General Motors
Body Systems Application

1988 - 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 will be 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 tells 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.

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1. GM BODY APPLICATION DESCRIPTION

The GM Body Systems application is used to diagnose vehicle body electronic systems. The GM Body Systems application allows you to monitor data and control body system actuators/motors by communicating with the body system computers via the vehicle's data link connector (DLC).

SUPPORTED BODY SYSTEMS

The GM Body Systems applications program can perform diagnostics on the following systems connected to the Serial Data Link and Entertainment & Comfort Bus:

- Supplemental Inflatable Restraint (SIR)
- Body Computer Module (BCM)
- Instrument Panel Cluster (IPC)
- Engine Oil Life Monitor (EOLM)
- Remote Accessory Control (RAC)
- Driver Information Center (DIC)
- Heating, Ventilation, Air Conditioning (HVAC)
- Computer Control Module (CCM)
- Low Tire Pressure Warning System (LTPWS)
- Entertainment and Comfort (E&C)
- Remote Function Actuator (RFA)
- Central Control Module (CCP)
- Platform Zone Module (PZM)
- Integrated Radio Chassis (IRC)
- Heater and A/C Programmer (ACM)

- Memory Seat Module (MSM)
- Cellular Mobile Phone (PHN)
- Cathode Ray Tube Controllers (CRTC)
- Electronic Climate Control Panel (ECCP)

There are significant differences in the diagnostic procedures for testing each of the above listed body systems. Be certain that you are following the correct operating procedures for the vehicle and body systems you are testing. The Vehicle Application Charts list the body systems available for each vehicle. See *Vehicle Coverage on page 7.*

OPERATING MODES

The following test modes are available for testing GM Body Systems (with OBD):

- SDL Test Modes
- E&C Test Modes

SDL Test Modes

Key	Name	Description
F0:	Data List See *Mode F0: DATA LIST on page 92.*	Displays diagnostic parameters
F1:	SDL Monitor See *Mode F1: SDL MONITOR on page 94.*	Passively monitors data which is transmitted between the different body systems.
F2:	DTCs See *Mode F2: DTC(S) on page 97.*	Displays DTCs that have been stored by the body system computers, along with a description of the DTC. DTCs can be cleared or kept in memory for later review.
F3:	Snapshot See *Mode F3: SNAPSHOT on page 100.*	Records data before and after the occurrence of an intermittent fault condition. Trigger conditions are user selectable and include trigger on body computer fault codes, or on a manual key press. Any part of the sample time can be displayed in data list format with a time/ sample stamp.
F4:	Special System Tests and Control Functions	Bi-directional identification control system outputs trace signals for troubleshooting. You can also conduct system-specific tests such as transferring engine oil life data from one EOLM to another, and programming new RAC key-tag signals.
F5:	VIN and Option Control See *Mode F5: VIN and Option Content on page 114.*	Read the vehicle identification number (VIN) and display which options are installed on the vehicle.
F8:	Information	Display vehicle information, such as ECU identification information (serial number, make date, etc.) and vehicle information, such as VIN.

E&C Test Modes

Key	Name	Description
F0:	E&C Monitor See *Entertainment & Comfort Bus (E&C) on page 143.*	Monitors transmissions on the E&C bus.
F1:	Component Identification See *Mode F1: Identify on page 157.*	Displays which components are connected to the E&C bus. Identifies E&C bus faults.
F3	Snapshot See *Mode F3: Snapshot on page 159.*	Captures and stores E&C messages.
F4:	Control Test See *Mode F4: E&C Control on page 162.*	Transmits E&C messages on the bus.
F5:	Speaker Test See *Mode F5: Speaker Test on page 169.*	Routes the audio signal to user selected speakers.

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 lose the snapshot data.

PRECAUTIONS FOR GM BODY APPLICATION

CHECK TESTER INDUCED DTCs

CAUTION!

Under some conditions the tester can cause trouble codes to be set. Generally these codes are associated with the serial data link. It is important to determine if the trouble codes are set by the tester or are due to a true malfunction in the vehicle.

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.

E, K, V, or Y Body vehicles can use onboard diagnostics or the GM Body System application to check ECM, BCM, or CCM codes.

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

GM vehicles and models that can be tested with the GM Body Systems Application are listed in the Vehicle Application Charts on the following pages. Remember that in most cases BCM, IPC, RAC, DIC, HVAC, E&C, and other Body systems are options and might not be installed on the vehicle you are testing.

Refer to the following charts for vehicle, body systems, and adapter configurations needed to connect the tester to the appropriate vehicle.

1988 VEHICLE COVERAGE

1988 Buick Passenger Cars				
MODEL	**BODY VIN 4TH DIGIT**	**SYSTEM**	**DATA LINK**	**ADAPTER CONFIG**
Reatta	E	E&C, BCM	UART	GM
Skylark Custom, Skylark Limited	N	E&C	UART	GM
Regal	W	E&C, IPC	UART	GM

1988 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Eldorado	E	BCM	UART	GM
Seville	K	BCM	UART	GM

1988 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Delta 88 Int'l, Royale Delta, 88 Royale Brougham	E	E&C, BCM	UART	GM
Cutlass Supreme	W	E&C, IPC	UART	GM

1988 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Grand Prix, Grand Prix LE, Grand Prix SE	W	E&C, IPC	UART	GM

1988 Light Duty Trucks

MAKE	MODEL	BODY VIN 5TH DIGIT	BODY	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	E&C	UART	GM

1989 VEHICLE COVERAGE

1989 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Electra Limited, Electra Park Ave	C	E&C	UART	GM
Reatta, Riviera	E	E&C, BCM	UART	GM
Skylark	N	E&C	UART	GM
Regal	W	E&C, IPC	UART	GM

1989 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Deville, Fleetwood, Fleetwood 60 Special	C	SIR DERM	UART	GM
Eldorado	E	BCM	UART	GM
Seville	K	BCM	UART	GM
Allante	V	E&C	UART	GM

1989 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Regency	C	E&C	UART	GM
Toronado	E	E&C, BCM	UART	GM
Cutlass Supreme	W	E&C, IPC	UART	GM

1989 Pontiac Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Bonneville	H	E&C	UART	GM
Sunbird	J	E&C	UART	GM
Grand Prix	W	E&C, IPC	UART	GM

1989 Light Duty Trucks					
MAKE	MODEL	BODY 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	E&C	UART	GM

1990 VEHICLE COVERAGE

1990 Buick Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Electra	C	E&C	UART	GM
Reatta, Riviera	E	SIR, BCM	UART	GM
Le Sabre	H	E&C	UART	GM
Skylark	N	E&C	UART	GM
Regal	W	IPC	UART	GM

1990 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Fleetwood, Fleetwood 60 Special	C	SIR, BCM	UART	GM
Brougham	D	E&C	UART	GM
Eldorado	E	SIR, BCM	UART	GM
Seville	K	SIR, E&C, BCM	UART	GM
Allante	V	E&C	UART	GM

1990 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Camaro	F	SIR	UART	GM
Corvette	Y	SIR, E&C, CCM	UART	GM-S

1990 Geo Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Metro, Sprint	M	SIR	UART	GM
Storm	R	SIR	UART	GM-D

1990 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
98 Regency	C	E&C	UART	GM
Toronado	E	SIR, E&C, BCM	UART	GM
Cutlass Supreme	W	IPC	UART	GM

1990 Pontiac Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
6000	A	E&C	UART	GM
Firebird	F	SIR	UART	GM
Bonneville	H	E&C	UART	GM
Cutlass	J	E&C	UART	GM
Grand Prix	W	E&C, IPC	UART	GM

1990 Light Duty Trucks, MPV					
MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	E&C	UART	GM

1991 VEHICLE COVERAGE

1991 Buick Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Roadmaster	B	SIR	UART	GM
Electra	C	SIR, E&C, RAC, EOLM	UART	GM
Reatta, Riviera	E	SIR, E&C, BCM	UART	GM
Le Sabre	H	E&C	UART	GM
Skylark	N	E&C	UART	GM
Regal	W	E&C, IPC	UART	GM

1991 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Deville, Fleetwood	C	SIR, E&C, BCM	UART	GM
Brougham	D	E&C	UART	GM
Eldorado	E	SIR, E&C, BCM	UART	GM
Seville	K	SIR, E&C, BCM	UART	GM
Allante	V	SIR, E&C	UART	GM

1991 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Caprice	B	SIR	UART	GM
Cavalier	F	SIR, E&C	UART	GM
Corsica, Beretta	L	SIR,E&C	UART	GM-S
Corvette	Y	SIR, E&C, CCM, LTPWS	UART	GM

1991 Geo Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Metro, Sprint	M	SIR	UART	GM
Storm	R	SIR	UART	GM-D

1991 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Custom Cruiser	B	SIR	UART	GM
Ninety-Eight, Touring Sedan	C	SIR, E&C, RAC, DIC	UART	GM
Toronado	E	SIR, E&C, BCM	UART	GM
Eighty Eight	H	E&C	UART	GM
Achieva	N	E&C	UART	GM
Cutlass	N	E&C	UART	GM
Cutlass Supreme	W	E&C	UART	GM

1991 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird	F	SIR	UART	GM
Bonneville	H	E&C	UART	GM
Sunbird	J	E&C	UART	GM
Grand Am	N	E&C	UART	GM
Grand Prix	W	E&C, IPC	UART	GM

1991 Light Duty Trucks, MPV

MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	E&C	UART	GM

1992 VEHICLE COVERAGE

1992 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Century	A	E&C	UART	GM
Roadmaster	B	SIR	UART	GM
Electra	C	SIR, E&C, RAC, HVAC, EOLM	UART	GM
Reatta	E	E&C, BCM	UART	GM
Riviera	E	SIR, E&C, BCM	UART	GM
Le Sabre	H	SIR, E&C, RAC, HVAC, EOLM	UART	GM
Skylark	N	E&C	UART	GM
Regal	W	E&C	UART	GM

1992 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Deville, Fleetwood	C	SIR, E&C, BCM	UART	GM
Brougham	D	E&C	UART	GM
Eldorado	E	SIR, E&C, IPC	UART	GM
Seville	K	SIR, E&C, IPC	UART	GM
Allante	V	SIR, E&C	UART	GM

1992 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Caprice	B	SIR	UART	GM
Camaro	F	SIR, E&C	UART	GM
Cavalier	J	E&C	UART	GM
Beretta, Corsica	L	SIR, E&C	UART	GM

1992 Chevrolet Passenger Cars (Continued)				
Lumina	W	E&C	UART	GM
Corvette	Y	SIR, E&C, CCM, LTPWS	UART	GM

1992 Geo Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Sprint	M	SIR	UART	GM
Storm	R	SIR	UART	GM-D

1992 Oldsmobile Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Custom Cruiser	B	SIR	UART	GM
Ninety-Eight	C	SIR, E&C, DIC, HVAC, RAC	UART	GM
Toronado	E	SIR, E&C, BCM	UART	GM
Eighty Eight	H	SIR, E&C, DIC, HVAC, RAC	UART	GM
Achieva, Cutlass Calais	N	E&C	UART	GM
Cutlass	W	E&C	UART	GM

1992 Pontiac Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird	F	SIR, E&C	UART	GM
Bonneville	H	SIR, E&C, RAC, HVAC	UART	GM
Tempest	I	SIR, E&C	UART	GM
Sunbird	J	E&C	UART	GM
Grand Am	N	E&C	UART	GM
Grand Prix	W	E&C	UART	GM

1992 Saturn Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
SC, SL	Z	SIR	UART	GM

1992 Light Duty Trucks, MPV					
MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	E&C	UART	GM

1993 VEHICLE COVERAGE

1993 Buick Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Century	A	SIR, E&C	UART	GM
Roadmaster	B	SIR, E&C	UART	GM
Electra	C	SIR, E&C, RAC, EOLM, HVAC	UART	GM
Reatta, Riviera	E	SIR, E&C, BCM	UART	GM
Le Sabre	H	SIR, E&C, RAC, EOLM, HVAC	UART	GM
Skylark	N	E&C	UART	GM
Regal	W	E&C	UART	GM

1993 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Deville	C	SIR, E&C, BCM	UART	GM
Fleetwood	C	SIR, E&C, BCM, EOLM	UART	GM
Brougham	D	SIR, E&C, CCM	UART	GM
Eldorado	E	SIR, E&C, IPC	UART	GM
Deville	K	SIR, E&C, IPC	UART	GM
Allante	V	SIR, E&C	UART	GM

1993 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Caprice	B	SIR, E&C	UART	GM
Camaro	F	SIR, E&C	UART	GM
Beretta, Corsica	L	SIR, E&C	UART	GM
Corvette	Y	SIR, E&C, CCM, LTPWS	UART	GM

1993 Geo Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Metro	M	SIR	UART	GM
Storm	R	SIR	UART	GM
Prizm	S	SIR	UART	GM-P

1993 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Cutlass	A	SIR	UART	GM
Custom Cruiser	B	SIR, E&C	UART	GM
Ninety-Eight	C	SIR, E&C, DIC, HVAC, RAC	UART	GM
Royale	H	SIR, E&C, DIC, RAC, HVAC	UART	GM
Cutlass Supreme, Ninety-Eight	W	E&C	UART	GM

1993 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird	F	SIR, E&C	UART	GM
Bonneville	H	SIR, E&C, RAC, HVAC	UART	GM
Sunbird	J	E&C	UART	GM
Grand Prix	W	E&C	UART	GM

1993 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
SC, SL, SW	Z	SIR	UART	GM

1993 Light Duty Trucks, Vans, MPVs

MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	E&C	UART	GM
Chevrolet, GMC	Astro Van, Safari, Safari XT	L/M	SIR	UART	GM
Oldsmobile	Silhouette	U	SIR, E&C	UART	GM
Pontiac	Transport	U	SIR, E&C	UART	GM

1994 VEHICLE COVERAGE

1994 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Century	A	SIR, E&C	UART	GM
Roadmaster	B	SIR, E&C, HVAC	UART	GM
Park Avenue	C	SIR, E&C, RAC, EOLM, HVAC	UART	OBD II-C2/ GM-16
Le Sabre	H	SIR, E&C, RAC, EOLM, HVAC	UART	OBD II-C2/ GM-16
Skylark	N	SIR, E&C	UART	GM
Regal	W	SIR, E&C	UART	GM

1994 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Fleetwood	D	SIR, E&C, CCM, HVAC	UART	GM
Eldorado	E	SIR, E&C, IPC	UART	GM
Seville	K	SIR, E&C, IPC	UART	OBD II-C2/ GM-16

1994 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Caprice	B	SIR, E&C	UART	GM
Camaro	F	SIR, E&C	UART	OBD II-C2/ GM-16
Cavalier	J	SIR, E&C	UART	GM
Beretta	L	SIR, E&C	UART	GM
Lumina	W	SIR, E&C	UART	GM
Corvette	Y	SIR, E&C, CCM, LTPWS	UART	OBD II-C2/ GM-16

1994 Geo Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Prizm	S	SIR	Flash Codes	GM-P

1994 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Cutlass Ciera	A	SIR	UART	GM
Regency	C	SIR, E&C, RAC, EOLM, HVAC	UART	OBD II-C2/ GM-16
Royale	H	SIR, E&C, RAC, EOLM, HVAC	UART	OBD II-C2/ GM-16
Achieva	N	SIR, E&C	UART	GM
Cutlass	W	SIR, E&C	UART	GM

1994 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird	F	SIR, E&C	UART	GM
Bonneville	H	SIR, E&C, RAC, EOLM, HVAC	UART	OBD II-C2/ GM-16
Sunbird	J	SIR, E&C	UART	GM
Grand Am	N	SIR, E&C	UART	GM
Grand Prix	W	SIR, E&C	UART	GM

1994 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
SC, SL, SW	Z	SIR	UART	GM

1994 Light Duty Trucks, Vans, MPVs

MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	SIR, E&C	UART	GM
Chevrolet, GMC	All Models	L/M	SIR, E&C	UART	GM
Chevrolet, GMC	All Models	S/T	E&C	UART	GM
Chevrolet Pontiac Oldsmobile	All Models	U	E&C	UART	GM

1995 VEHICLE COVERAGE

1995 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Century	A	SIR, E&C	UART	GM
Roadmaster	B	SIR, E&C, HVAC	UART	GM
Park Avenue	C	SIR, E&C, RAC, HVAC	UART	OBD II-C2/ GM-16
Riviera	G	SIR, E&C, RAC, HVAC, IPC	UART	OBD II-C2/ GM-16
Le Sabre	H	SIR, E&C, RAC, HVAC	UART	OBD II-C2/ GM-16
Skylark	N	SIR, E&C	UART	GM
Regal	W	SIR, E&C	UART	GM

1995 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Fleetwood	D	SIR, E&C, CCM, HVAC,	UART	GM
Eldorado	E	SIR, E&C, IPC	UART	GM
Deville	K	SIR, E&C, IPC	UART	GM
Seville	K	SIR, E&C, IPC	UART	GM

1995 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Caprice	B	SIR, E&C	UART	GM
Camaro	F	SIR, E&C	UART	OBD II-C2/ GM-16
Cavalier	J	SIR, IPC, E&C	UART	OBD II-C2/ GM-16
Corsica	L	SIR, E&C	UART	GM
Lumina Monte Carlo	W	SIR, E&C	UART	GM
Corvette	Y	SIR, E&C, CCM, LTPWS	UART	OBD II-C2/ GM-16

1995 Geo Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Metro	M	SIR	UART	OBD II-C2/ GM-16
Prizm	S	SIR	UART	GM-P

1995 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Cutlass Ciera	A	SIR	UART	GM
Regency	C	SIR, E&C, RAC, HVAC,	UART	OBD II-C2/ GM-16
Aurora	G	SIR, E&C, RAC, DIC, HVAC, IPC	UART	OBD II-C2/ GM-16
Eighty Eight	H	SIR, E&C, RAC, HVAC,	UART	OBD II-C2/ GM-16
Achieva	N	SIR, E&C	UART	OBD II-C2/ GM-16
Cutlass Supreme	W	SIR, E&C	UART	GM

1995 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird	F	SIR, E&C	UART	OBD II-C2/ GM-16
Bonneville	H	SIR, E&C, RAC, HVAC,	UART	GM
Sunfire	J	SIR, E&C, IPC	UART	OBD II-C2/ GM-16
Grand Am	N	SIR, E&C	UART	GM
Grand Prix	W	SIR, E&C	UART	GM

1995 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
SC, SL, SW	Z	SIR	UART	OBD II-C2/ GM-16

1995 Light Duty Trucks, Vans, MPVs

MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K	SIR, E&C	UART	GM
Chevrolet, GMC	All Models	L/M	SIR, E&C	UART	GM
Chevrolet, GMC	All Models	S/T	SIR, E&C	UART	OBD II-C2/ GM-16
Chevrolet, Pontiac, Oldsmobile	All Models	U	E&C	UART	GM

1996 VEHICLE COVERAGE

1996 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Century	A	SIR, E&C,	UART	OBD II-C2/ GM-16
Roadmaster	B	SIR, E&C, HVAC	UART	OBD II-C2/ GM-16
Park Avenue	C	SIR, E&C, IPC, HVAC	UART	OBD II-C2/ GM-16
		RFA	Class 2	OBD II-C2
Riviera	G	SIR, E&C, HVAC, IPC	UART	OBD II-C2/ GM-16
		RFA	Class 2	OBD II-C2
Le Sabre	H	SIR, E&C, HVAC	UART	OBD II-C2/ GM-16
		RFA	Class 2	OBD II-C2
Skylark	N	SIR, E&C, IPC	UART	OBD II-C2/ GM-16
Regal	W	SIR, E&C	UART	OBD II-C2/ GM-16

1996 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Fleetwood	D	SIR, E&C, CCM, HVAC	UART	OBD II-C2/ GM-16
Eldorado	E	RFA, CCP, IPC, PZM, IRC, ACM, MSM, PHN	Class 2	OBD II-C2
		SIR, E&C	UART	OBD II-C2/ GM-16
Deville, Concours, Seville	K	RFA, CCP, IPC, PZM, IRC, ACM, MSM, PHN	Class 2	OBD II-C2
		E&C	UART	OBD II-C2/ GM-16

1996 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Caprice Classic, Impala	B	SIR, E&C	UART	OBD II-C2/ GM-16
Camaro	F	SIR, E&C	UART	OBD II-C2/ GM-16
Cavalier	J	SIR, E&C, IPC	UART	OBD II-C2/ GM-16
Beretta, Corsica	L	SIR, E&C	UART	OBD II-C2/ GM-16
Monte Carlo, Lumina	W	SIR, E&C	UART	OBD II-C2/ GM-16
Corvette	Y	SIR, E&C, CCM, LTPWS	UART	OBD II-C2/ GM-16

1996 Geo Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Metro LSI	M	SIR	UART	OBD II-C2/ GM-16
Prizm LSI	S	SIR	Flash Code	GM-P

1996 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Cutlass Ciera	A	SIR	UART	OBD II-C2/ GM-16
98 Regency	C	SIR, E&C, HVAC	UART	OBD II-C2/ GM-16
		RFA	Class 2	OBD II-C2

1996 Oldsmobile Passenger Cars

Aurora	G	SIR, E&C, DIC, HVAC, IPC	UART	OBD II-C2/ GM-16
		RFA	Class 2	OBD II-C2
88 Royale	H	SIR, E&C, HVAC	UART	OBD II-C2/ GM-16
		RFA	Class 2	OBD II-C2
Achieva	N	SIR, E&C, IPC	UART	OBD II-C2/ GM-16
Cutlass Supreme	W	SIR, E&C,	UART	OBD II-C2/ GM-16

1996 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird	F	SIR, E&C	UART	OBD II-C2/ GM-16
Bonneville	H	SIR, E&C, HVAC, IPC	UART	OBD II-C2/ GM-16
		RFA	Class 2	OBD II-C2
Sunfire	J	SIR, E&C, IPC	UART	OBD II-C2/ GM-16
Grand Am	N	SIR, E&C, IPC	UART	OBD II-C2/ GM-16
Grand Prix	W	SIR, E&C	UART	OBD II-C2/ GM-16

1996 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
SL, SC, SW	Z	SIR	UART	OBD II-C2/ GM-16

1996 Light Duty Trucks, Vans, MPVs

MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K L/M	SIR, E&C	UART	GM
Chevrolet, GMC	All Models	S/T	SIR, E&C	UART	OBD II-C2/ GM-16
Geo	Tracker	E/J	SIR	UART	GM
Chevrolet, Pontiac, Oldsmobile	All Models	U	SIR	UART	GM

1997 VEHICLE COVERAGE

1997 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue	C	HVAC	Class 2	OBD II-C2
		SIR (SDM-RCL2)		
Riviera	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Le Sabre	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Skylark	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Regal	W	Auto HVAC	Class 2	OBD II-C2
		SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1997 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Eldorado	E	SIR (SDM-RCL2)	Class 2	OBD II-C2
Deville	K	SIR (SDM-RCL2)	Class 2	OBD II-C2

1997 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Camaro	F	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Cavalier	J	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Malibu	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Lumina, Monte Carlo	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Corvette	Y	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1997 Geo Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Metro	M	SIR (SDM-I)	UART	OBD II-C2/ GM-16
Prizm LSI	S	SIR	FLASH CODE	GM-P

1997 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Aurora	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Eighty Eight, LSS, Regency	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Achieva, Cutlass	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Cutlass Supreme, Intrigue	W	SIR (SDM-B)	UART	OBD II-C2/ GM-16

1997 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird, Trans Am	F	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Bonneville	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Sunfire	J	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Grand Am	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Grand Prix	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1997 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
SL, SC, SW	Z	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1997 Light Duty Trucks, Vans, MPVs

MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K (SUV)	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1997 Light Duty Trucks, Vans, MPVs					
Geo	Tracker	E/J	SIR (SDM-I)	UART	OBD II-C2/ GM-16
All Makes	All Models	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, Pontiac, Oldsmobile	All Models	U/X	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, GMC	All Models	M/L	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, Oldsmobile, GMC	All Models	S/T	SIR (DDM 94)	UART	OBD II-C2/ GM-16
Chevrolet, GMC	All Models	C/K, S/T	SIR (SDM-RS)	UART	OBD II-C2/ GM-16

1998 VEHICLE COVERAGE

1998 Buick Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue	C	HVAC	Class 2	OBD II-C2
		SIR (SDM-RCL2)		
Riviera	G	SIR (SDM-RCL2)	UART	OBD II-C2/ GM-16
Le Sabre	H	SIR (SDM-RCL2)	UART	OBD II-C2/ GM-16
Skylark	N	SIR (SDM-RCL2)	UART	OBD II-C2/ GM-16
Century, Regal	W	Auto HVAC	Class 2	OBD II-C2
		SIR (SDM-RCL2)	UART	OBD II-C2/ GM-16

1998 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Eldorado	E	SIR (SDM-RCL2)	Class 2	OBD II-C2
Deville	K	SIR (SDM-RCL2)	Class 2	OBD II-C2

1998 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Camaro	F	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Cavalier	J	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Metro	M	SIR (SDM-I)	UART	OBD II-C2/ GM-16
Malibu	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Prizm LSI	S	SIR	Flash Code	GM-P
Lumina, Monte Carlo	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Corvette	Y	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1998 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Aurora	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Eight-Eight, LSS, Regency	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Achieva, Cutlass	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Cutlass Supreme, Intrigue	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1998 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird, Trans Am	F	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Bonneville	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Sunfire	J	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Grand Am	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Grand Prix	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1998 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
SL, SC, SW	Z	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1998 Light Duty Trucks, Vans, MPVs

MAKE	MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Chevrolet, GMC	All Models	C/K, L/M, S/T	SIR (SDM-RS)	UART	OBD II-C2/ GM-16

1998 Light Duty Trucks, Vans, MPVs					
Geo	Tracker	E/J	SIR (SDM-I)	UART	OBD II-C2/ GM-16
Chevrolet, GMC	All Models	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, Pontiac, Oldsmobile	All Models	U/X	SIR (SDM-U)	UART	OBD II-C2/ GM-16
Chevrolet, GMC	All Models	C/K (SUV), M/L	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, Oldsmobile, GMC	All Models	S/T (SUV)	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, GMC	Envoy, Utility (Blazer)	S/T	Auto HVAC, BCM	Class 2	OBD II-C2

1999 VEHICLE COVERAGE

1999 Buick Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue	C	HVAC	Class 2	OBD II-C2
		SIR (SDM-RCL2)		
Riviera	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Le Sabre	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Century, Regal	W	Auto HVAC	Class 2	OBD II OBD II-C
		SIR (SDM-G2)		

1999 Cadillac Passenger Cars				
MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Eldorado	E	SDM-RCL2	Class 2	OBD II-C2
Deville/Seville	K	SIR (SDM-RCL2)	Class 2	OBD II-C2

1999 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Camaro	F	SIR (SDM-G2)	Class 2	OBD II-C2
Cavalier	J	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Metro	M	SIR (SDM-I)	UART	OBD II-C2/ GM-16
Malibu	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Prizm	S	SIR	Flash Code	GM-P
Lumina, Monte Carlo	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Corvette	Y	SIR (SDM-G2)	Class 2	OBD II-C2

1999 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Aurora	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
LSS, Eighty Eight, Regency	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Cutlass, Alero	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Intrigue	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

1999 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird, Trans Am	F	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Bonneville	H	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Sunfire	J	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Grand Am	N	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Grand Prix	W	SIR (SDM-G2)	UART	OBD II-C2/ GM-16

1999 Light Duty Trucks, Vans, MPVs

MODEL	BODY VIN 5TH DIGIT	SIR SYSTEM	DATA LINK	ADAPTER CONFIG
All Models	C/K	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, GMC	C/K (Redesign)	SIR (SDM-RS)	UART	OBD II-C2/ GM-16
Express, Savana	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Astro, Safari	M/L	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, Oldsmobile, GMC	S/T (SUV)	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Chevrolet, GMC	S/T	SIR (SDM-RS)	UART	OBD II-C2/ GM-16
Envoy, Utility (Blazer)	S/T	Auto HVAC, BCM	Class 2	OBD II-C2
All Models	U/X	SIR (SDM-U)	UART	OBD II-C2/ GM-16

2000 VEHICLE COVERAGE

2000 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue	C	HVAC	Class 2	OBD II-C2
		SIR (SDM-RCL2)		
Le Sabre	H	SIR (SDM-G4)	Class 2	OBD II-C2
Century, Regal	W	Auto HVAC	Class 2	OBD II-C2
		SIR (SDM-G2/G3)		

2000 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Eldorado	E	SIR (SDM-RCL2)	Class 2	OBD II-C2
Deville/Seville	K	SIR (SDM-G6)	Class 2	OBD II-C2

2000 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Camaro	E	SIR (SDM-G2)	Class 2	OBD II-C2
Cavalier	J	SIR (SDM-G2)	Class 2	OBD II-C2
Metro	M	SIR (SDM-I)	UART	OBD II-C2/ GM-16
Malibu	N	SIR (SDM-G2)	Class 2	OBD II-C2
Prizm	S	SIR (SDM)	Flash Code	GM-P
Lumina	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Monte Carlo, Impala	W	SDM-G2	Class 2	OBD II-C2
Corvette	Y	SIR (SDM-G2)	Class 2	OBD II-C2

2000 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Alero	N	SIR (SDM-G2)	Class 2	OBD II-C2
Intrigue	W	SIR (SDM-G2)	Class 2	OBD II-C2

2000 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird, Formula	F	SIR (SDM-G2)	Class 2	OBD II-C2
Bonneville	H	SIR (SDM-G4)	Class 2	OBD II-C2
Sunfire	J	SIR (SDM-G2)	Class 2	OBD II-C2
Grand Am	N	SIR (SDM-G2)	Class 2	OBD II-C2
Grand Prix	W	SIR (SDM-G2/G4)	Class 2	OBD II-C2

2000 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
LS	J	SDM-G2	Class 2	OBD II-C2
SL, SC, SW	Z	SIR (SDM-RSD)	Class 2	OBD II-C2

2000 Light Duty Trucks, Vans, MPVs

MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Truck	C/K	SIR (SDM-G2)	Class 2	OBD II-C2
SUV	C/K	SIR (SDM-G4)	Class 2	OBD II-C2
Truck/SUV	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
Express, Savana	G	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Astro, Safari	M/L	SIR (SDM-G2), BCM	Class 2	OBD II-C2
Truck/SUV	S/T	SIR (SDM-G2)	Class 2	OBD II-C2
Truck/SUV	S/T	SIR (SDM-RS)	Class 2	OBD II-C2
Truck/SUV	S/T	Auto HVAC, BCM	Class 2	OBD II-C2
Truck/SUV	C/K (Redesign)	SIR (SDM-G2)	Class 2	OBD II-C2
Chevrolet Venture	U	SIR (SDM-G6)	Class 2	OBD II-C2
Pontiac Silhouette	U	SIR (SDM-G6)	Class 2	OBD II-C2
Pontiac Montana	U	SIR (SDM-G6)	Class 2	OBD II-C2
Truck	C/K	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16

2001 VEHICLE COVERAGE

2001 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SIR SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue	C	HVAC	Class 2	OBD II-C2
		SIR (SDM-RCL2)		
Le Sabre	H	SIR (SDM-G2/G3)	Class 2	OBD II-C2
Century, Regal	W	Auto HVAC	Class 2	OBD II-C2
		SIR (SDM-G2/G3)		

2001 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SIR SYSTEM	DATA LINK	ADAPTER CONFIG
Eldorado	E	SIR (SDM-RCL2)	Class 2	OBD II-C2
Deville/Seville	K	SIR (SDM-G6)	Class 2	OBD II-C2

2001 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SIR SYSTEM	DATA LINK	ADAPTER CONFIG
Camaro	F	SIR (SDM-G2/3)	Class 2	OBD II-C2
Cavalier	J	SIR (SDM-G2/8)	Class 2	OBD II-C2
Metro	M	SIR (SDM-I)	UART	OBD II-C2/ GM-16
Malibu	N	SIR (SDM-G2/4)	Class 2	OBD II-C2
Prizm	S	SIR (SDM)	Flash Codes	GM-P
Lumina	W	SIR (SDM-RSD)	UART	OBD II-C2/ GM-16
Impala/Monte Carlo	W	SIR (SDM-G)	Class 2	OBD II-C2
Corvette	Y	SIR (SDM-G2/3)	Class 2	OBD II-C2

2001 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SIR SYSTEM	DATA LINK	ADAPTER CONFIG
Aurora	G	SIR (SDM-G6)	Class 2	OBD II-C2
Alero	N	SIR (SDM-G2)	Class 2	OBD II-C2
Intrigue	W	SIR (SDM-G2)	Class 2	OBD II-C2

2001 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SIR SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird, Formula	F	SIR (SDM-G2/3)	Class 2	OBD II-C2
Sunfire	J	SIR (SDM-G2/8)	Class 2	OBD II-C2
Grand Am	N	SIR (SDM-G2/4)	Class 2	OBD II-C2
Grand Prix	W	SIR (SDM-G2/3)	Class 2	OBD II-C2

2001 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SIR SYSTEM	DATA LINK	ADAPTER CONFIG
LS	J	SIR (SDM-G2)	Class 2	OBD II-C2
SL, SC, SW	Z	SIR (SDM-G2)	Class 2	OBD II-C2

2001 Cadillac, Chevrolet, GMC, Oldsmobile, Pontiac Trucks, Vans, MPVs

MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Pontiac Aztek	A/B	SDM-DB SIR	Class 2	OBD II-C2
Chevrolet, GMC, Cadillac	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
Chevrolet, GMC	G	SDM-G2 SIR	Class 2	OBD II-C2
Chevrolet, GMC	M/L	SDM-G2 SIR, BCM	Class 2	OBD II-C2
Chevrolet, GMC, Oldsmobile	S/T	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
Chevrolet Venture	U/X	SDM-G6 SIR	Class 2	OBD II-C2
Oldsmobile Silhouette	U/X	SDM-G6 SIR	Class 2	OBD II-C2
Pontiac Montana	U/X	SDM-G6 SIR	Class 2	OBD II-C2

2002 VEHICLE COVERAGE

2002 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue	C	HVAC	Class 2	OBD II-C2
		SIR (SDM-G4)		
Le Sabre	H	SIR (SDM-GT)	Class 2	OBD II-C2
Century, Regal	W	Auto HVAC	Class 2	OBD II-C2
		SIR (SDM-G2, G4)		

2002 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Eldorado	E	SIR (SDM-RCL2)	Class 2	OBD II-C2
DeVille	K	SIR (SDM-GF)	Class 2	OBD II-C2
Seville	K	SIR (SDM-GF)	Class 2	OBD II-C2

2002 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Camaro	F	SIR (SDM-G2)	Class 2	OBD II-C2
Cavalier	J	SIR (SDM-G2)	Class 2	OBD II-C2
Malibu	N	SIR (SDM-G2)	Class 2	OBD II-C2
Prism	S	SIR (SDM)	Flash Codes	GM-P
Impala	W	SIR (SDM-GT)	Class 2	OBD II-C2
Monte Carlo	W	SIR (SDM-GT)	Class 2	OBD II-C2
Corvette	Y	SIR (SDM-G2)	Class 2	OBD II-C2

2002 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Alero	N	SIR (SDM-G2)	Class 2	OBD II-C2
Aurora	G	SIR (SDM-GT)	Class 2	OBD II-C2
Intrigue	W	SIR (SDM-G2, G4)	Class 2	OBD II-C2

2002 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Firebird	F	SIR (SDM-G2)	Class 2	OBD II-C2
Formula	F	SIR (SDM-G2)	Class 2	OBD II-C2
Bonneville	H	SIR (SDM-GT)	Class 2	OBD II-C2
Sunfire	J	SIR (SDM-G2)	Class 2	OBD II-C2
Grand Am	N	SIR (SDM-G2)	Class 2	OBD II-C2
Grand Prix	W	SIR (SDM-G2, G4)	Class 2	OBD II-C2

2002 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
L Series	J	SIR (SDM-G)	Class 2	OBD II-C2
S Series	Z	SIR (SDM-G2, G4)	Class 2	OBD II-C2

2002 Buick, Cadillac, Chevrolet, GMC, Oldsmobile, Pontiac Trucks, Vans, MPVs

MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Buick Rendezvous	A/B	SIR (SDM-DG)	Class 2	OBD II-C2
Pontiac Aztek	A/B	SIR (SDM-DG)	Class 2	OBD II-C2
Chevrolet Avalanche	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
Chevrolet Silverado	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
Chevrolet Suburban	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
Chevrolet Tahoe	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
GMC Sierra	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
GMC Yukon	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
Cadillac Escalade	C/K	Auto HVAC, BCM	Class 2	OBD II-C2
		SIR (SDM-G2)		
Chevrolet Express	G, H	SIR (SDM-G2)	Class 2	OBD II-C2
GMC Savana	G, H	SIR (SDM-G2)	Class 2	OBD II-C2
Chevrolet Astro	M/L	SIR (SDM-G2), BCM	Class 2	OBD II-C2
GMC Safari	M/L	SIR (SDM-G2), BCM	Class 2	OBD II-C2
Chevrolet S-10 Pickup	S/T	SIR (SDM-G2), BCM	Class 2	OBD II-C2
Chevrolet Blazer	S/T	SIR (SDM-G2), BCM	Class 2	OBD II-C2
Oldsmobile Bravada	S/T	SIR (SDM-GT), BCM	Class 2	OBD II-C2
GMC Envoy	S/T	SIR (SDM-GT), BCM	Class 2	OBD II-C2

2002 Buick, Cadillac, Chevrolet, GMC, Oldsmobile, Pontiac Trucks, Vans, MPVs (Continued)

MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
GMC Sonoma	S/T	SIR (SDM-G2), BCM	Class 2	OBD II-C2
Chevrolet Trailblazer	S/T	SIR (SDM-GT), BCM	Class 2	OBD II-C2
GMC Jimmy	S/T	SIR (SDM-G2), BCM	Class 2	OBD II-C2
Chevrolet Venture	U/V/X	SIR (SDM-D)	Class 2	OBD II-C2
Oldsmobile Silhouette	U/V/X	SIR (SDM-D)	Class 2	OBD II-C2
Pontiac Montana	U/V/X	SIR (SDM-D)	Class 2	OBD II-C2

2003 VEHICLE COVERAGE

2003 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue, Ultra	C	SIR (SDM-G4)	Class 2	OBD II-C2
Le Sabre	H	SIR (SDM-GT)	Class 2	OBD II-C2
Century, Regal	W	SIR (SDM-G2, G4)	Class 2	OBD II-C2

2003 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
CTS	D	SIR (SDM-GF)	Class 2	OBD II-C2
DeVille, SLS, STS	K	SIR (SDM-GF)	Class 2	OBD II-C2

2003 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Cavalier	J	SIR (SDM-G2)	Class 2	OBD II-C2
Malibu	N	SIR (SDM-G2)	Class 2	OBD II-C2
Impala, Monte Carlo	W	SIR (SDM-GT)	Class 2	OBD II-C2
Corvette	Y	SIR (SDM-G2)	Class 2	OBD II-C2

2003 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Aurora	G	SIR (SDM-GT)	Class 2	OBD II-C2
Alero	N	SIR (SDM-G2)	Class 2	OBD II-C2

2003 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Sunfire	J	SIR (SDM-G2)	Class 2	OBD II-C2
Bonneville	H	SIR (SDM-GT)	Class 2	OBD II-C2
Grand Am	N	SIR (SDM-G2)	Class 2	OBD II-C2
Grand Prix	W	SIR (SDM-D)	Class 2	OBD II-C2

2003 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Ion	A	SIR (SDM-D)	Class 2	OBD II-C2
L Series	J	SIR (SDM-G)	Class 2	OBD II-C2

2003 Buick, Cadillac, Chevrolet, GMC, Oldsmobile, Pontiac Trucks, Vans, MPVs

MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Aztek, Rendezvous	A/B	SIR (SDM-D)	Class 2	OBD II-C2
Avalanche, Escalade/EXT, Sierra, Silverado, Suburban, Tahoe, Yukon	C/K	SIR (SDM-D), BCM	Class 2	OBD II-C2
Express, Savana	G, H	SIR (SDM-GF)	Class 2	OBD II-C2
Astro, Safari	L/M	SIR (SDM-G2), BCM	Class 2	OBD II-C2
S-10, Blazer, Sonoma, Jimmy	S/T	SIR (SDM-G2), BCM	Class 2	OBD II-C2
Bravada, Envoy, Trailblazer	S/T	SIR (SDM-GT), BCM	Class 2	OBD II-C2
Venture, Silhouette, Montana	U/V/X	SIR (SDM-D)	Class 2	OBD II-C2

2003 Hummer

SERIES	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Hummer	N	SIR (SDM-GF), BCM	Class 2	OBD II-C2

2003 Chevrolet/GMC Medium Duty Trucks

SERIES	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
D-C Series	--	SIR	Class 2	OBD II-C2

2004 VEHICLE COVERAGE

2004 Buick Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Park Avenue, Ultra	C	SIR (SDM-G)	Class 2	OBD II-C2
Le Sabre	H	SIR (SDM-GT)	Class 2	OBD II-C2
Century, Regal	W	SIR (SDM-G2, G4)	Class 2	OBD II-C2

2004 Cadillac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
CTS	D	SIR (SDM-D320)	Class 2	OBD II-C2
DeVille, DHS, DTS, Seville, SLS and STS	K	SIR (SDM-GF)	Class 2	OBD II-C2
XLR	Y	SIR (SDM-GF)	Class 2	OBD II-C2

2004 Chevrolet Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Cavalier	J	SIR (SDM-G2)	Class 2	OBD II-C2
Classic	N	SIR (SDM-G2)	Class 2	OBD II-C2
Impala, Monte Carlo	W	SIR (SDM-GT)	Class 2	OBD II-C2
Corvette	Y	SIR (SDM-G)	Class 2	OBD II-C2

2004 Oldsmobile Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Alero	N	SIR (SDM-G2)	Class 2	OBD II-C2

2004 Pontiac Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Bonneville	H	SIR (SDM-GT)	Class 2	OBD II-C2
Sunfire	J	SIR (SDM-G2)	Class 2	OBD II-C2
Grand Am	N	SIR (SDM-G2)	Class 2	OBD II-C2
Grand Prix	W	SIR (SDM-D)	Class 2	OBD II-C2

2004 Saturn Passenger Cars

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Ion	A	SIR (SDM-D)	Class 2	OBD II-C2
L-Series	J	SIR (SDM-G)	Class 2	OBD II-C2

2004 Hummer

SERIES	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Hummer	N	SIR (SDM-GF), BCM	Class 2	OBD II-C2

2004 Buick, Cadillac, Chevrolet, GMC, Oldsmobile, Pontiac Trucks, Vans, MPVs

MODEL	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
Aztec, Rendezvous	A/B	SIR (SDM-GF), BCM	Class 2	OBD II-C2
Escalade, Sierra, Silverado, Suburban, Tahoe	C/K	SIR (SDM-D), BCM	Class 2	OBD II-C2
SRX	E	SIR (SDM-D320), BCM	Class 2	OBD II-C2
Express, Savana	G/H	SIR (SDM-GF), BCM	Class 2	OBD II-C2
Astro, Safari	L/M	SIR (SDM-G), BCM	Class 2	OBD II-C2
Blazer, Bravada, Envoy, Jimmy, Ranier, S-10, Sonoma, Trailblazer	S/T	SIR (SDM-GF), BCM	Class 2	OBD II-C2
Canyon, Colorado	S/T	SIR (SDM-GF)	Class 2	OBD II-C2
Montana, Silhouette, Venture	U/V/X	SIR (SDM-D), BCM	Class 2	OBD II-C2

2004 Saturn SUVs

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
VUE	Z	SIR (SDM-D)	Class 2	OBD II-C2

2004 Chevrolet/GMC Medium Duty Trucks

SERIES	BODY VIN 5TH DIGIT	SYSTEM	DATA LINK	ADAPTER CONFIG
D-C Series	--	SIR	Class 2	OBD II-C2
C-T Series	--	SIR	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.

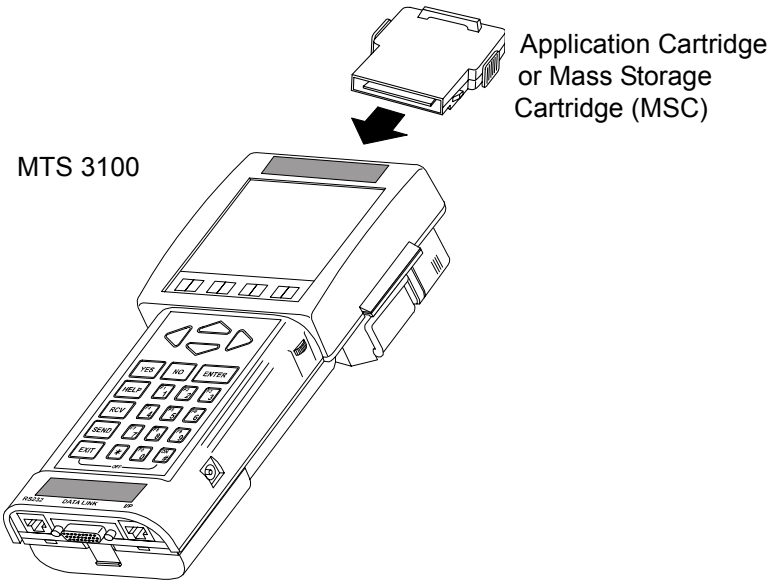
SETTING UP THE TESTER

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. Insert a Cartridge into the MTS 3100



4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 61* for information on selecting the correct adapters.
5. Locate the vehicle's DLC. Connect the DLC cable, or the adapter attached to the end of the DLC cable, to the vehicle. Continue to *Powering Up the Tester on page 56*.

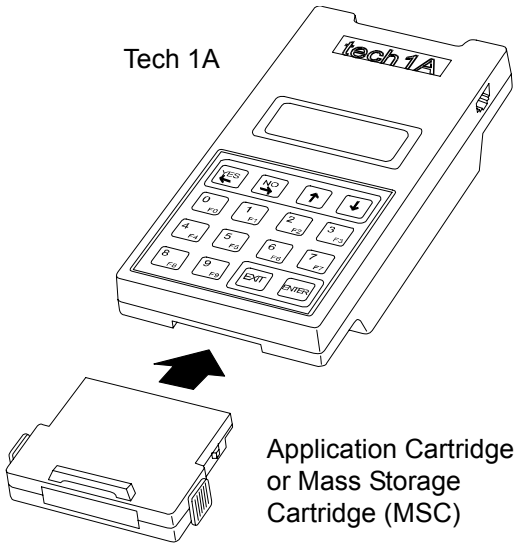
TECH 1A

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.

   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. Insert a Cartridge into the Tech 1A



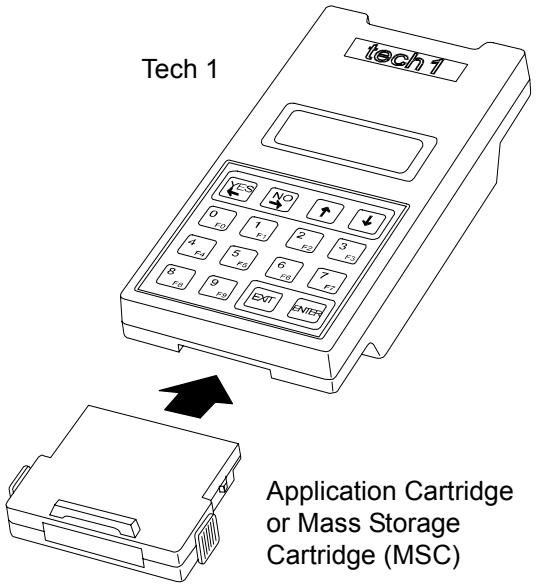
4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 61* for information on selecting the correct adapters.
5. Locate the vehicle's DLC. Connect the DLC cable, or the adapter attached to the end of the DLC cable, to the vehicle. Continue to *Powering Up the Tester on page 56*.

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.
3. Insert the application into the Master Cartridge slot on the bottom, rear of the tester.

FIGURE 4-3. Insert a Cartridge into the Tech 1



4. Install the appropriate adapter to the tester DLC cable. Refer to *Adapter and Adapter Cable Configurations on page 61* for information on selecting the correct adapters.
5. Locate the vehicle's DLC. Connect the DLC cable, or the adapter attached to the end of the DLC cable, to the vehicle. Continue to *Powering Up the Tester on page 56*.

POWERING UP THE TESTER

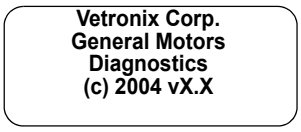
1988-95 vehicles equipped with a 12-pin DLC require powering the tester via the DC Power Cable. Connect the DC Power Cable to the vehicle cigarette lighter or the optional Battery Adapter Cable which connects to the vehicle battery.

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:

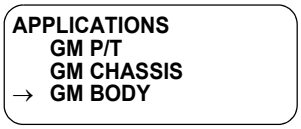
16MB Mass Storage Cartridge (MSC)



General Motors Diagnostic Cartridge

Press ↑ or wait two seconds to proceed to the Applications menu screen. If the display is not correct, see Appendix A.

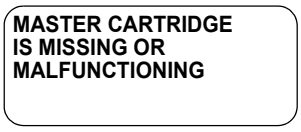
The available software applications are displayed:



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

   The GM Body Systems title screen is displayed.

3. 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 58*.
4. 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.

5. 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 A 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 Body Software Cartridge installed.

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

PERFORM VEHICLE AND/OR SYSTEM SELECTION

SELECTING THE MODEL YEAR

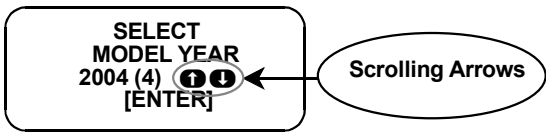
1. From the power-up menu, press ENTER to enter the vehicle selection mode.
2. If the tester “remembers” the last vehicle you tested, it gives you the option of continuing with the testing of that vehicle. Enter the model year on the keypad to start testing of a new vehicle, or press YES to continue 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 application cartridge from the tester.

NOTE

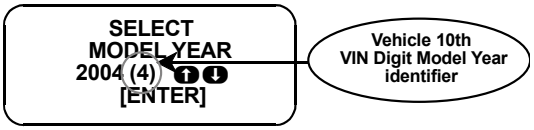
If you select a new vehicle, or the same vehicle as before but do not press YES, any data saved from previous testing is erased. This includes Snapshot and Review Codes.

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 to the SELECT MODEL YEAR screen.

SELECTING THE VEHICLE USING THE VIN

1. Select either F0: Passenger Car or F1: Light Truck.

   F0: Passenger Car: After selecting the passenger car, you are asked to select the 4th digit of the VIN code (the vehicle's body type). The tester displays all body VIN codes available for the year selected. Press YES or NO to scroll through the list until the desired VIN code flashes. Press ENTER to initialize communication.

   F1: Light Truck: After selecting light truck, you are asked to select the 5th digit on the VIN code (the vehicle's body type). The tester displays all body VIN codes available for the year selected. Press YES or NO to scroll through the list until the desired VIN code flashes. Press ENTER to initialize communication.

2. If the vehicle under test is different from the model selection screen that appears on the tester, select the vehicle model by pressing NO until the correct vehicle model is displayed, then press YES to enter your current system and model configuration.

> **NOTE**
>
> Look at the tester display carefully, as the differences can be subtle.

3. Select the system by pressing the corresponding function key.

   When you have selected a system to test, the tester displays a menu of test modes available for your selected system. This is called the Test Selection menu.

   Different test modes are available for different models, so the Test Mode menu varies from vehicle to vehicle.

