

2004 ACCESSORIES & EQUIPMENT

Data Link Communications - Corvette

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Data Link Connector Screw	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

DATA LINK COMMUNICATIONS SCHEMATIC ICONS

Data Link Communications Schematic Icons

Icon	Icon Definition
	<p>CAUTION: This vehicle is equipped with a Supplemental Inflatable Restraint (SIR) System. Failure to follow the correct procedure could cause the following conditions:</p> <ul style="list-style-type: none">• Air bag deployment• Personal injury• Unnecessary SIR system repairs <p>In order to avoid the above conditions, observe the following guidelines:</p> <ul style="list-style-type: none">• Refer to SIR Component Views in order to determine if you are performing service on or near the SIR components or the SIR wiring.• If you are performing service on or near the SIR components or the SIR wiring, disable the SIR system. Refer to Disabling the SIR System in SIR.

DATA LINK CONNECTOR (DLC) SCHEMATICS

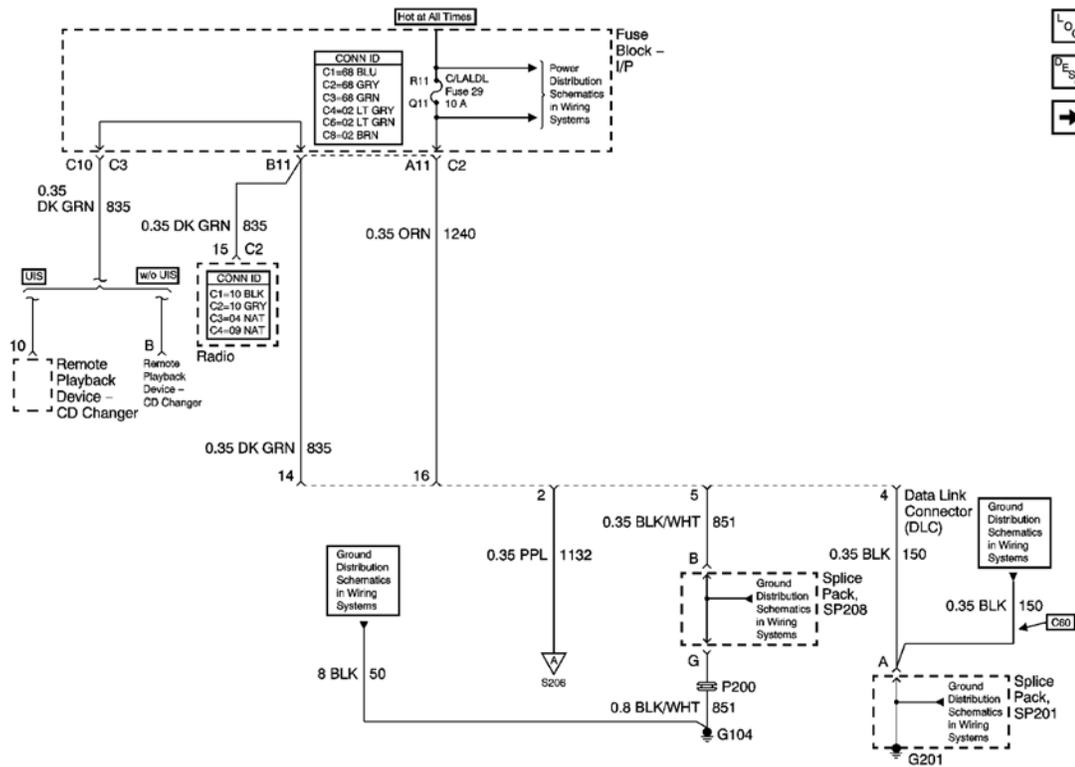


Fig. 1: Power And Ground Schematic
 Courtesy of GENERAL MOTORS CORP.

