE

2000 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
W	Regal	J	3.1L SFI	Class 2	OBD II-C2
W	Century	J	3.1L SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	1	3.8L SC SFI	Class 2	OBD II-C2
W	Regal	1	3.8L SC SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	K	3.8L SFI	Class 2	OBD II-C2
H	Le Sabre	K	3.8L SFI	Class 2	OBD II-C2
W	Regal	K	3.8L SFI	Class 2	OBD II-C2

2000 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E	Eldorado	Y	4.6L SFI	Class 2	OBD II-C2
E	Eldorado (Touring)	9	4.6L SFI	Class 2	OBD II-C2
K	Livery/Hearse/Limo	Y	4.6L SFI	Class 2	OBD II-C2
K	Seville SLS	Y	4.6L SFI	Class 2	OBD II-C2
K	Seville STS	9	4.6L SFI	Class 2	OBD II-C2
K	Concours	9	4.6L SFI	Class 2	OBD II-C2
K	DeVille	9	4.6L SFI	Class 2	OBD II-C2
K	DeVille	Y	4.6L SFI	Class 2	OBD II-C2

2000 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Cavalier	4	2.2L SFI	Class 2	OBD II-C2
J	Cavalier (Alt-Fuel CNG)	4	2.2L SFI	Class 2	OBD II-C2
J	Cavalier	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	J	3.1L SFI	Class 2	OBD II-C2
W	Lumina	J	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo	J	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo	E	3.4L SFI	Class 2	OBD II-C2
W	Monte Carlo	K	3.8L SFI	Class 2	OBD II-C2
W	Impala	E	3.4L SFI	Class 2	OBD II-C2
W	Impala	K	3.8L SFI	Class 2	OBD II-C2
F	Camaro	K	3.8L SFI	Class 2	OBD II-C2
F	Camaro	G	5.7L SFI	Class 2	OBD II-C2
Y	Corvette	G	5.7L SFI	Class 2	OBD II-C2

2000 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Alero	T	2.4L SFI	Class 2	OBD II-C2
N	Alero	E	3.4L SFI	Class 2	OBD II-C2
W	Intrigue	H	3.5L SFI	Class 2	OBD II-C2

2000 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Sunfire	4	2.2L SFI	Class 2	OBD II-C2
J	Sunfire (Alt-Fuel CNG)	4	2.2L SFI	Class 2	OBD II-C2
J	Sunfire	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	J	3.1L SFI	Class 2	OBD II-C2
W	Grand Prix	J	3.1L SFI	Class 2	OBD II-C2
N	Grand Am	E	3.4L SFI	Class 2	OBD II-C2
H	Bonneville	K	3.8L SFI	Class 2	OBD II-C2
H	Bonneville SSEi	1	3.8L SC SFI	Class 2	OBD II-C2
W	Grand Prix	1	3.8L SC SFI	Class 2	OBD II-C2
W	Grand Prix	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird	G	5.7L SFI	Class 2	OBD II-C2

2000 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L PFI	Class 2	OBD II-C2
Z	SL2	7	1.9L PFI	Class 2	OBD II-C2
Z	SW2	7	1.9L PFI	Class 2	OBD II-C2

2000 SATURN PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC1	8	1.9L SFI	Class 2	OBD II-C2
Z	SL	8	1.9L SFI	Class 2	OBD II-C2
Z	SL1	8	1.9L SFI	Class 2	OBD II-C2
Z	SW1	8	1.9L SFI	Class 2	OBD II-C2
J	LS	F	2.2L SFI	Class 2	OBD II-C2
J	LS1	F	2.2L SFI	Class 2	OBD II-C2
J	LW1	F	2.2L SFI	Class 2	OBD II-C2
J	LS	R	3.0L SFI	KW2000	OBD II-C2
J	LS1	R	3.0L SFI	KW2000	OBD II-C2
J	LW1	R	3.0L SFI	KW2000	OBD II-C2

2000 GM LIGHT DUTY TRUCKS/VANS/APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
M/L	Astro, Safari/Cargo/ Passenger Van	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy (Four Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy (Two Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer, Jimmy 4WD	W	4.3L SFI	Class 2	OBD II-C2
T	Bravada AWD	W	4.3L SFI	Class 2	OBD II-C2
C	C1500 Tahoe, Yukon 2WD 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C	C2500 Chassis Cab 2WD/ 4WD 3/4 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2

2000 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C	C3500 Crew Cab/Chassis Crew Cab 2WD/4WD 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C	C3500 HD Chassis Cab 2WD 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C	C3500 HD Chassis Cab 2WD 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	W	4.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton Silverado/Sierra	V	4.8L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton Silverado/Sierra	T	5.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD/ 4WD 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD/ 4WD 1/2 Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton Silverado/Sierra	V	4.8L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton Silverado/Sierra	T	5.3L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton (Alt-Fuel CNG)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton Silverado/Sierra	U	6.0L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	U	6.0L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup 3/4 Ton	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2

2000 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
C/K	C/K 2500 Suburban 2WD/ 4WD 3/4 Ton	J	7.4L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (Alt-Fuel CNG)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	J	7.4L SFI	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W	4.3L SFI	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	M	5.0L SFI	Class 2	OBD II-C2
G	G1500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	R	5.7L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	W	4.3L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	M	5.0L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	R	5.7L SFI	Class 2	OBD II-C2
G	G2500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2

2000 GM LIGHT DUTY TRUCKS/VANS/APVs (CONTINUED)

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	R	5.7L SFI	Class 2	OBD II-C2
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
G	G3500 Chevy Van, Savana Cargo, Chevy Express, Savana Passenger, Chevy Commercial, Savana Special, Chevy RV, Savana Camper Special	J	7.4L SFI	Class 2	OBD II-C2
K	K1500 Tahoe, Yukon, Escalade (Four Door) 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
K	K1500 Tahoe, Yukon (Two Door) 1/2 Ton	R	5.7L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	4	2.2L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	5	2.2L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
S	S10, Sonoma Pickup, Ext. Cab, Club Coupe	X	4.3L SFI	Class 2	OBD II-C2
T	T, Sonoma Pickup, Ext. Cab, Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
T	T, Sonoma Pickup, Ext. Cab, Club Coupe	X	4.3L SFI	Class 2	OBD II-C2
	Light Duty Truck	B	7.4L SFI	Class 2	OBD II-C2
U/X	Silhouette	E	3.4L SFI	Class 2	OBD II-C2
U/X	Montana	E	3.4L SFI	Class 2	OBD II-C2
U/X	Venture APV	E	3.4L SFI	Class 2	OBD II-C2

a. Equipped with Delco PCM.

2000 GM MEDIUM DUTY TRUCKS

MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Forward Control Chassis (S&D)	W	4.3L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)/P42	R	5.7L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)/P42	Y	6.5L EFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)	F	6.5L IEFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)/P32	J	7.4L SFI	Class 2	OBD II-C2
MD Truck	D	7.4L SFI	Class 2	OBD II-C2
P12 Motorhome/MD Truck	B	7.4L SFI	Class 2	OBD II-C2

2001 VEHICLE COVERAGE

2001 BUICK PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
W	Regal	J	3.1L SFI	Class 2	OBD II-C2
W	Century	J	3.1L SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	1	3.8L SC SFI	Class 2	OBD II-C2
W	Regal	1	3.8L SC SFI	Class 2	OBD II-C2
C	Park Avenue/Ultra	K	3.8L SFI	Class 2	OBD II-C2
H	Le Sabre	K	3.8L SFI	Class 2	OBD II-C2
W	Regal	K	3.8L SFI	Class 2	OBD II-C2

2001 CADILLAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
E	Eldorado	Y	4.6L SFI	Class 2	OBD II-C2
E	Eldorado (Touring)	9	4.6L SFI	Class 2	OBD II-C2
K	Livery/Hearse/Limo	Y	4.6L SFI	Class 2	OBD II-C2
K	Seville SLS	Y	4.6L SFI	Class 2	OBD II-C2

2001 CADILLAC PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
K	Seville STS	9	4.6L SFI	Class 2	OBD II-C2
K	Concours	9	4.6L SFI	Class 2	OBD II-C2
K	DeVille	9	4.6L SFI	Class 2	OBD II-C2
K	DeVille	Y	4.6L SFI	Class 2	OBD II-C2

2001 CHEVROLET PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Cavalier	4	2.2L SFI	Class 2	OBD II-C2
J	Cavalier	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	T	2.4L SFI	Class 2	OBD II-C2
N	Malibu	J	3.1L SFI	Class 2	OBD II-C2
W	Lumina	J	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo	J	3.1L SFI	Class 2	OBD II-C2
W	Monte Carlo	E	3.4L SFI	Class 2	OBD II-C2
W	Monte Carlo	K	3.8L SFI	Class 2	OBD II-C2
W	Impala	K	3.8L SFI	Class 2	OBD II-C2
W	Impala	E	3.4L SFI	Class 2	OBD II-C2
F	Camaro	K	3.8L SFI	Class 2	OBD II-C2
F	Camaro	G	5.7L SFI	Class 2	OBD II-C2
Y	Corvette	G	5.7L SFI	Class 2	OBD II-C2
Y	Corvette	S	5.7L SFI	Class 2	OBD II-C2

2001 OLDSMOBILE PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
N	Alero	T	2.4L SFI	Class 2	OBD II-C2
N	Alero	E	3.4L SFI	Class 2	OBD II-C2

2001 OLDSMOBILE PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
W	Intrigue	H	3.5L SFI	Class 2	OBD II-C2
G	Aurora	C	4.0L SFI	Class 2	OBD II-C2
G	Aurora	H	3.5L SFI	Class 2	OBD II-C2

2001 PONTIAC PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
J	Sunfire	4	2.2L SFI	Class 2	OBD II-C2
J	Sunfire	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	T	2.4L SFI	Class 2	OBD II-C2
N	Grand Am	J	3.1L SFI	Class 2	OBD II-C2
W	Grand Prix	J	3.1L SFI	Class 2	OBD II-C2
N	Grand Am	E	3.4L SFI	Class 2	OBD II-C2
H	Bonneville	K	3.8L SFI	Class 2	OBD II-C2
H	Bonneville SSEi	1	3.8L SC SFI	Class 2	OBD II-C2
W	Grand Prix	1	3.8L SC SFI	Class 2	OBD II-C2
W	Grand Prix	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird	K	3.8L SFI	Class 2	OBD II-C2
F	Firebird	G	5.7L SFI	Class 2	OBD II-C2

2001 SATURN PASSENGER CARS

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SC2	7	1.9L PFI	Class 2	OBD II-C2
Z	SL2	7	1.9L PFI	Class 2	OBD II-C2
Z	SW2	7	1.9L PFI	Class 2	OBD II-C2
Z	SC1	8	1.9L SFI	Class 2	OBD II-C2
Z	SL	8	1.9L SFI	Class 2	OBD II-C2

2001 SATURN PASSENGER CARS (CONTINUED)

4TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Z	SL1	8	1.9L SFI	Class 2	OBD II-C2
Z	SW1	8	1.9L SFI	Class 2	OBD II-C2
J	LS	F	2.2L SFI	Class 2	OBD II-C2
J	LS1	F	2.2L SFI	Class 2	OBD II-C2
J	LW1	F	2.2L SFI	Class 2	OBD II-C2
J	LS	R	3.0L SFI	KW2000	OBD II-C2
J	LS1	R	3.0L SFI	KW2000	OBD II-C2
J	LW1	R	3.0L SFI	KW2000	OBD II-C2

2001 GM LIGHT DUTY TRUCKS/VANS/APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
S	S-10/Sonoma Pickup, Ext. Cab/Club Coupe	5	2.2L SFI	Class 2	OBD II-C2
U/X	Silhouette	E	3.4L SFI	Class 2	OBD II-C2
U/X	Montana	E	3.4L SFI	Class 2	OBD II-C2
U/X	Venture APV	E	3.4L SFI	Class 2	OBD II-C2
A/B	Aztek	E	3.4L SFI	Class 2	OBD II-C2
M/L	Astro/Safari/Cargo/ Passenger Van	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer/Jimmy (Four Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer/Jimmy (Two Door)	W	4.3L SFI	Class 2	OBD II-C2
S/T	Blazer/Jimmy 4WD	W	4.3L SFI	Class 2	OBD II-C2
T	Bravada AWD	W	4.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup ½ Ton	W	4.3L SFI	Class 2	OBD II-C2
G	G 1500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass	W	4.3L SFI	Class 2	OBD II-C2
G	G 2500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass	W	4.3L SFI	Class 2	OBD II-C2

2001 GM LIGHT DUTY TRUCKS/VANS/APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
S	S-10/Sonoma Pickup, Ext. Cab/Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
T	T/Sonoma Pickup, Ext. Cab/Club Coupe	W	4.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup ½ Ton Silverado/Sierra	V	4.8L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup ¾ Ton Silverado/Sierra	V	4.8L SFI	Class 2	OBD II-C2
G	G 1500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass	M	5.0L SFI	Class 2	OBD II-C2
G	G 2500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass	M	5.0L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Tahoe/Yukon 2WD, 4WD ½ Ton	T	5.3L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup ½ Ton Silverado/Sierra/ Suburban	T	5.3L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup ¾ Ton Silverado/Sierra/ Suburban	T	5.3L SFI	Class 2	OBD II-C2
C	C 1500 Tahoe/Yukon 2WD ½ Ton	R	5.7L SFI	Class 2	OBD II-C2
C	C 2500 Chassis Cab 2WD, 4WD ¾ Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C	C 3500 Crew Cab/ Chassis Crew Cab 2WD, 4WD 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Pickup ½ Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD, 4WD ½ Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Pickup ¾ Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD, 4WD ¾ Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	R	5.7L SFI	Class 2	OBD II-C2

2001 GM LIGHT DUTY TRUCKS/VANS/APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G 1500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass	R	5.7L SFI	Class 2	OBD II-C2
G	G 2500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass	R	5.7L SFI	Class 2	OBD II-C2
G	G 3500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass/ Chevy Commercial/ Savana Special/Chevy RV/Savana Camper Special	R	5.7L SFI	Class 2	OBD II-C2
K	K 1500 Tahoe/Yukon/ Escalade (Four Door) ½ Ton	R	5.7L SFI	Class 2	OBD II-C2
K	K 1500 Tahoe/Yukon (Two Door) ½ Ton	R	5.7L SFI	Class 2	OBD II-C2
C/K	C/K 2500/3500 Pickup ¾ Ton Silverado/Sierra	U	6.0L SFI	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD, 4WD ¾ Ton	U	6.0L SFI	Class 2	OBD II-C2
C	C 2500 Chassis Cab 2WD, 4WD ¾ Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C	C 3500 Crew Cab/ Chassis Crew Cab 2WD, 4WD 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C	C 3500 HD Chassis Cab 2WD 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 1500 Suburban 2WD, 4WD ½ Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Pickup ¾ Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 2500 Suburban 2WD, 4WD ¾ Ton	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 3500 Pickup 1 Ton (S&D)	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
G	G 2500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2

2001 GM LIGHT DUTY TRUCKS/VANS/APVs

5TH VIN	MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
G	G 3500 Chevy Van/ Savana Cargo/Chevy Express/Savana Pass/ Chevy Commercial/ Savana Special/Chevy RV/Savana Camper Special	F[a]	6.5L TRB Diesel	Class 2	OBD II-C2
C/K	C/K2500 HD Sierra/ Silverado Pickup And Crew Cab	1	6.6L TRB Diesel	Class 2	OBD II-C2
C/K	C/K 3500 HD Sierra/ Silverado Pickup And Chassis Cab	1	6.6L TRB Diesel	Class 2	OBD II-C2
C/K	C/K2500 HD Sierra/ Silverado Pickup And Crew Cab	G	8.1L SFI	Class 2	OBD II-C2

a. Equipped with Delco PCM

2001 GM MEDIUM DUTY TRUCKS

MODEL	8TH VIN	ENGINE SIZE	DATA LINK	ADAPTER CONFIG.
Forward Control Chassis (S&D)	W	4.3L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)/P42	R	5.7L SFI	Class 2	OBD II-C2
Forward Control Chassis (S&D)/P42	Y	6.5L EFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)	F	6.5L IEFI Diesel	Class 2	OBD II-C2
Forward Control Chassis (D/O)/P32	E	8.1L SFI	Class 2	OBD II-C2
MD-Truck B-7 Bus Chassis	E	8.1L SFI	Class 2	OBD II-C2
MD-Truck C-Series	E	8.1L SFI	Class 2	OBD II-C2
Motorhome/MD-Truck	E	8.1L SFI	Class 2	OBD II-C2

2002 VEHICLE COVERAGE

2002 BUICK PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Century	W	J	3.1L SFI	PCM	Class 2	OBD II-C2
Regal	W	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Park Avenue	C	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Le Sabre	H	K	3.8L SFI	PCM	Class 2	OBD II-C2

2002 CADILLAC PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Eldorado	E	Y	4.6L SFI	PCM	Class 2	OBD II-C2
		9	4.6L SFI	PCM	Class 2	OBD II-C2
DeVille	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2
		9	4.6L SFI	PCM	Class 2	OBD II-C2
Seville SLS	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2
Seville STS	K	9	4.6L SFI	PCM	Class 2	OBD II-C2
Livery/Hearse/ Limo	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2

2002 CHEVROLET PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Cavalier	J	F	2.2L MFI	PCM	Class 2	OBD II-C2
		4	2.2L SFI	PCM	Class 2	OBD II-C2
		T	2.4L SFI	PCM	Class 2	OBD II-C2
Malibu	N	J	3.1L SFI	PCM	Class 2	OBD II-C2
Monte Carlo	W	E	3.4L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2

2002 CHEVROLET PASSENGER CARS (CONTINUED)

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Impala	W	E	3.4L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2
Camaro	F	K	3.8L SFI	PCM	Class 2	OBD II-C2
		G	5.7L SFI	PCM	Class 2	OBD II-C2
Corvette	Y	G	5.7L SFI	PCM	Class 2	OBD II-C2
		S	5.7L SFI	PCM	Class 2	OBD II-C2

2002 OLDSMOBILE PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Alero	N	F	2.2L MFI	PCM	Class 2	OBD II-C2
		E	3.4L SFI	PCM	Class 2	OBD II-C2
Intrigue	W	H	3.5L SFI	PCM	Class 2	OBD II-C2
Aurora	G	H	3.5L SFI	PCM	Class 2	OBD II-C2
		C	4.0L SFI	PCM	Class 2	OBD II-C2

2002 PONTIAC PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Sunfire	J	F	2.2L MFI	PCM	Class 2	OBD II-C2
		4	2.2L SFI	PCM	Class 2	OBD II-C2
		T	2.4L SFI	PCM	Class 2	OBD II-C2
Grand Am	N	F	2.2L MFI	PCM	Class 2	OBD II-C2
		E	3.4L SFI	PCM	Class 2	OBD II-C2
Grand Prix	W	J	3.1L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Bonneville	H	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Firebird	F	K	3.8L SFI	PCM	Class 2	OBD II-C2
		G	5.7L SFI	PCM	Class 2	OBD II-C2

2002 SATURN PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
SL	Z	7	1.9L MFI	PCM	Class 2	OBD II-C2
SL1	Z	7	1.9L MFI	PCM	Class 2	OBD II-C2
SC1	Z	7	1.9L MFI	PCM	Class 2	OBD II-C2
SL2	Z	8	1.9L MFI	PCM	Class 2	OBD II-C2
SC2	Z	8	1.9L MFI	PCM	Class 2	OBD II-C2
L100, L200, LW200	J	F	2.2L MFI	PCM	Class 2	OBD II-C2
L300	J	R	3.0L MFI	PCM	KW2000	OBD II-C2
LW300	J	R	3.0L MFI	PCM	KW2000	OBD II-C2

2002 BUICK/CADILLAC/CHEVROLET/GMC/OLDSMOBILE PONTIAC TRUCKS/VANS/MPVs

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Astro/Safari	M/L	W	4.3L CPI	VCM	Class 2	OBD II-C2
		X	4.3L MFI	PCM	Class 2	OBD II-C2
Avalanche	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
Aztec	A/B	E	3.4L MFI	PCM	Class 2	OBD II-C2
Blazer	S/T	W	4.3L CPI	VCM	Class 2	OBD II-C2
C3500HD/ Classic Sierra 3500HD	C	G	8.1L MFI	PCM	Class 2	OBD II-C2
		F	6.5L Turbo Diesel	PCM	Class 2	OBD II-C2
Escalade	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
	K	N	6.0L MFI	PCM	Class 2	OBD II-C2
Express/Savana	G	W	4.3L CPI	VCM	Class 2	OBD II-C2
		X	4.3L MFI	PCM	Class 2	OBD II-C2
		M	5.0L CPI	VCM	Class 2	OBD II-C2
		R	5.7L CPI	VCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
		F	6.5L Turbo Diesel	PCM	Class 2	OBD II-C2
Express/Savana Cutaway Van	G	R	5.7L CPI	VCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
		F	6.5L Turbo Diesel	PCM	Class 2	OBD II-C2
Montana	U/X/V	E	3.4L MFI	PCM	Class 2	OBD II-C2

2002 BUICK/CADILLAC/CHEVROLET/GMC/OLDSMOBILE PONTIAC TRUCKS/VANS/MPVs (CONTINUED)

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
P Series Box Truck (Cal)	B	Y	6.5L Turbo Diesel	PCM	Class 2	OBD II-C2
P Series Box Truck (Fed)	B	Y	6.5L Turbo Diesel	TCM	UART	OBD I
Rendezvous	A/B	E	3.4L MFI	PCM	Class 2	OBD II-C2
S-10/Sonoma Pick-Up 2WD	S	5	2.2L CFF	PCM	Class 2	OBD II-C2
		W	4.3L CPI	VCM	Class 2	OBD II-C2
S-10/Sonoma Pick-Up 4WD	T	W	4.3L CPI	VCM	Class 2	OBD II-C2
Silhouette	X/V	E	3.4L MFI	PCM	Class 2	OBD II-C2
Silverado/Sierra Full-Size Pick-Up	C/K	W	4.3L CPI	VCM	Class 2	OBD II-C2
		X	4.3L MFI	PCM	Class 2	OBD II-C2
		V	4.8L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
		1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
Suburban	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
Tahoe	C/K	V	4.8L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
Trailblazer/ Envoy	S/T	S	4.2L MFT	PCM	Class 2	OBD II-C2
Venture	U/X/V	E	3.4L MFI	PCM	Class 2	OBD II-C2
Yukon Denali/ XL Denali	K	U	6.0L MFI	PCM	Class 2	OBD II-C2
Yukon/Yukon XT	C/K	V	4.8L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2

2002 CHEVROLET/GMC MEDIUM DUTY TRUCKS

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
W-Series	4	R	5.7L CPI	PCM	Class 2	OBD II-C2
C-Series	5	E	8.1L MFI	PCM	Class 2	OBD II-C2
	6	E	8.1L MFI	PCM	Class 2	OBD II-C2
	7	E	8.1L MFI	PCM	Class 2	OBD II-C2

2003 VEHICLE COVERAGE

2003 BUICK PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Century	W	J	3.1L SFI	PCM	Class 2	OBD II-C2
Regal	W	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Park Avenue	C	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Le Sabre	H	K	3.8L SFI	PCM	Class 2	OBD II-C2

2003 CADILLAC PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
DeVille DHS	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2
DeVille DTS	K	9	4.6L SFI	PCM	Class 2	OBD II-C2
Seville SLS	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2
Seville STS	K	9	4.6L SFI	PCM	Class 2	OBD II-C2
Livery/Hearse/ Limo	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2

2003 CHEVROLET PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Cavalier	J	F	2.2L MFI	PCM	Class 2	OBD II-C2
Malibu	N	J	3.1L SFI	PCM	Class 2	OBD II-C2
Monte Carlo	W	E	3.4L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2
Impala	W	E	3.4L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2
Corvette	Y	G	5.7L SFI	PCM	Class 2	OBD II-C2
		S	5.7L SFI	PCM	Class 2	OBD II-C2

2003 OLDSMOBILE PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Alero	N	F	2.2L MFI	PCM	Class 2	OBD II-C2
		E	3.4L SFI	PCM	Class 2	OBD II-C2
Aurora	G	C	4.0L SFI	PCM	Class 2	OBD II-C2

2003 PONTIAC PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Sunfire	J	F	2.2L MFI	PCM	Class 2	OBD II-C2
Grand Am	N	F	2.2L SFI	PCM	Class 2	OBD II-C2
		E	3.4L SFI	PCM	Class 2	OBD II-C2
Grand Prix	W	J	3.1L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Bonneville	H	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2

2003 SATURN PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
L200, LW200	J	F	2.2L MFI	PCM	Class 2	OBD II-C2

2003 BUICK/CADILLAC/CHEVROLET/GMC/OLDSMOBILE PONTIAC TRUCKS/VANS/MPVs

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Astro/Safari	M/L	X	4.3L MFI	PCM	Class 2	OBD II-C2
Avalanche	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
Aztec	A/B	E	3.4L SFI	PCM	Class 2	OBD II-C2
Blazer	S/T	X	4.3L MFI	PCM	Class 2	OBD II-C2
Bravada	S/T	S	4.2L MFI	PCM	Class 2	OBD II-C2
Escalade	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
	K	N	6.0L MFI	PCM	Class 2	OBD II-C2
Express/Savana	G/H	X	4.3L MFI	PCM	Class 2	OBD II-C2
		V	4.8L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
GTO	V	G	5.7L SFI	PCM	Class 2	OBD II-C2
Hummer (H2)	N	U	6.0L MFI	PCM	Class 2	OBD II-C2
Montana	U/X/V	E	3.4L SFI	PCM	Class 2	OBD II-C2
P Series Box Truck	B	Y	6.5L Turbo Diesel	PCM	Class 2	OBD II-C2
Rendezvous	A/B	E	3.4L SFI	PCM	Class 2	OBD II-C2
S-10/Sonoma Pick-Up	S/T	H	2.2L SFI	PCM	Class 2	OBD II-C2
		X	4.3L MFI	PCM	Class 2	OBD II-C2
Silhouette	X/V	E	3.4L SFI	PCM	Class 2	OBD II-C2
Silverado/Sierra Full-Size Pick-Up	C/K	X	4.3L MFI	PCM	Class 2	OBD II-C2
		V	4.8L MFI	PCM	Class 2	OBD II-C2
		Z	5.3L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
		1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2

2003 BUICK/CADILLAC/CHEVROLET/GMC/OLDSMOBILE PONTIAC TRUCKS/VANS/MPVs (CONTINUED)

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Suburban	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
SSR	S	P	5.3L MFI	PCM	Class 2	OBD II-C2
Tahoe	C/K	V	4.8L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
Trailblazer/ Envoy	S/T	S	4.2L MFI	PCM	Class 2	OBD II-C2
		P	5.3L MFI	PCM	Class 2	OBD II-C2
Venture	U/X/V	E	3.4L SFI	PCM	Class 2	OBD II-C2
Yukon XLE/XLT/ Denali	C/K	V	4.8L MFI	PCM	Class 2	OBD II-C2
		Z	5.3L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2

2003 CHEVROLET/GMC MEDIUM DUTY TRUCKS

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
B7 Chassis	Multiple	U	6.0L MFI	PCM	Class 2	OBD II-C2
		1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2
C- Series	Multiple	U	6.0L MFI	PCM	Class 2	OBD II-C2
		1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2
T-Series	Multiple	U	6.0L MFI	PCM	Class 2	OBD II-C2
		1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2
W4-Series	Multiple	U	6.0L MFI	PCM	Class 2	OBD II-C2
		1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2

2004 VEHICLE COVERAGE

2004 BUICK PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Century	W	J	3.1L SFI	PCM	Class 2	OBD II-C2
Regal	W	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Park Avenue	C	K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Le Sabre	H	K	3.8L SFI	PCM	Class 2	OBD II-C2

2004 CADILLAC PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
CTS	D	S	5.7L V8	PCM	Class 2	OBD II-C2
DeVille DHS/ DTS	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2
		9	4.6L SFI	PCM	Class 2	OBD II-C2
Seville SLS/STS	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2
		9	4.6L SFI	PCM	Class 2	OBD II-C2
Livery/Hearse/ Limo	K	Y	4.6L SFI	PCM	Class 2	OBD II-C2
		9	4.6L SFI	PCM	Class 2	OBD II-C2

2004 CHEVROLET PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Cavalier	J	F	2.2L MFI	PCM	Class 2	OBD II-C2
Monte Carlo	W	E	3.4L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2

2004 CHEVROLET PASSENGER CARS (CONTINUED)

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Impala	W	E	3.4L SFI	PCM	Class 2	OBD II-C2
		K	3.8L SFI	PCM	Class 2	OBD II-C2
		1	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Corvette	Y	G	5.7L SFI	PCM	Class 2	OBD II-C2
		S	5.7L SFI	PCM	Class 2	OBD II-C2
Malibu	Z	F	2.2L MFI	PCM	Class 2	OBD II-C2

2004 OLDSMOBILE PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Alero	N	F	2.2L MFI	PCM	Class 2	OBD II-C2
		E	3.4L SFI	PCM	Class 2	OBD II-C2

2004 PONTIAC PASSENGER CARS

MODEL	BODY VIN (4TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Sunfire	J	F	2.2L MFI	PCM	Class 2	OBD II-C2
Grand Am	N	F	2.2L MFI	PCM	Class 2	OBD II-C2
		E	3.4L SFI	PCM	Class 2	OBD II-C2
Grand Prix	W	2	3.8L SFI	PCM	Class 2	OBD II-C2
		4	3.8L SFI Supercharged	PCM	Class 2	OBD II-C2
Bonneville	H	K	3.8L SFI	PCM	Class 2	OBD II-C2
		Y	4.6L SFI	PCM	Class 2	OBD II-C2
GTO	V	G	5.7L SFI	PCM	Class 2	OBD II-C2

2004 BUICK/CADILLAC/CHEVROLET/GMC/OLDSMOBILE PONTIAC TRUCKS/VANS/MPVs

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Astro/Safari	M/L	X	4.3L MFI	PCM	Class 2	OBD II-C2
Avalanche	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
Aztec	A/B	E	3.4L SFI	PCM	Class 2	OBD II-C2
Blazer/Jimmy	S/T	X	4.3L MFI	PCM	Class 2	OBD II-C2
Bravada	S/T	S	4.2L MFI	PCM	Class 2	OBD II-C2
Colorado/ Canyon	S/T	8	2.8L L4	PCM	Class 2	OBD II-C2
		6	3.5L L5	PCM	Class 2	OBD II-C2
Escalade	C/K	T	5.3L MFI	PCM	Class 2	OBD II-C2
		N	6.0L MFI	PCM	Class 2	OBD II-C2
Express/Savana	G/H	X	4.3L MFI	PCM	Class 2	OBD II-C2
		V	4.8L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
Hummer (H2)	N	U	6.0L MFI	PCM	Class 2	OBD II-C2
Montana	U/X/V	E	3.4L SFI	PCM	Class 2	OBD II-C2
Rendezvous	A/B	E	3.4L SFI	PCM	Class 2	OBD II-C2
S-10/Sonoma Pick-Up	S/T	X	4.3L MFI	PCM	Class 2	OBD II-C2
Silhouette	X/V	E	3.4L SFI	PCM	Class 2	OBD II-C2
Silverado/ Silverado SS/ Sierra Full-Size Pick-Up	C/K	X	4.3L MFI	PCM	Class 2	OBD II-C2
		V	4.8L MFI	PCM	Class 2	OBD II-C2
		Z	5.3L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		N	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2
		1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		2	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
SSR	S	P	5.3L MFI	PCM	Class 2	OBD II-C2
Suburban	C/K	Z	5.3L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2

2004 BUICK/CADILLAC/CHEVROLET/GMC/OLDSMOBILE PONTIAC TRUCKS/VANS/MPVs (CONTINUED)

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
Tahoe	C/K	V	4.8L MFI	PCM	Class 2	OBD II-C2
		Z	5.3L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
Trailblazer/ Envoy/Rainier	S/T	S	4.2L MFI	PCM	Class 2	OBD II-C2
		P	5.3L MFI	PCM	Class 2	OBD II-C2
Venture	U/X/V	E	3.4L SFI	PCM	Class 2	OBD II-C2
Yukon XLE/XLT/ Denali	C/K	V	4.8L MFI	PCM	Class 2	OBD II-C2
		Z	5.3L MFI	PCM	Class 2	OBD II-C2
		T	5.3L MFI	PCM	Class 2	OBD II-C2
		U	6.0L MFI	PCM	Class 2	OBD II-C2
		G	8.1L MFI	PCM	Class 2	OBD II-C2

2004 CHEVROLET/GMC MEDIUM DUTY TRUCKS

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
B7 Chassis	Multiple	1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		2	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		3	7.8L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2
Kodiak/TopKick C4500/C5500	Multiple	1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		2	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		3	7.8L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2
Kodiak/TopKick C6500/C7500/ C8500	Multiple	1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		2	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		3	7.8L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2
GMT 560 T-Series	Multiple	1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		2	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		3	7.8L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2

2004 CHEVROLET/GMC MEDIUM DUTY TRUCKS

MODEL	BODY VIN (5TH)	ENGINE VIN (8TH)	ENGINE	ECU TYPE	DATA LINK	ADAPTER CONFIG.
W4-Series	Multiple	1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		2	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		3	7.8L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2
WT5500	Multiple	1	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		2	6.6L Turbo Diesel	PCM	Class 2	OBD II-C2
		3	7.8L Turbo Diesel	PCM	Class 2	OBD II-C2
		E	8.1L MFI	PCM	Class 2	OBD II-C2

4. GETTING STARTED

This chapter provides information to assist you in operating your Vetronix tester and software application. In addition to helping you identify vehicles covered by the software, it shows you how to connect your tester to the vehicle and explains how to begin performing system diagnostic functions. It is suggested that you read this manual completely before operating the tester and the system software.

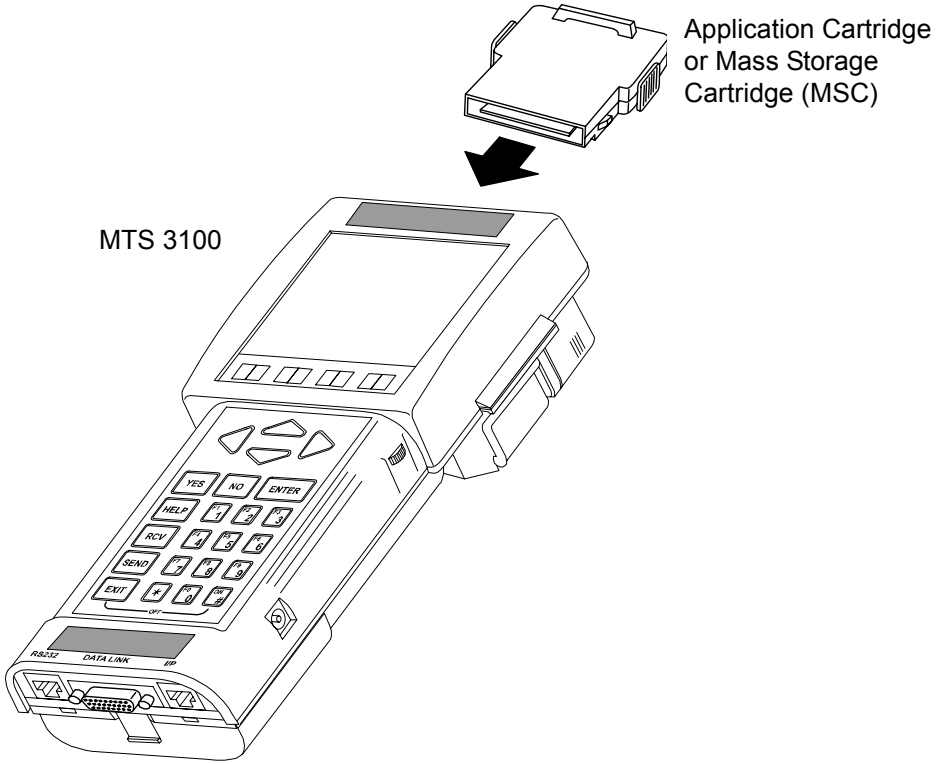
SETTING UP THE TESTER

MTS 3100

Before you operate the application software, do the following:

1. Make sure the vehicle ignition is OFF.
2. Connect the tester DLC (formerly called the ALDL) cable to the tester and tighten the screws.
3. Insert the cartridge into the slot at the top rear of the tester.

FIGURE 4-1. Inserting Cartridge into the MTS 3100



4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 113* for information on selecting the correct adapters.
5. Locate the vehicle DLC. Connect the DLC cable, or the adapter attached to the end of the DLC cable, to the vehicle. All 1994 and newer 16-Pin DLCs are located under the left side of the dashboard. Refer to the vehicle service manual for the DLC location on 1981-1995 vehicles that are not equipped with a 16-Pin DLC. Continue to *Powering Up the Tester on page 107*.

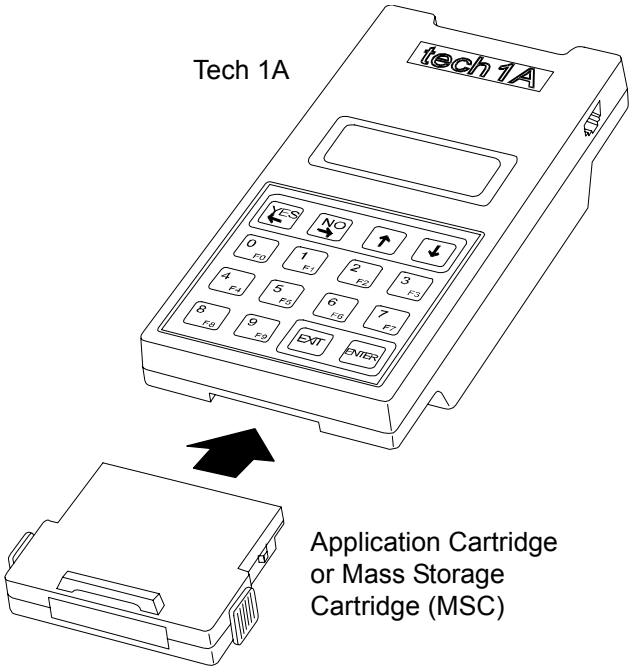
TECH 1A

Before you operate the Tech 1A, do the following:

1. Make sure the vehicle ignition is OFF.
2. Connect the tester DLC (formerly called the ALDL) cable to the tester and tighten the screws.
3. Insert the application into the Master Cartridge slot on the bottom, rear of the tester. Verify that no other "Master" cartridge is installed in the tester.

   If the system being tested uses Class 2 data type, Alliance and aftermarket service centers using a Tech 1A tester must also insert the OBD II Interface Cartridge into the top slot of the Tech 1A.

FIGURE 4-2. Inserting Cartridge into the Tech 1A



4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 113* for information on selecting the correct adapters.
5. Locate the vehicle DLC. Connect the DLC cable, or the adapter attached to the end of the DLC cable, to the vehicle. All 1994 and newer 16-Pin DLCs are located under the left side of the dashboard. Refer to the vehicle service manual for the DLC location on 1981-1995 vehicles that are not equipped with a 16-Pin DLC. Continue to *Powering Up the Tester on page 107*.

TECH 1

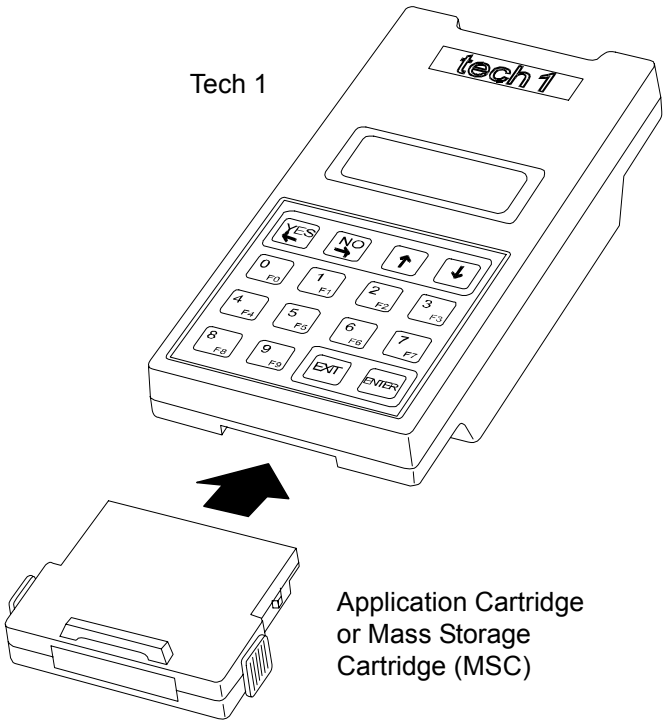
Before you operate the Tech 1, do the following:

1. Make sure the vehicle ignition is OFF.
2. Connect the tester DLC (formerly called the ALDL) cable to the tester and tighten the screws.

NOTE	If you are testing a vehicle with an RWAL or 4WAL system you must use a revised 12-pin DLC cable (P/N 02001578) to connect the tester to the vehicle. The revised cable is easily identified by the power port built into the connector on the vehicle end of the cable. The revised cable works with all other vehicle systems and tester cartridges.

3. Insert the application into the Master Cartridge slot on the bottom, rear of the tester. Verify that no other "Master" cartridge is installed in the tester.

FIGURE 4-3. Inserting Cartridge into the Tech 1



4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 113* for information on selecting the correct adapters.
5. Locate the vehicle DLC. Connect the DLC cable, or the adapter attached to the end of the DLC cable, to the vehicle. All 1994 and newer 16-Pin DLCs are located under the left side of the dashboard. Refer to the vehicle service manual for the DLC location on 1981-1995 vehicles that are not equipped with a 16-Pin DLC. Continue to *Powering Up the Tester*.

POWERING UP THE TESTER

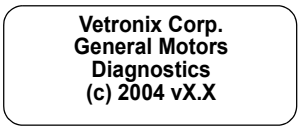
1988-95 vehicles equipped with a 12 pin DLC require powering the tester via the DC Power Cable. Connect the DC Power Cable to the vehicle cigarette lighter or the optional Battery Adapter Cable which connects to the vehicle battery.

When testing a 1995 to present vehicles equipped with a 16-pin DLC, the tester is powered through the DLC Cable (except when using a Tech 1 tester). Continue to *Selecting the Application*.

SELECTING THE APPLICATION

1. Once the tester is powered, one of the following screens is displayed:

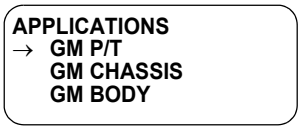
16MB Mass Storage Cartridge (MSC)



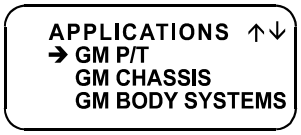
General Motors Diagnostic Cartridge

2. Press ↑ or wait two seconds to proceed to the Applications menu screen.

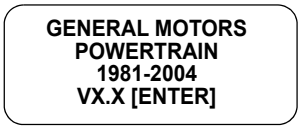
   The available software applications are displayed:



3. Select the application. If your application is on a MSC, use the ↑ and ↓ keys to move the cursor (arrow), then press ENTER. If the application is on a MAC, select the function key next to the desired application.

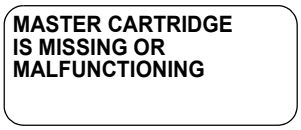


4. The GM Powertrain identification screen is displayed.



5. If the display is correct, turn the ignition *ON* and you are ready to proceed with selecting the vehicle model year. Continue to *Selecting the Model Year on page 109*.

If the display reads:



This means that the tester is receiving power but the cartridge is not making good contact, or else the wrong DLC cable and/or adapter are installed. If this happens, do the following:

- Remove and reinsert the cartridge making sure that the cartridge is properly seated.
- Verify that the correct DLC cable is installed.
- See *Setting Up the Tester* to determine if the vehicle you are testing requires a DLC cable adapter. If an adapter is required, verify that the correct one is installed.

If the display is blank, the tester is not receiving power. In this case, perform the following checks:

- Disconnect and reconnect the tester DC power plug at the cigarette lighter socket.
- Make sure that both the tester DC power plug and cigarette lighter socket have good, clean contacts.
- Verify that 12V power is available at the center contact of the cigarette lighter socket, and that the outside contact of the lighter socket is grounded.
- Check the vehicle's cigarette lighter fuse.
- Check the fuse in the cigarette lighter plug on the end of the tester DC power cable.

If the display is still not correct, Appendix B lists possible causes for the malfunction and recommendations to remedy the problem. If the problem persists, perform the tester Self-test as described in the basic tester Operator's Manual.

NOTE

The tester Self-test does not operate with the GM Chassis Software Cartridge installed.

ACTIVE KEYS	
ENTER	Confirm displayed information is correct. Advance to next display. Select previously tested vehicle.
F0 - F9	Used to select a menu item.
↑ , ↓	Used to select menu item. Stop automatic menu scroll. Manually scroll menu.
EXIT	Return to previous display.

PERFORM VEHICLE AND/OR SYSTEM SELECTION

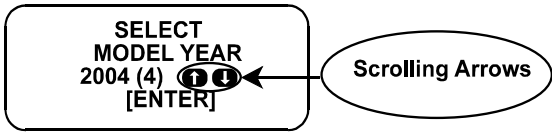
SELECTING THE MODEL YEAR

1. From the Power-Up menu, press ENTER to enter the vehicle selection mode.
2. If the tester "remembers" the last vehicle you tested, it gives you the option of continuing with the testing of that vehicle. Enter the model year on the keypad to start testing of a new vehicle, or press YES to continue testing the same vehicle. Generally, the tester "remembers" the previous vehicle under test if it has been less than 24 hours and you have not removed the application cartridge from the tester.

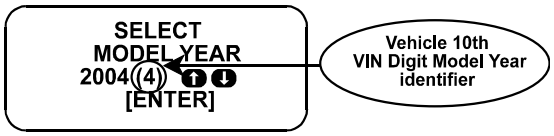
> **NOTE**
>
> If you select a new vehicle, or the same vehicle as before but do not press YES, any data saved from previous testing is erased. This includes Snapshot and Review Codes.

3. The model year selection screen defaults to the current year. The ↑ or ↓ arrow key scrolls through the available model years.

> **NOTE**
>
> Holding down the ↑ or ↓ arrow key results in fast scrolling.



The brackets to the right of the model year represent the 10th VIN digit (year identifier) for easier model year identification.



When the correct model year appears on the screen, press the ENTER key to advance the software to the next vehicle selection screen.

Quick keys are also available for entering the model year. From the SELECT MODEL YEAR screen, select the last two digits of the model year from the key pad to advance to the next vehicle selection screen (For example, pressing 9 and 2 selects 1992). Pressing EXIT returns the software back to the SELECT MODEL YEAR screen.

The first of a series of vehicle selection screens is displayed. From the SELECT MODEL YEAR screen, you have the option of identifying the vehicle you are testing by entering the Vehicle Identification Number (VIN), by selecting the fuel system type, by selecting a Cadillac vehicle or a Diesel vehicle. Press the key to the left of the method you wish to use. The options available in the Select menu are

dependent on the year model of the vehicle being tested. Therefore, not all options shown below are available for every vehicle.

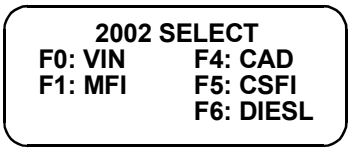


FIGURE 4-4. Example of a 2002 SELECT Menu

4. Depending on the method you choose and the model year of the vehicle being tested, several more vehicle identification screens may be displayed.

SELECTING A VEHICLE BY VIN CODE

If the VIN code select method has been chosen, the tester displays every VIN code (8th Digit) available for the selected model year. To select a given VIN code simply press NO, ↑, or ↓ until the desired VIN code is flashing, then press ENTER. Holding the NO key down causes continuous scrolling of the flashing cursor.

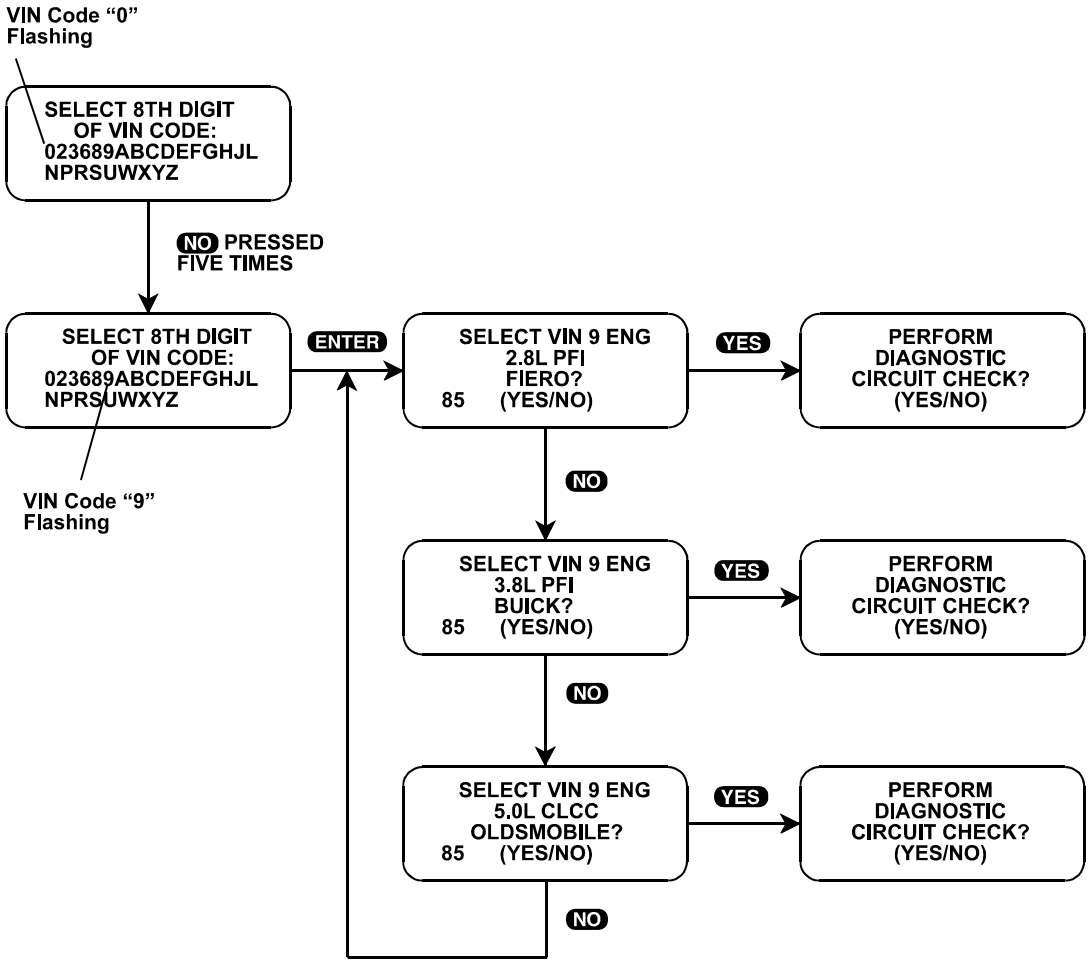
The tester displays a description of an engine and vehicle body type with the selected VIN. If the engine and vehicle type select message is correct, press YES.

In some cases, a given VIN code applies to more than one engine or vehicle type. In this case, if the vehicle identification message does not correspond to the vehicle being tested, press NO until the displayed information matches the vehicle, then press YES.

After YES is pressed, other screens asking for information about the vehicle may be displayed.

If none of the vehicle identification messages correspond to the vehicle, go back and recheck the VIN code (8th digit) and model year (10th Digit).

FIGURE 4-5. Example of Selecting a 1985 VIN “9” Engine Equipped Vehicle



SELECTING THE VEHICLE BY FUEL SYSTEM

Select the fuel system type for the vehicle being tested from the Select menu. The tester displays a vehicle description. Press **NO** until the information on the screen matches the vehicle being tested, then press **YES**.

SELECTING A CADILLAC VEHICLE

When F4: CAD is selected from the Select menu, the tester displays a vehicle description. Press **NO** until the information on the screen matches the vehicle being tested, then press **YES**.

SELECTING A DIESEL VEHICLE

When F6: DIESL is selected from the Select menu, the tester displays a vehicle description. Press **NO** until the information on the screen matches the vehicle being tested, then press **YES**.

SELECTING THE TRANSMISSION TYPE

For some models, the transmission type must be selected. Press the key to the left of the menu item that matches the vehicle you are testing.

SELECTING THE BODY TYPE

For some models, the body type must be selected (examples: C, B body, 2-door, 4-door). Press the key to the left of the menu item that matches the vehicle you are testing.

SELECTING OTHER VEHICLE CONFIGURATIONS

In addition to the following examples of vehicle configuration selections, you may be asked to identify other options (such as AIR Pump, Cal/Fed, Traction Control, etc.).

SELECTING THE GVWR TYPE

For some models, the Gross Vehicle Weight Rating must be selected (examples: under 8500, over 8500). Press the key to the left of the menu item that matches the vehicle you are testing.

SELECTING THE TBI GOVERNOR TYPE

For some models, indication of the TBI Governor equipped engine must be selected. Press YES or NO to indicate equipment that matches the vehicle being tested.

SELECTING THE TRANSFER CASE

For some models, the transfer case must be selected (examples: 2 SPD ATC, Borg Wagner, 263 NVG). Press the key to the left of the menu item that matches the vehicle being tested. For additional assistance, refer to the *ATC Selection Tables on page 204* to help determine the vehicle's transfer case.

PERFORM DIAGNOSTIC CIRCUIT CHECK

Once the vehicle type has been selected, the Diagnostic Circuit Check may be available. ECM or TCM equipped vehicles allow the option of either running the test or going straight to the Select Mode menu.

REVIEW STORED SNAPSHOT OR CAPTURED DATA

When certain systems are selected, the tester asks if you wish to view previously stored Snapshot data. Press YES to view the data or NO to continue the vehicle selection process. The tester warns you if the Snapshot or captured data is not from the selected vehicle.

ACTIVE KEYS	
ENTER	Confirm displayed information is correct. Advance to next display. Select previous vehicle tested. Select a VIN.
F0 - F9	Used to select a menu item.
YES , NO	Used to select a VIN and other information.
↑ , ↓	Used to select a VIN. Stop automatic menu scroll, manually scroll menu.
EXIT	Return to previous display.

ADAPTER AND ADAPTER CABLE CONFIGURATIONS

The proper Data Link Connector (DLC) adapter or adapter cable for the vehicle being tested must be connected to the tester DLC Cable in order to connect the tester to the vehicle.

The following Vehicle Adapter tables identify which adapters and cables are required to connect each type of tester to the various GM vehicles.

All adapters, cables, and any other hardware required to connect the tester to the vehicle are listed in the chart. The Figure Number in the chart refers to the adapter and cable illustrations on the pages following the chart.