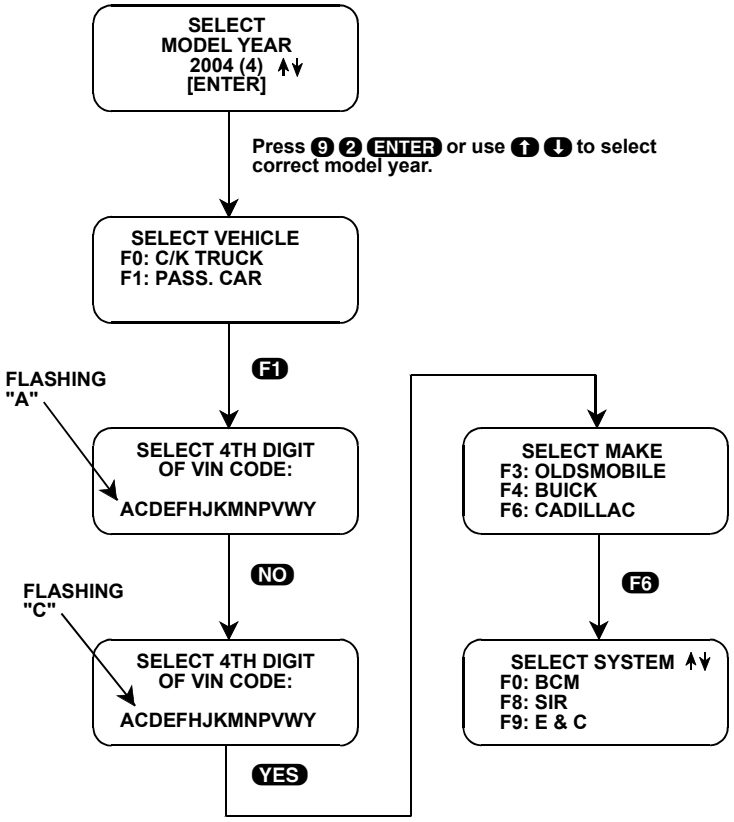
4. To select a different vehicle for testing, press EXIT several times to take you backward through the selection process until your change can be made. Then complete the selection process for the new vehicle under test as previously described.

   You have successfully "informed" the tester of the current application and can begin testing by selecting the test you wish to perform. When you arrive at this point, go to Chapter 5.

SELECTING THE VEHICLE MAKE

When selecting various GM vehicles, the tester displays a *Select Make* menu. Press F1 to select Chevrolet, F2 to select Pontiac, F3 to select Oldsmobile, F4 to select Buick, or F6 to select Cadillac.

FIGURE 4-4. Example of Selecting a 1992 Cadillac C-Body Vehicle



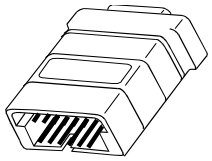
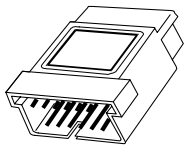
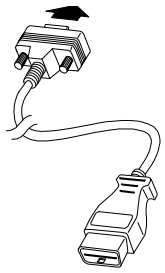
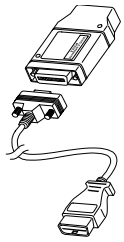
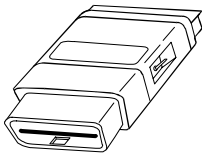
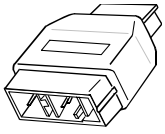
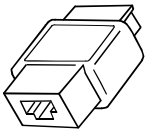
ACTIVE KEYS	
F0 - F9	Select year.
→, NO	Scroll to the right.
←, YES	Scroll to the left.
ENTER	Confirm displayed information is correct. Advance to next display. Select previously selected vehicle.
EXIT	Return to previous display.

ADAPTER AND ADAPTER CABLE CONFIGURATIONS

This section describes the adapters and other hardware needed for use with the various vehicles covered in the GM Body Systems Application Software. The proper Data Link Connector (DLC) adapter, cable, and additional hardware (for Class 2 network communications) are needed to connect to the vehicles listed in the Vehicle Application Chart section at the beginning of this chapter. Read the following sections that describe how to select an adapter for use with the vehicle you are testing.

Body Systems Adapters

The following table lists the adapters needed for use with the GM Body Systems Application software. Refer to the remainder of this section for appropriate adapter selection and usage.

BODY SYSTEMS ADAPTERS NEEDED			
ADAPTER	**DESCRIPTION**	**P/N**	**ILLUSTRATION**
GM 12/14-Pin DLC Adapter	Used on most GM vehicle 12-pin DLCs prior to 1996	02001384	
GM 12/12-Pin SIR/Dual UART Adapter	Used on 1990 Y-body and 1991 L-body SIR systems.	02001039	
16/14-Pin OBD II Adapter Cable	Used for vehicles with the 16-pin DLC configuration from 1994 to the present	02001969	
Controller Area Network VIM 16/24-Pin DLC Adapter Cable	Used for vehicles with the 16-pin DLC configuration from 1994 to the present	VIM 02003211 or F-00K-108-115 Cable 02001744	
16/12-Pin Non-OBD DLC Adapter	Used for vehicles with the 16-pin DLC configuration specifically designed to be used with GM 12/14-Pin DLC Adapter. Should be used in combination with E&C bus.	02001575	
GM Geo Prizm SIR Adapter	Used on 1990 to 2000 Geo Prizm for SIR diagnostics	02001190	
Isuzu/Delco 3-Pin ADL Adapter	Used on 1990 to 1993 Geo Storm SIR systems	02001032	

GM ECUs use two types of communication protocol:

- UART (Universal Asynchronous Receive and Transmit)
- Class 2

UART

UART communication is used for all serial communication prior to OBD II (requirement for all automotive manufacturers to reduce emissions). The UART is a 5 volt line that toggles the voltage to ground at a fixed bit pulse width during communications. UART transmits data at the rate of 8192 bits per second (8192 bps). Some control modules on current production GM vehicles for Chassis and Body Systems communicate using the UART protocol.

CLASS 2

CLASS 2 was introduced to meet the demanding requirements of sharing information from ECU to ECU on a vehicle network. The Class 2 data line transfers information by toggling the line from zero volts to 7 volts. Class 2 transmits data at the rate of 10.4 Kilobits per second (10.4 Kbps). Class 2 is used for serial communications on GM Powertrain and Transmission control modules starting in 1994 and continuing to the present. Class 2 communications supports some GM Chassis and Body Systems control modules and is increasing as new models are introduced.

Because of this performance improvement, Vetronix diagnostic test tools are required to contain new hardware in order to use General Motors' new and old data link(s).

NOTE

Applications with 16 pin SAE J1962 DLC (OBD II) provide power to the tester; therefore, the 12-volt power cable is not needed for supplying power to the MTS 3100.

16-Pin Data Link Connector (DLC)

Along with the OBD II requirement came the definition of a new 16-pin data link connector (DLC). General Motors began using this data link connector (DLC) on its vehicles in 1994, even for those vehicles that were not OBD II compliant. A series of new 16-pin DLC adapter(s) were developed to connect all GM vehicles, whether they are OBD II compliant or not, to the Tech 1/1A and MTS 3100 testers.

NOTE

In all cases of determining which adapter or adapter combination to use, please reference the *Body Adapter Usage Table on page 65*.

NOTE

To purchase any Vetronix items mentioned in this manual, please call **(800) 321-4VTX (USA)**

Selecting the Correct Adapter

First, look up the vehicle you are testing in the Vehicle Application Tables in Chapter 3. You need to know the VIN number that identifies the body of the vehicle you are working on. The 4th digit of the VIN identifies the body type for passenger cars and the 5th digit for light trucks (refer to *Vehicle Identification Number (VIN) on page 87*).

Once you have located the vehicle in the Vehicle Application Tables look in the column marked Adapter Config and note the listing (see below).

1996 Chevrolet Passenger Cars (Example)

MODEL	BODY VIN 4TH DIGIT	SYSTEM	DATA TYPE	ADAPTER CONFIG
Cavalier	J	SIR, E&C, IPC	UART	OBD II/ OBD II-C/ GM-16

Next, look in the *Body Adapter Usage Table on page 65* for the adapter configuration for the vehicle you are testing. For the example above, the 1996 Cavalier Adapter Configuration is OBD II, OBD II-C, or GM-16. The *Body Adapter Usage Chart* lists the adapters, cables, and other hardware needed to connect each Vetronix tester to the vehicle.

For this example, assuming you are using the MTS 3100, the options are:

OBD II-C configuration	Controller Area Network VIM and DLC Adapter Cable
GM-16 configuration	GM 12/14-Pin DLC Adapter and 16/12-Pin Non-OBD II DLC Adapter

Body Adapter Usage Chart (Example)

SYSTEM	ADAPTER CONFIG	TESTER	ADAPTER DESCRIPTION	PART NO.	FIG NO.
1995-2004 Systems with a 16-Pin DLC (Class 2 data)	OBD II-C	*MTS 3100	OBD II Compliant MTS 3100 Controller Area Network VIM 16/24-Pin DLC Adapter Cable	02002184 02003211 02001744	Figure 4-9
	OBD II	Tech 1A	Tech 1A OBD II Interface Cartridge 16/14-Pin OBD II Type 3 Adapter Cable	02002178 02001969	Figure 4-10
			OBD II VIM 16/24-Pin VIM DLC Adapter Cable	02001808 02001744	Figure 4-11
		Tech 1	Tech 1 GM/RWAL/4WAL ALDL Cable Tech 1 14/12-Pin VIM Adapter OBD II VIM 16/24-Pin VIM DLC Adapter Cable	02001578 02001198 02001808 02001744	Figure 4-12
1994-2001 Systems with a 16-Pin DLC (UART data)	GM-16	MTS 3100	GM 12/14-Pin DLC Adapter 16/12-Pin Non-OBD II Adapter	02001384 02001575	Figure 4-13
		Tech 1A	GM 12/14-Pin DLC Adapter 16/12-Pin Non-OBD II Adapter	02001384 02001575	Figure 4-14
		Tech 1	16/12-Pin Non-OBD II DCL Adapter	02001575	Figure 4-15

For an illustration of the adapters and how to connect them to the tester, refer to the *FIG NO.* listing in the last column of the Body Adapter Usage Chart.

Body Adapter Usage Table

SYSTEM	ADAPTER CONFIG	TESTER	ADAPTER DESCRIPTION	PART NO.	FIG NO.
1988-1995 Systems with a 12-Pin DLC	GM	MTS 3100	GM 12/14-Pin DLC Adapter	02001384	Figure 4-5
		Tech 1A	GM 12/14-Pin DLC Adapter	02001384	Figure 4-6
		Tech 1[a]	Tech 1 GM RWAL/4WAL ADL Cable	02001578	Figure 4-7
All 1994 and newer with 16-pin DLC (OBD II)	OBD II-C2	MTS 3100	Controller Area Network VIM 16/24-Pin DLC Adapter Cable	F-00K-108-115 02001744	Figure 4-8
Body Systems with a 16-Pin DLC	OBD II-C[b]	MTS 3100	Controller Area Network VIM 16/24-Pin DLC Adapter Cable	02003211 02001744	Figure 4-9
	OBD II[b]	Tech 1A	Tech 1A OBD II Interface Cartridge 16/14-Pin OBD II Type 3 Adapter Cable	02002178 02001969	Figure 4-10
			OBD II VIM 16/24-Pin VIM DLC Adapter Cable	02001808 02001744	Figure 4-11
		Tech 1	Tech 1 GM/RWAL/4WAL ALDL Cable Tech 1 14/12-Pin VIM Adapter OBD II VIM 16/24-Pin VIM DLC Adapter Cable	02001578 02001198 02001808 02001744	Figure 4-12
1994-2001 Systems with a 16-Pin DLC (UART data)	GM-16	MTS 3100	GM 12/14-Pin DLC Adapter 16/12-Pin Non-OBD II Adapter	02001384 02001575	Figure 4-13
		Tech 1A	GM 12/14-Pin DLC Adapter 16/12-Pin Non-OBD II Adapter	02001384 02001575	Figure 4-14
		Tech 1	16/12-Pin Non-OBD II DCL Adapter	02001575	Figure 4-15
1990-1991 SIR Systems (1990 Y Body) (1991 L Body)	GM-S	MTS 3100	GM 12/14-Pin DLC Adapter GM 12/12-Pin SIR/Dual UART Adapter	02001384 02001039	Figure 4-16
		Tech 1A	GM 12/14-Pin DLC Adapter GM 12/12-Pin SIR/Dual UART Adapter	02001384 02001039	Figure 4-17
		Tech 1	Tech 1 GM RWAL/4WAL ALDL Cable GM 12/12-Pin SIR/Dual UART Adapter	02001578 02001039	Figure 4-18
1990-1993 SIR System for Geo Prizm (1990-93 S Body)	GM-P	MTS 3100	GM 12/14-Pin DLC Adapter Geo Prizm SIR Adapter	02001384 02001190	Figure 4-19
		Tech 1A	GM 12/14-Pin DLC Adapter Geo Prizm SIR Adapter	02001384 02001190	Figure 4-20
		Tech 1[a]	Tech 1 GM RWAL/4WAL ALDL Cable Geo Prizm SIR Adapter	02001578 02001190	Figure 4-21
1990-1993 SIR Systems for Geo Storm (1990-93 R Body)	GM-D	MTS 3100	GM 12/14-Pin DLC Adapter Isuzu/Delco 3-Pin ALDL Adapter	02001384 02001032	Figure 4-22
		Tech 1A	GM 12/14-Pin DLC Adapter Isuzu/Delco 3-Pin ALDL Adapter	02001384 02001032	Figure 4-23
		Tech 1[a]	Tech 1 GM RWAL/4WAL ALDL Cable Isuzu/Delco 3-Pin ALDL Adapter	02001578 02001032	Figure 4-24

a. Tech 1 RWAL/4WAL ALDL cable can be used with all of the applications in place of the Tech 1 DLC cable.

b. 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.