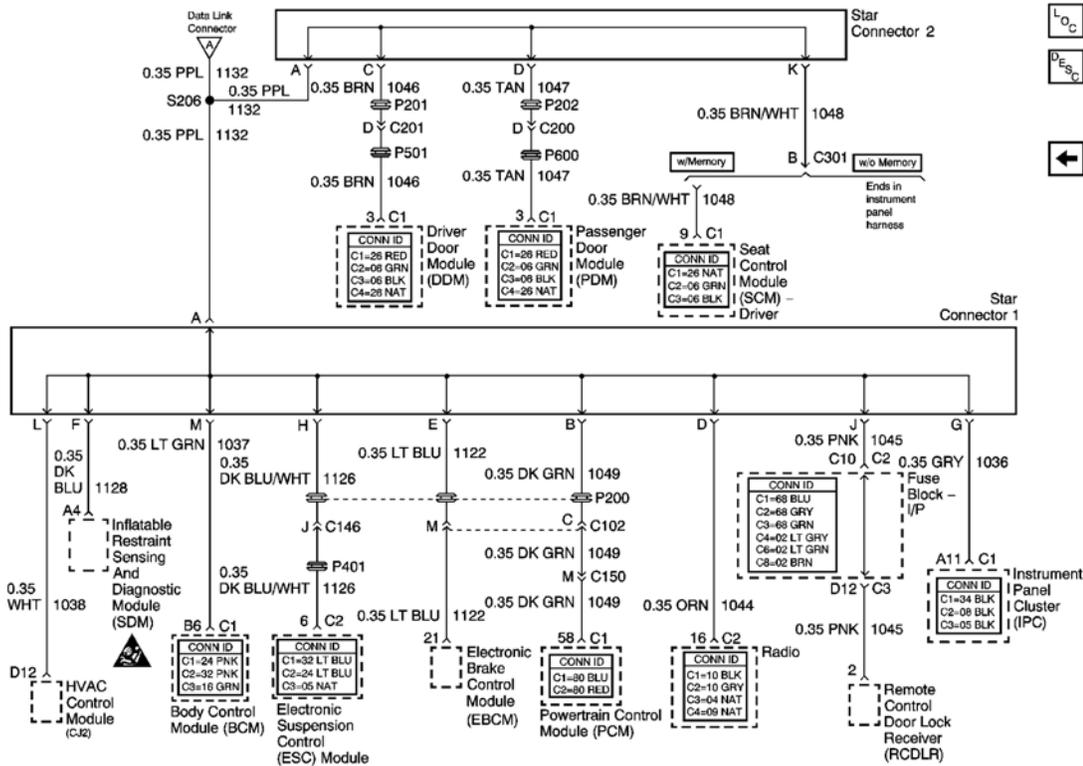


Fig. 2: Star Connectors Schematic
 Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

DATA LINK COMMUNICATIONS COMPONENT VIEWS

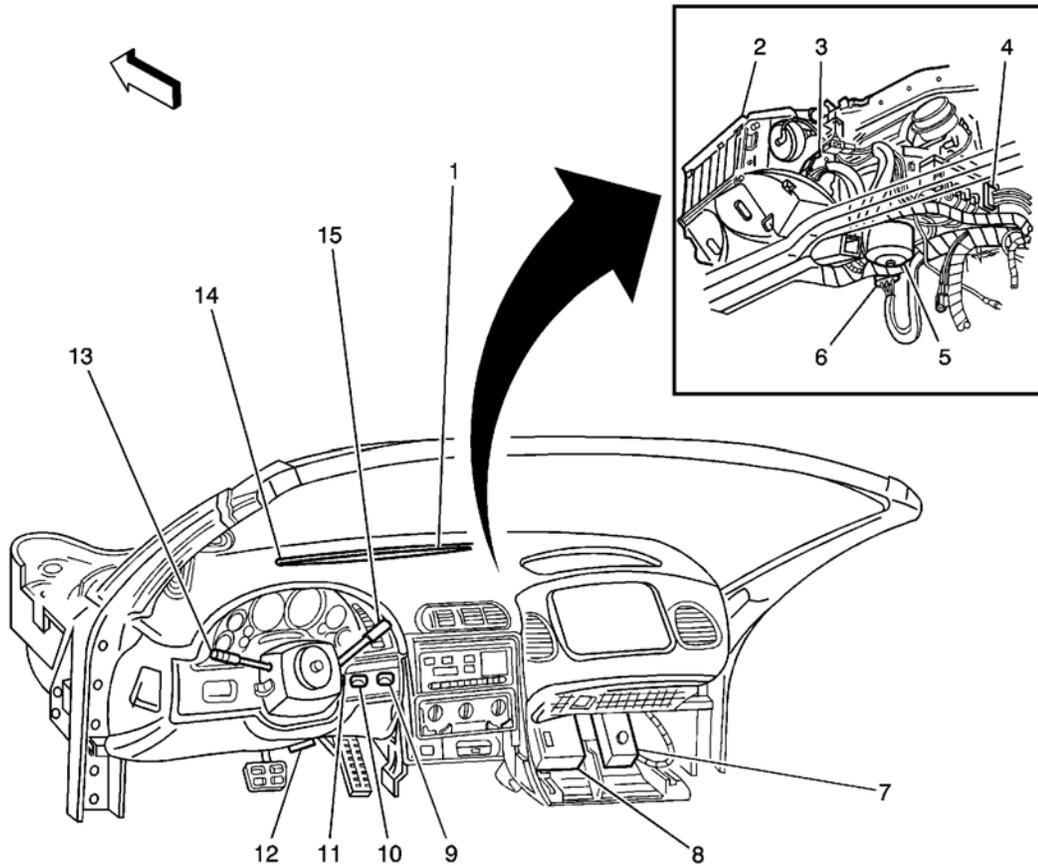


Fig. 3: Instrument Panel Component View
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 3

Callout	Component Name
1	Sunload Sensor
2	HVAC Module Assembly
3	Air Temperature Actuator (C60)
4	Vacuum Control Assembly (CJ2)
5	Blower Motor
6	Blower Motor Control Processor
7	Fuse Block-IP
8	Body Control Module (BCM)
9	Ignition Switch
10	Air Temperature Sensor - Inside
11	Telescoping Actuator Switch

12	Data Link Connector (DLC)
13	Multifunction Turn Signal Lever
14	Ambient Light Sensor
15	Windshield Wiper/Washer Switch