TABLE 4-1. Vehicle Adapters Required

VEHICLE	ADAPTER CONFIG.	TESTER	ADAPTER DESCRIPTION	FIG.NO.
All 1981 vehicles and 1982 J-Car with 5-Pin DLC	GM-5	MTS 3100	GM 12/5-Pin (P/N 02002009) GM 12/14 (P/N 02001384)	Figure 4-6
		Tech 1A	GM 12/5-Pin (P/N 02002009) GM 12/14 (P/N 02001384)	Figure 4-7
		Tech 1	GM 12/5-Pin (P/N 02002009)	Figure 4-8
1983-95 vehicles with 12-Pin DLC	GM	MTS 3100	GM 12/14 (P/N 02001384)	Figure 4-9
		Tech 1A	GM 12/14 (P/N 02001384)	Figure 4-10
		Tech 1	NONE	Figure 4-11

TABLE 4-1. Vehicle Adapters Required (Continued)

VEHICLE	ADAPTER CONFIG.	TESTER	ADAPTER DESCRIPTION	FIG.NO.
1986-89 5.0/5.7L PFI, F- and Y-Cars	GM-E	MTS 3100	GM 12/12 Pin-E (P/N 02001244) GM 12/14 (P/N 02001384)	Figure 4-12
		Tech 1A	GM 12/12 Pin-E (P/N 02001244) GM 12/14 (P/N 02001384)	Figure 4-13
		Tech 1	GM 12/12 Pin-E (P/N 02001244)	Figure 4-14
1994-95 C, H, Y cars (non OBD II) 1995 G cars (non-OBD II)	GM-16	MTS 3100	GM 16/12 pin Non-OBD II Adapter (P/N 02001575) GM 12/14 pin (P/N 02001384)	Figure 4-12
		Tech 1A	GM 16/12 pin Non-OBD II Adapter (P/N 02001575) GM 12/14 pin (P/N 02001384)	Figure 4-13
		Tech 1	GM 16/12 pin Non-OBD II Adapter (P/N 02001575)	Figure 4-14
1989 GEO Spectrum 1.5L VIN 7 1990-93 GEO Storm 1.6L VIN 5, 6 1992-93 GEO Storm 1.8L VIN 8	GM-D	MTS 3100	GM Isuzu/Delco 3-pin Adapter (P/N 02001325) GM 12/14 pin (P/N 02001384)	Figure 4-15
		Tech 1A	GM Isuzu/Delco 3-pin Adapter (P/N 02001325) GM 12/14 pin (P/N 02001384)	Figure 4-16
		Tech 1	GM Isuzu/Delco 3-pin Adapter (P/N 02001325)	Figure 4-17

TABLE 4-1. Vehicle Adapters Required (Continued)

VEHICLE	ADAPTER CONFIG.	TESTER	ADAPTER DESCRIPTION	FIG.NO.
All 1994 and newer with 16-Pin DLC (OBD II)	OBD II-C2	MTS 3100	Controller Area Network VIM (P/N F-00K-108-115 16/24-pin DLC Adapter Cable (P/N 02001744)	Figure 4-18
	OBD II-C[a]	MTS 3100	Controller Area Network VIM (P/N 02003211) 16/24-pin DLC Adapter Cable (P/N 02001744)	Figure 4-19
	OBD II[a]	Tech 1A	OBD II I/F Cartridge (P/N 02002178) 16/14-pin DLC Cable (P/N 02001969)	Figure 4-20
			OBD II VIM[b] (P/N 02001808) 16/24-pin DLC Cable (P/N 02001744)	Figure 4-21
		Tech 1	OBD II VIM[b] (P/N 02001808) or 14/15-pin DLC Cable[b] (P/N 02001744)	Figure 4-22

a. OBD II and OBD II-C are early adapter cable configurations utilized by the tester to communicate with systems connected to the OBD II DLC. If you have one of these configurations, please reference OBD II-C2 in the Adapter Config. column of the vehicle coverage tables for the vehicle you are diagnosing.

b. Standard GM Dealer Configuration

FIGURE 4-6. GM-5 Configuration for MTS 3100

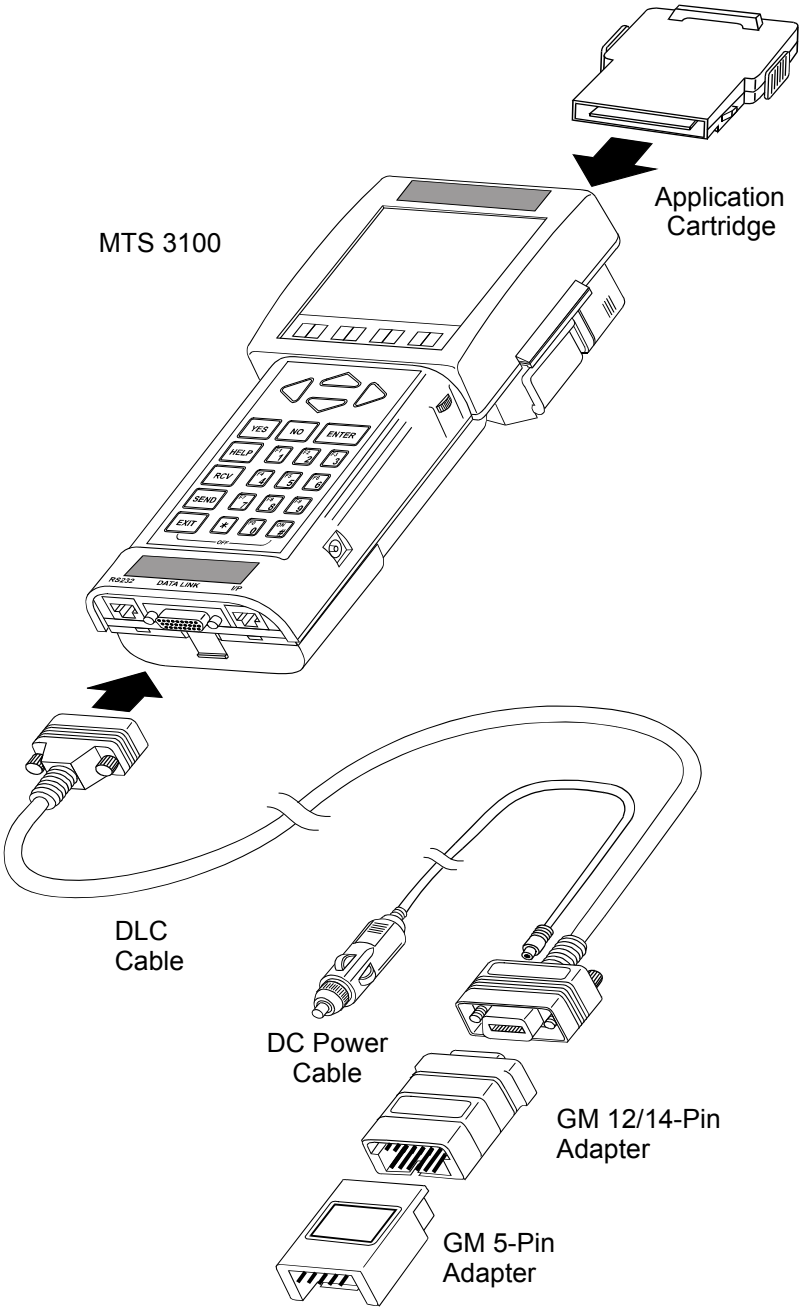


FIGURE 4-7. GM-5 Configuration for Tech 1A

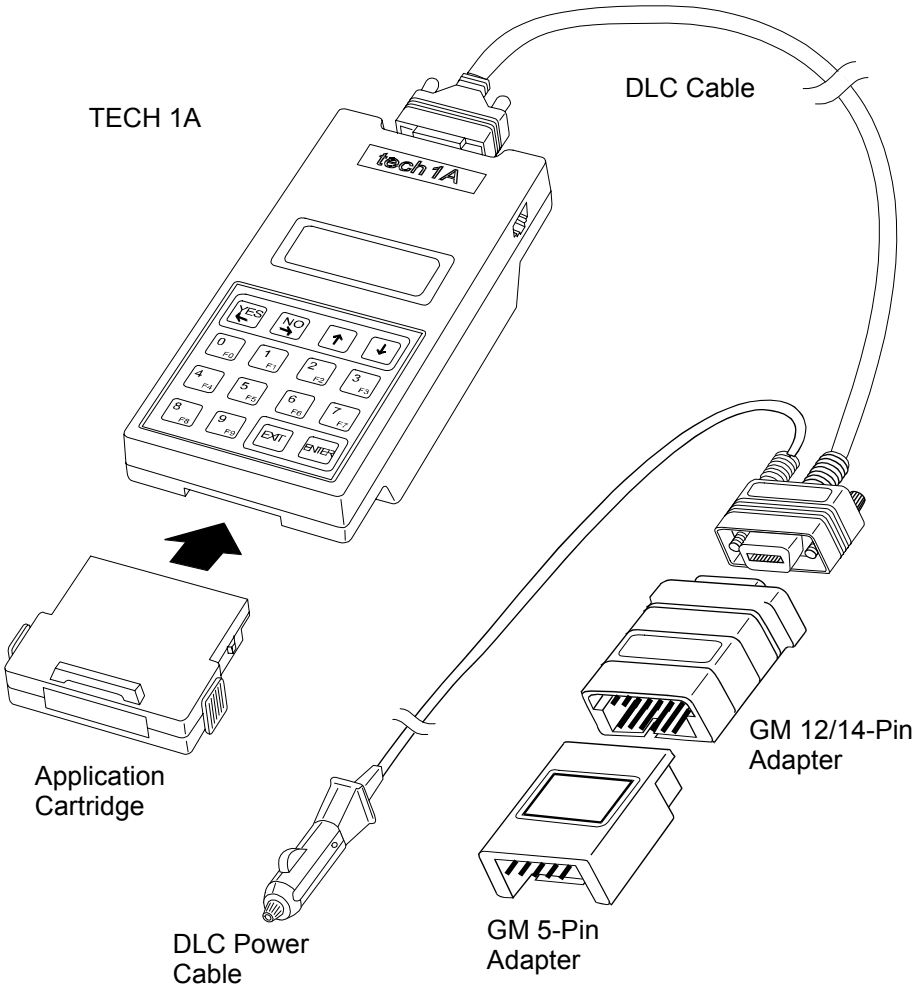


FIGURE 4-8. GM-5 Configuration for Tech 1

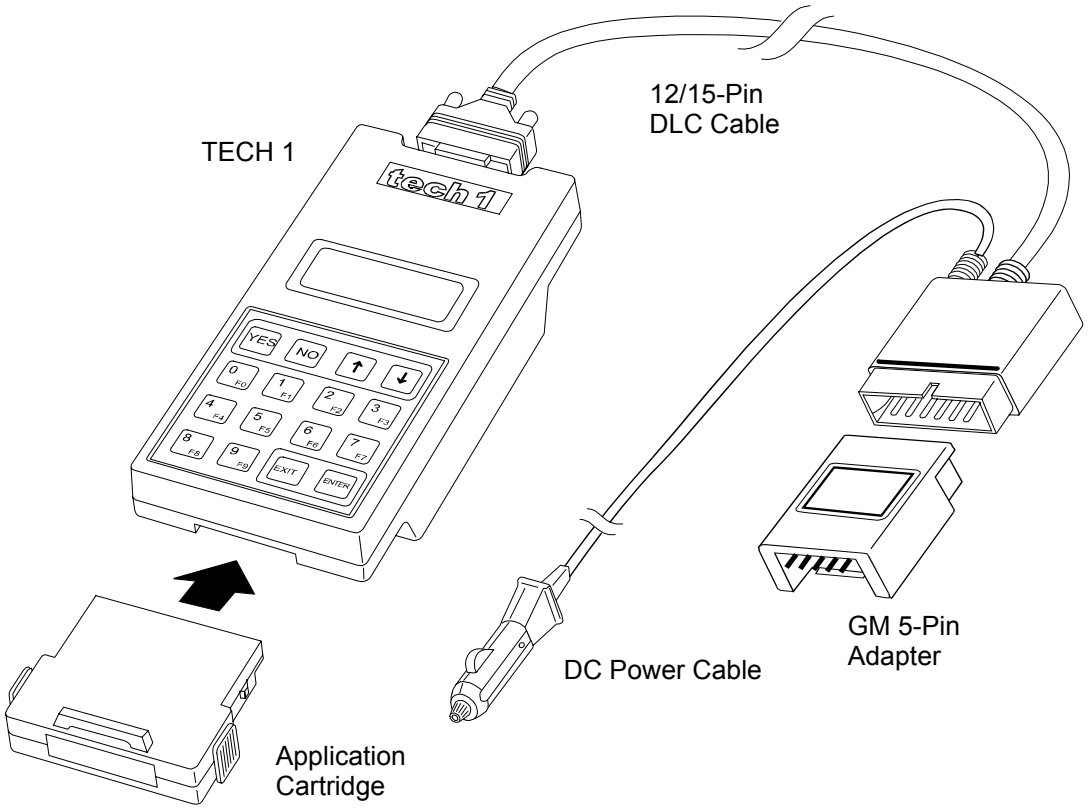


FIGURE 4-9. GM Configuration for MTS 3100

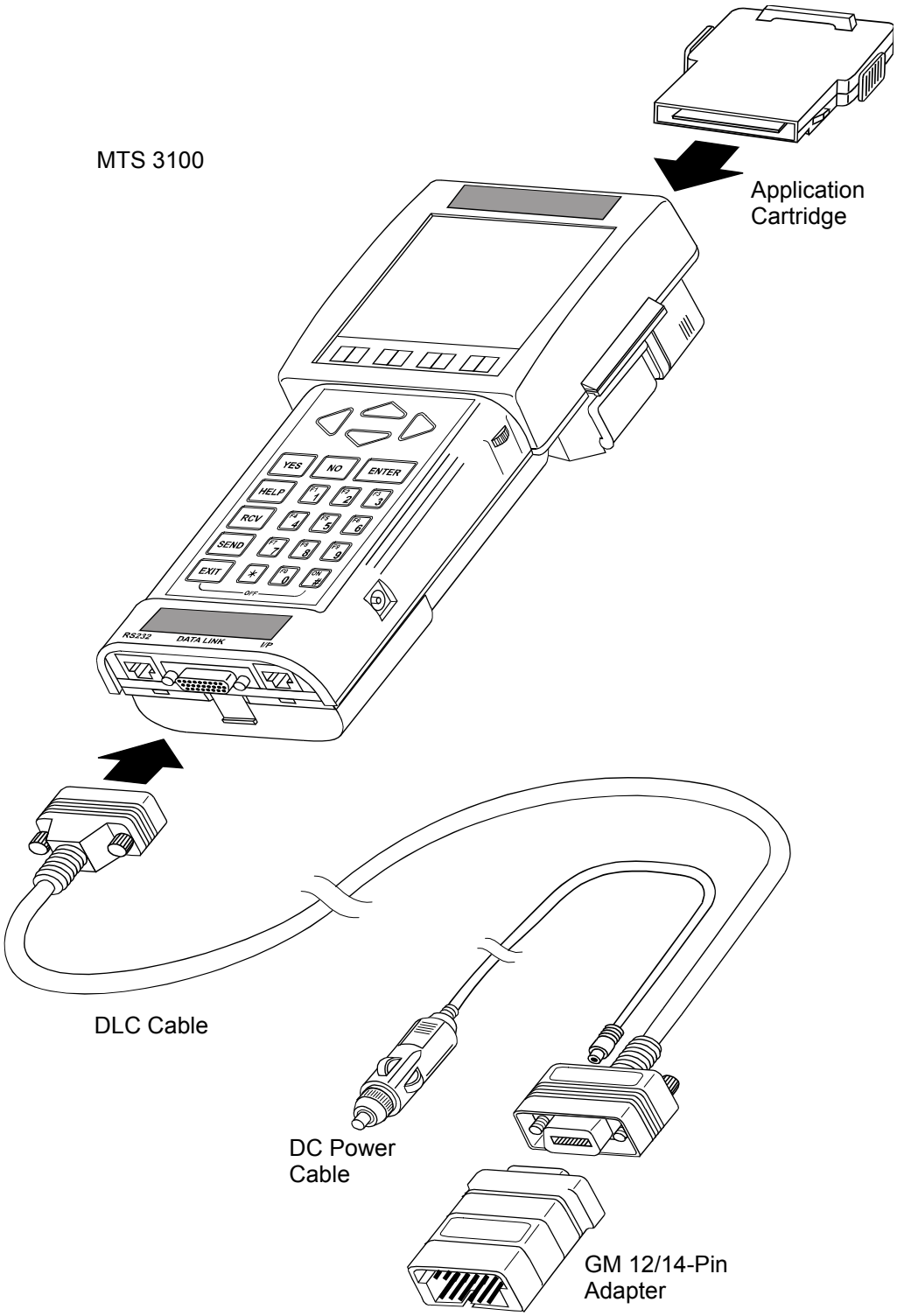


FIGURE 4-10. GM Configuration for Tech 1A

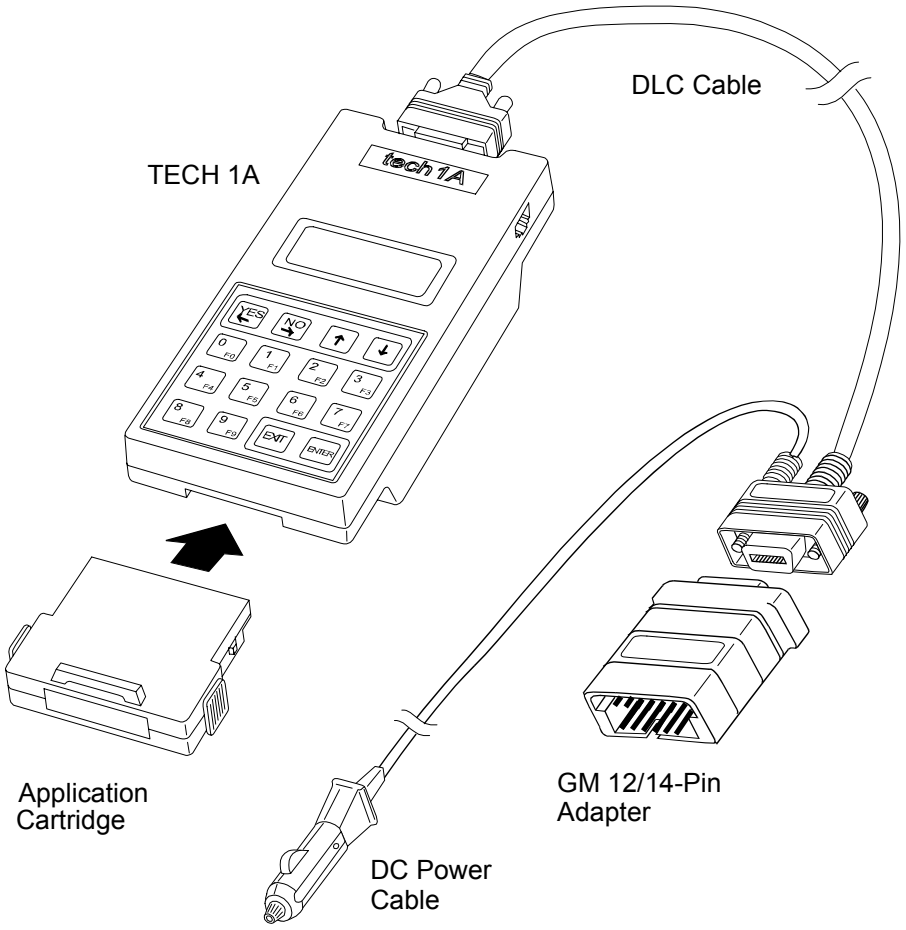


FIGURE 4-11. GM Configuration for Tech 1

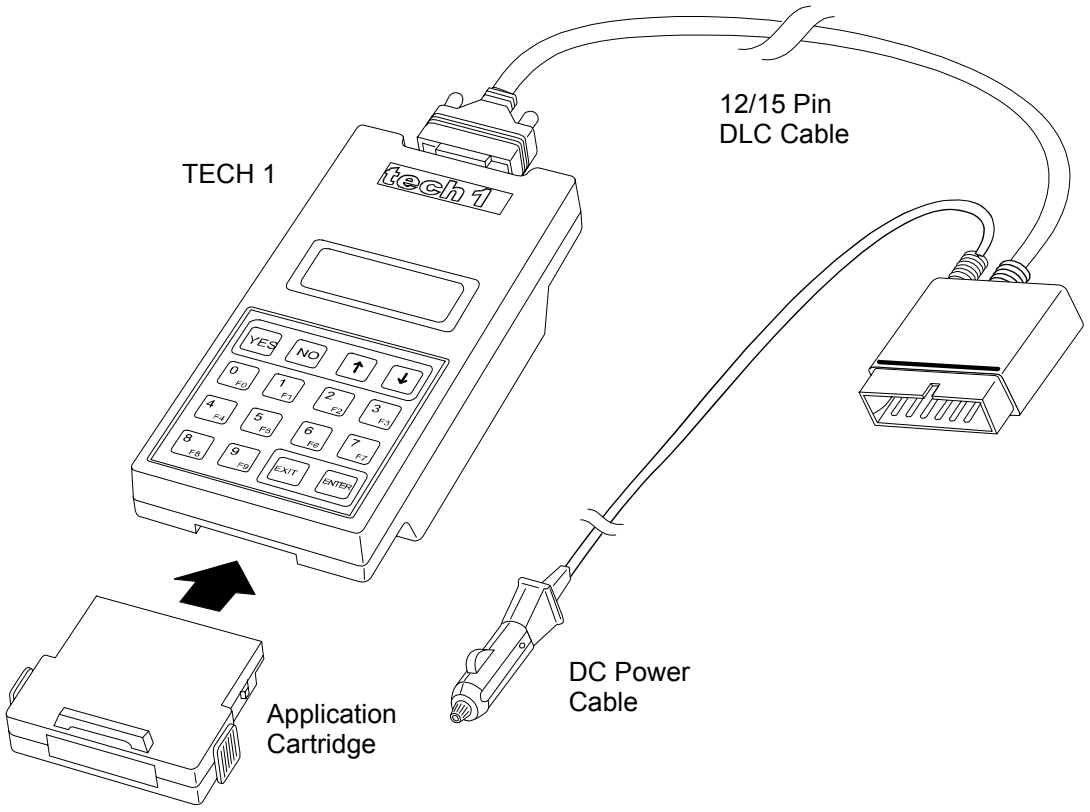


FIGURE 4-12. GM-16/GM-E Configuration for MTS 3100

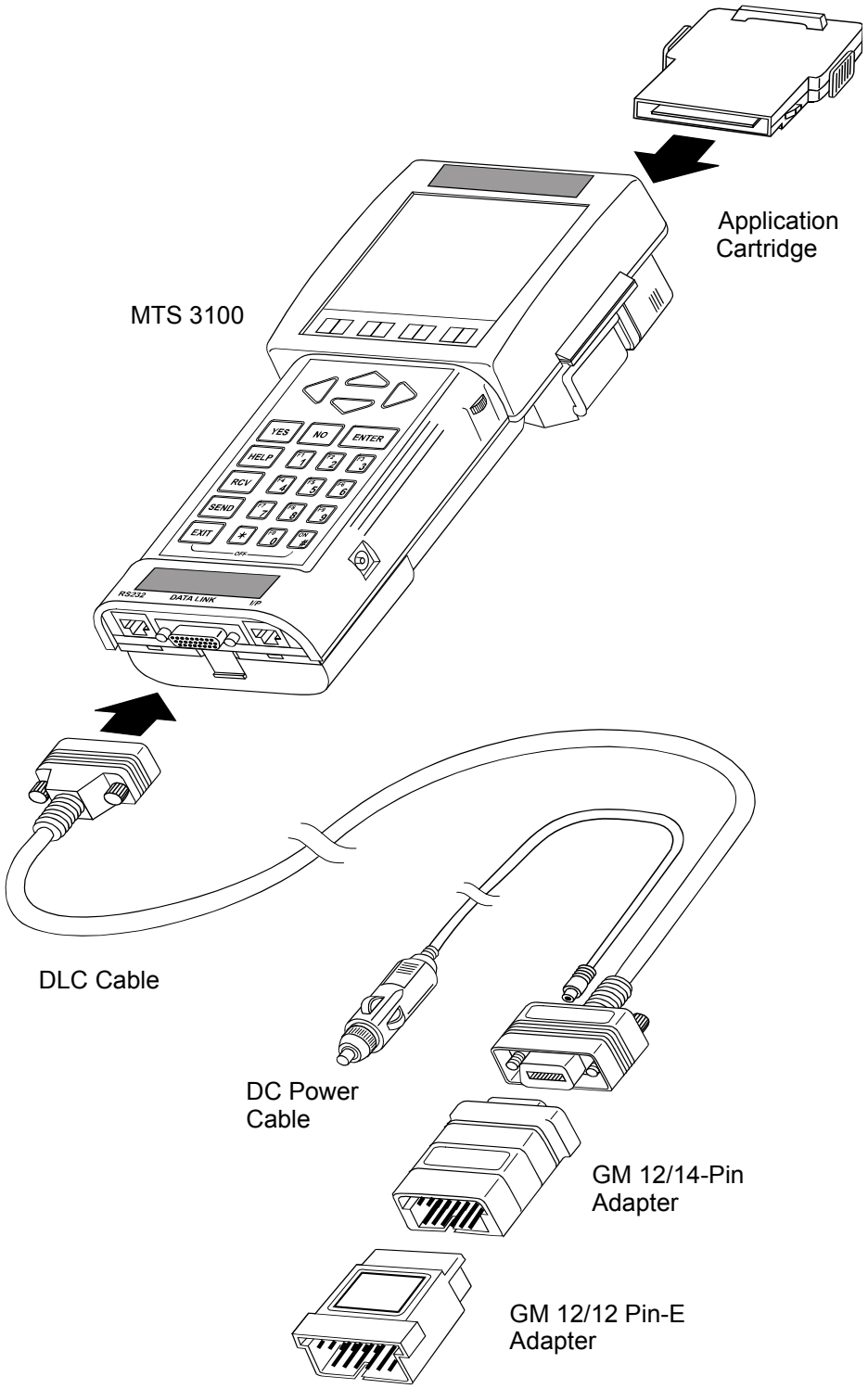


FIGURE 4-13. GM-16/GM-E Configuration for Tech 1A

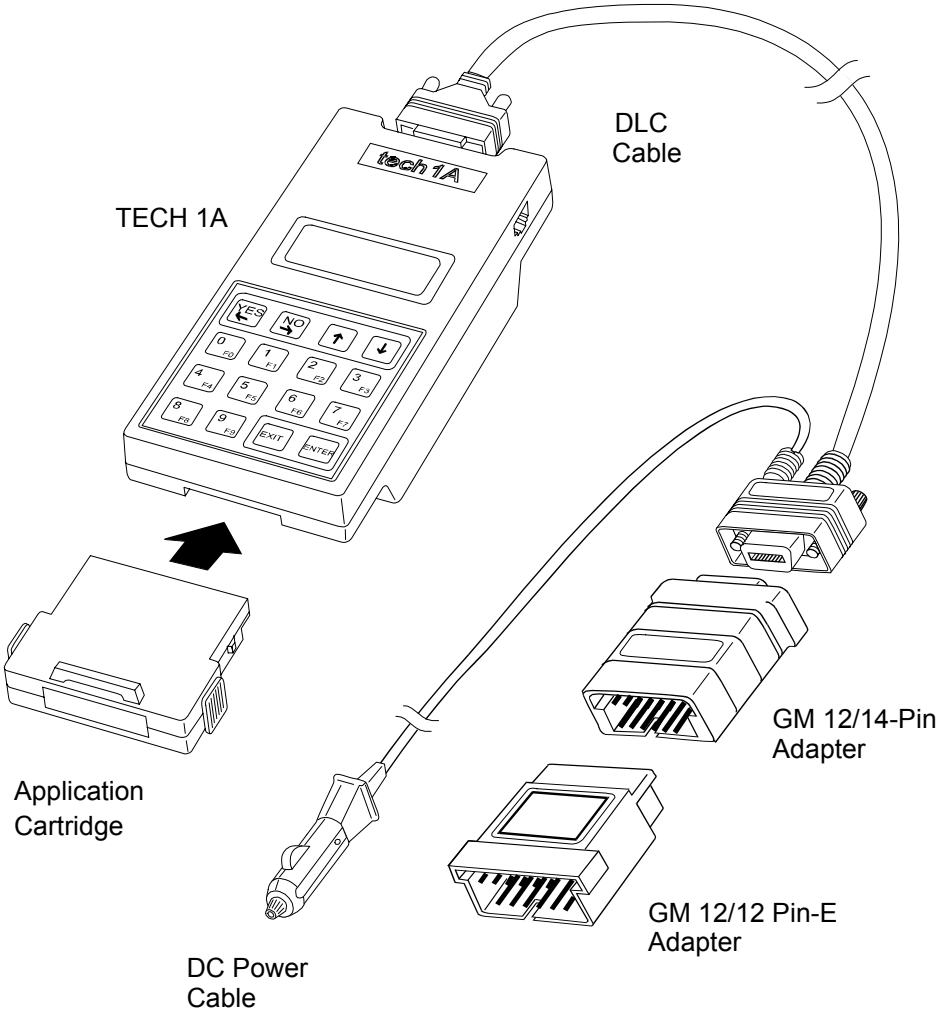


FIGURE 4-14. GM-16/GM-E Configuration for Tech 1

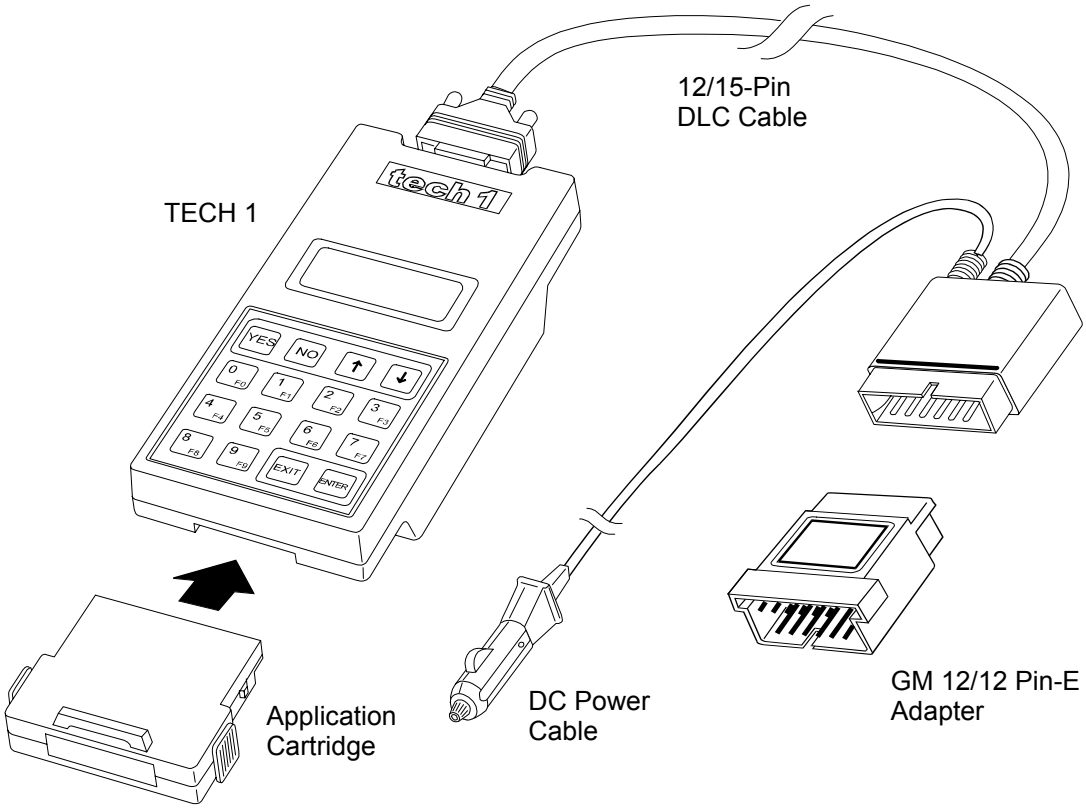


FIGURE 4-15. GM-D Configuration for MTS 3100

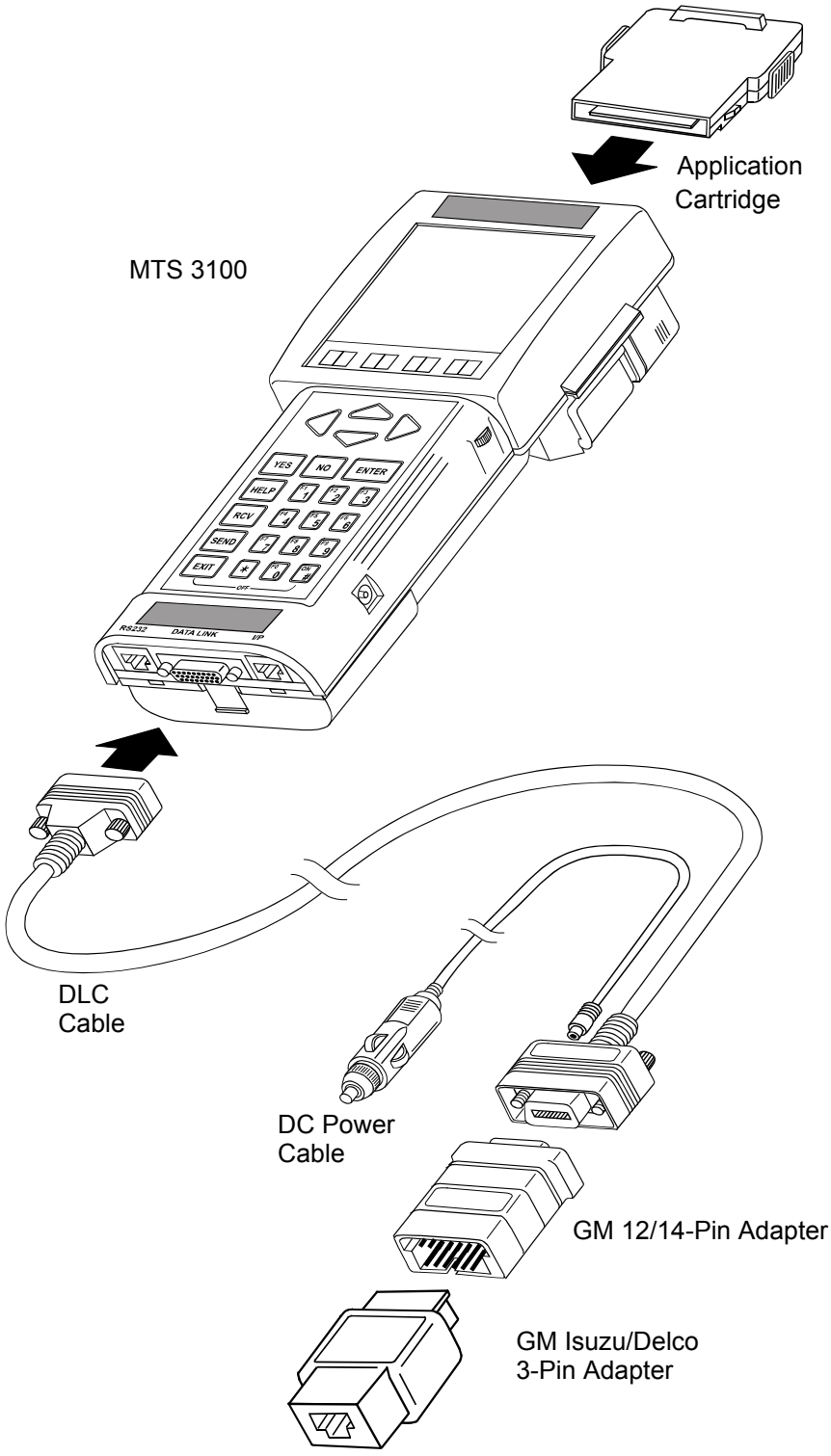


FIGURE 4-16. GM-D Configuration for Tech 1A

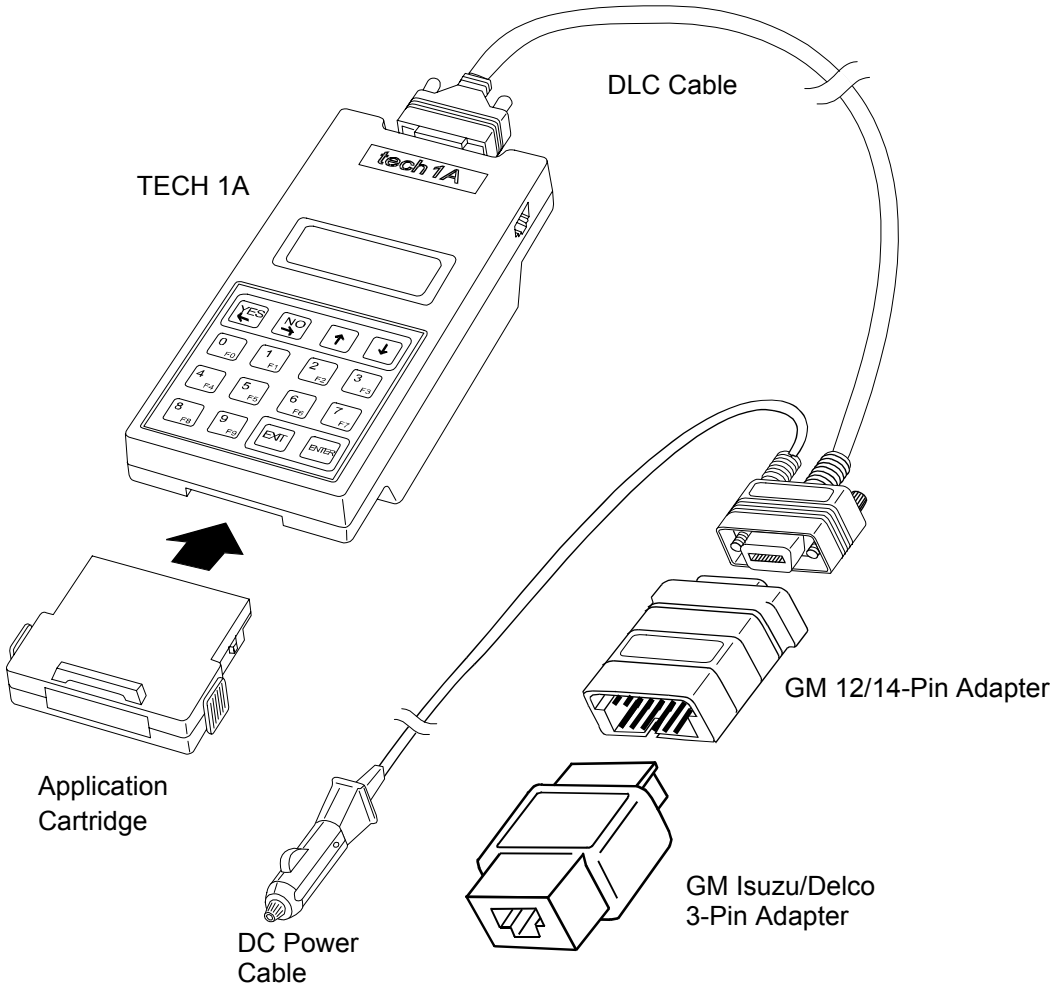


FIGURE 4-17. GM-D Configuration for Tech 1

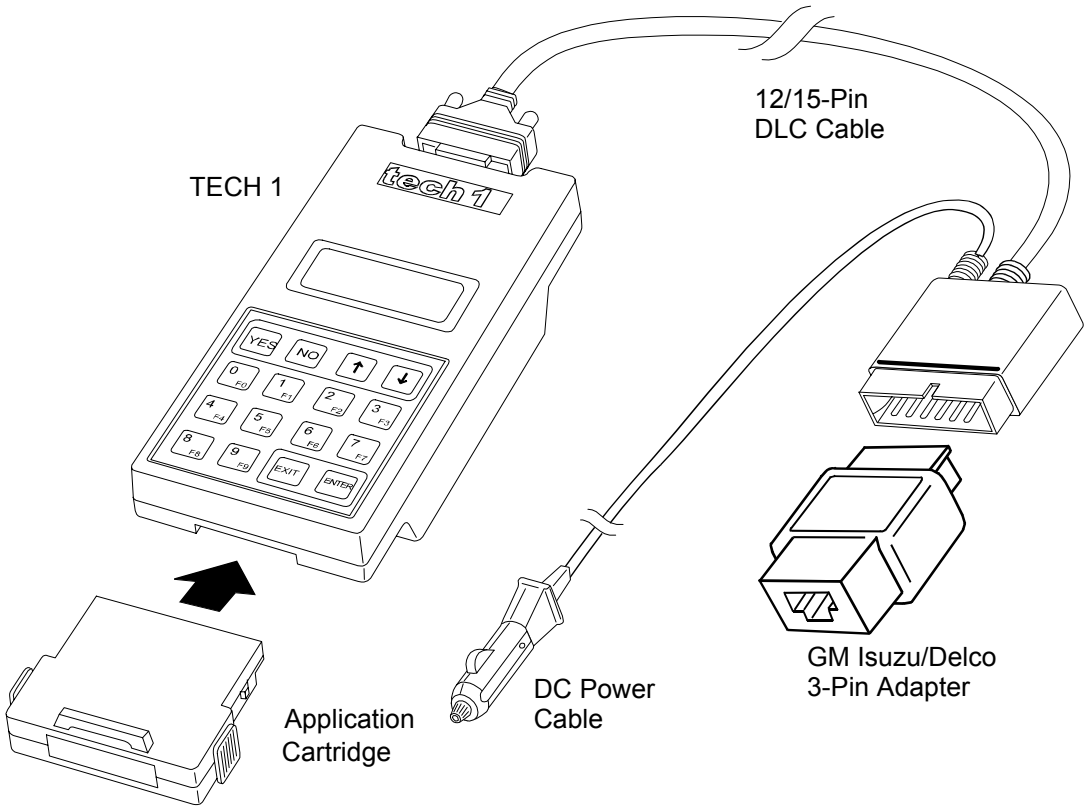


FIGURE 4-18. OBD II-C2 Configuration for MTS 3100

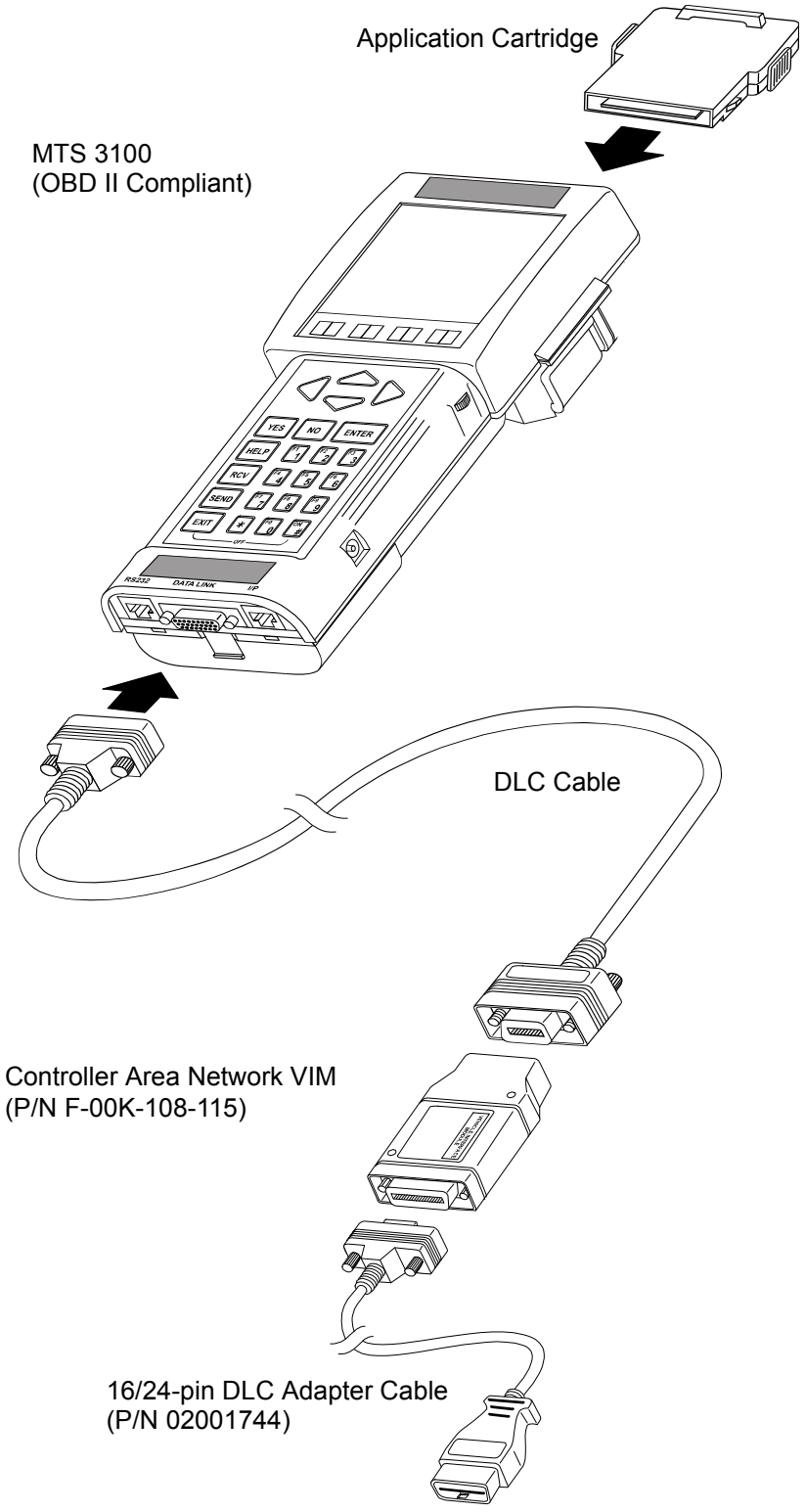


FIGURE 4-19. OBD II-C Configuration for MTS 3100

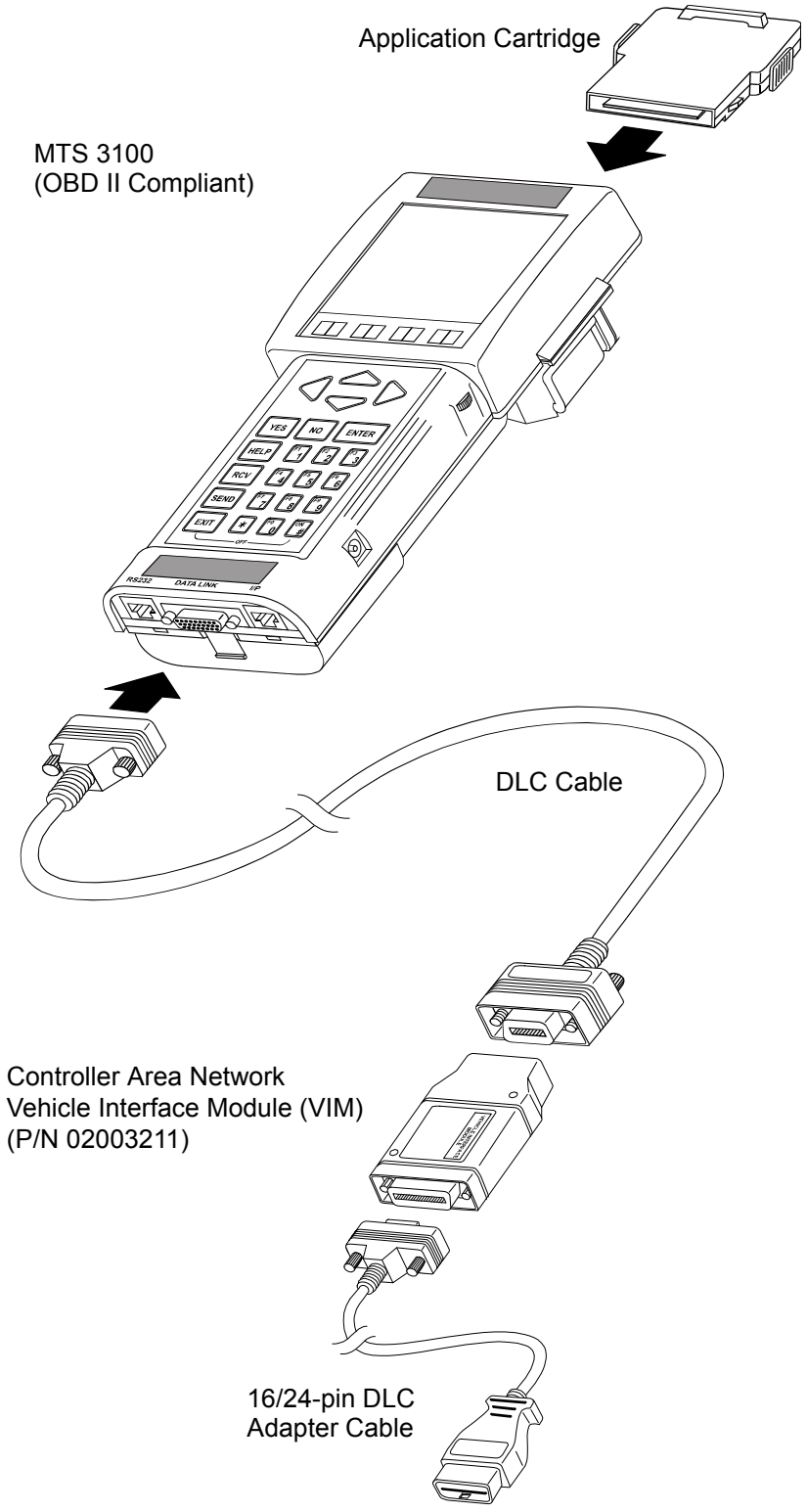


FIGURE 4-20. OBD II Configuration for Tech 1A Using OBD II Interface Cartridge

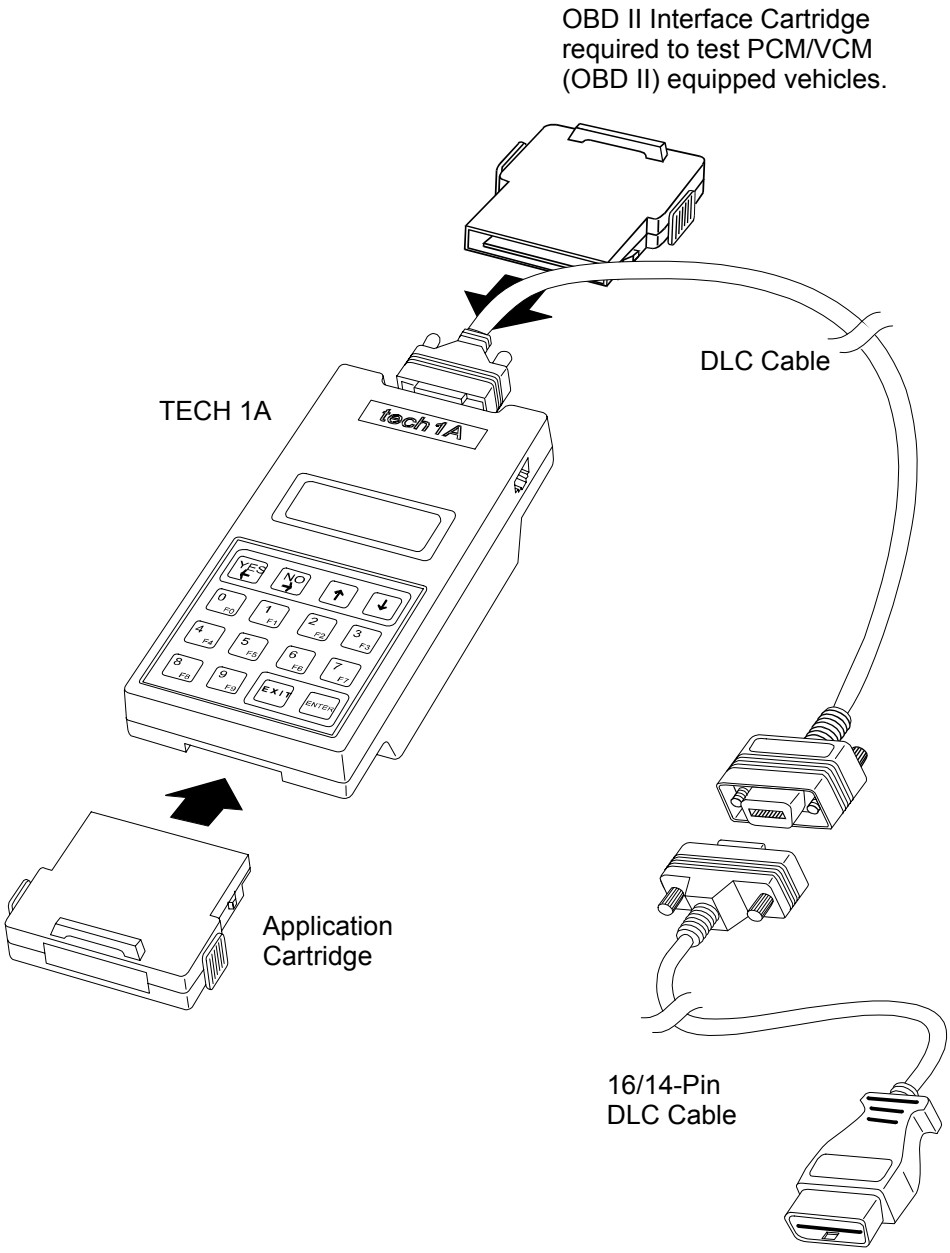


FIGURE 4-21. OBD II Configuration for Tech 1A Using Vehicle Interface Module (VIM)

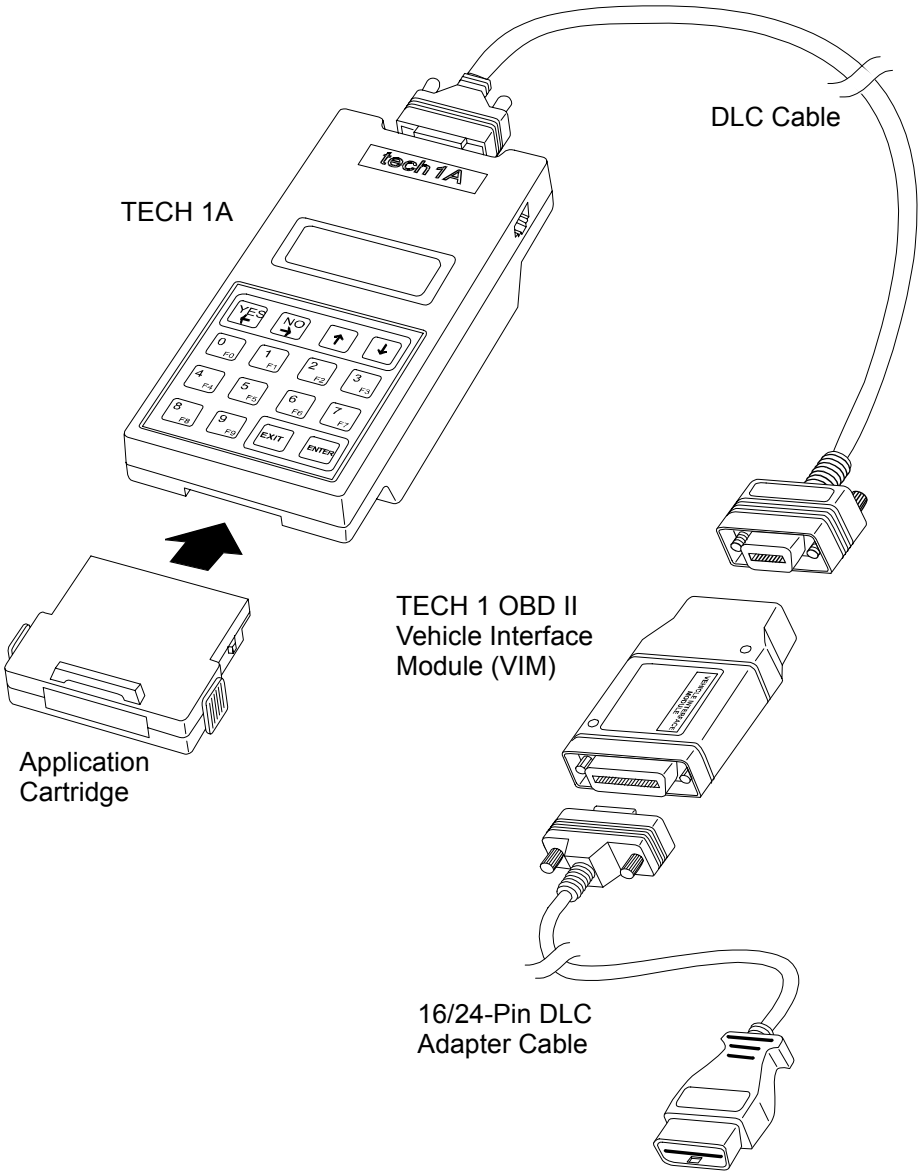
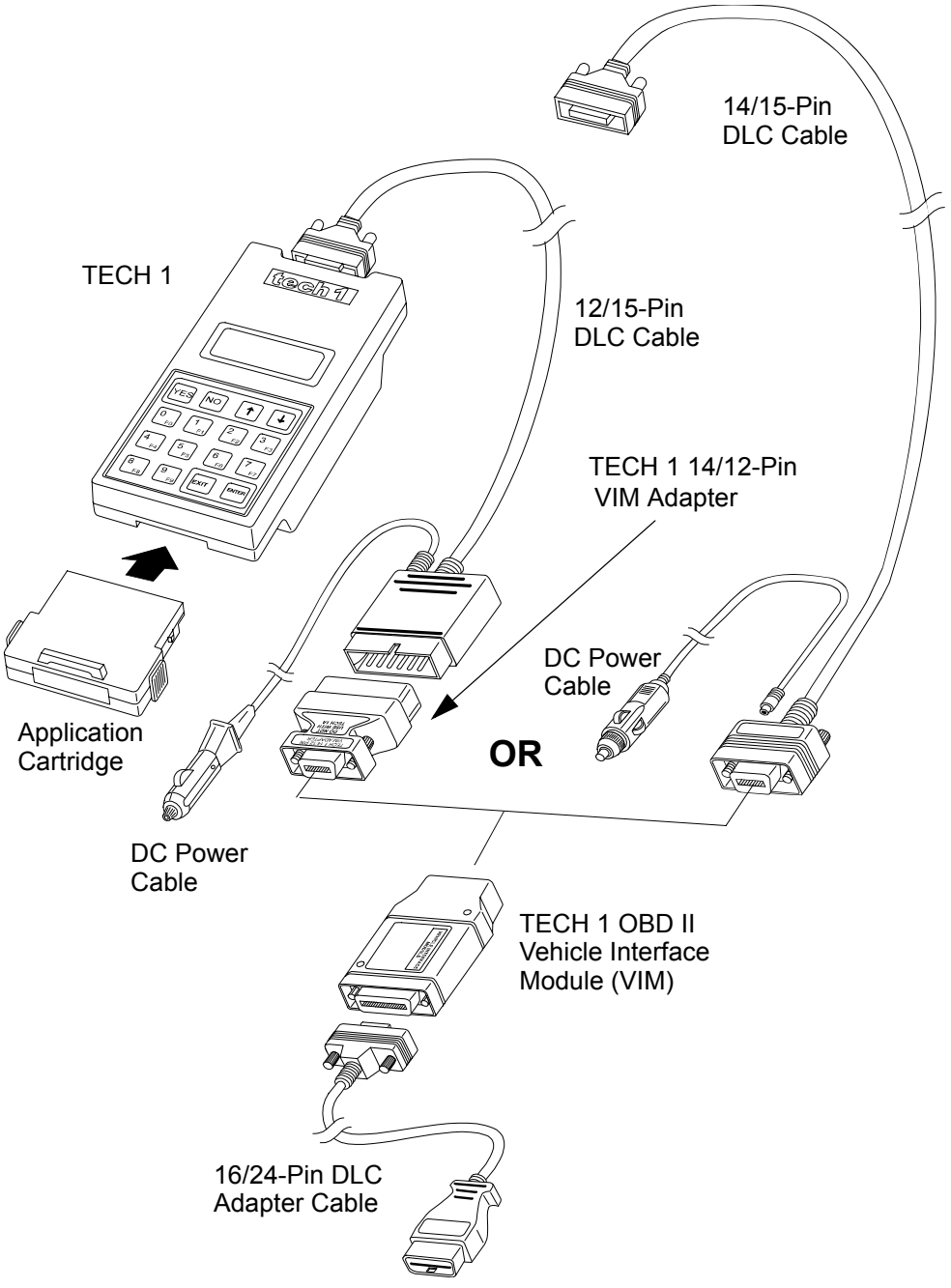


FIGURE 4-22. OBD II Configuration for Tech 1



VEHICLE IDENTIFICATION NUMBER (VIN)

If you are in doubt about the type of vehicle you are testing, refer to the Vehicle Identification Number (VIN). Use the chart below to assist in interpreting the VIN of the vehicle being tested.