TESTER/CABLE/ADAPTER ILLUSTRATIONS

FIGURE 4-5. GM Adapter Configuration for MTS 3100

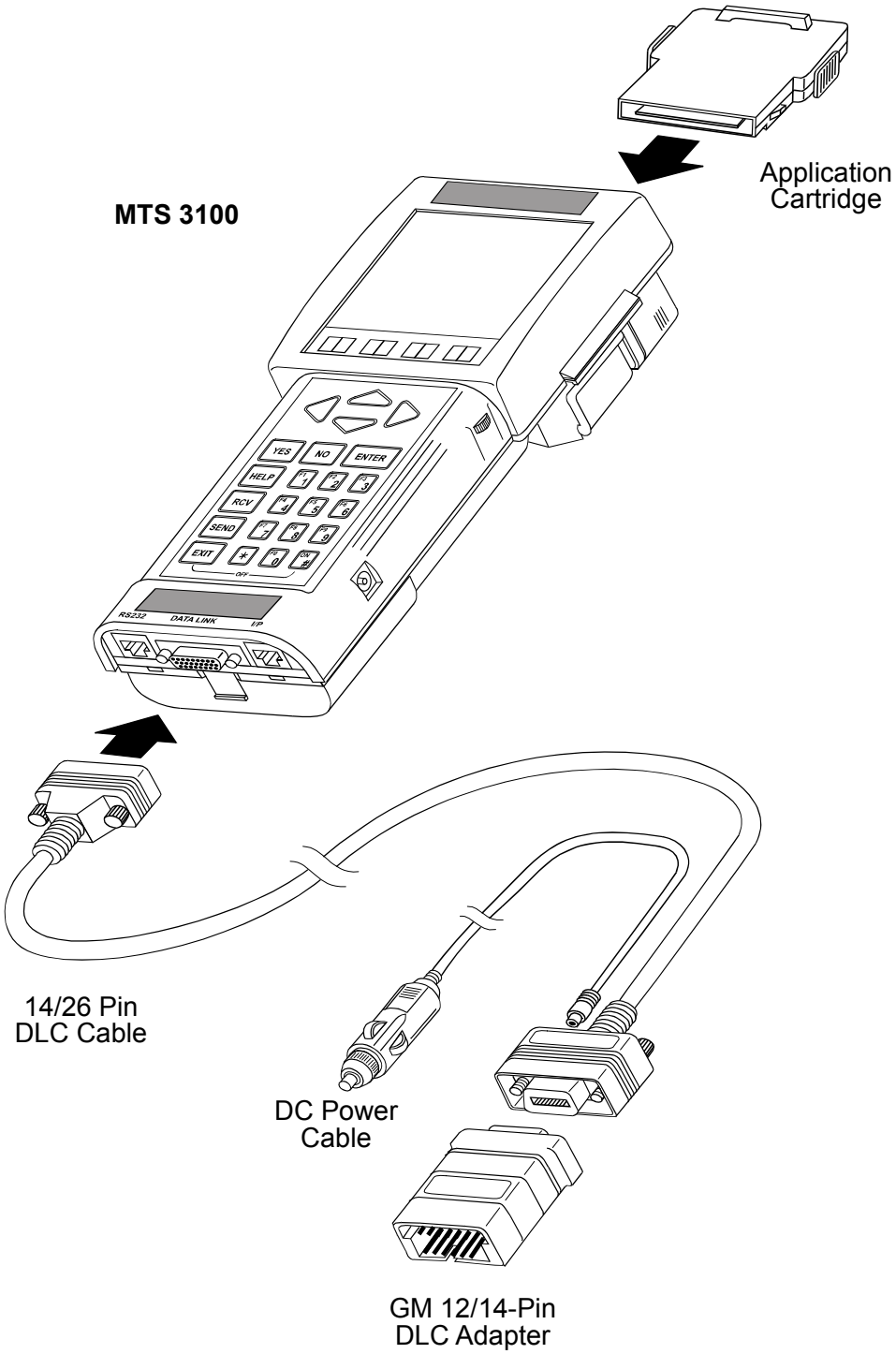


FIGURE 4-6. GM Adapter Configuration for Tech 1A

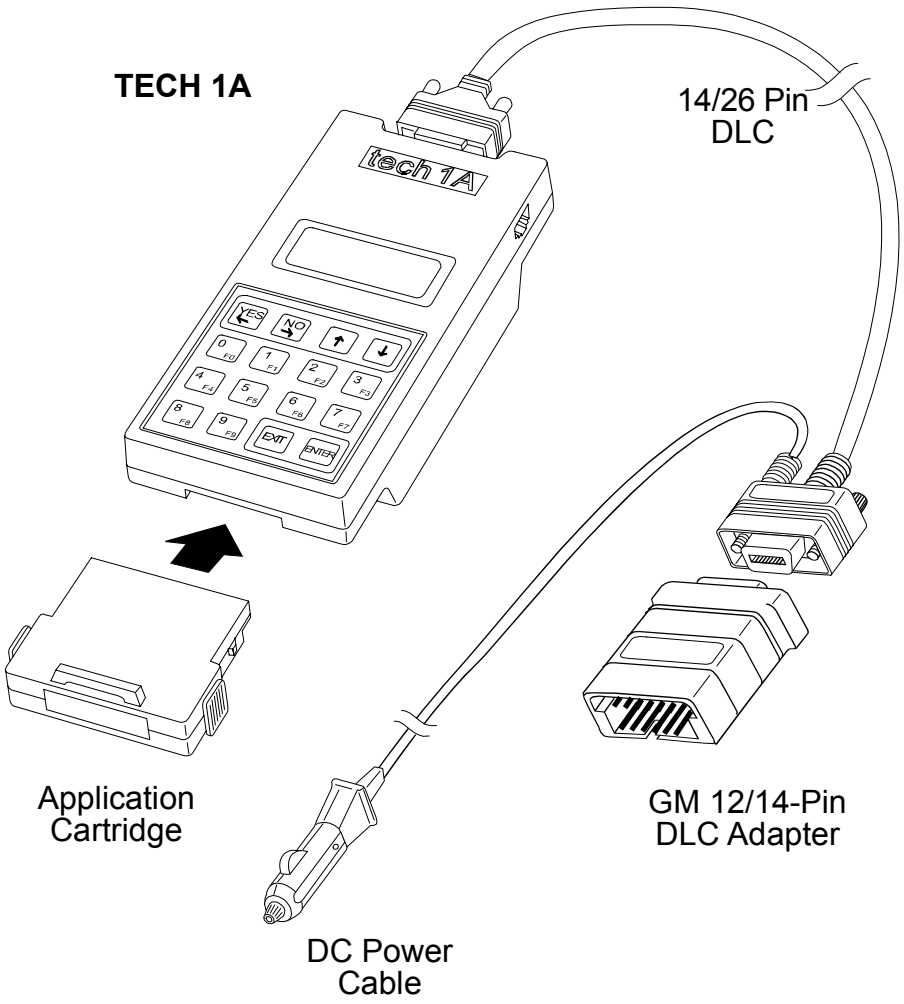


FIGURE 4-7. GM Adapter Configuration for Tech 1

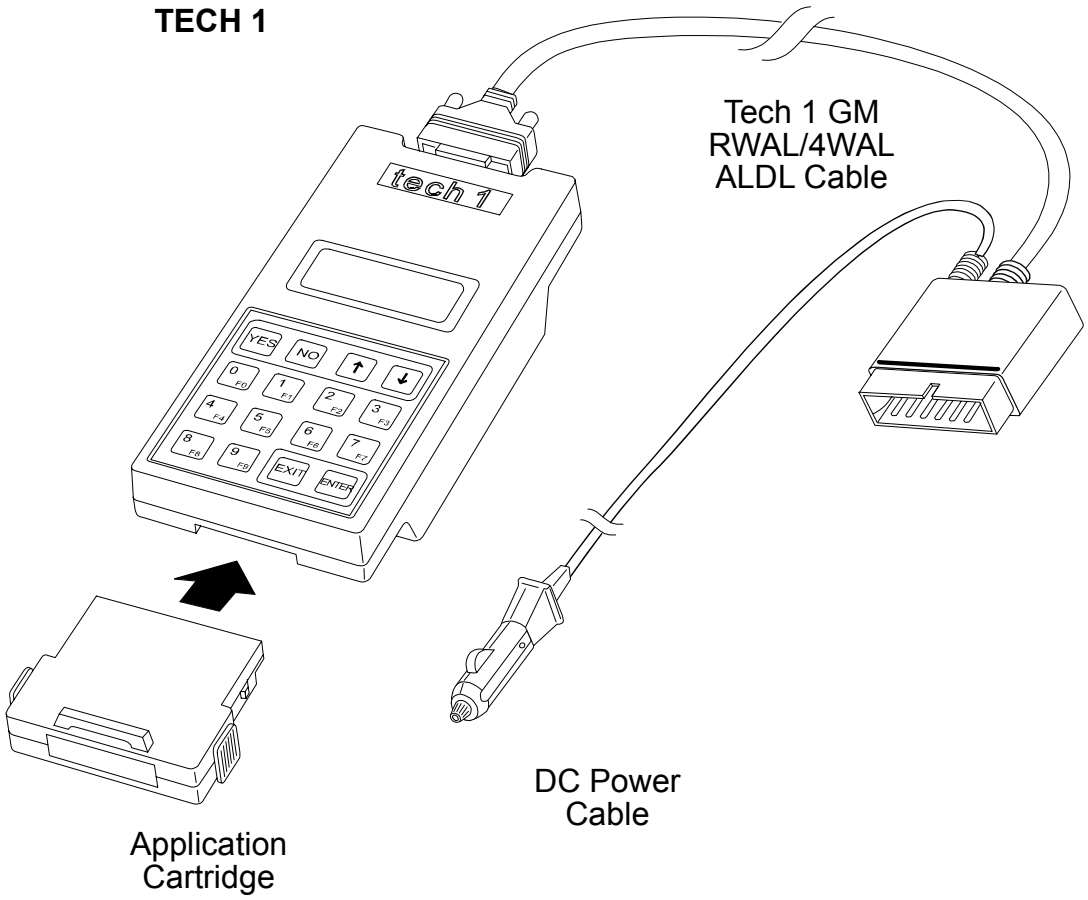


FIGURE 4-8. OBD II-C2 Adapter Configuration for MTS 3100

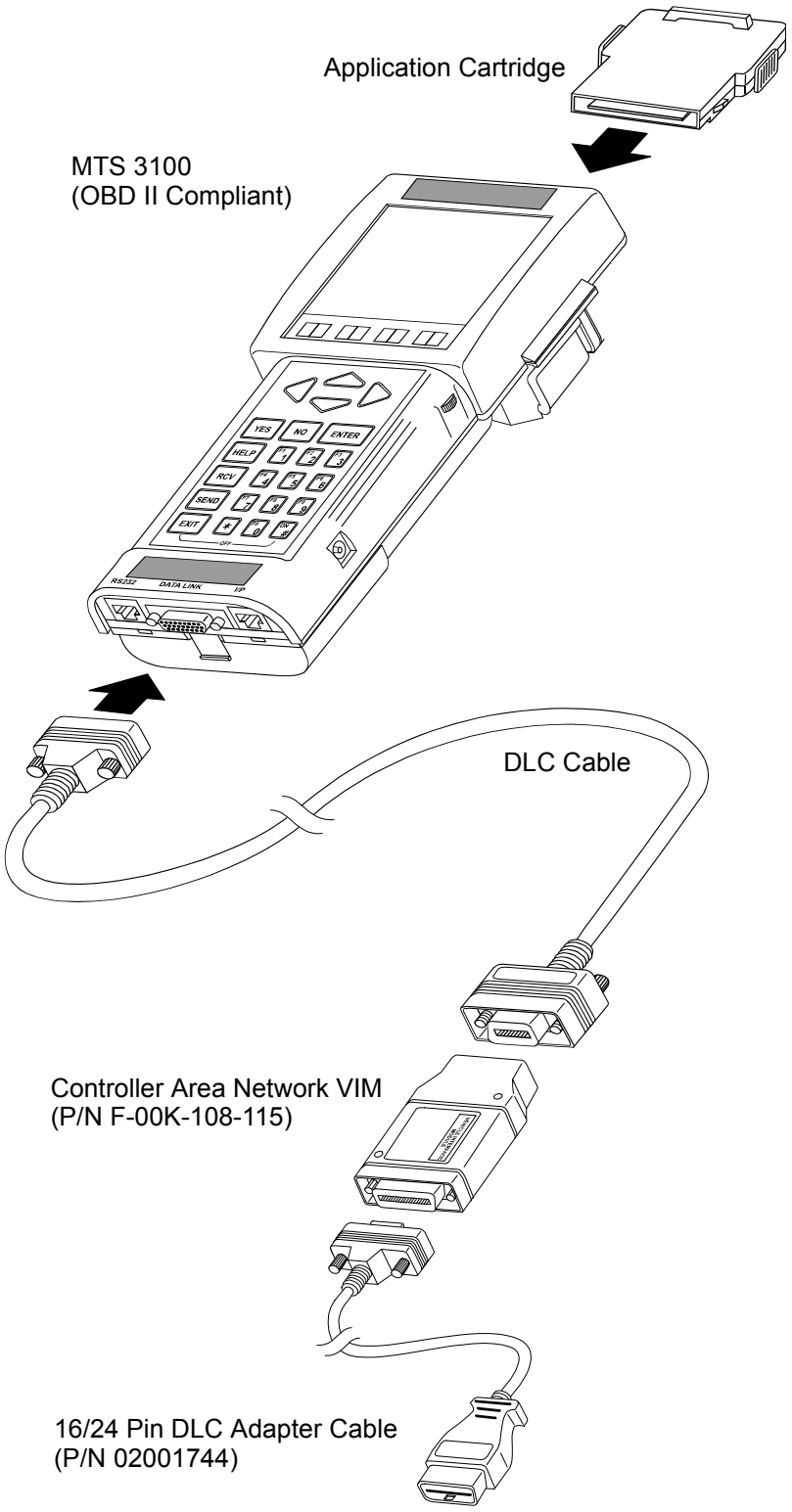


FIGURE 4-9. OBD II-C Adapter Configuration for MTS 3100

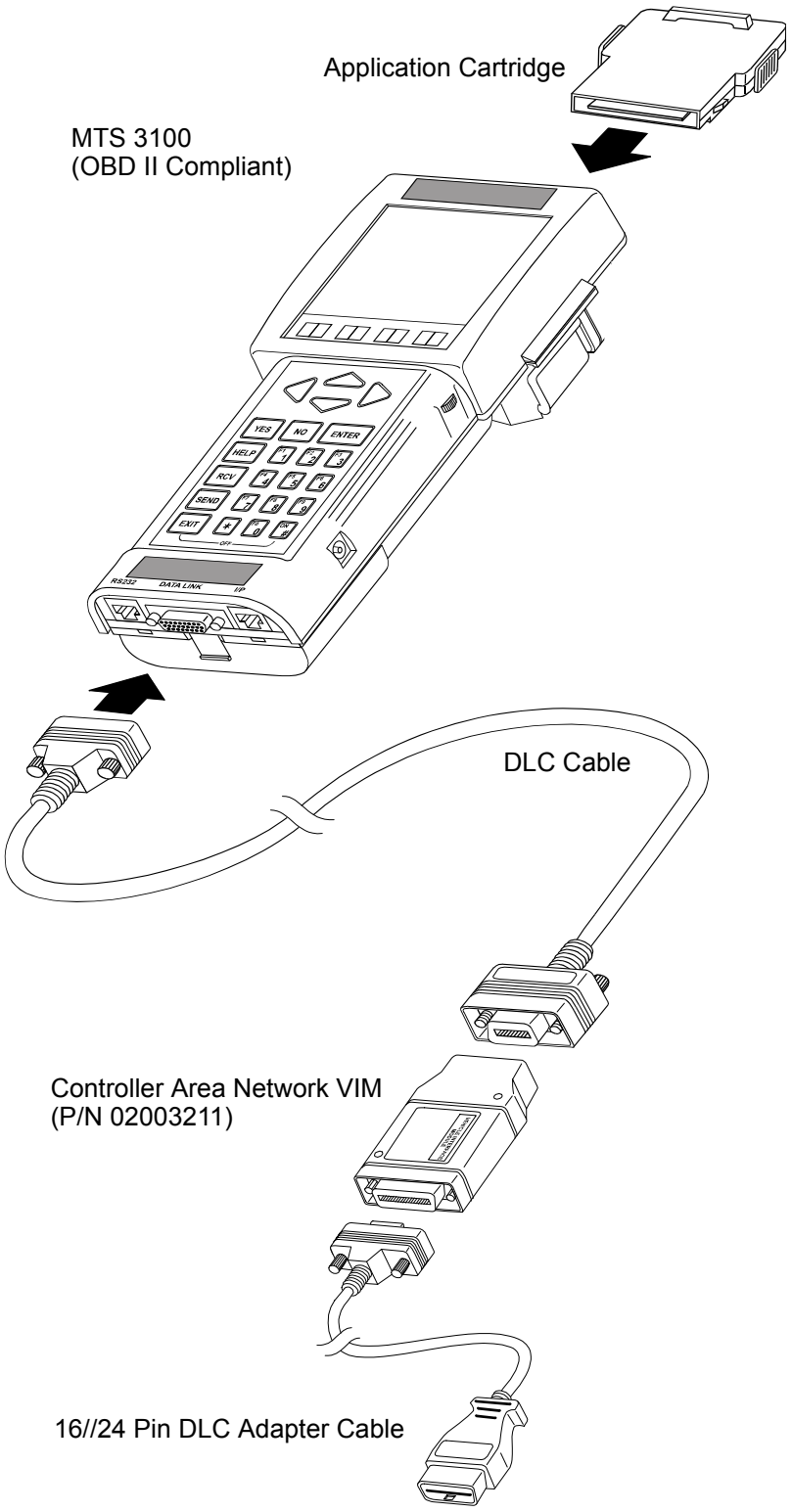


FIGURE 4-10. OBD II Adapter Configuration for Tech 1A

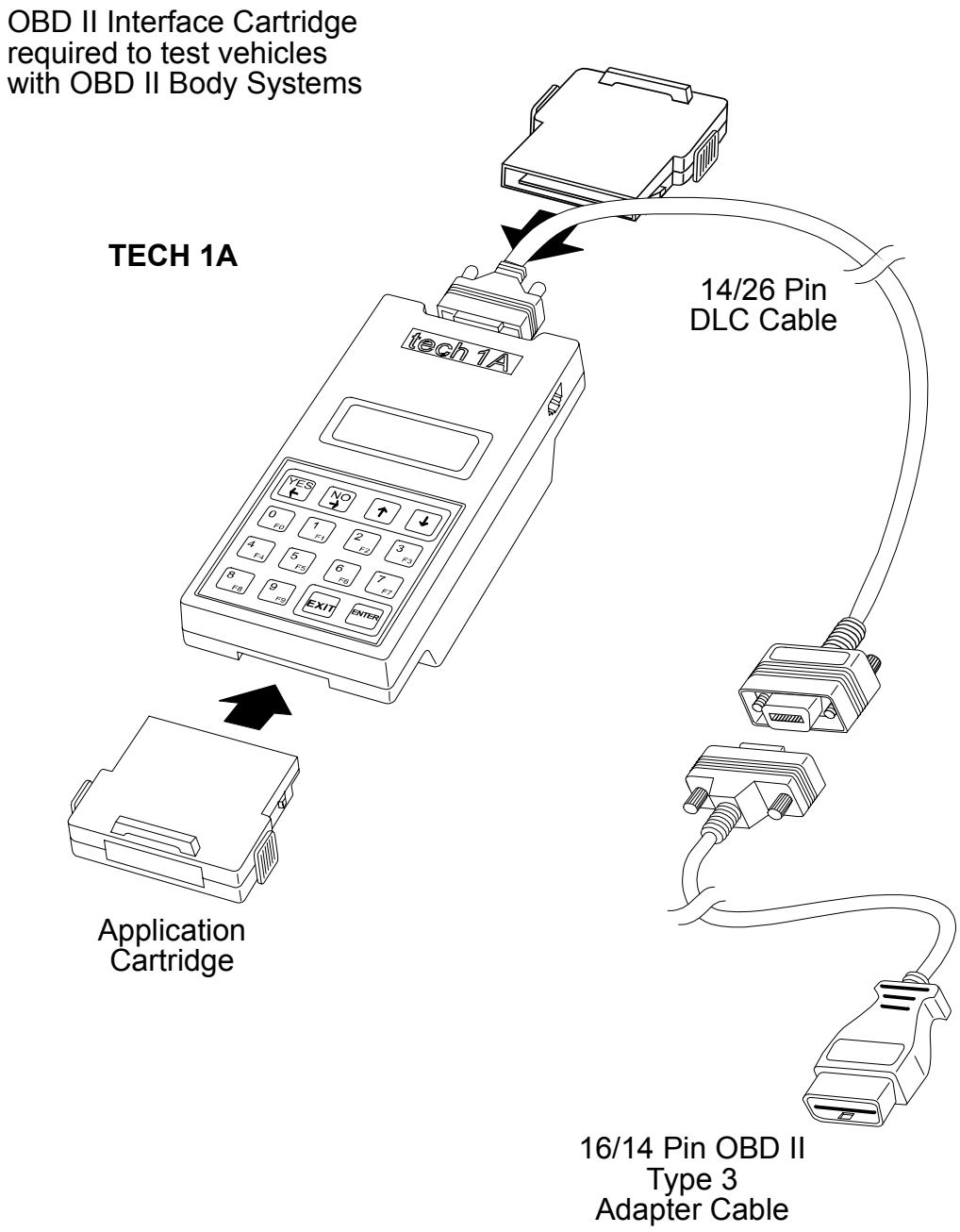


FIGURE 4-11. OBD II Adapter Configuration for Tech 1A

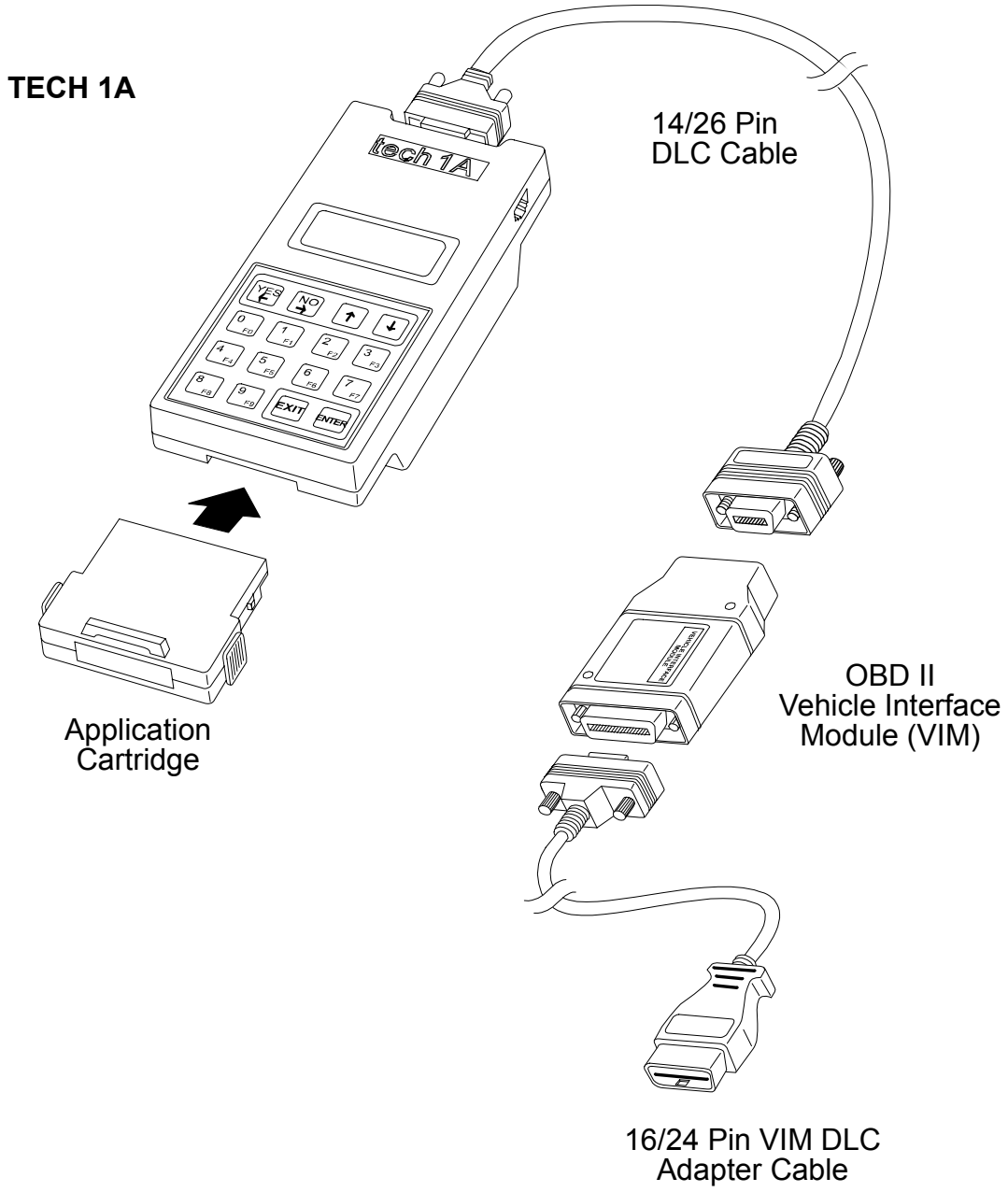


FIGURE 4-12. OBD II Adapter Configuration for Tech 1

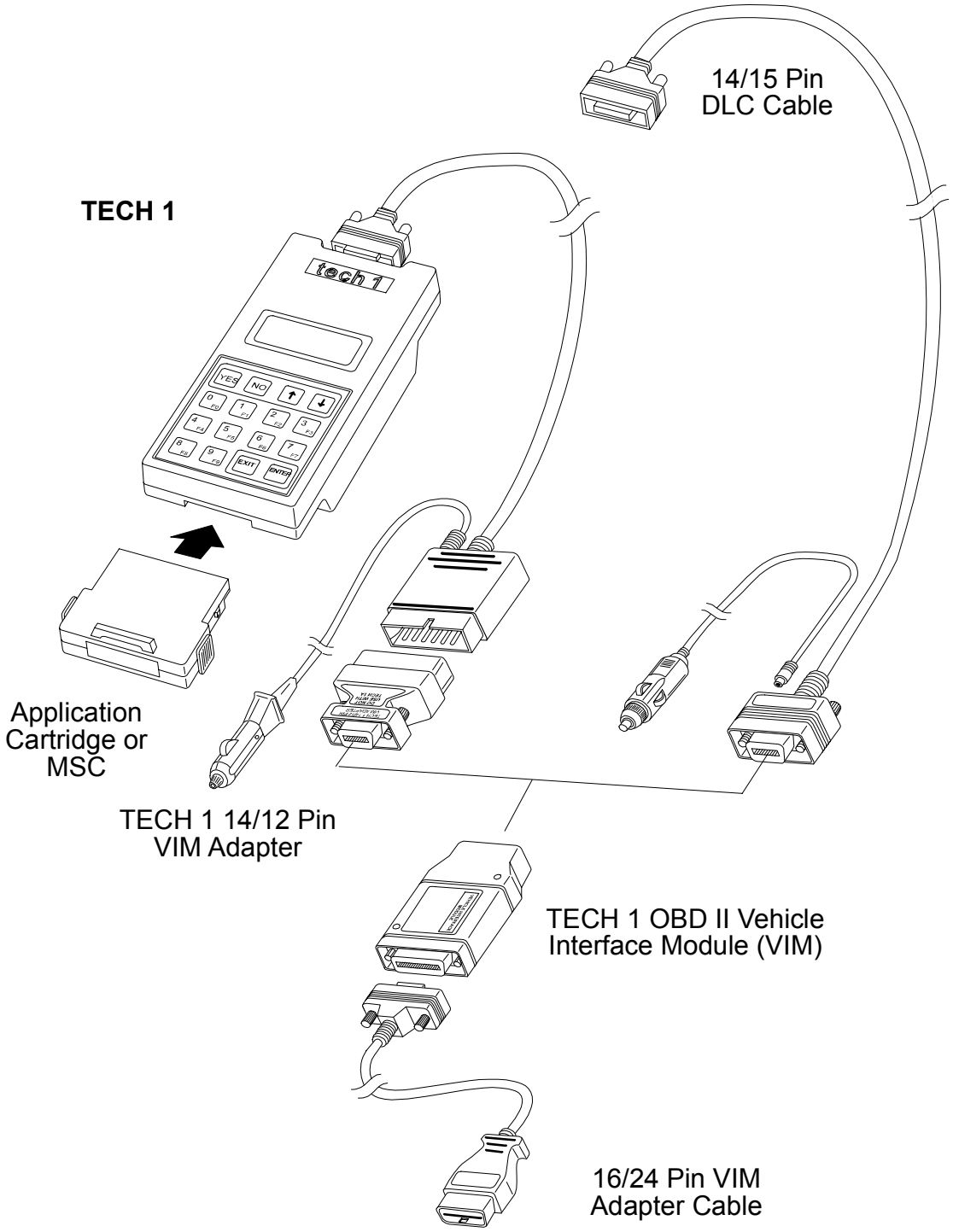


FIGURE 4-13. GM-16 Adapter Configuration for MTS 3100

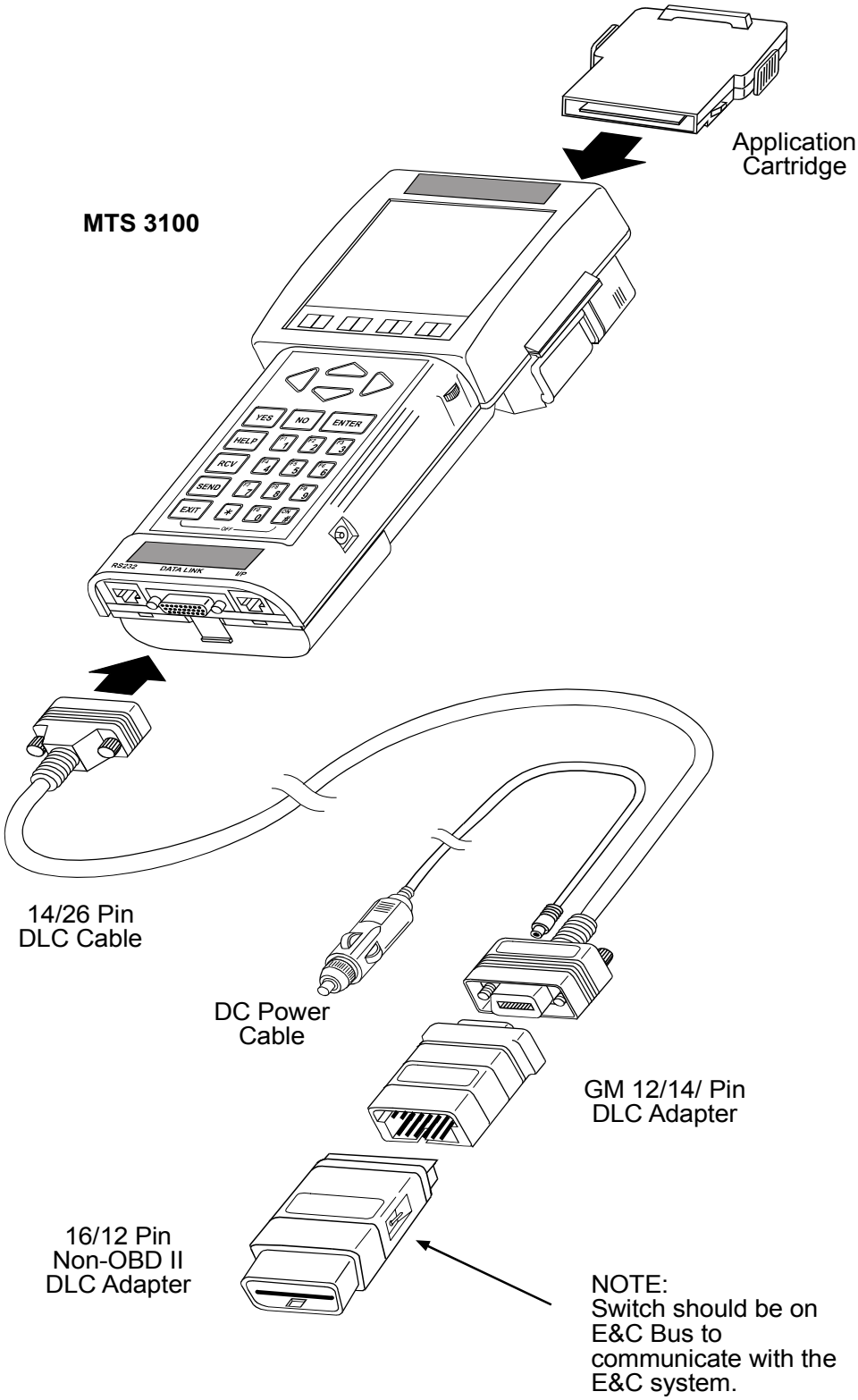


FIGURE 4-14. GM-16 Adapter Configuration for Tech 1A

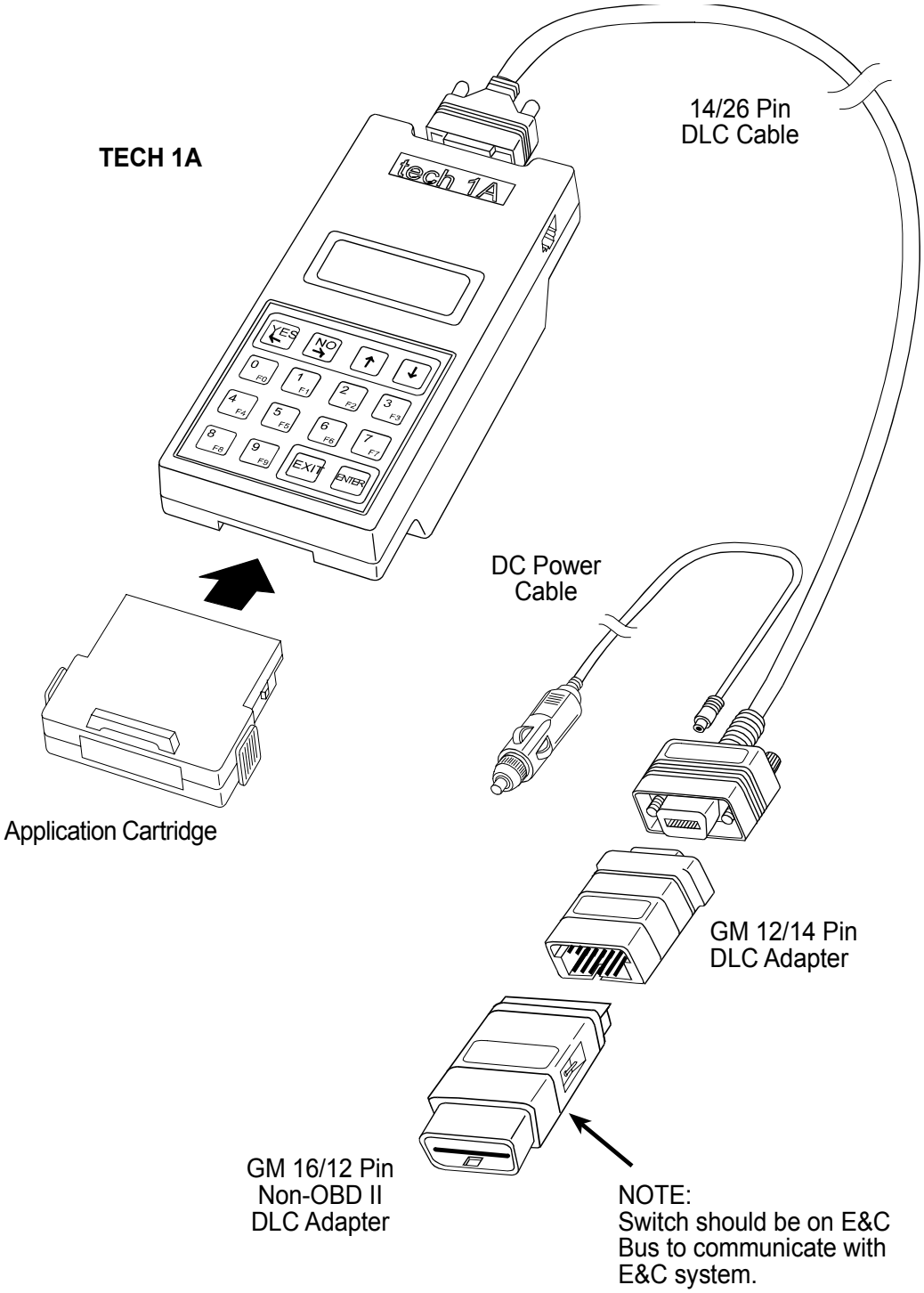


FIGURE 4-15. GM-16 Adapter Configuration for Tech 1

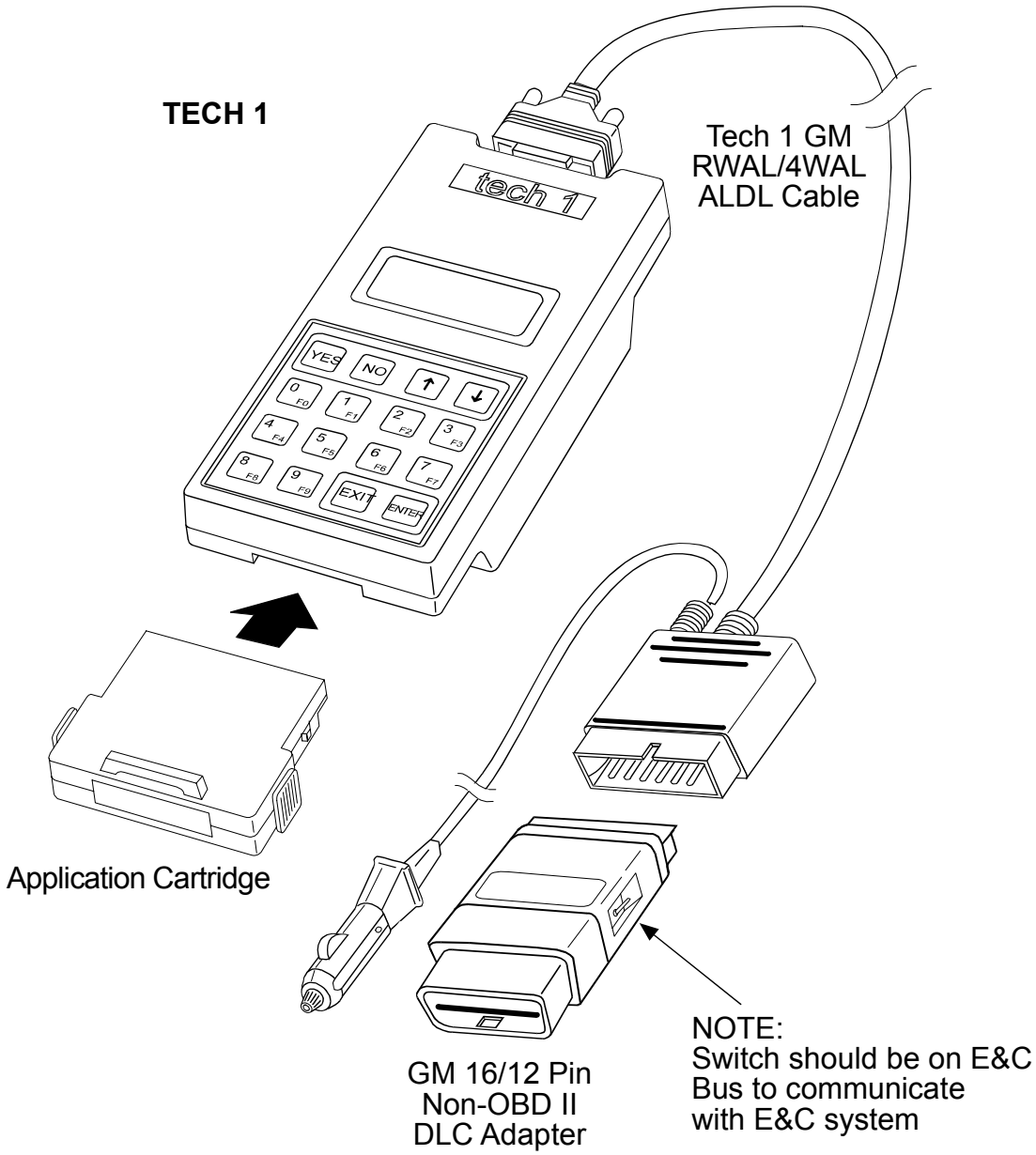


FIGURE 4-16. GM-S Adapter Configuration for MTS 3100

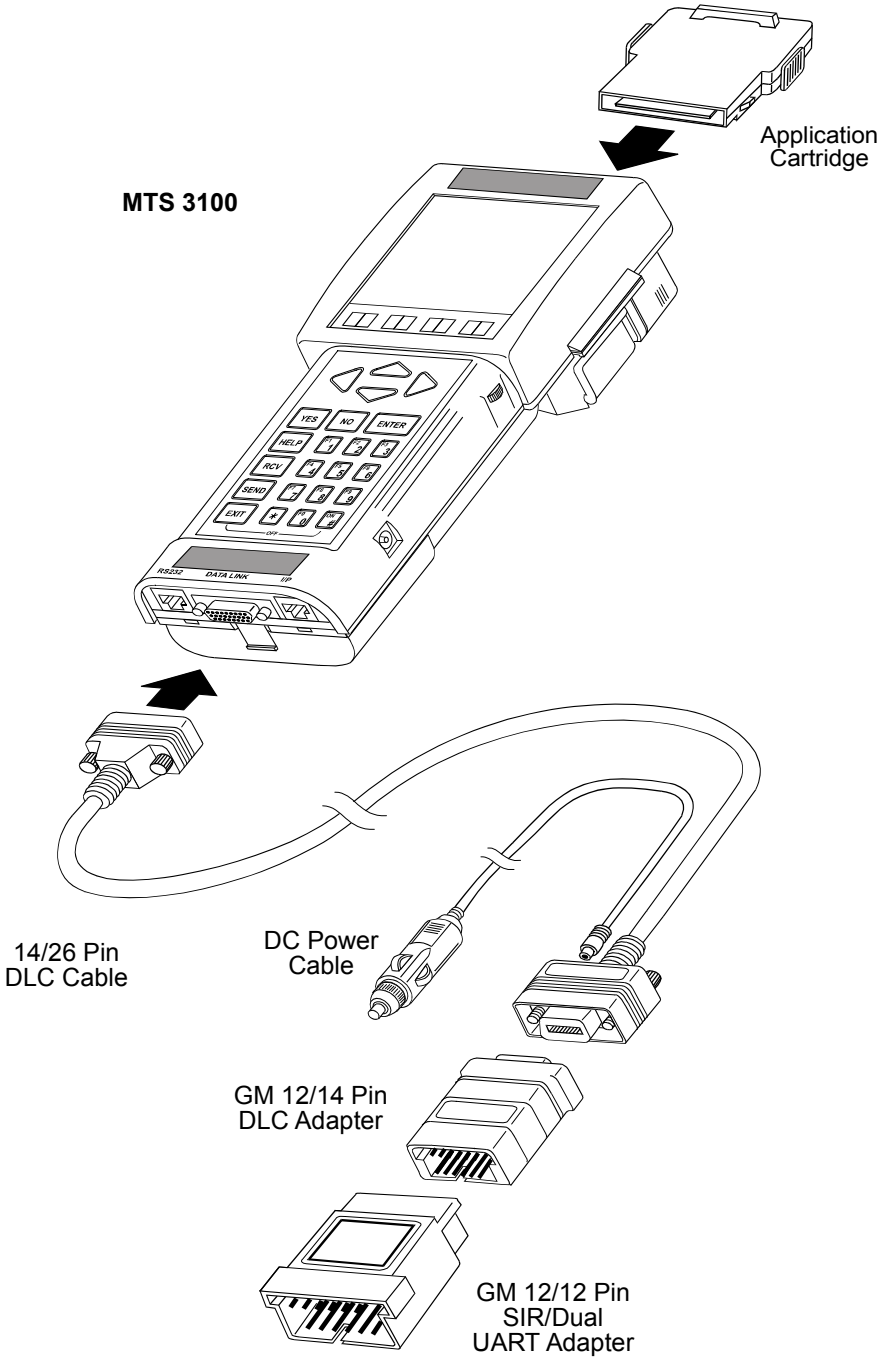


FIGURE 4-17. GM-S Adapter Configuration for Tech 1A

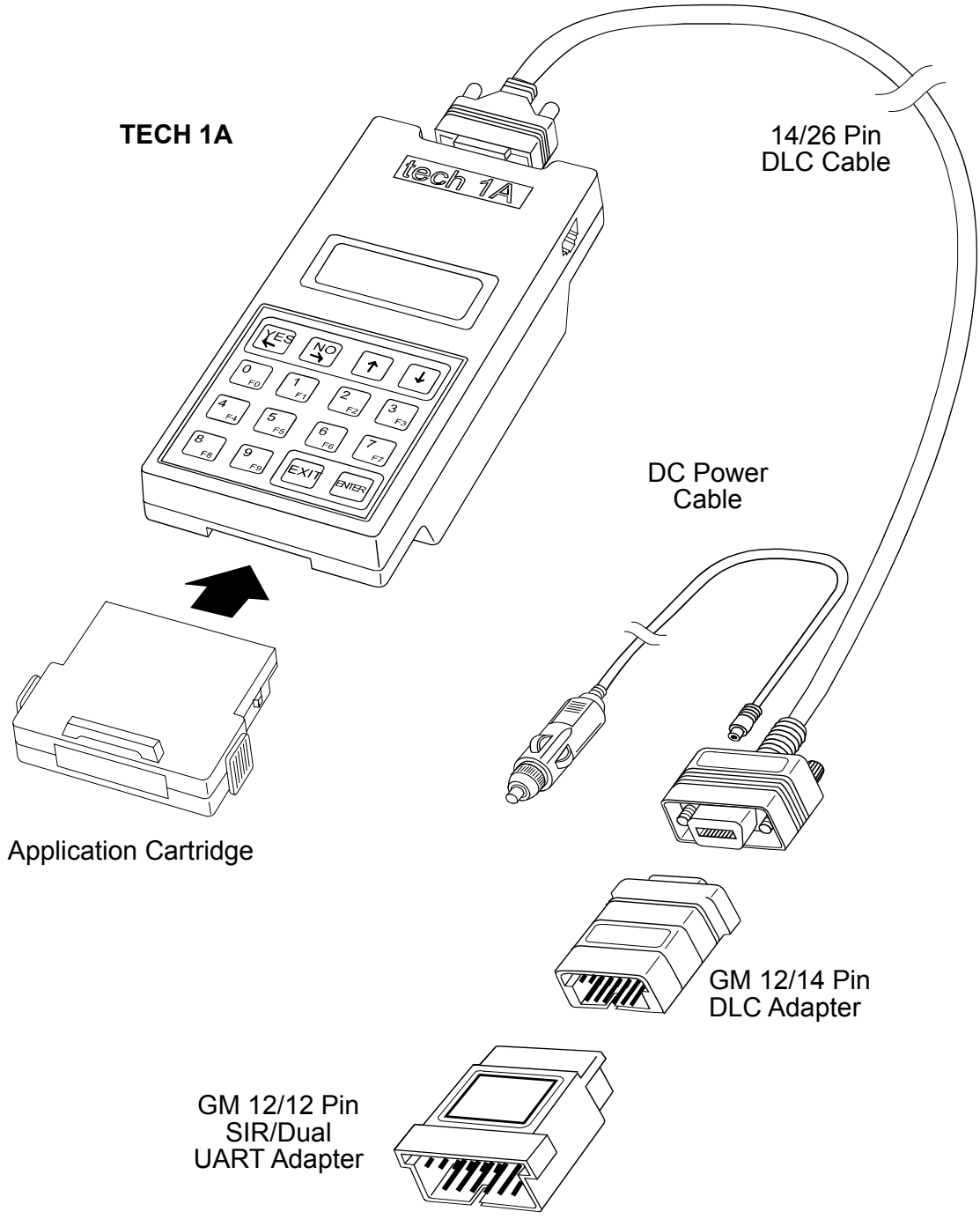


FIGURE 4-18. GM-S Adapter Configuration for Tech 1

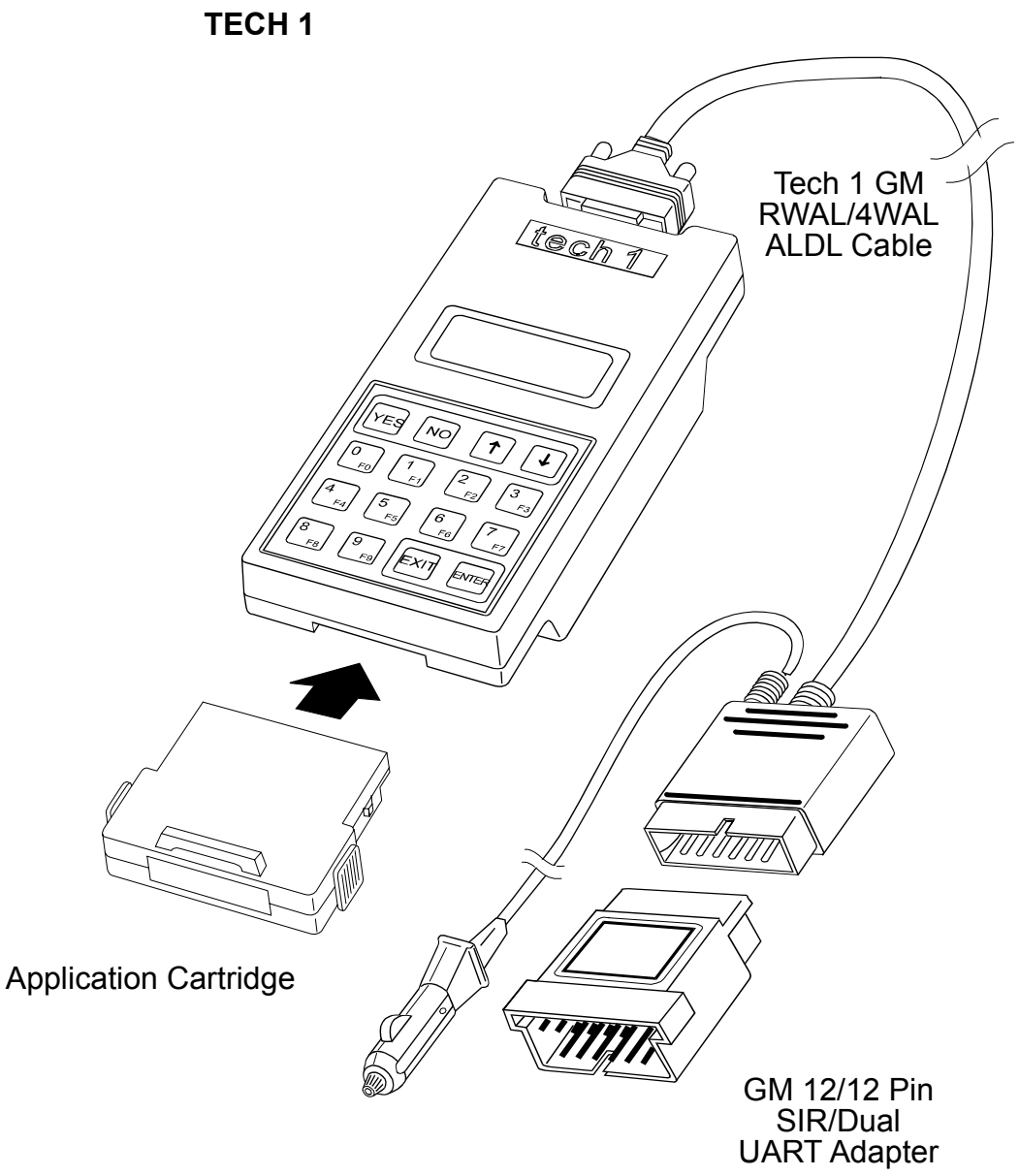


FIGURE 4-19. GM-P Adapter Configuration for MTS 3100

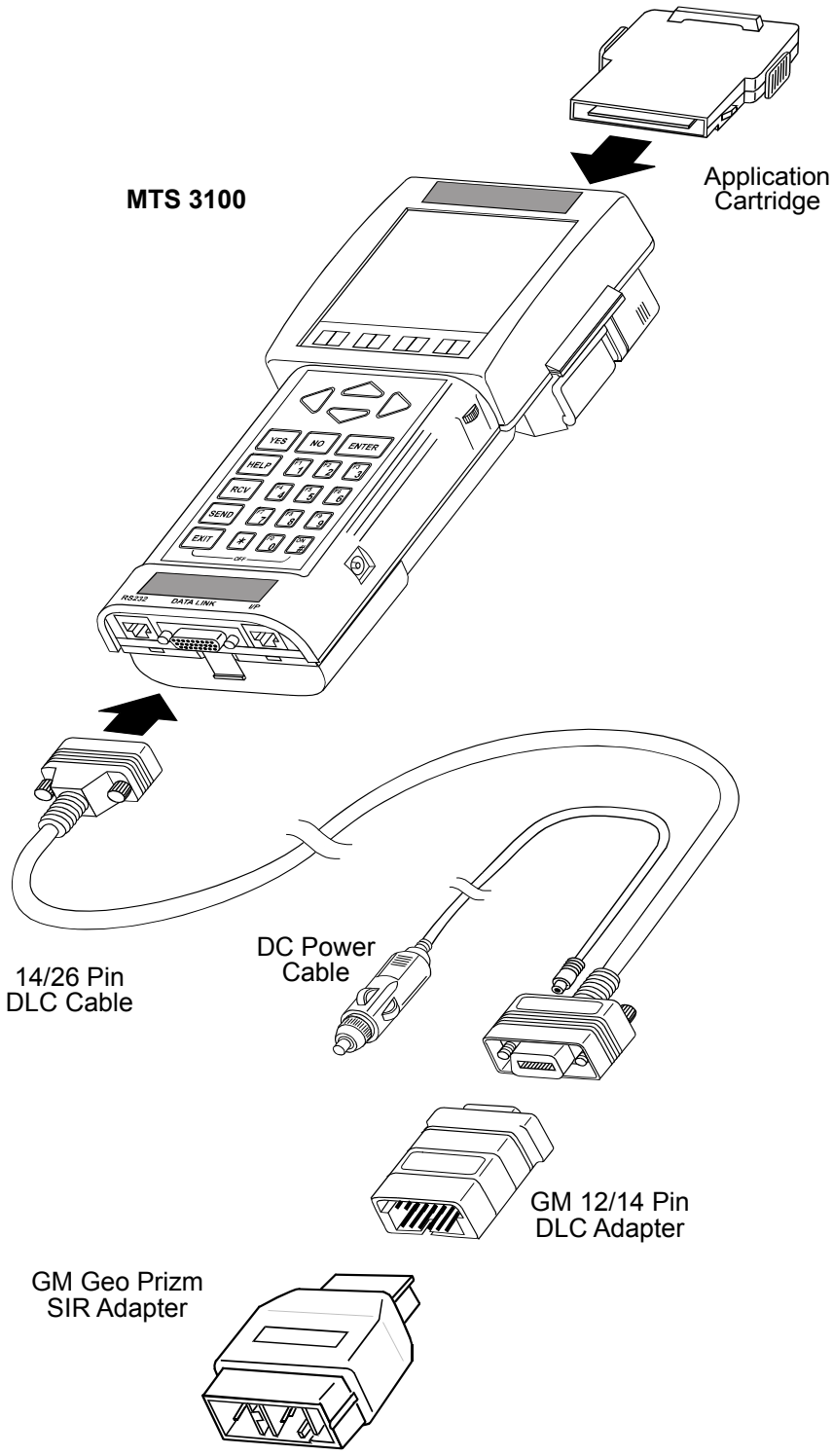


FIGURE 4-20. GM-P Adapter Configuration for Tech 1A

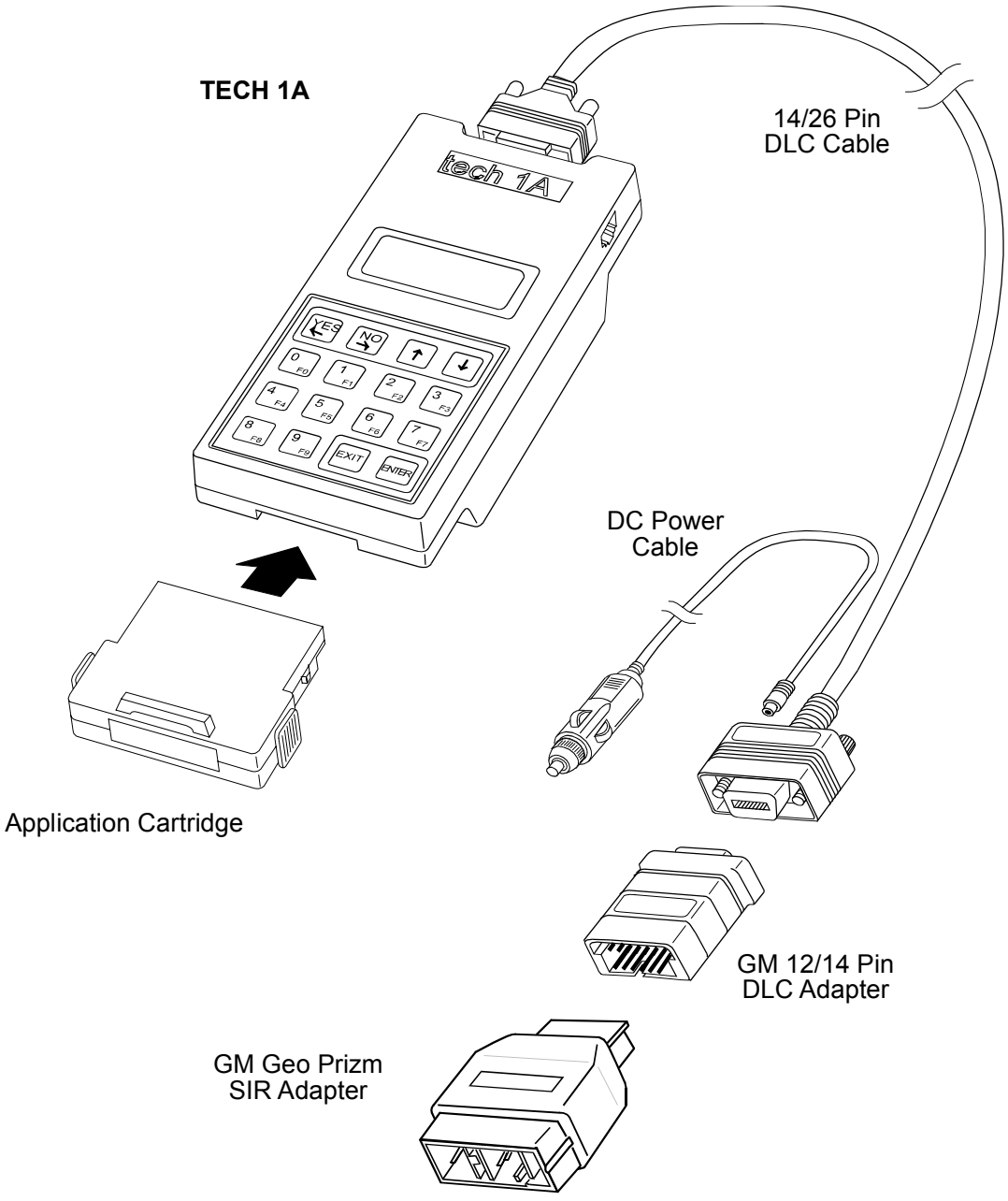


FIGURE 4-21. GM-P Adapter Configuration for Tech 1

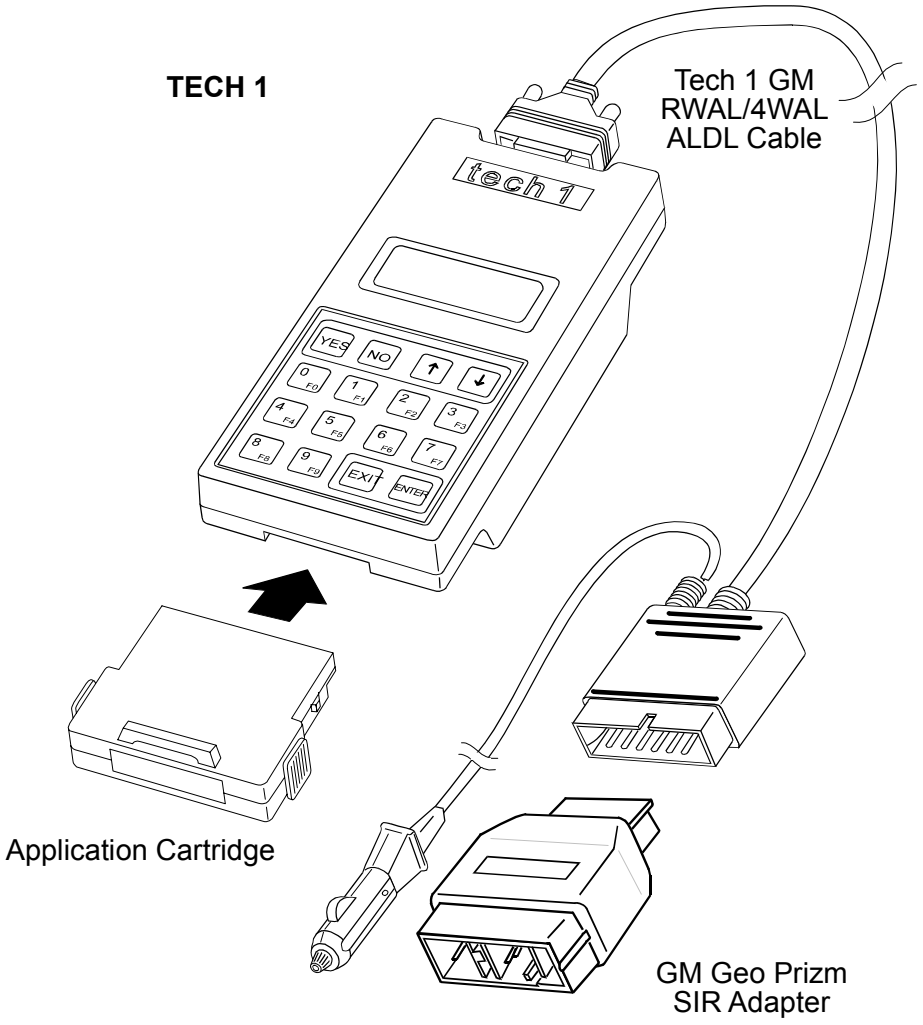


FIGURE 4-22. GM-D Adapter Configuration for MTS 3100

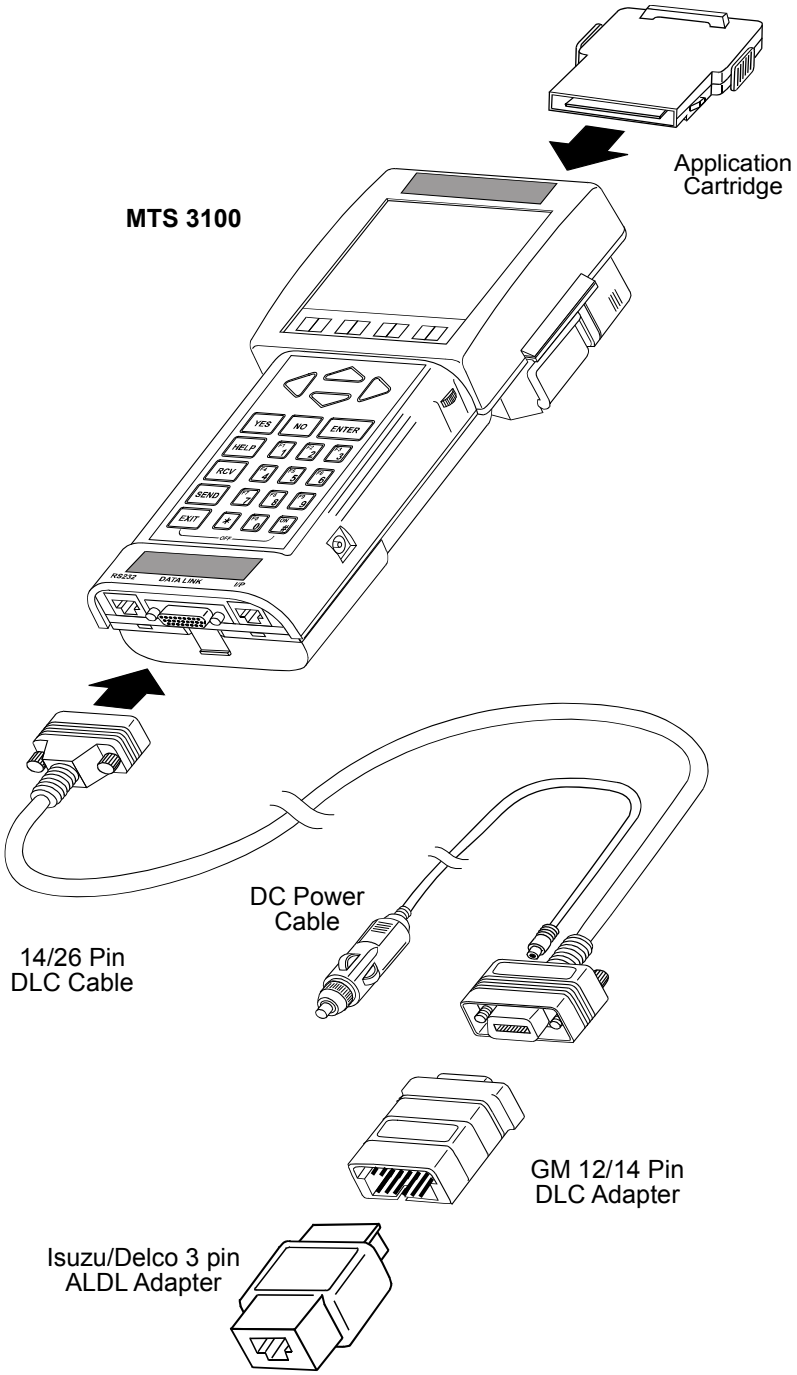


FIGURE 4-23. GM-D Adapter Configuration for Tech 1A

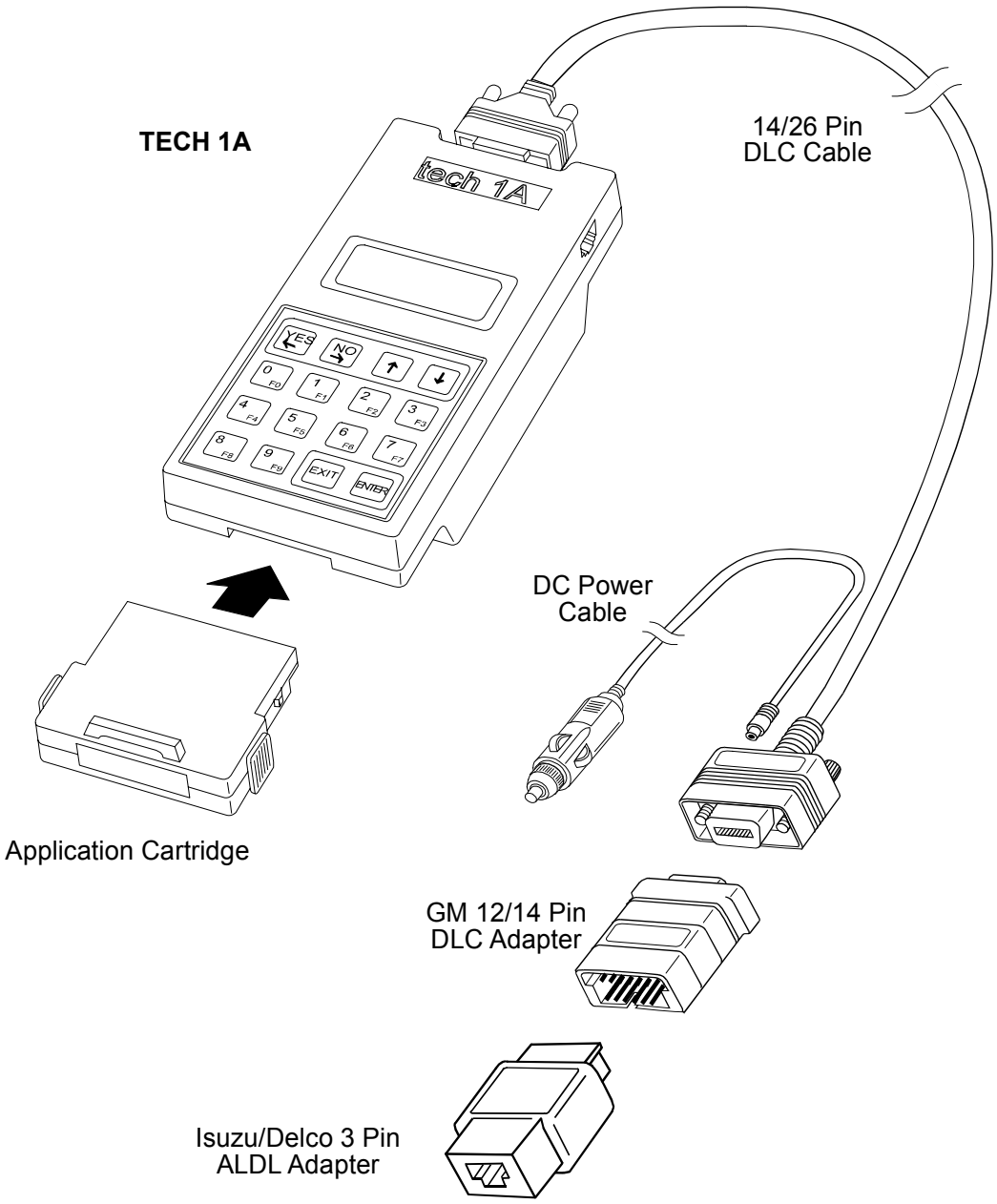
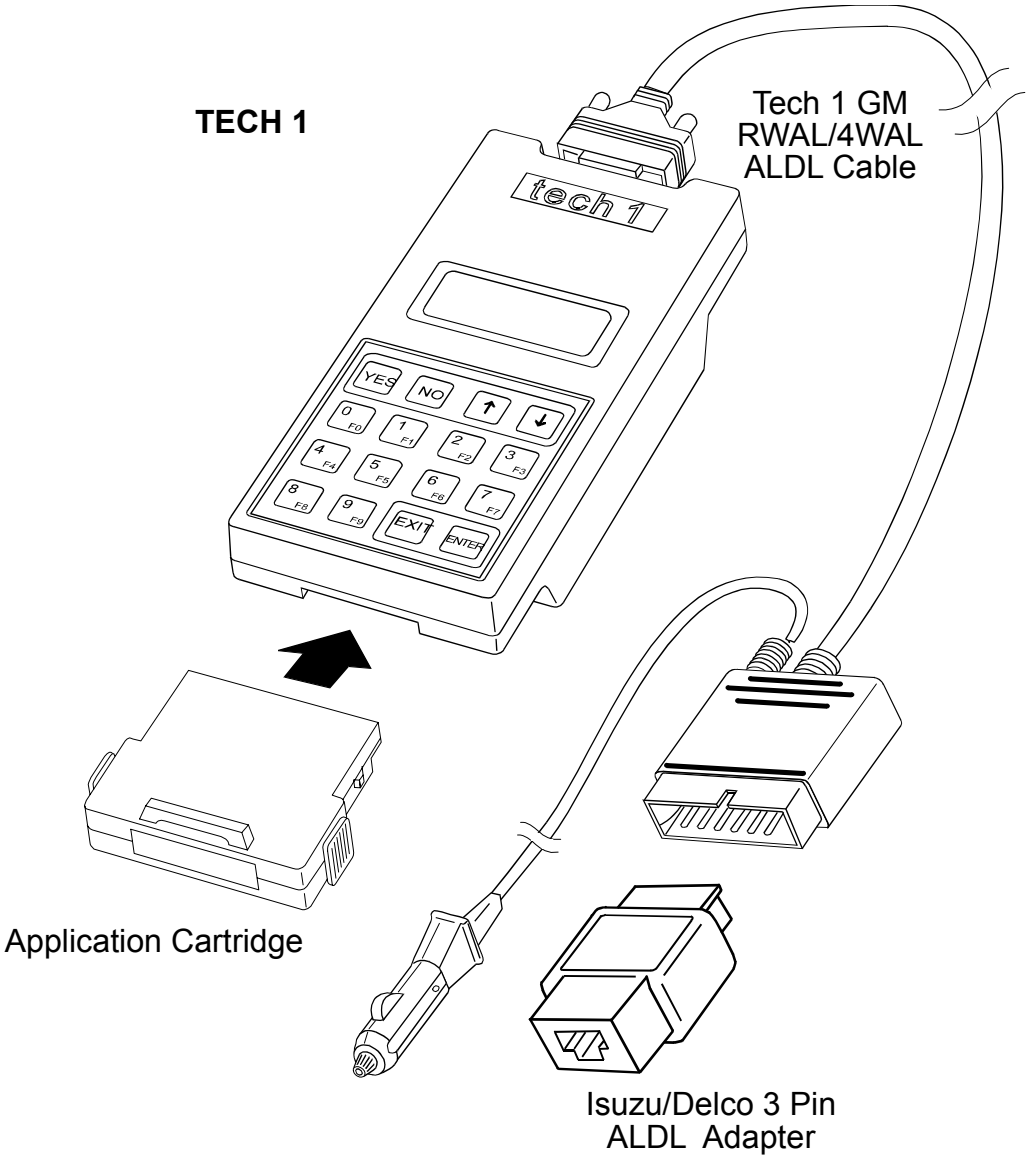


FIGURE 4-24. GM-D Adapter Configuration for Tech 1



USING THE TESTER KEYPAD AND MENUS

The operation of the tester software is simple, so once you've read through the manual to get a general idea of how it operates, you won't have to refer to it very often. You simply sequence through the operation of the cartridge by pressing keys on the tester in response to messages displayed on the tester. In general, this sequencing is performed by pressing "Function Keys" to select items from *menus* displayed on the tester. Refer to the following table for a summary of the basic key functions. Each section in this manual contains a table indicating which keys are active for that mode of operation.

TESTER FUNCTION KEYS

General Tester Key Functions	
YES , NO	Answer the tester questions and scroll through data parameters.
EXIT	Terminate operating modes and return to previous menu.
↑	Scroll the menu display, or control a function ON.
↓	Halt automatic menu scrolling, then scroll menu display, or control a function OFF.
F0-F9	Select operating modes and command special functions.
0-9	Enter the vehicle year and model. Numeric keys also designate trouble codes while in *Snapshot* mode.
F6 for 1 sec.	If you are using a Tech 1, activate RS232C Cartridge menu (if installed).
F7	Toggle between English/Metric.
F8	Print data in *Data List* or *Snapshot* mode (if used with optional RS232C I/F Cartridge and printer).
ENTER	Enter designated trouble code number. Confirm that action has been performed.

VEHICLE IDENTIFICATION NUMBER (VIN)

If you are in doubt about the vehicle you are testing, refer to the Vehicle Identification Number (VIN). Use the chart below to interpret the VIN.

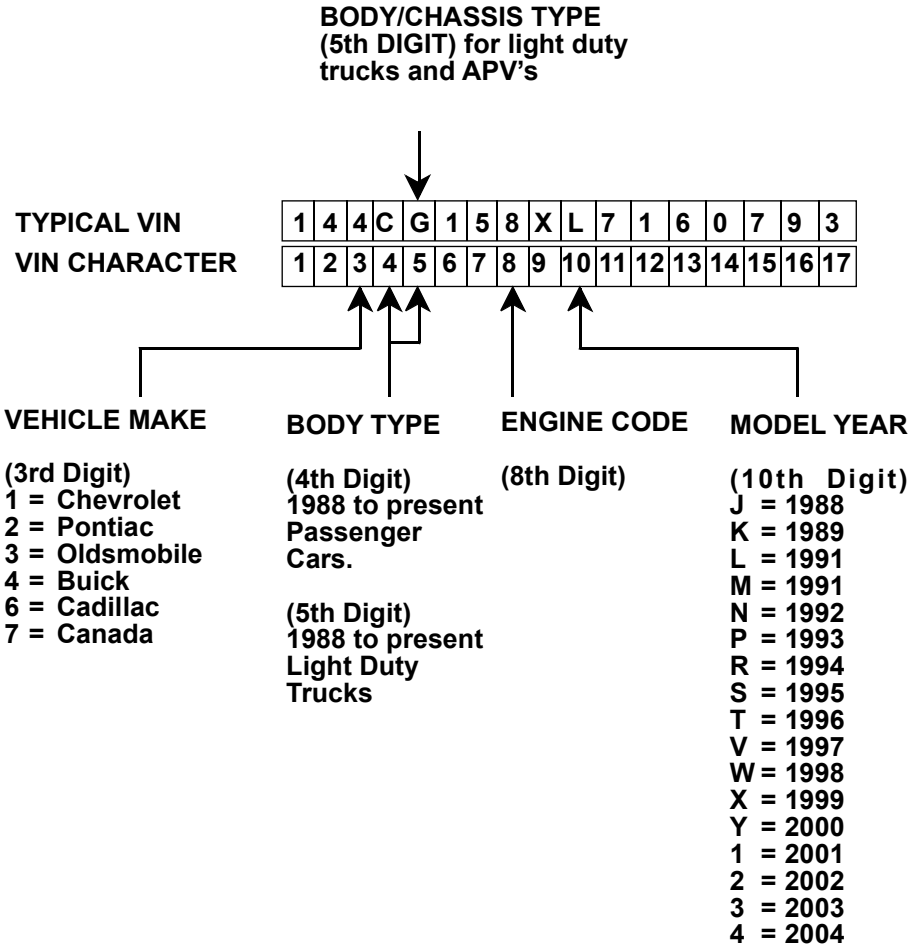


FIGURE 4-25. Body/Chassis Types

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.

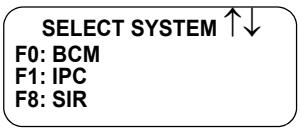
SYSTEM	MODE	SUBMODE	DESCRIPTION
Common Test Modes	F0: Data List	F0: Data F1: Input 1 F2: Input 3 F3: Outputs F4: Security Data	Displays Air Bag Sensors and Input/Output data about the current condition of the SIR system. Examples include Ignition Voltage data, Warning Lamp Cycles, and Driver Seatbelt status.
	F2: DTCs	F0: Current DTCs F1: History DTCs F2: Clear DTCs	Displays Diagnostic Trouble Codes recorded by the ECU. 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	F1: Reprogram BCM	Provides the ability to reset memory values or write to vehicle memory. An example is Synchronizing the SDM with other modules on the Class 2 bus.
	F8: Information	F3: ECU Info F4: Vehicle Info	Displays helpful information about the vehicle or systems under test. This can consist of Calibration ID, Module ID, or VIN (Vehicle Identification Number).
System Test Modes	F0: Flash Codes		Allows you to flash the system DTCs on the dashboard indicator lamp.
	F0: E&C Monitor		Allows you to monitor transmission of data on the E&C bus to verify messages are transmitted in response to driver inputs.
	F1: Clear Codes		Allows you to clear any system DTCs that may be present.
	F1: SDL Monitor		Allows you to passively monitor data which is being transmitted between the vehicle's components during normal operation.
	F1: Reprogramming		Allows you to reprogram various devices on the Class 2 communication bus following component replacement.
	F1: Identify E&C Components		Identifies which E&C components are currently operational on the E&C bus and identifies possible E&C faults.
	F3: E&C Snapshot		Allows you to capture a sequence of messages transmitted between components on the E&C bus.
	F4: E&C Controls		Allows you to send messages to any of the E&C components and control the operation of that component.

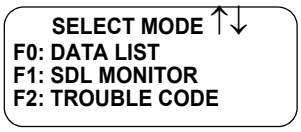
SYSTEM	MODE	SUBMODE	DESCRIPTION
System Test Modes (cont.)	F4: CCM Tests		Allows you to check or correct several CCM circuits by isolating a function to control. Controls consist of telltale lamps, relays, and dimming control.
	F4: BCM Tests		Allows you to perform a number of output controls such as mix door, A/C Clutch, chimes, relays, and lamps.
	F4: IPC Tests		Allows testing of dimming, LEDs, telltales, chimes, and segment tests.
	F4: RAC Tests		Allows you to test interior, exterior, and security lamps, as well as exercise relays associated with the RAC system. Functionality also consists of key tag programming and testing.
	F4: DIC Tests		Allows you to control dimming, chime tests, segment check, reset tests, english/metric, and switch tests.
	F4: EOLM Tests		Allows you to check the Engine Oil Life monitor system, transfer oil life data from one EOLM control module to another, and reset the oil life data to 20% or 100% remaining oil life.
	F4: HVAC Tests		Allows control of single and dual temperature zone systems. Output controls consist of mix doors, solenoids, A/C clutch, rear defrost, blower PWM, and program number.
	F5: VIN and Option Content		Allows reading of VIN and, if available, the vehicle's options.
	F5: Speaker Test		Allows you to test each of the vehicle's speakers independently.

SELECTING THE SYSTEM AND TEST MODE

The tester makes selecting systems and test modes easy by displaying a *Select System* menu and *Test Mode* menu. The menus show which key is used to select the system or test mode. In some cases all of the systems and test modes cannot be displayed on the tester screen at the same time, so the tester automatically sequences through all pages of the menu. You can stop the automatic scrolling by pressing the ↓ key. The display can then be manually scrolled by pressing the ↑ or ↓ keys.

To select a system or test mode, press the tester key to the left of the system or test mode listed on the menu. Regardless of which test modes are being displayed, any test mode can be selected from either menu page. Examples of a *Select System* menu and a *Select Mode* menu are shown below.





Once you've selected a system and test mode, operation begins. Detailed operating descriptions for each test mode are given in this section.

ACTIVE KEYS	
0 - 9	Used to select system and test mode.
↑	Used to scroll the menu display.
↓	Turns off the automatic menu scrolling, then used to scroll the menu display.

COMMON TEST MODES

The Common Test Mode section is designed to keep Common Tests that apply to most Body systems together in one section.

The Common Tests all have the same active tester keys and menu layout for most Body systems.

The following modes apply to the Common Test Mode section:

- Data List (see *Mode F0: DATA LIST*)
- SDL Monitor (see *Mode F1: SDL MONITOR*)
- DTC(S) (see *Mode F2: DTC(S)*)
- Snapshot (see *Mode F3: SNAPSHOT*)
- Information (see *Mode F8: INFORMATION*)

Additional information may be available for the Body system you are working on. Refer to the specific Body system outlined in the Selecting and Operating Test Modes section of this manual.

MODE F0: DATA LIST

The purpose of the *Data List* mode is to continuously monitor system data parameters.

In order to maximize the information that can be seen at one time, the tester displays data parameters in pairs. The Body Systems cartridge contains pre-programmed data parameter pairs, or you can create your own pairs. See *Create your Own Data Pairs on page 94.*

Appendix B of this manual contains descriptions of most data parameters. Not all data parameters are transmitted by every ECU; therefore, not all data parameters can be monitored for each vehicle system.

To use Data List mode, do the following:

1. Select Data List from the *Select Mode* menu by pressing **F0**.
2. Select the data parameters to be displayed by scrolling through the parameters with the **YES** and **NO** keys.

   The data may be printed if the tester is connected to a compatible printer. An RS232C I/F Cartridge Kit (P/N 01001151) is required for Tech 1 testers.
3. 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.

Operation of the *Data List* mode is summarized in Figure 5-1 on page 93.

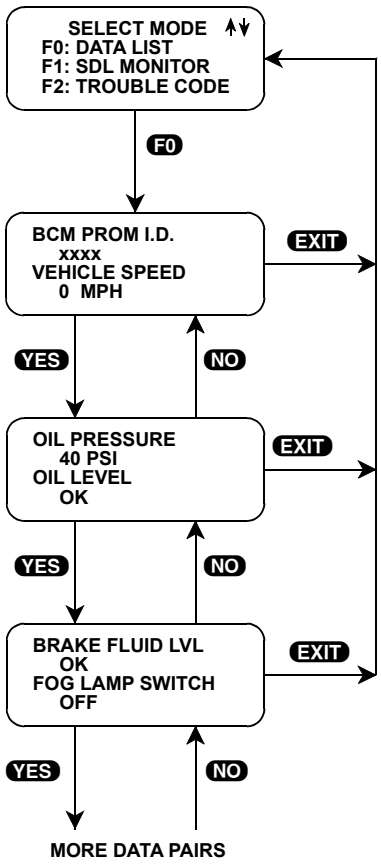


FIGURE 5-1. Example of Operating Mode F0: Data List

ACTIVE KEYS	
YES , NO	Scroll through the 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.
F7	Toggles between English and Metric values in some parameters.
F8	Print the *Data List* parameters.
EXIT	Return to *Test Mode* menu.

Create your Own Data Pairs

You can create data parameter pairs different from the pre-programmed pairs. Any two parameters which can be monitored for the VIN type you selected can be made into a pair.

New data pairs are created simply by scrolling either the bottom or top display parameter, while the other display 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 below. Pressing **F1** causes the bottom display parameter to be fixed, as shown in Figure B. To *unfix* the top parameter, press **F1** again. Press **F0** to *unfix* the lower parameter. The tester won't allow both top and bottom parameters to be fixed at the same time.

As an example, let's say you wish to create a pair with OIL PRESSURE and VEHICLE SPEED. To do so, scroll through the pre-programmed pairs with the **YES** or **NO** key until you find a pair with OIL PRESSURE. Fix Oil Pressure by pressing **F0** if OIL PRESSURE 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 *Vehicle Speed* is displayed.

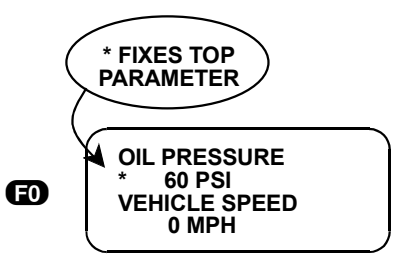


FIGURE A

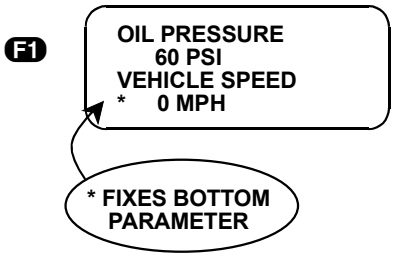


FIGURE B

MODE F1: SDL MONITOR

The purpose of the SDL MONITOR mode is to passively monitor data which is being transmitted on the serial data link between the vehicle's components during normal operation. The operator can evaluate the data to see if it is correct, or at least reasonable, such as the data the IPC sends to the BCM, or data the ECM sends to the BCM.

To use SDL Monitor mode, do the following:

1. After selecting the system to test, select SDL MONITOR from the *Select Mode* menu by pressing **F1**.

   If you are testing a 1988-93 Oldsmobile E-Car, you are asked to select the type of display you wish to test.

2. Select the data link to be monitored from the *Select SDL Mode* menu.

Which of the following you can choose depends on the model of the car you are testing.

F0:	ECM to BCM	**F3:**	ECCP to BCM1
F1:	BCM to ECM	**F4:**	ECCP to BCM
F2:	BCM to IPC	**F4:**	BCM to ECCP
F2:	BCM1 to IPC	**F4:**	CRTC to BCM
F2:	IPC to BCM	**F5:**	BCM to HUAC
F3:	BCM to IPC	**F5:**	BCM to CTRC
F3:	BCM 2 to IPC	**F5:**	BCM to CCDIC

When a link has been selected, *Waiting for Data* is displayed, then the first pair of data parameters is displayed. Press the **YES** or **NO** key to scroll through all of the parameters available for the vehicle DLC message you selected.

3. If communications messages become intermittent or absent, the parameters start flashing on the display. In this case you should:
   - Verify that the ignition is in the ON position.
   - Exit and reenter selected monitor mode.
   - Check the connection to the DLC.
   - Verify parameters are still updating. Communication may be intermittent, but still useful.

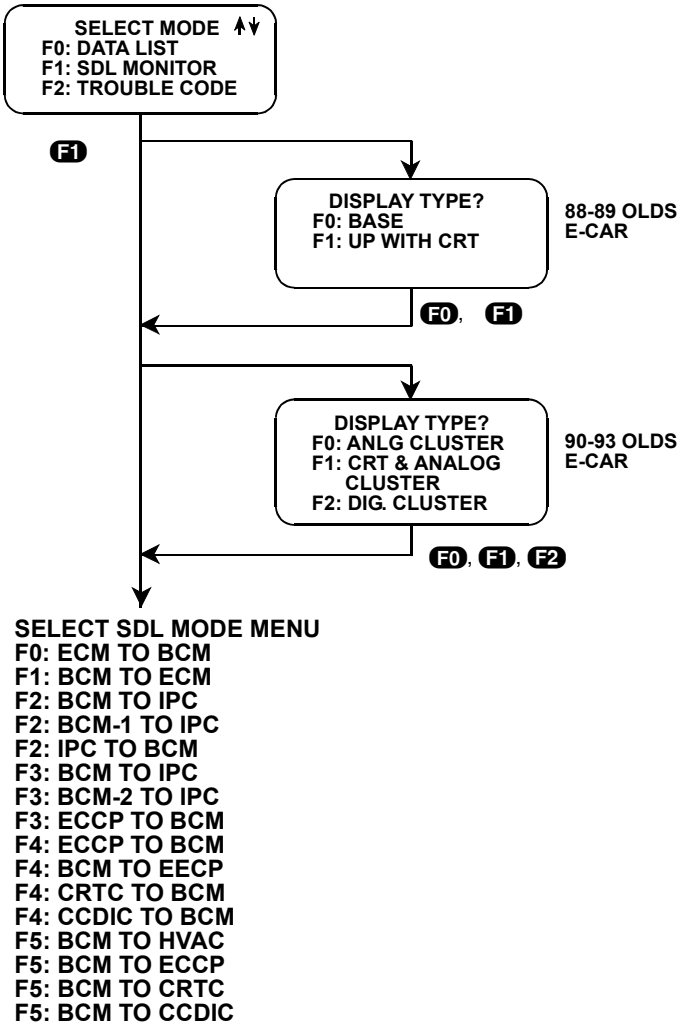


FIGURE 5-2. SDL Monitor

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
↑	Scroll the menu displays.
↓	Turn off automatic menu scrolling.
F0 - F2	Select *Instrument Panel Display Type* for 1988-98 Olds E-cars.
F0 - F5	Select *SDL Monitor* links.
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.
F7	Toggle between English and metric.
EXIT	Return to previous menu.