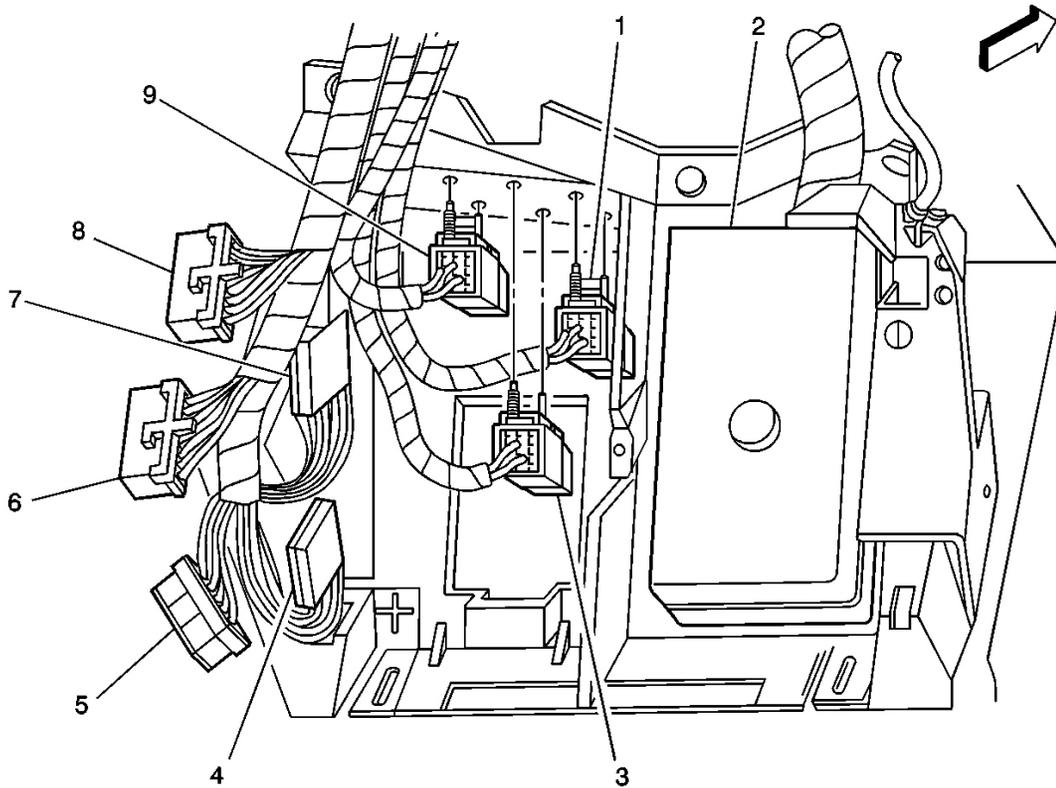


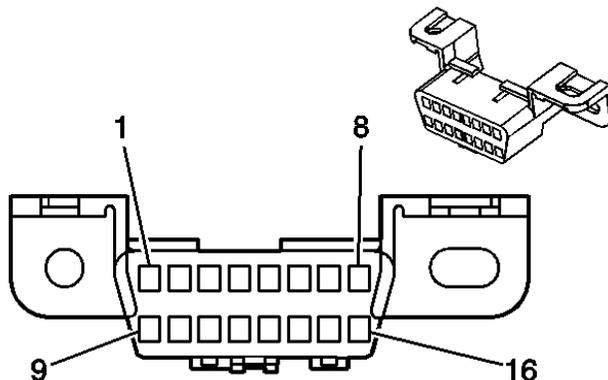
Fig. 4: Under Rh Side Of Dash Component View
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 4

Callout	Component Name
1	Theft Deterrent Relay
2	Fuse Block-IP
3	Blower Motor Relay
4	Star Connector #2
5	Body Control Module (BCM) C3
6	Body Control Module (BCM) C1
7	Star Connector #1
8	Body Control Module (BCM) C2
9	Steering Column Lock Relay

DATA LINK COMMUNICATIONS CONNECTOR END VIEWS

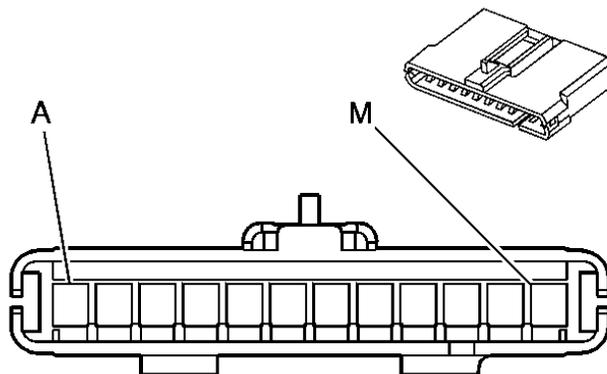
Data Link Connector Terminal Identification (DLC)



Connector Part Information		• 12110250 • 16-Way F Metri-Pack 150 Series (BLK)	
Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	PPL	1132	Serial Data
3	-	-	Not Used
4	BLK	150	Ground
5	BLK/WHT	851	Ground
6-13	-	-	Not Used
14	DK GRN	835	Diagnostic Signal -Entertainment and Comfort
15	-	-	Not Used
16	ORN	1240	Battery Positive Feed