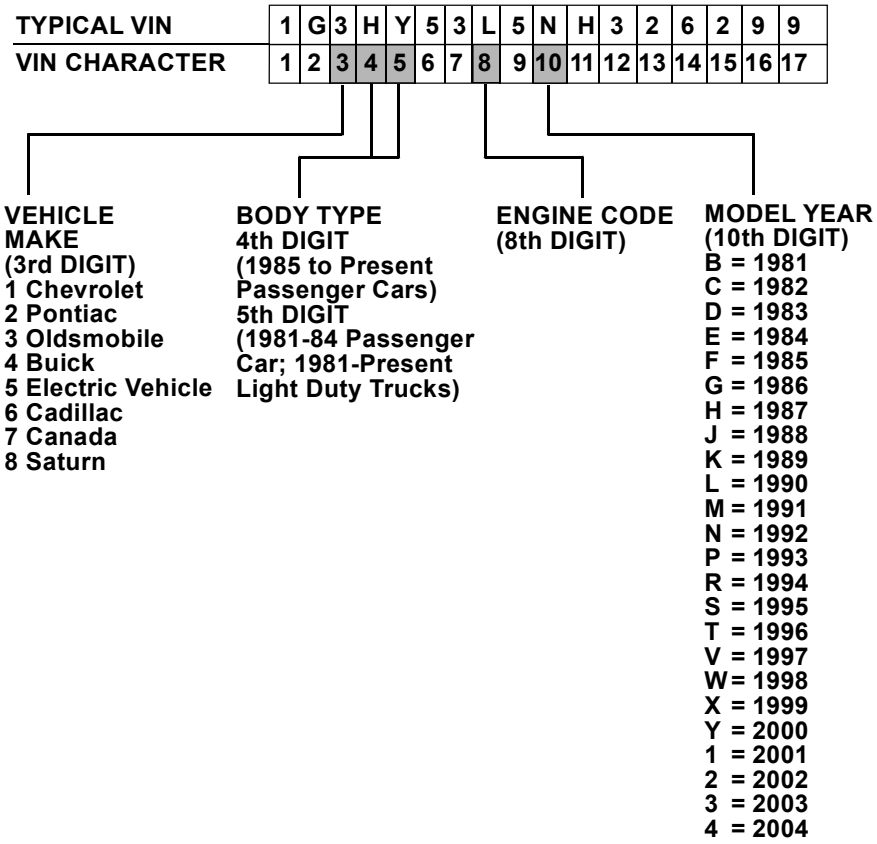


FIGURE 4-23. Vehicle Selection by VIN Code

5. SELECTING AND OPERATING TEST MODES

This chapter provides a detailed description of each test available in this application. Following the test descriptions, step-by-step instructions tell you how to quickly perform the test. A list of the active keys for each test is included at the end of each test mode.

TEST MODES SUMMARY

The following table gives you a quick summary of the test modes available within this application. Detailed descriptions of the test modes are given in the appropriate sections of this chapter. The tester only displays the test modes that are applicable to the vehicle being tester.

SYSTEM	MODE	SUBMODE	DESCRIPTION
ECM and TCM	F0: Data List		Monitors and displays engine and transmission data parameters.
	F1: Field Service		Commands the ECM/TCM to operate in the field service mode.
	F1: Fixed Spark		Commands the ECM to operate in the fixed spark mode. Cadillac and Suzuki only.
	F1: BCM		This mode is used to display on-board diagnostic information on the climate control panel. 1985-89 Cadillac C-body models only.
	F2: Trouble Code/ DTCs		Displays Diagnostic Trouble Codes recorded by the ECM/TCM.
	F3: Snapshot		Gives you the ability to capture Data List information for later analysis. Trigger point and trigger type are selectable by the user.

SYSTEM	MODE	SUBMODE	DESCRIPTION
ECM and TCM (cont.)	F4: OBD Controls	F0: Output Tests F0: Air Solenoid F0: RPM Control F0: EEPROM Info F1: Backup Fuel F1: Backup Spark F1: ISC Cal Air F1: Cal ID F1: Actuator CTL F1: Options Info F1: Fan Relays F1: Oil Life Reset F1: Min-T Rich F2: Min-T Lean F2: PROM ID F2: Clear Codes/DTC F3: IAC System F1: Idle Learn F3: ISC System F0: ISC Min AIR F0: ISC Cal AIR F3: RPM Control F3: EGR Control F3: VIN Code F4: BLM Reset F4: Fuel Trim Reset F5: Transmission F5: Oil Life Reset F5: Inj Balance F6: Inj Balance F6: VIN Display F6: QDM Tests F6: Fuel System Prime F6: Odometer Reset F7: Odometer Reset F7: Diag Circuit Check F7: Inj Fault Reset F7: Oil Life Reset F7: Service Spark F8: Service Spark F8: Transfer Case F8: VIN Display F9: O2S System	Allows control of individual ECM/TCM outputs to check for correct operation. The specific outputs that you can control depend on the vehicle selected.

SYSTEM	MODE	SUBMODE	DESCRIPTION
PCM/VCM, ATC, and AFECU	F0: Data List		Monitors and displays engine and transmission data parameters.
	F1: Capture Info		Reads Freeze Frame, DTC and Failure Records held in the vehicle controller memory and saves this data in tester memory.
	F2: DTCs	F0: DTC Info F0: History F1: MIL Request F2: Last Test Fail F3: Test Fail SCC F4: Not Run SCC F5: Fail This Ign F6: DTC Status F1: Specific DTC F2: Freeze Frame F3: Fail Records F4: Clear Info F5: ATC DTC Info F2: Clear ATC DTC	Displays Diagnostic Trouble Codes recorded by the PCM, VCM, ATC or AFECU. The ability to Clear DTC information is also found in this mode.
	F3: Snapshot		Gives you the ability to capture Data List information for later analysis. Trigger point and trigger type are selectable by the user.
	F4: OBD Controls	F2: A/T Output F7: Learn TAPS F7: Clear TAPS F3: IAC System F0: RPM Control F4: Fuel System F1: Fuel Trim Reset F2: Inj Balance F3: Inj Flow F5: Crank Learn F8: Bay Tests F0: Bay Test	Allows control of output or actuator device to check for correct operation. The specific outputs that you can control depend on the vehicle selected.
	F8: Information	F2: System Info F0: MIL Status F1: System Status F3: ID Info F0: VIN ID F1: Cal ID	Displays helpful information about the vehicle or systems under test. This can consist of Calibration ID, Module ID, or VIN (Vehicle Identification Number.)

SELECTING TEST MODES

The tester makes selecting a test mode easy by displaying a list of tests (a Select Mode menu) that is unique for the vehicle and system that you have selected. The menu also displays which key is used to select each test mode.

The first three test modes are shown as soon as the vehicle and system are selected. The other test modes automatically scroll onto the display three at a time every three seconds. After all menu options have been displayed, the scrolling process repeats.

To stop the automatic scrolling, press either the ↑ or ↓ key. The menu may then be manually changed by pressing either the ↑ key to advance to the next display, or the ↓ key to return to the previous display. All multiple menus of more than three items scroll in this way. Regardless of which test modes are displayed, any test mode can be selected at any time from the menu.

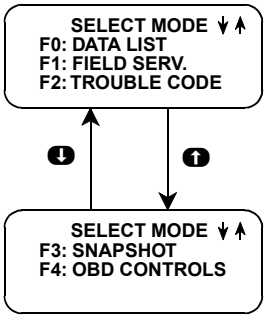
When some Test Modes are selected, a submenu is displayed. Items are selected from the submodes in the same manner as selecting from the Test Modes. To return to the previous menu just press EXIT.

To select a test mode, simply press the key listed to the left of the test mode or submode on the menu. Sample menus are shown below. The menu items may vary according to the vehicle and system selected.

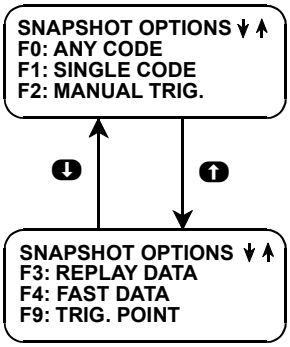
NOTE

Mode F2 in the Select Mode menu is referred to as Trouble Code for 1981-1992 vehicles and as DTC (Diagnostic Trouble Code) for 1993 and later vehicles.

ECM/TCM SUBMODE MENU



SUBMODE MENU



ECM AND TCM SYSTEMS

MODE F0: DATA LIST

The purpose of the DATA LIST mode is to continuously monitor engine and transmission data parameters. ECM operation can be commanded in either the “diagnostics” mode (also called the 10K mode) or the “road test” mode (also called the open mode) for certain vehicles.

VIEWING DATA PARAMETERS

In order to maximize the information that can be seen at one time the tester displays data parameters in pairs. A typical pair of data parameters is shown in A in Figure 5-1.

To see the other preprogrammed data pairs available for the system you've selected, press either the YES or NO key. The YES key causes the tester to scroll forward through the list of preprogrammed pairs. The NO key causes backward scrolling. Holding either key causes continuous scrolling.

Road Test Mode Operation

If the tester automatically selects the Road Test mode, the letters “RT” do NOT appear on line two (A in Figure 5-1). If you are monitoring data parameters when Road Test mode is selected, the letters “RT” are displayed on line 2 of the display as shown in B in Figure 5-1, below. The letters indicate “Road Test” mode operation.

Selecting Road Test mode operation for engine types which do not transmit data in this mode causes a tester display as in C in Figure 5-1.

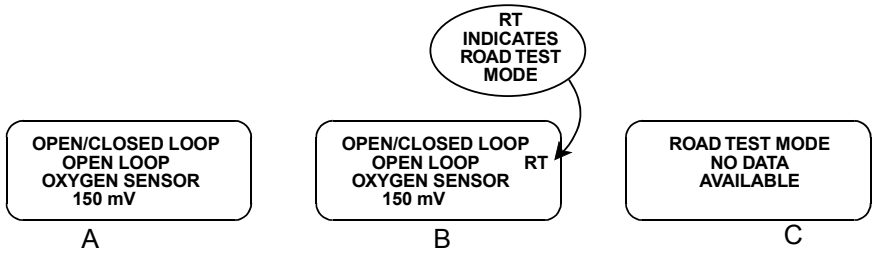


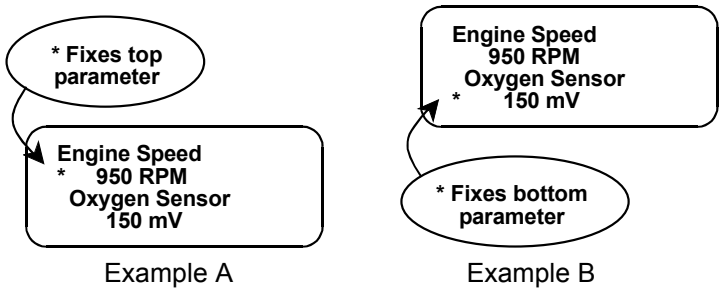
FIGURE 5-1. Selecting Road Test Mode

CREATE YOUR OWN DATA PAIRS

Some parameters are displayed as preprogrammed pairs, as shown in Example A in Figure 5-1. You can create data parameter pairs different from the preprogrammed pairs.

New data pairs are created simply by scrolling either the bottom or top parameter, while the other parameter is fixed. Pressing F0 causes the top display parameter to be “fixed”, which is indicated with an asterisk (*) in the left column of the second line of the display, as shown in Example A. Pressing F1 causes the bottom display parameter to be fixed, as shown in Example B below. To “unfix” the top parameter, press F1. Press F0 to “unfix” the lower parameter. The top and bottom parameters cannot both be fixed at the same time.

As an example, let's say you wish to create a pair with ENGINE SPEED and OXYGEN SENSOR. To do so, scroll through the preprogrammed pairs with the YES or NO key until you find a pair with ENGINE SPEED. Fix ENGINE SPEED by pressing F0 if ENGINE SPEED is the top parameter, F1 if it is the bottom. Then scroll the other half of the display with either the YES or NO key until OXYGEN SENSOR is displayed.



To create your own data pairs, do the following:

1. Press F0 to select DATA LIST from the Select Mode menu.
2. If an ECM Mode option menu appears, select either the Diagnostics (10K) or Road Test (Open) mode of operation. The tester automatically selects the Diagnostics (10K) mode for carbureted ECMs and selects the Road Test (Open) mode for vehicles that don't allow this option.

NOTE	Diagnostics (10K) mode ECM operation is different than during normal driving. In the diagnostics mode, engine speed is maintained at 1000 RPM for certain fuel injected engines, and extra spark is added to the normal spark calculations. FUEL INJECTED VEHICLES MUST NOT BE DRIVEN IN THE DIAGNOSTICS MODE. Carbureted engines may exhibit a rough idle and stalling at idle may occur. The Diagnostics (10K) mode may mask cold driveability problems and induce stalling. The Road Test (Open) mode does not affect normal ECM operation, therefore the vehicle can be driven in the road test mode.

   For 1987-88 1.5L VIN = 9 Isuzu engines you can select either a slow data list or a fast data list. Different parameters are available for each list. If the slow list is selected after the fast list has been active you must turn the car off for a least 3 seconds to get slow data. This is not the same function as F4: Fast Data in Snapshot mode.

   For some vehicles you may select Engine, Transmission, or Both data. When “Both” is selected, some values may vary slightly between the engine and transmission due to the data being read from two separate messages in the data stream. When you have selected F0: ENGINE or F1: TRANSMISSION, the F7 key may be pressed to toggle between the engine and transmission parameter displays. There is a slight delay and a blank screen as the tester initiates communication with the other Control Module.

3. Press YES or NO to scroll through the displayed data parameters.

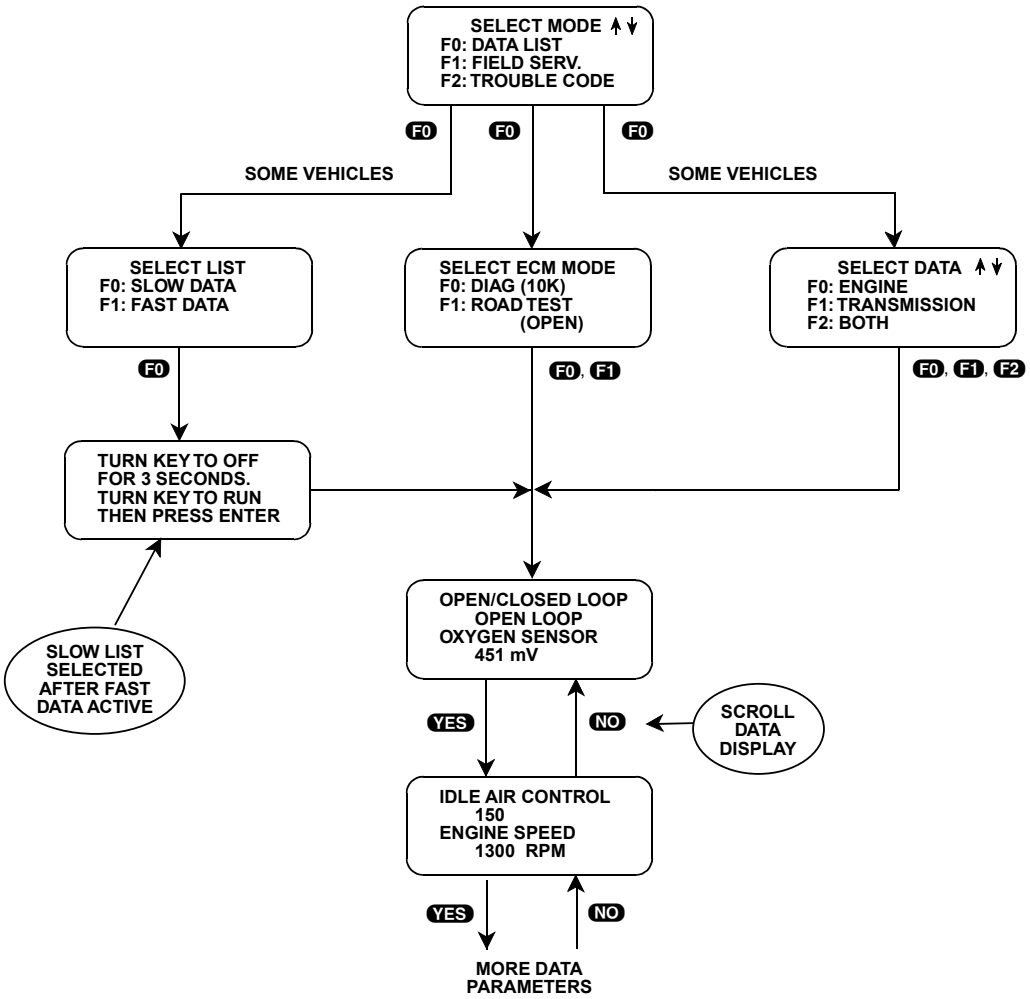


FIGURE 5-2. Example of Data List Mode

4. The data may be printed if the tester is connected to a compatible printer. An RS232C I/F Cartridge (P/N TK05030B or 02001405) is required for Tech 1 testers. To print the data, press **F8**. While the data is being sent to the printer, the keyboard is disabled.

   Data can also be printed in a tabular format using the SCREEN PRINT feature. This function is enabled by pressing **F6** for approximately 1 second until an RS232 Setup menu is displayed. Pressing **F1** then enables the SCREEN PRINT function. Refer to the tester Operator's Manual (MTS 3100 and Tech 1A testers) or the RS232C I/F Cartridge Operator's Manual (Tech 1 testers) for more detail.

5. For high-speed ECMs, the **F3** key may be used to toggle a “Fast Data” mode which requests data from the ECM at a faster rate than normal Data List (8 times per second as opposed to 5 times per second). “FAST” appears in the lower right corner of the display when this mode is active. This gives a more immediate response on the tester display to fast events.

6. Press **EXIT** at any time to return to the Select Mode menu.

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as “fixed” for creating your own data pairs.
F0 , F4	Select a Data List from the Select Data menu.
F3	Toggle the “Fast Data” mode on and off.
F7	Toggle display of engine or transmission parameters on certain vehicles.
F8	Print current data sample (if tester is connected to a compatible printer).
EXIT	Return to Select Mode menu.

MODE F1: FIELD SERVICE

The purpose of the FIELD SERVICE mode is to command ECM/TCM operation in the field service mode (also called the “ground mode”). The FIELD SERVICE mode is available for most ECMs.

Most ECMs do not transmit data in the FIELD SERVICE mode. Instead, the vehicle “check engine” light flashes out stored trouble codes (Key ON, Engine OFF). The tester display reproduces the vehicle “check engine” light flashing to allow remote viewing of the dashboard flashing “check engine” light for certain vehicles.

Some ECM/TCMs transmit data in the FIELD SERVICE mode and display Data List parameters while in this mode.

To access Field Service mode, do the following:

1. Press F1 to select Field Service from the Select Mode menu.
2. FIELD SERVICE WITHOUT DATA LIST For certain vehicles, the tester display flashes stored trouble code numbers in a manner similar to the vehicle “CHECK ENGINE” light.

   FIELD SERVICE WITH DATA LIST For these engines, the Data List parameters are displayed. Select the data parameters to be displayed with the YES and NO keys. The letters “FLD” appears at the end of line two of the display and “SRV” appears at the end of line four to remind you that you are in the Field Service mode. The display does not flash with the check engine light for these engines.
3. Press EXIT to turn off the Field Service mode and return to the Select Mode menu.

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark the top display parameter as fixed, or “unfix” bottom parameter.
F1	Mark the bottom display parameter as fixed, or “unfix” top parameter.
EXIT	Return to the Select Mode menu.

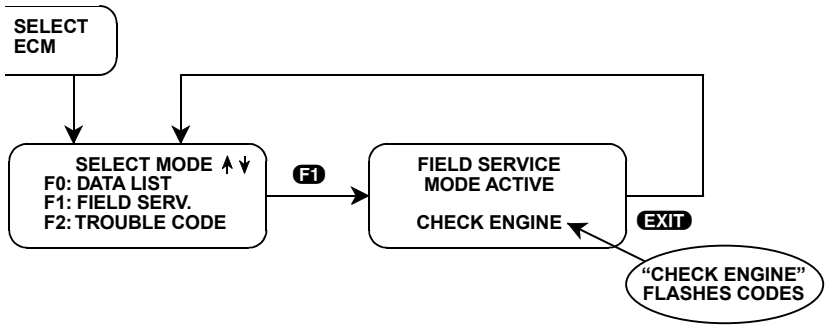


FIGURE 5-3. Field Service without Data List

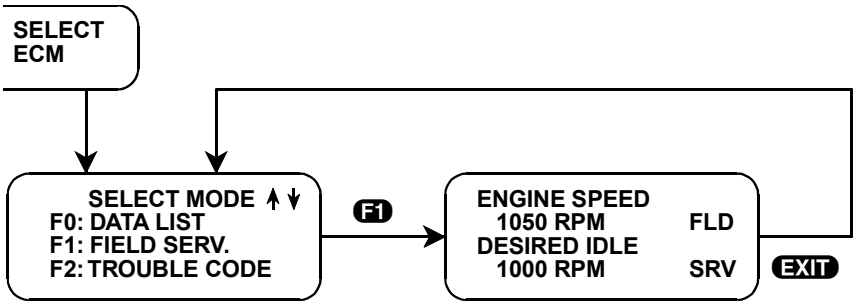


FIGURE 5-4. Field Service with Data List

MODE F1: FIXED SPARK

The purpose of the FIXED SPARK mode is to continuously monitor engine data parameters while commanding ECM operation in the fixed spark mode. The FIXED SPARK mode is available only for Cadillac and Suzuki vehicles. FIXED SPARK is Cadillac's Field Service mode. Like Field Service, FIXED SPARK grounds DLC diagnostic pins A & B.

The FIXED SPARK mode allows you to set the engine timing. While the tester is commanding fixed spark operation, the ECM holds a fixed spark advance when the engine speed is below a specific level (typically 900 RPM).

The tester FIXED SPARK mode allows monitoring of engine data parameters in a manner identical to that of the DATA LIST mode. See *Viewing Data Parameters on page 138*. Fixed spark operation is indicated by the letters “FXS” in the lower right corner of the tester display as shown on the next page.

NOTE

When FIXED SPARK is selected for the 1988-1989 Cadillac C-Car ECM, a different data list is used.

To access Fixed Spark mode, do the following:

1. Press F1 to select the FIXED SPARK mode from the Select Mode menu.
2. Press YES or NO to scroll through the displayed data parameters.
3. Press EXIT to terminate the FIXED SPARK mode and return to the Select Mode menu.

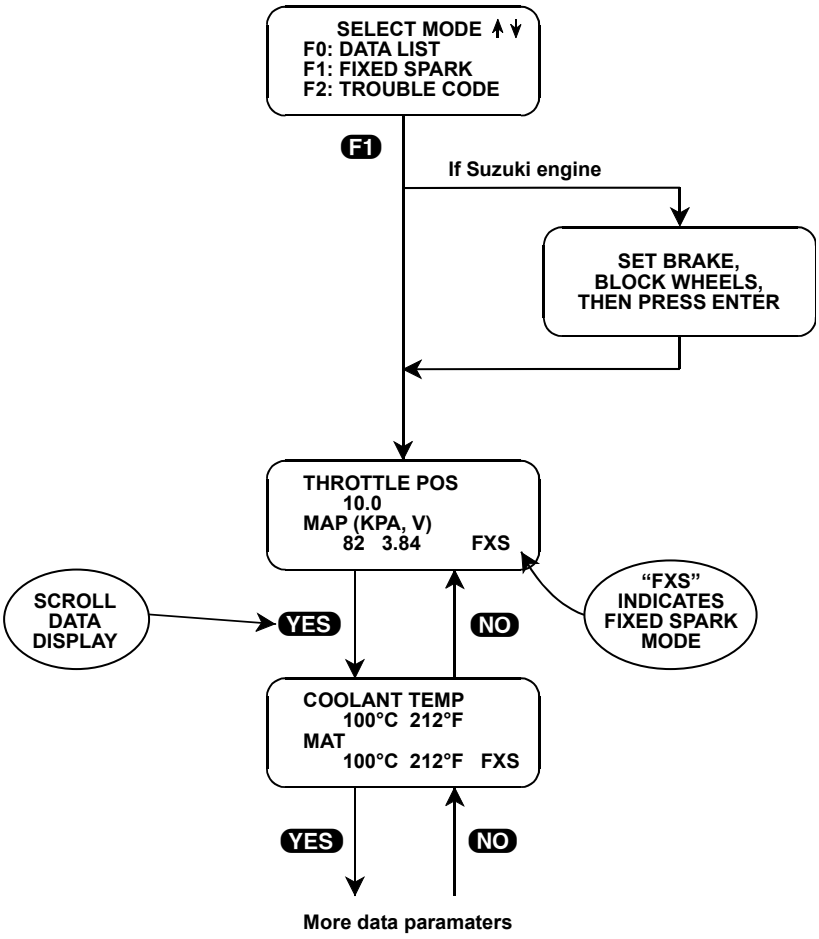


FIGURE 5-5. Fixed Spark

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark the top displayed parameter as "fixed" for creating your own data pairs.
F1	Mark the bottom displayed parameter as "fixed" for creating your own data pairs.
EXIT	Return to the Select Mode menu.

MODE F2: TROUBLE CODE / DTC

This procedure is for ECM/TCM systems only. For PCM/VCM systems, refer to *Mode F2: DTC on page 216*.

The purpose of the TROUBLE CODE/DTC test mode is to read stored Diagnostic Trouble Codes/DTCs. For 1993 and later vehicles, Trouble Codes are referred to as Diagnostic Trouble Codes (DTCs).

To access Trouble Code/DTC Test mode, do the following:

1. Select the TROUBLE CODE/DTC mode from the Select Mode menu by pressing F2.
2. If trouble codes are present, the tester automatically displays each trouble code for three seconds, in numerically ascending order, then returns to the Select Mode menu. Each trouble code present is displayed with its number and a description of the trouble code. If no trouble codes are present, the tester displays a message to that effect for three seconds, then automatically returns to the Select Mode menu.

   Some ECM systems can display both history and current trouble codes. For these systems, the current trouble codes are displayed first (if any) followed by the history (stored) trouble codes.
3. A trouble code can be “held” by pressing the ↓ key while the code is being displayed. This enables you more time to record the code. The ↑ key is then used to resume display of the rest of the trouble codes.
4. Press EXIT to terminate the TROUBLE CODE/DTC mode and return to the Select Mode menu.

NOTE

Trouble codes/DTCs can also be displayed in Data List and Snapshot mode by pressing F2.

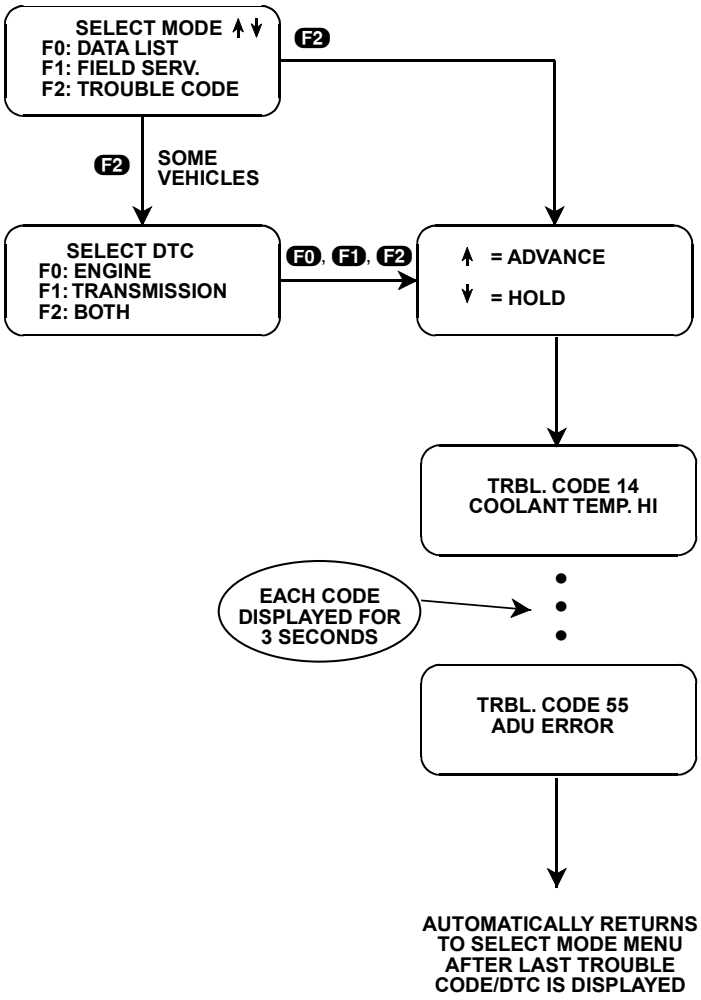


FIGURE 5-6. Trouble Code/DTC

For 1993 and later vehicles “DTC” (Diagnostic Trouble Code) is displayed instead of “Trouble Code”.

ACTIVE KEYS	
↑	Advance to next trouble code.
↓	Hold presently displayed trouble code.
EXIT	Return to the Select Mode menu.

MODE F3: SNAPSHOT

The purpose of the SNAPSHOT test mode is to help you isolate an intermittent or transient problem by storing data parameters before and/or after the problem occurs.

For some vehicles, you may select Engine Data, Transmission Data, or Both.

When the tester is operating in SNAPSHOT mode, it is constantly storing information about data parameters and trouble codes. A time and frame number index for the stored information is also saved.

The tester stores all of the Data List parameters and trouble codes for the vehicle selected. When the memory is full, the oldest (earliest) data collected is erased to make room for new information.

A “TRIGGER” tells the tester when to stop collecting data. You can specify a “TRIGGER CONDITION” so the tester collects data that is most useful in diagnosing the current problem. You can also select a “TRIGGER POINT.”

TRIGGER POINT

If F9:TRIG. POINT is selected from the Snapshot Mode menu, a trigger point selection menu is displayed. Trigger Point allows you to specify which data to capture—data that occurs before, after, or both before and after the point at which the trigger occurs. If no trigger point is selected, the center trigger point is used and a similar number of data samples before and after the trigger is saved. Trigger point is fully explained in Step 5 of the Setup phase of SNAPSHOT mode.

TRIGGER CONDITION

The trigger condition defines the specific circumstances under which you want the trigger to occur. The possible trigger conditions are:

- ANY CODE: If any new trouble code is detected by the ECM, it causes the trigger to occur.
- SINGLE CODE: You can select a specific trouble code that causes the trigger to occur. Step 4 of the Setup phase of SNAPSHOT mode tells you how to enter the code.
- MANUAL TRIGGER: While operating the SNAPSHOT mode, you can always cause the trigger to occur by pressing the F9, ENTER or EXIT keys.

Once the trigger occurs, the tester retains data according to which trigger point you have selected.

FAST DATA MODE

A FAST DATA mode is available for certain vehicles. If F4: FAST DATA is selected from the Snapshot Mode menu, the tester requests data at a faster rate (approximately every 125 ms, or 8 times a second) than the normal request rate. This causes the Snapshot buffer to fill with data sooner, but gives improved resolution to catch quick events. This feature is not available for low-speed (160 BAUD) ECMs.

Snapshot Mode for ECM/TCM Systems

The operation of SNAPSHOT mode is divided into three phases: Set-Up (through Step 5), Data Capture (through Step 9), and Data Display (through Step 14).

To select the Setup Phase of Snapshot Mode, do the following:

1. Press F3 to select the SNAPSHOT mode from the Select Mode menu.
2. Note: This step is only present for certain vehicles.

   Some vehicles require that you select ECM operation in either diagnostics (10K) or road test (open) mode during SNAPSHOT test, by pressing F0 or F1 respectively.

   For the 1987-88 1.5L Turbo you must select either fast data or slow data at this point (See *ECM and TCM Systems on page 138*).

   When certain vehicles are selected, you are asked to choose a system for the Snapshot— Engine, Transmission, or Both.
3. The trigger conditions and Replay Data options are displayed in a self-scrolling Snapshot Mode menu. To select a trigger option, just press the Function Key displayed to the left of the desired trigger condition. To replay previously captured data, press F3.
4. You can choose a specific trouble code/DTC for the trigger condition.

   When the tester screen displays “SNAPSHOT MODE, ENTER ECM CODE:, xx” or “ENTER DTC: xxxx”, use numeric keys 0 - 9 to enter the trouble code/DTC number that you have selected, then press the ENTER key. The tester continues to store data until the specified trouble code is detected, or until you press the EXIT key. If the code/DTC you enter does not exist for the engine type being tested, an “INVALID CODE” message is displayed and the code has to be re-entered.
5. In addition to offering a trigger condition selection, you have the option of selecting a trigger point. If you select F9:TRIG. POINT from the Snapshot Mode menu, the following options are displayed: F0: BEGINNING, F1: CENTER, and F2: END.

   F0: BEGINNING The trigger is at the beginning of the captured data. After the trigger occurs, the tester continues to capture data until the memory is full, then the data is displayed. If not enough data samples have been collected to fill the tester memory (because the EXIT key was pressed before the tester memory was full), some data samples that were captured before the trigger point are also available for display.

   F1: CENTER If enough time has elapsed before and after the trigger point, a similar number of data samples that occurred before and after the trigger point is available for display. However, if the trigger occurs at or near the start of the Data Capture phase, there are fewer samples before the trigger point available for display. Also, if the EXIT key is pressed after the trigger occurs, but before the tester memory is full, fewer data samples captured after the trigger point are available for display.

   F2: END Data that occurred before the trigger is displayed. If the tester memory was not full when the trigger occurred, some data samples captured after the trigger point are also available for display.

   After the Data Capture phase, you can scroll through all of the stored data for display. In the Data Display phase, data parameters are displayed in a manner identical to that of the Data List mode. You can also specify the data sample you wish to display (Step 10 and Step 11).

ACTIVE KEYS	
EXIT	Return to Select Mode menu.
F0 , F2	Select trigger condition or trigger point.
F3	Select Replay Data.
F4	Select fast data mode (Available only for high speed ECMs).
F9	Select Trigger Point.
0 - 9	Select specific trouble code (DTC).
ENTER	Enter selected trouble code (DTC).

Snapshot Setup Phase

(Select Trigger Condition or Display Previously Captured Data).

Press the function key to the left of the desired trigger condition. To bypass the Data Capture phase and review previously captured data, press F3: REPLAY DATA.

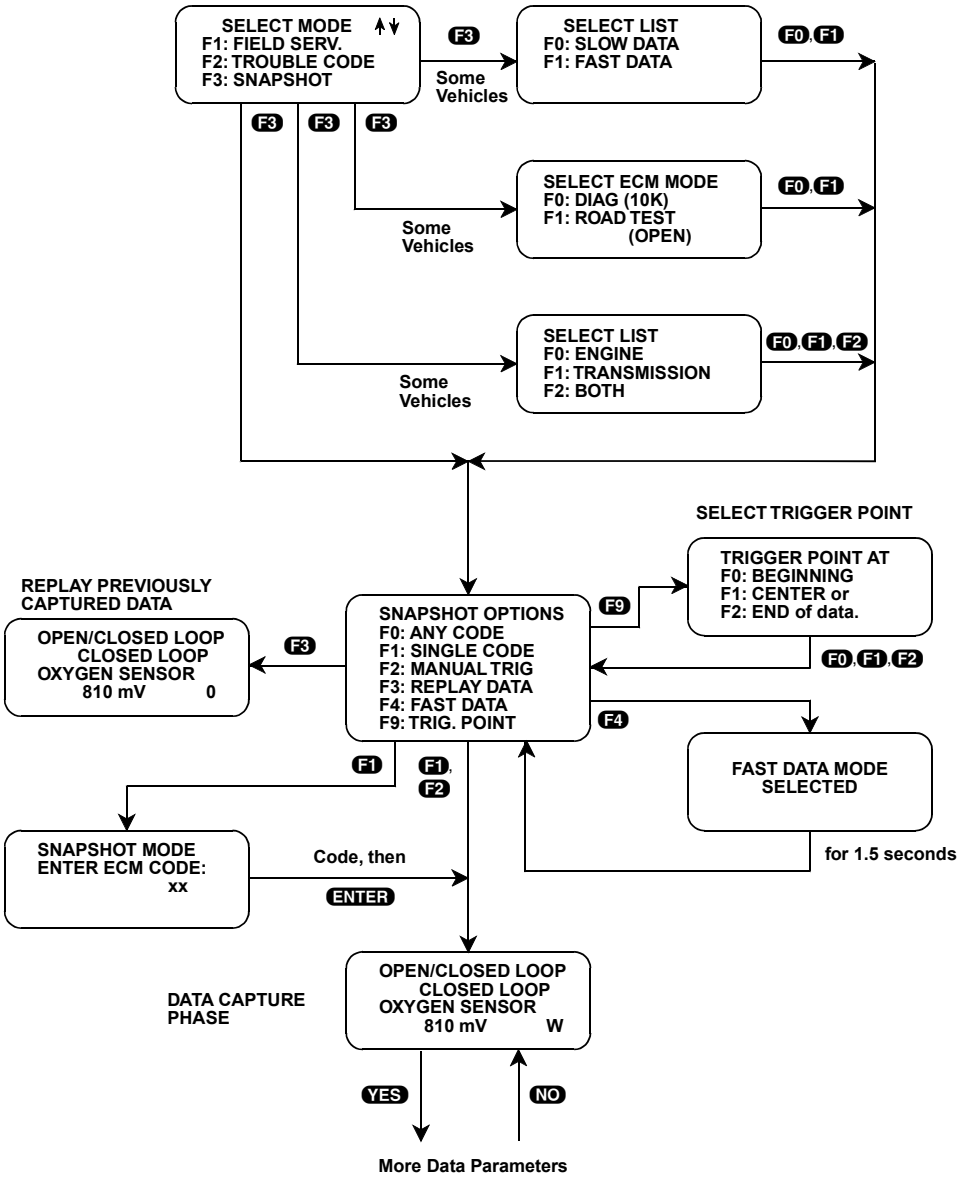
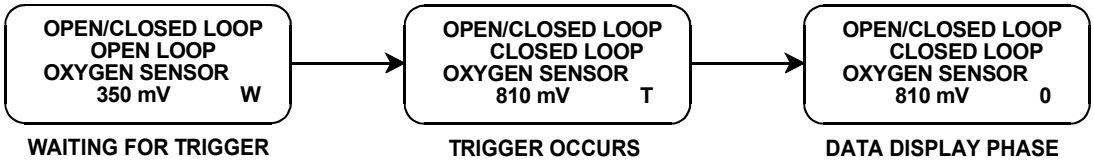


FIGURE 5-7. Snapshot Setup Phase

To access Data Capture Phase of Snapshot mode, do the following:

6. Once the trigger condition is specified, the tester begins storing data parameters and trouble codes while displaying the Data List parameters.
7. The data is organized as a number of data "samples." The value or state of each parameter as well as all trouble codes are saved for each sample. The data display indicates the "waiting for trigger" condition with a flashing "W" in the lower right-hand corner of the display. While waiting for the selected trigger, the F9, EXIT, or ENTER key can always be used to force a trigger.



8. Once the trigger occurs, the tester continues to save data samples until its memory is full. The data display indicates that the trigger has occurred by replacing the flashing "W" with a fixed "T." As soon as the memory is full, the data capture terminates automatically and the tester goes to the Data Display phase.
9. Press EXIT to terminate the Data Capture phase early and move to the Data Display phase.

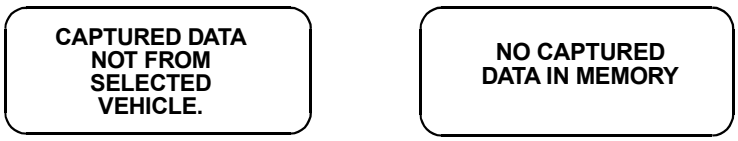
ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as "fixed" for creating your own data pairs.
F1	Mark bottom displayed parameter as "fixed" for creating your own data pairs.
F9	Manual trigger.
ENTER	Manual trigger.
EXIT	Manual trigger or Display captured data if trigger has already occurred.

To access Data Display Phase of Snapshot mode, do the following:

10. The Data Display phase is indicated with a number (initially zero) in the lower right hand corner of the display. Select the data to be displayed by using the YES and NO keys (see *ECM and TCM Systems on page 138*).

    During the Data Display phase, the trouble codes present for each sample can be displayed by pressing F2.

    If no data has been captured, or if data stored in the tester memory is not data from the vehicle currently being tested (i.e. it's from a previously tested vehicle), the tester displays one of the following messages for four seconds (or until the ↑ or EXIT key is pressed):



11. Use the ↑ and ↓ keys to select the desired sample. An index is displayed in the lower right-hand corner of the tester display. Sample “0” corresponds to the trigger sample; sample “-1” is the sample immediately preceding the trigger; sample “+1” is immediately after the trigger, and so on. The index range may be less than the maximum number of samples if not enough time was allowed for data capture before or after the trigger.

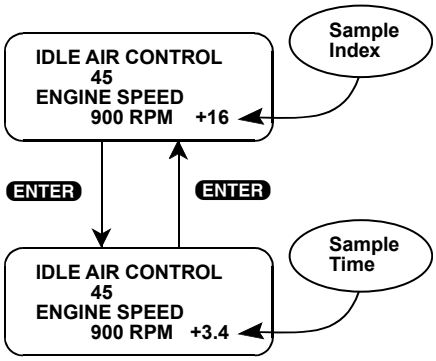
    You can advance directly to the first, last, or trigger sample with the press of a button.

    F4: Display first (earliest) sample

    F5: Display trigger sample (0)

    F6: Display last (most recent) sample

12. While in the Data Display phase, pressing ENTER causes the tester to toggle between the sample index and sample time.



    The sample time display gives the time in seconds (relative to the trigger sample) at which the tester received the currently displayed sample. For example, a sample time of +3.4 means the sample was received 3.4 seconds after the trigger sample. A sample time of -2.6 seconds means the sample was received 2.6 seconds before the trigger.

13. The currently displayed Snapshot sample may be printed if the tester is connected to a compatible printer. An RS232C I/F Cartridge (P/N TK05030B or 02001045) is required for Tech 1 testers. To print the data, press F8. While the data is being sent to the printer, the keyboard is disabled.

    Snapshot data can also be printed in a tabular format using the SCREEN PRINT feature. This function is enabled by pressing F6 for approximately 1 second until an RS232 Setup menu is displayed. Pressing F1 then enables the SCREEN PRINT function. Refer to the tester Operator’s Manual (MTS 3100 and Tech 1A testers) or the RS232C I/F Cartridge Operator's Manual (Tech 1 testers) for more detail.

14. When you are finished viewing the sampled data, press EXIT to return to the Trigger Select menu. If you are finished with the SNAPSHOT mode, press EXIT again to return to the Select Mode menu.

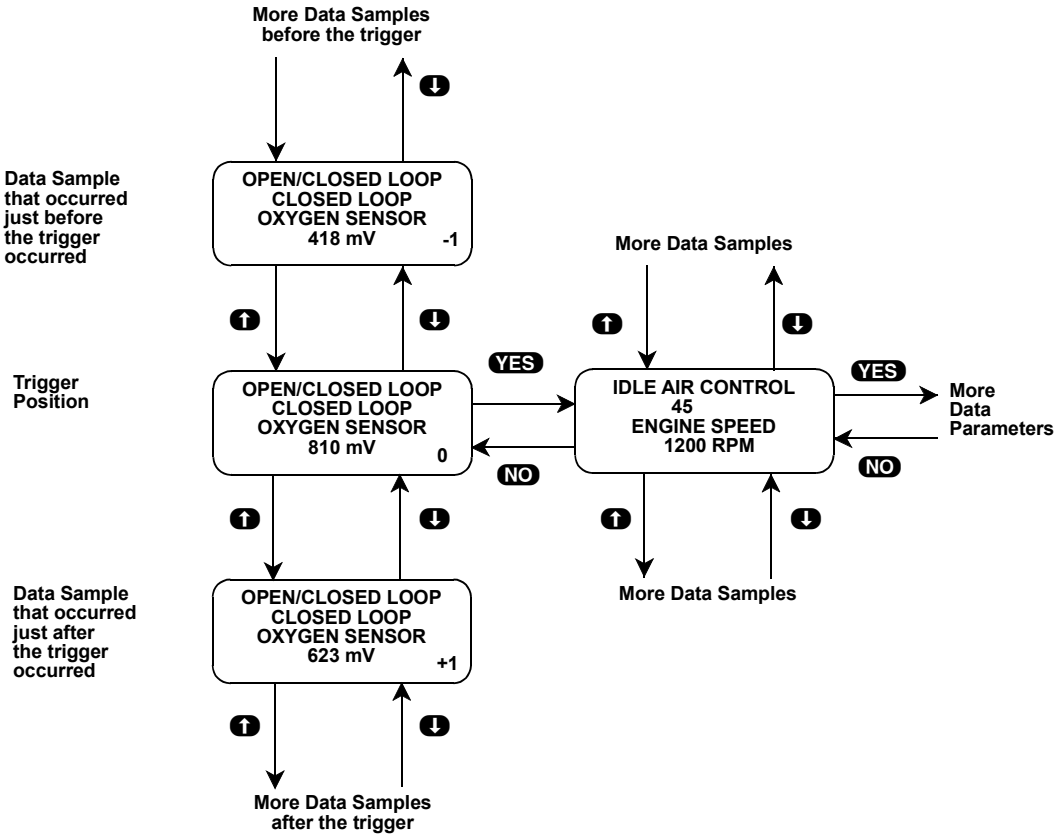


FIGURE 5-8. An Example of Snapshot Data Display

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
↑ , ↓	Scroll through selected samples.
F0 , F1	Fix top or bottom display parameter respectively.
F2	Display trouble codes for current sample.
F4	Advance to first (earliest) sample.
F5	Advance to trigger sample (sample 0).
F6	Advance to last (most recent) sample.
F8	Print current data sample (if tester is connected to a compatible printer).
ENTER	Toggle between sample index and sample time display.
EXIT	Return to the Trigger Select menu.

MODE F4: OBD CONTROLS

SUBMODE F0: OUTPUT TESTS

The Output Tests submode allows you to control individual ECM/TCM outputs to check for correct operation. The specific outputs that you can control depend on the vehicle selected.

CAUTION!

These tests should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

Outputs available to control appear in an Output Tests menu unique to the vehicle selected. Some of the output control options are further broken down into submenus allowing control of one output from a group of similar outputs.

With the tester, you can turn some outputs, such as switches and actuators, ON or OFF by pressing the ↑ or ↓ key. For most of these outputs, the tester automatically returns the output to ECM/TCM control after a few seconds to avoid damage to the actuator or the engine.

For some outputs, such as RPM, you can change the value or setting of the output by pressing the ↑ or ↓ key.

There are two types of Output Resets; some outputs can be reset to the original default value, and other outputs can be Reset to a value that you select.

There are certain constraints to controlling some of the outputs. Some are determined by the ECM/TCM, and some are determined by the tester.

While controlling the outputs, the Data List parameters are available for most vehicles. The normal F0: Data List key functions are available for these vehicles.

NOTE

- For many output functions, the engine must be running before the control module allows an output to be controlled by the tester. For some output functions, the engine must be OFF before the output can be controlled.
- DTCs may be set when performing any output control or test.
- Always check and clear DTCs after performing output controls or tests.
- Response to output controls may take a few seconds. For example, on certain vehicles, when commanding Cooling Fan 2, Fan 1 turns ON first and in about 5 seconds, Fan 2 turns ON.

Examples of outputs that can be controlled are listed on the pages following the operating procedure. Not all Output tests are available for all vehicles.

To select Output Tests, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F0 to select Output Tests from the Select Controls menu.

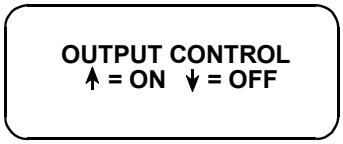
3. After a three second prompt message, a menu of the available outputs appears. This menu automatically scrolls every three seconds. To turn off the automatic scrolling and manually control the menu display, use the ↑ and ↓ keys.
4. To select an output to control, press the function key displayed to the left of the desired output. It is not necessary that the menu item be currently displayed for you to select it; any menu item can be selected while the menu is scrolling. Once an output is selected, you can then begin controlling the state of that output.
5. Depending on which output is selected, the ↑ or ↓ key is used to increase or decrease the value of the selected output or to change the state of the selected output (ON or OFF for example), or reset the output to its default setting. For some outputs, the 0 - 9 keys are used to input a new reset value.
6. When controlling the state of an output, the output can be in one of three states:
   a. When the output is first selected, it is under normal vehicle control module control; the output is determined by the control module only.
   b. To override control of the control module and change the state of the output (to turn the output ON, for example), press the ↑ key.
   c. To override control of the control module and force the output to the opposite state (turn the output OFF, for example), press the ↓ key.

   Note that the state of the output does not change as the override is commanded if the override state is the same as the control module controlled state. For example, if the Check Engine Light is ON, and it is then commanded ON with the ↑ key, its state does not change; it stays ON.

   The tester allows output override control (ON or OFF) for only five seconds (for most outputs) before control of the output is returned to the ECM/TCM. This safety feature prevents damage to the controlled output.
7. For most vehicles, the Data List parameters are displayed while the outputs are being controlled. For these vehicles, a three character window is displayed at the end of line 2. These three characters serve as a reminder of which output is being controlled.

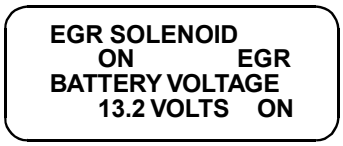
   The last three characters of line 4 of the display shows the current state or value of the output being controlled (ON/OFF, %, RPM, etc.) if the state is being overridden by the tester. It is blank when the output is under normal ECM/TCM control.

   For vehicles that do not display Data List parameters while in the Output Tests mode, the controlled output is displayed along with a one line output state descriptor.

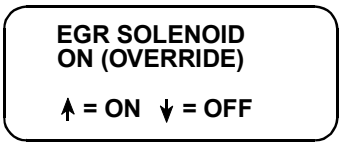


CONTROL OPERATION PROMPT

SAMPLE OUTPUT TESTS MENU



SAMPLE OUTPUT CONTROL WITH DATA LIST (EGR CONTROLLED ON)



SAMPLE OUTPUT CONTROL WITHOUT DATA LIST

8. When you are finished controlling the output, press EXIT to return to the Select Output menu. When EXIT is pressed, control of the selected output is returned to the ECM/TCM. Press EXIT again to return to the Select Control menu.

ACTIVE KEYS	
F0 - F7	Select output to control.
↑	Advance menu scroll. Change state or value of output.
↓	Freeze menu scroll. Change state or value of output.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
EXIT	Exit from Output Tests mode and return control of selected output to the ECM/TCM.

MODE	OUTPUT	DESCRIPTION
F0	TCC Solenoid VCC Solenoid TCC/Shift LT	The TCC control option allows you to activate the Torque Converter Clutch (Viscous Converter Clutch for Cadillac) Solenoid.
F0	Transmission	For vehicles with multiple transmission controls.
F0	1-4 Shift	Only available for 6-speed manual transmission equipped Corvettes.
F0	Fan Relay #1	Allows testing of engine cooling fan system.
F1	Fan Relay #2	Allows testing of engine cooling fan system.
F2	Both Fan Relays	Allows testing of engine cooling fan system.
F2	Dash Lamps SES Light CE Light MIL	Allows control of dash lamps, Service Engine Soon (SES) Light, Check Engine (CE) Light or Malfunction Indicator Light (MIL) Instrument panel lamp.
F3	A/C RELAY	A/C Relay control.
F4	CPP Solenoid EVAP Purge	Enables Canister Purge Solenoid or Fuel Evaporator Purge Solenoid control.
F5	EGR Solenoid EGR Control	Controls the EGR Solenoid.
F6	AIR Solenoid AIR Switch AIR System AIR Controls AIR Control	Used to select control of Air Injection Reaction (AIR) management system.
F6	Air System	Electrically driven AIR Pump Motor control.
F6	ITV Relay	Allows control of the Intake Tuning Valve.
F7	Wastegate	Allows Wastegate Solenoid control on turbocharged engines.
F7	Secondaries	Control of secondary fuel system for covered vehicles.
F7	Secondary Air	Secondary Air Solenoid control for equipped vehicles.
F7	Closed Loop Fuel Loop Status	Allows selecting Closed or Open Loop fuel delivery.
F7	Fuel Pump	Allows control of the Fuel Pump ON or OFF for supported vehicles.
F7	Boost Control	Allows commanding of Supercharger boost ON (100%) or OFF (0%) for supported vehicles.
F7	Oil Life Rst	Resets Oil Life Monitor to 100% for supported vehicles.

TABLE 5-1. Examples of ECM/TCM Output Tests

MODE	OUTPUT	DESCRIPTION
F8	Cruise Cntrl	Cruise Servo position is commanded to 0%. Up and down arrows can be used to change the servo position in 1% increments.
F8	Intercooler	Allows control of the intercooler pump ON or OFF for supported vehicles.
F9	Ride Control	Allows adjustment of the suspension between a normal and firm setting for supported vehicles.

TABLE 5-1. Examples of ECM/TCM Output Tests (Continued)

SUBMODE F0: AIR SOLENOID

The purpose of the AIR SOLENOID submode is to control the state of the AIR Switch solenoid while continuously monitoring engine data parameters. The solenoid causes air to be directed to the vehicle exhaust ports and can be used to test the effect on engine data parameters such as oxygen sensor voltage. Submode F0: AIR SOLENOID Control is not available for High Speed ECMs.

The AIR SOLENOID submode allows monitoring of engine data parameters in a manner identical to that of the DATA LIST mode. See *Viewing Data Parameters on page 138*.

To select Air Solenoid, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F0 to select the AIR SOLENOID test from the Select Control menu.
3. When the AIR SOLENOID submode is entered, the letters “A/S” appear at the end of line two of the display. The tester initially leaves the AIR Switch solenoid under ECM control. To energize the solenoid, press the ↑ key; “ON” appears at the end of line four of the display. The solenoid returns to normal ECM operation after 20 seconds or when the ↓ key is pressed and the end of line four is blank.
4. Press YES or NO to scroll through the displayed data parameters.
5. Press EXIT to return to the Select Control menu and return AIR Solenoid control to the vehicle.

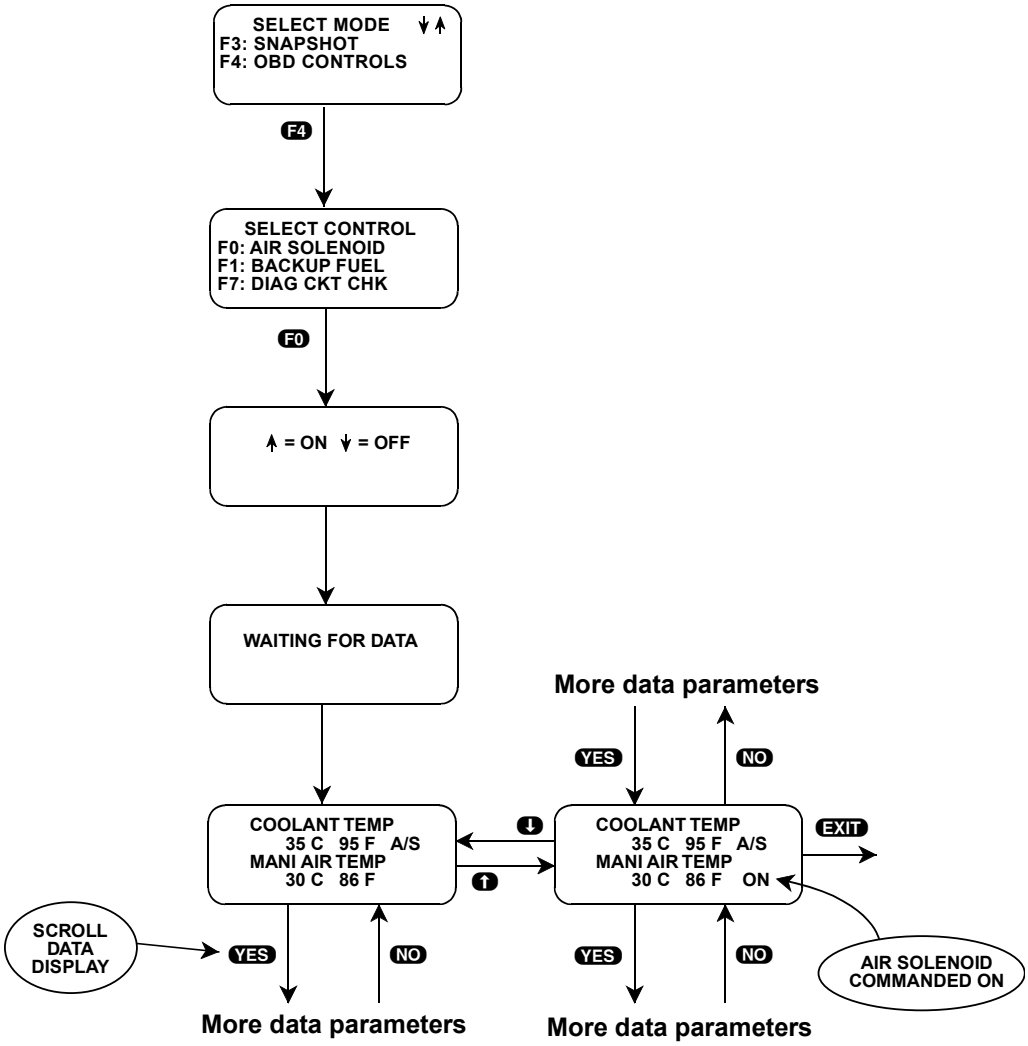


FIGURE 5-9. Air Solenoid

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Select AIR Solenoid Test.
F0 , F1	Mark top or bottom displayed parameter as “fixed”.
↑	Command AIR Solenoid ON.
↓	Stop commanding AIR Solenoid ON.
EXIT	Return to Select Control menu.