MODE F2: DTC(S)

Trouble codes or Diagnostic Trouble Codes (DTC) are set when an abnormal condition is detected by the system ECU. They are key to diagnosing many of the problems which can occur in the vehicle. You should refer to the GM service manual for additional information regarding trouble codes.

Trouble codes can be displayed and cleared. Fix or examine the indicated problem, clear the code, then see if it resets immediately or after a few drive cycles.

If F2: TROUBLE CODES/DTC is selected and there are no stored trouble codes for the system you are testing, the tester informs you that there are no trouble codes.

When F2: TROUBLE CODES/DTC is selected and trouble codes have been indicated by the system ECU, the tester asks if you want to clear 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 displays 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)*.

You can use the *TROUBLE CODE/DTC* mode to display trouble codes which have been set by the vehicle. You can also use the *TROUBLE CODE/DTC* mode to clear the codes set by the System ECU after the codes have been displayed. If a current code problem still exists, the code are reset by the system.

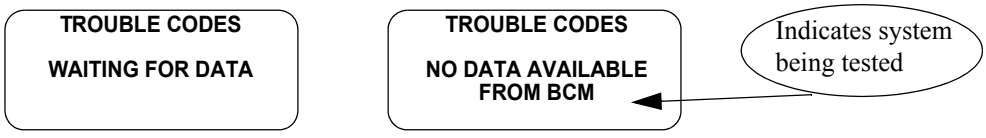
NOTE

On 1990 E-Cars, Code B552 *BCM Keep Alive Memory Failure* is sometimes set by the tester when clearing codes. On 1991-93 C-Body Oldsmobile, the DIC may set a code 54 when the tester is testing the RAC. Therefore, you should check for trouble codes at the start and end of the testing. If there are codes set at the end of testing but not at the start, it is assumed that they are caused by the tester and should be ignored.

To read Diagnostic Trouble Codes, do the following:

1. Select TROUBLE CODES/DTC mode by pressing F2.

   If the vehicle fails to respond to the tester within 3 seconds, the tester displays the following:



2. Under these conditions you should:
   - Verify that the vehicle's ignition is in the ON position.
   - Check the connection to the DLC.
   - Reselect the system and retry.

   If this message persists, you should check for a shorted or open serial data link or a faulty System ECU.

   Once data has been received, the tester displays each code for 3 seconds.

3. If you want to freeze the display, press the ↓ key. Pressing ↑ causes the tester to sequence to the next code.

   The tester displays trouble codes followed by a brief description of the code.

   Certain body 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 doesn't differentiate between current or history trouble codes.

   All codes are continually displayed until the EXIT key is pressed.

To clear Diagnostic Trouble Codes, do the following:

4. Press the EXIT key.

   The tester prompts you to *CLEAR CODES*.

5. Press NO to leave the *TROUBLE CODE/DTC* mode.

   If you press YES the tester prompts you with the following message: *History Codes Will be Lost Continue?*.

6. Press YES again to make the tester clear both current and history codes from the system you have selected.

7. If the *Code Clear Fail* message is displayed, re-enter the *TROUBLE CODE/DTC* mode and try to clear codes again.

   If it fails again, then you probably have an intermittent connection to the serial data link (SDL). It is also possible that the ECU is malfunctioning.

ACTIVE KEYS	
YES , NO	Used to determine if codes are to be cleared.
↓	Freeze the display of the latest trouble code.
↑	Display the next trouble code.
EXIT	Terminate trouble code scrolling. Terminate trouble code display.

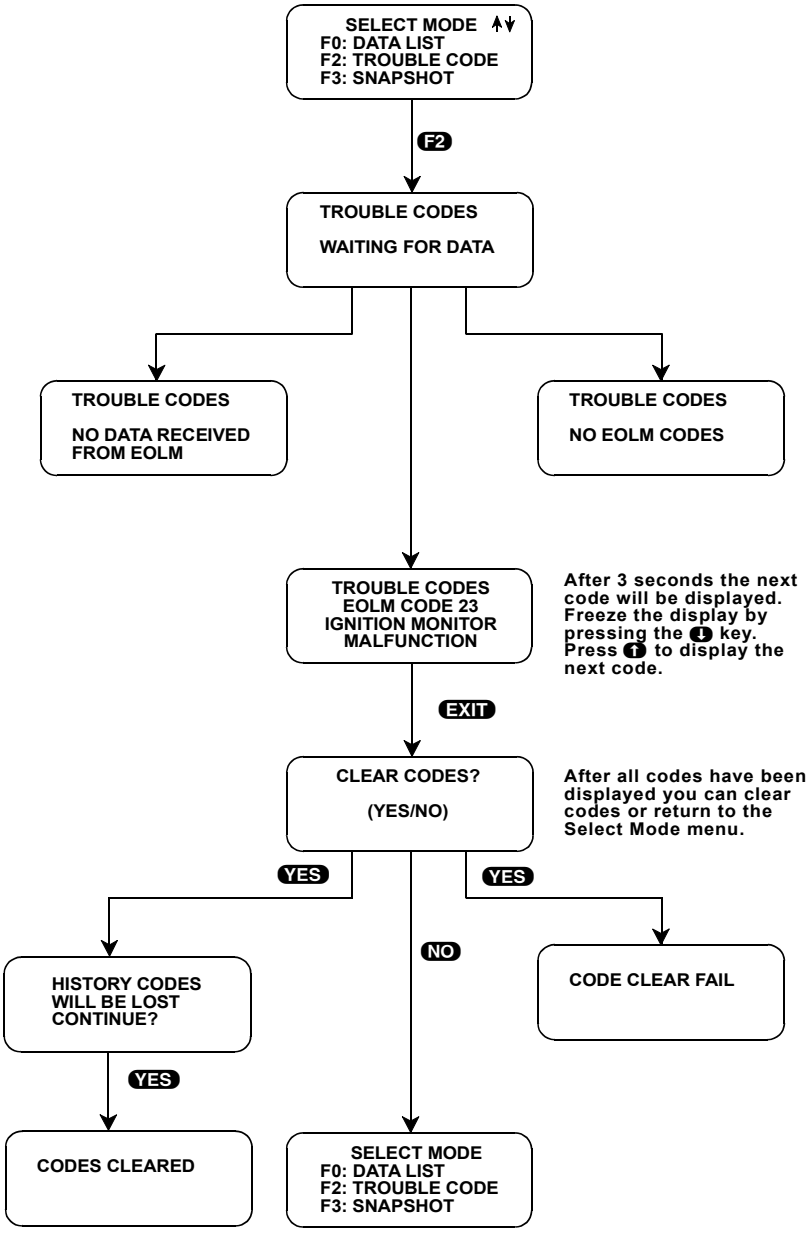


FIGURE 5-3. Example of Reading and Clearing EOLM Trouble Codes

MODE F3: SNAPSHOT

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

When the tester is operating in SNAPSHOT mode, it continually stores information about data parameters and trouble codes. A time and position index for the stored information is also saved.

The tester stores all of the Data List parameters and trouble codes for the vehicle selected. It can store from 56 to over 999 data samples, depending on the system being tested. Each snapshot erases the previously stored information and records all new information.

BODY SYSTEMS THAT SUPPORT SNAPSHOT FUNCTION						
RFA	CCP	EOLM	BCM	IPC	ACM	HVAC
PHN	RAC	CCM	IRC	E&C	DIC	SIR

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 trouble code is detected, it causes the trigger to occur.

- SINGLE CODE:

  You can select a specific trouble code that causes the trigger to occur.

- MANUAL TRIGGER:

  While operating the SNAPSHOT mode, you can always cause the trigger to occur by pressing the, ENTER, EXIT, or F9 keys.

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

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. This can be:

- Data that occurs before the trigger
- Data that occurs after the trigger
- Data that occurs both before *and* after the trigger

If no trigger point is selected, the center trigger point is used and a similar number of data samples before and after the trigger are saved.

Viewing Captured Data

You have the option of bypassing the Data Capture phase and displaying previously captured data. To do this, select F0:REPLAY DATA from the *Snapshot* menu. All data captured during SNAPSHOT is retained in the tester until it is overwritten by a new SNAPSHOT, or if the tester is unplugged from the cigarette lighter for more than 12 hours.

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 the following message for four seconds (or until the EXIT key is pressed):

Printing Captured Data

The Body Systems Cartridge has the capability to print the captured data, providing a hard copy of any selected data sample.

NOTE

If you are using a Tech 1, the tester RS232C I/F Cartridge Kit (P/N 01001151) is required to support the print function.

The operation of *SNAPSHOT* mode is divided into three phases:

- Set-Up Phase
- Data Capture Phase
- Data Display Phase

To run Snapshot Set-Up Phase, do the following:

1. Select the SNAPSHOT mode from the *Test Mode* menu by pressing F3.

   The trigger conditions and Replay Data options are displayed in a self-scrolling *Snapshot Mode* menu.

2. To select a trigger option, press the function key displayed to the left of the desired trigger condition. To replay previously captured data, press F0.

   For some systems, you can choose to trigger on the trouble code that occurs or a specific system trouble code for the trigger condition as explained below. When current and history codes exist for a system, current codes are used to trigger.

3. To trigger on the first trouble code that occurs while taking a snapshot, press F3.

4. To select the single code trigger, press F4 to enter the code you want to use as a trigger.

5. When the tester screen displays *SNAPSHOT MODE, ENTER "SYSTEM" CODE:, xx* or *ENTER DTC XXXX*, use numeric keys 0 - 9 to enter the two, three, or four digit trouble code number that you have selected.

6. If the code is a three or four digit code preceded by the letter B or F, skip the letter and enter the numerical code only. The tester automatically enters the letter.

7. 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 you enter does not exist for the system being tested, an *INVALID CODE* message is displayed and the code has to be reentered.

   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*.

   If a trigger position is not selected, the center position is automatically used.

   - 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.

   - 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 is 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.

Snapshot Set-Up Phase

To select Trigger Condition or display previously captured data, do the following:

1. Press the function key to the left of the desired trigger condition.
2. To bypass the Data Capture phase and review previously captured data, press F0: REPLAY DATA.

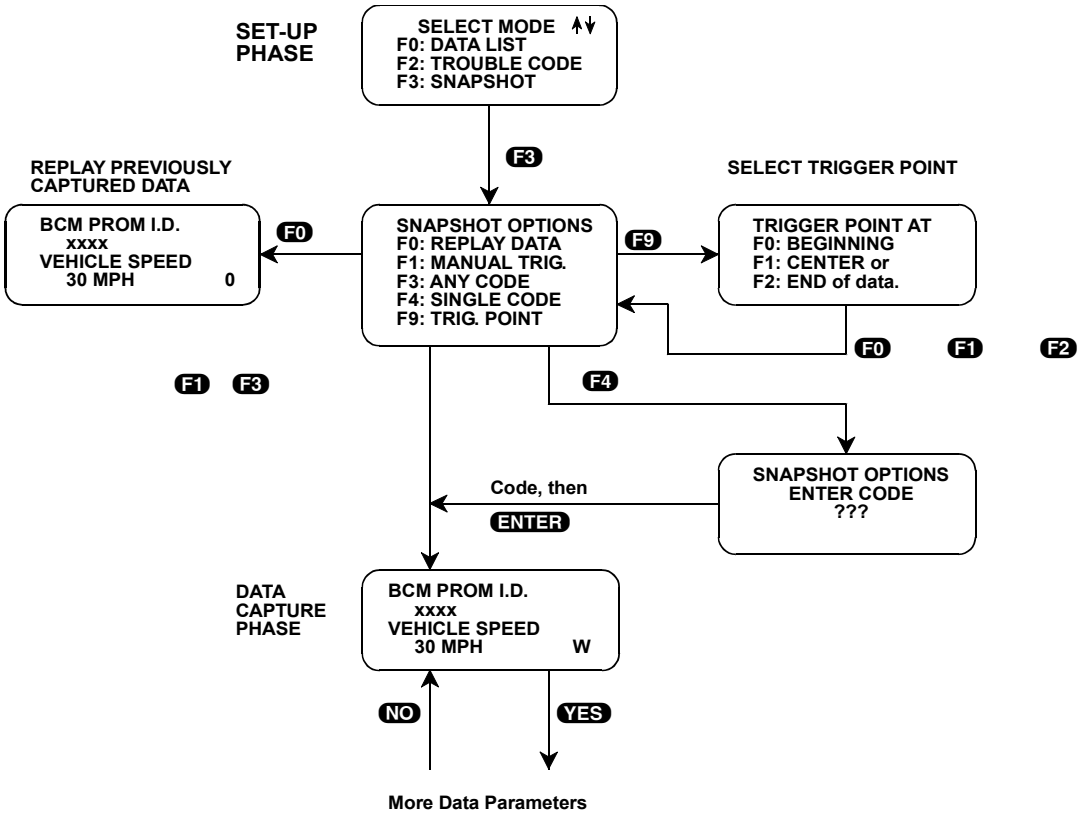


FIGURE 5-4. Snapshot Setup Phase Flow

ACTIVE KEYS IN THE SNAPSHOT SET-UP PHASE	
EXIT	Return to test mode menu.
F1 - F4	Select trigger condition or trigger point.
F0	Select Replay Data.
0 - 9	Select specific diagnostic trouble codes.
ENTER	Enter selected diagnostic trouble code.

Data Capture Phase

Once the trigger condition is specified, the tester begins storing data parameters and trouble codes while displaying the Data List parameters.

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 when the trouble codes are in the same message as the snapshot data. The data display indicates the *waiting for trigger* condition with a flashing *W* in the lower right-hand corner of the display.

If you don't wish to wait for the selected trigger, you can always force a trigger.

To force a trigger, do one of the following:

- Press F9
- Press EXIT, or
- Press ENTER.

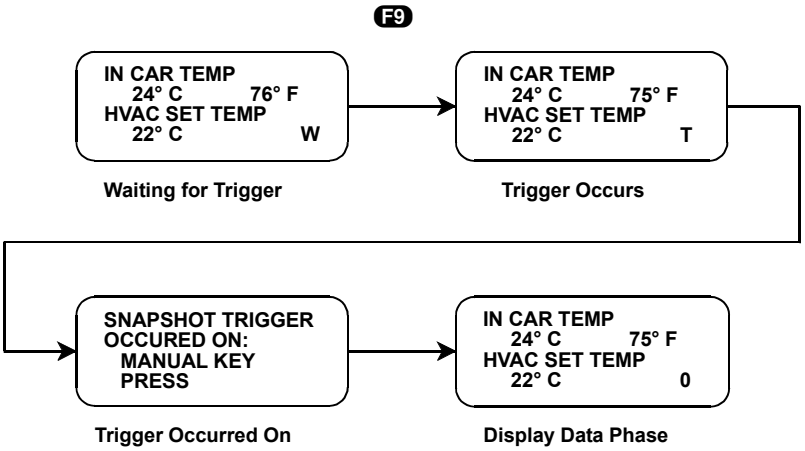


FIGURE 5-5. Data Capture Phase Flow

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.

After the data capture terminates, the tester briefly displays the cause of the trigger. You can also see this display by pressing F3 in the *Data Display* Phase.

To terminate the *Data Capture* phase early, do the following:

- Press EXIT.

  The *SNAPSHOT* mode moves to the *Data Display* phase.

ACTIVE KEYS IN THE SNAPSHOT DATA CAPTURE PHASE	
F9	Manual trigger.
ENTER	Manual trigger.
EXIT	Manual trigger, or Display captured data if trigger has already occurred.

Data Display Phase

The Data Display phase is indicated with a number (initially zero) in the lower right hand corner of the display.

To select the data parameters to be displayed, do the following:

- Press the YES and NO keys.

To select the desired sample, do the following:

- Press the ↑ and ↓ keys.

  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. The index range also varies between systems, due to different message lengths. Take care that a lower parameter you are reading is not being overwritten by the sample date/time.

To view an obstructed parameter, do the following:

1. Freeze a lower parameter which is not the desired parameter with F1.
2. Then scroll with YES or NO until the desired parameter is in the upper parameter location on the tester display.

The Body Systems Cartridge allows you to advance directly to the first, last, or trigger sample with the press of a button, as shown in the following table.

ACTIVE KEYS	
F4	Display first (earliest) sample.
F5	Display trigger sample (0).
F6	Display last (most recent) sample.

To toggle between the sample index and sample time while in the *Data Display* phase, do the following:

- Press ENTER.

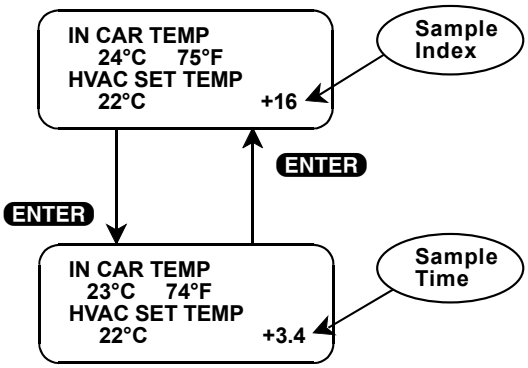


FIGURE 5-6. Toggling Between Sample Index and Sample Time

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.

If you are using a Tech 1, the currently displayed *Data List* may be printed if the tester is equipped with an RS232C I/F Cartridge Kit (P/N 01001151) connected to a compatible printer.

To print the data, do the following:

- Press F8 .

  While the RS232C Cartridge is sending data to the printer, the tester keyboard is disabled.

> **WARNING!**
>
> 
>
> Do not plug in the RS232C Cartridge with the tester on.

To print the currently displayed data list from a Tech 1A or MTS 3100, do the following:

1. Connect to a compatible printer.
2. Press the F8 key.

SNAPSHOT data can also be printed in a tabular format using the RS232C Cartridge's SCREEN PRINT feature. This is enabled (for Tech 1, the RS232 Cartridge must be installed).

To print Snapshot data in tabular format, do the following:

1. Press F6 for approximately 1 second until an *RS232 Setup* menu is displayed.
2. Press F1 to enable the SCREEN PRINT function.

To return to the Trigger Select menu, do the following:

- Press EXIT to return to the *Trigger Select* menu. If you are finished with the *SNAPSHOT* mode, press EXIT again to return to the *Test Mode* menu.

ACTIVE KEYS IN SNAPSHOT DATA DISPLAY PHASE	
YES , NO	Scroll through displayed data parameters.
↑ , NO	Scroll through selected samples.
F0 , F1	Fix top or bottom display parameter respectively.
F2	Display diagnostic trouble codes for current sample.
F3	Displays cause of trigger.
F4	Advance to first (earliest) sample.
F5	Advance to trigger sample (sample 0).
F6	Advance to last (most recent0 sample.
F7	Toggle between English and Metric values.
F8	Print current data sample (if equipped with RS232C I/F cartridge and printer).
ENTER	Toggle between sample index and sample time display.
EXIT	Return to trigger select.

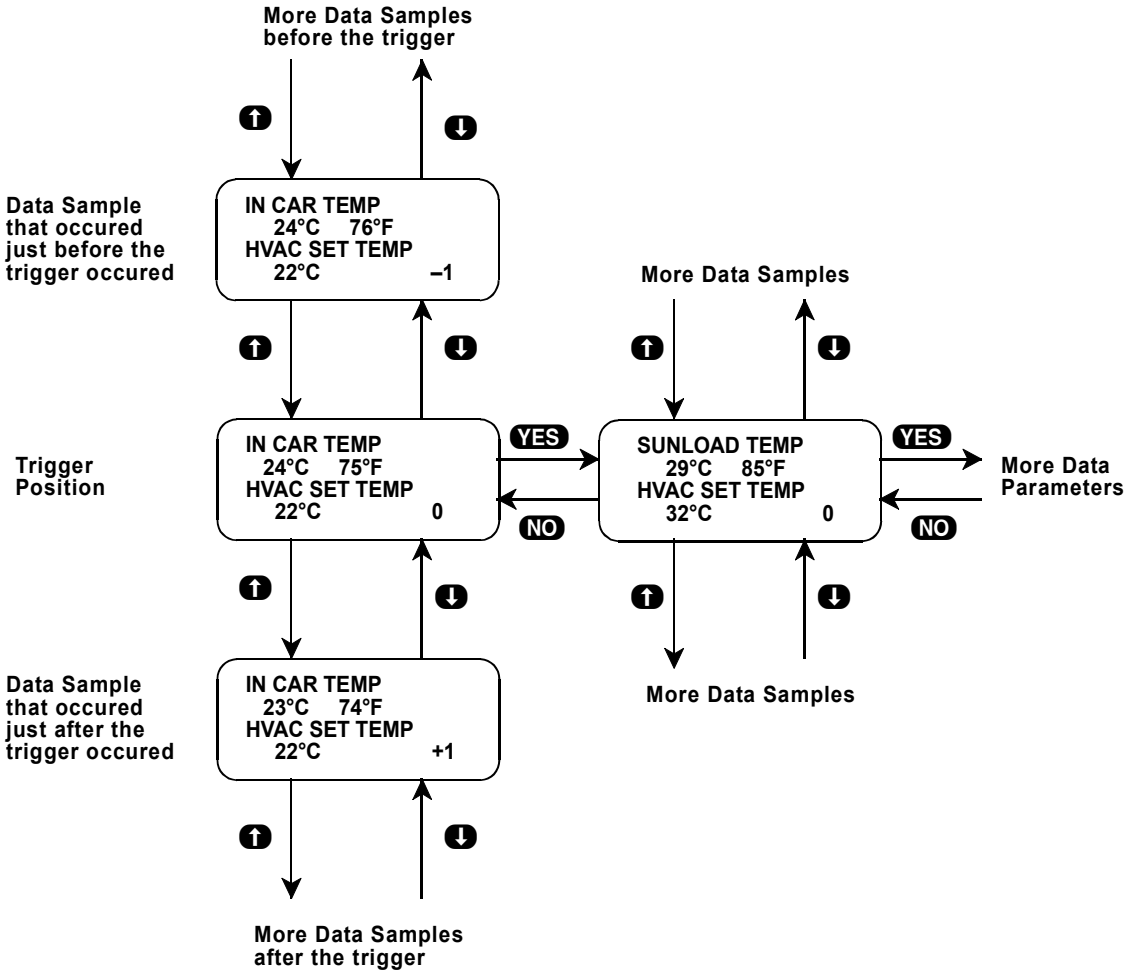


FIGURE 5-7. Data Display Phase

Class 2 Snapshot-Data Display Phase

Snapshot data from a Class 2 system can be displayed before entering the Body Systems Application software. If a Snapshot is saved in memory, the tester displays the following screen, asking if you would like to replay the snapshot before entering the vehicle selection process.

If you select NO, the tester continues and allow you to select the model year and body VIN. You can continue testing as normal; however, if you choose YES, the tester displays the saved snapshot:

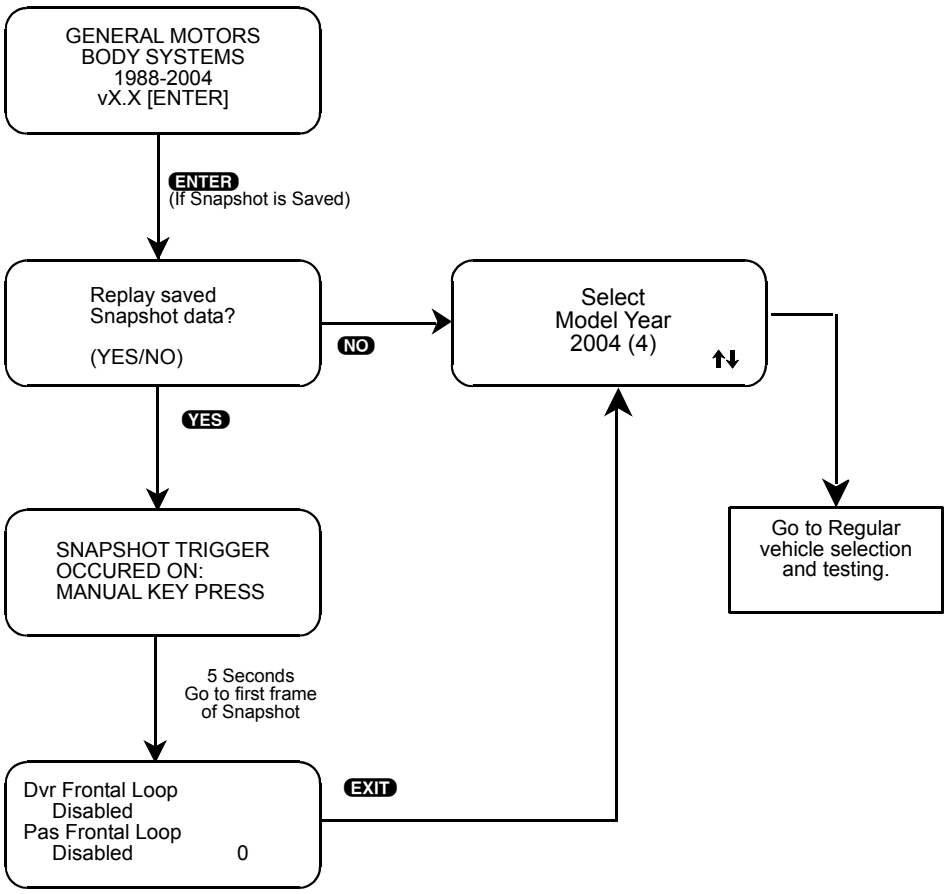


FIGURE 5-8. Snapshot Class 2 Data Display Phase

MODE F8: INFORMATION

The purpose of the *Information* test mode is to supply additional information about the vehicle or system under test. Information test mode includes.

- System Status
- System Identification
- Calibration Identification

NOTE

Not all Body Systems have the F8: Information option available.

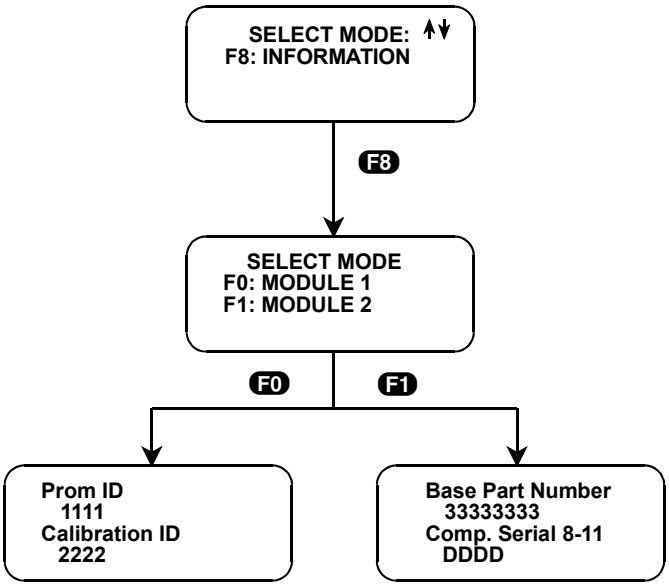


FIGURE 5-9. Information Test Mode

ACTIVE KEYS	
F8	Select *Information* from the *Select Mode* menu.
F0 , F1	Select the information type from the *Select Datalist* menu.
YES , NO	Scroll through the *Datalist.*
EXIT	Return to the *Select Datalist* menu.

SYSTEM TEST MODES

AIR CONDITIONING MODULE (ACM)

The ACM provides the controls for temperature regulation. It controls an actuator that adjusts the air mix valve position to blend cold and warm air. The motor is reversible and moves a rotary shaft, which drives the air mix valve link. The motor also provides a position sensor signal to monitor the actual valve position.

The ACM responds to operate the four vacuum solenoids that control vacuum to the various actuators which control the following:

- Air inlet (re-circulation) valve
- A/C Defrost valve
- Up/Down valve

In addition, the ACM controls the Park Brake release actuator. The PCM sends a Class 2 message to the ACM. This message is sent when the transmission is shifted out of Park or Neutral.

The ACM tests allow you to check or correct several ACM circuits. Tests include those for components such as High/Low cooling fans, various solenoids, Park Brake release operation, and Upper/Lower motor operations.

Mode F4: OBD Controls

To run the ACM tests, do the following:

1. Select F4: OBD CONTROLS from the *Select Mode* menu.
2. From the *Select Control* menu, choose from the following test menus:

F0:	**Solenoids**	F1:	**Misc tests**
	F0: Recirc. Sol		F0: Park brk rel
	F1: A/C def. Sol		F1: Outside tmp
	F2: Air Up Sol		F2:Upper motor
	F3: Air Dn Sol		F3: Lower motor
			F4: Blower speed

3. When you press a test key, the corresponding ACM data is displayed. Use the ↑ and ↓ arrow keys to turn components On and Off
4. Press EXIT to return to the *Select Control* menu. When you are finished with the ACM tests, press EXIT again to return to the *Select Mode* menu.

CENTRAL CONTROL MODULE (CCM)

The Central Control Module (CCM) Tests allow you to check or correct several CCM circuits by isolating a function to control. The types of functions controlled are telltale lamps, relays, and dimming control. All of the tests are operated the same way.

Mode F4: CCM Tests (1990-93 Y-Body Chevrolet Corvette and 1993 D-Body Cadillac Fleetwood)

Mode F4: OBD Controls (1994-96 Y-Body Corvette and 1994-1996 D-Body Cadillac Fleetwood)

To run the Mode F4: CCM tests or F4: OBD Controls tests, do the following:

1. Select F4: CCM TESTS or F4: OBD Controls from the *Select Mode* Menu
2. Select the desired test.

   Example test menus are listed below:

F0: TT/LAMPS	
F1:	CHANGE OIL
F2:	CHECK GAUGES
F3:	SEATBELT
F4:	SECURITY
F5:	OIL LEVEL

F2: CHIMES	
F1:	CHIME 1
F2:	CHIME 2

F1: RELAYS	
F1	HORN
F2	REAR DEFOG
F3	COURTESY

F3: DIMMING	
F1:	GAUGES
F2:	SPEEDO
F3:	RADIO

   When the test key is pressed, the CCM data list is displayed with a three character abbreviation of the test selected at the end of line 2. The bottom right corner shows three different options: 1) the ↑ and ↓ arrows 2) “ON” or 3) “OFF”. The ↑ and ↓ arrows indicate the keys to use in controlling the selected test. There are only two states, activated or deactivated, except that when first selected, there is no overriding state selected yet.

3. Press EXIT to return to the *CCM Test*s menu.
4. When you are finished with the CCM Tests, press EXIT to return to the *Select Mode* menu.

ACTIVE KEYS	
F0 - F5	Select Test to perform.
↑ , ↓	Used to control lamp, relay or dimming control.
EXIT	Return to *Select Mode* menu.

Mode F5: VIN and Option Content

The VIN and Option Content mode is available on certain CCM, BCM, and IPC systems. It reads the VIN and, if available, the vehicle's options, such as type of gasoline, destination country of the vehicle, features available, and other qualities of the vehicle that do not change. These parameters are stored in the EEPROM of the particular control system.

To use VIN and Option Content Mode, do the following:

1. Press F5 to select the *VIN & OPTION CONTENT* mode from the *Select Mode* menu.

   Parameters containing information specific to the vehicle being tested are displayed.

2. Use the YES and NO keys to scroll through the parameters. You can create your own data pairs as explained in the *F0: DATA LIST* section.
3. Press EXIT to return to the *Select Mode* menu.

BODY CONTROL MODULE (BCM)

BCM tests are available for the 1988-93 Buick E-car, 1988-91 Cadillac E- and K-cars, 1988-93 Oldsmobile E-car, and 1990-93 Cadillac C-car vehicles.

NOTE

During BCM control key presses, NO DATA FROM BCM may be displayed briefly. Communication reestablishes automatically within a few seconds.

Mode F4: BCM TESTS

To run the BCM tests, do the following:

1. Select **F4: BCM TESTS** from the *Select Mode* menu.
2. Select the desired control function from the BCM Tests Selection menus below:

OLDSMOBILE BCM TESTS MENU	
F0: MIX DOOR MAXIMUM	Step 3a
F1: A/C CLUTCH	Step 3a
F2: CHIMES	
F1: CHIME 1	Step 3a
F2: CHIME 2	Step 3a
F3: FOG LAMPS	Step 3a
F4: COURTESY LAMP	Step 3a
F5: GENERATOR TERMINAL	Step 3a
BUICK BCM TEST MENUS	
F0: OUTPUTS	
F0: MIX DOOR MAXIMUM	Step 3a
F1: A/C CLUTCH	Step 3a
F2: CHIMES	
F1: CHIME 1	Step 3a
F2: CHIME 2	Step 3a
F3: LAMPS	
F0: HEAD LAMPS *	Step 3a
F1: HI/LO BEAMS	Step 3a
F2: TWILIT/PARK^	Step 3a
F3: DRL RELAY	Step 3a
F4: FOG LAMPS	Step 3a
F5: COURTESY LAMP	Step 3a
F4: DAB RELAY	Step 3a
F5: GENERATOR I TERMINAL	Step 3a
F1: OVERRIDES	Step 3a
F0: BLOWER PULSE WIDTH MODULATION	Step 3b
F1: VACUUM FLORESCENT DIMMING	Step 3c
* Reatta only ^Riviera only	

3. When the test is selected, the corresponding BCM data list parameter is displayed. A three-character abbreviation at the end of line 2 indicates the test selected. The Output Tests have only two states; activated or deactivated. The Override Tests have variable control. Press the ↑ key to turn the output ON or increase the Override level, and press the ↓ key to turn the output OFF or decrease the Override level.

ABBREVIATIONS FOR OUTPUTS AND OVERRIDES					
MXD	=	Mix Door Maximum	A/C	=	A/C Clutch
CH1	=	Chime 1	CH2	=	Chime 2
FLR	=	Fog Lamps Relay	LMP	=	Courtesy Lamp
GEN	=	Generator 1 Terminal	HDL	=	Head Lamps
H/L	=	HI/LO Beams	TPL	=	Twilight/Park Lamps
DRL	=	Daytime Running Lamps Relay	DAB	=	Delayed Accessory Bus Relay
BPW	=	Blower Pulse Width	VFD	=	Vacuum Florescent Dimming

a. The functions listed under “F0: OUTPUTS” are all two state functions, typically *enabled* and *disabled*, *on* and *off*, *activated* or *deactivated*. They are controlled by the ↑ and ↓ keys. The ↑ key usually activates the function and the ↓ key deactivates it. The state of the control is shown in the lower right corner as ON or OFF. When first entering the test, up and down arrows are displayed here. This indicates the keys to use, and also indicates controlling has not begun yet.

b. The Blower PWM has eight control positions. One is Blower off, and the other are the seven vehicle blower speeds. Control begins with the setting on the medium blower speed. The ↑ key increases blower speed, and the ↓ key decreases blower speed with each keypress until the blower is turned off. The Data List parameter *BLOWER COMMAND* updates the new voltage control level of the blower with each control keypress.

c. The Vacuum Florescent Dimming function increases or decreases brightness by 10% with each ↑ or ↓ keypress. The data list parameter VF DIMMING updates the percent brightness with each control keypress.

4. Press EXIT to return to the BCM *Tests* menu. When you are finished with the BCM Tests, press EXIT to return to the *Select Mode* menu.

Mode F5: VIN and Option Content

The *VIN and Option Content* mode is available on certain CCM, BCM, and IPC systems. It reads the VIN and, if available, the vehicle's options, such as type of gasoline, destination country of the vehicle, features available and other qualities of the vehicle that do not change. These parameters are stored in the EEPROM of the particular control system. Definitions for VIN and Option Content parameters are found in Appendix B

To use VIN and Option Content Mode, do the following:

1. Press F5 to select the *VIN & OPTION CONTENT* mode from the *Select Mode* menu.

   Parameters containing information specific to the vehicle being tested are displayed.

2. Use the YES and NO keys to scroll through the parameters. You can create your own data pairs as explained in *Mode F0: DATA LIST*.

3. Press EXIT to return to the *Select Mode* menu.

INSTRUMENT PANEL CLUSTER (IPC)

Instrument Panel Cluster (IPC) tests are available on 1988-91 Buick W-car, 1988-91 Oldsmobile W-car, 1988-91 Pontiac W-car, 1992-96 Cadillac E/K-car, 1995-96 Buick G-car, 1995-96 Chevrolet J-car, 1995-96 Oldsmobile G-car, 1995-96 Pontiac J-car, 1996 Buick N-car, 1996 Pontiac N-car, and 1996 Oldsmobile N-car vehicles.

The IPC has only one IPC Test, Vacuum Florescent Dimming.

Mode F4: IPC Tests

To perform the IPC Tests, do the following:

1. Select *F4: IPC TESTS* from the *Select Mode* menu.
2. To display the *VF DIMMING* parameter, press F4.
3. Use the ↑ key to increase the brightness by 10% or the ↓ key to decrease the brightness by 10%.

   The tester displays the current percent of brightness with each keypress.
4. Press EXIT to return to the *IPC Tests* menu.
5. When you are finished with the IPC Tests, press EXIT to return to the *Select Mode* menu.

Specific IPC System for 1994-1996 Oldsmobile C/H-Body Applications

These vehicle applications may have one of two IP Cluster options, a Tach IP Cluster or VF Digital display cluster. The IPC TESTS differ for both of these levels of IP clusters. When the user selects the IPC from the *Select System* menu on either of these cluster options, each of the test modes (including F4: IPC Tests) are adjusted by the tester through an option content test when the IPC was selected. The DIC functions for the 1994 C/H vehicles are now an integral function of the IPC when the vehicle is equipped with a FV display cluster and are tested in the F4: IPC TESTS menu selection.

The following IPC TEST selections are available for 1994-96 Oldsmobile C/H-body vehicles.

To run the IPC tests, do the following:

1. Select *IPC TESTS* from the *Select Mode* menu.
2. Select the desired control function from the IPC TEST selection menus below (see notes at the bottom of the following chart for more selection information).

F0: IPC DIMMING
F1: IPC INDICATORS
F0: DIC LEDS*
F0: DIC LEDS*
F1: DATE
F2: OIL
F3: GAUGE
F1: TELLTALES
F1: HOT T/TALE
F2: VOLTS T/TALE
F3: TRAC CTRL OFF
F4: SEATBELT
F5: LOW WASHER**
F6: TRAC CTRL ACT**
F2: CHIMES
F0: FAST CHIME
F1: SLOW CHIME
F3: SEGMENT TEST*
F0: EVEN ROWS
F1: EVEN COLUMNS
F2: ODD ROWS
F3: ODD COLUMNS
F4: EVEN COLUMNS
* These tests are available on DIC equipped vehicles only. ** These tests are not available on DIC equipped vehicles.

Mode F5: VIN and Option Content

The VIN and Option Content mode is available on certain CCM, BCM, and IPC systems. It reads the VIN and, if available, the vehicle's options, such as type of gasoline, destination country of the vehicle, features available, and other qualities of the vehicle that do not change. These parameters are stored in the EEPROM of the particular control system.

To use VIN and Option Content mode, do the following:

1. Press F5 to select the *VIN & OPTION CONTENT* mode from the *Select Mode* menu.

   Parameters containing information specific to the vehicle being tested are displayed.

   Use the YES and NO keys to scroll through the parameters. You can create your own data pairs as explained in Section *F0: DATA LIST*.

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

LOW TIRE PRESSURE WARNING SYSTEM (LTPWS)

The *Flash Codes* test allows you to flash *Low Tire Pressure Warning System (LTPWS)* trouble codes on the dashboard LTPWS telltale lamp. The *Clear Codes* test allows you to clear any LTPWS trouble codes that are present. Refer to the LTPWS Service Manual, Section 3E, to interpret the codes.

When you enter *Mode F2* you see the *Flash Codes* described in this section.

NOTE

The F0:Flash Codes/F1: Clear Codes test is available for 1991-96 Y-Body vehicles only

Mode F0: Flash Codes

Mode F1: Clear Codes

To run the tests, do the following:

1. Select the LTPWS from the 1991-1996 Y-Body *Select System* menu by pressing F1 / F5 (depending on the vehicle year).

   You are prompted to *Refer to the LTPWS diagnosis in the Service Manual*.

2. Press ↓ to continue.
3. When the *Select Mode* menu is displayed, press F0 to read flashed codes, or F1 to clear codes.

   You are prompted to *Turn the ignition ON and press the* ENTER *key.*

4. Do not start the engine, just turn the ignition key to run.

   Waiting for ECM ignition is displayed until the tester has detected a message from the ECM to the BCM, indicating that the ignition is on.

   If you selected F0: FLASH CODES, the tester informs you that the codes flash on the Service LTPWS Lamp.

5. Press ENTER to flash trouble codes on the LTPWS warning lamp.

The tester display informs you that *Diagnostic Trouble Code 12* precedes any trouble codes stored.

6. If you selected F1: CLEAR CODES, the tester asks you to press YES to clear codes.
7. Press NO if you do not want to clear any codes.

   While codes are being cleared, *Clearing LTPWS DTC(s)* flashes for 9 seconds. When code clearing is finished, the display is updated.
8. Press ↓ to see the complete message.

NOTE

You must cycle the ignition OFF and ON before the LTPWS lamp turn off. It remains on, without flashing after clearing codes, to indicate that clearing codes has been completed.

9. Press EXIT twice to return to the *Select System* menu.

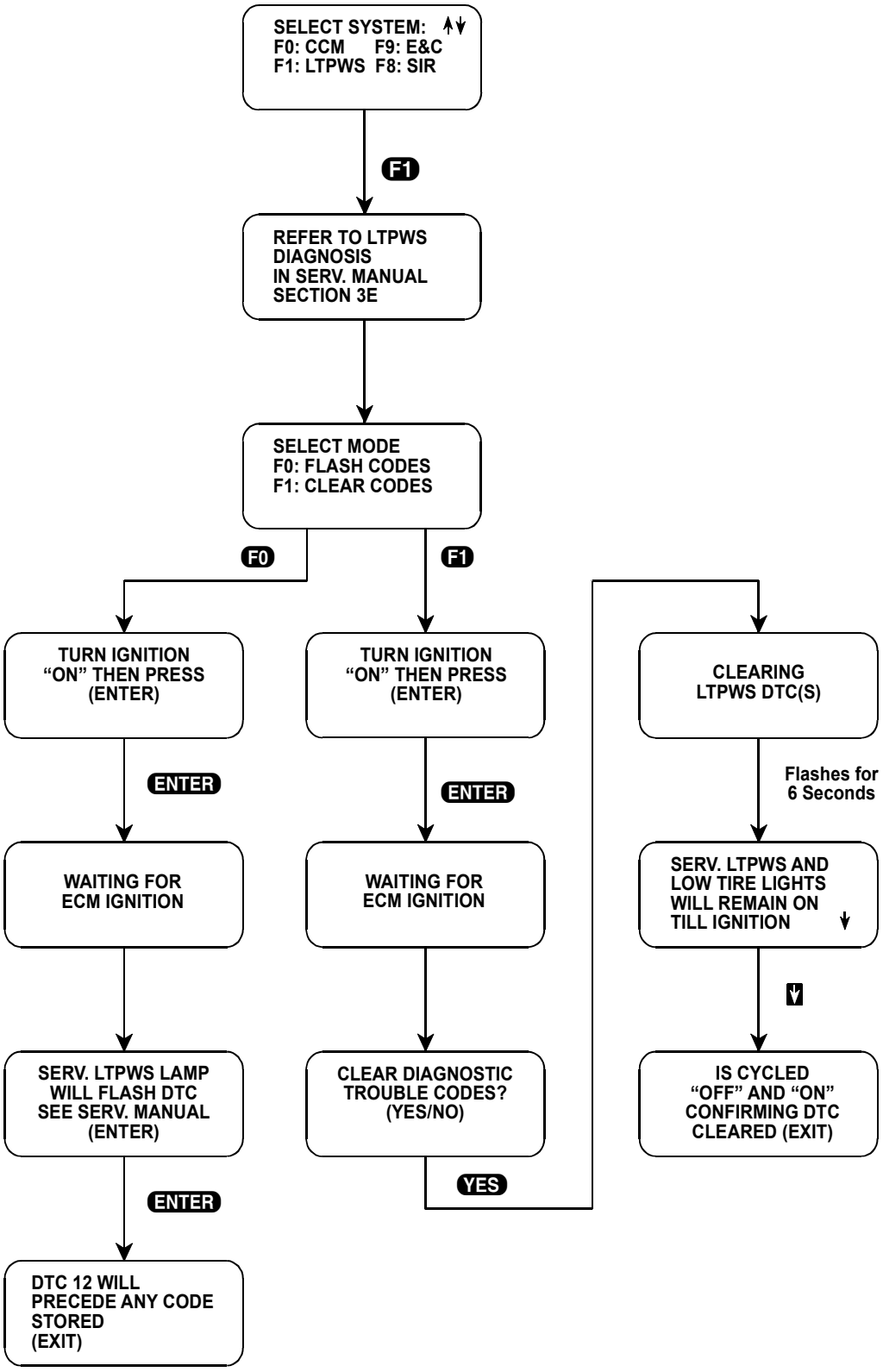


FIGURE 5-10. LTPWS Codes

REMOTE ACCESSORY CONTROL (RAC)

The Remote Accessory Control function allows you to test interior, exterior, and security lamps, as well as exercise relays associated with the RAC system. Also, the tester allows you to program a new key tag identification signal (also known as a Vehicle Access Code) for vehicles equipped with the RAC system.

Vehicles equipped with the RAC system are: 1991-95 Buick C-cars, 1991-95 Oldsmobile C-cars, 1992-95 Pontiac H-bodies, 1995 Buick G-cars, 1994-95 Buick H-cars, 1994-95 Oldsmobile H-cars and 1995 Oldsmobile G-cars.

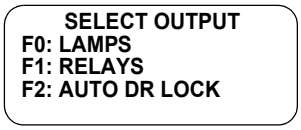
NOTE

The tester can only test RAC Levels 2 and 3.

Mode F4: RAC Tests

To run the Mode F4: RAC Tests, do the following:

1. Select *F4: RAC TESTS* from the *Select Mode* menu.
2. There are three types of RAC tests: Lamps and Relays (see *step 3.*), Programming RAC Key Tags (see *step 4.*), and Automatic Door Locks (see *step 5.*). After a RAC test has been performed, press EXIT to return to the *Select Test* menu.
3. Lamps and Relays



If you choose *F0: OUTPUTS*, a *Select Output* menu is displayed.

a. Press either F0 to test lamps or F1 to test lock relays for the doors and trunk, as well as relays for the horn and *Retained Accessory Power (RAP)*.

A menu of the lamps or relays available for testing is displayed. When the lamp or relay you wish to test has been selected, *Data List* pairs are displayed on the tester screen. At the end of line two an abbreviation indicating the lamp or relay chosen is displayed, and up and down arrows are displayed at the end of line four. Abbreviations for the lamps and relays are listed in the following table.

ABBREVIATIONS FOR LAMPS AND RELAYS

ILP*	=	Interior Lamps	ULC	=	Unlock Door Relay
ELP**	=	Exterior Lamps	TRK	=	Trunk Relay
STT	=	Security Telltale	UDR*	=	Unlock Driver's Door Relay
HRN**	=	Horn	RAP	=	Retained Accessory Power
LOC	=	Lock Door Relay			

* Level III necessary for test
** Level III with Security System necessary for test

b. Use the ↑ key to turn the lamp or relay ON or the ↓ key to turn the lamp or relay OFF. The arrows at the end of line four are replaced by OFF or ON indicating the status of the lamp or relay. The lock relays only stay on for 300 milliseconds so you must press the ↑ key each time you want to see the lock relays operate. The ↑ and ↓ keys turn the horn and RAP ON and OFF respectively.

c. Use the YES and NO keys to scroll through the Data List while testing the lamps and relays. The lamp or relay that you selected as well as its status remain on the tester screen while the Data List is scrolled.

4. Program RAC Key Tags

To program RAC key tags, press F1 from the *RAC Tests* menu. You are instructed to turn off the Level Three Theft Deterrent, if available, before pressing the YES key on the tester.

a. On the new key tag, press any one of the buttons one time, then press the YES key on the tester. All buttons on the key tag are programmed by the single key press, so the other buttons do not need to be pressed.

b. If an optional second key tag is to be programmed, press any button on the second key tag once, then press YES on the tester. If the vehicle does not allow a second keytag to be programmed, just press YES.

c. Now lock and unlock the doors to test the operation of the key tags to be certain the programming was successful. Reprogram the key tag if necessary.

5. Automatic Door Locks (ADL)

a. To test the Automatic Door Locks select F0: OUTPUTS, then select F2: AUTO DR LOCK from the *Select Output* menu.

The status of the AUTO DR LOCK is initially LOCK ONLY. Pressing ↑ changes the state to LOCK and UNLOCK. Pressing the ↓ key returns the status to LOCK ONLY. The current status is indicated on line 2 of the tester display.

6. Key Tags (1994-95 Vehicles)

a. To test the Key tag operation select F0: OUTPUTS then press F3: KEY TAG(S) from the *Select Output* menu.

The tester screen displays *TRANSMITTER 1* on line 1 *and TRANSMITTER 2* on line 3.

b. Momentarily press a button on a key tag, line 2 or 4 to indicate which of the key tags was used and which button on the tag was pressed (be sure to pause 2 to 3 seconds before pressing any other key tag buttons). This indication verifies the signal to the receiver.