Star Connector Terminal Identification 1

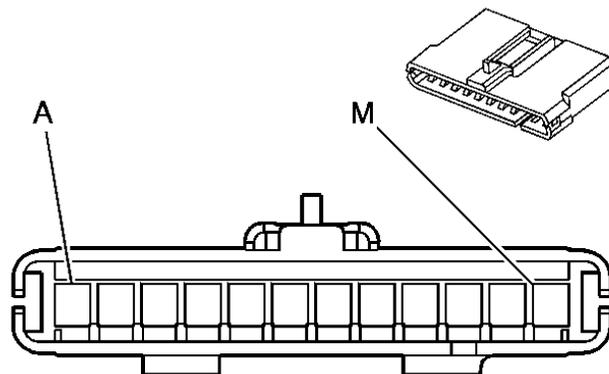




Connector Part Information		<ul style="list-style-type: none"> • 15317802 • 12-Way F Metri-Pack 150 Series (GRY) 	
Pin	Wire Color	Circuit No.	Function
A	PPL	1132	DLC Class 2 Serial Data
B	DK GRN	1049	PCM Class 2 Serial Data
C	-	-	Not Used
D	ORN	1044	Radio Class 2 Serial Data
E	LT BLU	1122	ABS/TCS Class 2 Serial Data
F	DK BLU	1128	SDM Class 2 Serial Data
G	GRY	1036	IPC Class 2 Serial Data
H	DK BLU/WHT	1126	SCM (Suspension) Class 2 Serial Data
J	PNK	1045	RFA Class 2 Serial Data
K	-	-	Not Used
L	WHT	1038	HVAC Class 2 Serial Data
M	LT GRN	1037	BCM Class 2 Serial Data

Star Connector Terminal Identification 2





Connector Part Information		<ul style="list-style-type: none"> • 15317802 • 12-Way F Metri-Pack 150 Series (GRY) 	
Pin	Wire Color	Circuit No.	Function
A	PPL	1132	DLC Class 2 Serial Data
B	-	-	Not Used
C	BRN	1046	DDM Class 2 Serial Data
D	TAN	1047	PDM Class 2 Serial Data
E - J	-	-	Not Used
K	BRN/WHT	1048	SCM (Seat) Class 2 Serial Data
L - M	-	-	Not Used

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - DATA LINK COMMUNICATIONS

Begin the diagnosis of the data link communications by performing the Diagnostic System Check for the system in which the customer concern is apparent. The Diagnostic System Check will direct you to the correct procedure within the Data Link Communications section when a communication malfunction is present.

DIAGNOSTIC TROUBLE CODE (DTC) LIST

Diagnostic Trouble Code (DTC) List

DTC	Diagnostic Procedure	Module
U1000	Refer to <u>DTC U1000 and U1255</u>	EBCM, ESC, RCDLR, SDM
U1016	Refer to <u>DTC U1001-U1254</u>	BCM, EBCM, IPC, DDM, PDM, Radio, RCDLR, SCM
U1040	Refer to <u>DTC U1001-U1254</u>	IPC, SDM
U1056	Refer to <u>DTC U1001-U1254</u>	IPC
U1064	Refer to <u>DTC U1001-U1254</u>	DDM, HVAC, IPC, PDM, Radio, RCDLR, SCM, SDM
U1088	Refer to <u>DTC U1001-U1254</u>	IPC

U1096	Refer to <u>DTC U1001-U1254</u>	BCM, DDM, HVAC, PDM, Radio, RCDLR, SDM
U1128	Refer to <u>DTC U1001-U1254</u>	IPC
U1153	Refer to <u>DTC U1001-U1254</u>	IPC
U1160	Refer to <u>DTC U1001-U1254</u>	HVAC, IPC, SCM
U1161	Refer to <u>DTC U1001-U1254</u>	HVAC, IPC, SCM
U1166	Refer to <u>DTC U1001-U1254</u>	IPC
U1176	Refer to <u>DTC U1001-U1254</u>	IPC
U1255	Refer to <u>DTC U1000 and U1255</u>	BCM, HVAC, IPC, DDM, PDM, Radio, RCDLR, SCM
U1300	Refer to <u>DTC U1300, U1301, or U1305</u>	BCM, EBCM, ESC, HVAC, IPC, DDM, PDM, Radio, RCDLR, SCM, SDM
U1301	Refer to <u>DTC U1300, U1301, or U1305</u>	BCM, EBCM, ESC, HVAC, IPC, DDM, PDM, Radio, RCDLR, SCM, SDM
U1305	Refer to <u>DTC U1300, U1301, or U1305</u>	BCM, EBCM, ESC, HVAC, IPC, DDM, PDM, Radio, RCDLR, SCM

DTC U1000 AND U1255

Circuit Description

Modules connected to the class 2 serial data circuit monitor for serial data communications during normal vehicle operation when operating information and commands are exchanged among the modules. When a module receives a message for a critical operating parameter, the module records the identification number of the module which sent the message. A critical operating parameter is one which, when not received, requires that the module use a default value for that parameter. When a module does not associate an identification number with at least 1 critical parameter within about 5 seconds of beginning serial data communication, DTC U1000 or U1255 is set. The DTC will only be reported once if more than 1 critical parameter does not have a sending module identification number associated with it.

The following systems communicate on the class 2 serial data circuit:

- Body Control Module (BCM)
- Electronic Brake Control Module (EBCM)
- Electronic Suspension Control (ESC) Module
- HVAC (with CJ2)
- Sensing and Diagnostic Module (SDM)
- Instrument Panel Cluster (IPC)
- Driver Door Module (DDM)
- Passenger Door Module (PDM)
- Seat Control Module (SCM) (with AAB)
- Powertrain Control Module (PCM)
- Radio
- Remote Control Door Lock Receiver (RCDLR)

Conditions for Running the DTC

- Voltage supplied to the module is in the normal operating voltage range.
- Diagnostic trouble codes U1300, U1301 or U1305 are not set.
- The module setting the DTC requires serial data communication to occur.

Conditions for Setting the DTC

At least 1 critical operating parameter has not been associated with an identification number within about 5 seconds after beginning serial data communication.

Action Taken When the DTC Sets

The module uses a default value for the missing parameter.