SUBMODE F0: RPM CONTROL

Submode F0: RPM CONTROL is available for certain ECM/TCMs. RPM Control is available for certain other ECM/TCMs under Mode F4: OBD Controls, Submode F3: RPM Control.

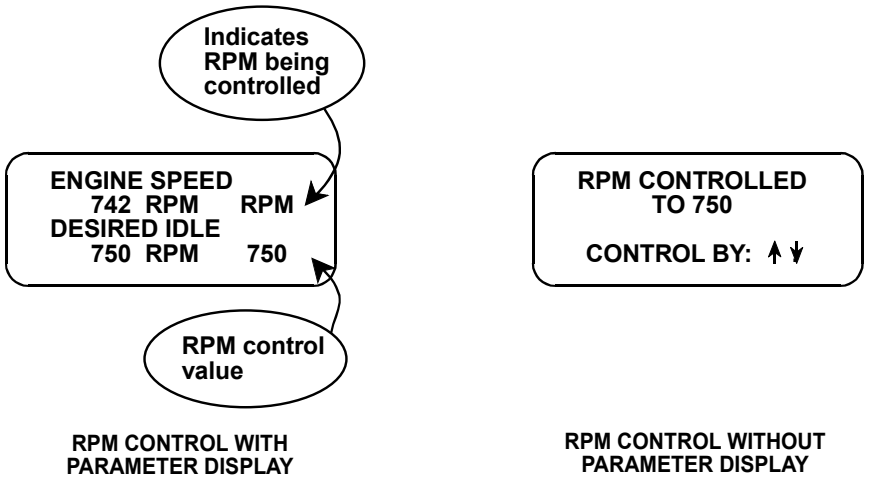
The RPM CONTROL function allows you to remotely control engine RPM from the tester. If an elevated RPM or diagnosis of the IAC motor is required for any reason, this mode allows quick and easy control of the IAC motor. Some systems may have a slight time delay prior to IAC movement. This is not the fault of the IAC motor, ECM, or tester.

CAUTION!

This test should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select RPM Control, do the following:

1. Block the wheels, set the parking brake, put the transmission in Park or Neutral, then start the engine.
2. Press F4 to select OBD Controls from the Select Mode menu.
3. Press F0 to select RPM Control from the Select Control menu.
4. The tester initializes controlled engine speed to 1000 RPM. You can increase or decrease the engine RPM by pressing the keys listed in the Active Keys chart. Holding down any of the keys causes the RPM to change in the appropriate direction. The speed to which the engine can be controlled is dependent on the selected vehicle. For most vehicles the engine speed can be controlled from 300 to 2000 RPM.
5. Most ECMs that have RPM CONTROL capabilities also display parameters as in DATA LIST mode. For these ECMs, “RPM” appears at the end of line 2 of the display, and the currently commanded value of RPM is displayed at the end of line 4. Data parameters can be scrolled and fixed as in the Data List mode.
   Systems that cannot display parameters display the currently controlled RPM value.



NOTE	300 to 2000 RPM is only the range of control allowed by the tester. Depending on current engine conditions, some engines may not achieve 2000 RPM, or may stall at 300 RPM. This does not necessarily indicate a faulty IAC Motor. Engine age, wear, or other system faults (e.g., vacuum leaks) may be the cause.

ACTIVE KEYS	
↑	Increase engine speed by 25 RPM.
↓	Decrease engine speed by 25 RPM.
YES , NO	Scroll through displayed data parameters.
F0	Select RPM Control Test.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
EXIT	Terminate the RPM CONTROL mode and return to the Select Control menu.

SUBMODE F0: EEPROM INFO

In the EEPROM Information submode the tester displays information about the EEPROM within the Saturn ECM. The information is used to determine the software that has been programmed into the ECM. The EEPROM Information is presented in the same format as the Data List mode.

To select EEPROM Information, do the following:

1. Press F0 to select EEPROM INFO from the Select Control menu.
2. Choose F0:ENGINE or F1:TRANSMISSION to view the EEPROM INFO for the selected system.
3. Use the YES and NO keys to scroll through the EEPROM INFO displays. You can use the F0 and F1 keys to create your own Data List pairs as described in the F0: DATA LIST mode description.
4. The data in this mode may be printed if the tester is connected to a compatible printer. Refer to Step 4 on page 140 for further printing instructions.
5. Press EXIT to return to the Select Control menu.

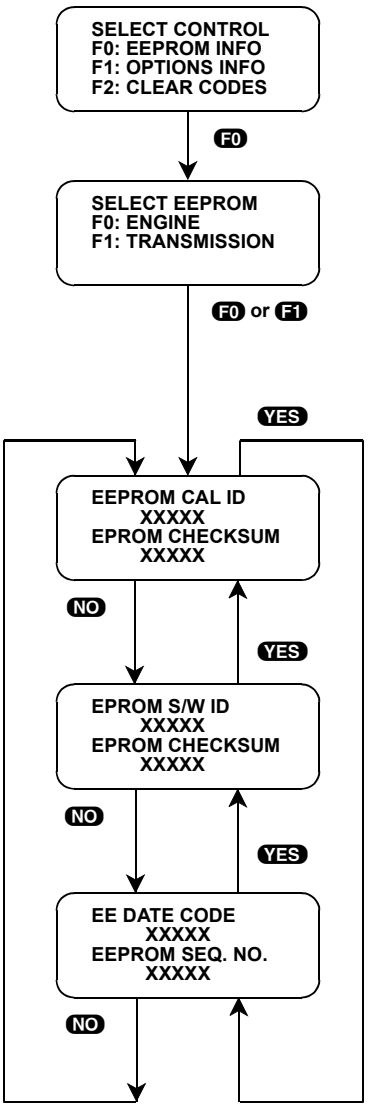


FIGURE 5-10. EEPROM Information

ACTIVE KEYS	
YES , NO	Scroll through EEPROM INFO displays.
F0	Select EEPROM Info.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
F8	Print data displayed on tester screen.
EXIT	Return to the Select Control menu.

SUBMODE F1: BACKUP FUEL

SUBMODE F1: BACKUP SPARK

The purpose of the BACKUP FUEL submode is to command the ECM BACKUP FUEL and SPARK mode of operation (also called the “3.9K mode” or Throttle Body Backup).

The ECM enters the BACKUP FUEL and SPARK mode of operation under two conditions: when the tester commands the mode or when the ECM fails. The BACKUP FUEL and SPARK mode sets base timing and supplies fuel injector pulses so the vehicle may be driven in for service if the ECM/TCM is not operating or system voltage is very high or very low.

For some vehicles, only BACKUP SPARK may be commanded.

NOTE

The tester automatically turns off the BACKUP FUEL mode after 20 seconds.

To select Backup Fuel or Backup Spark, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F1 to select the BACKUP FUEL or BACKUP SPARK test from the Select Control menu. No data is available while the vehicle is in BACKUP FUEL or BACKUP SPARK mode.
3. Press EXIT to quit the BACKUP FUEL or BACKUP SPARK mode and return to the Select Control menu. The tester automatically exits after 20 seconds.

ACTIVE KEYS	
F0	Select Backup Fuel or Backup Spark.
EXIT	Return to Select Control menu.

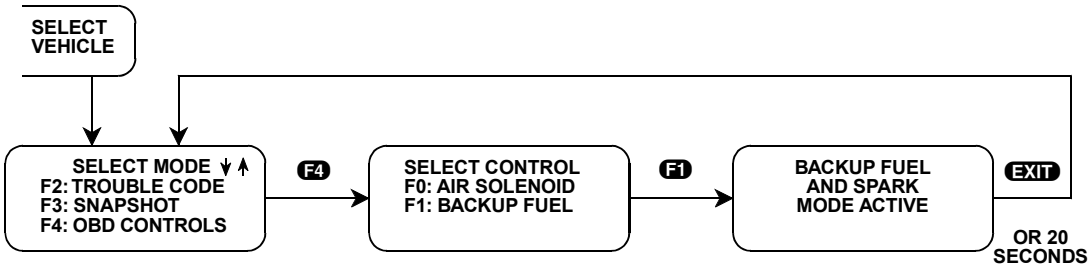


FIGURE 5-11. Backup Fuel Mode

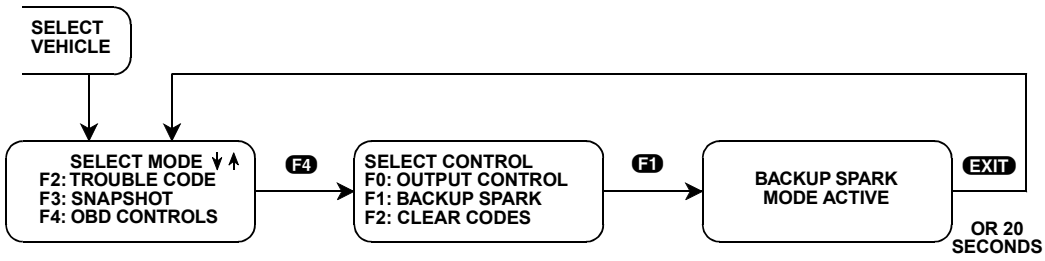


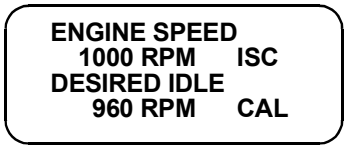
FIGURE 5-12. Backup Spark Mode Active

SUBMODE F1: ISC CAL AIR

The purpose of the ISC CAL AIR mode is to set the duty cycle of the ISC Valve to a certain value at idle speed. This is done by adjusting the idle adjustment screw in the throttle body. The ISC CAL AIR mode allows monitoring of engine data parameters in a manner identical to that in the Data List mode.

To select ISC CAL Air, do the following:

1. Block the wheels, place transmission in Park/Neutral and set the parking brake.
2. Press F4 to select OBD Controls from the Select Mode menu.
3. Press F1 to select ISC CAL AIR from the Select Control menu.
4. Make sure the vehicle is in Park/Neutral with the parking brake engaged, start the engine unless it is already running, then press ENTER.
5. Press YES or NO to scroll through the displayed data parameters. The letters ISC appearing at the end of line two of the display indicate that the ISC motor is being controlled. At the end of line four of the display CAL (Calibrated Air) is displayed.



6. Press EXIT to return to the Select Control menu and return control of the ISC system to the ECM.

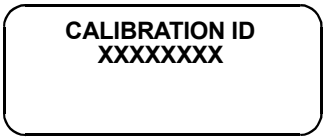
ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as “fixed”.
F1	Select ISC CAL AIR.
F1	Mark bottom displayed parameter as “fixed”.
ENTER	Advance to ISC Control provided vehicle is in Park or Neutral.
EXIT	Return to Select Control menu.

SUBMODE F1: CAL ID

In the CAL ID submode the tester displays the Calibration ID for the controller EEPROM.

To select CAL ID, do the following:

1. Press F1 to select CAL ID from the Select Control menu.
2. The ID value (max. 16000000) is displayed on line 2 of the tester display.



3. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F1	Select CAL ID.
EXIT	Return to Select Control menu.

SUBMODE F1: ACTUATOR CTL

The Actuator Control submode is available only for the 1992-1995 6.5L VIN U Turbo Diesel (6BG1) Medium Duty Truck engine.

This submode allows control of the Prestroke Actuator in 5° increments from minimum (5°) to maximum (55°).

To select Actuator Control, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F1 to select ACTUATOR CTL from the Select Control menu.
3. A prompt screen is displayed for approximately 4 seconds describing the use of the up and down arrow keys to control the prestroke actuator. This screen may be skipped by pressing ↑, but note that the key must be released before it affects prestroke actuation.
4. The data pair ACTUAL PRESTROKE and DESIRED PRESTROKE is displayed with the indicator "P/S" at the end of line 2 and the degrees of actuation at the end of line 4. The ↑ and ↓ keys may be used to increase or decrease respectively, the degree of prestroke actuation.

NOTE

Actuator Control is allowed only at engine speeds below 1000 RPM. If engine speed exceeds this point, Actuator Control automatically returns to ECM control. If this occurs you must exit the test, then reenter it.

The Data List display may be controlled in the same manner as in Mode F0: Data List.

The data in this mode may be printed if the tester is connected to a compatible printer. Refer to Step 4 on page 140 for further printing instructions.

5. Press EXIT to return to the Select Control menu.

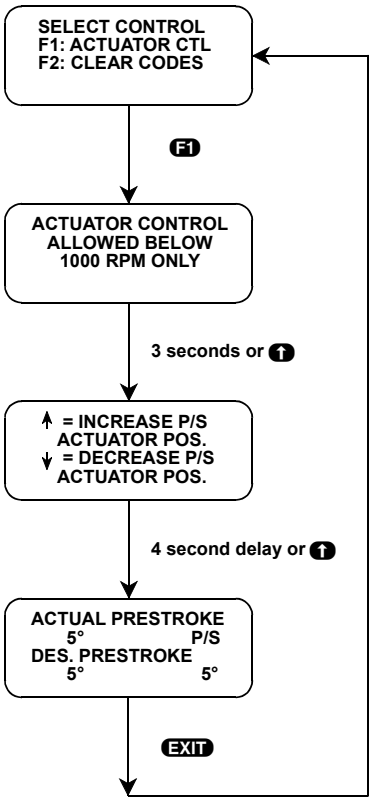


FIGURE 5-13. Actuator Control

ACTIVE KEYS	
YES , NO	Scroll through regular DATA PAIRS.
F0 , F1	Used to create your own data pairs.
F1	Select Actuator Control.
F8	Print data if the tester is connected to a compatible printer.
EXIT	Return to Select Control menu.

SUBMODE F1: OPTIONS INFO (SATURN)

The Options Information submode is only available for Saturn vehicles.

In the Options Information submode the tester displays which options have been programmed into the ECM of the Saturn vehicle being tested. The vehicle's tire size is also displayed. The information is presented in the same format as the Data List mode.

To select Options Information for Saturn vehicles, do the following:

1. Press F4 to select OBD CONTROLS from the Select Mode menu.

2. Press F1 to select OPTIONS INFO from the Select Control menu.
3. Use the YES and NO keys to scroll through the OPTIONS INFO displays. You can use the F0 and F1 keys to create your own pairs as described in the F0: DATA LIST mode description.

   The data in this mode may be printed if the tester is connected to a compatible printer. Refer to Step 4 on page 140 for further printing instructions.
4. Press EXIT to return to the Select Controls menu.

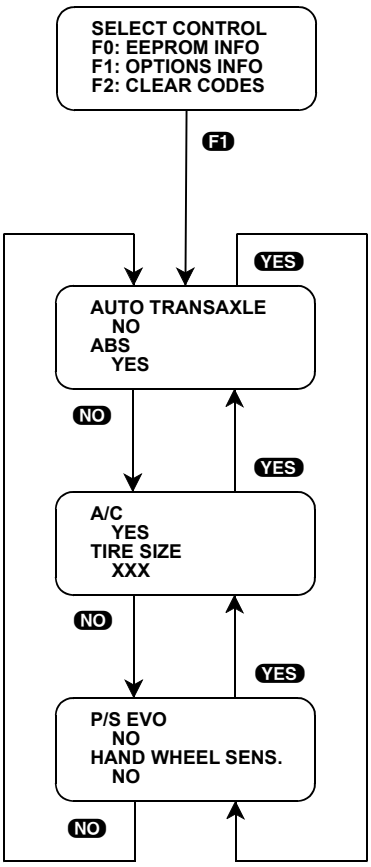


FIGURE 5-14. Saturn Options Information

ACTIVE KEYS	
YES , NO	Scroll through OPTIONS INFO displays.
F0 , F1	Used to create your own data pairs.
F1	Select Options Info.
F8	Print data displayed on tester screen.
EXIT	Return to Select Controls menu.

SUBMODE F1: FAN RELAYS

The purpose of the FAN RELAYS mode is to allow testing of the engine cooling fan system.

To select Fan Relays, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F1 to select Fan Relays from the Select Control menu.
3. Press F1 through F4 to select a Relay from the Fan Relay menu.
4. Press ↑ to turn the relay(s) ON or ↓ to turn the relay(s) OFF.
5. Press EXIT to return to the Select Control menu.

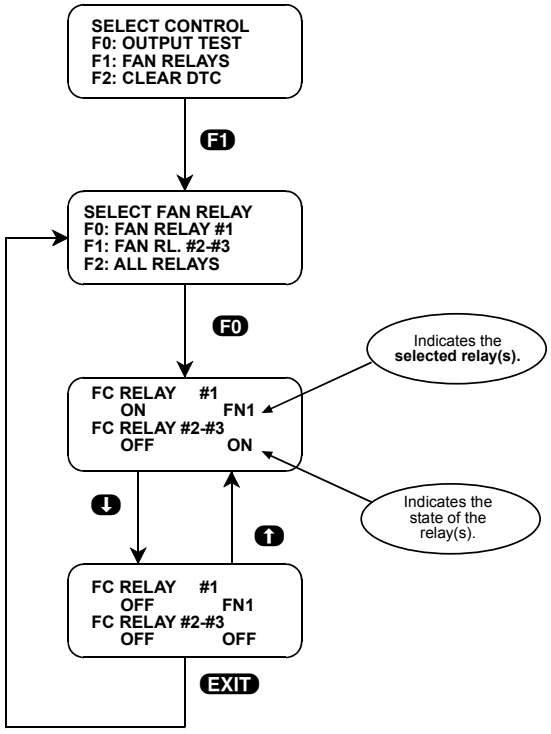


FIGURE 5-15. Fan Relay Tests

ACTIVE KEYS	
F0 , F1	Used to create your own data pairs.
F1	Select Fan Relays.
↑ , ↓	Turn fan relay ON or OFF.
YES , NO	Scroll through parameter displays.
EXIT	Return to Select Control menu.

SUBMODE F1: OIL LIFE RESET

Submode F1: Trans Oil Reset

The Oil Life Reset allows you to reset the Oil Life Monitor index to a different value.

To select Oil Life Reset, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F1 to select Oil Life Reset from the Select Control menu.
3. Press F1 to select Trans Oil Reset from the Select Control menu.
4. Use the 0 - 9 keys to enter the percent of Trans Oil Life, then press ENTER. Entering 90% is used as an example in the flow chart on the following page.
5. The tester asks you to confirm the entered Oil Life percent value. Press YES to confirm the value, or press NO to enter a different value.
6. Press EXIT to return to the Select Control menu.

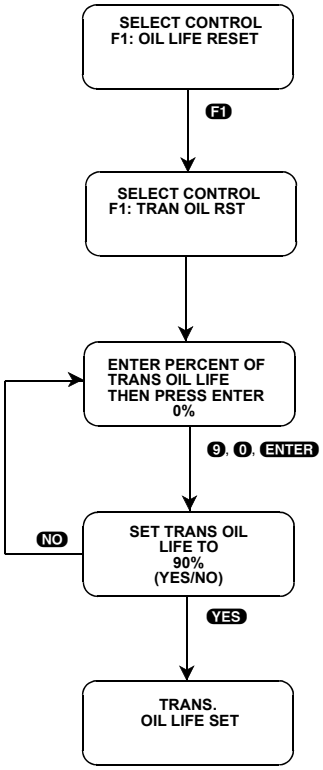


FIGURE 5-16. Oil Life Reset

ACTIVE KEYS	
YES , NO	Scroll through parameter displays.
F1	Select Oil Life Reset.
F1	Select Trans Oil Reset.
0 - 9	Enter new Oil Life Value.
ENTER	Enter the new value.
YES	Confirm the new Oil Life Value.
EXIT	Return to Select Control menu.

SUBMODE F1: MIN-T RICH

SUBMODE F2: MIN-T LEAN

The purpose of the MIN-T RICH and the MIN-T LEAN submodes is to command Min-T operation in either the full rich mode or full lean mode, respectively, while continuously monitoring engine data parameters.

The MIN-T RICH submode commands the ECM to maintain the Mixture Control solenoid at the full rich setting (10%; 6° dwell). The MIN-T LEAN submode commands the ECM to maintain the Mixture Control solenoid at the full lean setting (90%; 54° dwell).

The tester MIN-T RICH and MIN-T LEAN submodes allow monitoring of engine data parameters in a manner identical to that of the DATA LIST mode. See *Viewing Data Parameters on page 138*. Min-T rich or Min-T lean operation is indicated by the letters “MTR” or “MTL”, respectively, in the lower right corner of the tester display.

To select the MIN-T RICH or MIN-T LEAN submodes, do the following:

1. Press F4 to select the OBD Control mode from the Select Mode menu.
2. Select the MIN-T RICH test from the Select Control menu by pressing F1 or press F2 to select the MIN-T LEAN test.
3. Select the data parameters to be displayed by scrolling through the parameters with the YES and NO keys. The letters “MTR” in the lower right corner of the display indicate ECM operation in the MIN-T RICH mode. ECM operation in the full lean mode is indicated by the letters “MTL” in the lower right display corner.
4. Pressing EXIT returns Air-Fuel control to the ECM and returns to the Select Control menu.

NOTE

Once the tester has been connected to the DLC connector and the MIN-T engine type selected, the MIN-T operates in the full rich mode until closed loop operation begins.

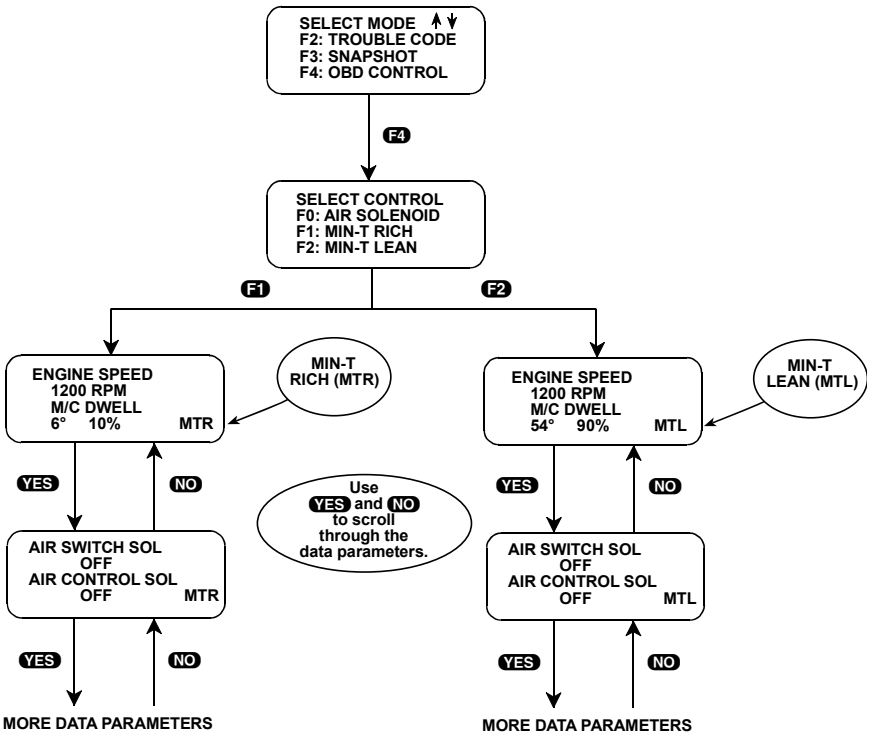


FIGURE 5-17. Min-T Tests

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as “fixed.”
F1	Mark bottom displayed parameter as “fixed” or Select Min-T Rich.
F2	Select Min-T Lean.
EXIT	Return to Select Control menu.

SUBMODE F2: PROM ID

The PROM ID submode displays the ID number of the ECM or TCM PROM.

To select PROM ID, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F2 to select the PROM ID submode from the Select Control menu.

> **NOTE**
>
> When PROM ID is selected, the ECM is placed in the diagnostic (10K) mode of operation.

3. The PROM ID is displayed for 3 seconds after which the tester automatically returns to the Select Control menu.
4. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F2	Select Prom ID Test.
EXIT	Return to Select Control menu.

SUBMODE F2: CLEAR CODES/DTC

The purpose of the CLEAR CODES/DTC submode is to command the clearing of stored Diagnostic Trouble Codes (DTCs). This submode is available if certain high speed ECM/TCMs have been selected for testing.

To select Clear Codes/DTC, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F2 to select Clear Codes/DTC from the Select Control menu.
3. If communication is lost while the tester is commanding clear codes, the message “CLEAR CODES FAIL” appears for 2 seconds before returning to the Select Control menu.
4. The tester automatically returns to the Select Control menu when the stored DTCs have been cleared.

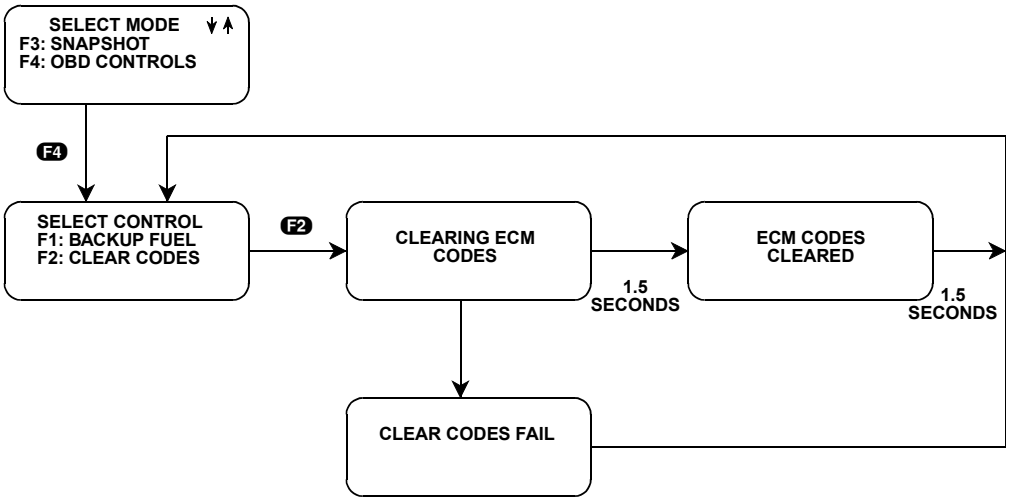


FIGURE 5-18. Clear Codes

For 1993 and later models, “CODES” appears as “DTC.”

ACTIVE KEYS	
F2	Clear Codes/DTCs.
EXIT	Return to Select Control menu.

SUBMODE F3: IAC SYSTEM

Submode F1: Idle Learn

In order to compensate for wear and/or degradation of certain components of the fuel delivery system, and proper fuel delivery at idle, the IDLE LEARN mode allows you to command the ECM to “relearn” the current IAC count that corresponds to the minimum idle speed. Also, after loss of battery power the ECM sets the Idle IAC count to a default number until the current IAC count can be learned by using the IDLE LEARN mode routine.

While performing the IDLE LEARN mode, the tester controls components that could affect engine idle speed. Components such as A/C, Fan 1, and Fan 2 are forced off during the test. The vehicle speed sensor and power steering switch is monitored during the IDLE LEARN test and the tester aborts the test if vehicle speed is detected or if the power steering is cramped.

CAUTION!

CAUTION

To help avoid personal injury due to unintended vehicle movement this test should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select the IAC System, do the following:

1. Clear the ECM memory before running the IDLE LEARN mode. Disconnect the battery for a minimum of 10 seconds. See the service manual for the specific memory clearing procedure for the vehicle selected.

2. Press F4 to select OBD Controls from the Select Mode menu.
3. Press F3 to select the IAC SYSTEM Submode.
4. Press F1 to select IDLE LEARN from the Select Function menu.
5. Make sure the vehicle parking brake is engaged and the drive wheels are secured, then press ENTER.
6. If the ECM memory has not been properly cleared, a display message tells you to clear ECM memory before proceeding with the IDLE LEARN test. Refer to the GM service manual to clear the ECM memory.
7. If the ECM memory has been properly cleared turn the ignition key to OFF if it is not already. Once the tester detects the ignition key is off, the tester displays a message reminding you to leave the vehicle in Park or Neutral for the duration of the IDLE LEARN Test.
8. The tester then asks you to select the transmission type of the vehicle you are testing. Press F0 for manual transmissions or F1 for automatics. This step is bypassed for the 3.4L W-Car.
9. If the ECM has not yet powered down, a message is displayed until the ECM goes to sleep. Once the ECM powers down, the tester asks you to turn the key to the "RUN" position. The tester sends an IAC reset command to the vehicle and "WAITING FOR IAC TO RESET" is displayed briefly. After the IAC has reset, you are asked to start the engine without pressing on the throttle, then press ENTER.
10. When the engine is started, the tester determines the engine coolant temperature. If the engine is too cold or too hot for the IDLE LEARN test to be performed, the tester controls Fan 1 and Fan 2 on or off, and, if necessary, increase engine speed to 1400 RPM until the coolant temperature is in the desired range (85°C to 103°C). At this time the fans are turned off.
11. The ECM begins learning the new minimum IAC position. The IAC count and engine RPM are displayed while the tester raises or lowers the engine speed to the target RPM (750 for automatic transmission vehicles, 825 RPM for manual transmission vehicles).
12. When the engine idle speed is within ±25 RPM of the target, the new learned Minimum Idle IAC position is displayed. This indicates that the IAC count has been learned by the ECM. Record this value, then press EXIT to return to the Select Mode menu.

ACTIVE KEYS	
F1	Select Idle Learn from Select Control menu.
F0	Select manual transmission.
F1	Select automatic transmission or select Idle Learn Test.
F3	Select IAC System.
ENTER	Advance to Idle Learn provided parking brake is engaged and the drive wheels are secured. Advance to next step.
EXIT	Return to the Select Control menu.

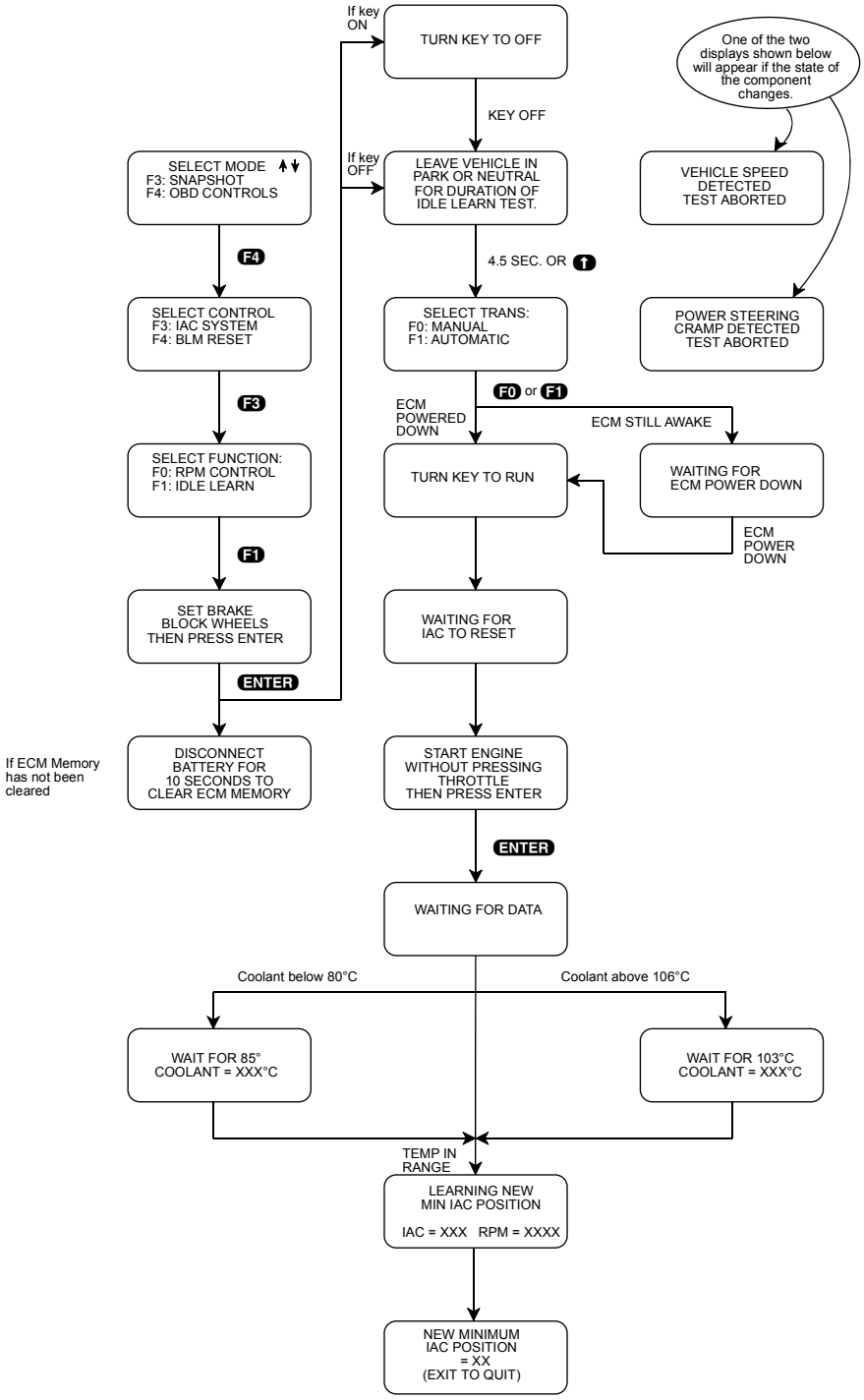


FIGURE 5-19. IAC Idle Learn

SUBMODE F3: ISC SYSTEM

SUBMODE F0: ISC MIN AIR

SUBMODE F0: ISC CAL AIR

The purpose of the ISC Minimum Air and ISC Calibrated Air modes is to test the Idle Speed Control system while monitoring data list parameters.

There are two separate ISC system tests. F0 (ISC Minimum Air) commands the Idle Speed Control motor to fully retract to the minimum air setting. It may take up to 20 seconds for the motor to reach the minimum air setting. F1 (ISC Calibrated Air) commands the Idle Speed Control motor to extend until a desired engine speed (typically 1500 RPM) is reached.

NOTE

When the ISC Control modes are selected for the 1987-1989 Cadillac 4.5L C-Car ECM a different data list is used.

CAUTION!

To help avoid personal injury due to unintended vehicle movement, operation of this mode requires proper functioning of the Park/Neutral switch. Use F0: DATA LIST to verify that the Park/Neutral switch is operating correctly before proceeding. This assures that the Park/Neutral switch is functioning properly.

To help avoid personal injury due to unintended sudden acceleration of the vehicle, the ISC CAL AIR test should not be conducted unless the vehicle is in Park or Neutral.

To select the ISC System, do the following:

1. Block the wheels, shift to Park/Neutral and set the parking brake.
2. Press F4 to select OBD Controls from the Select Mode menu.
3. Press F3 to select the ISC SYSTEM submode test from the Select Control menu.
4. Press F0 to select ISC MIN AIR or F1 to select ISC CAL AIR from the Select Function menu.
5. Make sure the vehicle is in Park/Neutral with the parking brake engaged, start the engine if it is not already running, then press ENTER.
6. Press YES or NO to scroll through the displayed data parameters. The letters ISC appearing at the end of line two of the display indicate that the ISC motor is being controlled. At the end of line four of the display, the letters MIN (Minimum Air) is displayed if F0 is selected or CAL (Calibrated Air) if F1 is selected.
7. Press EXIT to return to the Select Control menu and return control of the ISC system to the ECM.

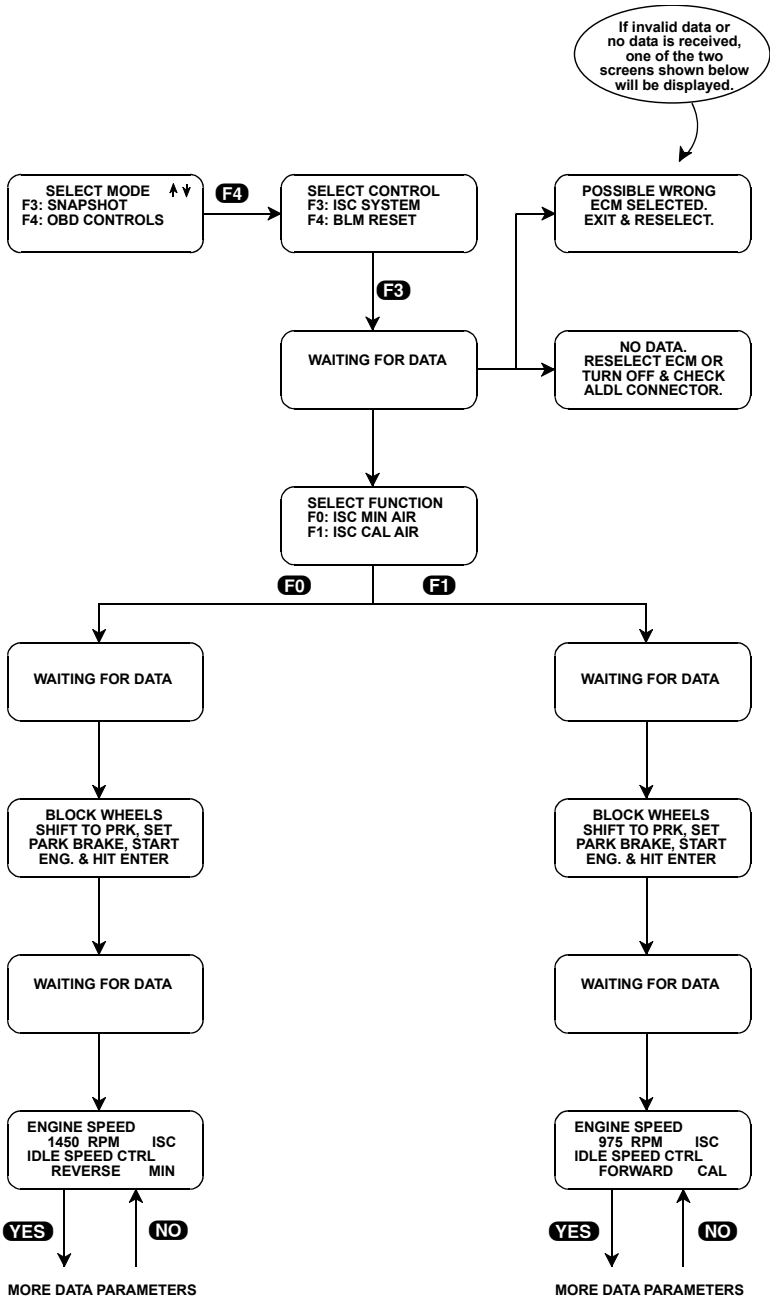


FIGURE 5-20. ISC MIN AIR/CAL AIR

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as “fixed” or select ISC MIN AIR.
F1	Mark bottom displayed parameter as “fixed” or select ISC CAL AIR.
ENTER	Advance to ISC Control provided vehicle is in Park or Neutral.
EXIT	Return to Select Control menu.

SUBMODE F3: RPM CONTROL

Submode F3: RPM CONTROL is only available for certain ECMs and TCMs. RPM Control is also available for other ECM/TCM systems as Submode F0: RPM Control.

The RPM CONTROL function allows you to remotely control engine RPM from the tester. If an elevated RPM or diagnosis of the IAC motor is required for any reason, this mode allows quick and easy control of the IAC motor. Some systems may have a slight time delay prior to IAC movement. This is not the fault of the IAC motor, ECM/TCM, or tester.

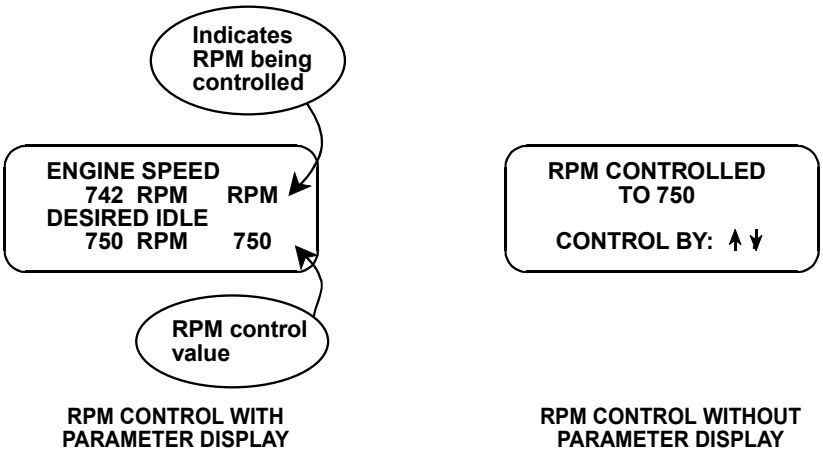
CAUTION!

This test should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select RPM Control, do the following:

1. Block the wheels, set the parking brake, put the transmission in Park or Neutral, then start the engine.
2. Press F4 to select OBD Controls from the Select Mode menu.
3. Press F3 to select RPM Control from the Select Control menu.
4. The tester initializes controlled engine speed to 1000 RPM. You can increase or decrease the engine RPM by pressing the keys listed in the Active Keys chart. Holding down any of the keys causes the RPM to change in the appropriate direction. The speed to which the engine can be controlled is dependent on the selected vehicle. For most vehicles the engine speed can be controlled from 300 to 2000 RPM.
5. Most ECMs/TCMs that have RPM CONTROL capabilities also display parameters as in DATA LIST mode. For these ECMs, “RPM” appears at the end of line 2 of the display, and the currently commanded value of RPM is displayed at the end of line 4. Data parameters can be scrolled and fixed as in the Data List mode.

   Systems that cannot display parameters display the currently controlled RPM value.



NOTE	300 to 2000 RPM is only the range of control allowed by the tester. Depending on current engine conditions, some engines may not achieve 2000 RPM, or may stall at 300 RPM. This does not necessarily indicate a faulty IAC Motor. Engine age, wear, or other system faults (e.g. vacuum leaks) may be the cause.

ACTIVE KEYS	
↑	Increase engine speed by 25 RPM.
↓	Decrease engine speed by 25 RPM.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
F3	Select RPM Control.
EXIT	Terminate the RPM CONTROL mode and return to the Select Control menu.

SUBMODE F3: EGR CONTROL

The EGR Control mode allows you to continuously monitor Data List parameters while commanding the EGR control ON. When EGR control is ON, exhaust gas is introduced into the intake manifold. The engine should be warmed to operating temperature before performing the EGR Control mode test.

To select EGR Control, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F3 to select the EGR Control mode from the Select Control menu.
3. Set the parking brake, block the wheels, then start the engine.
4. The test begins with the EGR on. To control the EGR off, press the ↓ key. To control EGR on again press the ↑ key. The Data List display for monitoring the engine's response is available while the EGR is being controlled.
5. Press EXIT to return to the Select Control menu and return EGR Control to the ECM/TCM.

ACTIVE KEYS	
YES , NO	Scroll through the displayed data parameters.
F0	Mark top displayed parameter as “fixed”.
F1	Mark bottom displayed parameter as “fixed”.
F3	Select EGR Control.
ENTER	Advance to EGR Control provided the vehicle is in Park or Neutral.
↑	Switch EGR control on while viewing the parameters.
↓	Switch EGR control off while viewing the parameters.
EXIT	Return to the Select Control menu.

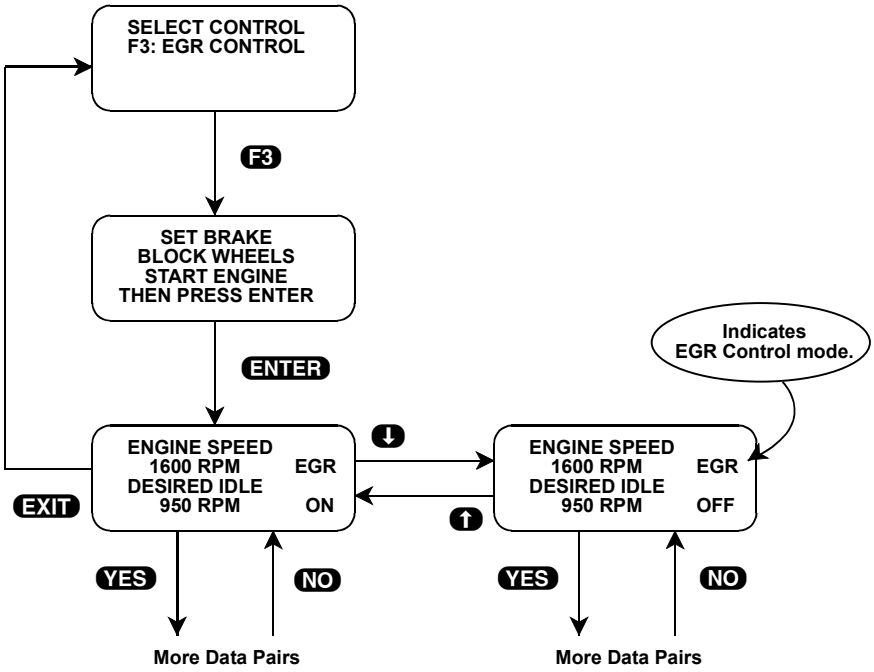


FIGURE 5-21. EGR Control

SUBMODE F3: VIN CODE

In the VIN CODE submode the tester displays the VIN Code that has been programmed into the ECM of the Saturn vehicle being tested.

To select VIN Code, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F3 to select VIN CODE from the Select Control menu.

3. The VIN code for the vehicle being tested is displayed on the tester screen.
4. The data in this mode may be printed if the tester is connected to a compatible printer. Refer to Step 4 on page 140 for further printing instructions.
5. Press EXIT to return to the Select Control menu.

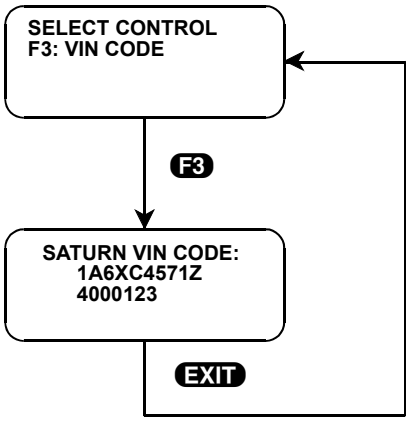


FIGURE 5-22. VIN Code

ACTIVE KEYS	
F3	Select VIN CODE.
EXIT	Return to Select Control menu.

SUBMODE F4: BLM RESET

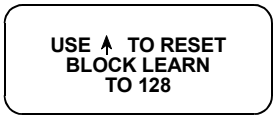
SUBMODE F4: FUEL TRIM RESET

The BLM RESET and FUEL TRIM RESET modes are available for certain vehicles.

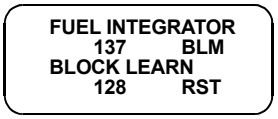
These modes are used to reset all stored Block Learn Multiplier/Fuel Trim cell values to 128. While in this mode you can reset the cells as many times as you wish. Individual cells cannot be reset with this mode. BLM/FUEL TRIM RESET can be used to cancel an excessively rich or lean fuel correction after a repair has been made to verify proper operation of the fuel system.

To select BLM Reset or Fuel Trim Reset, do the following:

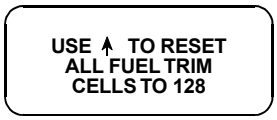
1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F3 to select BLM RESET or FUEL TRIM RESET from the Select Control menu. An instruction message for resetting the BLM or Fuel Trim Cells appears for three seconds before the mode becomes active.
3. The tester resets the cells when the ↑ key is pressed. The cells can be reset as many times as you wish with the ↑ key while in this mode.



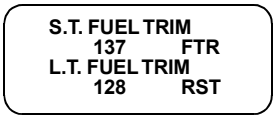
Control Key Prompt



BLM Reset Mode Display



Control Key Prompt



Fuel Trim Reset Mode Display

4. While in the BLM RESET/FUEL TRIM test mode, data parameters are displayed as they are in the DATA LIST mode. The letters "BLM" appear at the end of line two of the display, and "RST" appears at the end of line four. Data parameters can be scrolled and fixed as in the DATA LIST mode.
5. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
↑	Reset all Block Learns or Fuel Trim to 128.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
F4	Select BLM Reset or Fuel Trim Reset.
EXIT	Return to the Select Control menu.

SUBMODE F5: TRANSMISSION

This test mode allows you to select one of the available transmission outputs and control it ON and OFF while viewing Data List parameters. This feature enables you to determine if the proper response is occurring when an output is cycled on and off.

NOTE

On some vehicles, the tester can only control the outputs when the engine is running. The control is not accepted by the ECM in any other ignition mode.

To select Transmission, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F5 to select Transmission from the Select Control menu.
3. The Transmission tests title screen, displayed for 3 seconds, informs you that the outputs are controlled ON and OFF by the ↑ and ↓ keys respectively. The tester then displays all outputs available for testing.
4. To select an output to control, press the function key displayed to the left of the desired output.
5. A controlled output can be in one of three states:
   a. When the output test is first selected the output is under the control of the system controller (ECM or TCM), depending on the vehicle being tested.
   b. To override the system controller and force the output ON, press the ↑ key.

c. To override the system controller and force the output OFF, press the ↓ key.

Note that the state of the output (ON or OFF) does not change if the override state is already the same as the state being commanded.

The following transmission outputs can be tested:

4T60E	4L60E
F0: TCC DISCRETE	F0: TCC SOLENOID
F1: TCC PWM SOLENOID	F1: 1-2 SOL
F2: SHIFT SOL A	F2: 2-3 SOL
F3: SHIFT SOL B	F3: SHIFT TRANS
F4: GEAR CONTROL	F4: PCS CONTROL
	F5: 3-2 SOLENOID
	F6: CLEAR ADAPTS

4L80E (1991-1992)	4L80E (1993-1995)
F4: TCC SOLENOID	F4: TCC SOLENOID
F5: SHIFT TRANS	F5: SHIFT TRANS
F0: SHIFT SOLENOID A	F0: 1-2 SOL
F1: SHIFT SOLENOID B	F1: 2-3 SOL
F2: GEAR CONTR	F2: GEAR SHIFTS
F6: FORCE MOTOR	F6: PCS CONTROL

Gear Shifts

When performing the Gear Shift Test, ↑ and ↓ are used to slew up and down through the gears. The commanded gear is displayed in the lower right corner of the display.

Force Motor/PCS Control

When performing the Force Motor/PCS Control Test on a 1991-95 4L80E or 4L60E transmission, ↑ and ↓ can be used to slew the current from 0.1-1.0 amp.

6. The tester allows output override control (ON or OFF) for only five seconds (for most outputs) before it returns control of the output to the system controller. This safety feature is to prevent damage to the controlled output.

NOTE

TCC PWM Solenoid on 3800 L27 Engines

The ECM must command the PWM solenoid state ON before the tester may override the PWM solenoid. If an attempt to override the PWM is made, the ECM may not command the TCC PWM solenoid ON.

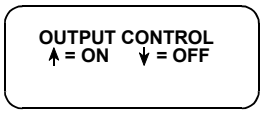
Solenoid B on 3800 E car

Overriding solenoid B in 4th gear may induce a code and the ECM does not allow the override. If the transmission defaults to 3rd gear, turn the key off then restart.

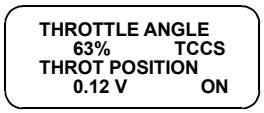
7. To select a different output to control, press the EXIT key, then select the new output.
8. The Data List parameters are displayed while the outputs are being controlled. At the end of line 2 an abbreviation of the output being controlled is displayed. “ON” or “OFF” is displayed at the end of line 4 indicating if the system controller is being overridden by the tester. The end of line 4 is blank when the output is being controlled by the system controller.

   When overriding 1-2 SOL, 2-3 SOL, or a combination of both in GEAR SHIFTS, vehicles equipped with 4L60-E transmissions have the following constraints:

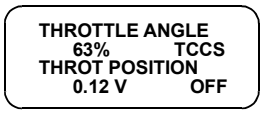
   - In D3, only 1st, 2nd and 3rd gears are allowed.
   - In D2 and D1, only 1st and 2nd gears are allowed.
   - If current codes 24 and 72 are set, only 2nd gear is allowed.
   - If current codes 81 and 66 are set, only 3rd gear is allowed.
9. When you are through controlling the output, press EXIT to return to the Select Control menu. When EXIT is pressed, control of the selected output is returned to the system controller. Press EXIT again to return to the Select Output menu.



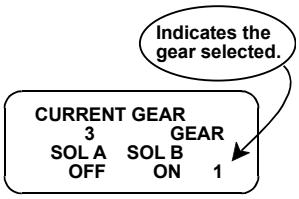
OUTPUT CONTROL TEST TITLE SCREEN



TCC PWM SOL OUTPUT BEING CONTROLLED ON



TCC PWM SOL OUTPUT BEING CONTROLLED OFF



IN GEAR SHIFTS, USE ↑ AND ↓ TO SLEW THROUGH THE GEARS

ACTIVE KEYS	
↑	Turn selected output ON or advance menu scroll. Slew gears or increase force motor amperage.
↓	Turn selected output OFF or freeze menu scroll. Slew gears or decrease force motor amperage.
F0 - F6	Select output to control.
F0 - F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
F5	Select Transmission OBD Controls.
EXIT	Terminate Output Control and return to the Output menu or subselect menu. Press twice to return to Select Mode menu.

SUBMODE F5: OIL LIFE RESET

The purpose of the OIL LIFE RESET control is to reset the Oil Life Monitor Index to 100% for supported vehicles.

To select Oil Life Reset, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F5 to select Oil Life Reset from the Select Control menu.
3. Instructions for resetting the Oil Life Index are displayed for approximately 5 seconds.
4. The Oil Life Monitor parameter is displayed. The parameters can be controlled as in the Data List mode.
5. Press the ↑ key to reset the Oil Life Index to 100%.
6. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F5	Select Oil Life Reset from the Select Control menu.
YES , NO	Scroll through parameter displays.
↑	Reset the Oil Life Index.
EXIT	Return to Select Control menu.

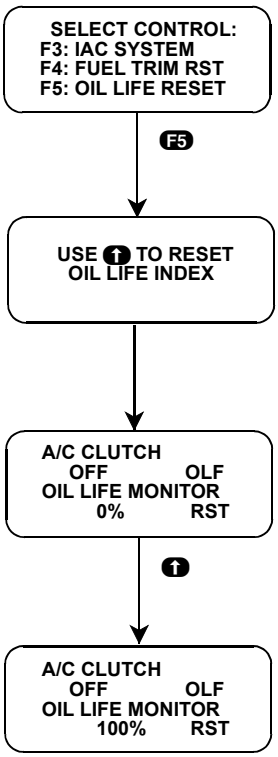


FIGURE 5-23. Oil Life Reset Display

SUBMODE F5: INJ. BALANCE

SUBMODE F6: INJ. BALANCE

The INJECTOR BALANCE test mode allows you to turn off individual fuel injectors. This mode is used to isolate weak or non-contributing cylinders by effectively disconnecting the fuel injectors from the ECM. INJECTOR BALANCE is not necessarily a test of the injectors but rather a test of the contribution of the controlled cylinders. By shutting off individual injectors and monitoring the drop in Engine Speed, the performance of each of the cylinders can be gauged.

CAUTION!

To help avoid personal injury due to unintended vehicle movement, this test should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select Injector Balance, do the following:

1. Block the wheels, set the parking brake, start the engine and make sure the Air Conditioner is off.
2. Press F4 to select the OBD Controls mode from the Select Mode menu.
3. Press F5 or F6 to select the INJECTOR BALANCE submode test from the Select Control menu.
4. Make sure the vehicle parking brake is engaged and the drive wheels are secured, then press ENTER .

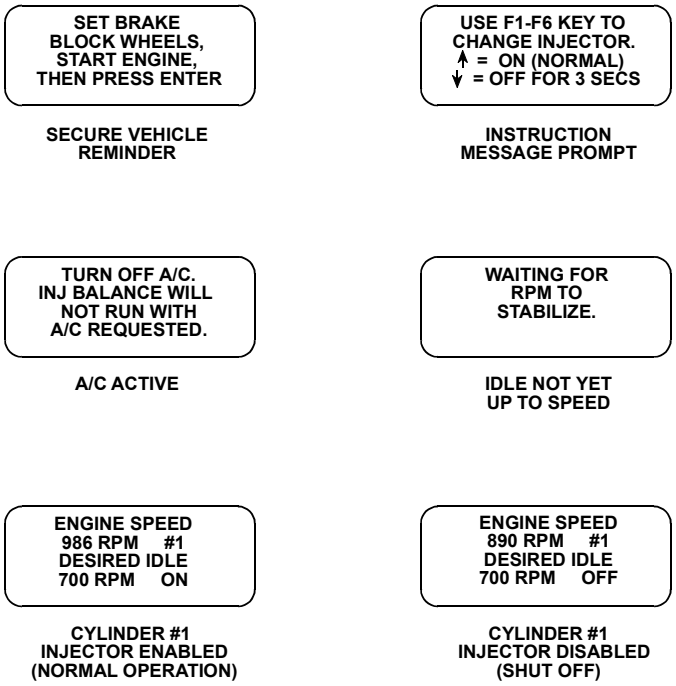
5. At this point the tester commands the idle to 1000 RPM and waits for the Engine Speed to reach from between 900 to 1100 RPM. After the engine speed stabilizes, or twelve seconds, whichever comes first, the Injector Balance test begins.
6. When the INJECTOR BALANCE test becomes active, the screen displays the engine parameters. The top parameter, Engine Speed, is permanently fixed; it cannot be “unfixed”. The end of line two of the display indicates the number of the current injector under control (initially #1). The injectors are numbered the same as the cylinder numbers. The end of line four of the display shows the state of the controlled injector: OFF means the injector is disabled or shut off. ON is displayed when the injector is under normal ECM control and is the state that injector #1 is initially controlled to.

   The ↓ key is used to shut off the injector under control. The injector is automatically reenabled (normal operation) after three seconds. If you wish to turn the injector back on before the three second timeout, you may do so by pressing the ↑ key.