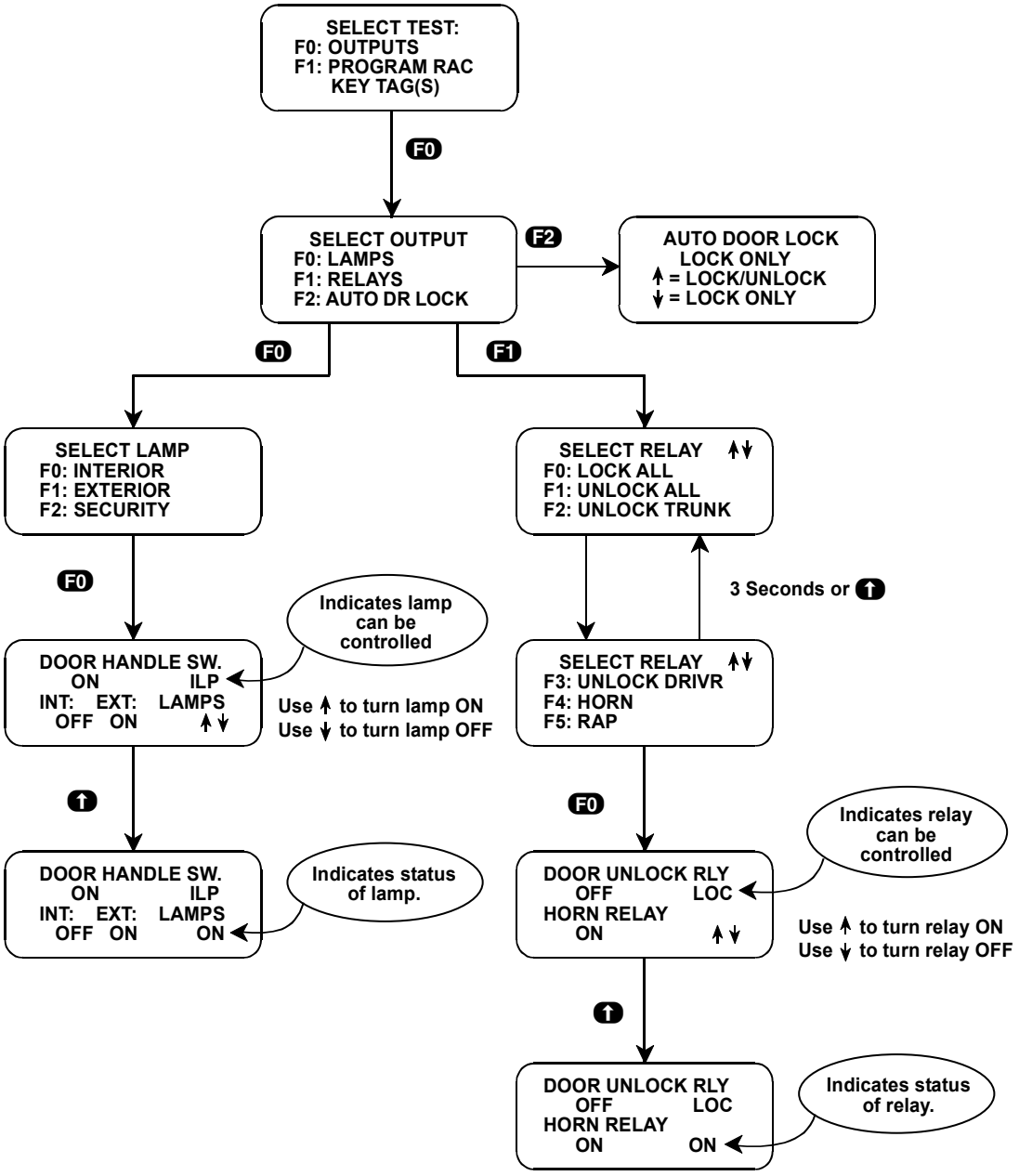


FIGURE 5-11. RAC Tests: Output Tests

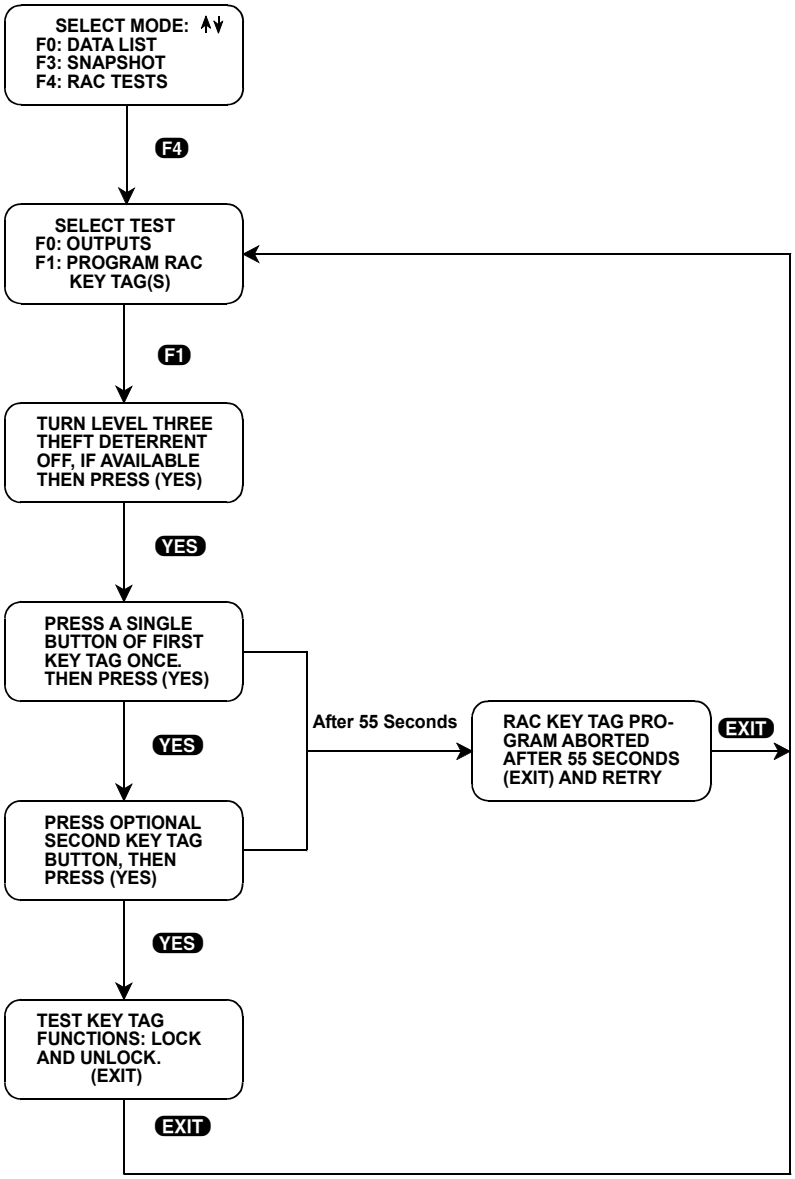


FIGURE 5-12. RAC Tests: Program Key

DRIVER INFORMATION CENTER (DIC)

The Driver Information Center (DIC) is available on 1991-93 C-body Buicks and Oldsmobiles, the 1992-93 H-body Oldsmobiles and 1995-96 G-car Oldsmobiles.

The Driver Information Center supplies many conveniences to the driver from a keyboard modifiable display. The following special DIC test are available with the tester: Dimming Control, Keypress Beep, Chime Tests, Segment Check, Reset Tests, English/Metric Switch and Switch Tests.

Mode F4: DIC TESTS

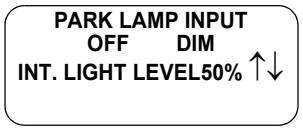
To run the Mode F4: DIC Tests, do the following:

1. Select DIC TESTS from the *Select Mode* menu by pressing F4.
2. Select one of the tests from the following menu:

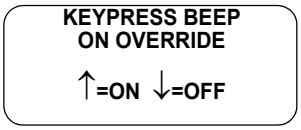
F1: KEY TEST	See *step 7.*
F0: DIMMING CONTROL	See *step 5.*
F1: KEYPRESS BEEP	See *step 6.*
F2: CHIME TESTS	
F0: SLOW CHIME	See *step 6.*
F1: FAST CHIME	See *step 6.*
F3: SEGMENT CHECK	See *step 6.*
F4: RESET TESTS	
F0: TRIP ODO	See *step 6.*
F1: OIL LIFE	See *step 6.*
F5: ENGLISH/METRIC TEST	See *step 4.*
F6: SWITCH TESTS	See *step 7.*

3. After the test is performed, use the EXIT key to stop the test and return to the last *DIC Tests* menu. Refer to the step number indicated in the previous table for specific instructions for each test.
4. The parameter associated with the system selected is displayed first. Scroll the parameters by pressing the YES and NO keys. Press the ↑ key to turn the test on and the ↓ key to turn the test off. The three-character abbreviation at the end of line 2 indicates the test selected. ON or OFF at the end of line 4 indicates the commanded state. An example of the English/Metric Test display is shown in the following illustration.

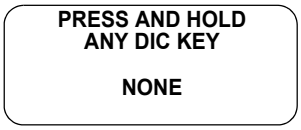
5. *Dimming Control* shows the *Percent Interior Light Level* data list parameter while testing dimming. Control begins at 50%. The ↑ key increases the light level 10% with each keypress. The ↓ key decreases the light level 10% with each keypress.



6. This control method indicates the test name and the control keys to press. The present control state is indicated on line 2 of the tester display. The ↑ key turns the control state on and the ↓ key turns the control state off.



7. The Switch Tests and Key Test decode the state of the DIC function keys. You just hold down the DIC keys, one at a time, and the tester display indicates which key is being depressed. If all keys are decoded correctly, the following keyboard keys are available: NONE, ECON/1, FUEL/2, RANGE/3, SPEED/4, OIL/5, GAGES/6, DEST/7, ETA/8, E/T/9, DT/TM/0, ENTER, and RESET.



8. Press EXIT to return to the *Select Test* menu.

ENGINE OIL LIFE MONITOR (EOLM)

EOLM tests are available for 1991-94 Buick C-body, 1992-94 Buick H-body, 1994 Oldsmobile C-body, 1994 Oldsmobile H-body, and 1994 Pontiac H-body vehicles.

The EOLM Tests function allows you to check the Engine Oil-Life Monitoring telltale system, transfer oil-life data from one EOLM ECU to another, and reset the oil-life data to 20% or 100% remaining oil-life.

Mode F4: EOLM Tests

To run the Mode F4: EOLM tests, do the following:

1. Select F1: *EOLM* from the *Select System* menu.
2. Select *EOLM TESTS* from the *Select Mode* menu by pressing F4.

3. Select the sub-test you wish to perform from the *Select Tests* menu. In the following list, the sub-test indicates the procedure to follow to perform the test.

F0: OIL TELLTALE	See *step 4.*
F1: TRANSFER OIL-LIFE DATA	See *step 5.*
F2: RESET OIL MILEAGE 20%	See *step 6.*
F3: RESET OIL MILEAGE 100%	See *step 6.*

4. Press F0 to check the *Oil Change Telltale Lamp* operation. Use the ↑ key to turn the oil change telltale lamps ON and the ↓ key to turn the oil change telltale lamps OFF.
5. When *F1: TRANSFER OIL-LIFE DATA* is pressed, a sub-menu offers you a choice of getting old *EOLM* data or *XFER (transfer) TO NEW.*

NOTE

The TRANSFER OIL-LIFE DATA function is only used when replacing the EOLM computer. If you have determined that the computer must be replaced, follow the instructions below.

a. Press F0: *GET OLD EOLM DATA* to store engine oil-life data from the old computer. The tester asks you to press the YES key if you want to transfer the data from this *EOLM ECU* to a new *EOLM ECU*.

b. Press YES to continue or EXIT to return to the *EOLM Tests* menu. If you press the YES key, the data from the old *EOLM ECU* is displayed as REVS = *$xxxx and MILEAGE = $yyyy.* Record this value so you can be sure the tester still holds this value when you are ready to transfer it to a new *EOLM ECU*.

$xxxx and $yyyy are numerical hexadecimal values that vary with oil-life.

NOTE

Once EOLM data has been transferred to the tester, using the tester without a cartridge installed or with a cartridge other than the GM Body Systems Cartridge invalidates the EOLM data.

c. Install a new EOLM ECU, then press F1: *TRANSFER OIL-LIFE DATA* to begin the transfer process. If the old EOLM ECU denies access to the old data by the tester, see the vehicle service manual.

FIGURE 5-13. Updates and Oil Transfer screens.

d. Press YES to update oil data. The tester informs you if the engine oil-life data transfer failed. A good transfer displays one of the messages below.

You can check the validity of the transfer data and the data put into the new EOLM by comparing oil revolutions in the *EOLM Data Lis*t function to the *REVS = $XXXX* value in the *Oil-Life Transfer* tests.

6. The F2 and F3 keys enable you to reset the data to 20% or 100% of engine oil-life remaining.

   After you press F2 or F3, the tester asks you to press the YES key if you want the oil-life remaining to be reset to the value displayed on the screen.

   Press YES to accept the new data or EXIT to return to the *Select Tests* menu. The tester informs you if the reset was successful.

7. When you are finished, press EXIT to return to the *Select Mode* menu.

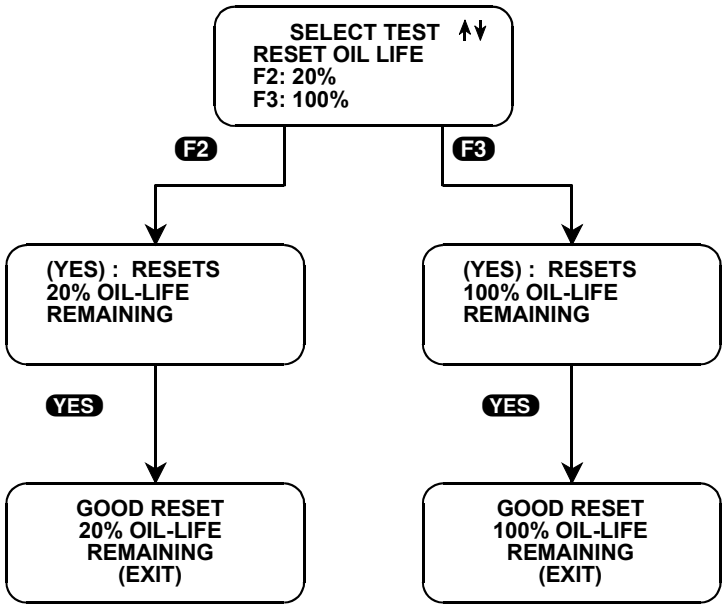


FIGURE 5-14. EOLM Reset Oil Life

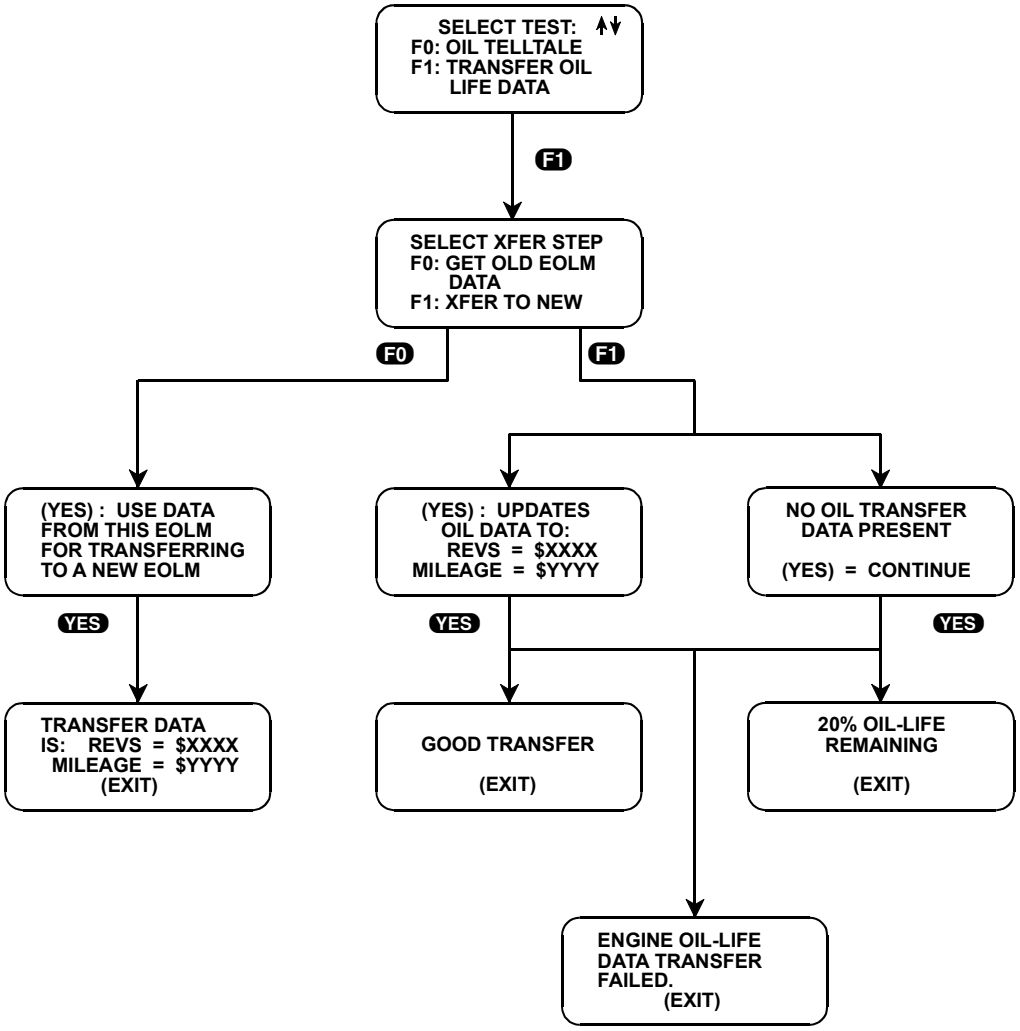


FIGURE 5-15. EOLM Transfer Oil-Life Data

HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

Heating, Ventilation, and Air Conditioning (HVAC) tests are available for single and dual zone systems used in 1992-96 H-body, 1991-96 C-body, 1994-96 D-car, 1994-96 B-car, and 1995-96 G-car vehicles. The tests are identical for both vehicles, except that the single system has one mix door to control and the dual zone has two mix doors.

Mode F4: HVAC Tests

To run the Mode F4: HVAC tests, do the following:

1. Select F4: *HVAC TESTS* from the *Select Mode* menu.
2. Select the desired control function from the following *HVAC TESTS* selection menus:

F0: OUTPUTS
F0: MIX DOOR MAX
F1: MIX DOOR 1
F2: MIX DOOR 2
F1: VACUUM SOLENOIDS
F1: VACUUM SOLENOID 1
F2: VACUUM SOLENOID 2
F3: VACUUM SOLENOID 3
F4: VACUUM SOLENOID 4
F2: A/C CLUTCH
F3: REAR DEFROST*
F1: OVERRIDES
FO: BLOWER PWM
F1: PROGRAM NUMBER**
F1: REAR DEFROST
F2: AMB TEMP**
* This test is located in the *Outputs Selection* menu for some vehicles and *Overrides Selection* menu for other applications. ** These tests are not available for all vehicle model years and/or body types.

3. When the test key is pressed the HVAC data list is displayed with a three character abbreviation of the selected test displayed at the end of line 2. The data list displays the data pair corresponding to the test in progress. The bottom right corner shows three different options: the UP and DOWN arrows, ON or OFF.

   The UP and DOWN arrows indicate that the test is ready to begin. Press the ↑ key to turn the test ON and the ↓ key to turn the test OFF.

The Output Tests have only two states–ACTIVATED or DEACTIVATED. The Override Tests have variable control, but can only be controlled ON or OFF by the tester. The Blower is turned ON to maximum with the ↑ key and OFF with the ↓ key. The Program Number is set to the hottest setting with the ↑ key and coolest with the ↓ key.

ABBREVIATIONS FOR OUTPUTS AND OVERRIDES					
MD1	=	Mix Door 1	MD2	=	Mix Door 2
VS1	=	Vacuum Solenoid 1	VS2	=	Vacuum Solenoid 2
VS3	=	Vacuum Solenoid 3	VS4	=	Vacuum Solenoid 4
A/C	=	Air Conditioner Clutch	RDF	=	Rear Defrost
ARQ	=	Ambient Request	BPW		Blower Pulse Width
PGN		Program Number	AMB		Ambient Temperature Update

4. Press EXIT to return to the *HVAC Tests* menu. When you are finished with the HVAC Tests, press EXIT to return to the *Select Mode* menu.

F4: OBD Controls

While operating controls for HVAC system components, a data list is displayed so the user can monitor all parameters during the operation of a specific control. During most OBD controls, the entire data list is displayed, but a small number of selected controls may display only a screen showing the state of the controlled component. There are three possible states for a component while exercising OBD Controls:

- NONE (N/A) – no command has been issued by the scan tool. This is the default state, and for most controls, it is also the state achieved by pressing EXIT the first time before exiting the control.
- ON – the scan tool turns the component ON or to its maximum limit via the HVAC control module. For example, this could be 100% for the blower motor or 255 (counts) for Mode Door.
- OFF – the scan tool turns the component OFF or to its minimum limit via the HVAC control module. For example, this could be 0% for blower motor or 0 (counts) for Mode Door.

The following controls are available on 1997 through 2002 W-Body Buick passenger cars equipped with Auto HVAC.

- F0: Sol. Tests – Command selected solenoid ON and OFF.
  - F0: Sol 1 – Defog
  - F1: Sol 2 – Heater
  - F2: Sol 3 – Defr/Ht
  - F3: Sol 4 – Air In
  - F4: Sol 5 – A/C Mode
- F1:Misc. Tests
  - F0: Lft Mix Motor – Commands the motor to its maximum/hottest position (ON), or to its minimum/coldest position (OFF).
  - F1: Rt Mix Motor – Commands the motor to its maximum/coldest position (ON), or to its minimum/hottest position (OFF).
  - F2: Blower Motor – Turns the blower motor to full speed (ON), or OFF.
  - F3: Rear Defogger – Commands the Rear Defogger ON or OFF.

The following controls are available on 1998-2001 S/T Light Trucks equipped with Auto HVAC.

NOTE

During Solenoid Tests, the blower motor is disabled.

- F0:Sol. Tests
  - F0: Solenoid 1 – Commands the HVAC ECU to energize (ON) or de-energize (OFF) the defroster solenoid.
  - F1: Solenoid 2 – Commands the HVAC ECU to energize (ON) or de-energize (OFF) the heater solenoid.
  - F2: Solenoid 3 – Commands the HVAC ECU to energize (ON) or de-energize (OFF) the solenoid.
  - F3: Solenoid 4 – Commands the HVAC ECU to energize (ON) or de-energize (OFF) the air inlet solenoid.
  - F4: Solenoid 5 – Commands the HVAC ECU to energize (ON) or de-energize (OFF) the A/C solenoid.
- F1:Misc. Tests
  - F0: Mix Motor – Commands the air temperature actuator towards its maximum/255 counts (ON) or to its minimum/0 counts (OFF).
  - F1: Blower Motor – Controls the blower motor to its maximum speed (ON) or OFF.
  - F2: A/C LED – Turns LED in A/C switch button ON or OFF.
  - F3: Rear Defogger – Commands the Rear Defogger ON or OFF.
  - F4: A/C Request – Issues a request to the PCM to turn the A/C ON or OFF.

The following controls are available on 2000-2002 C/K Light Trucks equipped with Auto HVAC.

- F0: Misc. Tests
  - F0: Inst OAT Updt – The outside air temperature raw input data is updated.
  - F1: Rear Defogger – Controls the Rear Defogger ON or OFF
  - F2: A/C Request – A/C is requested either ON or OFF.
  - F3: Recirc Mode – The Recirculation Mode light is turned ON or OFF, and the recirculation door is driven to the recirculation position.
  - F4: Outside Air – The Recirculation Mode light is turned ON or OFF, and the recirculation door is driven to the Outside Air position.
- F1: Mtr/Act Tests
  - F0: Air Inlet Dr – The Air Inlet Door is commanded to its minimum and maximum limits.
  - F1: Mix Door Pos – The temperature actuator is commanded to its minimum and maximum limits.
  - F2: Mix Motor – The temperature actuator is commanded to its minimum and maximum limits.
  - F3: Blower Motor – Commands the Blower motor to its minimum (OFF) and maximum (ON) speeds.
  - F4: Aux Blwr Mtr – Commands the Auxiliary Blower Motor to its minimum (OFF) and maximum (ON) speeds.
  - F5: Aux Mix Door – Commands the Auxiliary temperature actuator to its minimum and maximum limits.
  - F6: Aux Mode Door – Commands the door actuator to its minimum and maximum limits.

REMOTE FUNCTION ACTUATOR (RFA)

Use the Remote Function Actuator to program key fobs for remote door lock and trunk lock actuation. If two transmitters are used, both must be present to perform this operation. Always begin with Fob #1.

Mode F4: OBD Controls

To program key fobs, do the following:

1. Select F4: OBD Controls from the *Select Mode* menu.
2. Select F0: Program Key Fob(s) from the *Select Control* menu.
3. From the *Program Key Fobs* menu, select one of the following:

F0:	Key Fob #1
F1:	Key Fob #2
F2:	Both Fobs

4. When you press a test key, follow the instructions on the tester's display.
5. Press EXIT to return to the *Select Control* menu. When finished with the tests, press EXIT again to return to the *Select Mode* menu.

SUPPLEMENTAL INFLATABLE RESTRAINT (SIR)

The F0:Flash Codes/F1:Clear Codes test allows you to flash SIR trouble codes on the dashboard SIR telltale light. Any SIR trouble codes present can also be cleared. Refer to Service Manual to interpret the codes.

NOTE

This test is available for 1990 Y-Body vehicles only.

Mode F0: Flash Codes (1990 Y-Body)
Mode F1: Clear Codes (1990 Y-Body)

To run Flash Codes and/or Clear Codes for 1990 Y-Body, do the following:

1. SIR is displayed when a 1990 Y-Body vehicle is selected from the *Vehicle Selection* menu. Press F8 to select the SIR tests.

   A *Select Test* menu with *Flash Codes* or *Clear Codes* is displayed.

2. Press F0 to flash stored trouble codes on the SIR telltale light, or F1 to clear the SIR codes.
3. Install the 12/12-Pin SIR/DUAL UART adapter (Vetronix P/N 02001039, GM P/N TA0065) onto the DLC cable. Plug the adapter into the DLC on the vehicle.
4. When the installation is complete, press ENTER.

   The tester asks you to turn the ignition to the OFF position, then press the ENTER key.

   A *waiting* message is now displayed for 3 seconds.

5. Turn the Ignition switch to the *RUN* position when the tester asks you to.

   If you selected F0: FLASH CODES, the trouble codes are now flashed on the SIR telltale lamp

6. Press EXIT to return to the *Select Test* menu. If you wish to clear stored trouble codes at this time, select **F1: CLEAR CODES**, or press EXIT twice to return to the *Vehicle Selection* menu.
7. If you selected *F1: CLEAR CODES*, the tester flashes a *clearing codes* message while the SIR codes are cleared. When the codes are cleared, the tester asks you to turn the ignition to OFF, then press the ENTER key.

   A *waiting* message is displayed briefly.

8. You are now asked to verify that Code 12 is the only trouble code stored in the SIR memory.
9. Press the EXIT key to return to the *Select Test* menu, then select F0 to flash the codes on the SIR telltale lamp. When only code 12 is present, press EXIT three times to return to the *Vehicle Selection* menu.

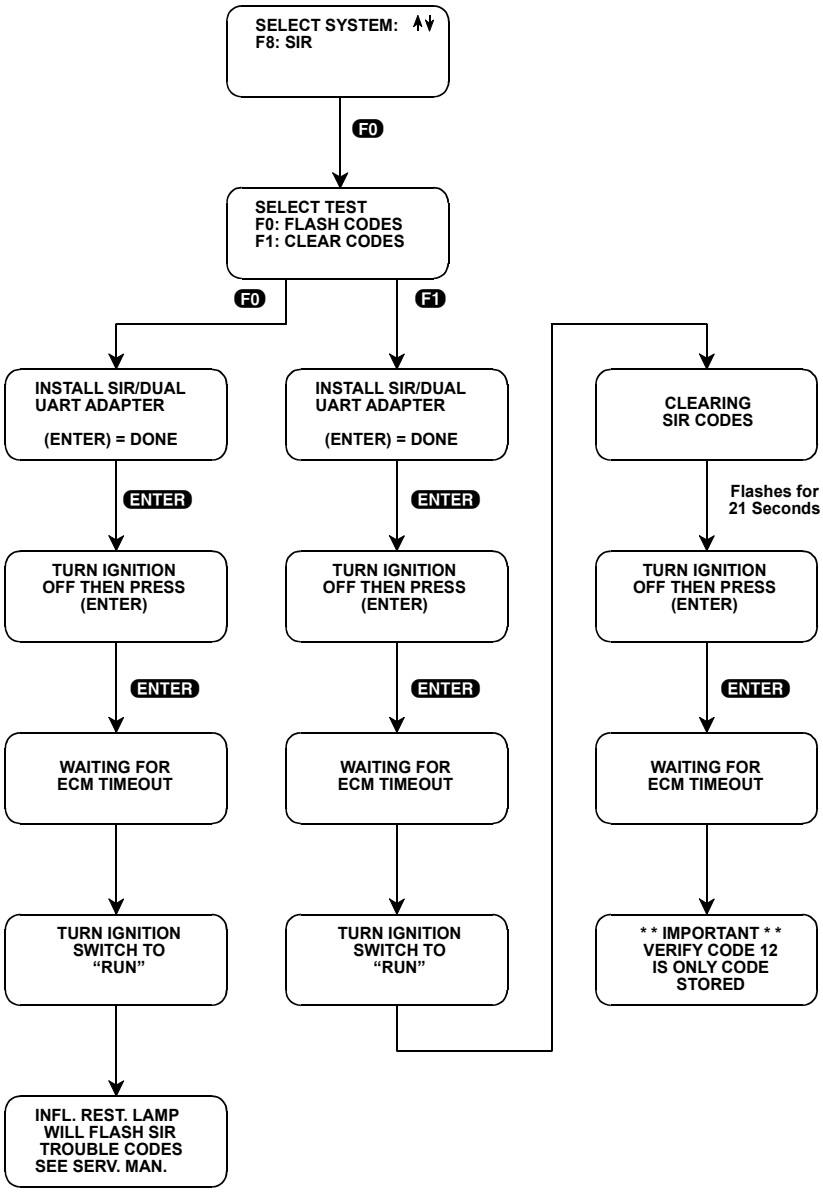


FIGURE 5-16. SIR Codes (1990 Y-Body)

Mode F0: Flash Codes (1993-99 Geo Prizm)

Mode F1: Clear Codes (1993-99 Geo Prizm)

The F0: Flash Codes/F1: Clear Codes test is available for Geo Prizm vehicles only. The Geo Prizm SIR adapter (GM P/N 3000015, Vetronix P/N 02001190) is required to diagnose SIR systems on the Geo Prizm.

The SIR system displays DTCs by flashing the AIR BAG indicator lamp, which is located in the Instrument Panel Cluster (IPC). Each DTC displayed consists of a number of flashes which represent the first digit of the DTC followed by a 2.5 second pause, then a number of flashes which represent the second digit of the DTC. Each DTC is flashed once before moving on to the next one. After all DTCs have been displayed, the entire sequence is repeated.

To clear DTCs, do the following:

1. Turn the ignition OFF.
2. Select *F1: Clear Code*s from the *Select Mode* menu.
3. Turn the ignition ON and press ENTER.

To use Flash Codes and Clear Codes for 1993-1999 Geo Prizm, do the following:

1. Select the *SIR* from the *Select System* menu by pressing F8.

   You are then prompted to *Always do SIR diagnostic system check in Service Manual, Section 9J-A*.
2. Press ENTER to continue.
3. From the *Select Mode* menu press F0 to flash codes or F1 to clear codes from the SIR.
4. Install the Geo Prizm SIR adapter (Vetronix P/N 02001190) as prompted by the tester.

> **NOTE**
>
> 
>
> The Geo Prizm diagnostic connector for the SIR system is under hood.

5. When you are prompted to *Turn the ignition* ON *and press the enter key*, do not start the engine; just turn the ignition key to run, then press ENTER.
6. **FLASH CODES:** If you select *F0: FLASH CODES*, you are notified *SIR warning lamp will flash DTC. See Service Manual*. Press ENTER to continue.

   Diagnostic Trouble Codes are flashed on the SIR warning lamp. If no codes are present, the warning lamp flashes every 250 ms (4 times per second).
7. Press EXIT twice to return to the *Select System* menu.

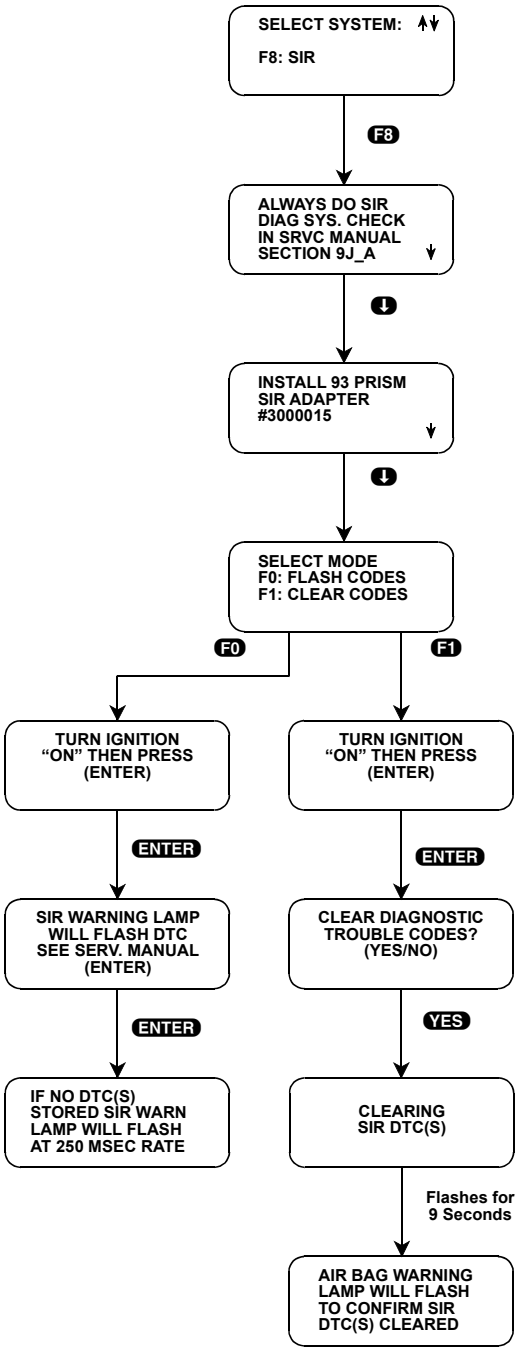


FIGURE 5-17. SIR Codes (1993-99 GEO Prizm)

8. **CLEAR CODES:** If you select F1: CLEAR CODES, you are asked to press **YES** to clear all SIR DTCs that are present. Press **NO** if you do not want to clear the codes.
9. If you press **YES**, *Clearing SIR DTC(s)* flashes for 9 seconds while codes are being cleared.

   When code clearing is finished, the warning lamp flashes.

NOTE

Do not press EXIT before the warning lamp flashes or the codes do not get cleared.

10. Press EXIT to return to the *Select System* menu.

ACTIVE KEYS	
F0	Select Flash Codes.
F1	Select Clear Codes.
↓	Continue test procedure.
YES	Confirm that you wish to clear trouble codes.
NO	Do not clear trouble codes.
EXIT	Return to *Select System* menu.

SIR SYNCHRONIZATION TEST

The Synchronization test is performed when replacing the SDM module or when replacing the BCM, DIM, or IPC module. Use the following chart to identify vehicles that support the Synchronization test.

TARGET ECU	BODY VIN	MAKE/MODEL	YEAR
BCM	A/B	Pontiac Aztec	2001-2004
	A/B	Buick Rendezvous	2001-2004
	C	Buick Park Avenue	1997-2004
	J	Chevrolet Cavalier	2000-2004
	J	Pontiac Sunfire	2000-2004
	N	Chevrolet Malibu	2000-2004
	N	Oldsmobile Alero	2000-2004
	N	Pontiac Grand Am	2000-2004
	S	Chevrolet SSR	2004
	S/T	Buick Ranier	2004
	S/T	Chevrolet TrailBlazer	2004
	S/T	Chevrolet Colorado	2004
	S/T	GMC Canyon	2004
	S/T	GMC Envoy	2004
	S/T	Oldsmobile Bravada	2004
	W	Buick Century	1999-2004
	W	Buick Regal	1999-2004
	W	Pontiac Grand Prix	2004
	W	Chevrolet Impala	2003-2004
	W	Chevrolet Monte Carlo	2003-2004
	W	Oldsmobile Intrigue	2000-2002
DIM	D	Cadillac CTS	2003-2004
	E	Cadillac SRX	2004
	G	Oldsmobile Aurora	2001-2002
	H	Buick Le Sabre	2000-2004
	H	Pontiac Bonneville	2000-2004
	K	Cadillac Deville/Seville	2000-2004
	K	STS/SLS	2000-2004

TARGET ECU	BODY VIN	MAKE/MODEL	YEAR
IPC	E	Cadillac Eldorado	1997-2002
	F	Chevrolet Camaro	1999-2002
	F	Pontiac Firebird/Trans AM	1999-2002
	K	Cadillac DeVille/Seville	1997-1999
	U/V/X	Chevrolet Venture	2000-2004
	U/V/X	Oldsmobile Silhouette	2000-2004
	U/V/X	Pontiac Montana	2000-2004
	Medium Duty Trucks		
	--	D-C Series	2003-2004
	--	C-T Series	2003-2004

Mode F1: Reprogramming the BCM and DIM ECUs

The Body Control Module (BCM) ECU and the Dash Integration Module (DIM) ECU should be reprogrammed when one or more of the following condition(s) exist:

- BCM electronic control unit replacement
- DIM electronic control unit replacement
- SDM electronic control unit replacement
- DTC 1001/1155/1159/1160 Inflatable Restraint Sensing and Diagnostic Module Calibration Mis-Match stored

During every ignition cycle, the BCM, DIM, and Power Control Module (PCM) send a keying message over the serial data line containing vehicle identification to the Sensing & Diagnostic Module (SDM). The SDM receives these messages and compares them to information stored in memory. The keying message from the BCM and DIM contains a partial vehicle identification number (VIN).

The keying message from the PCM, BCM, and DIM must match the same information stored in the SDM or DTC(S) will be set. The following chart shows the conditions for setting DTC B 1001, B1155, B1159, and B1160:

DTC	CONDITION(S)
B1001-Configuration Error	Incorrect keying messages stored.
B1155-Inflatable Restraint Sensing and Diagnostic Module Calibration Mis-Match	Incorrect keying messages sent by the BCM or PCM.
B1159-Inflatable Restraint Sensing and Diagnostic Module Calibration Mis-Match	BCM Keying Message does not match information stored in SDM.
B1160-Inflatable Restraint Sensing and Diagnostic Module Calibration Mis-Match	SDM received an incomplete VIN message from the PCM.

To reprogram the BCM ECU, do the following:

1. Turn ignition to the RUN position.
2. Press F4 to select *Misc. Test* from the *Select Mode* menu.
3. Press F1 to select *Reprogram BCM ECU*.
4. Press YES to begin reprogramming.

The software communicates with the SDM module and reads the current VIN information stored in the memory of the SDM. The SDM VIN information is then used to program the BCM. This allows the BCM to recognize the SDM on initial power up.

Confirmation should be displayed on the tester screen. If the BCM reprogramming was unsuccessful, a message is displayed on the tester screen.

NOTE

Reprogramming the BCM can only be done once per ignition cycle.

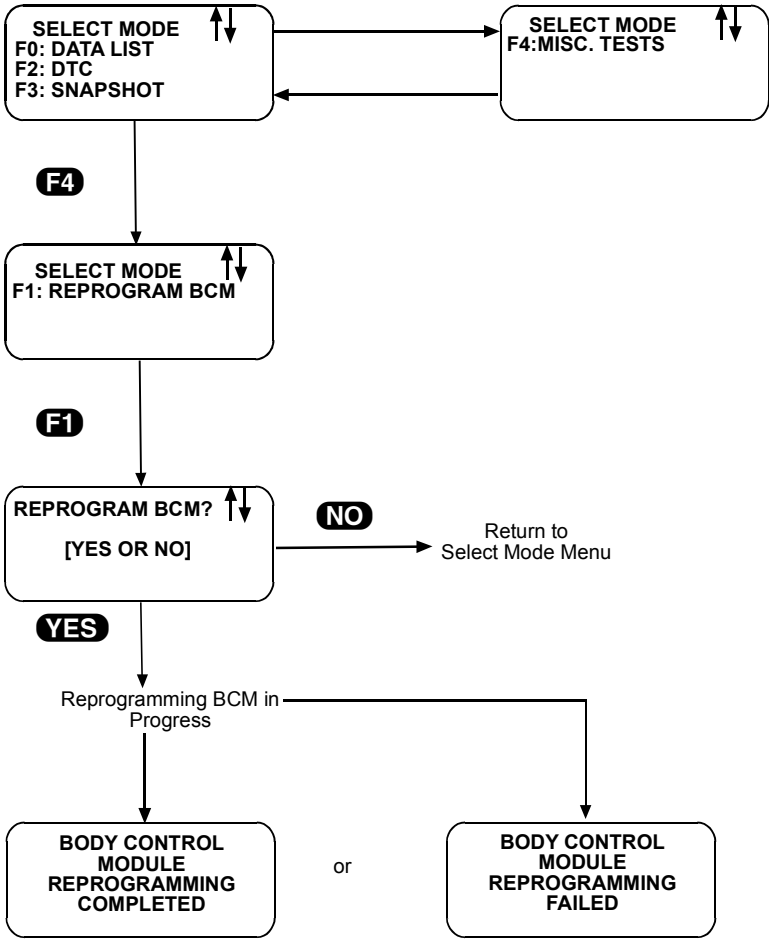


FIGURE 5-18. Reprogramming the BCM ECU

Mode F1: Reprogramming the IPC ECU

The Instrument Panel Cluster (IPC) ECU should be reprogrammed when one or more of the following condition(s) exist:

- IPC electronic control unit replacement
- SDM electronic control unit replacement
- DTC 1001 Incorrect Keying Messages stored
- DTC 1155 SDM Calibration Mismatch stored
- DTC B1159 Loss Of Serial Data-Key Not Received stored
- DTC B1160 Loss of Serial Data-VIN Not Received stored

IPC TO SDM Circuit Operation

During every ignition cycle, the Instrument Panel Cluster (IPC) sends a keying message over the serial data line containing vehicle identification to the Sensing & Diagnostic Module (SDM). The SDM receives this message and compares it to the information stored in memory. The keying message from the IPC contains a partial vehicle identification number (VIN).

The keying message from the IPC must match the same information stored in the SDM or DTC(S) will be set. The following chart shows the conditions for setting DTC B1001, B1155, B1159, and B1160:

DTC	CONDITION(S)
B1001-Configuration Error	Incorrect keying messages stored.
B1155-SDM Calibration Mismatch	Incorrect keying messages sent by the BCM or PCM.
B1159-Loss of Serial Data-Key Not Received.	IPC keying Message does not match information stored in SDM.
B1160-Loss Of Serial Data-VIN Not Received	IPC keying Message does not match information stored in SDM.

To reprogram the IPC ECU, do the following:

1. Turn ignition to the RUN position.
2. Press F4 to select *Misc. Test* from the *Select Mode* menu.
3. Press F1 to select *Reprogram IPC ECU*.
4. Press YES to begin reprogramming.

The software communicates with the SDM module and reads the current VIN information stored in the memory of the SDM. The SDM VIN information is then used to program the IPC. This allows the IPC to recognize the SDM on initial power up.

Confirmation should be displayed on the tester screen. If the IPC reprogramming was unsuccessful, a message is displayed on the tester screen.

NOTE

Reprogramming the IPC can only be done once per ignition cycle.

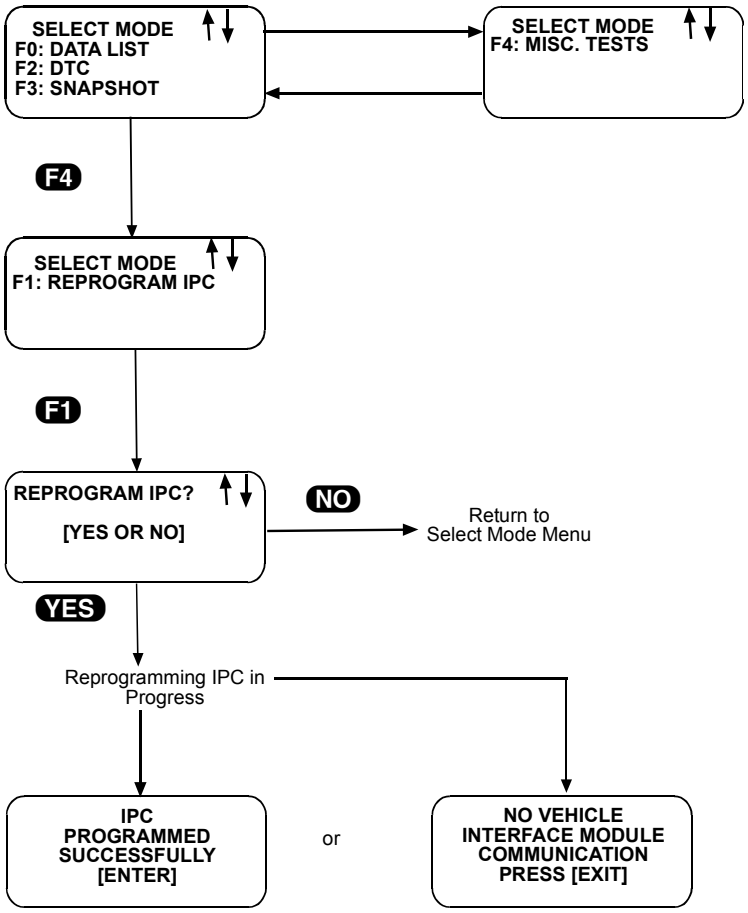


FIGURE 5-19. Reprogramming the IPC ECU

ENTERTAINMENT & COMFORT BUS (E&C)

Vehicle Entertainment & Comfort components communicate with each other using the E&C data bus. Testing of the following components on the E&C data bus is supported by the Body Systems Application.

- Radio Control Head
- Radio Receiver and Amplifier
- Graphic Equalizer Control Head
- Cassette Tape Deck
- Compact Disk Player
- Heating, Ventilation, and Air Conditioning systems
- Cellular Telephone
- Speaker Operation

In some cases, the E&C communication bus must be wired to pin J of the DLC to communicate with the tester. Refer to the charts on the following pages to determine which vehicles need to have the E&C communication bus wired to the DLC.

The E&C bus circuit can be found in Section 8A of the factory GM Service Manual. Any and all jumpers or wiring installed in the vehicle must be temporary and removed when testing is complete.

NOTE

The 16/12-Pin Non-OBD II DLC adapter and 16-Pin Data Link connector (DLC) must be used to communicate with the E&C communication bus system in GM vehicles from 1995 - present.

E&C FUNCTION TESTS BY MODEL YEAR

E&C Function Tests for Model Year 1988

E&C FUNCTION TESTS FOR MODEL YEAR 1988

VIN	DIV	RCVR	CNTRL HEAD	EQUAL	TAPE	CD	HVAC	PHONE	E&C CONN. TO DLC*
PASSENGER VEHICLES									
E	3	•						•	YES
	4	•			•			•	YES
N	4	•	•						NO
W	2	•	•	•					YES
	3	•	•						YES
	4	•	•	•					YES
TRUCKS									
C/K	TRK	•	•	•					NO

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1989

E&C FUNCTION TESTS FOR MODEL YEAR 1989									
VIN	DIV	RCVR	CNTRL HEAD	EQUAL	TAPE	CD	HVAC	PHONE	E&C CONN. TO DLC*
PASSENGER VEHICLES									
C	3	•	•				•		YES
	4	•	•						NO
E	3	•			•		•+	•	YES
	4	•			•			•	YES
H	2	•	•				•		YES
	4	•	•						NO
J	2	•	•	•					POSS.
N	4	•	•						NO
V	6	•	•					•	YES
W	2	•	•	•			•		YES
	3	•	•				•		YES
	4	•	•	•					YES
TRUCKS									
C/K	TRK	•	•	•					NO

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection.

+ HVAC control for Oldsmobile only has Fan and Set Temperature Control.
Mode Control is not

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1990

E&C FUNCTION TESTS FOR MODEL YEAR 1990									
VIN	DIV	RCVR	CNTRL HEAD	EQUAL	TAPE	CD	HVAC	PHONE	E&C CONN. TO DLC*
PASSENGER VEHICLES									
A	2	•	•	•			•		YES
C	3	•	•	•			•		YES
	4	•	•	•					NO
D	6	•	•			•			YES
E	3	•	•	•	•	•	•+	•	YES
	4	•	•			•		•	YES
H	2	•	•			•	•		YES
	4	•	•						NO
J	2	•	•	•		•			POSS.
K	6	•	•					•	YES
N	4	•	•						NO
V	6	•	•			•		•	YES
W	2	•	•	•			•		YES
	3	•	•				•		YES
	4	•	•	•		•			YES
Y	1	•	•	•		•	•		YES
TRUCKS									
C/K	TRK	•	•	•					NO

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection.

+ HVAC control for Oldsmobile only has Fan and Set Temperature Control.
Mode Control is not

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1991

E&C FUNCTION TESTS FOR MODEL YEAR 1991									
VIN	DIV	RCVR	CNTRL HEAD	EQUAL	TAPE	CD	HVAC	PHONE	E&C CONN. TO DLC*
PASSENGER VEHICLES									
A	2	•	•						YES
	4	•	•						YES
C	3	•	•			•	•		YES
	4								YES
	6					•			YES
D	6	•	•			•			YES
E	3	•				•		•	YES
	4	•				•		•	YES
	6	•				•		•	YES
F	1					•			NO
	2					•			NO
H	2	•	•				•		YES
	3	•	•						YES
J	1	•	•	•		•			NO
	2	•	•	•		•			NO
K	6	•				•			YES
L	1					•			NO
	2					•			NO
N	4	•	•						NO
V	6	•	•			•			YES
W	2	•	•	•			•		YES
	3	•	•				•		YES
	4	•	•			•			YES
Y	1	•	•			•			YES
TRUCKS									
C/K	TRK	•	•	•					NO

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection.

DIVISION

1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1992

E&C FUNCTION TESTS FOR MODEL YEAR 1992													
VIN	DIV	ID	MONITOR	SNAP SHOT	RADIO RCVR	CNTRL HEAD	EQUAL	TAPE	PHONE	CD	HVAC	SPKR	E&C CONN. TO DLC*
PASSENGER VEHICLES													
A	4	•	•	•	•	•							YES
C	3	•	•	•	•	•	•	•		•	•	•	YES
	4	•	•	•	•	•	•	•		•	•	•	
	6	•	•	•	•	•	•	•		•		•	
D	6	•	•	•	•	•	•	•		•		•	YES
E	3	•	•	•	•	•	•	•	•	•		•	YES
	4	•	•	•	•	•	•	•	•	•		•	
	6	•	•	•	•	•		•	•	•		•	
F	1	•	•	•	•	•	•	•		•		•	NO
	2												
H	2	•	•	•	•	•	•	•		•	•	•	YES
	3												
	4												
J	1	•	•	•	•	•	•	•		•		•	NO
	2												
K	6	•	•	•	•	•		•		•		•	YES
L	1	•	•	•	•	•				•	•	•	NO
	2												
N	2	•	•	•	•	•	•			•		•	NO
	3												
	4												
V	6	•	•	•	•	•		•		•		•	YES
W	1	•	•	•	•	•	•	•		•	•	•	YES
	2												
	3												
	4												
Y	1	•	•	•	•	•		•		•		•	YES
TRUCKS													
C/K	TRK	•	•	•	•	•	•	•		•		•	NO

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection.

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1993

E&C FUNCTION TESTS FOR MODEL YEAR 1993													
VIN	DIV	ID	MONITOR	SNAP SHOT	RADIO RCVR	CNTRL HEAD	EQUAL	TAPE	PHONE	CD	HVAC	SPKR	E&C CONN. TO DLC*
PASSENGER VEHICLES													
A	4	•	•	•	•	•		•		•		•	YES
B	1 3 4	•	•	•	•	•	•	•		•		•	NO
C	3 4	•	•	•	•	•	•	•		•	•	•	YES
	6	•	•	•	•	•	•	•		•		•	YES
D	6	•	•	•	•	•	•	•		•		•	YES
E	4	•	•	•	•	•	•	•	•	•		•	YES
	6	•	•	•	•	•		•	•	•		•	YES
F	1 2	•	•	•	•	•	•	•		•		•	NO
H	2 3 4	•	•	•	•	•	•	•		•	•	•	YES
J	1 2	•	•	•	•	•	•	•		•		•	NO
K	6	•	•	•	•	•		•	•	•		•	YES
L	1 2	•	•	•	•	•				•		•	NO
N	2 3 4	•	•	•	•	•	•			•		•	NO
V	6	•	•	•	•	•		•		•		•	YES
W	1 2 3 4	•	•	•	•	•	•	•		•	•	•	YES
Y	1	•	•	•	•	•		•		•		•	YES
TRUCKS													
C/K	TRK	•	•	•	•	•	•	•		•		•	
U	TRK	•	•	•							•	•	

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection.