Conditions for Clearing the DTC

- A current DTC U1000 or U1255 will clear when all critical operating parameter for the module have been associated with an identification number or at the end of the current ignition cycle.
- A history DTC resets after 50 ignition switch cycles with no repeated failure.

Diagnostic Aids

When a malfunction such as an open fuse to a module occurs while modules are communicating, a current DTC is set indicating lost communication with a specific module DTC. When the modules stop communicating, ignition is turned OFF, the current Lost Communication DTC is cleared but the history DTC remains. When the modules begin to communicate again, the module with the open fuse will not be learned by the other modules so DTC U1000 or U1255 is set as current by the other modules. If the malfunction occurs when the modules are not communicating, only DTC U1000 or U1255 is set.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

- 1:** A Lost Communication with XXX DTC with a history status may indicate the cause of U1000 or U1255.
- 2:** The modules which is not communicating is the likely cause of U1000 or U1255 being set.
- 5:** The module which was not communicating may have set Lost Communication with XXX DTCs for those modules that it was monitoring.
- 6:** The module which was not communicating may have set Lost Communication with XXX DTCs for those modules that it was monitoring.
- 7:** The module which was not communicating may have set Lost Communication with XXX DTCs for those modules that it was monitoring.
- 11:** The modules which can communicate indicate the module which cannot communicate. You must clear the DTC from these modules to avoid future misdiagnosis.

13: If all modules are communicating, the module which set U1000 or U1255 may have done so due to some other condition.

14: The module which set U1000 or U1255 is the likely cause of the malfunction.

DTC U1000 and U1255

Step	Action	Yes	No
1	Did you record any DTCs in the range of U1001-U1254 with a history status?	Go to <u>DTC U1001-U1254</u>	Go to Step 2
2	<ol style="list-style-type: none"> 1. Turn ON the ignition with the engine OFF. 2. Attempt to communicate with each module on the class 2 serial data circuit. If using a Tech 2, obtain this information using the Class 2 Message Monitor feature. 3. Record all of the modules communicating on the class 2 serial data circuit. 4. Compare the list of modules which are communicating to the list given in the Circuit Description. <p>Does any module on the class 2 serial data circuit not communicate?</p>	Go to Step 3	Go to Step 13
3	<p>Test the battery positive voltage circuits and the ignition voltage circuits of the module that is not communicating for an open or a short to ground. Refer to <u>Control Module References</u> in Body Control System for the applicable schematic. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 4
4	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Test the ground circuits of the module that is not communicating for an open. Refer to <u>Control Module References</u> in Body Control System for the applicable schematic. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 5
5	<ol style="list-style-type: none"> 1. Disconnect both star connectors. 2. Inspect for poor connection at the star connectors. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 6
	Test the class 2 serial data circuit of the module that is not		

6	<p>communicating for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 7
7	<p>Inspect for poor connections at the battery positive voltage circuits, the ignition voltage circuits, the ground circuits, and the class 2 serial data circuit of the module that is not communicating. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 9	Go to Step 8
8	<p>IMPORTANT: Perform the set up procedure for module if required.</p> <p>Replace the module which is not communicating. Refer to Control Module References in Body Control System. Did you complete the replacement?</p>	Go to Step 11	-
9	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition with the engine OFF. 3. Select the Display DTCs function for the module which was not communicating. <p>Does the scan tool display and DTCs which do not begin with a"U"?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 10
10	<p>Use the scan tool in order to clear the DTCs.</p> <p>Did you complete the action?</p>	Go to Step 11	-
11	<p>Select the Display DTCs function for the modules which had U1000 or U1255 set as a current DTC.</p> <p>Does the scan tool display any DTCs which do not begin with a"U"?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 12
12	<p>Use the scan tool in order to clear the DTCs.</p> <p>Did you complete the action?</p>	System OK	-
13	<p>Did you record any other DTCs for the modules which had U1000 or U1255 set as a current DTC?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 14
14	<ol style="list-style-type: none"> 1. Install a scan tool. 2. Turn ON the ignition with the engine OFF. 3. Use the scan tool in order to clear the DTCs. 4. Turn OFF the ignition for at least 5 seconds. 5. Turn ON the ignition with the engine OFF. 6. Select the Display DTCs function. 		

	Does the scan tool display U1000 or U1255 set as a current DTC?	Go to Step 15	Go to Diagnostic Aids
15	<p>IMPORTANT: Perform the set up procedure for module if required.</p> <p>Replace the module which had U1000 or U1255 set as a current DTC. Refer to Control Module References in Body Control System. Did you complete the replacement?</p>	System OK	-

DTC U1001-U1254

The module ID Number list provides a method for determining which module is not communicating. A module with an internal class 2 serial data circuit malfunction or which loses power during the current ignition cycle would have a Lost Communication DTC set by other modules. Use the module ID Number list in order to determine which module is not communicating and the DTC U1001-U1254 diagnostic table in order to diagnose the malfunction.