   To select other injectors, press the F-Key corresponding to the cylinder number. If the previously selected injector was commanded OFF when a new injector is selected, the previous injector is set back to normal (turned on).
7. The YES and NO keys can be used to scroll the bottom parameter while in the INJECTOR BALANCE mode.

NOTE 	Although the engine was at first controlled to an idle speed of 1000 RPM, the Desired Idle parameter does not reflect this control. During the test, the ECM is not controlling the idle to the value shown by the Desired Idle parameter but rather it is commanding the IAC motor to hold steady. This is so that ECM Idle Control does not attempt to compensate for the disabled injectors.

8. If at any time the Air Conditioner turns on, the currently controlled injector is reenabled (if currently disabled) and a message prompting you to turn off the A/C appears on the screen. As soon as the tester detects that the A/C has been turned off, the Injector Balance test resumes.
9. Press EXIT to return to the Select Control menu.



ACTIVE KEYS	
↑	Enable selected injector.
↓	Disable selected injector.
ENTER	Acknowledge prompt screen.
YES , NO	Scroll through displayed data parameters.
F1 - F8	Select injector to control.
F5 - F6	Select Injector Balance Test.
EXIT	Terminate the Injector Balance mode and return to Select Control menu.

SUBMODE F6: VIN DISPLAY

In the VIN DISPLAY submode the tester displays the VIN Code that has been programmed into the ECM of the vehicle being tested.

Operating Procedure:

1. Press F6 to select VIN DISPLAY from the Select Control menu.
2. The VIN code for the vehicle being tested is displayed on the tester screen.

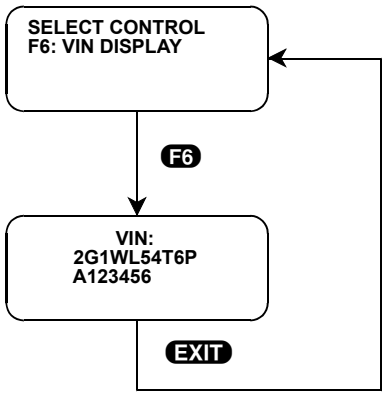


FIGURE 5-24. VIN Display

3. The data in this mode may be printed if the tester is connected to a compatible printer. Refer to Step 4 on page 140 for further printing instructions.
4. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F6	Select VIN DISPLAY.
EXIT	Return to Select Control menu.

SUBMODE F6: QDM TESTS

The Quad Driver Module (QDM) Tests allow the QDM A and B fault lines to be monitored while the various circuits used by each are toggled by the tester. This can assist in determining which circuit is causing a QDM to exhibit a fault (HIGH) condition.

To select QDM Tests, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F6 to select QDM Tests from the Select Controls menu. The engine must be off, the transmission in Park or Neutral, and the TCC Brake Switch must be off or an appropriate warning message is displayed and the test ends.
3. For some 3800 engines, a submenu requires selection of QDM A TEST/CODE 26 or QDM B TEST/CODE 56. Select one of these, if appropriate, then press ENTER after the warning message concerning the above conditions has been displayed.
4. The selected series of outputs cycles on and off automatically at 3-second intervals. The ↑ key may be used to bypass this pause at any time during the tests, but the complete series must be run before control is returned to the OBD Controls menu.
5. If the tester detects that Park/Neutral is not selected or that the brake is engaged, the QDM tests cannot be performed. The tester informs you of these conditions, then automatically returns to the select OBD Controls menu. Correct the condition, then select QDM Tests and run the tests again.
6. Press EXIT to return to the Select Control menu.

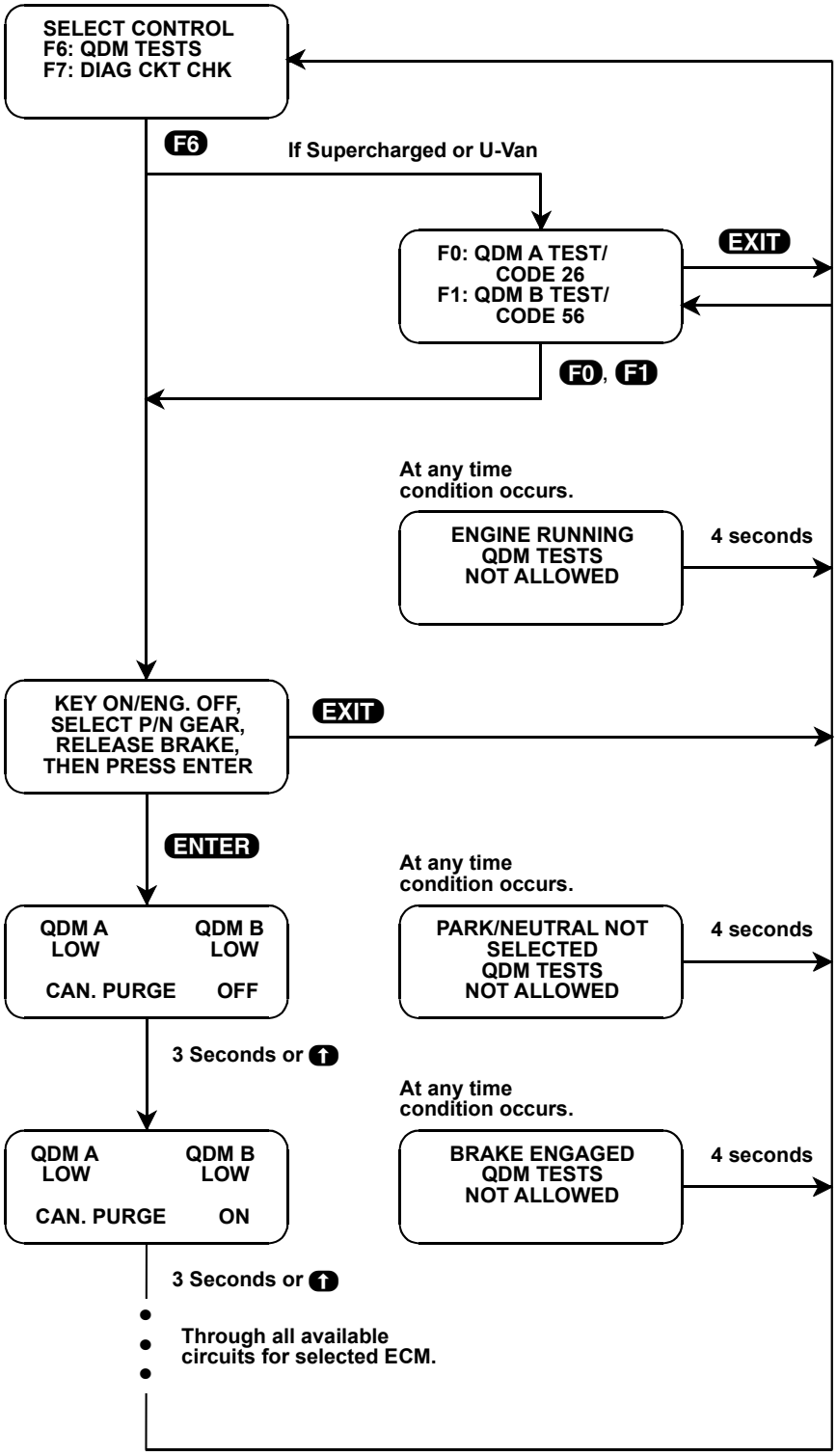


FIGURE 5-25. QDM Tests

ACTIVE KEYS	
F0 - F1	Select QDM A or QDM B test.
F6	Select QDM Tests.
ENTER	Confirm setup instructions have been performed.
↑	Advance to next QDM test.
EXIT	Return to the Select Control menu.

SUBMODE F6: FUEL SYSTEM PRIME

The Fuel System Prime mode enables fuel to be pumped in 2-second increments to the engine, but functions only with the key on and the engine off.

To select Fuel System Prime, do the following:

1. Press F6 to select Fuel System Prime from the Select Control menu. If the engine is not running, a prompt is displayed to remind you to ensure all fuel lines are connected so that fuel is not pumped into the engine compartment. Press ENTER to continue.
2. Use ↑ to prime the fuel system. The pump turns off automatically after two seconds, or it can be turned off sooner by pressing ↓. Priming may be repeated as many times as desired.

   If the engine is started at any time during this process, the tester control of the fuel pump is stopped immediately.
3. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F6	Select Fuel System Prime.
ENTER	Confirm that all fuel lines are connected.
↑ , ↓	Control fuel pump on and off.
EXIT	Return to Select Control menu.

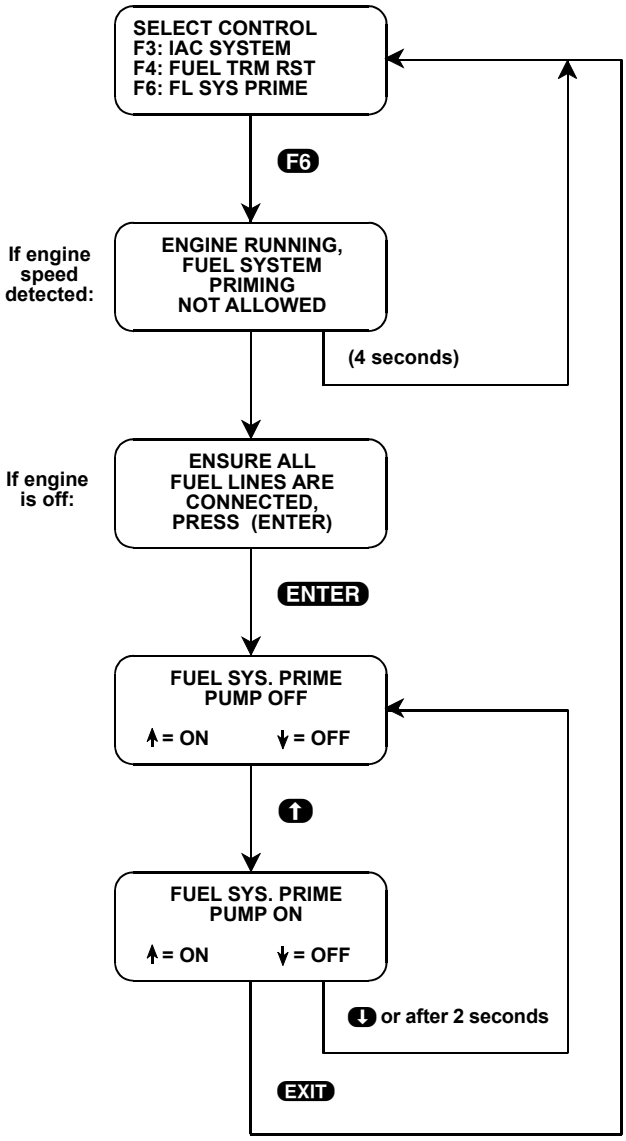


FIGURE 5-26. Fuel System Prime

SUBMODE F6: ODOMETER RESET

SUBMODE F7: ODOMETER RESET

The Odometer Reset mode allows you to enter the Odometer Reading into a replacement ECM or TCM.

To select Odometer Reset, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F6 or F7 to select Odometer Reset from the Select Control menu.

3. Use the 0 - 9 keys to enter the Odometer reading, then press ENTER. Entering 2,000 miles is used in the example flow chart in Figure 5-27.
4. Press YES to confirm the odometer reading.
5. The Odometer parameter displays the current Odometer value.
6. The parameters can be controlled as in the Data List mode.
7. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F6 or F7	Select Odometer Reset.
YES , NO	Scroll through parameter displays.
0 - 9	Used to enter the Odometer reading.
ENTER	Enter the new Odometer value.
YES	Confirm new Odometer value.
EXIT	Return to Select Control menu.

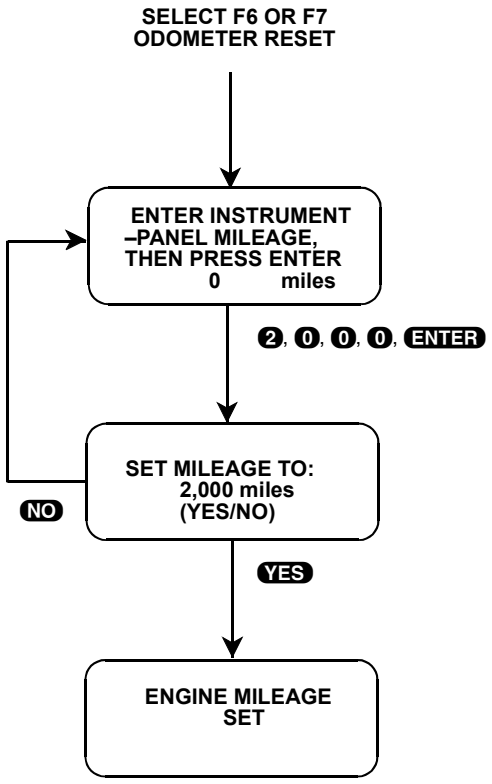


FIGURE 5-27. Odometer Reset

SUBMODE F7: DIAGNOSTIC CIRCUIT CHECK/OBD SYSTEM CHECK

The purpose of the Diagnostic Circuit Check is to verify that the ECM and Check Engine Light circuit are operating correctly.

For some vehicles this submode is called On Board Diagnostic (OBD) System Check.

It is important that the Diagnostic Circuit Check be performed before any further diagnosis of the vehicle is made. The Diagnostic Circuit Check is the quickest way to determine if the ECM has failed.

To select Diagnostic Circuit Check or OBD System check, do the following:

1. There are two ways to select the Diagnostic Circuit Check:
   - After selecting the vehicle that you wish to test, the tester asks if you want to perform the Diagnostic Circuit Check. Press YES to perform the test, *or*
   - The Diagnostic Circuit Check is also available in the OBD Controls menu. Choose F4: OBD CONTROLS, then select F7: DIAG CKT CHK.
2. Be sure the engine is not running. Turn the ignition key to run, then press ENTER.

   On diesel trucks it may be necessary to turn the key to OFF for 10 seconds, then turn the key to RUN to proceed with the test.
3. The tester asks you if the Check Engine Light is ON.

   If the light is on, press YES. The tester then applies a short between DLC pins A and B and asks if the light is flashing Code 12. If Code 12 is flashing, the Diagnostic Circuit Check has passed. Press the YES key and you are prompted to select the Data List mode to verify that serial data communications are functioning properly. After 3.5 seconds, or an ↑ key press the tester displays the Select Mode menu or Select Control menu.

   If the Check Engine light is not on, press the NO key. The Diagnostic Circuit Check has failed. Also, if the light is on but Code 12 does not flash, the test has failed. Press the EXIT key to return to the PERFORM DIAGNOSTIC CIRCUIT CHECK display. If the Check Engine light failed either test, see Section 6E of the Service Manual to correct the problem, then perform the Diagnostic Circuit Check test again to verify the repair.

   On some vehicles, the Diagnostic Circuit Check appears as On-Board Diagnostic System Check, and the Check Engine Light is referred to as the Malfunction Indicator Lamp (MIL).

ACTIVE KEYS	
F7	Select Diagnostic Circuit Check or OBD System Check.
YES , NO	Answer questions displayed on the tester screen.
ENTER	Confirm that the engine is off and the ignition key is on.
EXIT	Return to Select Control menu at any time.

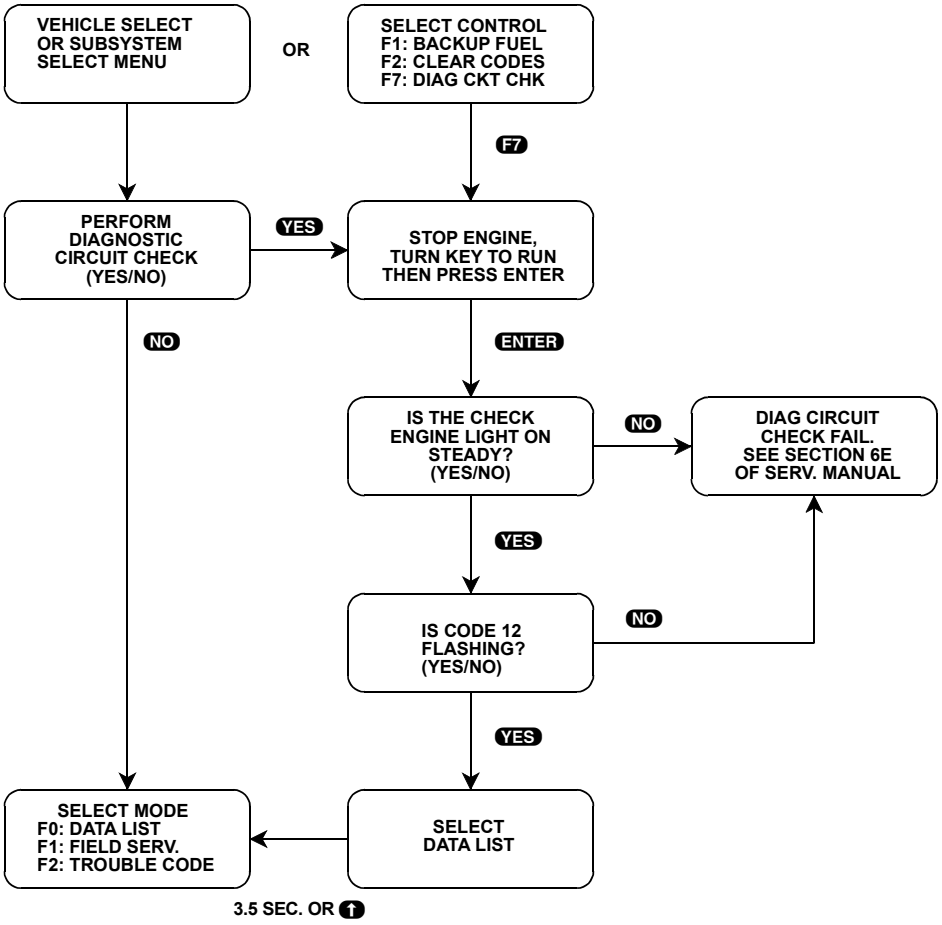


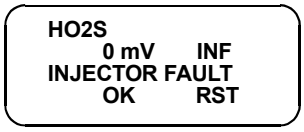
FIGURE 5-28. Diagnostic Circuit Check/On-Board Diagnostic System Check

SUBMODE F7: INJECTOR FAULT RESET

The Injector Fault Reset mode allows you to reset a fuel injector that has set a DTC.

To select Injector Fault Reset mode, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F7 to select Inj. Fault RS from the Select Control menu.
3. The Injector Fault parameter is displayed. The parameters can be controlled as described in the Data List mode.



4. Press ↑ to reset the fault.

5. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F7	Select Injector Fault Reset.
↑	Reset the Injector Fault.
EXIT	Return to Select Control menu at any time.

SUBMODE F7: OIL LIFE RESET

The Oil Life Reset allows you to reset the Oil Life Monitor index to a different value.

To select Oil Life Reset, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F7 to select Oil Life Reset from the Select Control menu.
3. Press F0 to select Engine Oil Reset or press F1 to select Trans Oil Reset from the Select Control menu.
4. Use the 0 - 9 keys to enter the percent of Engine or Transmission Oil Life, then press ENTER. Entering 90% for resetting the transmission oil life is used as an example in the flow chart on the following page.
5. The tester asks you to confirm the entered Oil Life percent value. Press YES to confirm the value, or press NO to enter a different value.
6. Press EXIT to return to the Select Control menu.

YES , NO	Scroll through parameter displays.
F1	Select Oil Life Reset.
F0 , F1	Select Engine or Transmission Oil Reset.
F7	Select Oil Life Reset.
0 - 9	Enter new Oil Life Value.
ENTER	Enter the new value.
YES	Confirm the new Oil Life Value.
EXIT	Return to Select Control menu.

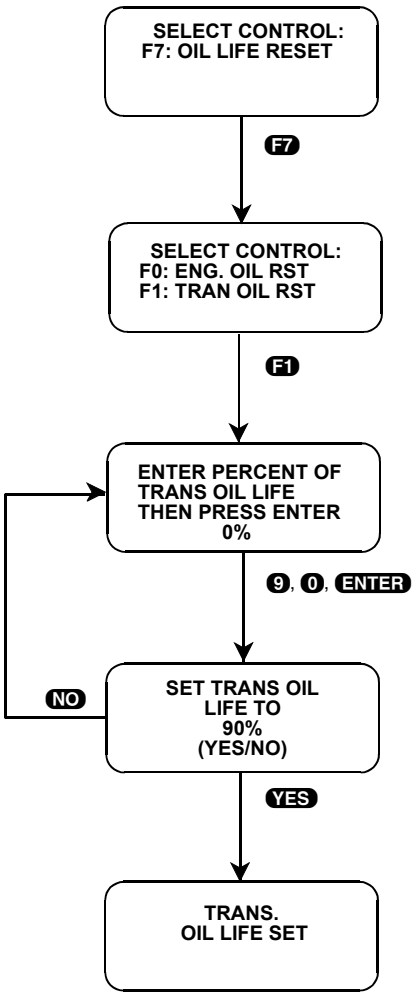


FIGURE 5-29. Oil Life Reset

SUBMODE F7: SERV. SPARK

SUBMODE F8: SERV. SPARK

Vehicles with the Service Spark submode are calibrated for premium fuel only. The purpose of Service Spark is to retard the ignition timing overall up to 4 degrees maximum so regular unleaded fuel can be used without spark knock.

To select Service Spark, do the following:

1. Press F4 to select OBD CONTROLS from the Select Mode menu.
2. Press F7 or F8 to select SERVICE SPARK from the Select Control menu.
3. Enter the amount of spark retard, then press ENTER.
4. The entered valued is displayed. Press YES to accept the value or press NO to enter a different value.

5. When YES is pressed, Spark Retard Set is displayed.
6. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F7 , F8	Used to select Service Spark.
YES , NO	Scroll through parameter displays.
ENTER	Enter amount of spark retard.
EXIT	Return to the Select Control menu.

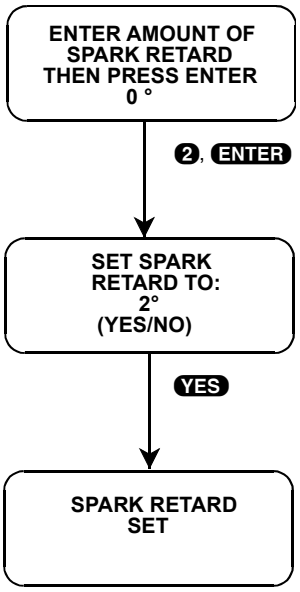


FIGURE 5-30. Service Spark

SUBMODE F8: TRANSFER CASE

The Transfer Case mode (available on certain TBI trucks with electronic transfer case) enables the transfer case to flash diagnostic codes on the instrument panel "4WD" light.

To select Transfer Case, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F8 to select TRANSFER CASE from the Select Control menu. A warning message informs you that pin J of the DLC connector is grounded. Press YES to continue or press NO to exit.
3. If you press YES, serial communications are stopped and pin J on the DLC connector is grounded. The tester screen prompts you to monitor the "4WD" light on the instrument panel to receive any diagnostic codes.
4. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F8	Select Transfer Case DTC Flash.
YES	Confirm that pin J is grounded, continue test.
NO	Exit test after warning screen.
EXIT	Return to Select Control menu at any time.

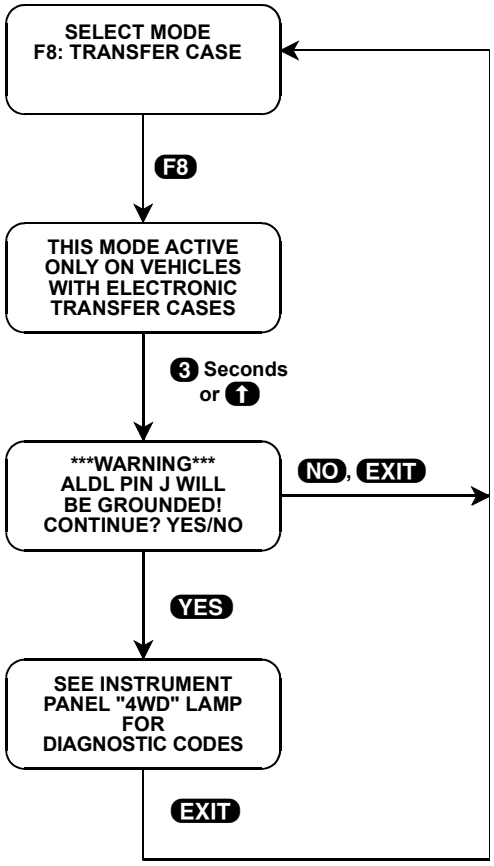


FIGURE 5-31. Transfer Case

SUBMODE F8: VIN DISPLAY

In the VIN Display submode the tester displays the VIN Code that has been programmed into the ECM or TCM of the vehicle being tested.

To select VIN Display, do the following:

1. Press F8 to select VIN DISPLAY from the Select Control menu.
2. The VIN code for the vehicle being tested is displayed on the tester screen.

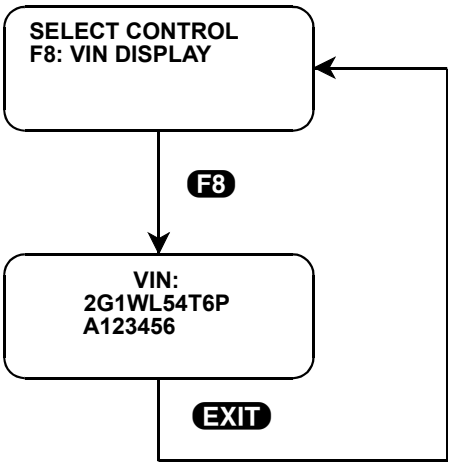


FIGURE 5-32. VIN Display

3. The data in this mode may be printed if the tester is connected to a compatible printer. Refer to Step 4 on page 140 for further printing instructions.
4. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F8	Select VIN Display.
EXIT	Return to Select Control menu.

SUBMODE F9: O2S SYSTEM

The GM Powertrain Application includes an Oxygen Sensor Test for all 1981-1995 ECM vehicles.

The O2S System test verifies the operation of the heater element circuit (if equipped) and evaluates the operation of the oxygen sensor. On vehicles with dual oxygen sensors, this test evaluates the condition of each sensor.

To select O2S System, do the following:

1. Block the wheels, set the parking brake and put the transmission in park or neutral.
2. Press F4 to select OBD Controls from the Select Mode menu.
3. Press F9 to select O2S System from the Select Control menu.
4. An information message is displayed and then you are asked if the vehicle is equipped with a heated oxygen sensor.

   If you enter YES for Heated Oxygen Sensor, the tester displays instruction screens, begin performing the heater element circuit tests, and display the results.
5. At the tester prompt, press YES to continue the oxygen sensor tests. The tester instructs you to turn the A/C and all accessories OFF, then start the engine.

   The system must be in closed loop and the AIR system must be functioning properly.
6. You are instructed to raise the engine to 2500 RPM. Before the test continues, the tester waits for the engine coolant temp to reach 85°C (185°F). You are then instructed to hold RPM at 2500 for one minute for oxygen sensor preconditioning.
7. You are instructed to lower engine RPM to 2000. The oxygen sensor evaluation tests begin.
8. After the tests are complete, the tester displays Heater Element Pass or Fail results, O2S High/Low Test Limits and the actual O2S voltage value results.
9. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F9	Select O2S System.
↑ , ↓	Scroll through displayed screens.
ENTER	Confirm instructions and advance to the next display.
YES , NO	Answer displayed questions.
EXIT	Return to Select Control menu.

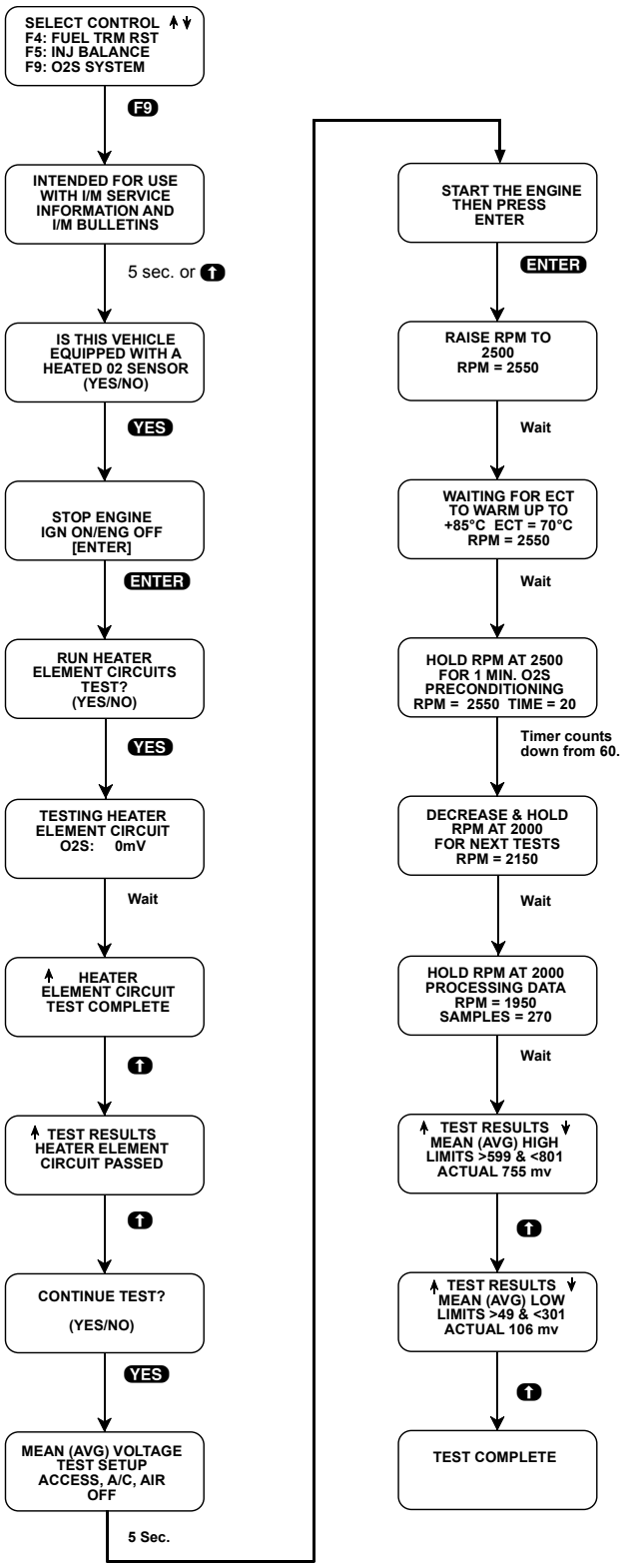


FIGURE 5-33. O2S System

MODE F1: BCM

BCM COVERAGE IN THE GM POWERTRAIN APPLICATION

1985-1989 Cadillac C-body vehicles use the climate control panel to display on-board diagnostic information from the vehicle Body Control Module (BCM). This feature is normally accessed by pressing a combination of climate control panel keys on the vehicle console (refer to the vehicle Service Manual for instructions). However, if the climate control panel keys are not functioning, the tester and the GM Powertrain Application can be used to display vehicle on-board information.

This mode is available on the following vehicles:

MAKE	MODEL	MODEL YEAR	8TH VIN	DISPLACEMENT
Cadillac	C-body	1985-1987	VIN=8	4.1L
		1988-1989	VIN=5	4.5L

To select BCM, do the following:

1. Press the appropriate function key(s) to select Cadillac C-body 4.1L (1985-1987 VIN=8) and 4.5L (1988-1989 VIN=5).
2. Press F1 to select Body Control Module (BCM) communications.
3. Press the appropriate function key for the desired test mode. The displayed test modes are similar to the ECM/TCM test modes; please refer to the correct test mode description in the ECM/TCM section.

ACTIVE KEYS	
F1	Select BCM System.
EXIT	Return to Sub System Selection Menu.

PCM/VCM, ATC, AND AFECU SYSTEMS

PCM/VCM OBD II SYSTEMS

This chapter describes the basic operation of the GM Powertrain software application's diagnostic test modes for GM vehicles equipped with PCM or VCM electronic powertrain control systems. The PCM and VCM systems described in this chapter are OBD II compliant, and the GM powertrain software application supports GM's Class 2 communication protocol, and support of enhanced OBD II data stream information is available.

To support Class 2 communications on GM vehicles, the MTS 3100 with an OBDII daughter board, Tech 1a with an OBD II interface cartridge, or Tech 1 with a Tech 1 OBD II VIM kit is required.

ATC (AUTOMATIC TRANSFER CASE)

1998 and newer GM 4-wheel drive trucks have several different Automatic Transfer Case options, as well as electric shift and manual shift units. The ATC options use a separate controller that supports Data List, DTCs, and bi-directional output controls while the electric shift and manual shift transfer cases do not. The ATC controller is on the Class 2 communication bus. Refer to the *ATC Selection Tables* to determine which ATC is present in the vehicle under test so that the correct selection can be made. The option code is typically listed on a sticker inside the vehicle's glove box.

ATC Selection Tables

1998 AUTOMATIC TRANSFER CASE OPTIONS			
BODY VIN (5TH)	**MENU SELECTION**	**MODEL**	**OPTION CODE**
K	ELEC/MANUAL	NVG 243	NP1
K	ELEC/MANUAL	NVG 241	NP2
K	2 SPD ATC	NVG 246	NP8
T	ELEC/MANUAL	NVG 233	NP1
T	1 SPD ATC	NVG 136	NP4

1999 AUTOMATIC TRANSFER CASE OPTIONS

BODY VIN (5TH)	MENU SELECTION	MODEL	OPTION CODE
K	ELEC/MANUAL	NVG 243	NP1
K	ELEC/MANUAL	NVG 241/NVG 261	NP2
K	2 SPD ATC	NVG 246	NP8
L	1 SPD ATC	NVG 136	NP4
T	ELEC/MANUAL	NVG 233	NP1
T	2 SPD ATC	NVG 236	NP8

2000 AUTOMATIC TRANSFER CASE OPTIONS

BODY VIN (5TH)	MENU SELECTION	MODEL	OPTION CODE
K	ELEC/MANUAL	NVG 243	NP1
K	ELEC/MANUAL	NVG 241/NVG 261	NP2
K	2 SPD ATC	NVG 246	NP8
L	1 SPD ATC	NVG 136	NP4
T	ELEC/MANUAL	NVG 233	NP1
T	2 SPD ATC	NVG 236	NP8

2001 AUTOMATIC TRANSFER CASE OPTIONS

BODY VIN (5TH)	MENU SELECTION	MODEL	OPTION CODE
K	ELEC/MANUAL	NVG 263	NP1
K	ELEC/MANUAL	NVG 261	NP2
K	1 SPD ATC	NVG 149	NP3
K	2 SPD ATC	NVG 236/246	NP8
L	1 SPD ATC	NVG 136	NP4
T	ELEC/MANUAL	NVG 233	NP1
T	2 SPD ATC	NVG 236/246	NP8

2002 AUTOMATIC TRANSFER CASE OPTIONS

BODY VIN (5TH)	MENU SELECTION	MODEL	OPTION CODE
K	ELEC/MANUAL	NVG 263	NP1
K	ELEC/MANUAL	NVG 261	NP2
K	1 SPD ATC	NVG 149	NP3
K	2 SPD ATC	NVG 236/246	NP8
L	1 SPD ATC	NVG 136	NP4
T	ELEC/MANUAL	NVG 233	NP1
T	1 SPD ATC	NVG 126	NP4
T	2 SPD ATC	NVG 226	NP8

2003 AUTOMATIC TRANSFER CASE OPTIONS

BODY VIN (5TH)	MENU SELECTION	MODEL	OPTION CODE
H	Borg Warner	BW 4473	NP3
K	263 NVG	NVG 263	NP1
K	ELEC/MANUAL	NVG 261	NP2
K	AWD	NVG 149	NP3
K	2 SPD ATC	NVG 246	NP8
K	Borg Warner	BW 4481	NR3
K	Borg Warner	BW 4482	NR4
L	1 SPD ATC	NVG 136	NP4
N	Borg Warner	BW 4484	NR4
T	ELEC/MANUAL	NVG 233	NP1
T	1 SPD ATC	NVG 126	NP4
T	2 SPD ATC	NVG 226/NVG 236	NP8

2004 AUTOMATIC TRANSFER CASE OPTIONS			
BODY VIN (5TH)	**MENU SELECTION**	**MODEL**	**OPTION CODE**
K	263 NVG	NVG 263	NP1
K	ELEC/MANUAL	NVG 261	NP2
K	AWD	NVG 149	NP3
K	2 SPD ATC	NVG 246	NP8
K	AWD	BW 4481	NR3
K	Borg Warner	BW 4482	NR4
L	1 SPD ATC	NVG 136	NP4
N	Borg Warner	BW 4484	NR4
T	ELEC/MANUAL	NVG 233	NP1
T	1 SPD ATC	NVG 126	NP4
T	2 SPD ATC	NVG 226/NVG 236	NP8

AFECU (ALTERNATIVE FUEL ENGINE CONTROL UNIT)

The 1999-2000 GM Alt-Fuel (compressed natural gas) vehicles are the 5.7L 4-speed automatic C/K-Truck (2WD/4WD pick-up), and the 2.2L 3-speed automatic J-Car (Chevrolet Cavalier and Pontiac Sunfire). These vehicles utilize a separate Alt-Fuel controller while in CNG fuel mode called the AFECU as well as the PCM/VCM for operation in gasoline mode. The AFECU supports Data List, DTCs, Freeze Frames, and bi-directional controls. The 1999-2000 AFECU is on the Class 2 communication bus.

DIAGNOSTIC APPLICATION OVERVIEW

Operation of some Powertrain application test modes are different for PCM/VCM (OBD II) vehicles than for ECM/TCM (non-OBD II) vehicles. The test modes for PCM/VCM systems are described in the following sections.

Refer to *Adapter and Adapter Cable Configurations on page 113* for hardware information on how to connect the tester to vehicles with PCM/VCM systems.

SELECTING TEST MODES

The tester makes selecting the test mode easy by displaying a list of tests (a Select Mode menu) that is unique for the vehicle and system that you have selected. The menu also displays which key is used to select each test mode.

The menu options and functions may vary, depending on the equipment configuration of the vehicle being tested. Only the menu options available for the selected vehicle are displayed.

The first three test modes are shown as soon as the system and vehicle are selected. The other test modes automatically scroll onto the display three at a time every three seconds. After all menu options have been displayed, the scrolling process repeats.

To stop the automatic scrolling, press either the ↑ or ↓ key. The menu may then be manually changed by pressing either the ↑ key to advance to the next display, or the ↓ key to return to the previous display. All multiple menus of more than three items scroll in this way. Regardless of which test modes are displayed, any test mode can be selected at any time from the menu.

To select a test mode, simply press the key listed to the left of the test mode on the menu. Sample menus are shown below. The menu items vary according to the vehicle and system selected.

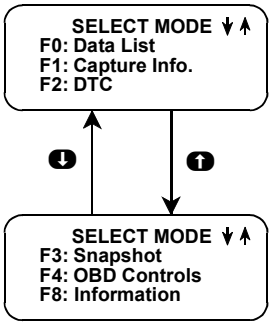


FIGURE 5-34. PCM/VCM Select Mode Menu

SELECTING SUBMODES

When some Test Modes are selected, a submenu is displayed. Items are selected from the submodes in the same manner as selecting from the Test Modes. To return to the previous menu just press EXIT.

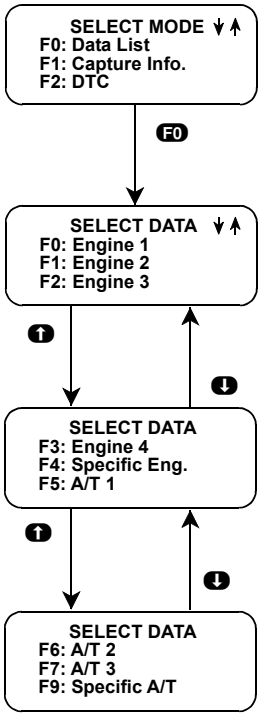


FIGURE 5-35. Example of SUBMODE Menus

PRINTING DATA

The Data Lists can be printed if the tester is connected to a compatible printer.

Some PCM/VCM/ATC/AFECU Class 2 Data Lists display Full Screen parameter descriptions rather than pairs of parameters. These full screen parameters are not printed exactly as they are displayed on the tester. When printing Data Lists that use full screen parameters you see <MODIFIED DESCRIPTION BELOW> on the first line and a shortened description with the value for the parameter on the next line.

MODE F0: DATA LIST

The Data List mode described in this section applies to vehicles equipped with a PCM or VCM and Class 2 communications.

The operation of the Data List function for PCM/VCM/ATC and AFECU vehicles is similar to Data List Operation for ECM/TCM vehicles. However, due to the large number of parameters and the update rate, the GM Powertrain application now has additional submenu entries for selection of parameter lists. The parameter lists have been subdivided to maintain an acceptable data update rate using Class 2 communications. The new submenu entry types are illustrated on the following pages.

VIEWING DATA PARAMETERS

In order to maximize the information that can be seen at one time the tester displays data parameters in pairs (some Class 2 Data Lists use full screen parameters). There are up to four dozen preprogrammed pairs for each engine type and selected data list. A typical pair of data parameters is shown below.

ENGINE SPEED
960 RPM
DESIRED IDLE
900 RPM

To see other data parameters for the engine type you've selected, press either the YES or NO key. The YES key causes the tester to scroll forward through the list and the NO key causes backward scrolling. Holding either key causes continuous scrolling.

CREATE YOUR OWN DATA PAIRS

Parameters are displayed as preprogrammed pairs, as shown in example *Figure A* below. You can create data parameter pairs different from the preprogrammed pairs, as explained below.

NOTE

Some parameters for PCM/VCM vehicles are displayed in a single parameter format with a full screen parameter description and cannot be paired with another parameter.

New data pairs are created simply by scrolling either the bottom or top parameter, while the other parameter is “fixed”. Pressing F0 causes the top display parameter to be “fixed”, which is indicated with an asterisk (*) in the left column of the second line of the display, as shown in *Figure A*. Pressing F1 causes the bottom display parameter to be “fixed”, as shown in *Figure B*. To “unfix” the top parameter, press F1. Press F0 to “unfix” the lower parameter. The top and bottom parameters cannot both be fixed at the same time.

As an example, let's say you wish to create a pair with Engine Speed and Oxygen Sensor. To do so, scroll through the preprogrammed pairs with the YES or NO key until you find a pair with Engine Speed. Fix Engine Speed by pressing F0 if Engine Speed is the top parameter, F1 if it is the bottom. Then scroll the other half of the display with either the YES or NO key until Oxygen Sensor is displayed.

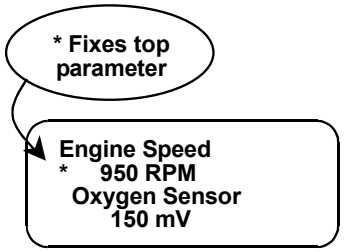


FIGURE A

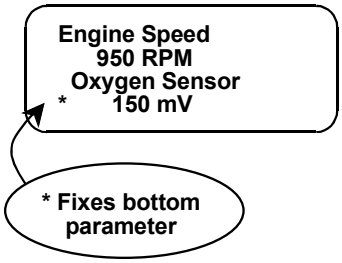


FIGURE B

NOTE

For PCM/VCM systems, scrolling through the data parameters after one parameter has been fixed causes the tester to skip parameters that are displayed in the full screen format.

To create your own data pair, do the following:

1. Press F0 to select Data List from the Select Mode menu.
2. For PCM and VCM systems, a menu is displayed which allows you to display engine, transmission, ATC (Automatic Transfer Case), or AFECU (Alternate Fuel) data parameters or display the data parameters for a specific engine or transmission subsystem. If Specific Eng. or Specific A/T is selected, a menu of specific engine or transmission systems is displayed.

   While in the Data List mode, “Hot Keys” options are available. Press the keys listed below to jump to the described display.

F2	Go to the DTC Select Status menu.
F3	Display the name of the current Data List.
F6	Go to the DTC Status display.
F7	Go to the next Data List in the selected menu.
F8	Print Data List.

   Again, for PCM/VCM/ATC/AFECU systems, some Data List parameters are displayed with a full screen description.
3. Select the data parameters to be displayed by scrolling through the parameters with the YES and NO keys.
4. The data may be printed if the tester is connected to a compatible printer. An RS232C I/F Cartridge (P/N TK05030B or 02001045) is required for Tech 1 testers. To print the data, press F8. While the data is being sent to the printer, the keyboard is disabled.

   Data can also be printed in a tabular format using the Screen Print feature. This function is enabled by pressing F6 for approximately 3 seconds until an RS232 Setup menu is displayed. Press F0 for RS232, then F0 for printer. Pressing F1 for Screen Print and then F0 enables the Screen Print function. Refer to the RS232C I/F or tester Operator's Manual for more detail.
5. Press EXIT at any time to return to the Test Mode menu.

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as “fixed” for creating your own data pairs.
F0 - F9	Select Data List Mode or Select a Data List from the Select Data menu.
F2	Displays the DTC Select Status menu.
F3	For PCM/VCM/ATC and AFECU systems, displays the name of the Data List you are viewing.
F6	DTC Status Display.
F6	For Tech 1A, hold the key for 3 seconds to go to the RS232 Setup screen.
F7	For Class 2 vehicles, goes to the next Data List in the selected menu.
F8	Print current data sample (if the tester is connected to a compatible printer).
EXIT	Return to the Select Mode menu.

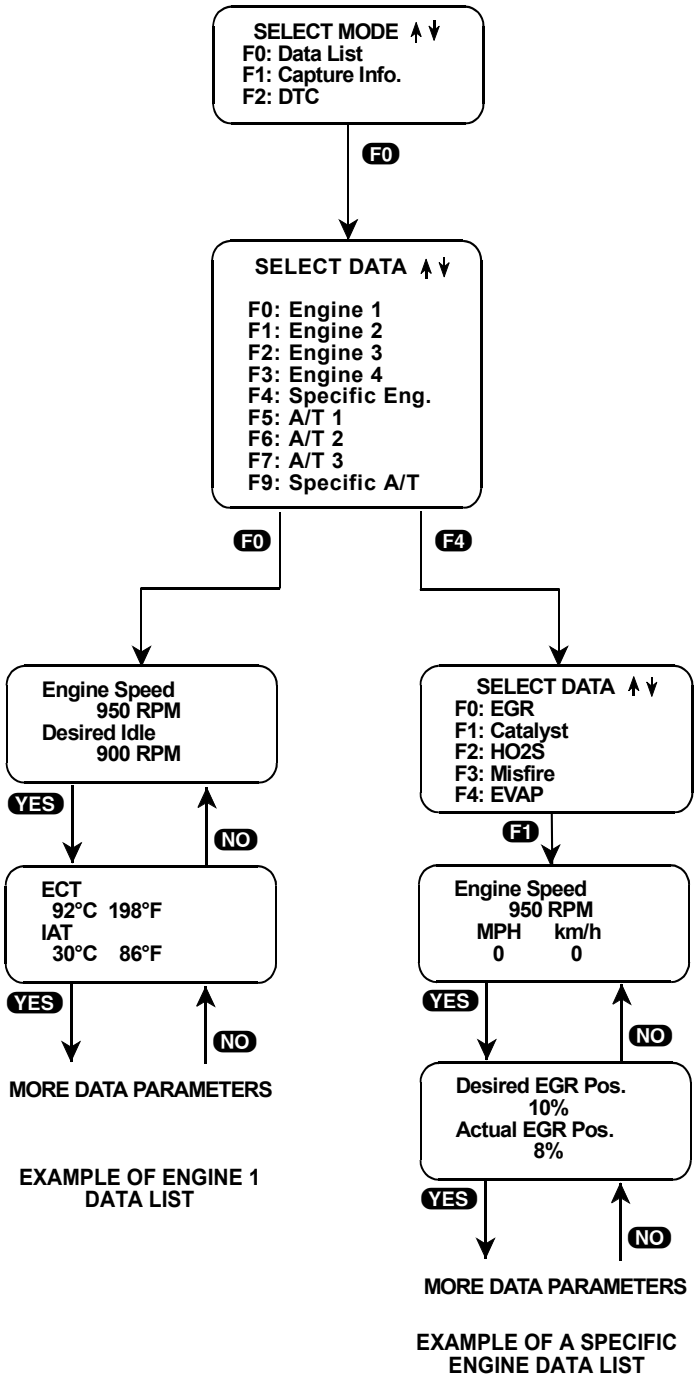


FIGURE 5-36. Example of Data List Mode for PCM/VCM Vehicles

MODE F1: CAPTURE INFO

Capture Info. is a feature that reads Freeze Frame, DTC, and Failure Records data held in the vehicle controller memory and saves this data in tester memory. This enables the user to clear the Freeze Frame and Failure Records and DTC data saved in the vehicle controller and still have this information available for diagnostic review and display.

When Capture Info. is selected, the tester displays menus that allow you to review data that is already saved in the tester memory, or replace saved data with new data from the vehicle.

The Capture Info. data saved in the tester memory is not cleared by selecting F2: DTC, Submode F4: Clear Info. The saved Capture Info. data can only be replaced by updating the Capture Info. data with the current data saved in the vehicle controller's memory.

To capture information, do the following:

1. Press F1 to select Capture Info. from the Select Mode menu.
2. The tester displays the type of information that is captured.
3. Press F0 to select Store Info.
4. The tester stores the information in its memory. When finished, the Capture Info. menu is displayed.
5. Once information has been stored, pressing F1 from the Select Mode menu displays the options shown on the following page.

To refresh information, do the following:

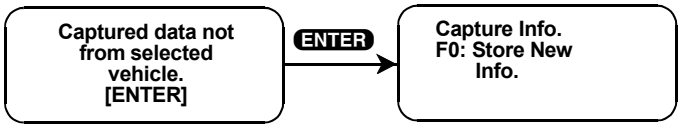
1. Press F0 to refresh DTC Info, Freeze Frame, and Failure Records data previously stored in the tester.
2. The tester updates the information in its memory. When finished, the Capture Info menu is displayed.

To review information, do the following:

1. Press F3 to review DTC Info, Freeze Frame, and Failure Records data stored in the tester for the currently selected vehicle.

> **NOTE**
>
> Captured information for the current vehicle is overwritten when information is refreshed. Additionally, stored information can be reviewed after vehicle selection.

If captured information from a previously tested vehicle is viewed, the following screen is displayed:



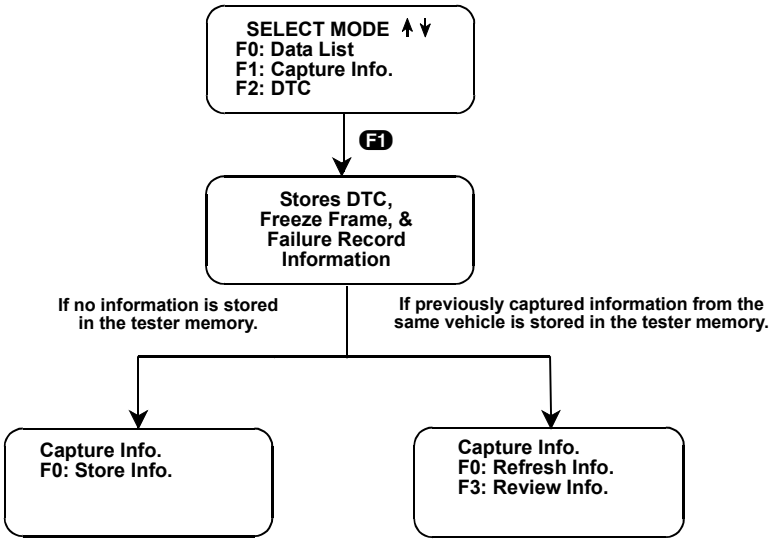


FIGURE 5-37. Capture Info. Mode

2. Press EXIT to return to the Select Mode menu.

ACTIVE KEYS	
F0 - F3	Select a menu option.
F1	Select Capture Info.
EXIT	Return to the Select Mode menu.

MODE F2: DTC

The F2: DTC mode has several modes and sub modes available for obtaining critical diagnostic information about the PCM, VCM, Automatic Transfer Case (ATC), and AFECU controlled systems. With the legislation of OBD II requirements, the PCM and VCM systems now support the display of important diagnostic information in a new format, which includes the information available in F2: DTC.

Modes available under F2: DTC are DTC information, Specific DTC, Freeze Frame, Failure Records, Clear Information, ATC (Automatic Transfer Case), and AFECU (Alternate Fuel) DTC information (if equipped).

The DTC Information mode supports several submodes, which include History, MIL Request, Last Test Failed, Test Failed Since Code Cleared, Test Not Run Since Code Cleared, Test Failed This Ignition Cycle, and DTC Status. ATC DTCs supports Submodes, History, and MIL request.

To select DTCs, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. A menu of options is displayed.
3. Press EXIT at any time to return to the previous menu.

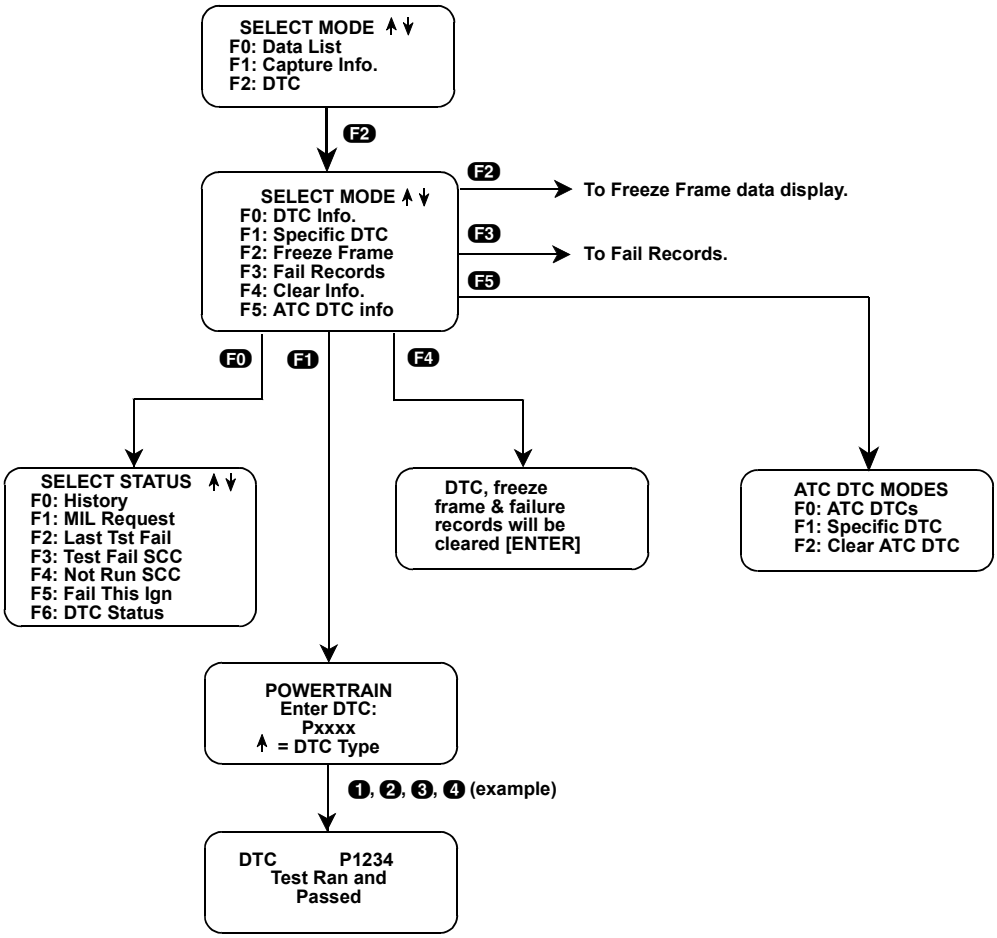


FIGURE 5-38. Example of F2: DTC Mode for PCM/VCM/ATC Systems

ACTIVE KEYS	
F0 - F6	Select a menu item.
F2	Select DTC Mode.
0 - 9	Enter a DTC number.
ENTER	Clear the stored information.
EXIT	Return to the Select Mode menu.

SUBMODE F0: DTC INFO

Performing the DTC Information mode displays History, MIL Request, Last Test Failed, Test Failed Since Code Cleared, Test Not Run Since Code Cleared, Test Failed This Ignition Cycle, and DTC Status information. This information provides insight to the condition of the PCM or VCM system and whether or not the diagnostic for a DTC has been performed by the PCM or VCM. The ATC (Automatic Transfer Case) Controller supports History and MIL request DTC information. Using this information and getting an

understanding from the service manual for the vehicle that is being diagnosed allows for accurate diagnostics of the PCM/VCM/ATC or AFECU system.

The operation of each submode (History, MIL Request, Last Test Failed, Test Failed Since Code Cleared, Test Not Run Since Code Cleared, Test Failed This Ignition Cycle, and DTC Status) is discussed in the following pages.

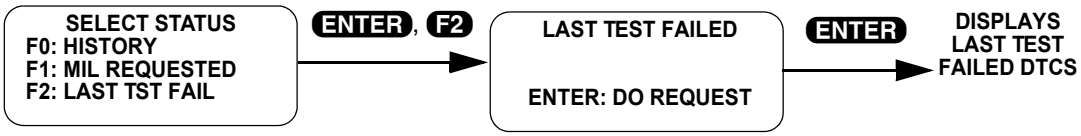
NOTE

Refer to Appendix D for a description of DTC Types A, B, C, and D.