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1994

E&C FUNCTION TESTS FOR MODEL YEAR 1994													
VIN	DIV	ID	MONITOR	SNAP SHOT	RADIO RCVR	CNTRL HEAD	EQUAL	TAPE	PHONE	CD	HVAC	SPKR	E&C CONN. TO DLC*
PASSENGER VEHICLES													
A	4	•	•	•	•	•		•		•		•	NO
B	1	•	•	•	•	•				•		•	NO
	4	•	•	•	•	•	•	•		•	•	•	NO
C	3	•	•	•	2001	•	•	•		•	•	2001	YES
	4	•	•	•	•	•		•		•	•	•	YES
D	6	•	•	•	•	•	•	•		•	•	•	YES
E	6	•	•	•	•	•		•	•	•		•	YES
F	1	•	•	•	•	•				•		•	NO
	2	•	•	•	2001	•	•	•		•		•	NO
H	2	GEN 2			2001	•	•	•		•	•	2001	
	3	•	•	•	2001	•	•	•		•	•	2001	YES
	4	•	•	•	•	•	•	•		•	•	•	
J	1	•	•	•	•	•				•		•	NO
	2	•	•	•	•	•				•		•	YES
K	6	•	•	•	•	•		•	•	•	•	•	YES
L	1 2	•	•	•	•	•				•		•	YES
N	3	•	•	•	•	•				•		•	NO
	2 4	•	•	•	•	•	•			•		•	NO
W	1	•	•	•	•	•					•	•	YES
	2	•	•	•	•	•	•	•			•	•	YES
	3	•	•	•	•	•	•	•		•	•	•	YES
	4	•	•	•	•	•	•	•			•	•	YES
Y	1	•	•	•	•	•			•	•	•	•	YES
TRUCKS													
C/K	TRK	•	•	•	•	•	•			•		•	YES
L/M	TRK	•	•	•	•	•				•		•	NO
S/T	TRK	•	•	•	•	•				•		•	NO
G	TRK	•	•	•	•	•				•		•	NO

2001: The 2001 Series is a new family of radios introduced in the 1994 model year.

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection.

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1995

E&C FUNCTION TESTS FOR MODEL YEAR 1995														
VIN	DIV	ID	MONITOR	SNAP SHOT	RADIO RCVR	CNTRL HEAD	EQUAL	TAPE	PHONE	CD	CD CHANGER	HVAC	RCVR	E&C CONN. TO DLC*
PASSENGER VEHICLES														
A	4	•	•	•	•	•				•			•	NO
B	1	•	•	•	2001								2001	NO
	4	•	•	•	2001	•	•	•		•		•	2001	NO
C	3 4	•	•	•	2001								2001	YES
D		•	•	•	•	•	•	•		•		•	•	YES
E		•	•	•	•	•		•	•	•			•	YES
F	1	•	•	•	•	•				•			•	YES
	2	•	•	•	2001								•	YES
G	3	•	•	•	•					•				
	4	•	•	•	•					•				
H	2 3 4	•	•	•	2001								2001	YES
J	1	•	•	•	•	•				•			•	YES
	2	•	•	•	•								•	YES
K		•	•	•	•	•		•	•	•		•	•	YES
L		•	•	•	•	•				•			•	NO
N	3	•	•	•	•	•				•			•	NO
	2 4	•	•	•	•	•	•			•			•	NO
W	1	•	•	•	2001								2001	NO
	2 4	•	•	•	2001								2001	YES
	3	•	•	•	2001	•	•	•		•		•	2001	YES
Y	1	•	•	•	•	•		•	•	•		•	•	YES
TRUCKS														
C/K	1, GMC	•	•	•	2001								2001	NO
L/M	TRK	•	•	•	•	•				•			•	NO
S/T	TRK	•	•	•	•	•				•			•	YES
G	TRK	•	•	•	•	•				•			•	NO

*NO = Requires Pin J be connected to the E & C Bus. This should be a temporary connection.

2001: The 2001 Series is a new family of radios introduced in the 1994 model year.

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C Function Tests for Model Year 1996

E&C FUNCTION TESTS FOR MODEL YEAR 1996														
VIN	DIV	ID	MONITOR	SNAP SHOT	RADIO RCVR	CNTRL HEAD	EQUAL	TAPE	PHONE	CD	CD CHANGER	HVAC	RCVR	E&C CONN. TO DLC
PASSENGER VEHICLES														
A[1]	4	•	•	•	•	•				•			•	NO
B	1 4	GEN 2									•			YES
C	3 4	GEN 2	•								•			
D	6	GEN 2									•			
F[1]	1	•	•	•	•	•				•			•	NO
	2	GEN 2									•			NO
G	3	•	•	•	•					•				
	4	•	•	•	•					•				
H	2 3 4	•	•	•	2001								2001	
J[1]	1 2	GEN 2									•			NO
L[1]	1	•	•	•	•	•				•			•	NO
N*	1 2 3	GEN 3									•			NO
W	1	GEN 2									•			NO
	2 3 4	GEN2									•			
Y	1	•	•	•	•	•		•	•	•		•	•	
TRUCKS														
C/K[1]	TRK	GEN2									•			NO
L/M[1]	TRK	GEN3									•			NO
S/T[1]	TRK	•	•	•	•	•				•			•	NO
GM[1]	TRK	GEN5									•			NO

[1] This vehicle requires that Pin 14 of the ALDL connector be wired to Pin 14 of the 9-pin connector located at the rear of the radio.

* This vehicle requires that Pin 14 of the ALDL connector be wired to Pin 1E of the 32-Pin connector located at the rear of the radio.

2001: The 2001 Series is a new family of radios introduced in the 1994 model year.

DIVISION
1 CHEVROLET
2 PONTIAC
3 OLDSMOBILE
4 BUICK
6 CADILLAC
7 GM/CANADA

E&C TEST MODES

Delco Electronics' advanced entertainment systems are made up of a number of components which perform different functions. For example, the radio switches and displays are contained on one or more control heads, while the radio receiver/amplifier is another box in a remote location, and the graphic equalizer might be located somewhere else.

The Entertainment and Comfort (E&C) Bus provides a means of communication between all of these entertainment components and some of the up-option climate control components (C68 and CJ2 HVAC). Information is shared between E&C components via messages which all of the components can transmit on the E&C bus. For example, when the driver presses the seek switch, the radio head sends a seek command to the radio receiver via the E&C bus, and the receiver sends the station number back to the radio head where it is displayed.

The GM Body Systems Cartridge provides you with a tool for troubleshooting the ECUs on the E&C communication bus on most GM cars and 88-96 C/K Trucks. With this cartridge, your tester becomes a component on the E&C bus the same as any of the on-board components. The tester allows you to listen to messages transmitted from any of the components and to transmit your own messages on the bus. In this way, you can readily isolate a problem to a particular component or to the bus itself. You can select among five E&C tests:

- F0: E&C MONITOR

  Monitors message transmissions on the E & C bus.

- F1: COMPONENT IDENTIFICATION

  Displays which components are connected to the E&C bus.

  Identifies E&C bus faults.

- F3: SNAPSHOT

  Captures and stores E&C messages.

- F4: CONTROL TEST

  Transmits E&C messages on the bus.

- F5: SPEAKER TEST

  Routes all of the audio to the selected speaker.

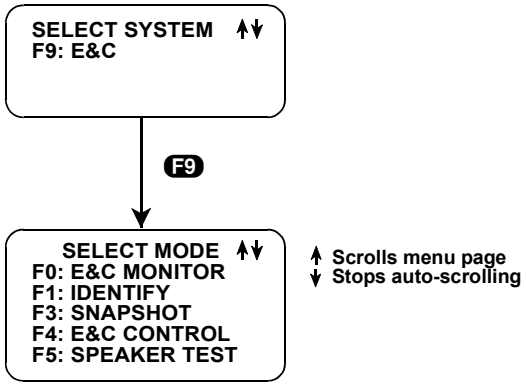


FIGURE 5-20. E&C Select Mode Menu

Mode F0: E&C Monitor

The E&C MONITOR test allows you to monitor transmissions on the E&C bus. This allows you to verify that messages are transmitted in response to driver inputs. For example, you can test all of the switches on the radio control head by pressing the switches and using the tester to verify that the appropriate message gets transmitted on the E&C bus.

To perform the E&C Monitor test, do the following:

1. Select the *E&C TESTS* by pressing F9.
2. Select the E&C MONITOR test by pressing F9. You should see the following display:

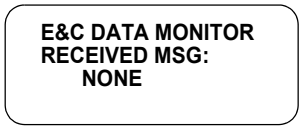


FIGURE 5-21. E&C Data Monitor Screen

   When messages are transmitted from one E&C component to another, you see that message displayed on the tester. An asterisk (*) is displayed in the lower right corner of the display for 1/10 second each time a message is detected. That way you can tell if a message is being transmitted repeatedly (e.g., increase volume).

3. If you wish to stop the display update, press F0.

   An *H*, for *HOLD*, is displayed in the corner while the message is being held.

4. If you press F1, the tester will WAIT (and display *W*) until the next message is detected and then hold that message (and display *H*).
5. Normal operation is resumed by pressing F2. This allows you to look for things to happen on the E&C bus. For example, you can set up the tester to WAIT for a message, then press the radio's increase volume switch, and verify that the tester detected the *INC VOLUME* message on the E&C bus.

   When the tester is in the *HOLD* mode (with *H* being displayed in the lower right corner), the tester saves the next message detected on the E&C bus in a one message *forward* buffer.

6. To see the message, press the ↑ key.

   The following example demonstrates how you can use this *forward* buffer to verify proper operation of two E&C components:

   a. Press F1 to put the tester into the *WAIT* mode.

   b. Press the *Increase Volume* switch on the *Radio Control Head*.

      The *Radio Head* should transmit the *Increase Volume* message to the *Radio Receiver* box.

      The tester should detect this message and display the message *INC VOLUME* in the *HOLD* mode.

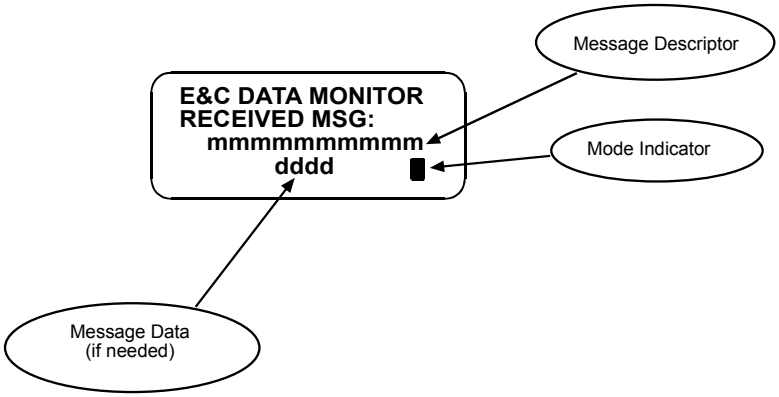
      The *Radio Receiver* should respond by transmitting the *Report Volume* message to the *Radio Head*.

   c. Press ↑ and the tester displays the *RPT VOLUME* message which was captured in the *forward* buffer.

   d. Press F2 to terminate the *HOLD* mode.

Using this procedure, you can verify that the *Increase Volume* switch is working properly, that the *Radio Control Head* is communicating properly on the E&C bus and that the *Radio Receiver Box* is responding properly.

See *E&C Bus Monitor Messages on page 248.* of this manual for summaries of the E&C monitor messages which can be detected by the tester using this cartridge.



Modes:	
*	Message has just been detected
H	Holding for next message
W	Waiting for next message
O	E&C buffer display (displaying most recent detected message)
-N	E&C buffer display (displaying Nth message before most recent message)

FIGURE 5-22. Summary of E&C Monitor Test Display

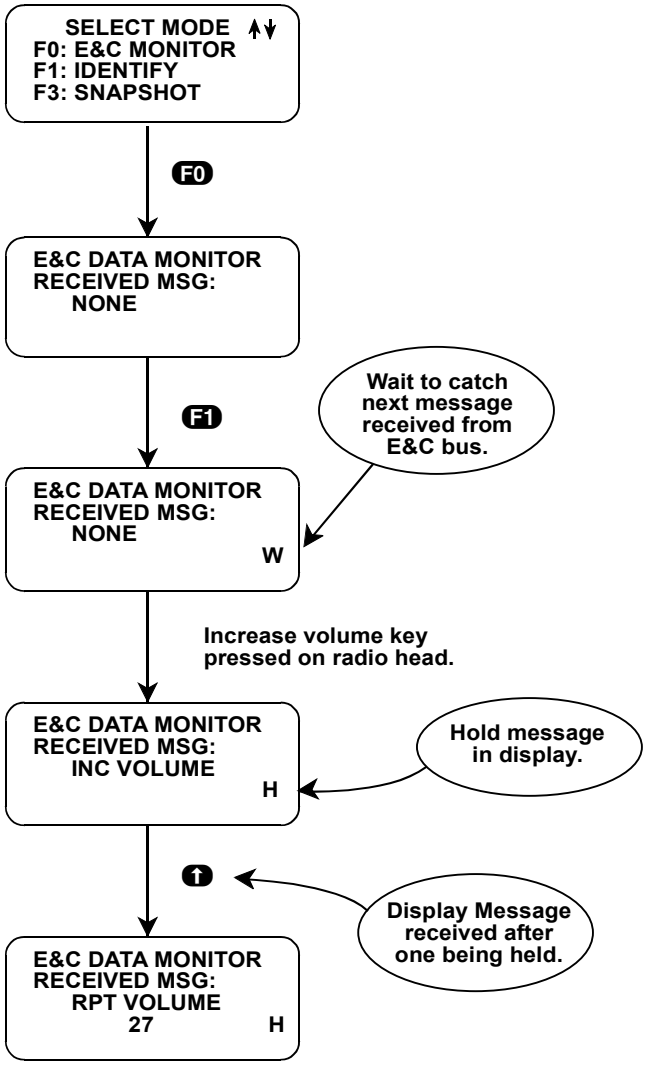


FIGURE 5-23. Using Wait/Hold to Examine Receiver's Response to E&C Command

ACTIVE KEYS	
F0	*HOLD* last message detected.
F1	*WAIT* for next message then *HOLD* it.
F2	Display all messages (stop *HOLD*ing or *WAIT*ing).
↑	Display message received after the one being held (*HOLD* mode only).
EXIT	Return to *SELECT E&C TEST.*

Mode F1: Identify

The E&C component identification test performs two basic functions: it tells you which E&C components are currently operational on the E&C bus, and it identifies possible E&C bus faults (open circuit or shorted bus). To do this, the tester transmits messages to all of the components which might be connected to the bus, and looks for a response from each one. When it sees the response, it displays the name of the component. The components which the tester can recognize are:

- Radio Control Head
- Radio Receiver and Amplifier
- Graphic Equalizer Control Head*
- Cassette Tape Deck
- Compact Disc Player*
- Steering Wheel Controls*
- Climate Control Panel
- Cellular Telephone

* In some vehicles, these components are not recognized in this mode. Use the E&C MONITOR mode to verify operation of these components.

NOTE

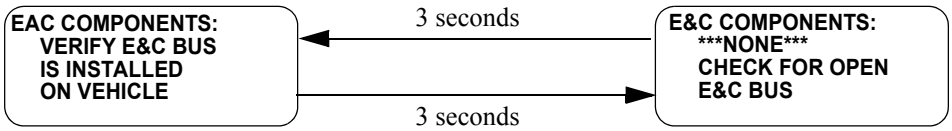
Always verify that the system being tested has an E&C bus. Some radios are not compatible, such as the Delco VF2000 Series.

To perform the E&C Component Identification test, do the following:

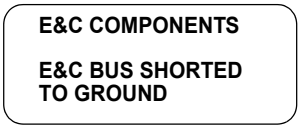
1. Select the *E&C SYSTEM* by pressing F0.
2. Select the *COMPONENT IDENTIFICATION* test by pressing F1.

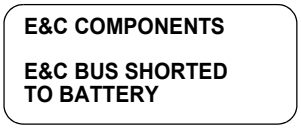
   After a short time, the tester displays the names of the components which it can identify. These names are displayed at three second intervals.

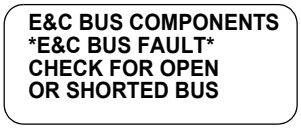
   If after three seconds the tester has not received a response from any of the E&C components, it displays two alternating screens:



If the tester is unable to successfully transmit a message, a bus fault is indicated, and the tester displays one of the following:







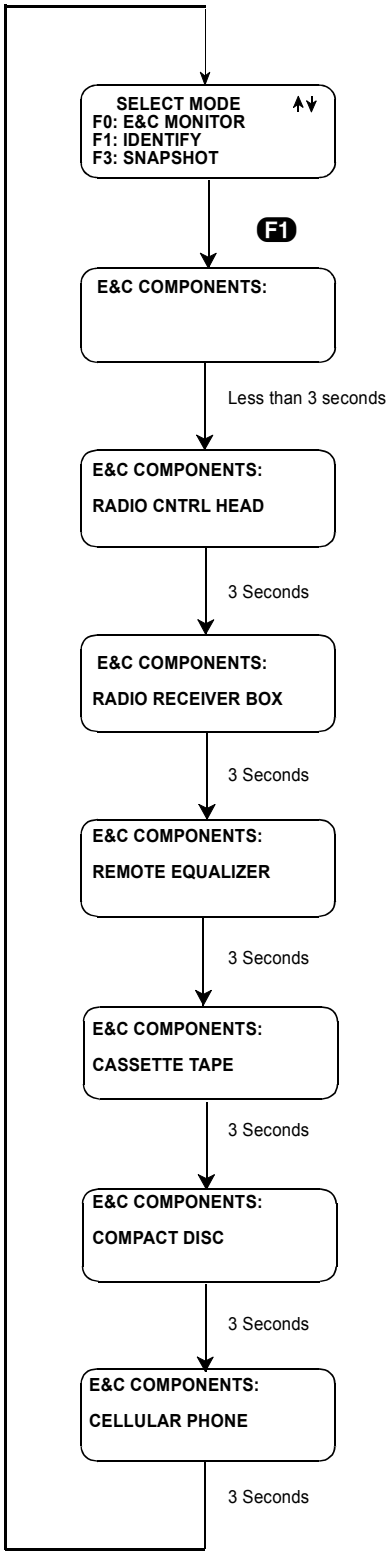


FIGURE 5-24. E&C Component Identification Test

Mode F3: Snapshot

The E&C Snapshot function allows you to capture a sequence of messages transmitted between components on the E&C bus. This can be used to look at what messages get transmitted on the bus when you press various keys on the control head(s). For example, when you press the increase volume switch on the Radio Control Head, the control head should send one or more *increase volume* commands, and the radio receiver should respond with one or more *report volume* messages. The E&C Snapshot mode can be used to examine these messages.

The tester saves the last 25 messages which it detected on the E&C bus. These messages are stored in the tester memory in an area referred to as the *E&C Buffer*. This data is saved in the tester's keep-alive memory so that if you disconnect the tester, the data is not lost.

One difference between the E&C Snapshot mode and the Snapshot for the Serial Data Link (SDL) is that the E&C Trigger Point (message 0) is always the most recent message. The sample index is always 0 or negative. If the Snapshot buffer is full, this index can be sequenced between 0 and -24.

To use the Snapshot function, do the following:

1. Select Snapshot from the E&C *Select Mode* menu by pressing F3.

   The *E&C Snapshot* menu allows you to select from the following options:

   a. F0: REPLAY

      If there are any messages saved in the *Snapshot* buffer, the last Snapshot data saved by the tester can be displayed.

      If there are no messages in the buffer, pressing causes the tester to display **NO DATA SAVED**.

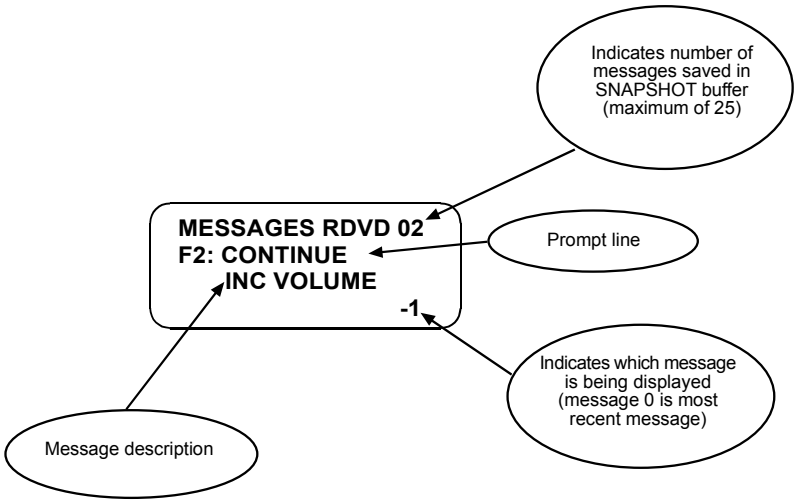


FIGURE 5-25. Snapshot Function

When data is being REPLAYED, use the ↑ and ↓ keys to scroll through the message saved in the *Snapshot* buffer. The number in the upper right corner indicates how many messages have been saved.

When you are in the *REPLAY* mode, pressing F2 allows you to continue collecting data.

b. F1: NEW TEST

Use the *F1: NEW TEST* option when first performing the Snapshot function on a vehicle. When *NEW TEST* is selected, any data which was saved previously in the Snapshot buffer is cleared and the message received counter displays 0. As E&C messages are detected, this counter increments until it reaches 25. After that the counter stays at 25, and the oldest E&C messages are lost. The tester retains the most recent 25 messages. After data has been collected it can be replayed by pressing the F0 key.

c. F2: CONTINUE

Press the F2 key to continue monitoring messages between the E&C components without destroying data which has been saved previously. While monitoring the messages you have the option of reviewing saved Snapshot data by selecting F0: REPLAY.

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

ACTIVE KEYS	
F0	Go to *REPLAY* mode (in *E&C Snapshot* menu or in *capture data* mode).
F1	Clear *E&C SNAPSHOT* buffer and go to *capture* mode (when in *E&C Snapshot* menu).
F2	Continue collecting *E&C* messages without clearing messages saved in Snapshot buffer (when in *E&C Snapshot* menu or *REPLAY* mode).
↑	Display next *E&C* message.
↓	Display previous *E&C* message.
EXIT	Return to *E&C Snapshot* menu or *E&C Select Mode* menu.

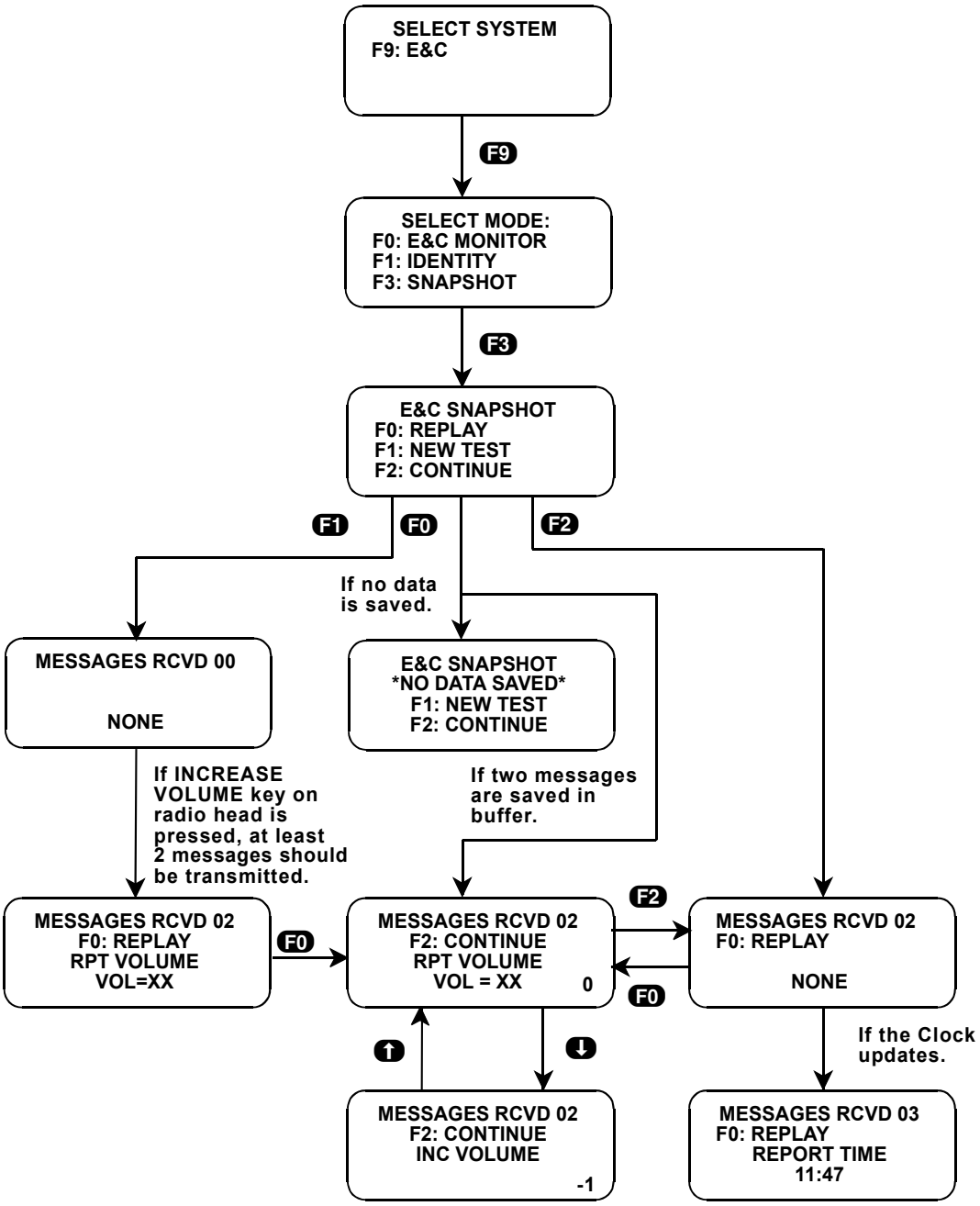


FIGURE 5-26. Example of E&C Snapshot

Mode F4: E&C Control

The *E&C CONTROL* test allows you to send messages to any of the E&C components and control the operation of that component. The tester becomes another control head on the E&C bus in the same way that the Radio Head is a control head. The E&C CONTROL test can help you to isolate a fault to either the control head or the component being controlled. For example, if the Radio Head cannot control the radio's Seek function but the tester can, the problem is probably in the Radio Head or the Seek switch.

To run the E&C Control test, do the following:

1. Select the *E&C TESTS* by pressing F9.
2. Press F4 to select the *E&C CONTROL* test.
3. Select the component you wish to control.

   Components available for testing vary according to the year and model of the vehicle being tested.

   - F0: RECEIVER (see *Submode F0: Radio Receiver Test*)
   - F1: CONTROL HEAD (see *Submode F1: Control Head Test*)
   - F2: REMOTE EQUAL (see *Submode F2: Remote Equalizer Test*)
   - F3: CASSETTE TAPE (see *Submode F3: Cassette Tape Tests*)
   - F4: COMPACT DISC (see *Submode F4: Compact Disc Tests*)
   - F5: HVAC (see *Submode F5: HVAC Tests*)
   - F6: CELL PHONE (see *Submode F6: Cellular Phone Tests*)

   Once you have selected the E&C component, the tester displays the first function which you can control.
4. Use the YES and NO keys to sequence through the functions.

Generally, there are two messages which can be transmitted for each function. For example, if you select *VOLUME*, you can send the increase volume message by pressing ↑ or you can press ↓ to send the decrease volume message. Line 4 tells you what ↑ and ↓ do. Holding ↑ or ↓ down causes the message to be transmitted repetitively. A *T* is displayed in the lower right corner for 1/10 second every time a message is transmitted. If a transmission error occurs, an *E* is displayed.

Submode F0: Radio Receiver Test

For many of the functions, the tester monitors the response message coming from the *Radio Receiver* and displays the data. For example, the tester displays the volume reported by the receiver when you are controlling the volume.

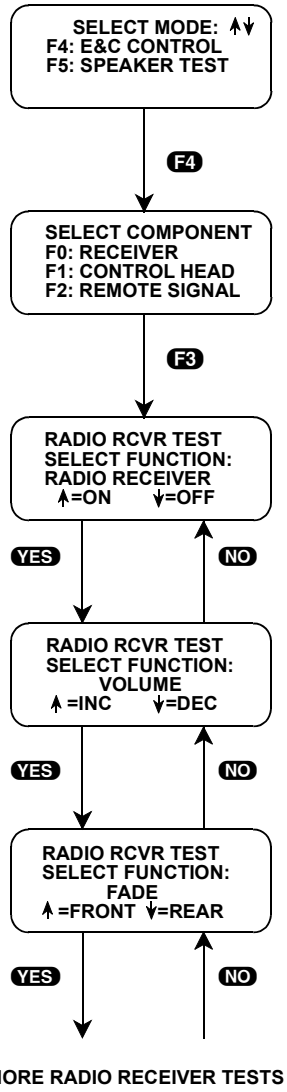


FIGURE 5-27. Example of E&C Radio Receiver Control Test

ACTIVE KEYS	
YES , NO	Select component or sequence through functions.
↑ , ↓	Transmit message.
EXIT	Return to *SELECT E&C TEST.*

Submode F1: Control Head Test

Submode F2: Remote Equalizer Test

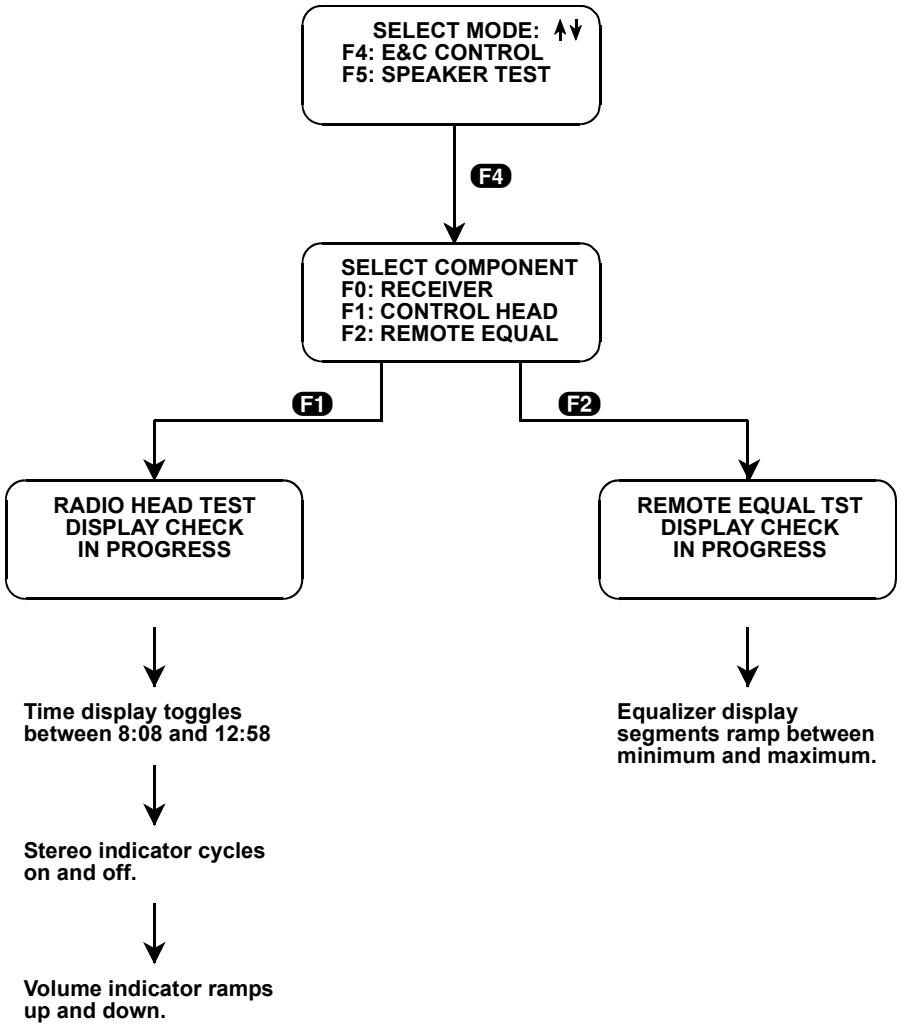


FIGURE 5-28. E&C Control Head and Remote Equalizer Tests

Submode F3: Cassette Tape Tests

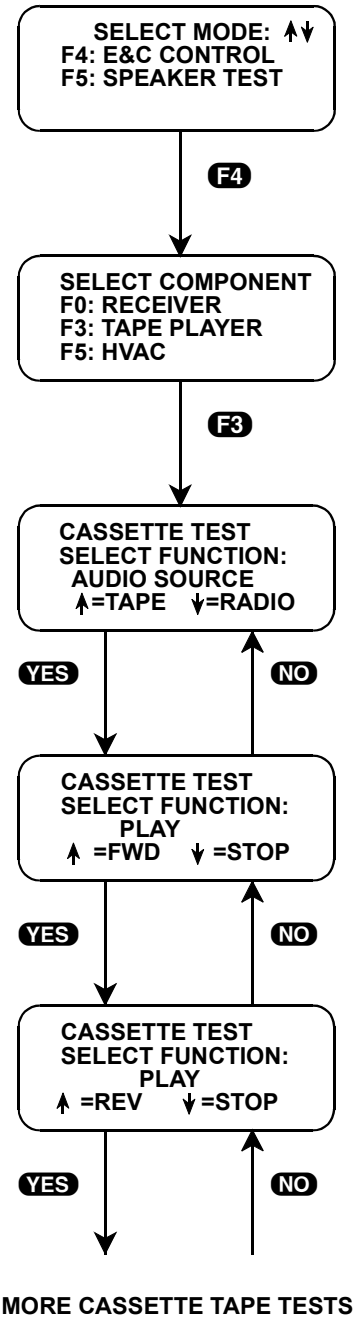


FIGURE 5-29. Example of Cassette Tape Tests

Submode F4: Compact Disc Tests

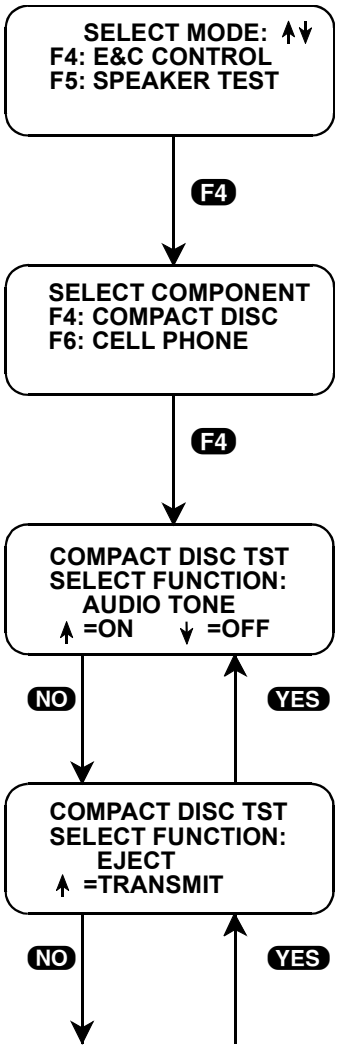


FIGURE 5-30. Example of Compact Disc Test

Submode F5: HVAC Tests

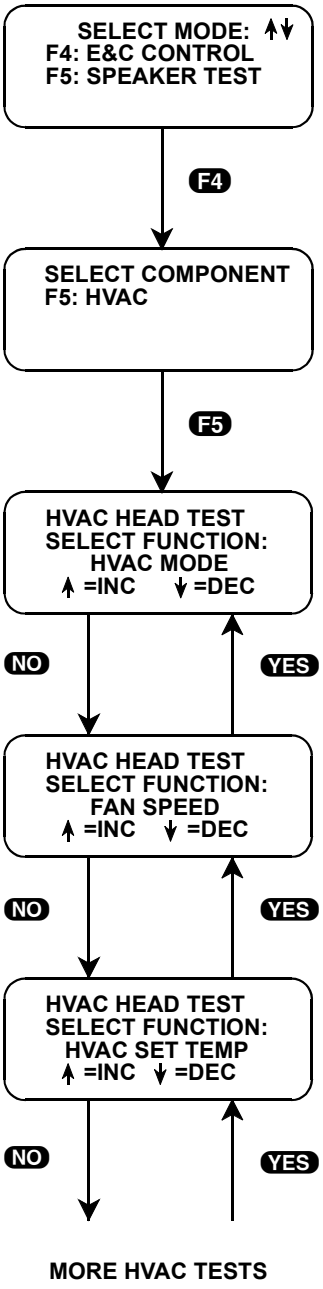


FIGURE 5-31. Example of E&C HVAC Control Test

Submode F6: Cellular Phone Tests

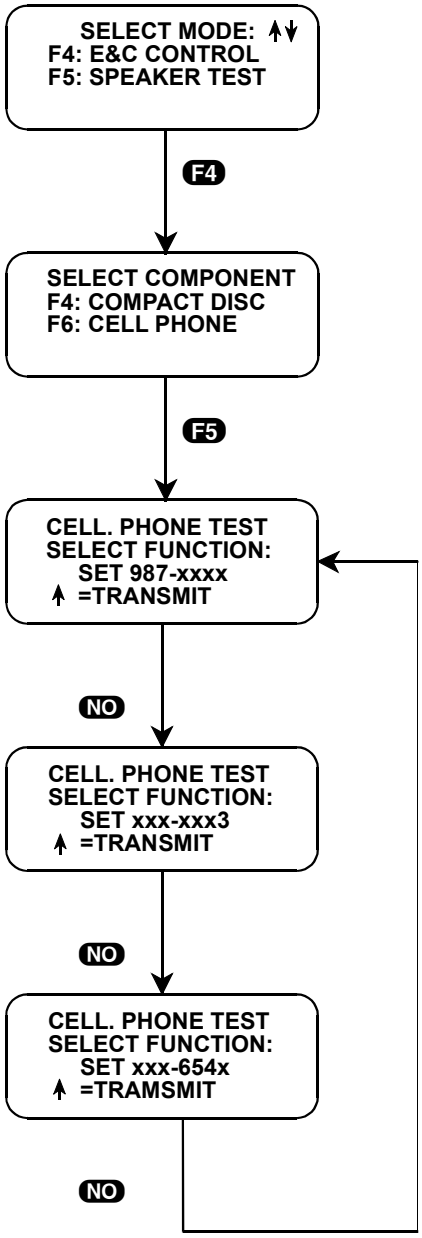


FIGURE 5-32. Example Of Cellular Phone Test

Mode F5: Speaker Test

The *E&C SPEAKER TEST* allows you to test each of the vehicle's speakers independently. In addition, you can use the SPEAKER TEST to evaluate the audio amplifiers for each of the speakers. To do this, the tester sends the appropriate fade and balance commands to the Radio Receiver to output audio to only one speaker at a time. You can also control the volume of that speaker by pressing the ↑ and ↓ keys.

NOTE

Volume Control is not available on some vehicle applications.

To run the E&C Speaker test, do the following:

1. Select the *E&C TESTS* by pressing F9.
2. Select the *F5: SPEAKER TEST.*
3. Press the NO key to sequence to the speaker you want to test.
4. Press ↑ or ↓ to increase or decrease the volume.
5. Terminate the test by pressing EXIT. The audio fade and balance are set to send audio to all speakers.

ACTIVE KEYS	
NO	Go to next speaker.
↑	Increase volume.
↓	Decrease volume.
EXIT	Return to *SELECT E&C TEST.* Restore audio to all speakers.

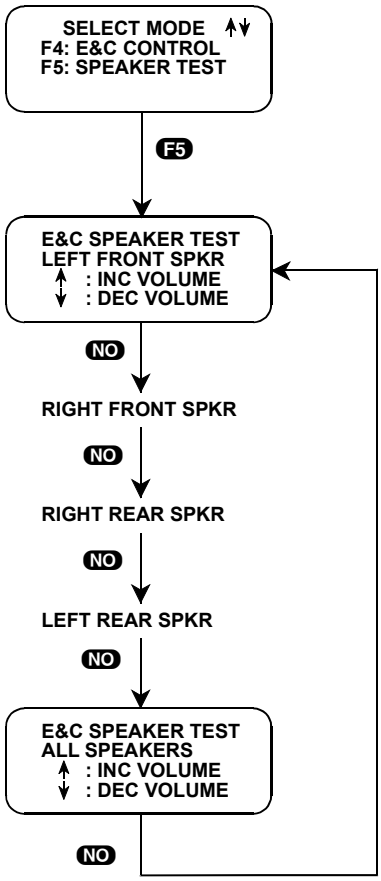


FIGURE 5-33. Speaker Test

FINISHING UP

When you've finished testing, check to see if any Diagnostic Trouble Codes are still set. If you've already cleared codes for a component, but the codes are still set, then the conditions which caused the codes to be set are probably still present. You should refer to the GM service manual to isolate the problem.

6. FINISHING UP

After using the application, do the following:

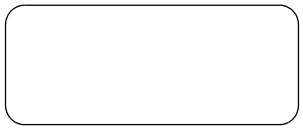
1. If the repairs are complete, clear the codes from memory before test driving to see if they recur or before releasing the vehicle to the customer.
   - If you have cleared the codes for a component but the codes are still set, then the conditions which caused the codes to be set may still be present. 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. IF YOU'RE HAVING A PROBLEM

This section is intended to help you get back on track if the tester appears to be operating abnormally. 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.

BLANK SCREEN



Most Likely Cause:

- No power is applied to the tester.

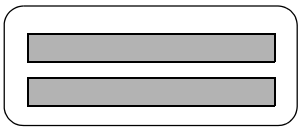
Other Possible Causes:

- Tester power supply is malfunctioning.

Recommendations:

- Plug the tester into another vehicle to verify proper operation.
- Check for the 12 volt power at the cigarette lighter.
- Check fuse in DLC cable cigarette lighter plug.
- Check for proper polarity of 12 volt power (center conductor should be positive).

SCREEN DISPLAYS SOLID BARS



Most Likely Cause:

- Cartridge was inserted while power was applied to tester.

Other Possible Causes:

- Two master cartridges are installed.
- Master cartridge is malfunctioning.
- Tester is malfunctioning.

Recommendations:

- Unplug connector from cigarette lighter and plug it back in.
- 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.

MASTER CARTRIDGE MISSING OR MALFUNCTIONING

Most Likely Cause:

- Master cartridge is not installed.

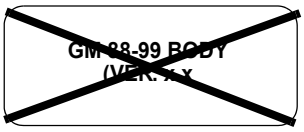
Other Possible Causes:

- Dirty contacts on the master cartridge connector.
- Master cartridge is malfunctioning.

Recommendations:

- Verify that a master cartridge is installed.
- Clean contacts on master cartridge connector with alcohol.
- Try a different master cartridge.

WRONG DISPLAY AFTER POWER IS APPLIED



Most Likely Cause:

- Wrong master cartridge is installed.

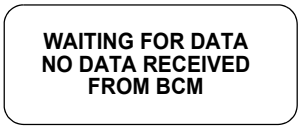
Other Possible Causes:

- Master cartridge is malfunctioning.
- Tester is malfunctioning.

Recommendations:

- Verify that the cartridge is installed in the bottom slot of the tester and that there isn't a master cartridge in the top slot.
- Try another cartridge.
- Try another selection from the MSC menu.
- Remove the master cartridge and perform the tester Self-test (refer to the tester OPERATOR'S MANUAL).

DATA NOT BEING RECEIVED



Most Likely Cause:

- Ignition switch is not in *RUN*.

Other Possible Causes:

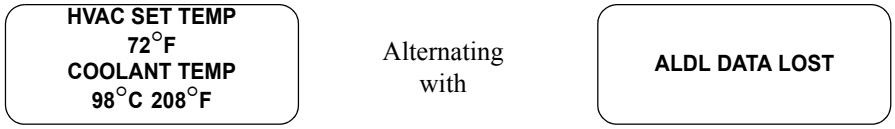
- Tester cable is not plugged securely into DLC.
- Cable is not plugged securely into tester.
- Serial data link is shorted or open-circuited.
- Body System is malfunctioning.
- Tester is malfunctioning.
- SIR/DUAL UART Adapter (GM P/N TA00065, Vetronix P/N 02001039) not installed when performing SIR tests on 1991 L-Body.

Recommendations:

- Verify that ignition is in *RUN*.
- Verify that tester is plugged securely into DLC.
- Check for serial data link shorted or open.
- Install SIR/DUAL UART Adapter.
- Remove SIR/DUAL UART Adapter if not requested to use for system being tested.
- EXIT test and retry.

INTERMITTENT COMMUNICATIONS

An alternating screen, as in the following example, this indicates that communications have been intermittent. When completely lost, only the *DATA LOST* screen is seen.



Most Likely Cause:

- Tester cable has come loose from DLC.

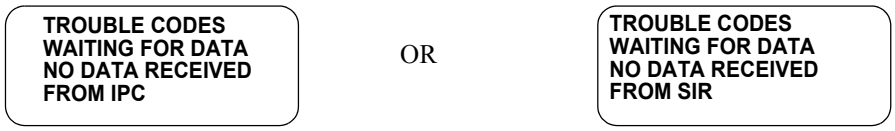
Other Possible Causes:

- Ignition switch has been turned *OFF*.
- Cable is not plugged securely into tester.
- Serial data link is shorted or open-circuited.

Recommendations:

- Verify that ignition is in *RUN*.
- Verify that tester is plugged securely into DLC.
- Check for serial data link shorted or open.
- See if data updates. Interruption of data may be just minor communications interference, especially in SDL Monitor Mode.

DATA NOT RECEIVED FROM IPC OR SIR



Most Likely Cause:

- The system displayed on the screen is not installed in this vehicle.

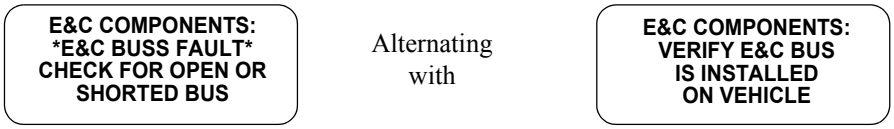
Other Possible Causes:

- The system displayed on the screen is malfunctioning.
- Ignition switch has been turned *OFF*.
- Cable is not plugged securely into tester.

Recommendations:

- Verify that this vehicle contains the system displayed on the screen.
- Verify that ignition is in *RUN*.
- Verify that tester is plugged securely into DLC.
- Check for serial data link shorted or open.

E&C COMPONENTS MESSAGES (1)



The tester queries all possible components and cannot get a response. After three seconds, the following screens are displayed.

Most Likely Cause:

- This vehicle does not contain E&C components.

Other Possible Causes:

- Ignition switch is not in *RUN*.
- Tester cable is not plugged in securely.
- E&C bus is not connected to pin J of DLC.
- E&C components are malfunctioning.

Recommendations:

- Verify that ignition is in *RUN*.
- Verify that the tester cable is plugged securely into the DLC.
- Check for pin in cavity J of DLC and that the pin J wire is indeed connected to the E&C bus (See Service Manual, Section 8A).
- Refer to service manual to determine if E&C components should be installed in vehicle.
- Refer to service manual for component troubleshooting.

E&C COMPONENTS MESSAGES (2)

E&C COMPONENTS:
E&C BUS FAULT
CHECK FOR OPEN
OR SHORTED BUS

The tester has failed in an attempt to transmit messages on the E&C bus.

Most Likely Cause:

- Tester cable is not plugged in securely.

Other Possible Causes:

- The E&C bus is open circuited.
- The E&C bus is shorted to battery or ground.

Recommendations:

- Verify that the E&C bus adapter is installed on the end of the tester cable and that the cable is plugged securely into the DLC.
- Verify that ignition is in *RUN*.
- Check for open circuited E&C bus.
- Check for E&C bus shorts.

E&C COMPONENTS MESSAGES (3)

E&C COMPONENTS

E&C BUS SHORTED TO GROUND

OR

E&C COMPONENTS

E&C BUS SHORTED TO BATTERY

The tester has failed in an attempt to transmit messages on the E&C bus.

NOTE

These screens can only be seen on testers with serial numbers after xxx002000.

Most Likely Cause:

- The E&C bus is shorted to ground or battery.

Other Possible Causes:

- Ignition switch is not in *RUN*.
- E&C component is malfunctioning.

Recommendations:

- Verify that ignition is in *RUN*.
- Check for E&C bus shorted to ground or battery.
- Refer to service manual for component troubleshooting.

REPAIR SERVICE

If you suspect that you have a problem with your unit, read the operating instructions carefully to ensure that you are operating the unit properly. Avoid the inconvenience of returning a non-defective unit for repair. It is advisable to exercise the Self-test procedure outlined in this manual to determine if a problem exists. If it is determined that a problem exists, or if you have any questions, please call 1-800-321-4VTX (USA).

B. DATA LIST PARAMETERS

The tester is capable of displaying a wide variety of parameters in the following modes:

- *F0: DATA LIST* (See *Mode F0: DATA LIST on page 92.*)
- *F1: SDL MONITOR* (See *Mode F1: SDL MONITOR on page 94.*)
- *F3: SNAPSHOT* (See *Mode F3: SNAPSHOT on page 100.*)
- *F5: VIN & OPTION CONTENT* (See *Mode F5: VIN and Option Content on page 114.*)

Each system ECU sends the tester information regarding the state of the ECU and associated sensors. The tester translates and displays this information in the form of diagnostic data parameters selected by the service technician. This section describes those parameters.

There are two basic types of diagnostic data 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 and Coolant Temperature.

The Data List mode of operation allows you to examine data which the body system ECUs transmit during normal operation. Included are data list parameters for the BCM, EOLM, RAC, DIC, and CCM systems. The status of telltale monitor lamps for the Instrument Panel Cluster (IPC) can also be displayed.

NOTE

The tester only displays data parameters for body system ECUs installed on the vehicle being tested.

In the SDL Monitor mode the tester passively *eavesdrops* on data being broadcast between the various body system ECUs. You decide which message you want to monitor at any time.

Parameters displayed in Snapshot mode are the same as those displayed in Data List mode with the addition of a time and index stamp showing where the data occurred relative to the Snapshot trigger. Snapshot parameters in the E&C mode do not include the time and index stamp.

The following section gives descriptions of the body parameters that can be displayed with the Body Systems Cartridge. Included are:

- a description of the states of the discrete parameters
- a description of the units, and the range of the analog parameters (analog ranges are widest possible ranges, not necessarily realistic maximum or minimum ranges)
- a description of the parameter

PARAMETERS LISTED ALPHABETICALLY

The following list contains all parameters, listed alphabetically, with those that begin with a number listed first.

PARAMETERS (NUMERIC)

These parameters begin with a number.

1ST LAMP DRIVER

STATES
OFF/ON

The 1st Lamp Driver parameter indicates the status of the primary lamp driver which is connected to terminal *B1*. The 1st and 2nd Lamp Drivers control the operation of the *AIR BAG* warning lamp during bulb check (seven flashes at key-on) and illuminate the lamp when a malfunction is detected.

2ND LAMP DRIVER

STATES
OFF/ON

This parameter indicates the status of the secondary lamp driver which is connected to terminal *B1*. The 1st and 2nd Lamp Drivers control the operation of the *AIR BAG* warning lamp during bulb check (seven flashes at key-on) and illuminate the lamp when a malfunction is detected.

4TH GEAR SWITCH

STATES
OFF/ON

This is an ECM parameter input from a switch mounted in the automatic transmission. When the car is in 4th gear the parameter reads ON. Otherwise the tester displays OFF.

8-DIGIT GM PART NUMBER

The scan tool displays an 8 digit part number. This number is the GM part number that is stored within the SDM memory.

36 V LOOP RSV

UNITS	RANGE
VOLTS	28.4 to 44.0

This parameter monitors the 36 volt reserve Power Signal from the DERM to each air bag deployment loop. On vehicles with driver side airbag only, this parameter is displayed as 36 V Loop (RSV)

PARAMETERS (A)

Parameters beginning with the letter A.

A/C CLUTCH REQ.

STATES
YES/NO

The BCM may request the ECM to activate the A/C clutch when it is desired by the driver.

A/C COMPRESSOR

STATES
OFF/ON

This parameter displays whether the A/C Compressor is OFF or ON.

A/C DESIRED

STATES
OFF/ON

This is a BCM request to the ECM to turn on the A/C clutch. This parameter displays ON if the A/C is requested on. Otherwise the tester displays OFF.

A/C HI SIDE TEMP

UNITS	RANGE
DEGREES C	-40 to + 215
DEGREES F	-40 to +418

The BCM uses a thermistor mounted in the air conditioning high pressure hose to monitor A/C operation. The tester displays degrees F and C.

A/C LED

STATES
OFF/ON

The state of the LED in the A/C ON/OFF button.

A/C LO SIDE TEMP

UNITS	RANGE
DEGREES C	-40 to +215
DEGREES F	-40 to +418

A thermistor is mounted in the evaporator low pressure hose of the A/C system. The tester displays degrees F and C.