DTC U1001-U1254

System	ID Number
Powertrain Control Module (PCM)	016
Electronic Brake Control Module (EBCM)	040
Electronic Suspension Control (ESC)	056
Body Control Module (BCM)	064
Inflatable Restraint Sensing and Diagnostic Module (SDM)	088
Instrument Panel Cluster (IPC)	096
Radio	128
HVAC	153
Driver Door Module (DDM)	160
Passenger Door Module (PDM)	161
Seat Control Module (SCM)	166
Remote Control Door Lock Receiver (RCDLR)	176

Circuit Description

Modules connected to the class 2 serial data circuit monitor for serial data communications during normal vehicle operation when operating information and commands are exchanged among the modules. When a module receives a message for a critical operating parameter, the module records the identification number of the module which sent the message for State of Health monitoring, Node Alive messages. A critical operating parameter is one which, when not received, requires that the module use a default value for that parameter. Once an identification number is learned by a module, it will monitor for that module's Node Alive message. Each module on the class 2 serial data circuit which is powered and performing functions that require detection of a communications malfunction is required to send a Node Alive message every 2 seconds. When no message is detected from a learned identification number for 5 seconds, a DTC U1XXX, where XXX is equal to the 3

digit identification number is set.

Conditions for Running the DTC

- Voltage supplied to the module is in the normal operating voltage range.
- Diagnostic trouble codes U1300 and U1301 are not set.
- The module setting the DTC requires serial data communication to occur.

Conditions for Setting the DTC

A message from a learned identification number has not been detected for the past 5 seconds.

Conditions for Clearing the DTC

- A current DTC will clear when a Node Alive message from the failed identification number is detected on the class 2 serial data circuit or at the end of the current ignition cycle.
- A history DTC will clear after 50 ignition switch cycles with no repeated malfunction.

Diagnostic Aids

- An intermittent open between the inoperative module and a star connector may cause this code to set.
- A poor connection at the inoperative module or a star connector may cause this code to set.
- An intermittent open in a star connector may cause this code to set.
- An improperly powered module may cause this code to set.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

1: A module which loses power during an ignition cycle will cause other modules to set Lost Communication DTCs.

2: A module which loses power during an ignition cycle will cause other modules to set Lost Communication DTCs.

3: The malfunction is due to an open in the class 2 serial data circuit or an open in the module.

7: The module which was not communicating may have set Lost Communication DTCs for those modules that it was monitoring.

9: The modules which can communicate indicate the module which cannot communicate. You must clear the DTC from these modules to avoid future misdiagnosis.

DTC U1001-U1254

Step	Action	Yes	No
1	Test the battery positive voltage circuits and the ignition voltage circuits of the module that is not communicating for an open or a short to ground. Refer to Control Module References in Body		

	Control System for the applicable schematic. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 9	Go to Step 2
2	1. Turn OFF the ignition. 2. Test the ground circuits of the module that is not communicating for an open. Refer to <u>Control Module References</u> in Body Control System for the applicable schematic. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 9	Go to Step 3
3	1. Disconnect the star connector that is connected to the module that is not communicating. 2. Inspect for poor connections at the star connectors. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 7	Go to Step 4
4	Test the class 2 serial data circuit of the module that is not communicating for an open between the module and the star connectors. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 7	Go to Step 5
5	Inspect for poor connections at the battery positive voltage circuits, the ignition voltage circuits, the ground circuits, and the class 2 serial data circuit of the module that is not communicating. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 7	Go to Step 6
6	IMPORTANT: Perform the set up procedure for module if required. Replace the module which is not communicating. Refer to <u>Control Module References</u> in Body Control System. Did you complete the replacement?	Go to Step 9	-
7	1. Install a scan tool. 2. Turn ON the ignition with the engine OFF. 3. Select the Display DTCs function for the module which was not communicating. Does the scan tool display any DTCs which do not begin with a "U"?	Go to <u>Control Module References</u> in Body Control System for the applicable Diagnostic System Check	Go to Step 8
	Use the scan tool in order to clear the DTCs.		

8	Did you complete the action?	Go to Step 9	-
9	Select the Display DTCs function for the modules which had the Lost Communication with XXX DTC set. Does the scan tool display any DTCs which do not begin with a"U"?	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 10
10	1. Use the scan tool in order to clear the DTCs. 2. Continue diagnosing or clearing the DTCs until all the modules have been diagnosed and all the DTCs have been cleared. Did you complete the action?	System OK	-

DTC U1300, U1301, OR U1305

Circuit Description

Modules connected to the class 2 serial data circuit monitor for serial data communications during normal vehicle operation. Operating information and commands are exchanged among the modules. In addition to this, Node Alive messages are transmitted by each module on the class 2 serial data circuit about once every 2 seconds. When the module detects one of the following conditions on the class 2 serial data circuit for approximately 3 seconds, the setting of all other class 2 serial communication DTCs is inhibited and a DTC will set.

DTC U1300, U1301, or U1305

DTC	Condition
U1300	Low voltage on the class 2 serial data circuit.
U1301	High voltage on the class 2 serial data circuit.
U1305	Low voltage or high voltage on the class 2 serial data circuit.

Conditions for Running the DTCs

- Voltage supplied to the module is in the normal operating voltage range.
- The vehicle power mode requires serial data communication to occur.

Conditions for Setting the DTCs

- No valid messages are detected on the class 2 serial data circuit.
- The voltage level detected on the class 2 serial data circuit is under one of the following conditions:
 - Always high
 - Always low
- The above conditions are met for approximately 3 seconds.

Action Taken When the DTCs Sets

- The module inhibits the setting of all other class 2 DTCs.
- The module uses default values for all parameters received on the class 2 serial data circuit.

Conditions for Clearing the DTC

- A current DTC clears when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold, without a repeat of the malfunction.