Using Submode F0: DTC Info

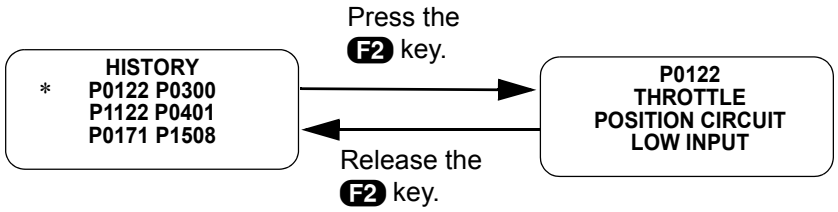
Each stored DTC is displayed using a 5 character format (e.g., P0122) along with the status of the code (e.g. History DTC). Each code is displayed for 3 seconds. Pressing ↑ advances to the next code and pressing the ↓ key holds the display on the currently displayed code. If "ENTER: More Info." appears on the bottom line, then pressing ENTER toggles the status portion of the screen to show more status information. If the bottom line is blank, then all available status information is already displayed.

To display a full-length description of an abbreviated menu item, press ENTER followed by the function key for the abbreviated menu item. In the example below, pressing ENTER , followed by F2, displays the expanded text for F2: LAST TEST FAIL. Press ENTER to display the LAST TEST FAILED DTCs.



On most vehicles, when DTC Info. is selected, a submenu is displayed for selection of DTCs by Status Type (e.g., F0: History, F1: MIL Requested, etc.).

When a specific status is selected, a list of DTCs with that status is displayed. A DTC may be selected by moving the asterisk with the YES (left), NO (right), ↑, and ↓ keys. Press F2 to display a description of the DTC indicated by the asterisk. Release the F2 key to return to the DTC Info. display.



F0: History

The History mode reads stored DTCs from the PCM, VCM, ATC, or AFECU memory. DTCs that are GM type B and have not yet failed twice are not displayed.

NOTE

"History" does not mean the fault is not present. The History DTC type indicates that the conditions to set and store the DTC were met during some prior operation and information was stored into the PCM or VCM or ATC or AFECU Controller memory. To test for current DTCs, use mode F0: DTC INFO. and appropriate status submodes.

F1: MIL Request

The MIL Request mode displays only DTCs that are requesting the MIL (Malfunction Indicator Lamp) to turn on. The MIL request cannot be used to determine if a fault or DTC is "current", because non-emission related DTCs (GM type C and D) do not request the MIL. GM Type C and D DTCs are not displayed using this option.

F2: Last Test Fail

The Last Test Failed mode displays only DTCs that failed the last time the diagnostic test ran. The last test may have been conducted during an earlier ignition cycle if the DTC is GM Type A or B.

F3: Test Fail SCC (Test Failed Since Code Clear)

The Test Failed Since Code Cleared mode displays all DTCs that have reported a diagnostic test failure since the last time DTCs were cleared. This search reports on all GM types (A, B, C, D) of DTCs.

F4: Not Run SCC (Not Run Since Code Clear)

The Test Not Run Since Code Cleared mode displays DTCs that have not been tested for since DTCs were last cleared. Since any displayed DTCs have not been tested for, their condition (passing or failing) is unknown.

```
     NOT RUN SCC
*  P0133   P0141
   P1133   P0420
   P0751   P0756
```

F5: Fail This Ign.

The Test Failed This Ignition Cycle mode displays all DTCs that have failed during the current ignition cycle.

F6: DTC Status

The DTC Status mode displays any DTCs that have not yet run during the current ignition cycle or have reported a test failure during this ignition. A tester Display Example for DTC Info status type F6 is shown below.

The RAN column displays whether the diagnostic test has run or not during this ignition cycle:

- **Yes** indicates that the test has completed this ignition cycle.
- **No** indicates that the test has not run this ignition cycle.

The FAIL column may contain one of these possible answers:

- **Yes** indicates that the diagnostic test has failed during this ignition cycle.
- **Int.** indicates that the diagnostic test has passed at least once and also failed at least once during this ignition cycle.
- **N/R** or **---** indicates that the diagnostic has not been run so no data is available to indicate its status.

DTCs displayed in this mode do not necessarily indicate a problem. This mode displays DTCs that have failed during this ignition cycle and DTCs that have not run.

As the vehicle is driven, DTCs may be removed from the tester display. This is due to the PCM or VCM's diagnostic executive performing a diagnostic routine for a particular DTC, and the results are a pass. In this case, removal of DTCs from the tester display is normal operation.

To change DTC Status Type, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F0 to select DTC Info for engine and transmission systems from the Select Mode menu; or F5 ATC DTC Info, then F0 ATC DTC for Automatic Transfer Case DTC information from the Select Mode menu; or F5 AF DTC INFO, then F0 AF DTC INFO for Alt-Fuel DTC information.
3. Press the function key for the appropriate function from the Select Status menu.
4. When DTCs for each DTC Information Status submode are displayed, use the ← , → , ↑ and ↓ keys to navigate the asterisk to the desired DTC.
5. Press F2 to display the DTC number and text description.
6. Press F7 to change to a different status type.

ACTIVE KEYS	
F0	Select PCM/VCM DTC Info or History modes.
F1	Select MIL Request mode.
F2	Select PCM/VCM DTC Test, Selects Last Test Failed Mode, Displays DTC number and text description.
F3	Select Test Failed Since Last Code Cleared mode.
F4	Select Test Not Run Since Last Code Cleared mode.
F5	Select Test Failed This Ignition Cycle mode, or ATC DTC Info Mode.
F6	Select DTC Status mode.
F7	Change DTC Information Status type.
EXIT	Return to Test Selection Menu.

SUBMODE F1: SPECIFIC DTC

Performing the Specific DTC mode allows you to enter a P-type or U-type DTC number for PCM/VCM/AFECU Systems or B,C, or U-Type DTC Number for ATC Systems and check the status of individual

diagnostic tests by DTC number. This information provides insight to the condition of the PCM or VCM system and the status of the diagnostic test for a specific DTC (as performed by the PCM, VCM, ATC, or AFECU Controller). Using this information and getting an understanding from the service manual for the vehicle that is being diagnosed allows for accurate diagnostics of the PCM, VCM, ATC, or AFECU system.

For PCM/VCM Systems this test mode can display complete DTC status since DTCs were last cleared, status this ignition cycle, and the last test status.

To display a specific DTC status, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F1 to select Specific DTC for engine and transmission systems from the Select Mode menu; or F5 ATC DTC Info, then F1 Specific DTC for Automatic Transfer Case Systems from the Select Mode menu; or F5 AF DTC Info, then F1 AF Specific DTC for Alt-Fuel controller from the Select Mode menu.
3. Enter the DTC number to obtain the status of individual diagnostic tests by specific DTC number. For some systems, there is also the option to enter B, C, or U type DTCs.

   NOTE

   Enter only DTC numbers that are supported for the vehicle being tested. Entered DTCs may be engine or transmission related. For ATC DTC and AFECU DTC Information, entered DTCs must be Automatic Transfer Case or AFECU System related.

4. Press ENTER. On each line of the display appears the current status for the specific DTC. In some cases there may be more than 3 status descriptions available for the entered DTC. Use the YES and NO keys to toggle the display.

   There are 8 descriptions that may be displayed for the status of each individual diagnostic tests by specific DTC. They are:

   - History DTC
   - MIL Requested
   - Failed This Ignition Cycle
   - Failed Since Last Code Clear
   - Last Test Failed
   - Not Run Since Last Code Clear
   - Not Run This Ignition Cycle
   - Last Test Passed

   Refer to *Submode F0: DTC Info on page 217*, then each appropriate submode for text descriptions on each of the above status.

5. Press F2 to display the DTC number and text description.
6. Press EXIT to return to the Select Mode Menu.

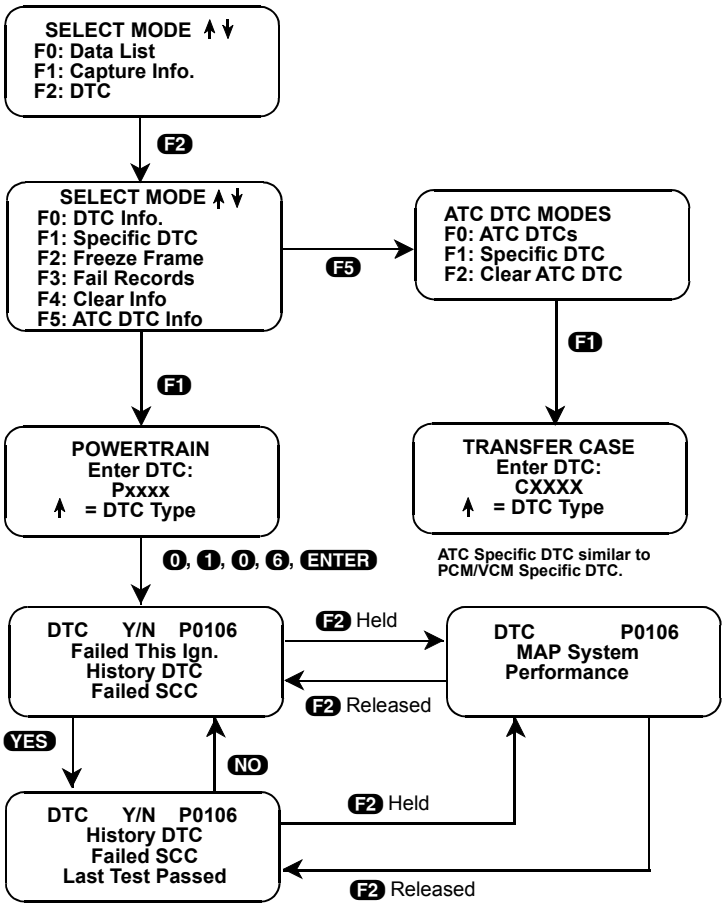


FIGURE 5-39. Specific DTC Info Example

ACTIVE KEYS	
F1	Select Specific DTC mode.
F2	Select DTC Mode.
F5	Select ATC DTC Info mode.
0 - 9	Enter DTC number.
ENTER	Confirm entered DTC number.
F2	Hold/Release. Displays DTC number and text description.
EXIT	Return to test selection mode.

SUBMODE F2: FREEZE FRAME

The Freeze Frame Data mode displays diagnostic data information about the state of the vehicle PCM, VCM or AFECU system when an emission related Diagnostic Trouble Code (DTC) is stored in PCM, VCM, or AFECU memory. Display of Diagnostic Data Information includes the DTC that caused the Freeze Frame and diagnostic data parameters (per GM's Enhanced OBD II and SAE J1979). Freeze Frame data is read from the Powertrain Control Module (PCM) or Vehicle Control Module (VCM) or Alternate Fuel Engine Control Unit (AFECU) using General Motor's Class 2 communication link. This mode does not affect vehicle operation, and diagnostic data information can be read from the PCM/VCM/AFECU to allow for quick analysis of critical input and output parameter values.

Freeze Frame data is displayed in parameter pairs, including the DTC which caused the freeze frame. All data list active keys are available for scrolling through the data parameters. One freeze frame record is available (refer to failure records for additional emission and non-emission based PCM/VCM/AFECU stored diagnostic data information).

The following is an example list of information that can be contained in the Freeze Frame data. Depending on the selected vehicle, many more parameters may be displayed.

- Freeze Frame DTC Number
- Engine Speed (RPM)
- Barometer (estimated)
- Coolant Temperature
- Air Flow Rate
- Engine Load
- Short Term Fuel Trim
- Long Term Fuel Trim
- Injector Pulse Width (both banks, if applicable)
- Learn Factor (BLM)
- Manifold Absolute Pressure (MAP)
- Loop Status
- Vehicle Speed

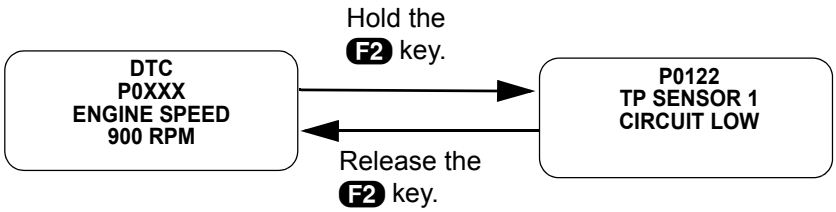
NOTE

During normal operation, Freeze Frame information is cleared anytime the associated History DTC is cleared from the vehicle controller memory by using the Clear Info mode.

To view Freeze Frame data, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F2 to select Freeze Frame from the Select Mode menu.
3. The message “Waiting for data” appears. After a few seconds, if Freeze Frame Data is stored, Freeze Frame data information is displayed. If an error or reminder message appears, perform the action that is presented by the display.
4. Use the YES and NO keys to scroll through the parameters.

Press and hold F2 from any screen in the Freeze Frame parameter pair list to display a description of the associated DTC. Release F2 to return to the Freeze Frame Data List.



5. Press EXIT to return to the Select Mode menu

ACTIVE KEYS	
F2	Select DTC Mode, Freeze Frame or Display DTC description.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter for creating your own data pairs.
EXIT	Return to Select Mode menu.

Freeze Frame Priority

The Freeze Frame function has special rules that determine which DTC has the highest priority for storing Freeze Frame data. Generally, a DTC that can impact emissions has the ability to store information to the Freeze Frame, (although a fuel trim or cylinder misfire DTC has maximum authority and may overwrite previously stored Freeze Frame information).

Since only one set of Freeze Frame data is stored in the vehicle controller, the information is limited and may not provide all data required for diagnosing a problem. To get more complete information on the status of the vehicle, stored parameters found in the Fail Records may be reviewed. Refer to *Submode F3: Fail Records*.

Freeze Frame information is stored upon the first GM Type A failure or second Type B failure only and is not updated for that DTC afterwards.

SUBMODE F3: FAIL RECORDS

The Failure Records mode displays diagnostic data information about the state of the vehicle PCM or VCM system when an emission or non-emission related Diagnostic Trouble Code (DTC) is stored in PCM or VCM memory. This information includes the DTC that caused the Failure Record and diagnostic data parameters (per GM's Enhanced OBD II and SAE J1979). Failure Record data is read from the PCM or VCM using GM's Class 2 communication link. This mode does not affect vehicle operation, and diagnostic data information can be read from the PCM or VCM to allow for quick analysis of critical input and output parameter values.

Failure Record data is displayed in parameter pairs, including the DTC which caused the failure record. All data list active keys are available for scrolling through the data parameters.

NOTE

During normal operation, Fail Records information is cleared anytime the associated History DTC is cleared from the vehicle controller memory by using the Clear Info. mode.

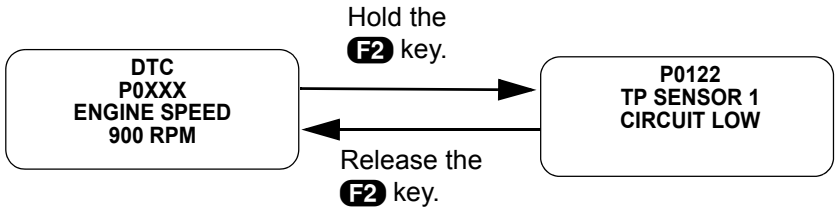
To view failure records, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F3 to select Fail Records from the Select Mode menu. If Fail Records are saved in the PCM/VCM, a menu is displayed which allows selection of a DTC Fail Record for review.
3. Press the appropriate function key next to the desired DTC for which failure record data is available.
4. The message “Waiting for data” appears. After a few seconds Failure Record data information is displayed. If an error or reminder message appears, perform the action that is presented by the display.
5. Use the YES and NO keys to scroll through the parameters. All Data List active keys are available for scrolling through the data parameters, or for freezing the top or bottom parameter.

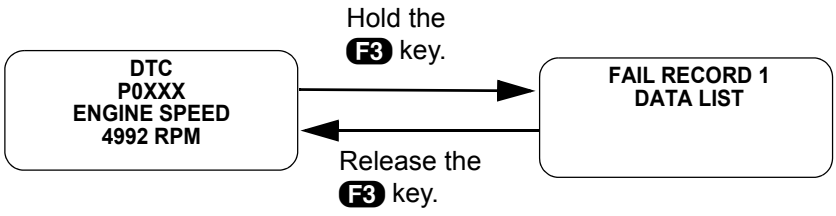
   The PCM/VCM stored Failure Records information is updated each time a diagnostic test reports a failure once per ignition cycle. This ensures that the latest information is available for diagnosing the problem.

   During normal operation, Fail Records information is cleared anytime the associated History DTC is cleared from the vehicle controller memory by using the Clear Info. mode.

   Press and hold F2 from any screen in the Fail Records parameter pair list to display a description of the associated DTC. Release F2 to return to the Fail Records Data List.



   Press F3 from any screen in Fail Record Parameter Pair List to display the Fail Record frame number. Release F3 to return to the Fail Records Data List.



6. Press EXIT to return to the Select Mode menu.

ACTIVE KEYS	
F3	Select Failure Record. Display Failure Record frame number.
F2	Select DTC Mode or Display DTC descriptor.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom parameter for creating your own parameter pairs.
EXIT	Return to the Select Mode menu.

Saturn Customer Snapshot Function

The Customer Snapshot function is available for 1996-2002 Saturn vehicles equipped with cruise control.

With the Customer Snapshot feature, the customer or technician has the ability to capture general engine data parameters when experiencing driveability problems and store this information in the vehicle's PCM. Activation of this function is performed by toggling the cruise control ON/OFF switch three times within three seconds. The PCM then sets a DTC P1624 (Customer Snapshot Data Available). The Snapshot data is stored in the vehicle's PCM memory as a Fail Record.

To access the Customer Snapshot data, the Failure Records are read as explained previously in the DTC section. The P1624 Fail Record is the customer snapshot data. The PCM allows only one customer snapshot capture per ignition cycle.

To select the Snapshot function, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F3 to select Fail Records from the Select Control menu.
3. If DTC P1624 is present, press the appropriate function key to select the P1624 Fail Record. There may be other Fail records stored in the PCM.
4. You can scroll through the Snapshot frame of data parameters as in Data List mode.

SUBMODE F4: CLEAR INFO

Performing the Clear Information mode causes the PCM or VCM to clear emission related DTCs and non-emission related DTCs stored in the PCM memory.

Disconnecting the negative battery cable for 10 seconds also clears information.

When DTCs are cleared from the PCM or VCM memory, all DTC, Freeze Frame, and Failure Records information are erased.

When clearing ATC (Automatic Transfer Case) DTCs, DTCs are only cleared from the ATC controller memory. Also, when clearing AFECU DTCs, DTCs are only cleared from the AFECU memory.

NOTE

F1: Capture Info. data saved in the tester memory is not cleared from memory when performing the Clear Information mode.

To clear DTCs and info, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F4 to select Clear Info from the Select Mode menu for PCM/VCM Systems. To clear ATC DTCs, Press F5 for ATC DTC Info, then press F2 to select Clear ATC DTCs.
3. A message reminder indicating clearing of all diagnostic data information (DTC, Freeze Frame, Failure Records, and Monitor Information) is displayed. Press ENTER to continue or EXIT to exit mode.
4. The message Clearing Info. is displayed.

   If there are DTCs stored and there is an affirmative DTC clear response from the vehicle controller, you see “Info. Cleared” displayed. If there is a negative DTC clear response, you see “Clear Info. Failed” displayed.

NOTE

Do not use F4: Clear Info unless directed to do so by service manual procedures. This prevents accidental clearing of Freeze Frame and Failure Record data from the controller.

5. Press EXIT or an automatic exit occurs after 3 seconds.

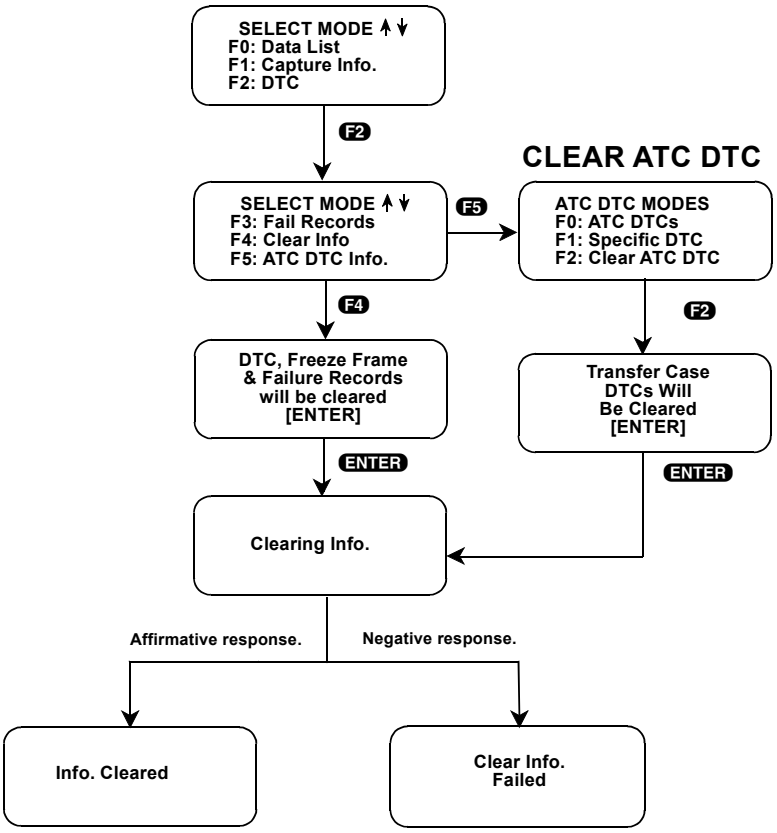


FIGURE 5-40. Clear Info Example PCM/VCM

ACTIVE KEYS	
F2	Select PCM/VCM DTC Mode or Clear ATC DTC Mode.
F4	Select Clear Information from the Select Mode menu.
F5	Select ATC DTC Info Mode.
ENTER	Proceed with Clear Info command.
EXIT	Return to the Select Mode menu.

SUBMODE F5: ATC DTC INFO

Submode F2: Clear ATC DTC

See *Submode F4: Clear Info on page 226.*

MODE F3: SNAPSHOT

The purpose of the Snapshot test mode is to help you isolate an intermittent or transient problem by storing engine, transmission, or ATC data parameters and DTCs before and/or after the problem occurs.

When the tester is operating in Snapshot mode, it is constantly storing information about data parameters and DTCs. A time and position index for the stored information is also saved.

The Snapshot mode for PCM/VCM/ATC (Automatic Transfer Case) or AFECU systems displays the same submenus that are displayed in the PCM/VCM/ATC or AFECU Data List mode. The data stored during the Snapshot relates only to the selected Data List (Engine 1 for example). When the memory is full, the oldest (earliest) data collected is erased to make room for new information.

Captured Snapshot Data

All data captured during Snapshot is retained in the tester memory unless:

- It is overwritten by a new Snapshot.
- A new application is selected from the MSC.
- A different master cartridge is installed in the tester.
- The tester is unplugged from a power source for more than 24 hours.
- The tester is powered on with no master cartridge installed.

Replay Data

If the same vehicle is reselected, you have the option of bypassing the Snapshot Data Capture phase and displaying previously captured data by selecting Replay Data from the Snapshot Options menu.

Trigger Condition

A “TRIGGER” tells the tester when to start saving data to the tester memory. You can specify a “TRIGGER CONDITION” so the tester collects data that is most useful in diagnosing the current problem. You can also select a “TRIGGER POINT,” as explained in Step 5 of the Snapshot Operating Procedure.

Trigger conditions for PCM/VCM systems are the same as for ECM/TCM systems, with the following exceptions:

- Certain vehicles cannot be set to trigger on a specific DTC.
- The Update Rate cannot be selected for PCM/VCM systems. The data is always requested at the most rapid possible rate.

A trigger condition defines the specific circumstances under which you want the trigger to occur. The possible trigger conditions are:

- Any DTC: If any new DTC is detected by the PCM/VCM/ATC/AFECU, it causes the trigger to occur.

> **NOTE**
>
> 
>
> If F6: Transfer Case Data List is selected for Any DTC Snapshot, only ATC (Automatic Transfer Case) DTCs trigger the Snapshot.

- Single DTC: For most vehicles you can select a specific DTC that causes the trigger to occur if the DTC is set. Step 4 in the Operating Procedure tells you how to enter the DTC. THIS OPTION IS NOT AVAILABLE FOR ALL VEHICLES.
- Manual Trigger: While operating the Snapshot mode, you can always cause the trigger to occur by pressing the F9, ENTER or EXIT keys.

Once the trigger occurs, the tester retains data according to which trigger point you have selected. Trigger Point is explained on the next page.

Trigger Point

If F9:Trig. Point is selected from the Snapshot Options menu, a trigger point selection menu is displayed. Trigger Point allows you to specify which data to capture—data that occurs before, after, or both before and after the point at which the trigger occurs. If no trigger point is selected, the center trigger point is used and a similar number of data samples before and after the trigger is saved. Trigger point is fully explained in Step 5.

Snapshot Mode for PCM/VCM/ATC/AFECU Systems

The operation of Snapshot mode is divided into three phases: Set-Up (through Step 5), Data Capture (through Step 9), and Data Display (through Step 14).

To select the Setup Phase of Snapshot Mode, do the following:

1. Press F3 to select the Snapshot mode from the Select Mode menu.

   The trigger conditions, Replay Data, and Trigger Point options are displayed in a self-scrolling Snapshot MODE menu.

2. To replay previously saved Snapshot data, press F3.
3. To select a trigger option, press the Function Key displayed to the left of the desired trigger condition.
4. For most vehicles you can choose a specific DTC for the trigger condition, as explained below. This option is not available for all vehicles.

   Press F1 to select Single DTC. Select the Data List you want the Snapshot to capture. When the tester screen displays “Enter DTC: Pxxxx”, use numeric keys 0 - 9 to enter the DTC number that you have selected, then press the ENTER key. For some systems there is also the option to enter B, C or U type DTCs. The tester continues to store data until the specified trouble code is detected, or until you press the F9, ENTER or EXIT key. If the DTC you enter does not exist for the engine type being tested, an “Invalid DTC, press ENTER to retry” message is displayed and the code has to be reentered.

NOTE

For Snapshot Trigger on a specific DTC, you must enter a DTC that is supported by the PCM, VCM, ATC, or AFECU.

5. In addition to offering a trigger condition selection, you have the option of selecting a trigger point. If you select F9:Trig Point from the Snapshot Options menu, the following options is displayed: F0: Beginning, F1: Center, or F2: End of Data. How Trigger Point works is explained below.

F0: Beginning	The trigger is at the beginning of the captured data. After the trigger occurs, the tester continues to capture data until the memory is full, then the data is displayed. If not enough data samples have been collected to fill the tester memory (because the EXIT key was pressed before the tester memory was full), some data samples that were captured before the trigger point is also available for display.
F1: Center	If enough time has elapsed before and after the trigger point, a similar number of data samples that occurred before and after the trigger point is available for display. However, if the trigger occurs at or near the start of the Data Capture phase, there are fewer samples before the trigger point available for display. Also, if the EXIT key is pressed after the trigger occurs, but before the tester memory is full, fewer data samples captured after the trigger point are available for display.
F2: End	Data that occurred before the trigger is displayed. If the tester memory was not full when the trigger occurred, some data samples captured after the trigger point are also available for display.

After the Data Capture phase, you can scroll through all of the stored data for display. In the Data Display phase, data parameters are displayed in a manner identical to that of the Data List mode. You can also specify the data sample you wish to display (Step 10 and Step 11) or print the current Snapshot Frame of Data Parameters.

ACTIVE KEYS	
EXIT	Return to test mode menu.
F0 - F2	Select trigger condition.
F3	Select Snapshot Mode or Replay Data.
F9	Select Trigger Point.
0 - 9	Enter specific DTC.
ENTER	Enter selected DTC.

Snapshot Setup Phase

(Select Trigger Condition, Display Previously Captured Data, or Setup Trigger Point).

Press the function key to the left of the desired trigger condition. To bypass the Data Capture phase and review previously captured data, press F3: Replay Data (if data is from same vehicle). To set up Trigger Point, press F9.

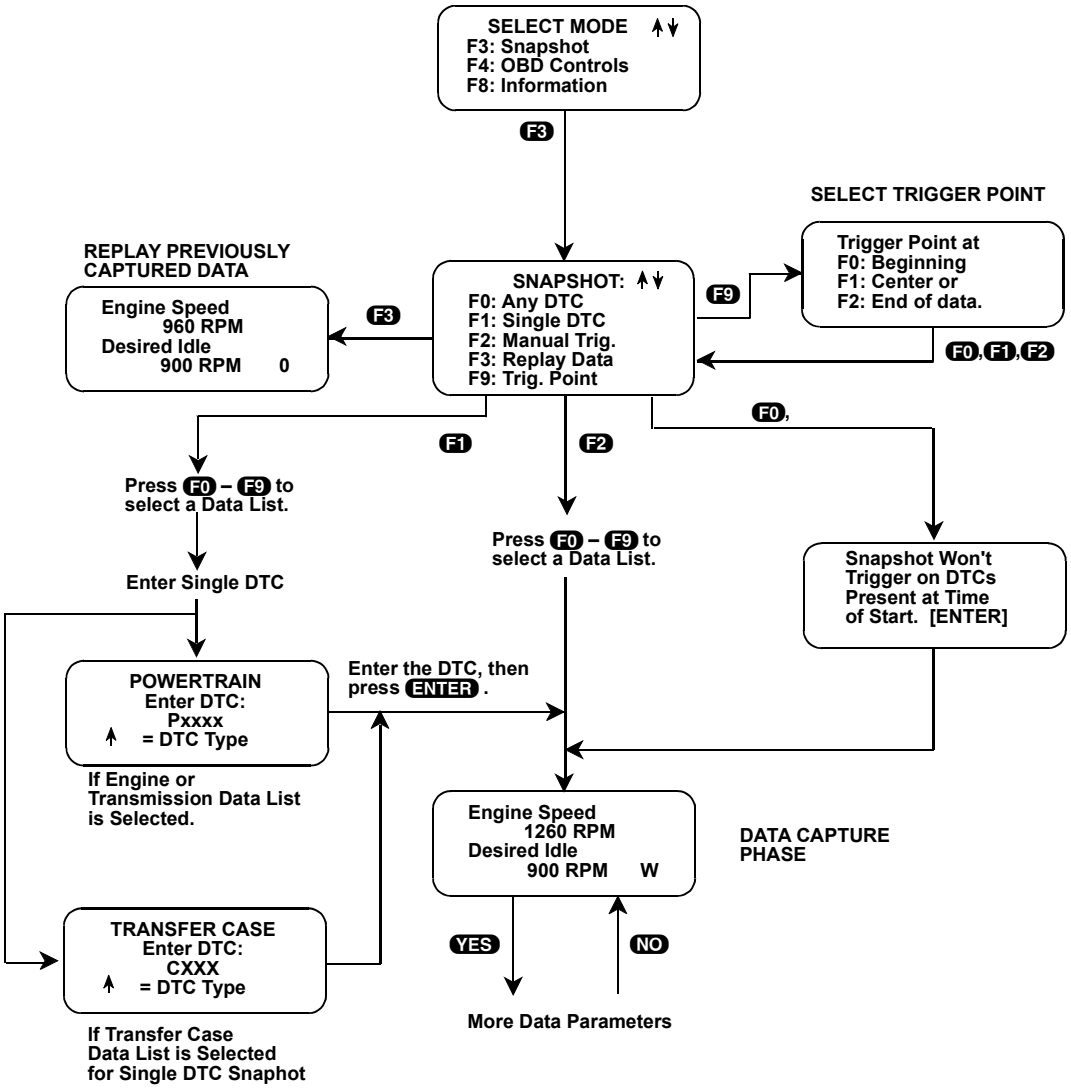
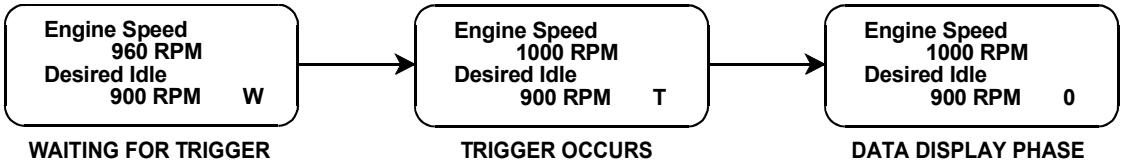


FIGURE 5-41. Snapshot Setup Phase

To access Data Capture Phase of Snapshot mode, do the following:

6. Once the trigger condition is specified, the tester begins storing engine data parameters and DTCs while displaying the Data List parameters.
7. The data is organized as a number of data "samples." The value or state of each parameter as well as all DTCs are saved for each sample. The data display indicates the "waiting for trigger" condition with a flashing "W" in the lower right-hand corner of the display. While waiting for the selected trigger, the F9, EXIT, or ENTER key can always be used to force a trigger.



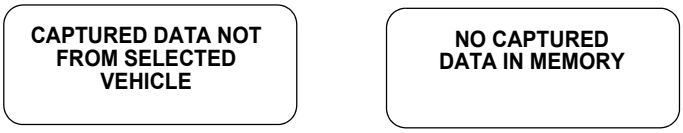
8. Once the trigger occurs, the tester continues to save data samples until its memory is full. The display indicates that the trigger has occurred by replacing the flashing "W" with a fixed "T." As soon as the memory is full, the data capture terminates automatically and the tester goes to the Data Display phase.
9. Press EXIT to terminate the Data Capture phase early and move to the Data Display phase.

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as "fixed" for creating your own data pairs.
F1	Mark bottom displayed parameter as "fixed" for creating your own data pairs.
F9	Manual trigger.
ENTER	Manual trigger.
EXIT	Manual trigger or Display captured data if trigger has already occurred.

To access Data Display Phase of Snapshot mode, do the following:

10. The Data Display phase is indicated with a number (initially zero) in the lower right hand corner of the display. Select the data parameters to be displayed by using the YES and NO keys (see *Mode F0: Data List on page 210*).

    If no data has been captured, or if data stored in the tester memory is not data from the vehicle currently being tested (i.e. it's from a previously tested vehicle), tester displays one of the following messages for four seconds (or until the ↑ or EXIT key is pressed).



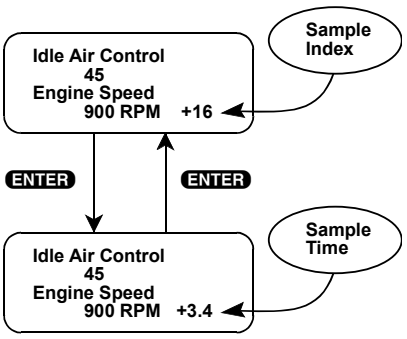
    During the Data Display phase, the DTC(s) present for each sample can be displayed by pressing F2.
11. Use the ↑ and ↓ keys to select the desired sample. An index is displayed in the lower right-hand corner of the tester display. Sample "0" corresponds to the trigger sample; sample "-1" is the sample

immediately preceding the trigger; sample "+1" is immediately after the trigger, and so on. The index range may be less than the maximum number of samples if not enough time was allowed for data capture before or after the trigger.

You can advance directly to the first, last, or trigger sample with the press of a button.

- **F4** Display first (earliest) sample.
- **F5** Display trigger sample (0).
- **F6** Display last (most recent) sample.

12. While in the Data Display phase, pressing **ENTER** causes the tester to toggle between the sample index and sample time.



The sample time display gives the time in seconds (relative to the trigger sample) at which the tester received the currently displayed sample. For example, a sample time of +3.4 means the sample was received 3.4 seconds after the trigger sample. A sample time of -2.6 seconds means the sample was received 2.6 seconds before the trigger.

13. The currently displayed sample may be printed if the Tech 1 is equipped with an RS232C I/F Cartridge (P/N TK05030B or 02001045) connected to a compatible printer. The RS232C I/F Cartridge is not required for Tech 1A or MTS 3100 testers. To print the data, press **F8**. While the data is being sent to the printer, the keyboard is disabled.

    Snapshot data can also be printed in a tabular format using the Screen Print feature. This is enabled by pressing **F6** for approximately 3 seconds until an RS232 Setup menu is displayed. Press **F0** for RS232, then **F0** for printer. Pressing **F1** and then **F0** enables the Screen Print function. Refer to the RS232C I/F or tester Operator's Manual for more detail.

14. When you are finished viewing the sampled data, press **EXIT** to return to the Snapshot Options menu. If you are finished with the Snapshot mode, press **EXIT** again to return to the Select Mode menu.

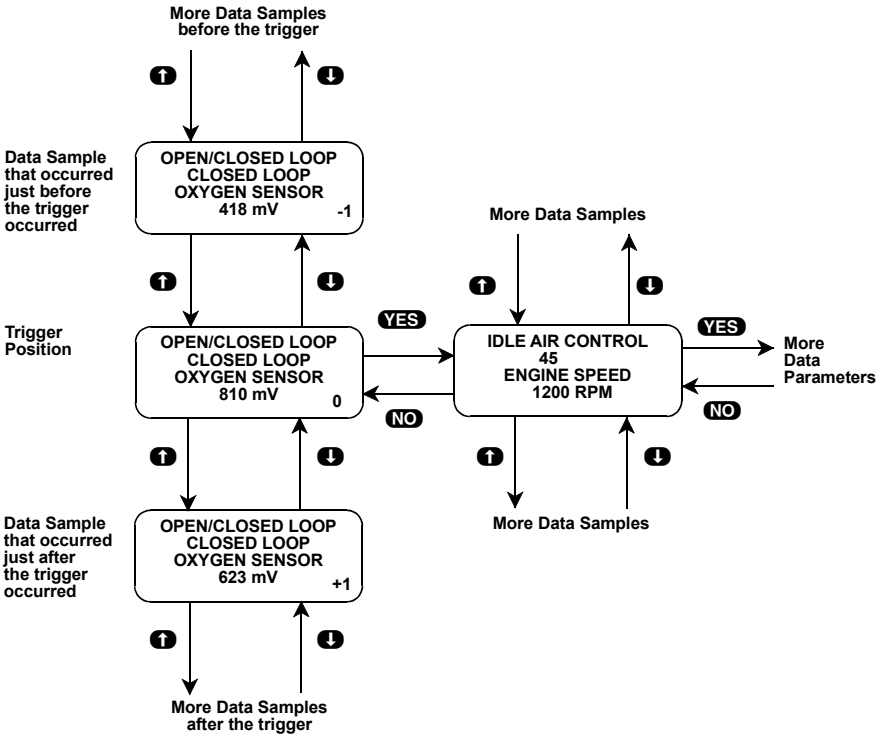


FIGURE 5-42. Example of Snapshot Data Display

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
↑ , ↓	Scroll through selected samples.
F0 , F1	Fix top or bottom display parameter respectively.
F2	Display DTC(s) for current sample.
F3	For Class 2 vehicles, displays the name of the Data List you are viewing.
F4	Advance to first (earliest) sample.
F5	Advance to trigger sample (sample 0).
F6	Advance to last (most recent) sample.
F6 (3 sec.)	Enable RS232 setup.
F8	Print current data sample (if equipped with compatible printer).
ENTER	Toggle between sample index and sample time display.
EXIT	Return to Snapshot Options.

MODE F4: OBD CONTROLS

The On-Board Diagnostic (OBD) Controls mode provides fast access to output controls supported by the vehicle OBD system. Most vehicle systems allow the tester to command an output or actuator device to turn on and off, or allow for PCM/VCM memory resets and adaptive learn strategies. The tester used with this software is capable of bi-directional communication which controls the device under test, or it can cause the device under test to change state by controlling PCM/VCM/ATC or AFECU input/output electronics. Providing quick and efficient diagnostic software tools to help problem diagnosis is the purpose of this mode.

The specific outputs that you can control is dependent on the vehicle selected. Outputs available to control appear in a Select Control menu unique to the vehicle selected. Some of the output control options have submenus that allow control of one output from a group of similar outputs.

There are certain constraints to controlling some of the outputs. Some are determined by the vehicle controller, and some are determined by the tester.

While controlling the outputs, the Data List parameters are displayed for most vehicles. The regular F0: DATA LIST key functions are available for these vehicles.

For many output functions, the engine must be running before the control module allows an output to be controlled by the tester. For some output functions, the engine must be off before the output can be controlled.

NOTE

Check and clear DTCs after performing output controls or tests. DTCs may be set when performing any output control or test.

CAUTION!

To help prevent personal injury due to movement of the vehicle, these tests should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select OBD Controls, do the following:

1. Block the wheels, set the parking brake and put the transmission in Park or Neutral.
2. Press F4 to select OBD Controls from the Select Mode menu.
3. A Select Control menu is displayed. This menu automatically scrolls every three seconds. To stop the automatic scrolling and manually control the menu display, use the ↑ and ↓ keys.

   Press the key to the left of the output type you wish to select. It is not necessary that the menu item be currently displayed for you to select it; any menu item can be selected while the menu is scrolling.

Output types available for testing are listed below. Not all menu items are available for all vehicles. Only menu items available for the selected vehicle are displayed.

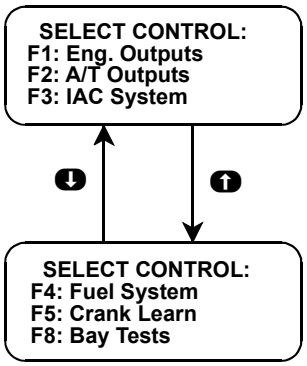


FIGURE 5-43. Example of Output Control Types

4. Depending on the vehicle being tested and the output selected, a submenu of options may be displayed. Press the function key to the left of the output type you wish to control. For example, for some vehicles, if F1: Eng. Outputs is selected from the preceding step, the following options are displayed. Remember, not all menu items are available for all vehicles and only the menu items available for the selected vehicle are displayed.

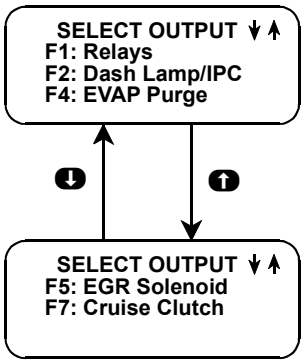
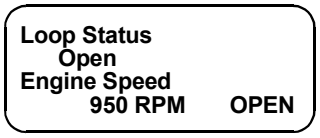


FIGURE 5-44. Example of Engine Output Control List

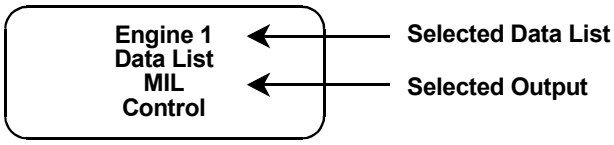
5. For most vehicles, parameters for the selected type of Data List are displayed while the output is being controlled.

   OUTPUT CONTROL: When the output is under normal PCM/VCM/ATC or AFECU control, the last characters of display on line 4 are blank. When the output is being bi-directionally controlled by the tester, the last characters of display on line 4 indicate the current output state or commanded value.

   DIAGNOSTIC DATA PARAMETER VALUE: When performing most output controls the Data List function is available and parameter data values are displayed. Depending on the PCM/VCM, normal mode (no control occurring) parameter values or commanded mode (control occurring) parameter values may be displayed. When this occurs, the parameter value may not change when the controlled output state is changed. This operation is part of the PCM or VCM calibration and cannot be avoided.



6. Press F3 while in the OBD Controls mode to display the selected Data List on lines 1 and 2, and the selected output on lines 3 and 4.



7. Use the ↑ and ↓ keys to toggle the state of the output, increase or decrease the value of the output, or reset the output.

   For most vehicles, you can scroll through the parameter display with the YES and NO keys.

8. When you are finished controlling the output, press EXIT to return to the Select Control menu. When EXIT is pressed, control of the selected output is returned to the PCM/VCM/ ATC or AFECU Controller. Press EXIT again to return to the OBD Controls menu.

Tables which list available OBD Controls are provided on the following pages. Each available OBD Control is dependent on the vehicle that is being tested and the items shown in F4: OBD Controls are automatically configured by the powertrain application software. Several specific examples of various OBD Control types follow the OBD Controls tables.

ACTIVE KEYS	
F0 - F9	Select output to control.
F3	Display selected Data List and output.
↑ or ↓	Turn selected output ON or OFF. Control value of output.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
EXIT	Exit from Output Control mode and return control of selected output to the PCM/VCM or ATC Controller.

OBD CONTROLS TABLES

The following tables list OBD Controls submodes which may be selected with the MTS 3100, Tech 1A, and Tech 1.

The submodes that are available appear in an OBD Controls menu which is unique to the vehicle selected.

Some of the OBD Controls are broken down into submenus which allow specific functions to be selected from a group of similar functions.

The tables on the following pages list PCM/VCM and ATC (Automatic Transfer Case) OBD Controls and define the type of control available for each output. Remember, not all OBD Controls are available for all vehicles and only those outputs available for the selected vehicle are displayed in the Select Control menus.

Examples of using the OBD Controls to change the state or value of an output, or reset an output are provided on the pages following the tables.

Engine, IAC System, and Fuel System Output Controls		
F0	RPM Control	Allows engine RPM control by controlling the idle air control motor.
F0	C/C Disable	Enables/Disables cruise control system.
F0	EVAP Service Bay Test	Enables PCM/VCM on-board enhanced EVAP system tests to run on supported vehicles.
F0	FT Enable	Enables/disables long term fuel trim (FT) corrections.
F0 F1 F3	A/C relay	Allows on/off control of air conditioning (A/C) clutch relay.
F0 F1 F2	MIL	Allows on/off control of MIL (Malfunction Indicator Lamp).
F0 F4 F7 F8	Oil Life Reset	Resets engine and transmission oil life monitor on supported vehicles.
F0 F1 F2	FC Relays	For vehicles with electric cooling fans, allows fan control by activating relays.
F1	IAC Reset	Resets the idle air control motor on supported vehicles.
F1	Throt. Blade	Allows control of Throttle Blade on supported vehicles with Throttle Actuated Control (TAC) system.
F1	Fan	Allows increase or decrease of cooling fan speed on supported vehicles.
F1 F2	Glow Plug	Allows activation of glow plug circuit for supported diesel vehicles.
F1	FT Reset	Resets Short and/or Long Term Fuel Trim cells.
F1	Ride Control	Allows adjustment of the suspension between a normal and firm setting for supported vehicles.
F1	Reset Odometer	Resets the replacement PCM to the odometer mileage on supported vehicles.
F1	Fuel Pres Ctl	Allows control of the Fuel Rail Pressure on supported diesel vehicles.
F1 F2 F9	CKP Decode	Allows switching of the crankshaft sensing decode mode to Angle, Time A, or Time B on supported vehicles.
F2	Inj. Balance	Allows on/off control of individual fuel injectors on supported vehicles.
F2	Dash Lamp/IPC	Allows on/off control of several dash lamps.
F2	Serv. Spark	Allows up to 4 degrees retard of the overall ignition timing for lower octane fuel on supported vehicles.
F2	Fuel Gauge	Sweep control of vehicle's fuel gauge on supported vehicles.
F3	Tachometer	Sweep control of vehicle's tachometer on supported vehicles.
F3	Inj. Flow	Tests individual fuel injector flow rate on supported vehicles.
F3	Spark Retard	Allows increase or decrease of ignition timing retard on supported vehicles.
F3 F4	EVAP System F1: EVAP Purge F2: Vent Sol. F3: Purge/Seal	Allows control of enhanced EVAP system purge and vent solenoids. Also performs system performance and seal.

Engine, IAC System, and Fuel System Output Controls (Continued)		
F3 F6 F8	Fuel Pump	Allows on/off control of the fuel pump on supported vehicles.
F3 F6	Boost Sol.	Allows on/off control of Boost solenoid.
F4	Inj. Pump F0: Time Set F1: Eng. Shut Off F2: FP Relay F3: TDC Learn	For Supported diesel vehicles, allows for timing setup and testing of engine shut off and fuel pump relay circuits.
F4	1st Gr. Start	Commands vehicle to start out in First Gear when PCM is commanding a Second Gear start.
F4 F5	EGR Solenoid EGR System Linear EGR	Controls EGR solenoid and EGR vent solenoid on supported vehicles.
F5	F0: AIR Pump F1: AIR Solenoid F2: AIR System	Allows on/off control air injection system components on supported vehicles.
F5 F6	Crank Learn	Crankshaft position variation learn procedure for the Misfire Detection System. Stores learned values in the vehicle's PCM/VCM on supported vehicles.
F6	Loop Status	Allows selecting Open or Closed loop fuel control.
F5	Glow Plug Lrn	Activates the Glow Plug System Learn by selecting ON. This command clears the system type and Not Learned will display on the scan tool. The glow plug must be turned on with the “F1:Glow Plug” control in order for the PCM to learn the system type. This procedure is necessary when a new calibration has been flash programmed in to the PCM.
F5	FRP Reg Relay	Allows on/off control of Fuel Rail Pressure (FRP) regulator relay.
F6	Intke Air Htr	Allows on/off control of Intake Air Heater relay.
F7	Cruise Inhibit	Allows on/off control of cruise control inhibit input.
F7	PTO Relay	Allows on/off control of Power Take Off (PTO) relay.
F7	Front O2S Htr	Allows on/off control of the Front O2S Heater on supported vehicles.
F8	GEN L Terminal	Allows user to override the PCM controlled Gen L terminal output that controls the charging system.
F8	Exhst Brk Ctl	Allows on/off control of Exhaust Brake Switch.
F8	EGR Thrtl Vlv	Allows on/off control of Exhaust Gas Recirculation (EGR) valve.
F8	Read O2S Htr	Allows on/off control of the Rear O2S Heater on supported vehicles.
F9	O2S Heater	Allows on/off control of the O2S Heater(s) on supported vehicles.
F9	FP Speed	Controls fuel pump speed (FP) between normal or high on supported supercharged vehicles.
F9	Cam Phase Sol	Allows control of Cam Phase Solenoid on supported vehicles.

A/T Output Controls		
F0	TCC Ctl. Sol TCC Ena. Sol.	Allows on/off control of the Torque Converter Clutch (TCC) enable and control solenoids.
F1 F2	1-2 Solenoid	Controls 1-2 Shift solenoid on or off.
F1	PC Sol. A	Allows control of the pressure control (PC) solenoid A expressed as a percentage of energized On time.
F2 F3	2-3 Solenoid	Controls 2-3 Shift solenoid on or off.
F2	PC Sol. B	Allows control of the pressure control (PC) solenoid B expressed as a percentage of energized On time.
F3 F4 F5 F6	Shift Trans.	Shifts transmission gears 1,2,3,4 by controlling the Shift solenoids.
F3	Shift Sol. C	Controls the commanded state of the shift solenoid C valve.
F4 F6	PC Solenoid	Allows control of the transmission Pressure Control (PC) solenoid signal.
F4	Shift Sol. D	Controls the commanded state of the shift solenoid D valve.
F5	Trans. Oil Reset	Resets transmission oil life monitor on supported vehicles.
F5	Shift Sol. E	Controls the commanded state of the shift solenoid E valve.
F6	3-2 DS Sol.	Controls the 3-2 Down Shift solenoid on/off on supported transmissions.
F6	Reset Adapts F0:GarageShift F1:Steady State F2: Shift F3: WOT 1-2	Resets the vehicle controller's Transmission Adaptive Pressure System (TAPS) function on supported vehicles.
F7	Clear TAPS	Clears the PCM or VCM Transmission Adaptive Pressure System (TAPS) memory on supported vehicles.
F8	P1870 Diag.	Torque converter clutch (TCC) system diagnostic procedure for DTC P1870 (Transmission Component Slipping) on supported vehicles. Refer to GM service bulletin #99-07-30-023 for details.
F8	AWD Solenoid	Allows on/off control of the All Wheel Drive (AWD) solenoid.
F8	Preset TAPS	Presets the PCM or TCM Transmission Adaptive Pressure System (TAPS) memory on supported vehicles.

ATC (Automatic Transfer Case) Output Controls		
F0	ATC Lamps F0:2WD High Lamp F1:4WD Auto Lamp F1:4WD High Lock F2:4WD Low Lamp F2:4WD Low Lock F3:4WD High Lamp F4:Neutral Lamp F5:Differ. Lock F5:4WD Serv Lamp	Allows on/off control of multiple Automatic Transfer Case (ATC) mode switch lamps and service lamp.
F1	Front Axle Switch	On/off control of vehicle front axle switch.
F1	Motor A High	On/off control of the Motor A high side.
F2	ATC Lock	On/off control of the Automatic Transfer Case (ATC) lock solenoid engagement.
F2	Motor A Low	On/off control of the Motor A low side.
F3	ATC Motor A	Activates Automatic Transfer Case (ATC) Motor A.
F3	Motor B High	On/off control of the Motor B high side.
F4	ATC Motor B	Activates Automatic Transfer Case (ATC) Motor B.
F4	Motor B Low	On/off control of the Motor B low side.
F5	Mode Switch	Commands Transfer Case to shift to Neutral, 2WD, 4WD low, 4WD high and AWD (All Wheel Drive).

CONTROL OUTPUT STATE

Controlling the State of an Output

For many OBD controls, such as lamps, switches and actuators, the tester allows you to change the state of the PCM/VCM outputs. For most of these outputs the tester automatically returns the output to PCM/VCM control after a few seconds to avoid damage to the output or the engine.

To control the state of an output, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F1 to select Eng. Outputs from the Select Control menu.
3. Press F2 (in this case) to select MIL from the Select Control menu.

   When the output is first selected, it is under normal PCM/VCM control.

   To override PCM/VCM control and change the state of the output, press the ↑ or ↓ key.

   Use the ↑ or ↓ keys to toggle the output between the two states.

   Note that the state of the output does not change as the override is commanded if the override state is the same as the control module controlled state. For example, if the Check Engine Light is ON, and it is then commanded ON with the ↑ key, its state does not change; the light stays ON.
4. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F0 - F9	Select a menu item.
↑ , ↓	Toggle output ON or OFF.
EXIT	Return to the Select Control menu.

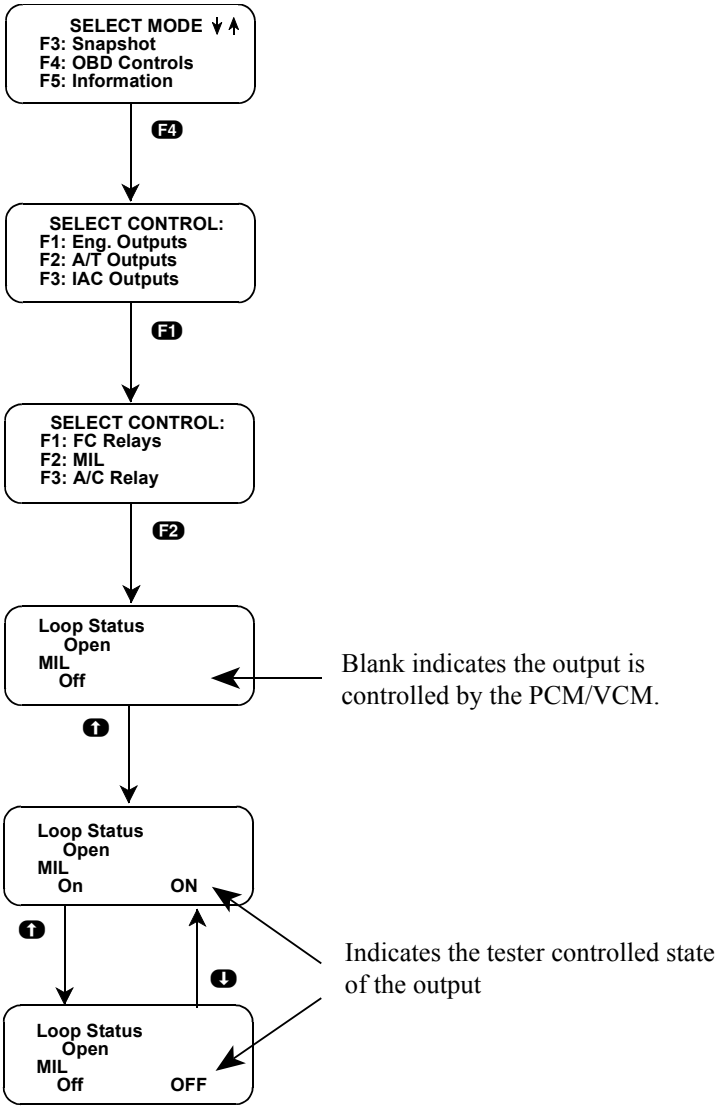


FIGURE 5-45. Control Output State (MIL Example)

CONTROL OUTPUT VALUE

Changing the Value of an Output

Some output controls allow you to change the control value of the controlled device. Some examples of outputs that allow you to change the value are listed below.

RPM CONTROL Allows you to control engine RPM with the tester.

EGR SOLENOID Some EGR controls allow you to change the % On or Flow of the EGR valve.

EVAP PURGE The EVAP PURGE output allows you to control the % of purge of the EVAP canister.

An example of changing the EGR Solenoid is explained below and illustrated on the following page. RPM control is explained and illustrated later in this section.

To change the value of an output, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F1 to select Eng. Outputs from the Select Control menu.
3. Press F5 (in this case) to select EGR Solenoid.

   When an output is selected that allows you to change the value, an instruction screen explaining how to perform the change is displayed. The tester then automatically advances to the Data List display and displays the current value of the output.

   Press the ↑ key to increase the value of the output or press the ↓ key to decrease the value of the output.

   Holding the ↑ or ↓ key continues to increase or decrease the value of the output until the key is released or the output control limit is reached.
4. Press EXIT to return to the Select Control menu.

ACTIVE KEYS	
F0 - F9	Select a menu item.
↑ - ↓	Change the value of the output.
EXIT	Return to the Select Control menu.