A/C REQUEST

STATES
OFF/ON

Displays if the HVAC ECU is requesting the PCM/VCM to turn the A/C system ON or OFF.

ADL

STATES
LOCK ONLY or LOCK/UNLOCK

This parameter indicates the status of the Automatic Door Lock (ADL) system.

AIR DELIVERY MODE

STATES
SEE BELOW

This is the HVAC air delivery mode commanded to the HVAC programmer by the BCM. States can be Defrost, Heat, Recirculate, Automatic, Economy, Bi-Level, Off.

AIR INLET DR ACT

UNITS	RANGE
COUNTS	0 to 255

The actual position of the air inlet door.

AIR INLET DR CMD

UNITS	RANGE
COUNTS	0 to 255

The position of the air inlet door as commanded by the A/C ECU.

AIR INLET DR MAX

UNITS	RANGE
COUNTS	0 to 255

The maximum travel range of the door when it is driven to its stops following a recalibration.

AIR INLET DR MIN

UNITS	RANGE
COUNTS	0 to 255

The minimum travel range of the door when it is driven to its stops following a recalibration.

AIR MIX DOOR ACT

UNITS	RANGE
COUNTS	0 to 255

The actual position of the air mix door.

AIR MIX DOOR CMD

UNITS	RANGE
COUNTS	0 to 255

The position of the air mix door as commanded by the A/C ECU.

ALT F-OUTPUT

UNITS	RANGE
%	0 to 100

The BCM monitors the generator field ON time. A value close to 0% represents a minimum regulator ON time, and a value close to 100% represents a maximum ON time.

ALT L-STATUS

STATES
OK/LOW

This is the generator feedback to the BCM. The generator pulls this circuit low when it is not charging, and the tester indicates LOW. When the generator is charging it pulls this circuit high, and the tester displays OK.

ALT. T/T OUTPUT
BRAKE T/T OUTPUT
COOLNT TMP OUTPT
OIL T/T OUTPUT

STATES
OFF/ON

These output indicators display ON when a bulb check is performed or when a failure condition occurs.

ALTERNATOR FAULT

STATES
HIGH/LOW

The DIC monitors the alternator field activation circuit. The status is normally *HIGH* during charging and *LOW* if the alternator pulls the line low signaling a no charge situation.

AMB LIGHT

STATES
LIGHT/DARK

The displayed value refers to the amount of ambient light level calculated by the module using the light sensor. The information is used by the module for operation of the following features:

- The automatic headlamp feature
- The Daytime Running Lamps (DRL) feature

AMB. LIGHT SENS.

UNITS	RANGE
COUNTS	0 to 255

The Ambient Light Sensor is used by the CCM to control the instrument panel intensity for varying conditions. A high count signals low light conditions while a low count signals high light level conditions.

AMBIENT LT SNSR

UNITS	RANGE
VOLTS	0 - 5.0

The displayed voltage value refers to the amount of ambient light level as measured by the light sensor. This information is used to operate the automatic headlamp feature and the Daytime Running Lamps (DRL) feature. In LIGHT ambient conditions, the sensor resistance is low. In DARK ambient conditions, the sensor resistance is high.

The BCM interprets the following conditions as LIGHT when the ambient light sensor resistance is low and the sensor return circuit voltage is between 2.2 and 5.0 volts.

The BCM interprets the following conditions as DARK when the ambient light sensor resistance is high and the sensor return circuit voltage is between 0.2 and 1.3 volts.

If there is an open or a short to ground in the ambient light sensor circuit, the sensor will read about 0.0 volts. The default state is DARK and the module will turn ON the headlamps.

If the headlamps are set to the AUTO position while in the LIGHT state and the ambient light level changes to DARK for 15 seconds, the BCM will turn ON the headlamps.

If the headlamps are set to the AUTO position while the DARK state and the ambient light level conditions change to LIGHT for 20 seconds, the BCM will turn the headlamps OFF.

AMBIENT TEMP

UNITS	RANGE
DEGREES C	-40 to +215
DEGREES F	-40 to +418

The BCM uses a thermister mounted at the front of the vehicle. The tester displays the unfiltered value indicated by the ambient temperature sensor, while the instrument panel displays a filtered value for the driver.

ARMING SENSOR

STATES
CLOSED/OPEN

The Arming Sensor monitors vehicle velocity changes. The sensor consists of a sensing element, normally-open switch contacts, a diagnostic resistor, and two diodes. When a low-level velocity change occurs, the sensing element closes the normally-open switch contacts and supplies voltage to the high side of the deployment module. This parameter displays the open/closed switch status of the sensor circuit.

AUTO BUTTON

STATES
OFF/ON

The state of the Auto Button. Pressed is ON, and released is OFF.

AUTO HDLMP ENBLE

STATES
YES/NO

The data item refers to the commanded state of the auto headlamp feature.

- YES displays when the BCM commands the auto headlamps to turn ON.
- NO displays when the BCM commands the auto headlamps to turn OFF

AUTO HEADLAMPS

STATES
ACTIVE/INACTIVE

The data item refers to the user setting of the auto headlamps feature.

- ACTIVE displays when the auto headlamps feature is ON.
- INACTIVE displays when the auto headlamps feature is OFF.

AUTO LEARN TIMER

UNITS	RANGE
SECONDS	0 - 2040

- The scan tool displays the seconds used by the BCM to learn valid code from the Passlock™ sensor. The learn procedure consists of 3 consecutive periods.

AUX INSD AIR (º)

UNITS	RANGE
DEGREES C	-40 to +150
DEGREES F	-40 to +300

Output value of the auxiliary inside air temperature sensor inside the vehicle cab.

AUX LOWER OUT (º)

UNITS	RANGE
DEGREES C	-40 to +150
DEGREES F	-40 to +300

Output value of the auxiliary lower/heater outlet temperature sensor.

AUX LOWER OUT TEMP

UNITS	RANGE
COUNTS	0 to 255

Output value of the auxiliary lower/heater outlet temperature sensor.

AUX MIX DR ACT

UNITS	RANGE
COUNTS	0 to 255

Actual position of the auxiliary mix door.

AUX MIX DR CMD

UNITS	RANGE
COUNTS	0 to 255

The position of the auxiliary mix door as commanded by the A/C ECU.

AUX MIX DR MAX

UNITS	RANGE
COUNTS	0 to 255

The maximum travel range of the door when it is driven to its stops following a recalibration.

AUX MIX DR MIN

UNITS	RANGE
COUNTS	0 to 255

The minimum travel range of the door when it is driven to its stops following a recalibration.

AUX MODE DR ACT

UNITS	RANGE
COUNTS	0 to 255

Actual position of the auxiliary mode door.

AUX MODE DR CMD

UNITS	RANGE
COUNTS	0 to 255

The position of the auxiliary mode door as commanded by the A/C ECU.

AUX MODE DR MAX

UNITS	RANGE
COUNTS	0 to 255

The maximum travel range of the door when it is driven to its stops following a recalibration.

AUX MODE DR MIN

UNITS	RANGE
COUNTS	0 to 255

The minimum travel range of the door when it is driven to its stops following a recalibration.

AUX UPPER OUT (º)

UNITS	RANGE
DEGREES C	-40 to +150
DEGREES F	-40 to +300

Output value of the auxiliary upper outlet temperature sensor.

AUX UPPER OUT TEMP

UNITS	RANGE
COUNTS	0 to 255

Output value of the auxiliary upper outlet temperature sensor.

AVE. FUEL RESET

STATES
ON/OFF

The Average Fuel Reset parameter is an input to the IPC that resets the Average Fuel Economy

PARAMETERS (B)

Parameters beginning with the letter B.

BACKUP WARNING

STATES
OFF/ON

This discrete output turns ON if the Warning Lamp feedback does not match the requested state.

BATTERY VOLT

UNITS	RANGE
VOLTS	0 - 18.1

The scan tool displays the value of the battery voltage.

BATTERY VOLTAGE

UNITS	RANGE
VOLTS	0.0 to 25.5

This parameter indicates the battery voltage available to the CCM.

BCM PROM I.D.

BCM Prom I.D. is displayed as a number, and is used with service publications to verify that the correct prom is installed in the vehicle.

BLOWER COMMAND

UNITS	RANGE
VOLTS	0.0 to 18.6
VOLTS	0.0 to 25.5

Blower Command is the desired HVAC blower voltage commanded by the BCM to the HVAC power module.

BLOWER MOTOR PWM
AUX BLWR MTR PWM

UNITS	RANGE
%	0 to 98

Speed of the blower motor (auxiliary blower motor).

BRAKE FLUID LVL
BRAKE FLUID INPUT

STATES
OK/LOW
ON/OFF

The Brake Fluid Level/Brake Fluid Input switch is an input to the BCM/IPC that is used to control the red brake warning lamp. This input is the brake pressure switch on NON-ABS cars.

BRAKE PRESSURE

STATES
OK/LOW

Brake Pressure is the low brake pressure warning switch for the ABS system. The BCM uses this information to control the anti-lock light.

PARAMETERS (C)

Parameters beginning with the letter C.

C/C BRAKE SW

STATES
RELEASED/DEPRESSED

The Brake Switch signals the BCM to release the cruise control when the brake is applied. The cruise control must be turned ON when testing this BCM input.

C/C RESUME/ACCEL

STATES
OFF/ON

The tester displays ON when the Resume/Accel switch is pressed. Note that the cruise control must be selected ON to test this BCM input.

C/C SERVO FDBK.

UNITS	RANGE
%	0 to 100

The BCM uses the Cruise Control Servo Feedback input during cruise control operation. Displayed as a percent, a value close to 0% is the rest position and a value close to 100% is WOT.

C/C SET/COAST

STATES
OFF/ON

The tester displays ON when the Set/Coast switch is pressed. Note that the cruise must be selected ON to test this BCM input.

C/C STATUS

STATES
OFF/ON

The C/C Status parameter indicates the present status of the cruise control system.

CALIBRATION ID

The scan tool displays a 4-digit number. This calibration ID is the check sum of the SDM read only memory contacts.

CANADA SELECT

STATES
ON/YES

This parameter indicates if the vehicle is set up for Daylight Running Lamps (DRL).

CHIME

STATES
NONE/ HEADLAMP/ KEY IN IGNITION/ SEAT BELT/ TURN SIGNAL

The chime output refers to the commanded state of the audible chime.

- NONE displays when No audible chime sound is commanded.
- HEADLAMP displays when the headlamp ON reminder feature commands the chime to turn ON.
- KEY IN IGNITION displays when the key in ignition reminder feature and the driver door open feature command the chime to turn ON.
- SEAT BELT displays when the driver seat belt not buckled reminder feature commands the chime to turn ON.
- TURN SIGNAL displays when the turn signal ON reminder feature (on for more than 0.75 mile) commands the chime to turn ON.

CHIME #1

STATES
OFF/ON

The BCM requests Chime #1 when a chime is desired. The tester displays ON when the chime is requested. The speed of the chime depends on the vehicle being tested.

CHIME #2

STATES
OFF/ON

The BCM requests Chime #2 when a chime is desired. The tester displays ON when the chime is requested. The speed of the chime depends on the vehicle being tested.

CLIMATE CONTROL KEYS
AUTO KEY
COOLER KEY 1990
ECON KEY 1991-96
FRONT DEFROST KEY
OFF KEY
OUTSIDE TEMP KEY
REAR DEFROST KEY
WARMER KEY

STATES
OFF/ON NOT CYCLED/CYCLED

The Climate Control keys are inputs to the BCM from the CCP.

1990 models: Tester displays the state of each switch as ON when the switch is pressed and held, or OFF when it is released.

1991-96 models: The switch state is NOT CYCLED until the switch is pressed. Once the switch has been pressed, the state remains at CYCLED because the BCM remembers that the key has been pressed this ignition cycle.

CLOCKSPRG CONFIG

STATES
O.5 OHMS/1.0 OHMS

The Clockspring Configuration parameter indicates the software calibration value stored in the DERM for the Clockspring Coil that is to be installed in the steering column.

COMPONENT SERIAL #8-11

The scan tool displays digits 8 through 11 of the SDM serial number.

COMPONENT SERIAL #12

The scan tool displays digit 12 of the SDM serial number.

COMPRESSOR REQ.

STATES
YES/NO

The BCM requests to the ECM that the A/C compressor be turned OFF or ON, depending on the state of the HVAC.

COOLANT FAN REQ.

STATES
YES/NO

The BCM may request the ECM to activate the engine cooling fan depending on A/C loads.

COOLANT LEVEL

STATES
OK/LOW

The Coolant Level sensor is an optional BCM input that is used to control the instrument panel Low Coolant Level warning lamp. The tester indicates whether the BCM is seeing a normal or low coolant level from this sensor.

COOLANT TEMP

UNITS	RANGE
DEGREES C	-40 TO + 199

Coolant Temperature is an analog input to the ECM. The Coolant Temperature sensor is a temperature variable resistor in series with a fixed resistor in the ECM and biased with a reference voltage. The ECM reads the voltage across the Coolant Temperature sensor and converts this voltage into temperature. Coolant Temperature is used by many ECM systems.

COURT RELAY-FDBK

STATES
OFF/ON

The CCM monitors the courtesy lamp relay's control circuit. A low voltage on this circuit indicates the relay is ON. A high voltage state on the relay control circuit indicates the relay is OFF.

COURTESY LMP RLY

STATES
ON/OFF

The BCM uses the courtesy lamp relay input in order to determine the state of the courtesy lamp relay.

- ON displays when the BCM commands the courtesy lamps to turn ON by providing a ground for the courtesy lamp relay coil.

- OFF displays when the BCM is not commanding the courtesy lamps to turn ON by not providing a ground for the courtesy lamp relay coil.

COURTESY LMP TMR

UNITS	RANGE
SECONDS	0 - 40

The courtesy lamp timer is used to control devices that attach to the following illuminated entry, remote illuminated entry and exit lighting circuit. The time each circuit remains ON is dependent on the lighting calibration. In most cases turning the ignition to the ON position will override the programmed light timing. The value displayed represents the time in seconds before the module turns off the courtesy lamp relay.

COURTESY LMP. SW

STATES
OFF/ON

The courtesy lamp switch is located on the instrument panel. When the switch is set to ON it requests the BCM/CCM to turn on the lamps.

COURTESY RELAY (BCM)
COURTESY OUTPUT (CCM)

STATES
OFF/ON

This parameter displays whether the Courtesy Lamp Relay is being commanded OFF or ON, by the BCM/CCM.

CRANK

STATES
YES/NO

This parameter monitors the status of the crank input to the DERM. When the engine is being cranked, system voltage is applied to the DERM crank input. This causes the DERM to ground the inflatable resistance indicator circuit until cranking stops. This, in turn, causes the DERM to perform the SIR diagnostic system check (self-test).

CRT BRIGHTNESS

UNITS	RANGE
%	0 to 100

The BCM sends the CRT a message to control the brightness of the CRT. The tester displays a percentage of full intensity.

CRTC TO CRTM

STATES
OK/PROBLEM

The tester displays OK if the Cathode Ray Tube Controller (CRTC) has proper communication with the Cathode Ray Tube Monitor (CRTM).

CRUISE SET SPEED

UNITS	RANGE
MPH	0 to 159
KPH	0 to 255

Cruise Set Speed is the speed that the cruise control system is trying to maintain. The tester displays the Set Speed in MPH. Pressing the F7 key selects KPH.

CRUISE SWITCH

STATES
OFF/ON

This is the cruise control ON or OFF select switch. The tester displays ON or OFF as selected by the driver.

CTRL A/C AT IDLE

STATES
NO/YES

The BCM may request the ECM to control the air conditioning compressor at idle when the HVAC is in Vent or Idle mode, when any of BCM codes B447, B448, B449, B450, or B112 are set, when A/C pressure is LOW, when diagnostic mode is ACTIVE or when the battery voltage is LOW.

CURRENT SOURCE

STATES
DISABLED/ENABLED

The Current Source parameter indicates whether the DERM is presently attempting to run the *Initiator Assembly Resistance Test*. Since the portion of the DERM system test which requires the current source takes approximately 200 mS, there almost never is a resistance where the status is Enabled.

PARAMETERS (D)

Parameters beginning with the letter D.

DAYTIME RUN LMP

STATES
ON/OFF

This parameter indicates the state of the daytime running lamps.

- The tool displays ACTIVE when the daytime running lamps are commanded ON.
- The tool displays INACTIVE when the daytime running lamps are commanded OFF.

DEFOG RELAY-FDBK

STATES
OFF/ON

The CCM monitors the defog relay's control circuit. A low voltage on this circuit indicates the relay is ON. A high voltage state on the relay control circuit indicates the relay is OFF.

DERM CONFIG.

STATES
00=DRIV./PASS
01=DRIV. ONLY
02=SERVICE

DESIRED BLWR MTR

UNITS	RANGE
%	0 to 98

Selected blower motor speed.

DIC PROM I.D.

UNITS	RANGE
NONE	0.00 to 99.99

The tester displays a number corresponding to the revision level of the software and calibration used in the DIC.

DIC SWITCH A/D

UNITS	RANGE
COUNTS	0 to 255

The Driver Information Center (DIC) uses one CCM input wire and a resistor network that changes value depending on which switch is being pressed. The CCM converts this analog input to digital counts. If all switches are in their normal state (not pressed), the count is 208-235. A short to ground causes a count of less than 17. An open or short to power causes a count greater than 235. A fault in the DIC switch or circuit may cause the on-board diagnostics to be inoperative.

DIL RELAY

STATES
OFF/ON

This parameter displays whether the Delayed Interior Light (DIL) relay is enabled (on).

DIL TIMER

UNITS	RANGE
SECONDS	0 to 600

This parameter indicates the amount of time the DIL relay is enabled (on).

DIM POT INPUT

STATES
ACTIVE/INACTIVE

The BCM uses the Dim Pot input in order to determine the position of the dome lamp switch (thumb wheel) when the park lamps are ON.

- ACTIVE displays when the dome lamp switch is not in the FULL DOWN position and the park lamps are ON.
- INACTIVE displays when you turn the dome lamp switch to the FULL DOWN position (dash lights OFF) and the park lamps are ON.

DIMMING

STATES
ACTIVE/INACTIVE

The dimming output refers to the state of the headlamp switch dimmer. The headlamp switch dimming feature is a term describing the customer's ability to control the illumination of the interior panel displays.

- INACTIVE displays when the park lamps are OFF.
- ACTIVE displays when the Park lamps are ON.

DIMMING POT

UNITS	RANGE
VOLTS	0.0 - 18.0

The voltage value displayed indicates the position of the dome lamp switch (thumb wheel). The voltage value displayed should vary between 0.1-12.7 volts depending on the position of the dome lamp switch.

Zero (0) volts will be displayed when the following conditions exist:

- The headlamp switch is in the AUTO position.
- The daytime running lamps are OFF.

10.5 volts will be displayed when the following conditions exist:

- The park lamps or the headlamps are turned ON.
- The dome lamp switch is in the FULL bright position (thumb wheel turned completely up just before the detent).

0.1volts will be displayed if the following conditions exist:

- The park lamps or the headlamps are turned ON.
- The dimmer switch is in the FULL DIM position (thumbwheel turned completely down).

DIMMING POT

UNITS	RANGE
%	0 to 100

The Dimming Pot is displayed in percent. A value close to 0% represents maximum dimming and a value close to 100% represents maximum brightness.

DISCRM SENSOR

STATES
OPEN/CLOSED

The discriminating sensor monitors vehicle velocity changes. Each sensor consists of a sensing element, nominally open switch contacts, and a diagnostic resistor.

DISPLAY MODE UP

STATES
OFF/ON

This parameter monitors the state of the IPC display. The tester displays ON when the Display Mode Up switch is pressed and OFF when the switch is released.

DISPLAY ON KEY

STATES
OFF/ON

The Display ON Key parameter reflects the state of the Information Key on the IPC when the Information key is pressed.

DISPLAY STYLE

STATES
TOUR SEDAN/VF UP LEVEL

The tester displays whether the vehicle is a *Touring Sedan* or a *Vacuum Florescent Up Level* model.

DOME LAMP SW

STATES
ON/OFF

The BCM uses the dome lamp switch input in determining if the dome lamp switch (thumb wheel) is requesting the interior lights to turn ON.

- ON displays if the dome lamp switch requests the module to turn the interior lights ON (full up position past the detent).
- OFF displays when the dome lamp switch does not request the BCM to turn the interior lights ON (not in the full up position past the detent).

DOME OVERRIDE SW

STATES
ON/OFF

The module uses the dome override switch input from the dome override switch in order to allow or to defeat the interior lighting when the door opens. The dome override switch is located near the headlamp switch.

- ON displays if the dome override switch is overriding the interior lighting.
- OFF displays if the dome override switch allows the interior lights to turn ON when any door opens or if the left glass opens (if equipped).

DOOR

STATES
OPEN/CLOSED

The Door parameter indicates the state of the door jamb input to the RAC module. Opening any one of the doors changes the status to OPEN.

DOOR HANDLE (CCM)
DOOR HANDLE SW (BCM)

STATES
OFF/ON
RELEASED/DEPRESSED

The tester displays ON when either front outside door handle is pressed. Door handles are a BCM/CCM wake up input. These are momentary contact switches. The tester SNAPSHOT mode can help test these switches for proper operation.

DOOR HANDLE SW

STATES
ACTIVE/INACTIVE

The door handle switch information refers to the position of either of the door handles (outside or inside). The module uses this information to activate the illuminated entry feature. Depending on the vehicle the parameter may apply to both front doors or just the drivers door.

- ACTIVE is displayed when either of the handles is raised.
- INACTIVE is displayed during normal operation.

DOOR HANDLE SW (RAC)

STATES
OFF/ON

Electrical switches at the front door handles notify the RAC module when the handles are pushed in. ON means one of the front door switches is pressed.

DOOR JAM (RAC)
MINI WEDGE SW (CCM)

STATES
CLOSED/OPEN

This parameter monitors the state of the door jamb input to the RAC/CCM module. Opening any one of the doors changes the status to OPEN.

DOOR JAMB SWITCH

STATES
OFF/ON

The tester displays ON when either the driver's or passenger's front door is open.

DOOR KEY SW

STATES
ACTIVE/INACTIVE

The door key switch is part of the driver door lock cylinder. The door key switch is an input to the BCM to turn OFF the content theft system.

- ACTIVE displays when you turn the door key switch by using the door key.
- INACTIVE displays when you do not turn the door key switch by using the door key.

DOOR KEY SWITCH

STATES
NORMAL/UNLOCK

This is a CCM input used to disarm the universal theft deterrent system when the doors are unlocked. The tester displays UNLOCK when the lock cylinder is rotated and NORMAL when the lock is at rest.

DOOR LOCK RELAY

STATES
ON/OFF

The door lock relay parameter refers to the operation of the power door locks and power door lock relay. The RAC module can control the power door locks through the relay assembly.

- ON displays when the BCM/RAC senses the door lock relay coil is energized motors.
- OFF displays when the BCM/RAC does not sense that the door lock relay coil is being energized.

DOOR UNLOCK RELAY

STATES
OFF/ON

This parameter indicates that the RAC module has activated the unlock coil of the door lock relay assembly. The RAC module can control the power door locks through the lock relay assembly.

DR LOCK RLY FDBK

STATES
ON/OFF

The door lock relay output refers to the commanded state of the door lock relay.

- ON displays when the BCM commands the door lock relay coil to turn ON.
- ON momentarily displays when you press the RFA transmitter lock button or if you press the power lock button.
- OFF displays when you do not press the RFA transmitter lock button or the power lock button.

DRIV CURENT SINK

STATES
OFF/ON

The Driver Current Sink parameter indicates whether the DERM is currently grounding *Driver Side Low* terminal *B8*.

DRIVER 36 VLR

UNITS	RANGE
VOLTS	0.0 to 40.0

The Driver 36 VLR parameter indicates the Driver's Side voltage supplied by the DERMs 36 volt power supply. This measurement is made inside the DERM.

DRIVER BAG ENERGY RESERVE

UNITS	RANGE
VOLTS	22 to 24

Steering wheel module loop reserve voltage.

DRIVER BELT STATUS CHANGED THIS IGNITION CYCLE

STATES
NO/YES

The scan tool displays YES or NO. Driver seat belt has been buckled or unbuckled after the ignition is turned ON.

DRIVER ENERGY RESERVE

UNITS	RANGE
VOLTS	0.0 to 30.0

This is the voltage of the driver frontal energy reserve capacators inside the SDM, as measured by the SDM.

DRIVER FRONTAL RESISTANCE TYPICAL DATA VALUE = 2.8 OHMS

UNITS	RANGE
OHMS	0 - 6.6

The SDM Performs the resistance measurement test once each ignition cycle and verifies the ignition 1 and the 23 VLR Voltages are within the normal ranges. Then the SDM sources a constant current to the driver deployment loop. The SDM then measures the voltage drop across the deployment loop and coverts the measured voltage value to a driver deployment loop resistance value.

DRIVER FRONTAL SENSELO TYPICAL DATA VALUE = 3.1 VOLTS

UNITS	RANGE
VOLTS	0 to 20

The SDM measures the voltage at the driver frontal low terminal 2 and displays the value as Driver Frontal Senselo.

DRIVER FRONTAL VDIF TYPICAL DATA VALUE = 4-10MV

UNITS	RANGE
MILLIVOLTS	0 to 500

The SDM measures the voltage difference between driver frontal high and driver frontal low and displays this voltage difference as Driver VDIF.

DRIVER HI

UNITS	RANGE
VOLTS	0.0 to 40.0

The Driver High parameter indicates the voltage measured by the DERM at the high side (power side) of the driver inflator module.

DRIVER INFO SW

This SDL monitor parameter states which driver information switch is pressed at the CCDIC. Note: The time/temp key is not a monitored switch, therefore, when this key is pressed a message is not sent to the BCM or displayed on tester. This does not indicate a problem.

DRIVER RESISTANCE

UNITS	RANGE
OHMS	0.0 to 25.5

The SDM performs the resistance measurement test once each ignition cycle, and it verifies that the Ignition 1 and the 23 VLR voltages are within the normal ranges. Then the SDM sources a constant current to the driver deployment loop, measures the voltage drop that occurs across the deployment loop, and converts the measured voltage value to a driver deployment loop resistance value.

DRIVER SBELT MON.

STATES
UNBUCKLED/BUCKLED

The *Driver Seatbelt Monitor* parameter indicates whether the status of the driver seat belt is stored as crash data during a deployment event.

DRIVER SEAT BELT

STATES
BUCKLED/UNBUCKLED

The SDM determines this by looking at whether the driver seat belt is buckled or unbuckled.

DRIVER SEAT BELT A/D

UNITS	RANGE
VOLTS	0 to 12

The scan tool displays 0 or 12 volts.

Driver's seat belt buckled	=	12 VOLTS
Driver's seat belt unbuckled	=	0 VOLTS

DRIVER SEAT BELT STATUS

STATES
BUCKLED/UNBUCKLED

The scan tool displays buckled or unbuckled. The signal from the drivers seat built switch indicates whether the driver seat is buckled or unbuckled.

DRIVER SEATBELT

STATES
UNBUCKLED/BUCKLED

The *Driver Seatbelt* parameter indicates the status of the driver seat belt.

DRIVER SENSELO

UNITS	RANGE
VOLTS	0.0 to 25.5

The SDM measures the voltage of the driver frontal low terminal voltage and displays it as Driver Senselo.

DRIVER SIDE IMPACT SENSOR ID

The scan tool displays a 2 digit ID number. The ID signal sent to the SDM from the Driver SIS.

DRIVER SOURCE

UNITS	RANGE
VOLTS	0.0 to 40.0

The Driver Source parameter indicates the voltage applied to the high side of the deployment loop. This voltage is measured by the DERM through a diagnostic resistor in the Arming Sensor.

DRIVER TEMP DIAL

UNITS	RANGE
DEGREES C	15 to 32
DEGREES F	59 to 89

The desired discharge temperature selected by the driver.

DRIVER: UNLOCK
ALL: UNLOCK

STATES
LOCK/UNLOCK

DRIVER: UNLOCK is the command from the RAC module to the driver door unlock relay (isolation relay) assembly. This is in response to a command from the remote transmitter to unlock the driver's door. ALL: UNLOCK is the command from the RAC module to the unlock coil of the door lock relay assembly.

DRIVER VDIF

UNITS	RANGE
mV	4 to 8

The Driver VDIF parameter indicates the voltage difference between the *Driver Side High* and *Driver Side Low* as measured by the DERM during normal non-deployment operation of the SIR system.

DRIVER'S/FRONT PSNGR'S/REAR

STATES
DOOR OPEN/DOOR CLOSED

The door switches on Cadillac E and K-Body BCMs are wired as either driver's and passenger's or front and rear doors.

DRIVER'S DOOR

STATES
CLOSED/OPEN

This is the BCMs *Driver's Side Door Ajar* switch. The tester displays OPEN when the door is ajar, or closed when the door is fully closed.

DRL RELAY

STATES
ON/OFF

The Daytime Running Lamp (DRL) relay output refers to the commanded state of the DRL relay coil.

- ON displays when the module commands the DRL relay coil to turn ON.
- OFF displays when the BCM does not command the DRL relay coil to turn ON.

DRVR JAMB SW

STATES
ACTIVE/INACTIVE

The driver door jamb switch information refers to the position of the driver door.

- INACTIVE is displayed when the driver door is closed and the switch plunger is pushed IN.
- ACTIVE is displayed when the driver door is open and the switch plunger is OUT.

DUAL BUTTON

STATES
OFF/ON

State of the Dual button. ON is pressed. OFF is released.

DUSK

STATES
YES/NO

The displayed value refers to the amount of ambient light level calculated by the module using the light sensor. Dusk is displayed whenever the park lamps are ON. The information is used by the module for operation of the following features:

- The automatic headlamps feature
- The Daytime Running Lamps (DRL) feature

DVR DR UNLCK RLY

STATES
ON/OFF

The driver door unlock relay output refers to the commanded state of the driver door unlock relay.

- ON displays when the module commands the driver door unlock relay to turn ON.
- ON momentarily displays when you press the RFA transmitter unlock button or an input from the power door unlock switches.

OFF displays when the BCM does not command the driver door unlock relay coil to turn ON and the driver door unlock relay does not energize.

DVR TEMP DN BTTN

STATES
OFF/ON

State of the Driver Temp Down button. ON is pressed. OFF is released.

DVR TEMP UP BTTN

STATES
OFF/ON

State of the Driver Temp Up button. ON is pressed. OFF is released.

PARAMETERS (E)

Parameters beginning with the letter E.

ENABLE COUNTER

RANGE
0 - 255

The displayed value refers to the number of times the module has been enabled since manufacture. This information is for the assembly plant use only.

ENG/MET STATE

STATES
METRIC/ENGLISH

This parameter indicates the measurement system used to indicate numerical values on an IPC, DIC, or CRTC.

ENG/MET SWITCH

STATES
RELEASED/DEPRESSED

When the English/Metric switch on the instrument panel is pushed, the tester displays DEPRESSED; otherwise, it displays RELEASED.

ENGINE DATA SW

STATES
ON/OFF

Available for 1988 E-Body Oldsmobiles in SDL Monitor mode, the Engine Data Switch parameter indicates the state of the Instrument Panel Display and Engine Data toggle switch on the instrument panel. The tester displays ON when Engine Data Switch is being pressed.

ENGINE SPEED

UNITS	RANGE
RPM	0 to 6375

Engine Speed is a PCM/VCM/ECM internal parameter. It is computed by reference pulses from the distributor and is used by virtually all PCM/VCM/ECM systems. The up-option IPC uses the engine speed broadcast by the PCM/VCM/ECM for its tachometer display.

EXPORT STRAP

STATES
EXPORT/DOMESTIC

The tester displays EXPORT if the vehicle is built to be exported; otherwise, DOMESTIC is displayed.

EXTERIOR LAMP

STATES
OFF/ON

This is the RAC module's command to the exterior lamp control relay during security system operation. The ignition key must be ON to view RAC data list parameters.

PARAMETERS (F)

Parameters beginning with the letter F

FAN 1 REQUEST
FAN 2 REQUEST

STATES
NO/YES

This parameter indicates whether the BCM is requesting Coolant Fan from the ECM.

FAN DOWN BUTTON

STATES
OFF/ON

State of the Fan Down speed button to reduce blower motor speed. ON is pressed. OFF is released.

FAN SPEED

STATES
HI/LOW/OFF

This parameter indicates the desired speed of the engine cooling fan.

FAN UP BUTTON

STATES
OFF/ON

State of the Fan Up speed button to increase blower motor speed. ON is pressed. OFF is released.

FLASH TO PASS SW

STATES
ON/OFF

The BCM monitors the flash to pass input on CKT 1356 in order to determine if the high beams are requested ON. The scan tool displays ON when the BCM or the Flash To Pass switch commands the high beams ON. OFF is displayed when the flash to pass switch or the BCM is not commanding the high beams ON.

FOG LAMP RELAY

STATES
OFF/ON

The BCM controls the Fog Lamp Relay to be either ON or OFF.

FOG LAMP SWITCH

STATES
OFF/ON

The Fog Lamp Switch is mounted on the instrument panel and is a direct input to the BCM on Reatta models requesting the fog lamps.

FOG/TWILIGHT RELAY

STATES
OFF/ON

This is the BCM control signal to the fog lamp relay on Reattas and the twilight relay on Rivieras.

FREON PRESSURE

STATES
OK/LOW

The Freon Pressure Switch signals the BCM to illuminate the Service A/C System lamp when freon pressure is very low.

FRONT DOOR
DRIVER'S DOOR
PASSENGER'S DOOR

STATES
CLOSED/OPEN

The tester displays the position of the driver's door on 2-door cars, either the driver's or the front doors on 4-door cars (depends on the vehicle being tested), or the passenger's doors as indicated by the BCM’s input switches at each door.

FRNT FOG LMP RLY

STATES
ON/OFF

The front fog lamp relay output refers to the commanded state of the front fog lamp relay coil.

- ON displays when the BCM commands the front fog lamp relay coil to turn ON. This allows the relay to power up the front fog lamps.
- OFF displays when the BCM does not command the front fog lamp relay coil to turn ON. This denies current to the front fog lamps and causes the front fog lamps to be kept OFF.

FRONT FOG LMP SW

STATES
ON/OFF

The BCM uses the front fog lamp switch input in order to determine the status of the front fog lamp switch.

- ON displays when you depress the front fog lamp switch.
- OFF displays when you are not depressing the front fog lamp switch.

FRT DEFRST BUTTN

STATES
OFF/ON

State of the Front Defrost button. ON is pressed. OFF is released.

FUEL ECONOMY KEYS:
AVERAGE KEY
FUEL RESET KEY
FUEL USED KEY 1990
INSTANT KEY 1991-96
RANGE KEY
TIME SET KEY

STATES
OFF/ON NOT CYCLED/CYCLED

- 1990 models:

  The Fuel Economy keys are inputs to the BCM from the FDP. The tester displays the state of each switch as ON when the switch is pressed and held, or OFF when it is released.

- 1991-96 models:

  The switch state is NOT CYCLED until the switch is pressed. Once the switch has been pressed, the state remains at CYCLED because the BCM remembers that the key has been pressed this ignition cycle.

FUEL ENABLE

STATES
OFF/ON

This parameter indicates the state of the Pass Key Module. If the state is OFF, vehicle starting is inhibited.

FUEL GAUGE SWITCH
FUEL DATA SWITCH

STATES
RELEASED/DEPRESSED OFF/ON

When the Fuel Gauge Switch on the instrument panel is pushed, the tester displays DEPRESSED; otherwise RELEASED is displayed. The Fuel Data Switch is a momentary switch. The tester displays ON when the switch is pressed and OFF when the switch is released.

FUEL LEVEL

STATES
OK/LOW

Fuel Level Sender is an input to the BCM/IPC. It is used to control the fuel gauge at the instrument panel.

FUEL LEVEL

UNITS	RANGE
GAL	0 to 25
LITERS	0 to 95

The fuel level sender is an input to the BCM. It is used to control the fuel gauge at the instrument panel.

FUEL LEVEL

STATES
GAL/LITERS

The Fuel Level parameter displays the current fuel level in whole gallons or liters.

PARAMETERS (G-H)

Parameters beginning with the letters G-H.

GAUGE DIMMING PWM

UNITS	RANGE
%	0 - 100

The tester displays the CCM's commanded pulse width to the IPC for Instrument panel illumination. A pulse width close to 100% indicates maximum intensity.

GREEN LED DIM

UNITS	RANGE
%	0 - 100

The tester displays the CCM's commanded pulse width to the Green LED's used in the HVAC control head and other areas of the instrument panel. Due to the low intensity light emitted from LED's, the pulse width is normally near 100%.

HATCH

STATES
CLOSED/OPEN

The CCM uses a discrete input switch to determine the position of the rear hatch. OPEN means that the hatch switch indicates the hatch is open.

HEAD LAMP SWITCH (BCM)
HEAD LAMPS (CCM)

STATES
OFF/ON

This is the Head Lamp request from the Head Lamp Switch to the BCM/CCM.

HEADLAMP PWR RLY

STATES
ON/OFF

The headlamp power relay output refers to the commanded state of the headlamp power relay coil.

- ON displays when the BCM commands the headlamp power relay coil to turn ON.
- OFF displays when the BCM does not command the headlamp power relay coil to turn ON.

The BCM then does not allow current to the headlamp power relay coil. The headlamps remain OFF.

HEADLMP RELAY FDBK

STATES
ON/OFF

The BCM uses the headlamp relay feedback input in order to determine if the headlamps are ON or OFF by determining if current is present on the headlamp circuit. The BCM monitors CKT 352 in order to determine if the headlamp power relay energizes.

- ON displays when the BCM receives a voltage input on the circuit between the headlamp switch and the headlamp power relay coil. The voltage input indicates that the headlamps are ON.
- OFF displays when the BCM does not receive a voltage signal on the circuit between the headlamp switch and the headlamp power relay coil. The lack of voltage indicates that the headlamps are OFF.

HEADLAMP REQ SW

STATES
ACTIVE/ INACTIVE

The BCM uses the headlamp request switch input in order to determine the position of the headlamp switch.

- ACTIVE displays when the headlamp switch is in the HEADLAMP position.
- INACTIVE displays when the headlamp switch is not in the HEADLAMP position.

HEATED WINDSHLD

STATES
ON/OFF

This is a discrete input to the BCM from the Heated Windshield module which indicates when the Heated Windshield option is on.

HEATED WS REQ.

STATES
YES/NO

Heated Windshield Request is a pulsed output from the BCM to the Heated Windshield module. This is a momentary contact switch only. Use tester snapshot to test switch operation.

HIGH BEAM INPUT

STATES
YES/NO

Tester displays YES when the BCM's beam change input is pulled to ground.

HIGH BEAM INPUT

UNITS	RANGE
VOLTS	0.0 - 18.0

The module uses this input in order to determine the state of the high beam headlamps. The High Beam Input voltage will vary depending on the state of the headlamps. Refer to the following table.

Headlamps State	High Beam Input Voltage
DRL Beams ON	5.9-7.0 volts
Low Beams ON	11.5-14.0 volts
High Beams ON	1.2 volts

HIGH BEAM RELAY

STATES
OFF/ON

This is a BCM controlled relay. The BCM turns this relay ON to switch from Low Beams to High Beams.

HIGH BEAM SWITCH

STATES
ON/OFF

The BCM uses the high beam switch input in order to determine if the high beam headlamps are ON by measuring the voltage on CKT 524 between the following components:

- Both of the high beam headlamps
- The high/low beam selector switch
- The flash to pass switch

HIGH FAN REQUEST

STATES
NO/YES

This is a request from the BCM to the ECM for the High Fan to activate.

HORN RELAY

STATES
ACTIVE/INACTIVE
ON/OFF

The horn relay input information refers to the horn operation.

ACTIVE/ON displays when the following conditions exist:

- The BCM senses that the horn relay coil circuit is grounded.
- The horns receive a command to sound.

INACTIVE/OFF displays when the following conditions exist:

- The BCM does not sense that the horn relay coil circuit is grounded.
- The horns do not receive a command to sound.

HORN RELAY-FDBK

STATES
OFF/ON

The CCM monitors the horn relay's control circuit. A low voltage on this circuit indicates the relay is ON. A high voltage state on the relay control circuit indicates the relay is OFF.

HVAC FAN IS AUTO

STATES
NO/YES

This is a message sent to the CRTC from the BCM when the HVAC Fan speed is set to AUTO.

HVAC MODE CONTROL

STATES
BCM/ECCP

This parameter shows whether the BCM or the Electronic Climate Control Panel (ECCP) system is controlling the HVAC system.

HVAC MODE DESCRIPTORS

These descriptors indicate the commanded state of the HVAC. The BCM ECU commands the state of the HVAC delivery mode to the remote HVAC program module.

A/C	BILEVEL HEAT	FORCE DEF	RECRCULAT
A/C RECIRC	BLOWER DLY	FT DEFOG	SNOW INGST
A/C PURGE	COLD PURGE	HEATER	UP FORCED
AUTO KEY	DEFOG	LOW FORCE	UPPER
BILEVEL	DEFROST	LOWER	VENT
BILEVEL A/C	FIX HEATER	MEDIUM	
BILEVEL DEF	FIX BILVL	PURGE NRM	
BILEVEL FRC	FIX DFRST	PURGE DEF	

HVAC MOMENTARY SWITCHES

STATES
OFF/ON

The tester displays ON when these keys are pressed and OFF when the keys are released.

AUTO KEY	FAN UP KEY
COOLER KEY	FAN DOWN KEY
DEFOG KEY	OFF KEY
ECON KEY	REAR DEFOG KEY
FRONT DEFORST KEY	WARMER KEY

HVAC PROGRAM NO.

UNITS	RANGE
NONE	0 to 255

This is an internal BCM calculation used to control the HVAC system. A number close to 0 is maximum air conditioning while a number close to 255 is maximum heat.

HVAC SET TEMP SET/EXT. TEMP

UNITS	RANGE
DEGREES F	0 to +210
DEGREES C	-18 to +99

This is the temperature that the driver has commanded on the electronic climate control panel.

PARAMETERS (I-J)

Parameters beginning with the letters I and J.

IGN 1 PRESENT

STATES
YES/NO

Ignition 1 is a discrete input from the ignition switch to the CCM. The tester states whether this input is present at the CCM.

IGN POWER MODE

STATES
OFF/ RUN/ CRANK/ UNKNOWN

- OFF is displayed when the ignition switch is in the OFF or the ACCESSORY positions.
- RUN is displayed when the switch is in the RUN position.
- CRANK is displayed when the ignition switch is in the CRANK position.
- UNKNOWN is displayed when the BCM is unable to determine the position of the ignition switch (i.e. between the OFF and the RUN position).

IGN. 1 VOLTS

UNITS	RANGE
VOLTS	0.0 to 16.3

The tester displays the actual voltage measured by the CCM at the Ignition 1 input.

IGN 3 PRESENT

STATES
YES/NO

Ignition 3 is a discrete input from the ignition switch to the CCM. The tester states whether this input is present at the CCM.

IGNITION

STATES
ON/OFF

The Ignition parameter displays ON if the ignition key is on, or OFF if the ignition is off, as seen by the RAC module.

IGNITION

UNITS	RANGE
VOLTS	0-25.5

The Ignition parameter displays the system voltage measured by the SDM at its ignition feed.

IGNITION
TYPICAL DATA VALUE = 12 VOLTS

UNITS	RANGE
VOLTS	0 to 12

The ignition represents the system voltage that is measured by the SDM between terminal 5 and terminal 7.

IGNITION 1

UNITS	RANGE
VOLTS	0.0 to 16.3

Ignition 1 is the voltage present at the switched ignition circuit number 1 to the BCM.

IGNITION 1

STATES
ACTIVE/ INACTIVE

- ACTIVE is displayed when the ignition switch is in the RUN or CRANK position.
- INACTIVE is displayed when the ignition switch is not in the RUN or CRANK position.

IGNITION 3

STATES
ACTIVE/ INACTIVE

- ACTIVE is displayed when the ignition switch is in the RUN position.
- INACTIVE is displayed when the ignition switch is not in the RUN position.

IGNITION CYCLES LAMP OFF

UNITS	RANGE
CYCLES	0 to 125

Number of ignition cycles with the warning lamp OFF.

IGNITION CYCLES LAMP ON

UNITS	RANGE
CYCLES	0 to 125

Number of ignition cycles with the warning lamp ON.

IGNITION VOLTAGE

UNITS	RANGE
VOLTS	0 to 20

The Scan tool displays 0-20 volts. This ignition represents the system voltage measured by the SDM in its ignition fee.

IN CAR TEMP

UNITS	RANGE
DEGREES C	-18 to +99
DEGREES F	0 to +210

This sensor is located in the instrument panel for monitoring the inside temperature for the automatic temperature control system.

INADVERT PWR RLY

STATES
ON/OFF

The inadvertent power relay output refers to the commanded state of the inadvertent power relay coil.

ON displays when the BCM commands the inadvertent power relay coil to energize. The command allows the relay to power up the following components:

- The courtesy lamp relay
- The vanity lamps
- The overhead reading lamps
- The underhood lamps
- The glove box lamp

OFF displays when the BCM does not command the inadvertent power relay coil to turn ON. The inadvertent power relay coil then does not allow current to the following components:

- The courtesy lamp relay
- The vanity lamps
- The overhead reading lamps
- The underhood lamp
- The glove box lamp

INADVERTENT PWR TMR

UNITS	RANGE
SECONDS	0 - 1216

The module uses this timer to protect the battery against inadvertent battery rundown caused by devices that are attach to the courtesy lamp circuit. If the following lights remain ON, the BCM will turn the lights OFF after 20 minutes:

- The dome/courtesy lamp
- The vanity lamp
- The overhead reading lamp
- The underhood or the glove box lamp

The lights are turned OFF by the Inadvertent power relay. The number of seconds displayed refers to the amount of time left before the BCM will turn the relay OFF.

INCANDESCENT DIMMING

UNITS	RANGE
%	0 TO 100

The tester displays the percentage of full intensity of the incandescent light used in the instrument panel.

INCANDESCENT PWM

UNITS	RANGE
%	0 to 100

This is a BCM lighting level command to the IPC from the dimming pot and twilight photo cell. A high percent indicates a bright command and a low percent indicates a dim command. The instrument panel lamps are controlled by the BCM with a Pulse Width Modulated voltage signal.

INSIDE AIR (º)

UNITS	RANGE
DEGREES C	-40 to +102 (1998-2001 S/T Truck) -40 to +60 (2000-2002 C/K Truck)
DEGREES F	-40 to +215 (1998-2001 S/T Truck) -40 to +140 (2000-2002 C/K Truck)

Output value of the inside air temperature sensor inside the vehicle cab.

INSIDE TMP SENS

UNITS	RANGE
VOLTS	0 to 5

Value of the inside air temperature sensor signal.

INT. LIGHT LEVEL

UNITS	RANGE
%	0 to 100

The tester displays the percentage of full intensity of the interior lights in the instrument cluster. The level only changes when the headlights or parking lights are on.

INTER LAMP REQ

STATES
ACTIVE/ INACTIVE

The interior lamp request information refers to the interior lamp request circuit.

ACTIVE displays momentarily when the driver turns the interior lamp ON and the inadvertent power relay is ON.

INACTIVE displays when the inadvertent power relay is ON.

INTER LIGHT MODE

STATES
NONE/ INTERIOR/ ILLUM ENTRY/ EXIT LIGHTING/ REMOTE ILLUM

The interior lighting mode output displays the name of the feature that is commanding the interior lights to turn ON.

NONE displays when the interior lights are not commanded to turn ON.

INTERIOR displays when the dome lamp switch commands the interior lights to turn ON.

ILLUM, ENTRY, EXIT LIGHTING, REMOTE ILLUM. display when the respective mode commands the interior lighting to turn ON.

INTERIOR LAMP

STATES
OFF/ON

This is the RAC module's command to the interior lamp control relay during illuminated entry operation. Viewing the RAC data is not possible when the ignition switch is off.

IPC PROM I.D.

RANGE
0 to 65535

The IPC PROM I.D. is displayed as a number, and is used with service publications to verify that the correct PROM is installed in the vehicle.

JULIAN DATE OF BUILD

The scan tool displays a 3 digit number. An example would be 723. 723 is July 23 which is day 204 based on the Julian Calendar.

PARAMETERS (K-L)

Parameters beginning with the letters K-L.

KEY CYLINDER REQUEST

STATES
YES/NO

This is an input to the RAC to unlock the power locks from either front door key cylinder. This is used on *Level 3 RACs* to alert the RAC module to disarm the theft deterrent system. When the key is in the lock and turned, the tester reads YES and the theft deterrent is disarmed.

KEY IN IGNITION

STATES
YES/NO

The key in ignition information refers to the position of the ignition key in the ignition switch.

- YES displays when you completely insert the ignition key in the ignition switch cylinder.
- NO displays when you do not completely insert the ignition ley into the ignition switch cylinder.

LAMP DRIVER

STATES
INTERNAL/EXTERNAL

The warning lamp control method for a hard wire lamp is internal. The warning lamp control method for a serial data controlled lamp is external.

LAMP DRIVER FEEDBACK

STATES
ACTIVE/INACTIVE

The warning lamp state detected by the SDM.

LAST RFA CMD

STATES
NONE/ LOCK/ UNLOCK/ PANIC/ MANUAL RESYNC/ FOB PROGRAM/ DIAG ACKNOWLEDGE/ DIAG REQUEST

The Last RFA Cmd. Since Wake-Up information refers to the last RFA commanded message from the BCM, since the BCM has achieved a wake-up status. NONE is displayed when the BCM has awakened from the asleep statue without commanding a RFA module request. Messages result from a button press from a programmed RFA transmitter (key fob).

LED DIMMING

STATES
NO/YES

LED Dimming is a message that is sent to the ECCP by the BCM to control the ECCP dimming.

NO = Not Dimming

YES = Dimming

LEFT TURN SIGNAL

STATES
ON/OFF

The BCM uses the left turn signal input in order to determine the state of the left turn signal.

- ON displays when the left turn signal switch engages. This commands the left turn signal lamps to illuminate.
- OFF displays when the left turn signal switch does not engage or the turn signal lamps do not illuminate.

The BCM monitors the vehicle speed input for activation of the turn signal reminder chime feature. The scan tool display alternates between ON and OFF as the turn signal flashes.

LH MIX MTR FDBK

UNITS	RANGE
COUNTS	0 to 255

The position of the left hand air temperature motor (actuator).

LH MIX MTR RQST

UNITS	RANGE
COUNTS	0 to 255

The desired position of the left hand air temperature motor (actuator).

LH PRETENS. RESIST. TYPICAL DATA VALUE = 2.4 OHMS

UNITS	RANGE
OHMS	0 to 6.6

The SDM performs the resistance measurement test once each ignition cycle and verified the ignition 1 and 23 VLR voltages are within the normal ranges. Then the SDM sources a constant current to he driver seat belt pretensioner deployment loop. The SDM then measures the voltage drop across the deployment loop and converts the measured voltage value to a driver seat belt pretensioner deployment loop resistance value.

LH PRETENS. SENSLO TYPICAL DATA VALUE = 3.1 VOLTS

UNITS	RANGE
VOLTS	0 to 20

The SDM measures the voltage at the driver seat belt pretensioner low terminal 9 and displays this value as *LH Pretens. Senslo*.

LH PRETENSIONER VDIF TYPICAL DATA VALUE = 4 - 10 MV

UNITS	RANGE
MILLIVOLTS	0 to 500

The SDM measures the voltage difference between driver belt high and driver belt low and displays this voltage difference as LH Pretensioner VDIF.

LH SIDE AIR BAG RESIST. TYPICAL DATA VALUE = 2.4 OHMS

UNITS	RANGE
OHMS	1 to 6.6

The SDM performs the resistance measurement test once each ignition cycle and verifies that Ignition 1 and Ignition 23 VLR voltages are within the normal ranges. Then the SDM sources a constant current to the LH

side air bag deployment loop and converts the measured voltage value to a LH side air bag deployment loop resistance value.