Diagnostic Aids

- These DTCs cannot be retrieved with a current status. Diagnosis of current DTCs is accomplished via the symptom, Scan Tool Does Not Communicate with a Class 2 Device. Refer to **Scan Tool Does Not Communicate with Class 2 Device** .
- An intermittent condition is likely to be caused by a short or an open on the class 2 serial data circuit. Use the Scan Tool Does Not Communicate with a Class 2 Device procedure in order to isolate an intermittent condition. Refer to **Scan Tool Does Not Communicate with Class 2 Device** .

SYMPTOMS - DATA LINK COMMUNICATIONS

IMPORTANT: The Diagnostic System Check for the system that is malfunctioning must be performed before attempting to use the symptom diagnostics. Refer to Control Module References in Body Control System for the appropriate Diagnostic System Check.

Review the system operation in order to familiarize yourself with the system functions.

Refer to **Data Link Communications Description and Operation** .

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the data link communications/ serial data circuits. Refer to **Checking Aftermarket Accessories** in Wiring Systems.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** in Wiring Systems.

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- Scan Tool Does Not Power Up
- Scan Tool Does Not Communicate with Class 2 Device
- Scan Tool Does Not Communicate with E and C Data Line

SCAN TOOL DOES NOT POWER UP

Circuit Description

The data link connector (DLC) is a standardized 16 cavity connector. Connector design and location is dictated by an industry wide standard, and is required to provide the following:

- Scan tool power battery positive voltage at terminal 16
- Scan tool power ground at terminal 4
- Common signal ground at terminal 5

The scan tool will power up with the ignition OFF. Some modules however, will not communicate unless the ignition is ON and the power mode master (PMM) module sends the appropriate power mode message.

Test Description

The number below refers to the step number on the diagnostic table.

4: If the battery positive voltage and ground circuits of the DLC are functioning properly. The malfunction must be due to the scan tool.

Scan Tool Does Not Power Up

Step	Action	Yes	No
Schematic Reference: Data Link Connector (DLC) Schematics Connector End View Reference: Data Link Communications Connector End Views			
1	Test the battery positive voltage circuit of the data link connector (DLC) for an open or a short to ground. Refer to Circuit Testing or Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 2
2	Test the ground circuit from pin 4 of the DLC for an open or high resistance. Refer to Circuit Testing or Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 3
3	Inspect for poor connections and terminal tension at the DLC. Refer to Testing for Intermittent Conditions and Poor Connections or Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 4
	The scan tool may be malfunctioning. Refer to the scan tool user guide.	Go to Control Module References in Body Control	

SCAN TOOL DOES NOT COMMUNICATE WITH CLASS 2 DEVICE

Circuit Description

Modules connected to the class 2 serial data circuit monitor for serial data communications during normal vehicle operation. Operating information and commands are exchanged among the modules. Connecting a scan tool to the DLC allows communication with the modules for diagnostic purposes. DTCs may be set due to this symptom and during this diagnostic procedure. Complete the diagnostic procedure in order to ensure all the DTCs are diagnosed and cleared from memory.

Diagnostic Aids

- The Serial Data Link Tester J42236-A, is a special tool for the Corvette. This tool maintains a serial data connection with the power mode master (PMM) while isolating other modules from the class 2 serial data circuit. If available, use this tool in place of a jumper wire when isolating the cause of lost communications.
- The body control module (BCM) detects that the ignition is ON and sends the appropriate power mode message to the other modules. Therefore, the BCM must be connected to the DLC for any other module to communicate with the scan tool.
- When the class 2 serial data circuit:
 - is shorted to ground
 - is shorted to voltage

The following DTCs may set:

- U1300
- U1301
- U1305

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: A partial loss of communication in the class 2 serial data circuit uses a different procedure than a total loss of communication of the class 2 serial data circuit.

4: The following DTCs may be retrieved with a history status. These DTCs are not the cause of the present condition.

- U1300
- U1301
- U1305

6: A State of Health DTC with a history status may be present along with a U1000 or U1255 with a

current status. This indicates that the malfunction occurred when the ignition was on.

10: Normal class 2 serial data communication cannot take place until the power mode master (PMM) module sends the appropriate power mode message. If the PMM does not send a wake-up message, other modules on the class 2 serial data circuit may not communicate.

12: Normal class 2 serial data communication cannot take place until the power mode master (PMM) module sends the appropriate power mode message. If the PMM does not send a wake-up message, other modules on the class 2 serial data circuit may not communicate.

13: Normal class 2 serial data communication cannot take place until the power mode master (PMM) module sends the appropriate power mode message. If the PMM does not send a wake-up message, other modules on the class 2 serial data circuit may not communicate.

19: If there are no current DTCs that begin with the letter "U", the communication concern has been repaired.

20: The communication concern may have prevented diagnosis of the customer complaint.

Scan Tool Does Not Communicate with Class 2 Device

Step	Action	Yes	No
Schematic Reference: Data Link Connector (DLC) Schematics			
Connector End View Reference: Master Electrical Component List			
1	Does the scan tool power up?	Go to Step 2	Go to Scan Tool Does Not Power Up
2	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. Attempt to communicate with each module on the class 2 serial data circuit. If using a Tech 2, obtain this information using the class 2 Message Monitor feature. <p>Does the scan tool communicate with any module on the class 2 serial data circuit?</p>	Go to Step 3	Go to Step 8
3	<ol style="list-style-type: none"> 1. Select the Display DTCs function for each module. If using a Tech 2, use the class 2 DTC Check feature in order to determine which modules do have DTCs set. 2. Record all of the displayed DTCs, the DTC status and the module which set the DTC. <p>Did you record any DTCs in the range of U1000 to U1305?</p>	Go to Step 4	Go to Step 7
4	Are history DTCs U1300, U1301 or U1305 retrieved from any module?	Go to Step 5	Go to Step 6
	IMPORTANT: Turn ON the ignition, with the engine OFF, when testing for a short to voltage. Use the DMM MIN/MAX function to capture intermittent conditions.		