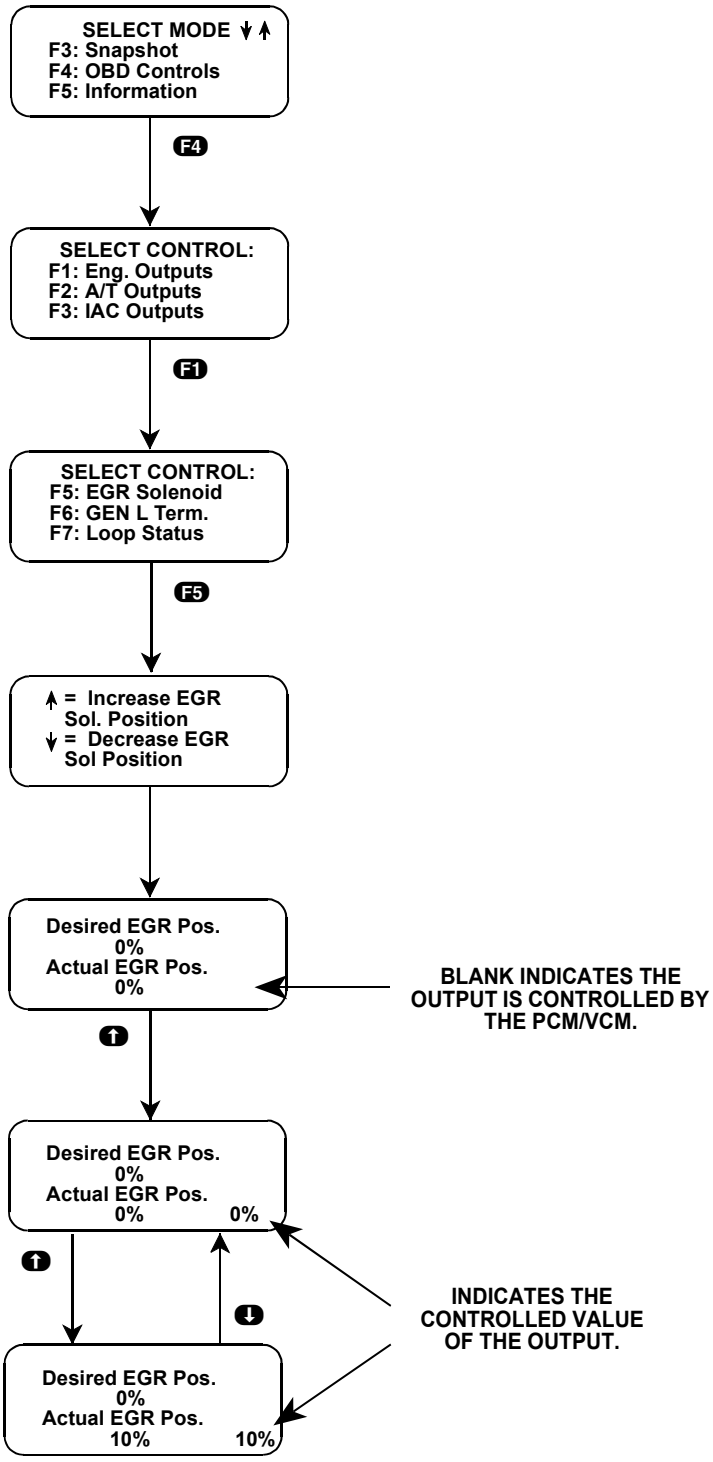


FIGURE 5-46. Control Output Value (EGR Solenoid Example)

CONTROL OUTPUT DEFAULT RESET

Some output controls allow you to reset the PCM/VCM adaptive learn value for the output to its default setting. Some examples are listed below.

LONG TERM FUEL TRIM RESET Resets the Fuel Trim cells to 128 (0%).

SHORT TERM FUEL TRIM RESET Resets the Fuel Trim cells to 128 (0%).

The Fuel Trim Reset mode is used to reset all stored Short and/or Long Term Fuel Trim adaptive memory cell values to 128. While in this mode you can reset the adaptive memory cells as many times as you wish. Individual adaptive memory cells cannot be reset with this mode. Fuel Trim Reset can be used to cancel an excessively rich or lean fuel correction after a repair has been made to verify proper operation of the fuel system.

To reset the adaptive learn value, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F4 (in this example) to select Fuel System from the Select Control menu.
3. Press F1 (in this example) to select Fuel Trim Reset from the Select Fuel System menu. A message informing you that Fuel Trim is reset appears. Press ENTER to advance to the next screen. An instruction message for resetting the Fuel Trim Cells appears for 5 seconds (you can advance to the next screen faster by pressing the ↑ key).
4. The tester resets the cells when the ↑ key is pressed. The cells can be reset as many times as you wish with the ↑ key.
5. In the Fuel Trim Reset mode, data parameters are displayed and can be scrolled and fixed as in the Data List mode.
6. Press EXIT to return to the Select Fuel System menu.

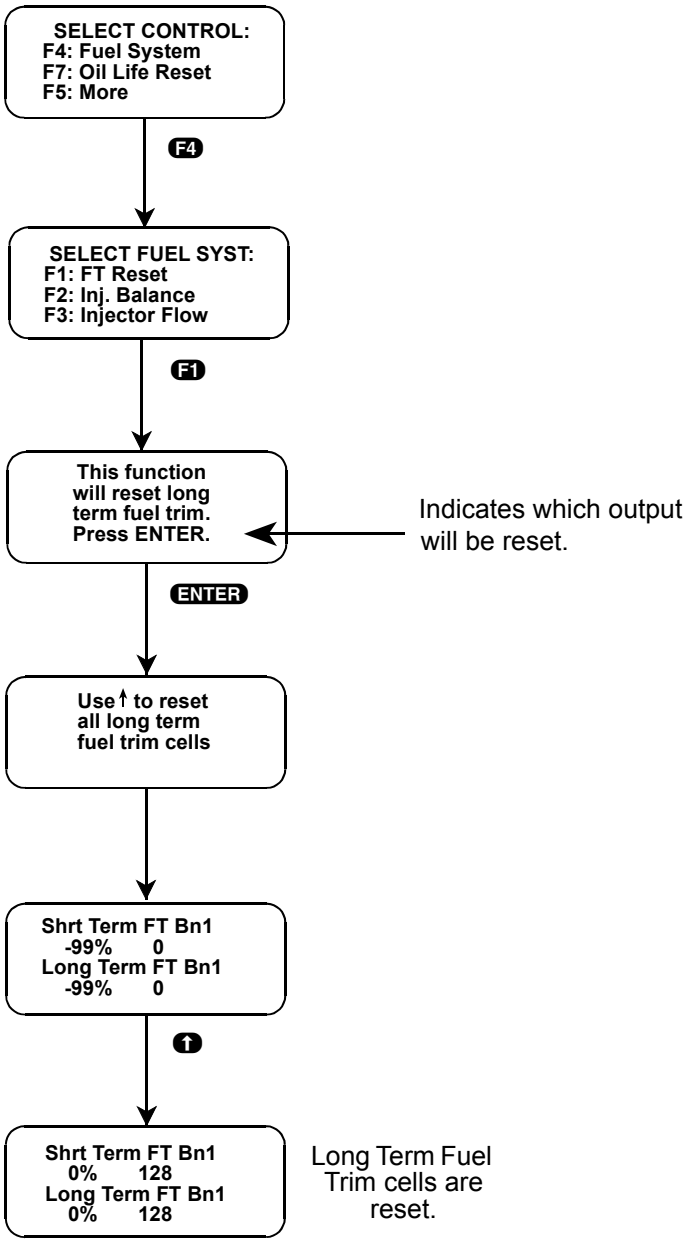


FIGURE 5-47. Control Output Default Reset (Fuel Trim Reset Example)

ACTIVE KEYS	
F0 - F9	Select a menu item.
↑	Reset the output to the default setting.
EXIT	Return to the Select Mode menu.

Control Output Value Reset

Some output controls allow you to reset the PCM or VCM adaptive memory value to a new setting. Examples are listed below.

OIL LIFE RESET Allows you to reset the Engine or Transmission Oil Life to a different value.

ODOMETER RESET Allows you to reset the PCM Odometer to a different value.

To reset an output to a different value, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F7 (in this example) to select Oil Life Reset from the Select Control menu. For some vehicles, F1: Eng. Outputs must be selected from the Select Control menu before F7: Oil Life Reset is available.
3. Press F0 (in this example) to select Eng. Oil Reset from the Select Control Menu.

   When an output is selected that allows you to reset the value, the tester asks you to enter the new value. Use the tester keypad to enter the new value, then press ENTER.
4. The tester displays the value you entered and ask if you want to change the setting to the displayed value. Press YES to accept the displayed value or press NO to enter a new value again. When YES is pressed, the tester automatically advances to the Data List display.

   The data parameters are displayed and can be scrolled and fixed as in the Data List mode. Press EXIT to return to the Select Control menu.
5. Press EXIT to return to the Select Control menu.

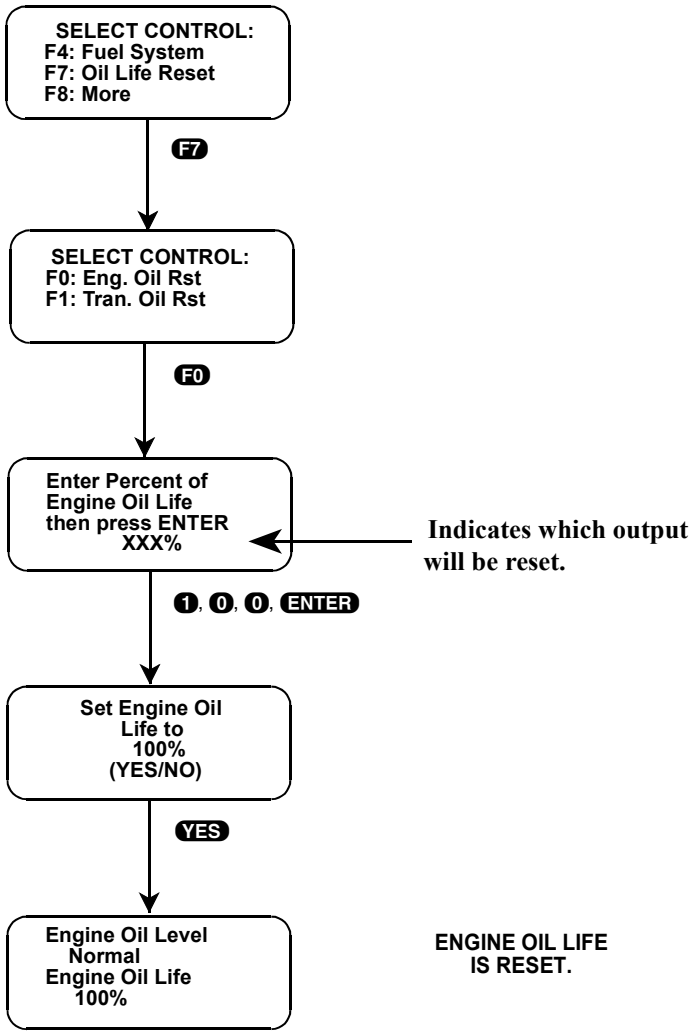


FIGURE 5-48. Example of Resetting an Output to a Different Value

ACTIVE KEYS	
F0 - F9	Select a menu item.
0 - 9	Enter a value.
ENTER	Advance to the next display. Accept entered value.
YES - NO	Accept or reject the displayed value.
EXIT	Return to the Select Mode menu.

Submode F1, F2, F9: CKP Decode

Certain GM engine packages utilize dual crankshaft position sensors (CKP A and CKP B) to determine actual crankshaft position. The PCM uses two methods of decoding the engine crankshaft position: angle based (using both sensors) or time based (using either CKP A or CKP B sensor input). When the sensors are functioning normally, the PCM uses the angle based method. If either of the sensor signals are invalid, the PCM uses the signal from the other sensor and switch from angle based mode to time based mode of crankshaft position decoding.

Vehicles that utilize this crankshaft position sensing strategy also have a "CKP Sensor Status" parameter available in data list mode. The tester displays Angle, Time A, or Time B for this parameter. If there is a problem with one of the CKP sensor signals, and the PCM switched to time based calculation, the CKP Sensor Status parameter displays which signal is being used.

The purpose of the Crank Position Sensing Decode Mode (CKP Decode) is to enable a specific decode mode of operation (Angle, Time A, or Time B). This is very helpful, and may be necessary for some CKP sensor/circuit diagnostic procedures. The specific decode mode (Angle, Time A, or Time B) can not be changed with the engine running. The commanded state remains valid for the current ignition cycle.

The following is a list of engine packages that use the CKP Decode procedure.

PASSENGER CARS				
1999	**2000**	**2001-2002**	**2003**	**2004**
3.5L (LX5) VIN H	3.5L (LX5) VIN H	3.5L (LX5) VIN H	4.0L (L47) VIN C	4.6L (L37) VIN 9
	4.6L (LD8) VIN Y	4.0L (L47) VIN C	4.6L (L37) VIN 9	4.6L (LD8) VIN Y
	4.6L (L37) VIN 9	4.6L (LD8) VIN Y	4.6L (LD8) VIN Y	
		4.6L (L37) VIN 9		

To select CKP Decode, do the following:

1. Block the wheels, set the parking brake and put the transmission in park or neutral.
2. Turn the ignition key on, engine off.
3. Press **F4** to select OBD Controls from the Select Mode menu.
4. Depending on the vehicle being tested, press the appropriate function key displayed to select CKP Decode from the Select Control menu.
5. Press **F0**, **F1**, or **F2** to select the desired Crank Position Sensing Decode Mode (Angle, Time A, or Time B respectively) from the Select CKP State menu.
6. The tester display prompts you to cycle the ignition off/on and to press **ENTER** to proceed.
7. An information message is displayed for three seconds instructing you to press the up arrow key to command the selected CKP decode state.
8. The tester then displays the appropriate data list with the CKP Sensor Status parameter displayed. The status switches to the previously selected state after the up arrow key is pressed. The currently commanded decode state cannot be switched again until the ignition switch is cycled.

ACTIVE KEYS	
↑	Command CKP Decode state.
ENTER	Advance test when prompted.
F4	Select OBD Controls.
F0, F1, F2, F9	Select CKP Decode/select CKP state.
EXIT	Return to Select Control menu.

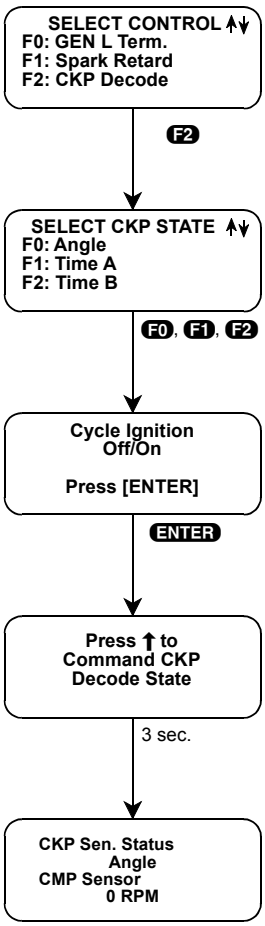


FIGURE 5-49. Crank Position Sensing Decode Mode

SUBMODE F2: A/T OUTPUTS

Submode F6: Reset Adapts

The Reset Adapts procedure applies to Cadillac and Oldsmobile Aurora vehicles with V8 engines and the 4T80E automatic transmission.

4T80E Transmission Adapt Function

The 4T80E transmission uses a line pressure control system which has the ability to continuously adapt the system's line pressure to compensate for normal wear of the clutch fiber plates, seals, and springs.

The PCM stores in memory the following adaptive memory learn (adapt) parameters for the transmission:

Upshift (Shift) Adapt: The PCM monitors the Automatic Transmission Input Shaft Speed Sensor (ISS) and the Vehicle Speed Sensor (VSS) during commanded shifts in order to determine if the gear shift is too fast or too slow. The PCM adjusts the signal to the Pressure Control Solenoid valve (PC Sol) to maintain a set shift feel.

Steady State Adapt: The PCM monitors the automatic transmission Input Shaft Speed Sensor (ISS) and the Vehicle Speed Sensor (VSS) after a shift and the PCM calculates the amount of slippage in that gear. The PCM then adjusts the signal to the Pressure Control Solenoid to maintain slippage below a set amount.

Garage Shift Adapt: The PCM monitors the Automatic Transmission Input Shaft Speed Sensor (ISS) during a shift into a given range (P,R,N,D) and the PCM calculates the engagement time. The PCM adjusts the PC Solenoid valve to maintain a set shift feel.

WOT 1-2 Adapt: The PCM monitors the Vehicle Speed Sensor (VSS) and the engine RPM during a 1-2 Wide Open Throttle (WOT) shift. The PCM adapts the 1-2 shift point during WOT.

NOTE

Transmission Adapts must be reset whenever the transmission is overhauled or replaced.

To reset the adaptive memory learn (adapt), do the following:

1. Block the wheels, set the parking brake and put the transmission in park or neutral.
2. Press F4 to select the OBD Controls mode from the Select Mode menu.
3. Press F2 to select the A/T Outputs submode from the Select Control menu.
4. Press F6 to select the Reset Adapts submode from the Select Output menu.
5. The Adapts that can be reset are displayed. Select the adapt you wish to reset by pressing the appropriate function key.
6. Press ↑ to clear the selected Adapt.

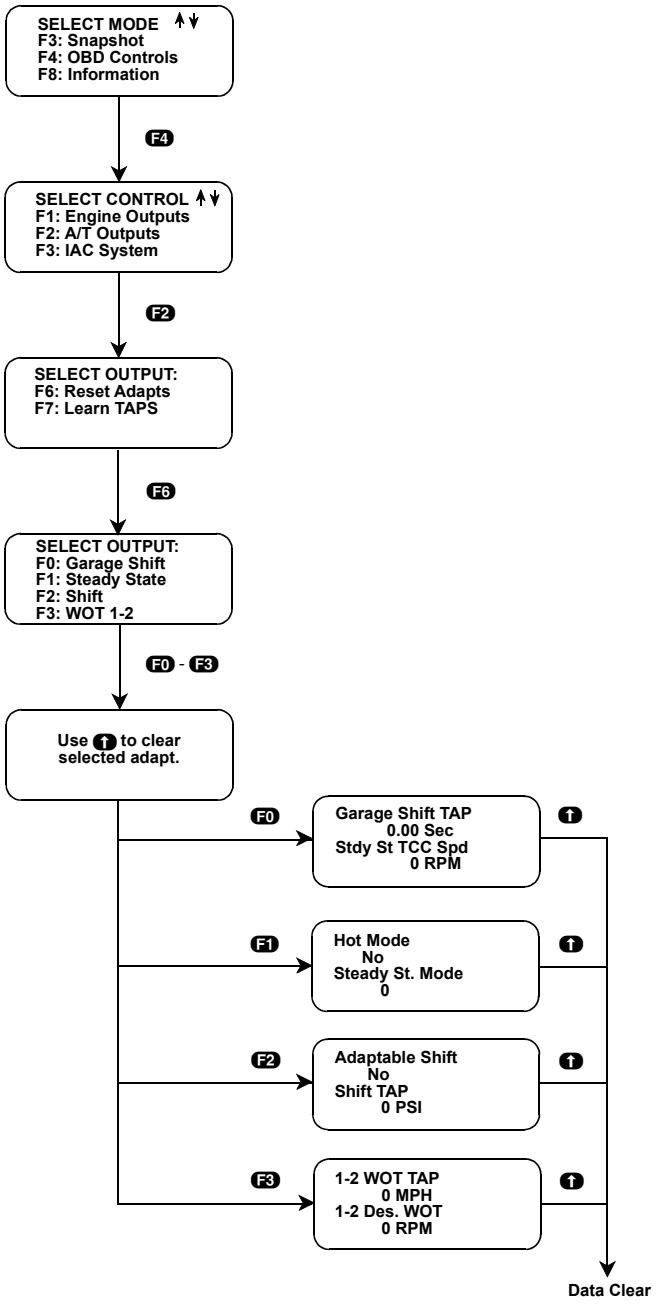


FIGURE 5-50. Reset Adapts Example

ACTIVE KEYS	
F0 - F3	Select adapt to reset.
F2	Select A/T Outputs.
F4	Select OBD Controls.
F6	Select Reset Adapts.
↑	Clear selected adapt.
YES , NO	Scroll through displayed data parameters.
EXIT	Return to Select Output menu.

Submode F7: Learn TAPS

The Learn TAPS procedure applies to Cadillac and Oldsmobile Aurora vehicles with V8 engines and the 4T80E automatic transmission.

The Learn TAPS mode is used to accelerate the PCM's Learn transmission adapts function. When this mode is used, the technician must road test the vehicle for 15 minutes (normal time without using the Learn TAPS mode is 2-3 hours).

Although performing this mode reduces adaptive pressure learn time, the transmission may experience harsh, soft or mushy shifts for up to two days later.

NOTE

Transmission Adapts must be reset whenever the transmission is overhauled or replaced.

To select Learn TAPS, do the following:

1. Block the wheels, set the parking brake and put the transmission in park or neutral.
2. Press F4 to select the OBD Controls mode from the Select Mode menu.
3. Press F2 to select the A/T Outputs submode from the Select Control menu.
4. Press F7 to select the Learn TAPS submode from the Select Output menu.
5. Press ↑ to activate the Learn TAPS mode.

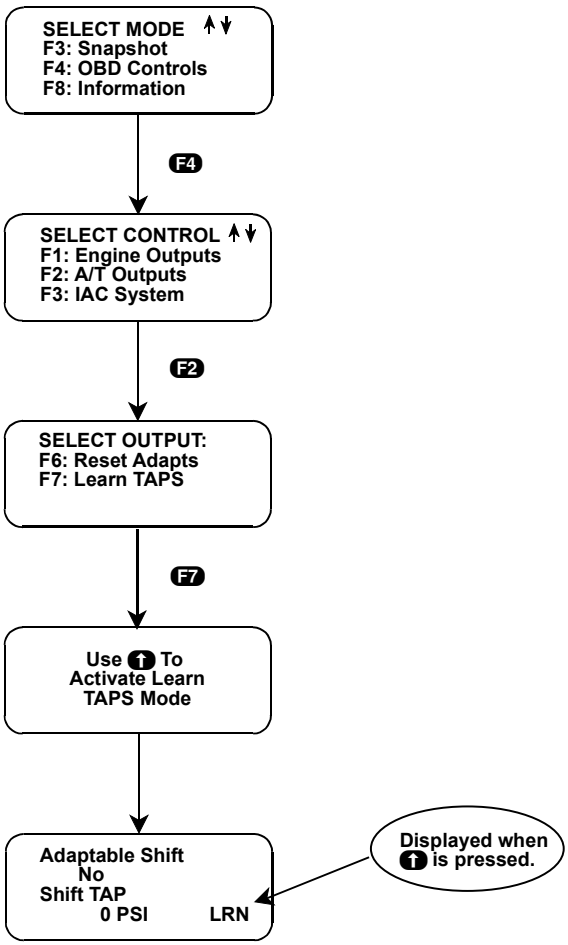


FIGURE 5-51. Learn TAPS Example

ACTIVE KEYS	
F2	Select A/T Outputs.
F4	Select OBD Controls.
F7	Select Learn TAPS.
↑	Activate Learn TAPS mode.
YES , NO	Scroll through displayed data parameters.
EXIT	Return to Select Output menu.

Submode F7: Clear TAPS

The Clear TAPS procedure applies to vehicles which use the 4T40E, 4T65E, 4L60E and 4L80E Automatic Transmissions.

Transmission Adapts Function

The 4T40E, 4T65E, 4L60E and 4L80E Automatic Transmissions use an electronic line pressure control system and have the ability to continuously adapt the system's line pressure to compensate for normal wear of the clutch fiber plates, seals, and springs.

The PCM stores in memory the upshift adapt parameters for the transmission operation. The PCM monitors the transmission Input Speed Sensor (ISS) and the Vehicle Speed Sensor (VSS) during commanded shifts to determine if the shift is occurring too fast or too slow. If the shift conditions were all within the proper operating range during the last shift, and the shift time was determined acceptable by the PCM, last shift information is then used by the PCM's adaptive function to update the adapt cells. The PCM then adjusts the signal for the Pressure Control Solenoid (PC Sol) to maintain a set shift feel.

NOTE

Transmission Adapts must be reset whenever the transmission is overhauled or replaced.

To select Clear TAPS, do the following:

1. Block the wheels, set the parking brake and put the transmission in park or neutral.
2. Press F4 to select the OBD Controls mode from the Select Mode menu.
3. Press F2 to select the A/T Outputs submode from the Select Control menu.
4. Press F7 to select the Clear TAPS submode from the Select Output menu.
5. Press ↑ to Clear Adapts.

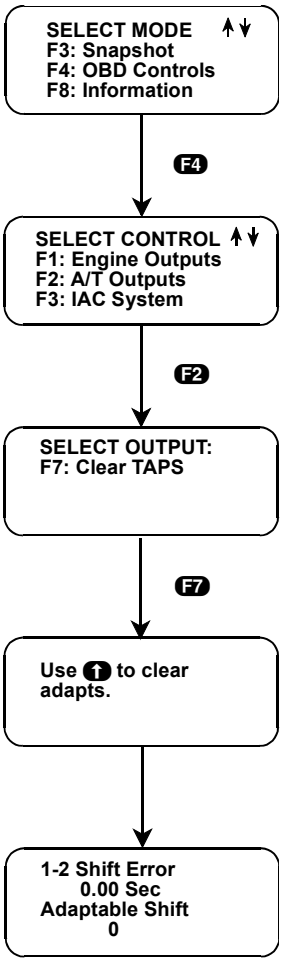


FIGURE 5-52. Clear TAPS

ACTIVE KEYS	
F2	Select A/T Outputs.
F4	Select OBD Controls.
F7	Select Clear TAPS.
↑	Clear Adapts.
YES , NO	Scroll through displayed data parameters.
EXIT	Return to Select Output menu.

SUBMODE F3: IAC/TAC SYSTEMS

Submode F0: RPM Control

The IAC system submode F0: RPM Control function is available for most PCMs and VCMs.

The RPM Control function allows you to remotely control engine RPM from the tester. If an elevated RPM or diagnosis of the IAC motor is required for any reason, this mode allows quick and easy control of the IAC motor. Due to vehicle system design, some systems may have a slight time delay prior to IAC movement.

CAUTION!

This test should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select RPM Control, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F3 to select IAC System from the Select Controls menu.
3. Press F0 to select RPM Control from the Select Function menu.
4. Set the parking brake, block the wheels, put the transmission in Park or Neutral, then start the engine. Press ENTER to continue.
5. The tester initializes controlled engine speed to 1000 RPM. You can increase or decrease the engine RPM by pressing the keys listed in the Active Keys chart. Holding down any of the keys causes the RPM to change in the appropriate direction. For most vehicles the engine speed can be controlled from 600 to 2000 RPM. VCM trucks control RPM to 1200 RPM.

   Data parameters are displayed as in Data List mode. The currently commanded value of RPM is displayed at the end of line four. Data parameters can be scrolled and fixed as in the Data List mode.

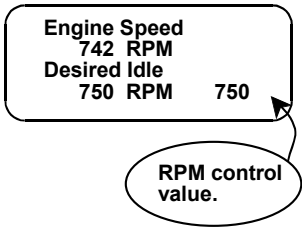


FIGURE 5-53. Example of RPM Control

NOTE

600 to 2000 RPM is the range of control allowed by the tester (VCM trucks control RPM to 1200 RPM). Depending on current engine conditions, some engines may not achieve 2000 RPM, or may stall at 600 RPM. This does not necessarily indicate a faulty IAC Motor. Engine age, wear, or other system faults (e.g. vacuum leaks) may be the cause.

ACTIVE KEYS	
↑	Increase engine speed by 25 RPM.
↓	Decrease engine speed by 25 RPM.
F0	Select RPM Control.
F2	Increase engine speed by 100 RPM.
F3	Select IAC System or decrease engine speed by 100 RPM.
F6	Increase engine speed by 500 RPM.
F7	Decrease engine speed by 500 RPM.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
EXIT	Terminate the RPM CONTROL mode and return to the Select Function menu.

Submode F1: Throt. Blade

The TAC System submode F1: Throt. Blade function is available for several systems with Throttle Actuated Control (TAC).

The Throttle Blade output allows you to control the percentage (%) or position of the throttle blade.

To change the position of the Throttle Blade, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F3 to select TAC System from the Select Control menu.
3. Press F1 to select Throt. Blade.

   When an output is selected that allows you to change the value, an instruction screen explaining how to perform the change is displayed. The tester then automatically advances to the Data List display and displays the current value of the output.

   Press the up arrow key to increase the throttle blade opening or the down arrow key to decrease the throttle blade opening. Holding the up or down arrow key continues to increase or decrease the value of the output key until the key is released or the output control limit is reached.
4. Press EXIT to return to the Select Control menu.

SUBMODE F4: FUEL SYSTEM

Submode F1: Fuel Trim Reset

The Fuel Trim Reset mode is available for certain PCM/VCMs.

The Fuel Trim Reset mode is used to reset all stored Short and/or Long Term Fuel Trim cell values to 128. While in this mode you can reset the cells as many times as you wish. Individual cells cannot be reset with this mode. Fuel Trim Reset can be used to cancel an excessively rich or lean fuel correction after a repair has been made to verify proper operation of the fuel system.

CAUTION!

To help prevent personal injury due to movement of the vehicle, these tests should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select Fuel Trim Reset mode, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F4 to select Fuel System from the Select Control menu.
3. Press F1 to select Fuel Trim Reset from the Select Fuel System menu. A message appears, informing you that Fuel Trim is reset. Press ENTER to advance to the next screen. An instruction message for resetting the Fuel Trim Cells appears for 5 seconds.
4. The tester resets the cells when the ↑ key is pressed. The cells can be reset as many times as you wish with the ↑ key.
5. While in the Fuel Trim Reset mode, data parameters are displayed and can be scrolled and fixed as in the Data List mode.
6. Press EXIT to return to the Select Fuel System menu.

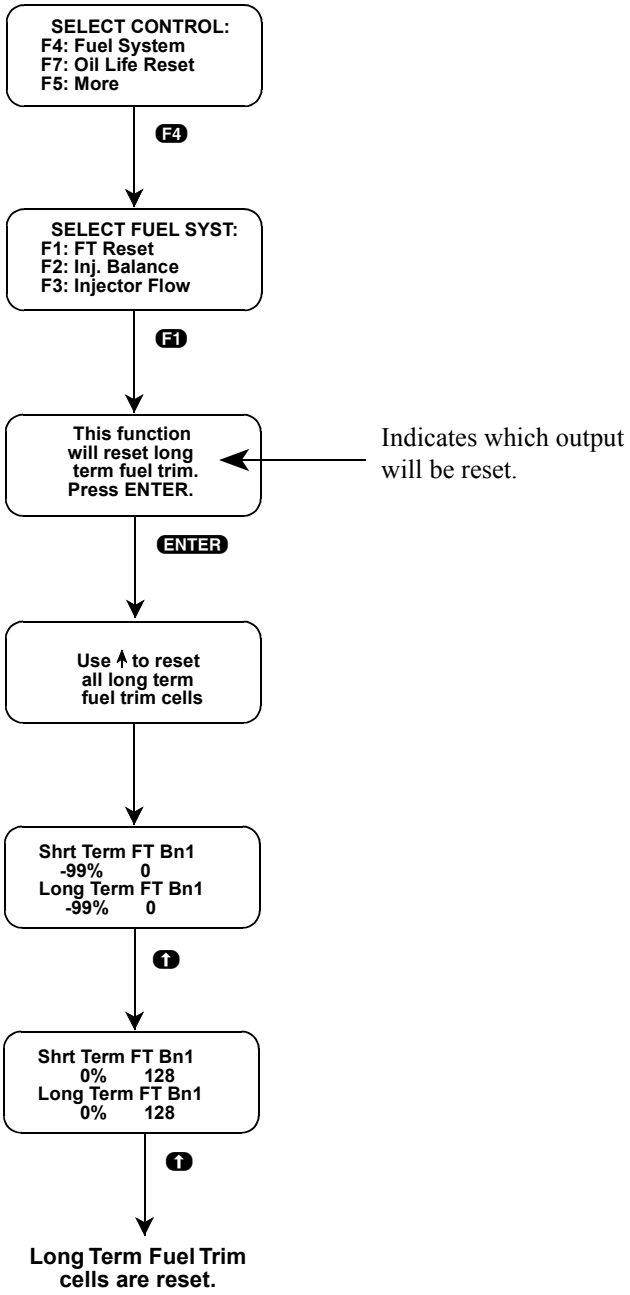


FIGURE 5-54. FUEL TRIM RESET

ACTIVE KEYS	
F4	Select OBD Controls.
F4	Select Fuel System.
F1	Select Fuel Trim Reset.
↑	Reset Fuel Trim to 128.
YES , NO	Scroll through displayed data parameters.
F0 , F1	Mark top or bottom displayed parameter as fixed for creating your own data pairs.
EXIT	Terminate the Fuel Trim Reset mode and return to the Select Fuel System menu.

Submode F2: Injector Balance

Available for certain PCM/VCMs, the Injector Balance mode is used to control individual fuel injectors off and on.

The INJECTOR BALANCE test mode allows you to shut off individual fuel injectors. This mode is used to isolate weak or non-contributing cylinders by effectively disconnecting the fuel injectors from the PCM or VCM. INJECTOR BALANCE is not necessarily a test of the injectors but rather a test of the contribution of the controlled cylinders. By shutting off individual injectors and monitoring the drop in Engine Speed, the performance of each of the cylinders can be gauged .

CAUTION!

To help prevent personal injury due to movement of the vehicle, these tests should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

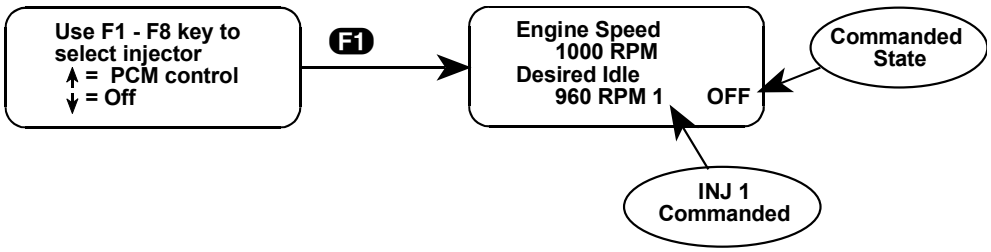
NOTE

Certain PCM/VCM vehicles only allow control for a set amount of time and under the proper conditions. You may get a device control lockout message and you need to exit the test for up to 60 seconds before control is again allowed.

To select Injector Balance, do the following:

1. Press F4 to select OBD Controls from the Select Mode menu.
2. Press F4 to select Fuel System from the Select Controls menu.
3. Press F2 to select Inj. Balance from the Select Fuel System menu.
4. The tester instructs you to set the brake, block the wheels, start the engine, then press ENTER.

   Turn the A/C off before entering the Injector Balance test. If the A/C comes on during the test, the RPM changes and an inaccurate RPM drop readings is displayed. Depending on the vehicle selected, the A/C may be automatically turned off (if set to on) by the tester when entering the Injector Balance test.
5. Use the F1 - F8 keys to select an injector to control (F1 = Injector 1, F2 = Injector 2, etc.).
6. Press ↓ to turn the selected injector off. Press ↑ to return control of the injector to the PCM.



7. When the Injector Balance test becomes active, the screen displays an engine data list. The top parameter is engine speed. The bottom right corner of the display indicates the number of the current injector under control (initially set to #1) and its controlled state. The injectors are numbered the same as the cylinder numbers. The lower right corner of the display switches to Off when the injector is commanded off.

   The ↓ key is used to shut off the injector under control. The injector is automatically reenabled (normal operation) after a calibrated number of seconds. If you wish to turn the injector back on before the time-out, you may do so by pressing the ↑ key or by selecting another injector to test.

   To select other injectors, press the tester key corresponding to the cylinder number. If the previously selected injector was commanded OFF when a new injector is selected, the previous injector is set back to normal PCM/VCM control (turned on).

8. The YES and NO keys can be used to scroll through the data list while in the Injector Balance mode.

NOTE	Although the engine was at first controlled to an idle speed of 1000 RPM (in most cases), the Desired Idle parameter does not reflect this control. During the test, the PCM is not controlling the idle to the value shown by the Desired Idle parameter but rather it is commanding the IAC motor to hold steady. This is so that PCM /VCM Idle Control does not attempt to compensate for the disabled injectors.

9. Press EXIT to return to the previous menu.

ACTIVE KEYS	
ENTER	Confirm instructions have been followed.
F1 - F8	Select an injector to control.
F2	Select Injector Balance Test.
F4	Select OBD Controls or Fuel System.
↑	Return injector control to the PCM.
↓	Turn selected injector off.
EXIT	Return to the previous menu.

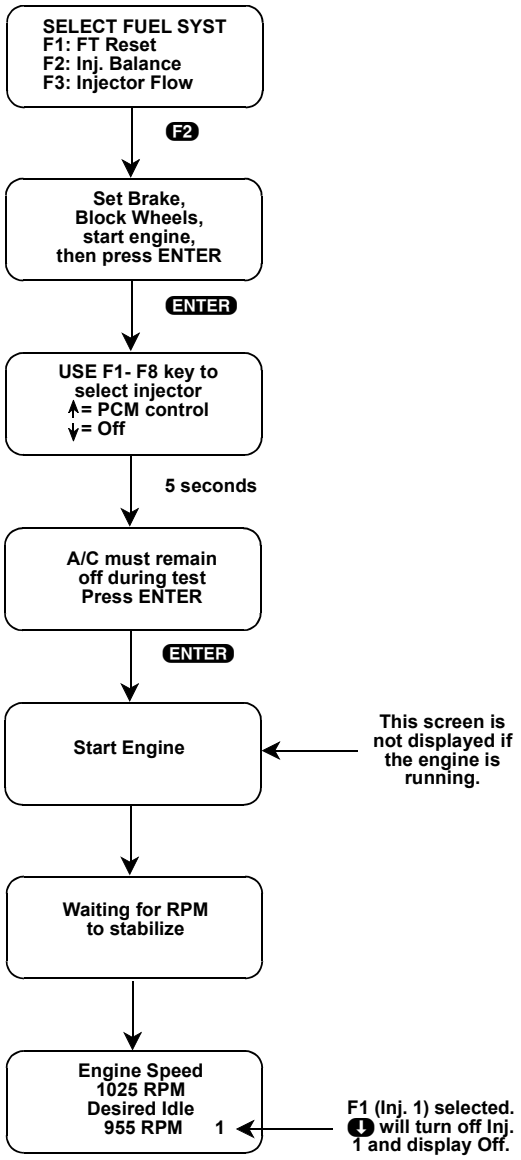


FIGURE 5-55. Injector Balance

Submode F3: Injector Flow

The Injector Flow Test determines if one or more fuel injectors is flowing more or less fuel than the others. This can be very helpful in diagnosing a driveability and/or emission related problem.

CAUTION! 	When opening fuel system lines, use extreme caution when handling fuel. Do not expose to flame, spark, or hot surfaces. Tests should only be run with the parking brake on and the drive wheels blocked. Any other mode of operation is not recommended and is unsafe.

To select Injector Flow, do the following:

1. Turn engine off, ignition key on, block the wheels, set the parking brake and put the transmission in park or neutral.
2. Press F4 to select OBD Controls from the Select Mode menu.
3. Press F4 to select Fuel System from the Select Controls menu.
4. Press F3 to select Injector Flow from the Select Fuel System menu.
5. Release fuel pressure from the fuel system using the vehicle manufacturer's specified method. Refer to vehicle service information.
6. Install a fuel pressure gauge on the vehicle's fuel system according to the vehicle manufacturer's service procedures. Refer to vehicle service information.
7. The tester display screens prompts you to enter the number of the injector to flow test and give instructions when to record fuel pressure before and after the injector is flowed.

   To prevent engine flooding, each injector can only be selected and flowed once per ignition cycle.
8. After the last injector has been flow tested, the tester automatically returns to the Select Fuel System menu. Compare the “fuel pressure drop” from each injector. Refer to the vehicle service information for injector diagnosis.

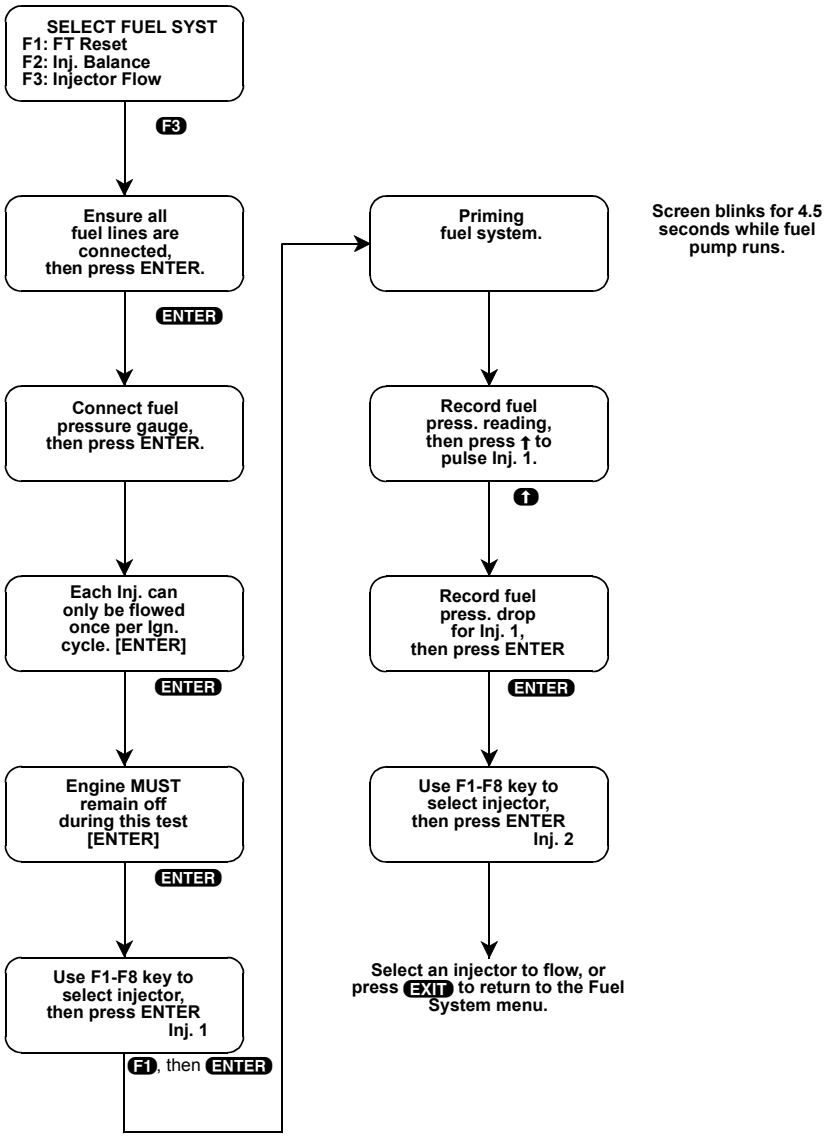


FIGURE 5-56. Injector Flow

ACTIVE KEYS	
ENTER	Confirm instructions have been followed.
F0 - F9	Select a menu item.
F3	Select Injector Flow.
F4	Select OBD Controls or Fuel System.
↑	Pulse selected injector.
0 - 9	Enter injector number.
EXIT	Return to the Select Mode menu.

SUBMODE F5: CRANK LEARN

The misfire detection process relies on very accurate measurements of the time it takes the crankshaft to rotate between each cylinder firing. There is always a natural “variation” in the measurement of crankshaft position detection due to the combination of crankshaft movement, crankshaft position sensor signals, engine balance, etc. Because of this the PCM/VCM needs to learn the particular variation of every engine crankshaft position detection system to accurately identify an engine misfire.

The crankshaft position variation compensating values are stored in the PCM's non-volatile memory after a learn procedure has been performed. If the actual variation is not within the values stored in the PCM, DTC P0300, P0301-P0308 (Engine Misfire) may set.

The Crankshaft Position Variation Learn procedure should be performed if any of the following conditions exist:

- DTC P1336 (Crank Variation not Learned) is set.
- The PCM has been replaced.
- The PCM has been reprogrammed.
- The engine has been removed and reinstalled or replaced.
- The crankshaft has been removed and reinstalled or replaced.
- The crankshaft harmonic balancer has been removed and reinstalled or replaced.
- The crankshaft position sensor has been removed and reinstalled or replaced.
- The clutch or flywheel has been removed and reinstalled or replaced.

The Crankshaft Position Variation Learn procedure cannot be performed if the following conditions exist:

- Engine coolant temp is less than 70° C (158° F) (on most vehicles).
- If any powertrain DTCs other than P1336 (Crank Variation not Learned) are set (on most vehicles).
- If the PCM detects a problem with the camshaft position signal circuit, the 3X, 18X, or 24X crankshaft reference circuits (for most vehicles).

NOTE

Diagnose and repair any DTCs set before attempting this procedure. Check and clear DTCs after performing this procedure. Also, do to some vehicle PCM/VCM anomalies, the Crank Learn procedure may need to be repeated.

To select Crank Learn, do the following:

1. Block the wheels, set the parking brake and put the transmission in park or neutral.
2. Start the engine and allow coolant to reach at least 70° C (158° F) for most vehicles. If engine coolant temp is less, the Crank Learn procedure prompts you and waits until the proper temperature is reached before continuing.
3. Turn the ignition switch OFF.
4. Press F4 to select the OBD Controls mode from the Test Mode menu.
5. Press F5 to select the Crank Learn submode test from the OBD Controls test menu.

6. Follow the instructions displayed on the tester. On most vehicles, you are instructed to accelerate the engine to fuel-cut RPM. **If RPM increases beyond the calibrated value, release the throttle immediately.** Some Saturn vehicles increase the engine speed automatically to over 3000 RPM during the Crank Learn test, while others instruct you to increase the engine speed to 3000 RPM.

   The tester displays appropriate abort screens if needed.

7. When the Crank Learn procedure is complete (positive response from the PCM/VCM), observe the DTC Status for DTC P1336 (Crank position variation not learned).

   If the tester indicates that DTC P1336 ran and passed, the crankshaft position variation learn procedure is complete.

   If the tester indicates DTC P1336 failed or not run, check for other DTCs.

   If no DTCs other than P1336 are set, repeat the Crankshaft Position Variation Learn procedure as necessary.

   Table 5-2 and Table 5-3 show a list of engine packages that use the Crankshaft Position Variation Learn procedure.

PASSENGER CARS			
1996	**1997**	**1998**	**1999**
1.9L (LL0) VIN 7	1.9L (LL0) VIN 7	1.9L (LL0) VIN 7	1.9L (LL0) VIN 7
1.9L (L24) VIN 8	1.9L (L24) VIN 8	1.9L (L24) VIN 8	1.9L (L24) VIN 8
	2.2L (LN2) VIN 4	2.2L (LN2) VIN 4	2.2L (LN2) VIN 4
	2.4L (LD9) VIN T	2.4L (LD9) VIN T	2.4L (LD9) VIN T
	3.1L (L82) VIN M	3.1L (L82) VIN M	3.1L (LG8) VIN J
	3.4L (LQ1) VIN X	3.8L (L36) VIN K	3.1L (L82) VIN M
	3.8L (L36) VIN K	3.8L (L67) VIN 1	3.4L (LA1) VIN E
	3.8L (L67) VIN 1	5.7L (LS1) VIN G	3.5L (LX5) VIN H
			3.8L (L36) VIN K
			3.8L (L67) VIN 1
			5.7L (LS1) VIN G
2000	**2001-2002**	**2003**	**2004**
1.9L (LL0) VIN 7	1.9L (LL0) VIN 7	2.2L (L61) VIN F	2.2L (L61) VIN F
1.9L (L24) VIN 8	1.9L (L24) VIN 8	3.1L (LG8) VIN J	3.1L (LG8) VIN J
2.2L (LN2) VIN 4	2.2L (LN2) VIN 4	3.4L (LA1) VIN E	3.4L (LA1) VIN E
2.2L (L61) VIN F	2.2L (L61) VIN F	3.8L (L36) VIN K	3.8L (L26) VIN 2
2.4L (LD9) VIN T	2.4L (LD9) VIN T	3.8L (L67) VIN 1	3.8L (L32) VIN 4
3.1L (LG8) VIN J	3.1L (LG8) VIN J	4.0L (L47) VIN C	3.8L (L36) VIN K
3.4L (LA1) VIN E	3.4L (LA1) VIN E	4.6L (L37) VIN 9	3.8L (L67) VIN 1
3.5L (LX5) VIN H	3.5L (LX5) VIN H	4.6L (LD8) VIN Y	4.6L (L37) VIN 9
3.8L (L36) VIN K	3.8L (L36) VIN K	5.7L (LS1) VIN G	4.6L (LD8) VIN Y
3.8L (L67) VIN 1	3.8L (L67) VIN 1	5.7L (LS6) VIN S	5.7L (LS1) VIN G
4.6L (LD8) VIN Y	4.0L (L47) VIN C		5.7L (LS6) VIN S
4.6L (L37) VIN 9	4.6L (LD8) VIN Y		
5.7L (LS1) VIN G	4.6L (L37) VIN 9		
	5.7L (LS1) VIN G		
	5.7L (LS6) VIN S		

TABLE 5-2. Engine Packages That Use Crankshaft Position Variation Learn Procedure

TRUCKS			
1997	**1998**	**1999**	**2000**
2.2L (LN2) VIN 4	2.2L (LN2) VIN 4	2.2L (LN2) VIN 4	2.2L (LN2) VIN 4
3.4L (LA1) VIN E	3.4L (LA1) VIN E	3.4L (LA1) VIN E	2.2L (L43) VIN 5
	4.3L (LF6) VIN X	4.3L (LF6) VIN X	3.4L (LA1) VIN E
	4.3L (L35) VIN W	4.3L (L35) VIN W	4.3L (LF6) VIN X
	5.0L (L30) VIN M	4.8L (LR4) VIN V	4.3L (L35) VIN W
	5.7L (L31) VIN R	5.0L (L30) VIN M	4.8L (LR4) VIN V
	7.4L (L29) VIN J	5.3L (LM7) VIN T	5.0L (L30) VIN M
		5.7L (L31) VIN R	5.3L (LM7) VIN T
		6.0L (LQ4) VIN U	5.7L (L31) VIN R
		7.4L (L29) VIN J	6.0L (LQ4) VIN U
			7.4L (L29) VIN J
2001	**2002**	**2003**	**2004**
2.2L (L43) VIN 5	2.2L (L43) VIN 5	2.2L (LN2) VIN H	2.8L (LK5) VIN 8
3.4L (LA1) VIN E	3.4L (LA1) VIN E	3.4L (LA1) VIN J	3.4L (LA1) VIN J
4.3L (L35) VIN W	4.2L (LL8) VIN S	4.2L (LL8) VIN S	3.5L (L52) VIN 6
4.8L (LR4) VIN V	4.3L (L35) VIN W	4.3L (LU3) VIN X	4.3L (LU3) VIN X
5.0L (L30) VIN M	4.3L (LU3) VIN X	4.8L (LR4) VIN V	4.8L (LR4) VIN V
5.3L (LM7) VIN T	4.8L (LR4) VIN V	5.3L (LM4) VIN P	5.3L (LM4) VIN P
5.7L (L31) VIN R	5.0L (L30) VIN M	5.3L (LM7) VIN T	5.3L (LM7) VIN T
6.0L (LQ4) VIN U	5.3L (LM7) VIN T	5.3L (L59) VIN Z	5.3L (L59) VIN Z
8.1L (L18) VIN G	5.7L (L31) VIN R	6.0L (LQ9) VIN N	6.0L (LQ9) VIN N
8.1L (L18) VIN E	6.0L (LQ4) VIN U	6.0L (LQ4) VIN U	6.0L (LQ4) VIN U
	6.0L (LQ9) VIN N	8.1L (L18) VIN E	8.1L (L18) VIN E
	8.1L (L18) VIN G	8.1L (L18) VIN G	8.1L (L18) VIN G
	8.1L (L18 MD) VIN E		

TABLE 5-3. Engine Packages That Use Crankshaft Position Variation Learn Procedure

ACTIVE KEYS	
↑ , ↓	Scrolls through displayed screens.
ENTER	Advances test when prompted.
F4	Select OBD Controls.
F5	Select Crank Learn.
EXIT	Returns to the OBD Controls test menu.

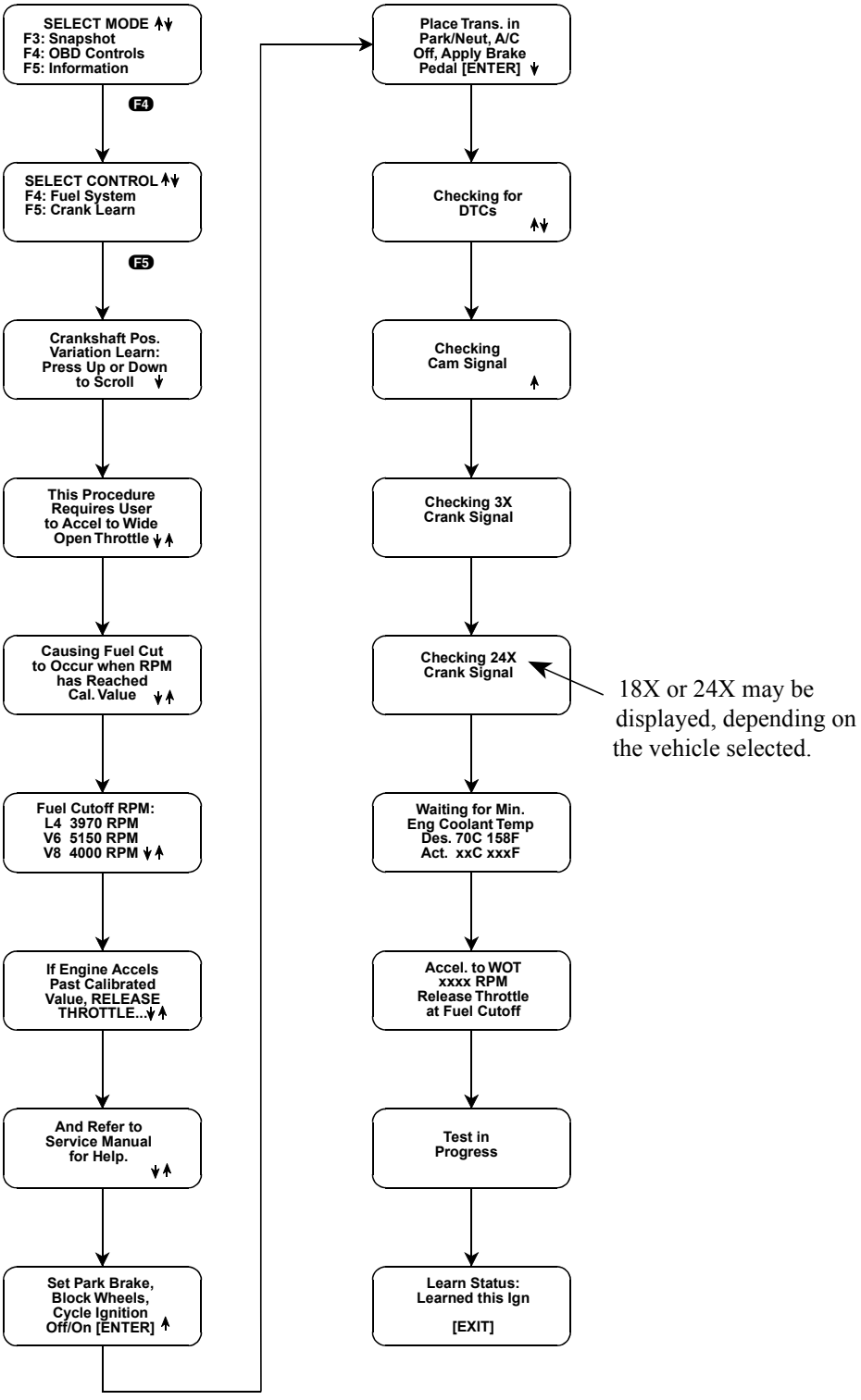


FIGURE 5-57. Truck Vehicles and 2000-2002 2.2L Saturn

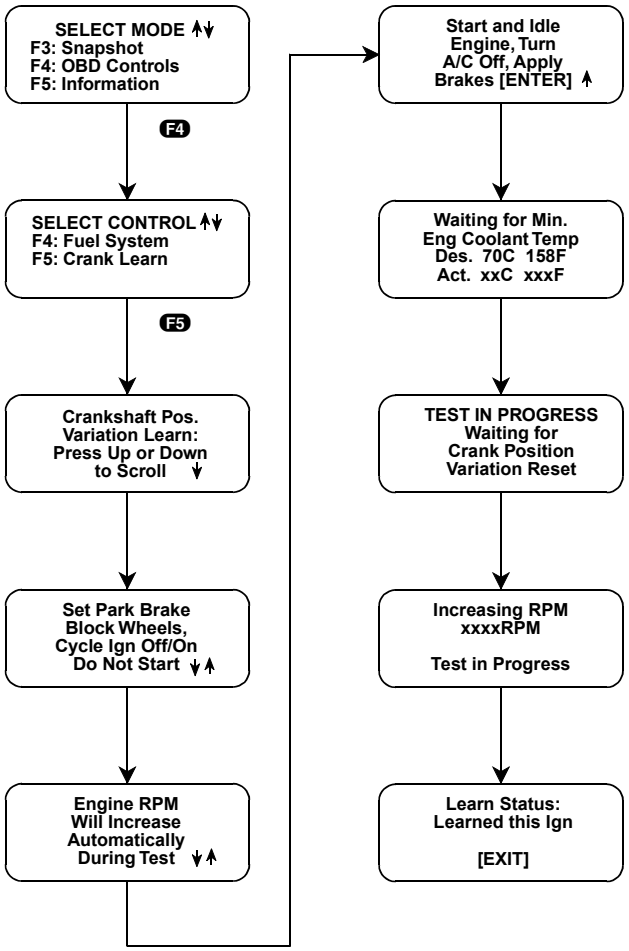


FIGURE 5-58. Saturn Vehicles (1996-1998)

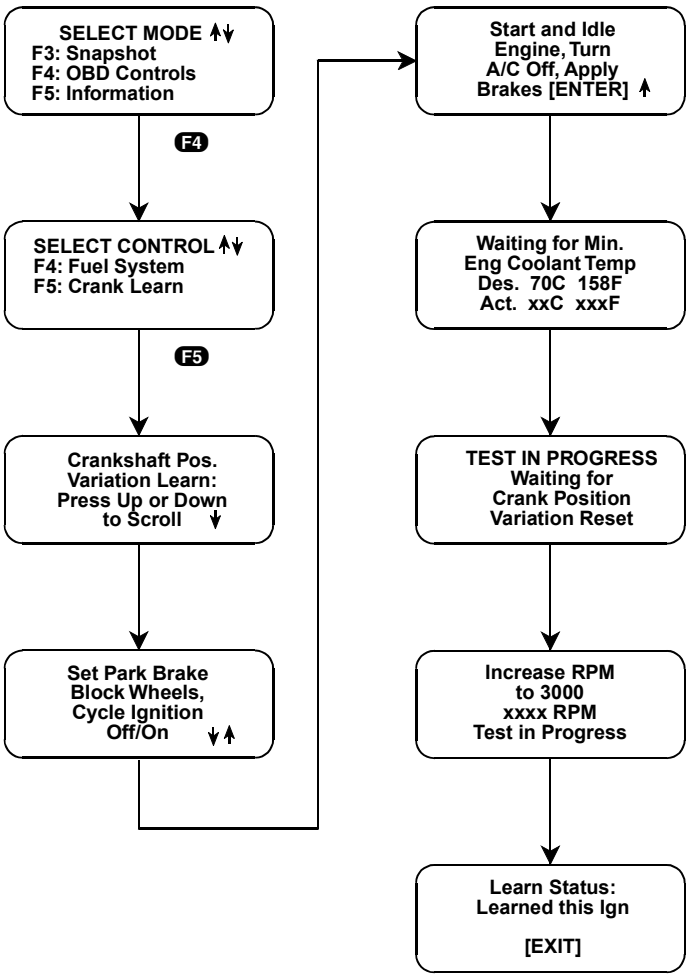


FIGURE 5-59. 1.9L Saturn Vehicles (1999-2002)

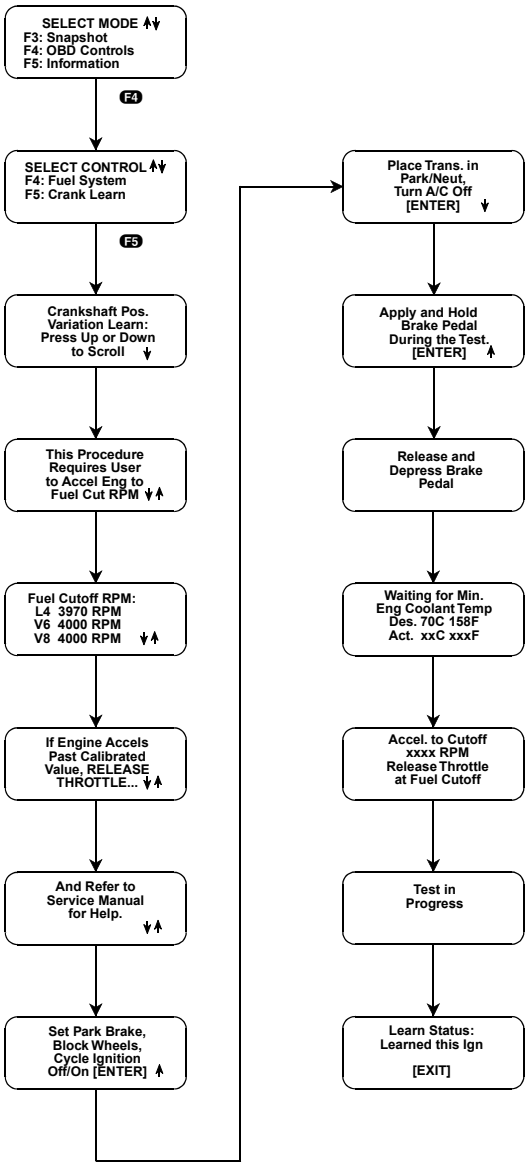


FIGURE 5-60. VCM Trucks

SUBMODE F8: BAY TESTS

Submode F0: EVAP Bay Test

The EVAP Service Bay test is used to enable the vehicle PCM/VCM to perform enhanced EVAP system diagnostic tests. Once complete, the OBD II Monitor for the EVAP system changes to complete. The vehicle's enhanced evaporative system diagnostic conducts up to 8 specific sub-tests in order to detect any fault conditions.