LH SIDE AIR BAG SENSELO TYPICAL DATA VALUE = 3.1 VOLTS

UNITS	RANGE
VOLTS	0 to 20

The SDM performs the resistance measurement test once each ignition cycle and verifies the ignition 1 and 23 VLR voltages are within the normal ranges. Then the SDM sources a constant current to the LH side air bag deployment loop. The DSM then measures the voltage drop across the deployment loop and converts the measured voltage value to a LH side air bag deployment loop resistance value.

LH SIR AIR BAG SENSELO TYPICAL DATA VALUE = 3.1 VOLTS

UNITS	RANGE
VOLTS	0-20

The SDM measures the voltage at the LH side air bag low terminal 10 and displays this value as LH Side Air bag Senselo.

LH SIDE AIR BAG VDIF UNITS TYPICAL DATA VALUE = 4 - 10 MV.

UNITS	RANGE
MILLIVOLTS	0 to 500

The SDM measures the voltage difference between driver side high and driver side low and displays this voltage difference as LH side Air Bag VDIF.

LIFT GLASS RELAY

STATES
ON/OFF

The lift glass relay output refers to the commanded state of the lift glass relay coil.

- ON displays when the BCM commands the lift glass relay coil to turn ON.
- ON momentarily displays when you press the RFA transmitter lift glass release button twice within 3 seconds or you press the lift glass button.
- OFF displays when you do not press the RFA transmitter lift glass release button twice within 3 seconds or you do not press the lift glass button.

LIFT GLASS SW

STATES
ON/OFF

The lift glass switch information refers to the position of the dash mounted lift glass switch.

- ON is displayed when the lift glass switch button is pressed in.
- OFF is displayed when the lift glass switch button is not pressed in.

LIGHTING CALIB

RANGE
16XXXXXX

This number refers to the lighting configuration calibration part number in the module.

LIGHTING SUFFIX

RANGE
AA-ZZ

This is the version of the lighting calibration number in the module.

LOCK REQUEST

STATES
YES/NO

If the RAC module has seen a request to lock the doors (YES), the remote transmitter's lock button requests the RAC module to lock the doors. On Level 3 RAC systems the door lock request can also be seen by the RAC module from the power lock switches located on the front doors of the vehicle.

LOW BEAM RELAY

STATES
ON/OFF

The headlamp power relay output refers to the commanded state of the headlamp power relay coil.

- ON displays when the BCM commands the headlamp power relay coil to turn ON.
- OFF displays when the BCM does not command the headlamp power relay coil to turn ON.

The BCM then does not allow current to the headlamp power relay coil. The headlamps remain OFF.

LOW FAN REQUEST

STATES
NO/YES

The BCM may request engine coolant fan operation when the A/C system is operating.

LOW FREON PSSR

STATES
YES/NO

This is a discrete input to the BCM for low refrigerant warning. The tester displays YES if the refrigerant is low.

LOW WASHER INPUT

STATES
OFF/ON

The tester displays ON when the windshield washer fluid level is low and OFF when the level is OK.

LOWER OUTLET (º)

UNITS	RANGE
DEGREES C	-40 to +102 (1998-2001 S/T Truck, 2000-2002 C/K Truck)
DEGREES F	-40 to +215 (1998-2001 S/T Truck, 2000-2002 C/K Truck)

Output value of the lower/heater outlet temperature sensor.

LOWER OUTLET (º)

UNITS	RANGE
DEGREES C	-40 to +80
DEGREES F	-40 to + 176

Temperature of the lower/heater outlet.

LT TURN SIGNAL
RT TURN SIGNAL

STATES
OFF/ON

These parameters change state anytime the IPC receives a signal from the Turn/Hazard switch.

PARAMETERS (M-O)

Parameters beginning with the letters M-O.

MIX DOOR ACTUAL

UNITS	RANGE
%	0 to 100

Displayed as a percent, *Mix Door Position* should follow the commanded mix door position except when the door reaches the mechanical limit of its travel.

NOTE

For 1990-96 Cadillac E and K-Cars, when in Data List or Snapshot mode, the Mix Door does not move. This does not indicate a problem with the vehicle or the tester.

MIX DOOR COMMAND

UNITS	RANGE
%	0 to 100

The *Mix Door* command is displayed as a percent. A value close to 0% represents a cold air mix, while a value close to 100% represents a warm air mix.

MIX DOOR DIRECTN

STATES
FORWARD/REVERSE

The tester displays the direction that the Air Mix Door was last moved. When the door is moved FORWARD, more warm air enters the vehicle. When the door is moved in the REVERSE direction, more cool air enters.

MIX DOOR DRIVE

STATES
OFF/ON

The Mix Door Drive moves the Air Mix Door to the desired position. The tester displays ON when the drive is attempting to move the Air Mix Door.

MIX DOOR MAX

UNITS	RANGE
COUNTS	0 to 255

The value of the maximum position following a calibration procedure.

MIX DOOR MIN

UNITS	RANGE
COUNTS	0 to 255

The value of the minimum position following a calibration procedure.

MIX DR MIN POS.

UNITS	RANGE
COUNTS	0 to 255

The value of the Mix Door.

MIX MOTOR

STATES
NORMAL/INITIALIZING

When left and right hand air temperature motors (actuators) are working correctly, the state should be normal.

MODE DOOR ACTUAL

UNITS	RANGE
COUNTS	0 to 255

The position of the mode door as indicated by the sensor. Higher values indicate the door is towards its maximum limit; lower values indicate the door is near its minimum limit.

MODE DOOR CMND

UNITS	RANGE
COUNTS	0 to 255

The desired position of the mode door. Higher values indicate the door is towards its maximum limit; lower values indicate the door is near its minimum limit.

MODE DOOR MAX

UNITS	RANGE
COUNTS	0 to 255

Maximum travel range of the Mode Door when recalibrated.

MODE DOOR MIN

UNITS	RANGE
COUNTS	0 to 255

Minimum travel range of the Mode Door when recalibrated.

MODE DOWN BUTTON

STATES
OFF/ON

State of the Mode Down button. ON is pressed. OFF is released.

MODE UP BUTTON

STATES
OFF/ON

State of the Mode Up button. ON is pressed. OFF is released.

MODULE P/N

RANGE
16XXXXXX

This is the part number assigned to the BCM currently being diagnosed.

OAT (º)

UNITS	RANGE
DEGREES C	-40 to +102 (1998-2001 S/T Truck) -40 to +60 (2000-2002 C/K Truck)
DEGREES F	-40 to +215 (1998-2001 S/T Truck) -40 to +140 (2000-2002 C/K Truck)

Outside Air Temperature - ambient air temperature value reported by the outside air temperature sensor.

OFF BUTTON

STATES
OFF/ON

State of the OFF button. ON is pressed. OFF is released.

OIL LEVEL

STATES
OK/LOW

The engine oil level switch is located in the engine oil pan. The switch signals the oil level is OK or LOW.

OIL MONITOR

UNITS	RANGE
MILLIONS	0 to 25.5

The tester displays the number of engine revolutions since the oil monitor was last reset in the CCM.

OIL PRESSURE

UNITS	RANGE
PSI	0 to 215

Oil pressure is displayed in PSI only, as indicated by the BCM′s engine oil pressure sender.

OIL RESET SWITCH

STATES
OPEN/CLOSED

The Oil Reset Switch is a mechanical switch on the EOLM box. It is used to reset the Oil Light telltale switch to the maximum value after the oil has been changed. OPEN indicates the switch is not being reset and CLOSED indicates the switch is being reset.

OIL REVS LEFT

UNITS	RANGE
HEXADECIMAL	$0B90 or $39D0

The Oil Revs Left parameter is only displayed as a hexadecimal value (not mileage). It should only be used as a check for the number of engine revolutions left on the engine oil as calculated by the EOLM based on factors such as engine speed and coolant temp. The hexadecimal value of $0B90 indicates there is approximately 20% engine oil-life remaining. A value of $39D0 means there is approximately 100% of the engine oil-life remaining.

OUTPUTS

STATES
OFF/ON

The following are outputs from the IPC that turn on a Tell Tale light when a fault is detected in the system.

- ALT T/T OUTPUT
- COOLNT TMP OUTPT
- OIL T/T OUTPUT

OUTSIDE AIR LED

STATES
OFF/ON

State of the LED in the Outside Air button.

OUTSIDE TMP SNS

UNITS	RANGE
VOLTS	0 to 5

Value of the outside air temperature signal.

PARAMETERS (P)

Parameters beginning with the letter P.

PARK BRAKE SW

STATES
SET/ RELEASED

The park brake switch information refers to the position of the park brake pedal.

- SET displays when you depress the parking brake (switch closed).
- RELEASED displays when you do not depress the Parking Brake switch (switch opened).

PARK ENGAGED

STATES
YES/NO

Notifies RAC module when the vehicle transmission is in the Park position. The tester displays YES if the transmission is in Park. NO is displayed if the transmission is in any gear other than Park.

PARK LAMP INPUT

STATES
OFF/ON

When the park lamps are on, the tester displays *ON*

PARK LAMP RELAY

STATES
ON/OFF

The park lamp relay output refers to the commanded state of the park lamp relay coil.

- ON displays when the BCM commands the park lamp relay coil to turn ON. This allows the relay to power up the park lamps.
- OFF displays when the BCM does not command the park lamp relay coil to turn ON.

This denies current to the park lamps and causes the park lamps to be OFF.

PARK LAMP SWITCH

STATES
OFF/ON

This is the Park Lamp request to the BCM from the Park Lamp Switch.

PARK LAMPS

STATES
ON/OFF

The BCM monitors the voltage on the park lamp CKT 2409 in order to determine if the park lamps are ON. The scan tool displays ON when the BCM or the headlamp switch turns the park lamps ON. OFF displays when the neither the park lamp switch nor the BCM commands the park lamps to turn ON.

PARK NEUTRAL SW.

STATES
P-N/ -R-DL

The Park/Neutral switch is a transmission input. The display reads P-N if the car is in Park or Neutral and -R-DL if it is in Reverse, Drive, or Low gear.

PARK SWITCH

STATES
OFF/ON

The Park Switch parameter is an indication to the CCM that the transmission is in Park.

PARKING BRAKE

STATES
OFF/ON

The parking brake switch input is used by the BCM to control the red brake warning lamp. The tester displays ON when the parking brake is applied.

PARKING LIGHTS

STATES
OFF/ON

This parameter displays the status of the *Parklamp/Headlamp* input to the CCM.

PAS DR UNLCK RLY

STATES
ON/OFF

The passenger door unlock relay output refers to the command state of the passenger door unlock relay coil.

- ON displays when the BCM commands the passenger door unlock relay coil to turn ON.
- ON displays momentarily when you press the RFA transmitter unlock button twice within 3 seconds.
- OFF displays when you do not press the RFA transmitter unlock button twice within 3 seconds or if you use the passenger power door unlock button.

PAS DR UNLOCK INP

STATES
ACTIVE/ INACTIVE

The passenger door unlock input information refers to the operation of the following items:

- Passenger door(s) unlock function
- Passenger door unlock relay

ACTIVE displays whenever the passenger door unlock relay coil is energized. An energized coil allows current to flow to the lock/unlock motors.

INACTIVE displays whenever the passenger door unlock relay is not energized. This condition prevents current from reaching the lock/unlock motors.

PASS 36 ULR

UNITS	RANGE
VOLTS	28.4 to 44.0

This parameter monitors the 36 volt reserve power signal from the DERM to each airbag deployment loop. The reserve power ensures that there is sufficient power to deploy the airbag if ignition power is low or lost on an accident. If the voltage falls below, or exceeds the normal operating range specified above, a fault is set.

PASS FRONTAL RESIST UNITS
TYPICAL DATA VALUE = 2.2 OHMS

UNITS	RANGE
OHMS	0 TO 6.6

The SDM performs the resistance measurement test once each ignition cycle and verifies the ignition 1 & 23 VLR voltages are within the normal ranges. Then the SDM sources a constant current to the passenger deployment loop. The SDM then measures the voltage across the deployment loop and converts the measured voltage value to a passenger deployment loop resistance value.

PASS FRONTAL SENSELO
TYPICAL DATA VALUE = 3.1 VOLTS

UNITS	RANGE
VOLTS	0 to 20

The SDM measures the voltage difference between passenger frontal high and passenger low and displays this voltage difference as Passenger VDIF

PASS KEY A/D

UNITS	RANGE
NONE	0 to 255

The CCM reads the ignition key's PASS KEY CODE (VATS) to check against the key code stored in memory. The A/D counts are referenced in the vehicle service manual. Each key to the vehicle should be within the ranges specified.

PASS KEY STATUS

STATES
OK/PROBLEM

PASS KEY Status refers to the Vehicle Anti-Theft System. When the ECM recognizes the proper ignition key in the ignition, PASS KEY Status reads OK. If PASS KEY Status is not OK, the tester displays PROBLEM, and the ECM does not provide fuel to the engine.

PASS KEY TELLTALE

STATES
OFF/ON

This parameter indicates the status of the Pass Key Lamp on the instrument panel.

PASS SENSELO

UNITS	RANGE
VOLTS	0 to 20

The SDM measures the voltage of the passenger frontal low terminal voltage and displays it as Passenger Senselo.

PASS TEMP DIAL

UNITS	RANGE
DEGREES C	15 to 32
DEGREES F	59 to 89

The desired discharge temperature selected by the passenger.

PASS TMP DN BTTN

STATES
OFF/ON

State of the Passenger Temp Down button. ON is pressed. OFF is released.

PASS TMP UP BTTN

STATES
OFF/ON

State of the Passenger Temp Up button. ON is pressed. OFF is released.

PASSENGER BAG ENERGY RESERVE

UNITS	RANGE
VOLTS	22 to 24

Instrument Panel (IP) module loop reserve voltage.

PASSENGER DOOR

STATES
OPEN/CLOSED

This is the BCM's passenger side door ajar switch. The tester displays OPEN when the door is ajar, or CLOSED when the door is fully closed.

PASSENGER RESISTANCE

UNITS	RANGE
OHMS	0.0 to 6.3

The *Passenger Resistance* parameter displays resistance as calculated by the DERM of the inflates module, SIR Cool Assembly harness wiring circuits and thermal contact.

PASSENGER SIDE IMPACT SENSOR ID

The scan tool displays a 2 digit ID number. The ID signal sent to the SDM from the passenger SIS.

PASSENGER SOURCE

UNITS	RANGE
VOLTS	0.0 to 40.0

The Passenger Source parameter indicates voltage applied to the high side of the deployment loop. This voltage is measured by the DERM through the diagnostic resistor in the arming sensor.

PASSENGER VDIF

UNITS	RANGE
MV	4 to 8

Voltage difference between passenger frontal high and passenger frontal low terminals.

PASSLOCK™ CODE

STATES
SHORT/TAMPER/VALID CODE # / OPEN

The scan tool displays the validity of the Passlock code received by the BCM. The scan tool displays OPEN, SHORTED, TAMPER and a valid code as a numeric value (1-10).

PASSLOCK™ DATA

UNITS	RANGE
VOLTS	0.00 to 5.00

The scan tool displays the voltage code from the Passlock sensor to the Body Control Module (BCM). A valid Passlock sensor voltage of 5 volts will be displayed on the scan tool when the ignition cylinder is turned to the ON position. Once the ignition cylinder has been rotated to the crank position the Passlock voltage will drop from 5 to 0.86-4.28 volts depending on which of the 10 possible Passlock sensors the

vehicle is equipped with. The (BCM) then determines if the voltage received is a valid or invalid code. The scan tool will continue to display the Passlock voltage code (0.86-4.28 volts) received by the (BCM) when the ignition cylinder returns to the on/run position.

PASSLOCK™ STATE

STATES
Ignition Off/Normal/Learn Passlck/ Tamper/Monitr Passlck/Fail Enable/ Seedkey Learn/Auto Lrn Pend/Auto Learn

The scan tool displays the state of the Passlock system.

PASSWRD LRN MODE

STATES
ACTIVE/ INACTIVE

The scan tool displays the state of the VTD password learn mode. The scan tool displays INACTIVE when the Passlock™ system is not in a learn mode.

PCM FAIL ENABLE

STATES
YES/NO

The scan tool displays the state of the VCM/PCM fail enable mode. The scan tool displays YES when the Passlock™ system transitions from the Monitor Passlock™ Data state to the VCM/PCM Fail Enable state.

PCM FUEL CONT

STATES
YES/NO

The scan tool displays the state of the VCM/PCM fuel continue mode. The scan tool displays YES when the Passlock™ system verifies a valid password to the BCM.

PCM LEARN TIMER

STATES
ACTIVE/ INACTIVE

The scan tool displays the state of the VCM/PCM learn timer. The scan tool displays INACTIVE when the BCM is not in a learn mode.

PRNDL SWITCHES A, B, C, P

STATES
HIGH/LOW

Transmission switches A, B, C, and P display the status of the transmission. The tester displays HIGH when the switch circuit is OPEN, or LOW when the switch circuit is closed to ground.

PROM ID

The scan tool displays a 4-digit number. This number is the programmable read-only memory (PROM) ID.

PROM ID. NO.

RANGE
0 to 65535

PROM identification number of an ECU.

PWR DOOR LOCK

STATES
YES/NO

The CCM uses the Power Door Lock input from the door switches to arm the universal theft deterrent system. The tester displays YES when this input goes high, as when the doors are locked.

PWR DOOR UNLOCK

STATES
YES/NO

The CCM uses the Power Door Unlock input from the door switches for wake up input. The tester displays YES when this input goes high, as when the doors are unlocked.

PARAMETERS (Q-R)

Parameters beginning with the letters Q-R.

QDM FAULT

STATES
YES/NO

A quad driver is an output power device used to control high current components. This parameter should read No.

RAC PGM LINE

STATES
LEVEL II OR III

Monitors the status of the RAC program line to pin G. The tester monitors the status of the RAC program circuit at pin G of the ALDL connector. The tester displays ON with an open circuit or high voltage. If this circuit is pulled to ground, tester displays OFF.

RAC SYSTEM LEVEL

There are three RAC system levels. The tester can test systems in levels 2 and 3. Level 1 RACs do not have Serial Data.

LEVEL	PRO	OPTION
RAC Level 1:	C97	Illuminated Entry
	KP2	Retained Accessory Entry
RAC level 2:	AU4	Automatic Door Locks
	AU0	Remote Lock Control
	SDL	Serial Data Link plus level 1 content
RAC Level 3:	AU6	Universal Theft Deterrent plus levels 1 and 2 content

RAC VERSION

STATES
PILOT/PROTOTYPE 1st/2nd/3rd/4th/5th/6th

RAC Version number indicates the level of RAC control module software being used in the RAC system. First through sixth levels are production versions.

RADIO LINK FAIL

STATES
OFF/ON

The tester displays FAILED if the CRTC does not receive 3 messages in a row from the radio module over the E&C bus. The BCM does not set any codes or take any action just because this flag is set.

RAP CALIB

RANGE
16XXXXXX

This the RAP (Retained Accessory Power) calibration part number used in the BCM.

RAP RELAY

STATES
OK/FAILED

This parameter displays whether the Retained Accessory Power (RAP) relay is being commanded OFF or ON. The RAP is controlled by the RAC/CCM module and can only be tested with the ignition on.

RAP RELAY

STATES
ON/ OFF

The RAP relay output refers to the commanded state of the RAP relay coil.

- ON displays when the BCM commands the RAP relay coil to energize. The command allows the relay to power up the following components:
- The radio
- The power windows
- The overhead console
- The sunroof with the ignition key removed or in the OFF position with all of the doors closed

OFF displays when the BCM commands the RAP relay to turn OFF.

RAP RELAY FDBK

STATES
ON/ OFF

The RAP feedback information refers to the operation of the retained accessory power (RAP) circuit.

- ON displays whenever the BCM turns ON the RAP relay.
- OFF displays whenever the BCM turns OFF the RAP relay.

RAP SUFFIX

UNITS	RANGE
	AA-ZZ

This is the version of the RAP calibration number in the BCM.

RAP TIMER

UNITS	RANGE
Seconds	0 - 1198

The module uses this feature to control the devices that attach to the retained accessory power (RAP) circuit. This feature allows the operation of the radio, sunroof, power windows and overhead console for 20 minutes after the ignition key is turned to the OFF position and before any door is opened. The number of seconds displayed refers to the amount of time left before the BCM will turn OFF the RAP relay.

RCVR CODE STATUS

STATES
PROGRAMMED/ NOT PROGRAMMED

This parameter gives the status of the RAC module in regard to being programmed or not programmed for a remote transmitter.

REAR DEFOG
RR DEFOG OUTPUT

STATES
OFF/ON

The state of the LED/switch in the rear defog switch.

REAR DEFOG CONTROL

STATES
BCM/ECCP

The HVAC Programmer controls the Defogger relay based on signals from the BCM or ECCP.

REAR DEFOG RELAY

STATES
OFF/ON

The tester displays the CCM's commanded state of the *Rear Defog Relay.*

REAR DEFOG REQ.

STATES
YES/NO

Rear Defog Request is a discrete input to the CCM to request electric defog. The switch makes only momentary contact to ground. Several depressions of the switch might be necessary to see its signal. Use tester Snapshot mode to capture this switch's input.

REAR DEFOG STATE

STATES
OFF/ON

The BCM and CRT send messages to each other noting whether the Rear Defog is on or off. The tester monitors and displays this information.

REAR DEFOG TIMER

UNITS	RANGE
SECONDS	0 to 1275

This parameter is a count-down timer for the electric defog system. The tester displays the amount of remaining defog time in seconds.

REAR DEFROSTER

STATES
OFF/ON

The HVAC Programmer controls the Defogger relay based on signals from the BCM or ECCP.

REAR FOG LAMP SW

STATES
ON/ OFF

The BCM uses the rear fog lamp switch (export only) input in determining the status of the rear fog lamp switch.

- ON displays when you depress the rear fog lamp switch.
- OFF displays when you are not depressing the rear fog lamp switch.

REAR DOOR(S)

STATES
CLOSED/OPEN

The tester displays OPEN when one or both of the rear doors is open.

REAR GATE/ DOOR

STATES
OPEN/CLOSED

The rear gate/door information refers to the position of the rear gate/door and rear glass.

- CLOSED is displayed when both the rear gate and the rear glass are completely closed.
- OPEN is displayed when the rear gate or the rear glass is not completely closed.

RECALL KEY

STATES
OFF/ON

The recall key displays stored IPC messages. The tester displays ON when the key is pressed and OFF when the key is released.

RECIRC. BUTTON

STATES
OFF/ON

The state of the Recirculation button. ON is pressed. OFF is released.

RECIRC LED

STATES
OFF/ON

The state of the LED in the Recirculation button.

REMINDER CALIB

RANGE
16XXXXXX

This number refers to the reminder warning calibration part number in the module.

REMINDER SUFFIX

RANGE
AA - ZZ

This is the version of the reminder calibration number in the module.

REQ DIAG DISPLAY

STATES
DISABLED/ENABLED

The Requested Diagnostic Display parameter indicates whether DERM terminal *A8* is grounded thus causing the *AIR BAG* warning lamp to flash diagnostic trouble codes.

RFA MESS WAKE-UP

STATES
NONE/ PANIC/ ACTIVE UNLOCK Fob (#)/ ACTV LOCK/ PROG MODE CANCEL/ REAR/ PROG MODE REQ/ TRANSMITTER DIAG/ PROG SUCCESSFUL/ MODE ACK/ MANUAL RESYNC

The RFA message since wake-up refers to the last message sent to the BCM from the RFA module. The RFA module sends a request to the BCM based on the RFA transmitter (key fob) button presses. The scan tool will display the last RFA Module request to the BCM since the BCM has been awake.

- NONE is displayed when the BCM wakes from the asleep status without receiving a message from the RFA Module. Messages result from a button press from a programmed RFA key fob.
- ACTIVE UNLOCK FOB (#) is displayed when the respective programmed RFA key fob is pressed to UNLOCK the vehicle.
- ACTIVE LOCK is displayed when a lock button is pressed on any programmed RFA key fob.
- REAR or PANIC is displayed when the respective button is pressed on any programmed RFA key fob.

RH MIX MTR FDBK

UNITS	RANGE
COUNTS	0 to 255

The position of the right hand air temperature motor (actuator).

RH MIX MTR RQST

UNITS	RANGE
COUNTS	0 to 255

The desired position of the right hand air temperature motor (actuator).

RH PRETENS RESIST. TYPICAL DATA VALUE = 2.4 OHMS

UNITS	RANGE
OHMS	0 to 6.6

The SDM perform the resistance measurement test once each ignition cycle and verifies the ignition 1 and 23 VLR voltages are within the normal ranges. Then the SDM sources a constant current to the passenger seat belt pretensioner deployment loop. The SDM then measures the voltage drop across the deployment loop and converts the measured voltage value to a passenger seat belt pretensioner deployment loop resistance value.

RH PRETENS SENSELO TYPICAL DATA VALUE = 3.1 VOLTS

UNITS	RANGE
VOLTS	0 to 20

The SDM measures the voltage at the passenger seat belt pretensioner low terminal 15 and displays the value as RH Pretens. Senselo.

RH PRETENSIONER VDIF
TYPICAL DATA VALUE = 4-10 MV

UNITS	RANGE
MILLIVOLTS	0 to 500

The SDM measures the voltage difference between passenger belt high and passenger belt low and displays this voltage difference as RH Pretensioner VDIF.

RH SIDE AIR BAG RESIST
TYPICAL DATA VALUE = 2.4 OHMS

UNITS	RANGE
OHMS	0 to 6.6

The SDM performs the resistance measurement test once each ignition cycle and verifies the ignition 1 and 23 VLR voltages are within the normal ranges. Then the SDM sources a constant current to the RH side air bag deployment loop. The SDM then measures the voltage drop across the deployment loop and convert the measured voltage value to a RH side air bag deployment loop resistance value.

RH SIDE AIR BAG SENSELO
TYPICAL DATA VALUE = 3.1 VOLTS

UNITS	RANGE
VOLTS	0 to 20

The SDM measures the voltage at the RH side air bag low terminal 14 and displays this values as RH side Air Bag Senselo.

RH SIDE AIR BAG VDIF
TYPICAL DATA VALUE = 4-10 MILLIVOLTS

UNITS	RANGE
MILLIVOLTS	0 to 500

The SDM measures the voltage difference between passenger side high and passenger side low and displays this voltage difference as RH Side Air Bag VDIF.

RIDE STATUS SWITCH

STATES
OFF/ON

This parameter displays the Ride Status on the IPC. The tester displays ON when the key is pressed and OFF when the key is released.

RIGHT TURN SIGNAL

STATES
ON/OFF

The BCM uses the right turn signal input in order to determine the state of the right turn signal.

- ON displays when the right turn signal switch engages. This commands the right turn signal lamps to illuminate.
- OFF displays when the right turn signal switch does not engage or the turn signal lamps do not illuminate.

The BCM monitors the vehicle speed input for activation of the turn signal reminder chime feature. The scan tool display alternates between ON and OFF as the turn signal flashes.

RR DEFOG SW.

STATES
OFF/ON

The state of the LED in the rear defog switch.

RR DEFROST BTTN

STATES
OFF/ON

The state of the Rear Defrost button. ON is pressed. OFF is released.

RR PASS DR/LIFT

STATES
ACTIVE / INACTIVE

The rear passenger door/ lift glass jamb switch information refers to the position of the following components:

- Right rear passenger door
- Left rear passenger door (4-door utility vehicle)
- The lift glass (2-door and 4-door utility vehicles)
- ACTIVE is displayed when any of the rear passenger doors or the lift glass is not completely closed.
- INACTIVE is displayed when both of the rear passenger doors and the lift glass are completely closed.

PARAMETERS (S)

Parameters beginning with the letter S.

SD TELLTALE

STATES
DISABLED/ENABLED

Serial Data Lamp.

SEASON ODOMETER

UNITS	RANGE
MILES	0 TO 999,999
KILOMETERS	0 to 1,609,999

This is the total accumulated mileage of the vehicle being tested. The BCMs EEPROM stores this information for display on the IPC. Pressing the F7 key toggles the display between miles and kilometers.

NOTE

Y-Car CCM only updates the odometer counter every 16 miles.

SEATBELT BUCKLED

STATES
YES/ NO

The seat belt buckled information refers to the position of the driver seat belt buckle.

- YES displays when you buckle the driver seat belt buckle (switch opened).
- NO displays when you do not buckle the driver seat belt buckle (switch closed).

SECURITY CALIB

RANGE
16XXXXXX

This number refers to the security calibration part number in the module.

SECURITY DISPLAY

STATES
OFF/ON

The security display is a Level 3 RAC output. The tester reflects the RAC module's desired control of the lamp, ON or OFF.

SECURITY LAMP STATE

STATES
OFF/ON/FLASHING

The scan tool displays the state of the SECURITY lamp. The scan tool displays ON, OFF or FLASHING.

SECURITY SUFFIX

RANGE
AA - ZZ

This is the version of the Security Calibration number in the module.

SELECT SOL. 1

STATES
OFF/ON

The state of the heater/defrost vacuum select solenoid.

SELECT SOL. 2

STATES
OFF/ON

The state of the A/C vacuum select solenoid.

SELECT SOL. 3

STATES
OFF/ON

The state of the heater vacuum select solenoid.

SELECT SOL. 4

STATES
OFF/ON

The state of the defrost vacuum select solenoid.

SELECT SOL. 5

STATES
OFF/ON

The state of the air inlet select solenoid.

SELECTED MODE

STATES
AUTO/UPPER OUTLET/BI-LEVEL/ FLOOR/DEFOG/DEFROST/OFF

The current selection for operating mode.

SENSOR FEED

UNITS	RANGE
VOLTS	2 to 3

Discriminating sensor voltage.

SENSOR LOW

UNITS	RANGE
VOLTS	0 to 40

The DERM monitors the low (ground) side of the airbag deployment loop. This parameter should be within 41-61% of the 36 volt reserve power parameter

SET/COAST SWITCH

STATES
OFF/ON

When the Cruise Control is on and the Set/Coast Switch is pressed, the tester displays ON; otherwise it displays OFF.

SOFTWARE P/N

RANGE
16XXXXXX

This information refers to the version of the software (software identification number) in the module.

SOLAR SENSOR

UNITS	RANGE
COUNTS	0 to 255

The value for intensity of the sunlight shining onto the dash. As intensity increases, the sensor value decreases. As intensity decreases, the sensor value increases.

SPEEDO DIM PWM

UNITS	RANGE
%	0 to 100

The tester displays the CCM's commanded pulse width to the IPC for speedometer illumination. A pulse width close to 100% indicates maximum intensity.

SSW DESIGN

RANGE
AA - ZZ

This is the version of the software part number in the module.

START RELAY-FDBK

STATES
OFF/ON

The CCM has a feedback line from the starter relay to indicate when the starter is OFF or ON.

STARTER ENABLE

STATES
OFF/ON

STORE SWITCH

STATES
OFF/ON

This is a momentary switch that stores IPC messages while the IPC is blanked. The tester displays ON when the switch is pressed and OFF when the switch is released.

SUN LOAD SENSOR

UNITS	RANGE
VOLTS	0 to 5

Value of the sun load sensor signal.

SUNLOAD TEMP

UNITS	RANGE
DEGREES F	-40 to +419
DEGREES C	-40 to +215

The sunload sensor is located in the instrument panel. It is used by the BCM to determine the load that the sun is placing on the A/C system.

SW. BATT. VOLTS

UNITS	RANGE
VOLTS	0.0 to 25.5

Switched Battery Voltage is the vehicle's system voltage after it has been cleaned up by the CCM. The voltage is normally be less than the Ignition 1 input voltage.

SYSTEM MONITOR

STATES
OFF/ON

When the System Monitor Switch on the instrument panel is pushed, the tester displays ON; otherwise, OFF is displayed. This is a momentary contact switch. Use tester Snapshot to test switch operation.

PARAMETERS (T)

Parameters beginning with the letter T.

TACH SWITCH

STATES
RELEASED/DEPRESSED

When the Tach Switch on the instrument panel is pushed, the tester displays DEPRESSED; otherwise, RELEASED is displayed. This is a momentary contact switch. Use tester Snapshot to test switch operation.

TAMPER SWITCH

STATES
OPEN/CLOSED

A normally open switch that closes to ground when a key cylinder assembly is removed. This is a circuit of the universal theft deterrent system used on Level 3 RAC systems.

TAMPER TIMER

UNITS	RANGE
SECONDS	0 - 2040

The scan tool displays the time remaining when in the tamper mode. The timer starts when the ignition switch is turned to the RUN position and the BCM receives a Passlock™ data voltage different from the last learned voltage. The timer has a delay of 10 minutes and will stay active even if the ignition switch is cycled from the RUN to the OFF position.

TAPE DECK STATUS

STATES
OK/FAILURE

Available for 1988-89 Oldsmobile E-Cars with a CRTC, Tape Deck Status is displayed during Serial Data Link monitoring of the CRTC to BCM message.

TELLTALE LAMPS

STATES
OFF/ON

The telltale lamps on the Instrument Panel Cluster can be commanded OFF or ON by the Body Computer Module. The tester displays the BCM's desired control of each of the following telltale lamps.

ALTERNATOR T/T	LOW OIL LEVEL
BRAKE T/T	LOW VOLTS T/T
CHANGE OIL T/T	LOW WASHER T/T
CHECK GAGE	METAL TEMP T/T
CRUISE T/T	OIL LEVEL T/T
DOOR AJAR T/T	OIL PRESS. T/T
ELEC. FAULT T/T	RESUME T/T
HEADLAMPS ON T/T	SEAT BELT T/T
HIGH BEAM T/T	SECURITY LAMP T/T
LOW FUEL T/T	SERVICE A/C T/T

TEMP DISPLAY

STATES
SET TEMP./EXT. TEMP.

The tester indicates which temperature is currently being displayed.

TEST SWITCH

STATES
RELEASED/DEPRESSED

When the Test Switch on the instrument panel is pushed, the tester displays DEPRESSED; otherwise, RELEASED is displayed.

THEFT DET. STATE

STATES
PASSIVE/ACTIVE DOORS ARMED/ ALARM/TIMEOUT

Theft Detection State indicates the setting of the security system in a RAC.

THEFT LAMP

STATES
OFF/ON/FLASHING

The security lamp turns ON for 15 seconds and then turns OFF when you open a door by using the handle or the key fob. The security lamp also displays ON STEADY for 3 seconds and then turns OFF when the ignition switch turns from the OFF position to the RUN position. If the IPC is unable to communicate with the BCM, the security telltale displays ON steady and the Passlock™ system functions. The security telltale goes to FLASHING mode momentarily and then displays ON steady for approximately 10 minutes if the vehicle is in the lockout cycle.

THEFT STATE

STATES
OFF/ IDLE/ DISARMED/READY TO ARM/ ARM INITIATED/ ARM DELAY/ ALARM/ ARMED

- OFF displays when ignition 1 is ACTIVE and all of the doors, including the rear glass, are closed.
- IDLE displays when ignition 1 is ACTIVE and any door or the rear glass is open.
- DISARM displays when ignition 1 goes from ACTIVE to INACTIVE and all of the doors and rear glass are closed
- READY displays when ignition 1 goes from ACTIVE to INACTIVE and any door or the rear glass are open
- ARM INITIATE displays when ignition 1 is INACTIVE, any door is open and the doors are locked.
- ARM DELAY displays when ignition 1 is INACTIVE and the vehicle is armed with the doors and rear glass closed.
- ARMED displays when the vehicle is in the ARM DELAY state and all of the inputs are monitored in order to determine whether to alarm or disarm the system. In the ARM DELAY state, ignition 1 is INACTIVE, and all of the doors and the rear glass are closed.
- ALARM displays when the vehicle is in the ARMED STATE and the system detects a violation on any of the inputs being monitored.

TR CNTRL STAT SW

STATES
OFF/ON

The Transmission Status Switch displays the transmission control status. The tester displays ON when the key is pressed and OFF when the key is released.

TRANSMISSION SELECTOR (PRNDL) POSITIONS

These descriptors indicate the position of the gear shift selector.

1st	2nd
3rd	4th
5th	6th
DRIVE	DRIVE 1
DRIVE 2	DRIVE 3
DRIVE 4	NEAUTRAL
OVERDRIVE	PARK
REVERSE	

TRIP/SEASON ODO.

STATES
OFF/ON

When the Trip/Season Switch on the instrument panel is pushed, the tester displays ON; otherwise, OFF is displayed.

TRIP ODO RESET
TRIP RST. SW.

STATES
RELEASED/DEPRESSED OFF/ON

When the TRIP ODO reset switch on the instrument panel is pushed, the tester displays DEPRESSED; otherwise, RELEASED is displayed. This is a momentary contact switch. Use tester Snapshot to test switch operation.

When the Trip Reset Switch on the instrument panel is pushed, the tester displays ON; otherwise, OFF is displayed.

TRIP ODO SELECT

STATES
RELEASED/DEPRESSED

When the TRIP ODO select switch on the instrument panel is pushed, the tester displays DEPRESSED; otherwise, RELEASED is displayed.

TRIP ODOMETER

UNITS	RANGE
MILES	0 to 1999.9
KILOMTERS	0 to 3218

The BCM transmits the accumulated trip odometer mileage by the IPC. Pressing the ¶ key toggles the display between MPH and KPH.

TRUNK AJAR

STATES
YES/NO

When the trunk is open, a discrete input to the BCM is toggled and the tester displays YES.

TRUNK OPEN INPUT

STATES
OFF/ON

The tester displays ON when the trunk is open and OFF when the trunk is closed.

TRUNK UNLOCK RELAY

STATES
OFF/ON

This parameter indicates whether the Trunk Unlock Relay is being commanded OFF or ON, by the RAC module.

NOTE

The remote transmitter cannot be used to unlock the trunk with the ignition ON.

TURN SIGNAL

STATES
YES/NO

When either the left or right turn signal is ON, the tester displays YES.

TWILIGHT DELAY

UNITS	RANGE
%	0 to 100
COUNTS	0 to 255

Twilight Display is an input from the IPC to the BCM and CCM through a variable resistor controlled by the driver. Twilight Delay is displayed in percent by the BCM or in Counts by the CCM. A value close to 0% or 0 counts represents a minimum delay time. A value close to 100% or 255 counts indicates a maximum delay time.

TWILIGHT ENABLE

STATES
OFF/ON

This is a discrete input to the IPC, BCM, or CCM depending on the vehicle being tested. The tester indicates if the Twilight Enable switch has been turned on or off.

TWILIGHT PHOTO

UNITS	RANGE
%	0 TO 100

The Twilight Photo Cell is a light sensitive resistor mounted in the instrument panel. Twilight photo is used by the BCM to control the Twilight Sentinel function. A value close to 0% represents daylight while a value close to 100% represents darkness.

TWILIGHT RELAY (RIVIERA ONLY)

STATES
OFF/ON

The BCM controls several relays for the Twilight function. These are all controlled through one circuit. The tester indicates whether the relays are being commanded ON or OFF by the BCM.

TWILIGHT SWITCH

STATES
OFF/ON

The Twilight Switch is an input to the BCM and is controlled by the driver. The Twilight Switch reads ON when the twilight switch is set to on.

PARAMETERS (U-Y)

Parameters beginning with the letters U-Y.

UNLOCK REQUEST

STATES
YES/NO

YES indicates that the RAC module has seen a request to unlock the doors. The remote transmitter's unlock button requests the RAC module to unlock the doors. On Level 3 RAC's the door unlock request can be seen by the RAC module also from the power lock switches located on the front doors of the vehicle.

UPPER OUTLET (º)

UNITS	RANGE
DEGREES C	-40 to +102 (1998-2001 S/T Truck) -40 to +60 (2000-2002 C/K Truck)
DEGREES F	-40 to +215 (1998-2001 S/T Truck) -40 to +140 (2000-2002 C/K Truck)

Temperature of the air discharged from the upper outlet.

VAC SOLENOID 1
VAC SOLENOID 2
VAC SOLENOID 3
VAC SOLENOID 4
VAC SOLENOID 5

STATES
OFF/ON

The state of the solenoid. If ON, the solenoid is energized. If OFF, the solenoid is not energized.

VEHICLE SPEED

UNITS	RANGE
MPH	0 to 159
KPH	0 to 255

Vehicle speed information is a signal received directly from the vehicle speed generator to the IPC cluster. Pressing F7 toggles the display between MPH and KPH.

VEHICLE SPEED

UNITS	RANGE
KM/H	0 - 205
MPH	0 - 127

The module uses the data for determining how fast the vehicle is traveling. This data is used during the operate of the automatic door lock and turn signal reminder features.

VENT BUTTON

STATES
OFF/ON

The state of the Vent button. ON is pressed. OFF is released.

VERY LOW FREON

STATES
NO/YES

The tester monitors the message from the BCM to the ECM and displays YES if the A/C system has very low freon pressure.

VF DIMMING

UNITS	RANGE
%	0 TO 100

The Vacuum Florescent Dimming parameter is a BCM to IPC command. The green or blue instrument panel displays are controlled by the Dimming Pot and Twilight Photo Cell. The maximum percentage is approximately 12%.

VIN INFORMATION

The scan tool displays a list. The DIM (Dash Integration Module) is programmed at the assembly plant with the last four digits of the SDM number and the VIN of the vehicle.

VTD FUEL DISABLE

STATES
OFF/ON

The scan tool displays the state of the VTD fuel disable mode. The scan tool displays INACTIVE when the Passlock™ system verifies a valid password.

VTD FUEL DISABLE UNTIL IGN OFF

STATES
YES/NO

The scan tool displays the state of the VTD fuel disable until Ignition Off mode. The scan tool displays NO when the Passlock™ system verifies a valid password.

WARNING LAMP CONTROL

STATES
OFF/ON

WARNING LAMP CYCLES

UNITS	RANGE
CYCLES	0 to 125

The ignition cycles of the current warning lamp state.

WARNING LAMP CYCLES TYPICAL DATA VALUE = 0-125 CYCLES

UNITS	RANGE
CYCLES	0 to 125

WARNING LAMP FBK

STATES
OFF/ON

The Warning Lamp Feedback parameter, under normal operating conditions, should match the status of the 1st Lamp Driver and/or the 2nd Lamp Driver. It indicates to the DERM whether the state of the *AIR BAG* warning lamp matches the microprocessor commanded state.

WARNING LAMP ON

UNITS	RANGE
HRS	0 to 182

Measures continuous warning lamp on time.

WASHER FLUID LVL

STATES
OK/LOW

The tester displays OK or LOW depending on the input from the switch located in the washer fluid reservoir.

YEAR MODULE BUILT

The scan tool displays what year the module was built.

E&C BUS MONITOR MESSAGES

This section contains a list of all the E&C communication bus messages which the tester is able to decode in the E&C MONITOR mode and those messages which the tester can transmit in the E&C CONTROL mode. Also included is a brief description of each of the messages.

The following table lists all of the E&C bus monitor messages which can be decoded by the scan tool. Some messages contain data which is displayed on line 4 of the tester (e.g., RPT FREQUENCY). For these messages, this table shows the format for the data display and describes the meaning of the data.

Descriptor	Message Description
SET VOLUME	VOL = vv vv = 0 (minimum volume) vv = 64 (maximum volume)
RPT VOLUME	Report current volume setting. VOL = vv (0-64)
INC VOLUME	Increase volume by 1 step.
DEC VOLUME	Decrease volume by 1 step.
AUDIO MUTE	Turn off amplifier's audio output.
AUDIO UNMUTE	Turn on amplifier's audio output.
INC FREQUENCY	Increment frequency to next channel.
DEC FREQUENCY	Decrement frequency to next channel.
SET FREQUENCY	Set receiver band and channel number. See format for RPT FREQUENCY.
RPT FREQUENCY	Report current receiver band and frequency of channel: FM xxx.x for U.S. FM -or- AM xxxx for U.S. AM -or- 9AM xxxx for EUROPEAN FM -or- EFM xxx.xx for ASIAN FM -or-
	WX CH x for WEATHER -or
SEEK UP	Increase frequency until station is found.
SEEK DOWN	Decrease frequency until station is found.
SCAN REQUEST	Sent from the Steering Wheel Control Head to the Radio Control Head to initiate the *Scan* function.
STOP SCAN	Sent from the Steering Wheel Control Head to the Radio Control Head to terminate the *Scan* function.
GO TO AM PRESET n	Tune the radio receiver to the AM station defined by *AM Preset* ***n***.

Descriptor	Message Description
GO TO FM PRESENT n	Tune the radio receiver to the FM station defined by *FM Preset **n***.
GO TO LAST AM STATION	Tune the radio receiver to the last AM station tuned.
GO TO LAST FM STATION	Tune the radio receiver to the last FM station tuned.
INC PRESET	Tune to the next preset station.
DEC PRESET	Tune to the previous preset station.
FADE REAR	Fade to the rear by 1 step.
FADE FRONT	Fade to the front by 1 step.
BALANCE RIGHT	Move balance to the right by 1 step.
BALANCE LEFT	Move balance the left by 1 step.
SET FADE & BAL	Set the fade & balance to a specified value: F=f, BB=bb ff=Fade (63=full rear) bb=Balance (63=full right)
FLAG COMMAND	Set state of radio power, stereo, loudness, and DNR to on or off. abcd (a, b, c & d = 0 or 1) a=0 Radio off a=1 Radio on b=0 Stereo disable b=1 Stereo enable c=0 Loudness off c=1 Loudness on d=0 DNR off d=1 DNR on
INC EQUAL CH 1	Increase equalizer band 1 (bass)
DEC EQUAL CH 1	Decrease equalizer band 1 (bass)
INC EQUAL CH 2	Increase equalizer band 2
DEC EQUAL CH 2	Decrease equalizer band 2
INC EQUAL CH 3	Increase equalizer band 3
DEC EQUAL CH 3	Decrease equalizer band 3
INC EQUAL CH 4	Increase equalizer band 4
DEC EQUAL CH 4	Decrease equalizer band 4
INC EQUAL CH 5	Increase equalizer band 5
DEC EQUAL CH 5	Decrease equalizer band 5
RPT EQUAL 1,5	Report equalizer bands 1 (bass) and 5 (treble)

Descriptor	Message Description
	b1=bb, bb-base (0-15) b5=tt tt=treble (0-15)
RPT EQUAL 2-4	Report equalizer bands 2 through 4 xx,yy,zz xx=Band 2 (0-15) yy=Band3 (0-15) zz=Band 4 (0=15)
REPORT TIME	Report current time of day HH:MM
INC TOD HOURS	Increase time of day by 1 hour
DEC TOD HOURS	Decrease time of day by 1 hour
INC TOD MINUTE	Increase time of day by 1 minute
DEC TOD MINUTE	Decrease time of day by 1 minute
INC SET TEMP	Increase HVAC set temperature by 1 degree
DEC SET TEMP	Decrease HVAC set temperature by 1 degree
INC FAN SPEED	Increase HVAC fan speed by 1 step
DEC FAN SPEED	Decrease HVAC fan speed by 1 step
SET HVAC MODE	Set a specific HVAC mode (e.g. AUTO, DEFROST, BI-LEVEL, OFF). Note: Some HVAC Mode commands are toggle functions where one transmission turns the function on, and a second transmission (some message) turns it off.
TOGGLE AM/FM	If radio setting is on AM, change to FM. If radio setting is on FM, change to AM.
RADIO ON/OF	Turn radio on or off, depending on the last state of the radio.
STOP/PLAY	Causes radio to halt cassette or CD and return to radio. Press again to halt radio and resume cassette or CD.
BAND SELECT	Alternates radio selection between AM, FM1 and FM2 bands.

E&C BUS CONTROL MESSAGES

The following table summarizes the E&C functions which the tester can control for the E&C components which can be controlled by the tester. The Steering Wheel Control Head is an input device and cannot be controlled by the tester.

In general, there are two messages which can be transmitted for a function (e.g., increase volume and decrease volume). The ⬆ and ⬇ keys, as summarized in the table, control the transmission of the messages. For those functions where only one message can be transmitted, ⬆ causes the message to be transmitted, and the ⬇ key is ignored.

E&C FUNCTION	⬆	⬇	MESSAGE DESCRIPTION
RADIO RECEIVER MESSAGES			
RADIO RECEIVER	ON	OFF	Turn radio receiver on or off.
VOLUME	INC	DEC	Increase or decrease volume by 1 step.
FADE	FRONT	REAR	Fade to the front or rear by 1 step.
BALANCE	LEFT	RIGHT	Move balance to the left or right by 1 step.
SEEK	UP	DOWN	Increase or decrease frequency until station is found.
FREQ.	INC	DEC	Increment or decrement frequency to next channel.
SET AM 760	XMT		Set frequency to 760 KHz. Note: The radio must be set to the appropriate band (AM or FM) in order for the tester to control the frequency.
SET AM 1620	XMT		Set frequency to 1620 KHz. Note: The radio must be set to the appropriate band (AM or FM) in order for the tester to control the frequency.
SET FM 99.5	XMT		Set frequency to 99.5 MHz. Note: The radio must be set to the appropriate band (AM or FM) in order for the tester to control the frequency.
SET FM 107.9	XMT		Set frequency to 107.9 MHz. Note: The radio must be set to the appropriate band (AM or FM) in order for the tester to control the frequency.
AM STEREO	ON	OF	Enable or disable AM stereo.
EQUAL. BAND 1	INC	DEC	Increase or decrease equalizer band 1 volume (bass).
EQUAL. BAND 2	INC	DEC	Increase or decrease equalizer band 2 volume.
EQUAL. BAND 3	INC	DEC	Increase or decrease equalizer band 3 volume.

E&C FUNCTION	⬆	⬇	MESSAGE DESCRIPTION
EQUAL. BAND 4	INC	DEC	Increase or decrease equalizer band 4volume.
EQUAL. BAND 5	INC	DEC	Increase or decrease equalizer band 5 volume (treble).
HOURS	INC	DEC	Increment or decrement time of day (hours).
MINUTES	INC	DEC	Increment or decrement time of day (minutes).
UNLOCK RADIO	XMT		Deactivate the vehicle anti-theft system.
RADIO CONTROL HEAD MESSAGES			
			The tester automatically outputs a sequence of messages to the *Remote Control Head* to exercise the head's display functions.
RADIO EQUALIZER CONTROL HEAD MESSAGES			
			The tester automatically outputs a sequence of messages to the *Remote Control Equalizer head* to exercise all segments of the equalizer display.
CASSETTE TAPE DECK MESSAGES			
AUDIO SOURCE	TAPE	RADIO	Switch the amplifier's input between the *Cassette Deck* and the *Radio Receiver.*
PLAY	FWD	STOP	Play cassette in direction 1.
PLAY	REV	STOP	Play cassette in direction 2.
HIGH SPEED	FWD	STOP	Fast forward the tape in direction 1.
HIGH SPEED	REV	STOP	Fast forward the tape in direction 2.
PROGRAM SEEK	FWD	REV	Go to the next selection on the tape in direction 1 or 2.
EJECT	XMT		Eject the Cassette tape.
COMPACT DISK PLAYER MESSAGES			
AUDIO TONE	ON	OFF	Turn audio tone generator on or off.
AUDIO SOURCE	DISK	RADIO	Switch the amplifier's input between *Cassette Deck* and the *Radio Receiver.*
PLAY	PLAY	STOP	Play or stop the compact disk.
SEEK SELECTION	#1	#5	Go to the first or fifth selection on the disk.
EJECT	XMT		Eject the compact disk.
HVAC CONTROL MESSAGES			
HVAC MODE	INC	DEC	Sequence to the next or previous HVAC mode.

E&C FUNCTION	⬆	⬇	MESSAGE DESCRIPTION
HVAC MODE	AUTO LOWER DEFROST	OFF	Set the HVAC mode to the specified state.
HVAC SET TEMP	INC	DEC	Increase or decrease HVAC set temperature.
FAN SPEED	INC	DEC	Increase or decrease HVAC fan speed.
CELLULAR TELEPHONE MESSAGES			
SET 987-xxxx	XMT		Set first 3 digits to 987.
SET XXX-654x	XMT		Set the middle digits to 654.
SET xxx-xxx3	XMT		Set the last digit of phone number to 3.

C. 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

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