The OBD II monitors, including EVAP system, are reset at every Clear Info. event. Additionally, in climates having extended periods of hot or cold temperatures, the Enhanced EVAP leak detection tests do not always run. It may take a week or two for the PCM/VCM to complete the EVAP system tests. The EVAP service bay test enables the PCM/VCM to run the EVAP system monitor after a Clear Info. has been performed.

The EVAP Service Bay test cannot be performed under certain situations including:

- Engine coolant or intake air temp too high.
- Fuel tank pressure out of test range (too high/too low).
- Fuel tank level is out of test range (15%-85% for most vehicles).
- Certain DTCs set.
- The EVAP system Monitor already complete. Perform DTC Clear Info. to reset the OBD II Monitors to incomplete.

Appropriate abort screens are displayed if DTCs are present or other test criteria are not met.

See vehicle service manual for specific Enhanced EVAP system test enable criteria.

NOTE

Some vehicles may not enable the test to run until RPM is raised above idle.

NOTE

Diagnose and repair any DTCs set before attempting this procedure. Do not attempt this test after the vehicle has recently been driven. Due to restraints placed upon the engine coolant temperature and intake air temperature range needed for the vehicle's PCM/VCM to perform the EVAP system diagnostic, it is best to run this test while the engine is cold.

To select EVAP Bay test, do the following:

1. Block the wheels, set the parking brake and put the transmission in park or neutral.
2. Turn the ignition switch off.
3. Press F4 to select the OBD Controls mode from the Test menu.
4. Press F8 to select Bay Tests submode from the OBD Controls test menu.
5. Press F0 to select EVAP Bay Test submode from the Select Test menu.
6. Follow the instructions displayed on the tester. The test may take several minutes to complete. When the on-board EVAP system diagnostic tests are complete, the tester displays the pass or fail results. If the test fails, the appropriate DTC, or reason for failure is displayed for diagnostic purposes.

The tester displays appropriate test abort screens as needed.

Following is a list of engine packages that use the EVAP Service Bay test procedure that are supported in the 1981-2004 GM Powertrain Application. The EVAP Service Bay test is selectable only on applicable vehicles.

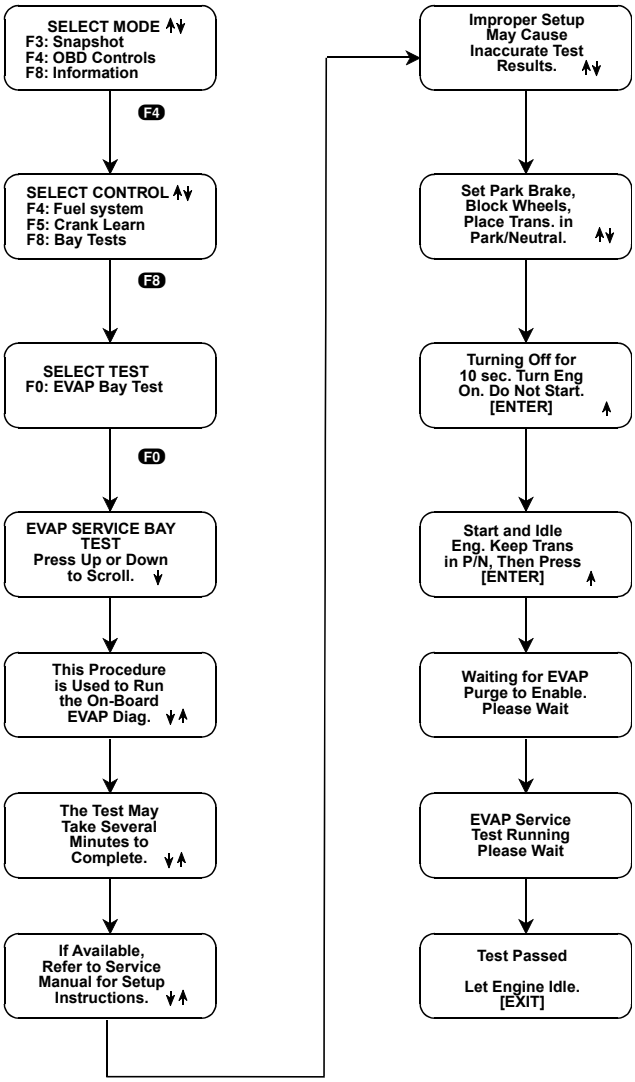
PASSENGER CARS			
1997	**1998**	**1999**	**2000**
3.1L (L82) VIN M	3.1L (L82) VIN M	3.1L (L82) VIN M	3.1L (LG8) VIN J
3.8L (L36) VIN K	3.8L (L36) VIN K	3.1L (LG8) VIN J	3.4L (LA1) VIN E
	3.8L (L67) VIN 1	3.4L (LA1) VIN E	3.5L (LX5) VIN H
		3.5L (LX5) VIN H	3.8L (L36) VIN K
		3.8L (L36) VIN K	3.8L (L67) VIN 1
		3.8L (L67) VIN 1	4.6L (LD8) VIN Y
		4.6L (LD8) VIN Y	4.6L (L37) VIN 9
		4.6L (L37) VIN 9	5.7L (LS1) VIN G
		5.7L (LS1) VIN G	
2001	**2002**	**2003**	**2004**
3.1L (LG8) VIN J	3.1L (LG8) VIN J	3.1L (LG8) VIN J	3.1L (LG8) VIN J
3.4L (LA1) VIN E	3.4L (LA1) VIN E	3.4L (LA1) VIN E	3.4L (LA1) VIN E
3.5L (LX5) VIN H	3.5L (LX5) VIN H	3.8L (L36) VIN K	3.8L (L26) VIN 2
3.8L (L36) VIN K	3.8L (L36) VIN K	3.8L (L67) VIN 1	3.8L (L32) VIN 4
3.8L (L67) VIN 1	3.8L (L67) VIN 1	4.0L (L47) VIN C	3.8L (L36) VIN K
4.0L (L47) VIN C	5.7L (LS1) VIN G	4.6L (L37) VIN 9	3.8L (L67) VIN 1
4.6L (LD8) VIN Y	5.7L (LS6) VIN S	4.6L (LD8) VIN Y	4.6L (L37) VIN 9
4.6L (L37) VIN 9		5.7L (LS1) VIN G	4.6L (LD8) VIN Y
5.7L (LS1) VIN G		5.7L (LS6) VIN S	5.7L (LS1) VIN G
5.7L (LS6) VIN S			5.7L (LS6) VIN S

TABLE 5-4. Engine Packages That Use The Evap Service Bay Test Procedure

TRUCKS			
1998	**1999**	**2000**	**2001**
3.4L (LA1) VIN E	3.4L (LA1) VIN E	3.4L (LA1) VIN E	3.4L (LA1) VIN E
	4.3L (L35) VIN W	4.3L (L35) VIN W	4.3L (L35) VIN W
	4.3L (LF6) VIN X	4.3L (LF6) VIN X	4.8L (LR4) VIN V
	4.8L (LR4) VIN V	4.8L (LR4) VIN V	5.0L (L30) VIN M
	5.0L (L30) VIN M	5.0L (L30) VIN M	5.3L (LM7) VIN T
	5.3L (LM7) VIN T	5.3L (LM7) VIN T	5.7L (L31) VIN R
	5.7L (L31) VIN R	5.7L (L31) VIN R	8.1L (L18) VIN G
	6.0L (LQ4) VIN U	6.0L (LQ4) VIN U	8.1L (L18 MD) VIN E
	7.4L (L29) VIN J	7.4L (L29) VIN J	
2002	**2003**	**2004**	
4.3L (L35) VIN W	3.4L (LA1) VIN E	3.4L (LA1) VIN E	
4.3L (LU3) VIN X			
4.8L (LR4) VIN V			
5.0L (L30) VIN M			
5.3L (LM7) VIN T			
5.7L (L31) VIN R			
6.0L (LQ9) VIN N			
8.1L (L18) VIN G			

TABLE 5-5. Engine Packages That Use The EVAP Service Bay Test Procedure

ACTIVE KEYS	
ENTER	Advance test when prompted.
F0	Select EVAP Bay Test.
F4	Select OBD Controls.
F8	Select Bay Tests.
↑ , ↓	Scroll through displayed screens.
EXIT	Return to Test menu.



If after several minutes test does not proceed, raise engine RPM above idle.

FIGURE 5-61. EVAP Bay Test

MODE F8: INFORMATION

SUBMODE F2: SYSTEM INFO

Submode F0: MIL Status

Submode F1: System Status

The SYSTEM INFO mode is used to display the MIL (Malfunction Indicator Lamp) Status and System Status.

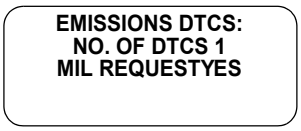
The MIL Status submode display indicates if there is an emission-related DTC in the vehicle PCM/VCM and if it is requesting the MIL to illuminate.

The System Status submode displays which OBD II monitor tests are supported and the current status of each test. If a test does not appear in the display, it is not supported by the vehicle. The character “Y” or “N” (YES/NO) appears after each entry only to indicate whether that test has completed.

To select System Information, do the following:

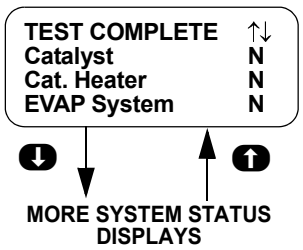
1. Press F8 to select Information from the Select Mode menu.
2. Press F2 to select System Info from the Select Type menu.
3. Press F0 to select MIL Status or F1 to select System Status.

MIL STATUS



The tester informs you if the MIL is being requested by the PCM/VCM due to a DTC being set.

SYSTEM STATUS



The OBD II monitor status of the selected system is displayed. “Y” indicates the OBD II monitor is complete and “N” means the OBD II monitor has not been completed. Use the ↑ and ↓ keys to scroll through the lists of OBD II system tests.

4. Press EXIT to return to the Select Info menu.

ACTIVE KEYS	
F0	Select MIL Status.
F1	Select System Status.
F2	Select System Info.
F8	Select Information Mode.
F0 - F6	Select a menu item.
↑ , ↓	Scroll through OBD II system tests.
EXIT	Return to the Select Mode menu.

SUBMODE F3: ID INFO

Submode F0: VIN ID

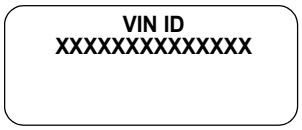
Submode F1: CAL ID

The ID INFO submode is used to display both the Vehicle Identification (VIN) and Calibration ID numbers for applicable vehicles found in the vehicle PCM or VCM.

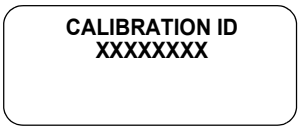
To select ID Info, do the following:

1. Press F8 to select Information from the Select Mode menu.
2. Press F3 to select ID Info from the Select Type menu.
3. Press F0 to select VIN ID or press F1 to select CAL ID.
4. The Identification information is displayed.

Example of VIN ID



Example of CAL ID



5. Press EXIT to return to the Select ID menu.

ACTIVE KEYS	
F0	Select VIN ID.
F1	Select CAL ID.
F3	Select ID Info.
F8	Select Information Mode.
EXIT	Return to the Select ID menu.

1999-2000 GM Alternative Fuel (CNG) Vehicles

The 1999-2000 GM Alt-Fuel (Compressed Natural Gas) vehicles are the 5.7L 4-speed automatic CK-Truck (2WD/4WD pick up), and the 2.2L 3-speed automatic J-Car (Chevrolet Cavalier and Pontiac Sunfire). These vehicles utilize a separate alternative fuel control module called the AFECU, and are supported in the 1981-2004 GM Powertrain application.

The new Alt-Fuel system test modes are similar in operation to the PCM/VCM/ATC Class 2 system test modes which are explained previously in this section. Their explanations, therefore, can be referenced in regard to the Alt-Fuel system, as well. For clarification, the following Tech 1/MTS 3100 menu structure is offered. It outlines the menu structure and output controls available for the 1999-2000 GM Alt-Fuel C/K-Truck and J-Car.

F0: Data List
- F0: Engine 1
- F1: Engine 2
- F2: Specific Eng. (C/K Truck)
  - F0: HO2S
  - F1: Misfire
  - F2: EVAP
- F5: A/T
- F6: Specific A/T (C/K Truck)
  - F0: TCC
  - F1: 1-2 Shift
  - F2: 2-3 Shift
  - F3: 3-4 Shift
  - F4: PC Solenoid
  - F5: Adapts 1
  - F6: Adapts 2
- F8: Alt. Fuel Eng
- F9: Alt. Fuel Log

F2: Specific Eng. (J Car)
- F0: EVAP
- F1: Misfire
- F2: O2S

F1: Capture Info.
- F0: Capture Info.
- F1: AF Capt. Info.

F2: DTC
- F0: DTC Info.
  - F0: History
  - F1: MIL Request
  - F2: Last Tst Fail
  - F3: Test Fail SCC
  - F4: Not Run SCC
  - F5: Fail This Ign
  - F6: DTC Status
- F1: Specific DTC
- F2: Freeze Frame
- F3: Fail Records
- F4: Clear Info.
- F5: AF DTC Info.
  - F0: AF DTC Info.
    - F0: History
    - F1: MIL Request
    - F2: Last Tst Fail
    - F3: Test Fail SCC
    - F4: Not Run SCC

F5: Fail This Ign
F6: DTC Status
F1: AF Spec. DTC
F2: AF Freeze Fr.
F3: AF Fail Rec.
F4: AF Clear Info.

F3: Snapshot
F0: Any DTC
F1: Single DTC
F2: Manual Trig.
F3: Replay Data
F9: Trig. Point

F4: OBD Controls
F1: Eng. Outputs (C/K Truck)
F1: MIL
F2: A/C Relay
F3: Fuel Gauge
F4: EVAP System
F1: EVAP Purge
F2: Vent Sol.
F3: Purge/Seal
F5: EGR Solenoid
F6: Fuel Pump
F7: Loop Status

F2: A/T Outputs (C/K Truck)
F0: TCC Ctl. Sol.
F2: 1-2 Solenoid
F3: 2-3 Solenoid
F5: Shift Trans.
F6: PC Solenoid
F7: Clear TAPS

F3: IAC System (C/K Truck)
F0: RPM Control
F1: IAC Reset

F4: Fuel System (C/K Truck)
F0: FT Enable
F1: FT Reset
F2: Inj. Balance
F3: Injector Flow

F1: Eng. Outputs (J Car)
F1: Fan Relays
F2: MIL
F3: A/C Relay
F4: EVAP System (J Car)
F1: EVAP Purge
F2: System Perf.
F3: Seal System
F4: Vent. Sol.
F7: Cruise
F8: Fuel Pump
F9: GEN L Term.

F2: A/T Outputs (J Car)
F0: TCC Enable

F3: IAC System (J Car)
F0: RPM Control

F4: Fuel System (J Car)
F1: FT Reset
F2: Inj. Balance
F6: Crank Learn (J Car)

F8: Bay Tests
F0: EVAP Bay Test

F9: Alt. Eng. Ctl.
F1: Eng. Outputs
F0: Fuel Ind. Lamp
F1: MIL
F2: Fuel Pump
F3: Fuel Gauge
F4: Fl Gauge Rly
F5: NGO Enable
F6: Hi Press Lkoff
F7: Lo Press Lkoff
F8: Mix Cntrl Vlv
F9: Fuel Sw over

F4: Fuel System
F0: FT Enable
F1: FT Reset
F8: Information
F2: System Info.
F0: MIL Status
F1: System Status
F3: AF SYS INFO
F0: AF MIL Status
F1: AF SYS Status
F3: ID Info.
F0: VIN
F1: Cal. ID
F2: Cal. ID (AF)

1999-2000 GM Alt-Fuel (CNG) Engine Output Controls Table		
F1	MIL	Allows on/off control of the malfunction lamp.
F2	Fuel Pump	Allows on/off control of the electric fuel pump.
F3	Fuel Gauge	Sweep control of the vehicle's fuel gauge.
F4	Fl Gauge Rly	Alternates fuel gauge relay between gas and natural gas mode.
F5	NGO Enable	Tests the AFECU's ability to toggle the natural gas operation circuit on or off.
F6	Hi Press Lk off	Allows on/off control of the natural gas system's Hi Pressure lock off solenoid. Also used to evacuate the fuel system for service.
F7	Low Press Lk off	Allows on/off control of the natural gas system's Lo Pressure lock off solenoid.
F8	Mix Cntrl Vlv	Allows frequency control of the natural gas mixture control valve.
F9	Fuel Sw over	Allows fuel mode to be switched from natural gas to gasoline operation. The vehicle remains in gasoline mode until the ignition is cycled.
F4	F0: FT Enable	Allows on/off control of the vehicle's controller ability to correct fuel trim.
F4	F1: FT Reset	Resets long term fuel trim cells to 0% or 128.

6. FINISHING UP

After using the application, do the following:

1. If the repairs are complete, clear the codes from memory before test driving to see if they recur or before releasing the vehicle to the customer.
   - If you have cleared the codes for a component but the codes are still set, then the conditions which caused the codes to be set may still be present. Refer to the OEM service manual to isolate the problem.
2. If the repairs are not yet complete, or if you want to continue testing at a later time, do not clear the codes from memory. Print a copy of the codes or write the codes down for comparison to the codes displayed when testing is resumed.
3. Disconnect the tester from the cigarette lighter plug or the battery terminal adapter.
4. Disconnect the cables and adapters from the vehicle's DLC. You may want to inspect the cable, connector, and cigarette lighter for any damage or corrosion.
5. Store all hardware components in the tester storage case.

NOTE	
	If the tester becomes dirty, clean it by wiping it with a rag dampened with mild detergent or hand soap. Avoid using harsh, petroleum-based cleaning solvents such as acetone, benzene, and trichloroethylene, as they may damage the tester. Although the tester is water resistant, it is not waterproof, so be sure to thoroughly dry off the tester prior to storage. Do not submerge the tester in water.

A. VEHICLE NETWORK COMMUNICATION STATUS

Most test modes display data. Therefore, these test modes require the ECM to send data to the tester. When you select a test mode, you may see one or more of the following communications status displays.

FIGURE A-1. Communication Status Displays

Display A in Figure A-1 means that the tester cannot yet display data as it has not yet received a complete data message from the vehicle controller. This display is sometimes seen right after selecting a test mode. This is because the vehicle controller to tester communications begin right after the engine type is selected. If the tester has not received a complete data message from the vehicle controller by the time you've selected the test mode, it tells you that it is waiting for data until a complete message is received from the vehicle controller.

Display B in Figure A-1 occurs when the tester determines that the data stream it receives from the vehicle controller does not match the engine type that you have selected. Most vehicle controllers send out a different number of data words, and some vehicle controllers transmit at a different rate. After you select the engine type, the tester expects to see a certain number of words transmitted at a certain rate. If the data word count or rate is different than expected, the tester displays this message. If this happens, return to the engine type selection step by pressing EXIT twice. Refer to the VIN tables of Chapter 3 to double-check your selection.

NOTE

The tester cannot always tell if the wrong engine type has been selected. A wrong engine type selection does not always result in the wrong ECM selected message. It is possible to see bad data if the vehicle is not selected properly.

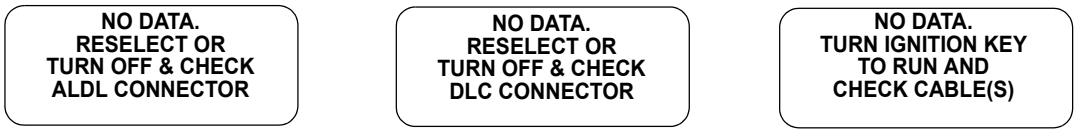


FIGURE A-2. Communication Status Displays

One of the displays in Figure A-2 occurs when the tester has not received any data from the ECM, PCM or VCM. In this case, you should verify that the ignition is ON and check the ALDL/DLC connections. An incorrect engine type selection may also cause this condition.

Once the tester has received valid data and begins data display, the display does not occur even if the tester is no longer receiving data. This allows you to turn off the ignition and still retain the data display.

NOTE	For carbureted vehicles, the circuitry of the vehicle “check engine” light is used to electrically transmit the ECM information. The “check engine” light flickers rapidly on those vehicles when the ECM is communicating with the tester.

B. IF YOU'RE HAVING A PROBLEM

Although the Vetronix testers were designed to give you years of trouble-free service, occasional problems may occur that require special attention. Some of these problems may be corrected with a few simple steps. Examples of most of the displays which you might see under abnormal conditions are shown. In addition, the most likely cause for the condition is given as well as other possible causes and recommendations on how to isolate or eliminate the problem. If the problem appears to be in the tester, perform the Self-test as described in the tester Operator's Manual.

TECH 1 AND TECH 1A SYMPTOMS

BLANK SCREEN WHEN THE TESTER IS TURNED ON

Most Likely Cause

- Faulty cable.
- Reverse polarity at cigarette lighter.
- Blown fuse.

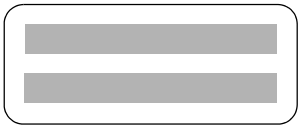
Other Possible Causes

- Tester power supply malfunctioning.
- No power is applied to the tester.

Recommendations

- Plug the tester into another vehicle to verify proper operation.
- Check for 12-volt power at the cigarette lighter.
- Check for proper polarity of 12-volt power (center conductor should be positive).
- Check the fuse for the cigarette lighter and the fuse in the cigarette lighter plug on the DLC Cable or power cable.

LINES ARE DISPLAYED WHEN THE TESTER IS TURNED ON



Most Likely Cause

- Two master cartridges are installed.

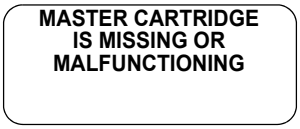
Other Possible Causes:

- Master cartridge is malfunctioning.
- Tester is malfunctioning.

Recommendations

- Make sure that only one master cartridge is installed in the tester.
- Remove all cartridges and see if "MASTER CARTRIDGE MISSING OR MALFUNCTIONING" message is displayed. If it is, try installing another master cartridge.

ERROR MESSAGE WHEN THE TESTER IS TURNED ON



Most Likely Cause

- Master cartridge is not installed.

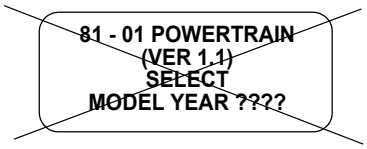
Other Possible Causes

- Dirty contacts on the master cartridge connector.
- Try a different master cartridge.

Recommendations

- Verify that a master cartridge is installed.
- Clean contacts on master cartridge connector with alcohol.
- Try a different master cartridge.

WRONG SCREEN WHEN THE TESTER IS TURNED ON



WRONG DISPLAY AFTER POWER IS APPLIED

Most Likely Cause

- Wrong master cartridge is installed.

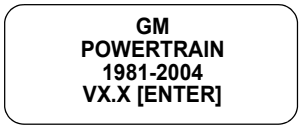
Other Possible Causes

- Master cartridge is malfunctioning.
- Tester is malfunctioning.

Recommendations

- Verify that the cartridge is installed in the bottom slot of the Tech 1 or Tech 1A and that there isn't a master cartridge in the top slot.
- Try another cartridge.
- Perform the Self-test as described in the tester Operator's Manual.

KEYBOARD OR DISPLAY LOCKED UP OR PROGRAM INTERMITTENTLY RETURNS TO TITLE SCREEN



Most Likely Cause

- DLC cable loose or bad.

Other Possible Causes

- Master Cartridge loose or dirty contacts.
- Cigarette lighter power intermittent.
- Tester is malfunctioning.

Recommendations

- Cycle power to the tester (unplug & replug the cigarette lighter adapter).
- Check cartridge socket and cartridge edge connector.
- Check DLC cable & connector for wear or corrosion.

ERROR MESSAGE DURING VEHICLE SELECTION

Most Likely Cause

- Vehicle under test is not selected vehicle.

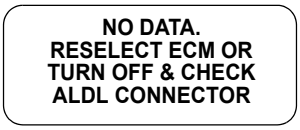
Other Possible Causes

- Loose DLC cable.

Recommendations

- Reselect vehicle and check VIN charts again.
- Remember that even if this message does not appear, the wrong vehicle may still be selected.

TESTER IS NOT RECEIVING DATA



Most Likely Cause

- Ignition switch OFF.

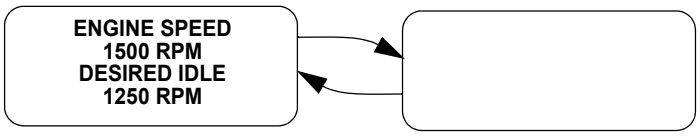
Other Possible Causes

- DLC cable loose or bad or connector pins loose or corroded.
- Improperly selected vehicle.
- DLC Cable problems.
- Loose connection at vehicle DLC.
- Defective vehicle DLC.

Recommendations

- Verify a good DLC Cable connection.
- Cycle power to the tester.
- Run the tester Self-test.

DATA LIST PARAMETERS FLASH ON AND OFF



Most Likely Cause

- DLC Cable loose or bad.
- Vehicle ignition switch turned off.

Other Possible Causes

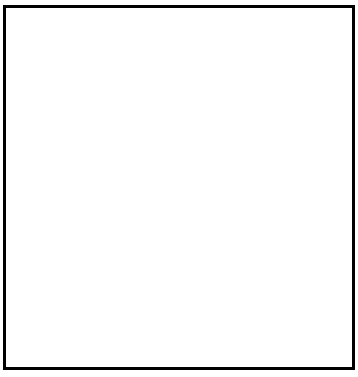
- DLC Cable connector pins loose or corroded.
- Vehicle DLC problems.
- Intermittent vehicle control module problem.

Recommendations

- Verify a good DLC Cable connection.
- Cycle power to the tester.

MTS 3100 SYMPTOMS

BLANK SCREEN WHEN THE TESTER IS TURNED ON



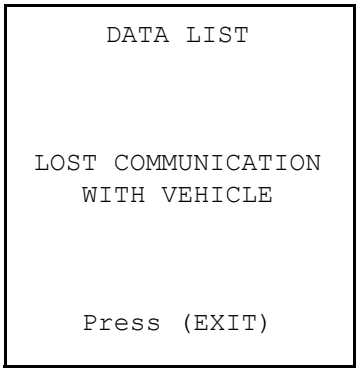
Most Likely Cause

- Display contrast misadjusted.
- NiCad batteries dead and tester is not receiving power from vehicle.
- Fuse in cigarette lighter plug is blown.

Recommendations

- Adjust tester contrast control.
- Charge NiCad batteries.
- Inspect the tester DC power cable and plug.
- Replace fuse in cigarette lighter plug (see *MTS 3100 does not power up on page 294*).

ERROR MESSAGE IS DISPLAYED



Most Likely Cause

- Communication to ECU lost while viewing parametric data in MFT Enhanced mode.
- Vehicle ignition switch is turned off.
- Tester not connected to vehicle DLC.
- DLC adapter or cable is malfunctioning.
- Loose connections.

Recommendations

- Make sure vehicle ignition switch is in the ON position.
- Disconnect and reconnect the DLC, making sure the connector is properly connected.

PRINTER CANNOT PRINT BY PRESSING SEND AND # SEND KEYS

Most Likely Cause

- Printer is turned off.
- Printer is out of paper.
- Printer cable connections are loose or cable is open.
- Printer is malfunctioning.
- Printer setup is incorrect.
- Incompatible printer.

Recommendations

- Turn the printer power on.
- Verify that the printer baud rate is the same as the baud rate of the tester.
- Set paper on the printer.
- Make sure the printer cable is connected securely; replace printer cable as needed.
- Run the printer self-test or print to test.

MTS 3100 DOES NOT PASS ALL OF THE SELF-TESTS

Most Likely Cause

- Tester is not receiving power from vehicle.
- Loose connections.
- Program card is not installed.
- Tester is connected to the vehicle DLC.
- Cigarette lighter socket or plug fuse is blown.

Recommendations

- Check that the cable is securely attached to the tester.
- Check that the DLC cable connector pins are clean.
- Check the fuse for the cigarette lighter socket and the fuse in the cigarette lighter plug. Replace the fuses if necessary.
- Double check that the appropriate test adapter (required for certain tests) is properly installed and making good contact during the testing.

MTS 3100 DOES NOT POWER UP

(When connected to the vehicle battery via the cigarette lighter or battery adapter cable)

Most Likely Cause

- DC power cable not making good contact.
- Vehicle cigarette lighter fuse is blown.
- Fuse in DC power cable cigarette lighter plug is blown.

Recommendations

- Disconnect and reconnect the DC power cord. Verify that the power cord is connected properly.
- Replace vehicle cigarette lighter fuse.
- Replace fuse in DC power cable cigarette lighter plug as follows:

1. Disconnect the DC power cable from the tester.
2. A 3A fuse is built into the power plug on the DC power cable. Check and replace the fuse as follows:
   a. Remove the power plug cover and remove the fuse together with the spring. The spring and power plug terminal can pop out so take care not to lose them.
   b. Check the fuse and replace it if necessary.
   c. Install the fuse and spring into the power plug.
   d. Check that the power plug terminal is inside the power plug cover, then screw the cover onto the power plug.

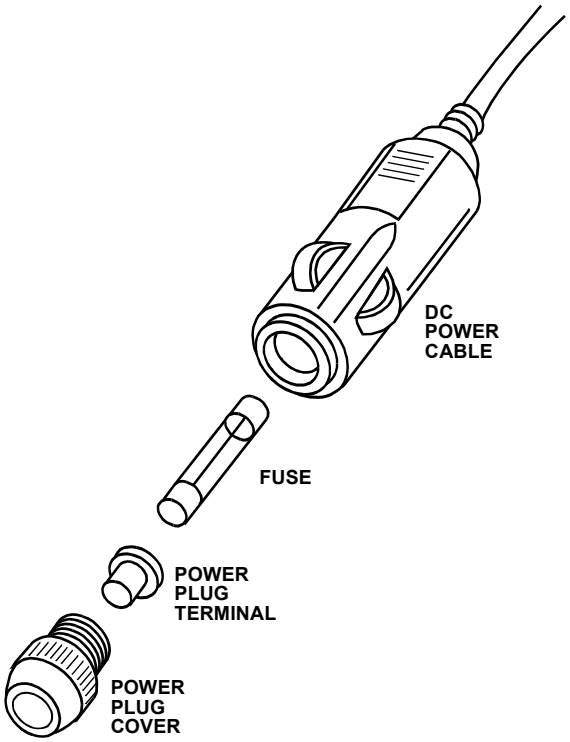


FIGURE B-1. DC Power Cable Plug

C. DATA LIST PARAMETERS

The Vetronix diagnostic testers are capable of displaying a wide variety of ECM, TCM, BCM, PCM, VCM, ATC, or AFECU parameters. The controller sends the tester information regarding the state of the engine and/or transmission. The tester “translates” and displays this information in the form of parameters required for diagnosis.

There are two basic types of parameters: discrete and analog. Discrete parameters are “bits” of information and can be in only one of two distinct states (on/off, open/closed, etc.). Switches and solenoids are examples of discrete parameters. Analog parameters are used to represent quantities and are displayed as a value with appropriate units. Examples of analog parameters include Engine Speed, Coolant Temperature, Oxygen Sensor Voltage, etc.

PARAMETER AND VEHICLE ANOMALIES

Some Cadillacs generally use the descriptors HIGH and LOW to describe the states of their parameters. HIGH and LOW refer to the voltages present at the ECM connector(s). HIGH means at or near 5 or 12 Volts and LOW means at or near zero volts or ground.

Some vehicle ECMs may be reprogrammed with later model year PROMs (Memcals). For these vehicles it is necessary to select in the 1981-2004 GM Powertrain Application Software the model year of new PROM calibration.

If a DTC related to a given parameter is present, the controller may automatically replace the “bad” parameter value with a nominal “fail-safe” value.

Some parameters may sporadically “jump” to unrealistic values for one data stream and then settle back to a normal value. Although this can indicate an intermittent problem, it may also be due to problems with the controller computer program.

D. TROUBLE CODE DESCRIPTIONS

ECM/TCM (OBD, OBD I) DTCS

Trouble codes or diagnostic trouble codes are stored in ECM or TCM memory when an abnormal condition is detected by the system controller. They are a key to diagnosing many of the problems which can occur in the vehicle.

Most vehicles display a two digit trouble code and a brief descriptor of the code. Some Cadillac vehicles and trucks display a three digit trouble code. You should refer to the GM service manual for complete trouble code descriptions and additional information regarding the codes and diagnostic procedures.

Certain vehicle systems are capable of distinguishing between Current and History trouble codes. These systems display a “C” (current) or “H” (history) at the end of line two on the tester display. If a “C” or “H” is not displayed, the system being tested does not differentiate between current or history trouble codes. For Cadillac vehicles, the trouble codes available through on-board diagnostics reflect both the current and history malfunctions.

Trouble codes can be displayed and cleared. You should fix or examine the problem indicated by the trouble code, clear the code, then see if the code resets immediately or after a few drive cycles.

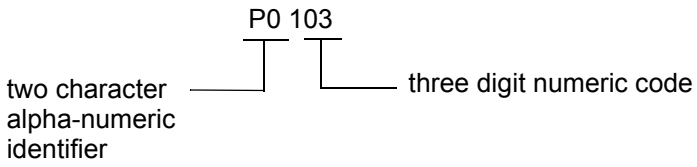
If F2: TROUBLE CODES/DTC is selected and trouble codes have been indicated by the system controller, in some cases the tester asks if you want to clear the codes. If you do not wish to clear the codes, press the NO key to return to the Select Mode menu. If you want to clear the codes, press the YES key. The tester attempts to clear the trouble codes, then display a message informing you that the codes were cleared or that the attempt to clear the codes failed. If the “CODE CLEAR FAIL” message is displayed, press EXIT to return to the Select Mode menu, then press F2: TROUBLE CODES and try to clear the codes again.

For 1993 and newer vehicles, trouble codes are referred to as Diagnostic Trouble Codes (DTC).

PCM/VCM (OBD II), ATC AND AFECU DTCS

The 1981-2004 GM Powertrain application supports display of Diagnostic Trouble Codes (DTCs) for 1995-2004 GM vehicles equipped with a PCM, VCM, ATC or AFECU. The PCM, VCM or AFECU can output Powertrain or Network DTCs. The ATC ECU can output Body, Chassis, or Network DTCs. Because the PCM or VCM system is designed to detect and identify problems in great detail, the number of DTCs exceeds several hundred code numbers and descriptions. The 1981-2004 GM Powertrain application is capable of reading and displaying the DTC number and descriptions read from the Powertrain Control Module (PCM), Vehicle Control Module (VCM), Automatic Transfer Case (ATC) Control Module, and Alternate Fuel (AFECU) control module.

DTCs that are output from the PCM/VCM/ATC or AFECU Controller are 5 characters in length; a two character alpha-numeric identifier followed by a three digit numeric diagnostic trouble code.



The two character alpha-numeric identifier can have a P, U, B, or C for its first character. Each letter is defined as:

P = Powertrain System

U = Network System

B = Body System

C = Chassis System

The two character alpha-numeric identifier can have a 0 or 1 for the second character. Each number is defined as:

0 = Society of Automotive Engineers (SAE) defined DTCs

1 = Manufacturer defined DTCs

Referring to the above, a DTC with 0 for the second character (e.g. P0102) defines a DTC that has been defined by the Society of Automotive Engineers (SAE), and whose definition should be uniform for all automotive manufacturers. A DTC with 1 for the second character (e.g. P1023) defines a DTC that has been defined by the vehicle manufacturer, and whose definition may not be uniform for all automotive manufacturers.

The three character numeric diagnostic trouble code is separated into categories that best represent specific systems on the vehicle. The GM PCM or VCM system uses seven of ten available categories for DTC groups. The groups are defined as:

1xx = Fuel and Air Metering

2xx = Fuel and Air Metering

3xx = Ignition System or Misfire

4xx = Auxiliary Emission Controls

5xx = Vehicle Speed and Idle Speed Control

6xx = Computer and Output Circuits

7xx = Transmission

The information described in this section is further described in the Society of Automotive Engineers (SAE) recommended practice J2012, which outlines recommended uniformity for diagnostic trouble code and descriptions for manufacturer product lines that are equipped with OBD II systems.

PCM/VCM (OBD II) DTC TYPES

A software program within the PCM, VCM, ATC, and AFECU called the Diagnostic Executive classifies Diagnostic Trouble Codes (DTCs) into certain categories. Each category type has different requirements to set the code, and the Diagnostic Executive only illuminates the MIL for emissions-related DTCs.

DTCs fall into four categories: A, B, C, and D; only types A & B are emission-related. The following descriptions define these categories.

Type A

Stores the DTC and turns on the MIL on the first trip in which an emission-related diagnostic test has run and reported a “test failed” to the Diagnostic Executive.

Type B

Stores the DTC and turns on the MIL during the second consecutive trip in which an emission-related diagnostic test has run and reported a “test failed” to the Diagnostic Executive. One failed test arms a Type B DTC. After one fail, the Type B DTC is “armed,” or prepared to store a history code and turn on the MIL if a second failure occurs. One passed test disarms a Type B DTC. Some special conditions apply to misfire and fuel trim DTCs.

Type C

Stores the DTC and turns on a SERVICE lamp (if equipped) on the first trip that a non-emission-related diagnostic test has run and reported a “test failed” to the Diagnostic Executive. This type of DTC is used in future applications.

Type D

Stores a DTC but does not turn on the MIL or SERVICE lamp. Type D codes are stored after the first complete trip that a non-emission related diagnostic has run and reported a “test failed” to the Diagnostic Executive.

E. GLOSSARY AND ABBREVIATIONS

This appendix contains terms and abbreviations found in the General Motors body, chassis, and powertrain manuals.

1-4	Skipshift
14L	1-4 Shift Light
1ST	First Gear
2AR	Secondary Air Injection Reaction
2FP	Secondary Fuel Pump
2IJ	Secondary Injector Module
2ND	Second Gear
2PT	Secondary Port Throttle
32S	3-2 Solenoid
3RD	Third Gear
4TH	Fourth Gear
4WAL	Four Wheel Anti-lock Brake System
ABS	Anti-lock Brake System
A/C or AC	Air Conditioning
ACL	Low A/C Lamp
ACCEL	Accelerometer or Acceleration
ACM	Heater and A/C Programmer
ACO	AIR Control
ACT	Actual
A/D	Analog to Digital
ADVICS	Manufacturer of ABS systems
AFECU	Alternate Fuel Engine Control Unit
AIR	Air Injection Reaction
ALDL	Assembly line Diagnostic Link. In 1993 the name was changed to Data Link Connector.
ALS	Ambient Light Sensor
ALT	Alternator
AMB	Ambient
Analog Data Parameter	A parameter which represents a quantity and is displayed as a value with appropriate units (volts, C, %, etc.).
ANLG	Analog
ARMD	Armed
A/S	AIR Solenoid
ASR	Acceleration Slip Regulation; Automatic Stability Regulator
ASW	AIR Switch
ASY	AIR System
A/T	Automatic Transmission
ATC	Automatic Transfer Case
AUTO, AUT	Automatic
B+	Battery Voltage

BARO	Barometric Pressure
BATT	Battery
BCM	Body Control Module
BFC	Body Function Controller
BILVL	Bilevel
BKE	Brake Enable Relay
BKL	Brake Light
BLK	Block
BLM	Block Learn Multiplier, Block Learn Memory
BLT	Seatbelt T/T
Bosch ABS	Bosch's ABS-2U system contained in some GM vehicles.
BPMW	Brake Pressure Modulator Valve
BPW	Blower Pulse Width
BST	Boost
BYP	Bypass
CAG	Check Gauge T/T
CAL, CALIB	Calibration
CAN	Controller Area Network
Capture Data	Save information coming from the vehicle
CAR	Cold Advance Relay
CARB	California Air Resource Board
CAT	Catalytic
CC, C/C	Cruise Control
CCDCIC	Climate Control and Diagnostic Information Center
CCM	Central Control Module
CCP	Climate Control Panel
CEL	Check Engine Light
CELL	Cellular, as in phone
CFI	Cross Fire Injection
CH1	Chime 1
CH2	Chime 2
CHG	Oil Change T/T
CHK	Check
CKT	Circuit
Class 2	GM communication protocol that defines diagnostic data messages and test modes within a vehicle multiplexed network.
CLCC	Closed Loop Carburetor Control
CLF	Closed Loop Fuel
CLM	Column
CLSD	Closed
CMD	Command
CMFI	Central Multi-port Fuel Injection
CMP	Camshaft Position
CNTRL	Control
CNTRLR	Controller
CNTS or CNTCS	Contacts
CNV	Catalytic Converter
Control Test	A test where the tester controls some the vehicle's functions
COOL	Coolant
CPI	Central Port Injection
CRTC	Cathode Ray Tube Controller
CRTM	Cathode Ray Tube Monitor
CSFI	Central Sequential Fuel Injection
CSV	Courtesy Relay
CTL, CNTL, CNTRL	Control
CTS	Courtesy
CURR	Current
CVRSS	Constant Variable Road Sensing System. Used on 1997 and 1998 E and K body.
CYCL	Cycle
DAB	Delayed Accessory Bus Relay

Data Line	Refers to circuit 800, the on-board computer communications network.
Data List	Tester operating mode where DLC diagnostic information is displayed.
Data Signal	A signal sent to or from a computer on a common wire with many other messages.
Data Parameter	A parameter which represents a quantity and is displayed as a value with appropriate units (volts, C, %, etc).
DC	Duty Cycle
DCD	Delco Chassis Division
DCD ABS III	Delco Chassis Division's ABS III system
DCD ABS VI	Delco Chassis Division's ABS VI system
DEC	Decrease or decrement
DERM	Diagnostic Energy Reserve Module (SIR System control module. Supplies current through the inflator modules, which will cause deployment of the air bags in the event of a frontal crash of sufficient force up to 30 degrees off the center line of the vehicle).
DET	Deterrent
DETECTN	Detection
DF	Defrost
DFI	Digital Fuel Injection
DFOG	Defog
DFRST or DF	Defrost
Diagnostic Codes	Trouble codes. Set by a system to indicate the occurrence of abnormal conditions.
DIC	Driver Information Center
DIL	Delayed Interior Light relay (activates courtesy lights)
DIR	Direction
Discrete Data Parameter	A parameter which can be in one of only two possible states (HIGH/ LOW, ON/OFF, etc.)
Discrete Signal	An individual voltage or ground signal that is carried on its own wire.
DIV	Division, Divert
DLC	Data Link Connector
DLY	Delay
DOHC	Double Overhead Cam
DR	Door
DRA	Digital Ratio Adapter
DRL	Daytime Running Lamps
DSIR	Desired
DTC	Diagnostic Trouble Code
DVM	Digital Volt Meter
E&C	Entertainment and Comfort
E&C Bus	Entertainment and Comfort Bus. A communication link which interconnects components of the entertainment and comfort systems of the vehicle.
E&C Component	A component which performs an entertainment or comfort function and which is connected to the E&C Bus.
EBCM	Electronic Brake Control Module
EBTCM	Electronic Brake Traction Control Module
ECCP	Electronic Climate Control Panel
ECM	Engine Control Module or Electronic Control Module
ECU	Electronic Control Unit
EEPROM	Electrically Erasable Programmable Read Only Memory.
EFE	Early Fuel Evaporation
EFI	Electronic Fuel Injection
EG1	EGR Valve 1
EG2	EGR Valve 2
EG3	EGR Valve 3
EGR	Exhaust Gas Recirculation
EGV	EGR Vent Solenoid

ELC	Electronic Level Control
ELEC	Electric
EMB	Electromagnetic Brake
ENAB	Enable
ENG	Engine, English
EOLM	Engine Oil Life Monitor
EPR	Exhaust Pressure Regulator
EPROM	Erasable Programmable Read Only Memory
Equal	Equalizer
ESB	Expansion Spring Brake
ESC	Electronic Spark Control
EST	Electronic Spark Timing
ETS	Electronic Traction Control System
EVO	Electronically Variable Orifice (an advanced GM steering system)
EXH	Exhaust
F12	Fan 1 and 2
FDBK or FB	Feedback
FDC	Fuel Data Center
FET	Field Effect Transmitter
FIX	Fixed
FLD	Field
FLR	Fog Lamps Relay
FN1	Fan 1
FN2	Fan 2
FNCTN	Function
FOG	Rear Defog Relay
FPR	Fuel Pressure Regulator
FREQ	Frequency
FRT, FRNT	Front
FTD	Functional Test Director (interactive test procedure)
FTR	Fuel Trim Reset
Function Keys	Keys on the tester which can be used to select a particular function: F0, F1, F9, etc. These keys double as numeric keys: 0-9.
FUP	Fuel Pump Control
FWD	Front Wheel Drive
FXS	Fixed Spark
GAG	Gauges Dimming
GEN	Generator 1 Terminal
GFD	General FET Driver
GLT	Governor Light
GMP4	Microcomputer type used in High Speed ECMs
GND	Ground potential (low side of battery).
GOV	Governor
GRD	Ground
G/S	Grams per Second
GVWR	Gross Vehicle Weight Ratio
HDL	Head Lamps Relay
HFN	High Fan
H/L	HI/LO Beams
HRN	Horn Relay
HT	Heat
HVAC	Heating, Ventilation and Air Conditioning module.
HYDRL	Hydraulic
IAC	Idle Air Control
ICCS	Integrated Chassis Controller (used on Cadillac E/K bodies)
I.D. or ID	Identification
I/F	Interface
IGN	Ignition
ILC	Idle Load Compensator
INC	Increase or Increment
INCANDES	Incandescent
IND, INDIC	Indicator

INFL	Inflatable
INGST	Ingestion
INIT	Initialization
INJ	Injector
Intermittent Testing	Testing which is performed to isolate problems that come and go.
INT	Interior; Intake; Integrator
I/O	Input/Output
IPC	Instrument Panel Cluster
IRC	Integrated Radio Chassis
ISC	Idle Speed Control
ITV	Intake Tuning Valve
KAM	Keep Alive Memory
Key Tag	Keychain sized auditory signal generator to open doors and trunk on C-Body cars with Level II RAC.
KPa	Kilopascals (a unit of pressure)
KPH	Kilometers per Hour
LB6	Engine designation for the 2.8L PFI engine used in GM10 vehicles.
L.BLM	Left Block Learn
LD2	Engine designation for the 2.3L PFI engine used in GM10 vehicles.
LED	Light Emitting Diode
LEV	Level
LF	Left Front
LFN	Low Fan
L.INT	Left Fuel Integrator
LMP	Courtesy Lamp
L.O2	Left Oxygen Sensor Voltage
LOC	Low Coolant Light
LR	Left Rear
LST	Loop Status
LT or LITE	Light
LTPWS	Low Tire Pressure Warning System
LV8	Engine Load
LVL	Oil Level T/T
MAF	Mass Air Flow
Magna Steer	A speed dependent steering system that incorporates its controller into the EBCM/EBTCM. Magna Steer controls the amount of effort needed to provide a “road feel” using an electromagnet and rotor at the input of the steering gear. Magna Steer is speed dependent and uses inputs received from the ABS brake controller.
MANI	Manifold
MAP	Manifold Absolute Pressure; Manifold Air Pressure
MAT	Manifold Air Temperature
M/C	Mixture Control
MD	Modulated Displacement
MET	Metric
MFI	Multi-port Fuel Injection
MIL	Malfunction Indicator Lamp
MIN	Minimum
MIN-T	Chevrolet Minimum Function T-Body car
Misc. Test	Miscellaneous Test
MON	Monitor
MPH	Miles per Hour
ms	Milliseconds (1000ths of a second)
MSG	Message
MSM	Memory Seat Module (1996 Cadillac models)
MSVA	Magna Steer Vehicle Assist: an electronic steering control system that varies the power steering assist according to vehicle speed, otherwise knows as “Speed Dependent Steering System”.
MT	Manual Transmission
MTL	Min-T Lean
MTR	Min-T Rich
mV	Millivolts (1000ths of a volt)

MXD	Mixed Door Maximum
N/C	Normally Closed
N/O	Normally Open
NRM	Normal
Numeric Keys	keys (0, 1-9) which are used to enter numeric values such as trouble codes. These keys double as function keys: F0 - F9
O2	Oxygen or oxygen sensor
OAT	Outside Air Temperature Sensor
OBD	On Board Diagnostic
OBD II	On-Board Diagnostics (Phase II). The California Air Resource Board (CARB) required that, by 1996, all vehicles sold in California (under 8500 GVWR) contain a certain minimum “on- board diagnostic” capability to diagnose emissions-related failures of the engine control system. These diagnostic requirements have been designated as OBD II with a goal of monitoring “all of the emissions-related components on-board the vehicle for proper operation.”
O/D	Overdrive
ODO	Odometer
On-Board	Anything which is a permanent part of the vehicle.
OHC	Overhead Cam
OLF	Oil Life
OLL	Oil Life Lamp
Parameter	A piece of information which is displayed by the tester.
PAS	Pass-Key Telltale
PCM	Powertrain Control Module
PFI	Port Fuel Injection
PGM	Program
PHN	Cellular Mobile Phone
PK2	Pass Key 2 Starter Inhibit
PKEY	Pass Key
PKL	Parking Lamps Relay
PM-III	Powermaster III
P/N	Park/Neutral Switch
POS	Position
POT	Potentiometer. Variable resistor
Powermaster III	Delco Moraine ABS III component. Integral booster/modulator which provides both normal braking and anti-lock braking.
PRESS, PSSR, PRSSR	Pressure
PRK	Park Gear
PRNDL	Transmission shifter (Park, Reverse, Neutral, Drive and Low)
PROM	Programmable Read Only Memory
P/S	Power Steering; Prestroke
PSI	Pounds per Square Inch
PUR	Fuel Evaporator Purge
PWM	Pulse Width Modulation
PWR	Power
PZM	Platform Zone Module
QDM	Quad Driver Module
RA	Rear Axle
RAC	Remote Accessory Control
RAD	Radio Dimming
RAP	Retained Accessory Power
R.BLM	Right Block Learn
RCV, RCVR	Receive, Receiver
RECIRC	Recirculate
REF	Reference
REL	Relay; Release (when used with “solenoid”)
REQ	Request
RES	Resolution
RF	Right Front

RFA	Remote Function Actuator
R.INT	Right Fuel Integrator
RLY	Relay
R.O2	Right Oxygen Sensor
RR	Right Rear
RS232 or RS-232	A serial data transmission standard between computers and accompanying systems which uses one signal line for data.
RS232 IF Cartridge	An auxiliary cartridge that works in conjunction with a vehicle cartridge. The cartridge gives RS232 capability to the Tech 1 so it can communicate with computers and printers.
RSS	Road Sensing Suspension
RST	Reset
RTD	Real Time Dampening
RWAL	Rear Wheel Anti-lock Brake System
SAE	Society of Automotive Engineers
SAE J1850 VPW	GM data link based on SAE J1850 variable pulse width class B medium speed communication network interface. 10.4kbps VPW, 0-7vDC.
S/C	Supercharged
SDL	Serial Data Link
SDM	Sensing and Diagnostic Module (part of the SIR system, the SDM contains a sensing device which converts vehicle velocity changes into an electrical signal. The electrical signal is processed by the SDM and compared to a value stored in memory).
Secondary Display	Climate Control Head, Visual Information Center
SEC	Security T/T; Secondary
SECT	Section
SEL	Selective Ride Control
SENS	Sensor
SES	Service Engine Soon Light
SFI	Sequential Fuel Injection
SHRT, SHT	Short
SIR	Supplemental Inflatable Restraint (An active restraint system used to protect the automobile's occupant from being forced into the dash and windshield upon impact in the event of an accident).
Snapshot Test	Tester operating mode which is used to isolate intermittent problems.
SOL	Solenoid
SPD	Speedometer Dimming
SPS	Speed Signal
SRV	Service
SSS	Speed Sensitive Steering. Used on 1997 and 1998 E and K body.
STR	Steering
SW	Switch
SWPS	Steering Wheel Position Sensor
SYS	System
TAC	Throttle Actuator Control
TBI	Throttle Body Injection
TCC	Torque Converter Clutch
TCM	Transmission Control Module
TCP	TCC PWM Solenoid
TCS	Traction Control System (for limiting slippage during acceleration)
TDP	Twilight Delay Pot
TEMP	Temperature
TEVES	Teves Mark IV ABS system contained in some GM vehicles
THK	Throttle Kicker
TICS	Timing and Ignition rate Control System
TIM	Tire Inflation Module
TP	Temperature
TPI	Tuned Port Injection
TPL	Twilight/Park Lamps
TPS	Throttle Position Sensor

TQUE	Torque
TRM	Terminal
Trouble Codes	Same as Diagnostic Codes. Set by a system ECU to indicate the occurrence of abnormal conditions.
TST	Test
TT or T/T	Telltales; Telltale Lamp. Warning indicators on the instrument panel.
UART	Universal Asynchronous Receiver Transmitter
UNLCK	Unlock
V	Volts
VAC	Vacuum
VATS	Vehicle Anti-Theft System
VCC	Viscous Converter Clutch
VCM	Vehicle Control Module
VES	Variable Effort Steering
VF	Vacuum Fluorescent. Used in many of the displays.
VFD	Vacuum Fluorescent Dimming
VIM	Vehicle Interface Module. An in-line interface that expands tester functionality.
VIN	Vehicle Identification Number
VNT	Vent
VOL	Volume
VS	Vacuum Solenoid
VSS	Vehicle Speed Sensor
WHL	Wheel
WOT	Wide Open Throttle
WS or W/S	Windshield
WSS	Wheel Speed Sensor
WST	Wastegate
ZP	Zero Pressure

INDEX

Numerics

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

Q

R

S

T

V

W