5	<p>Test the class 2 serial data circuit for an intermittent short to ground or an intermittent short to voltage. Refer to the following in Wiring Systems:</p> <ul style="list-style-type: none"> • <u>Testing for Intermittent Conditions and Poor Connections</u> • <u>Circuit Testing</u> • <u>Connector Repairs</u> • <u>Wiring Repairs</u> <p>Did you find and correct the condition?</p>	Go to Step 18	Go to Step 6
6	<p>Are U1000 or U1255 the only DTCs displayed in the previously specified range?</p>	Go to DTC U1000 and U1255	Go to DTC U1001-U1254
7	<p>Diagnose the non communicating module by using the DTC U1001-U1254 Lost Communications with XXX procedure for the module which is not communicating. The DTC U1001-U1254 Lost Communications with XXX procedure will determine which module is not communicating. Refer to DTC U1001-U1254 .</p> <p>Did you complete the action?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	-
8	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the scan tool from the data link connector (DLC). 3. Inspect for poor connections and terminal tension at the DLC. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 9
9	<p>Test the signal ground circuits of the DLC for an open or high resistance. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 10
10	<ol style="list-style-type: none"> 1. Isolate the power mode master (PMM) module from all other modules on the class 2 serial data circuit. To identify which module is the PMM, refer to Body Control System Description and Operation in Body Control System. 2. Attempt to communicate with the PMM. <p>Does the scan tool communicate with the PMM?</p>	Go to Step 12	Go to Step 11

11	<ol style="list-style-type: none"> 1. Test the class 2 serial data circuit between the DLC and the PMM for the following conditions. Turn ON the ignition when testing for a short to voltage: <ul style="list-style-type: none"> • High resistance • Open • Short to ground • Short to voltage 2. Test the following circuits of the PMM for an open or high resistance: <ul style="list-style-type: none"> • The battery positive voltage input circuits • The battery positive voltage output circuits • The ignition voltage input circuits • The ignition voltage output circuits • The switched battery positive voltage supply circuits • The ground circuits <p>Refer to Circuit Testing and Wiring Repairs in Wiring Systems. Did you find and correct the condition?</p>	Go to Step 18	Go to Step 16
12	<p>IMPORTANT: The PMM must remain connected to the DLC. Use the appropriate jumper if needed.</p> <ol style="list-style-type: none"> 1. Connect the previously disconnected modules. 2. Starting with the splice pack furthest from the DLC. Perform the following for each splice pack, in order to determine the location of the concern: <ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. One at a time disconnect each splice pack which connects the modules to the class 2 serial data circuit, by removing the splice pack comb. 3. Turn ON the ignition, with the engine OFF. 4. Attempt to communicate with any module still connected to the class 2 serial data circuit after disconnecting each splice pack. <p>Does the scan tool communicate with any module still connected to the class 2 serial data circuit after all the splice packs have been disconnected?</p>	Go to Step 13	Go to Step 14
	<p>IMPORTANT: The PMM must remain connected to the DLC. Use the appropriate jumper if needed.</p>		

13	<p>Using the appropriate jumper at the suspect splice pack, perform the following in order to determine which class 2 serial data circuit or module is causing the concern:</p> <ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. Using the appropriate jumper. Connect each previously disconnected module to the class 2 serial data circuit one at a time until communication with the class 2 serial data circuit is lost. <p>Did you complete the action?</p>	Go to Step 15	-
14	<p>Repair short to ground or voltage condition in the class 2 serial data circuits or in-line connectors to the last module connected in the branch being diagnosed. Refer to Wiring Repairs and Connector Repairs in Wiring Systems.</p> <p>Did you complete the repair?</p>	Go to Step 18	-
15	<ol style="list-style-type: none"> 1. Test the class 2 serial data circuits to the suspect module for a short to ground or a short to voltage. 2. Turn ON the ignition, with the engine OFF when testing for a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Step 18	Go to Step 16
16	<p>Inspect for poor connections and terminal tension at the harness connector of the suspect module. Refer to Testing for Intermittent Conditions and Poor Connections and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Step 18	Go to Step 17
17	<p>IMPORTANT: Perform the module setup procedure if required. Refer to</p> <p>Replace the suspect module. Refer to Control Module References in Body Control System for the appropriate Repair Instructions for module replacement. Did you complete the replacement?</p>	Go to Step 18	-
	<ol style="list-style-type: none"> 1. Connect all of the modules. 2. Connect all the connectors. 3. Install a scan tool. 4. Turn ON the ignition leaving the engine OFF. <p>IMPORTANT: The scan tool may require a power up reset before communication will occur due to a short on the class</p>		

	<p>2 serial data circuit. Turn off or disconnect the scan tool before you display DTCs.</p> <p>5. Wait for 10 seconds.</p> <p>6. Select the display DTCs function for each module. If using a Tech 2, use the class 2 DTC Check feature in order to determine which modules do have DTCs set.</p> <p>7. Record all of the displayed DTCs and the DTC status.</p> <p>Did your record any DTCs which begin with a letter "U" and with a current status?</p>	Go to Step 20	Go to Step 19
18	<p>Did you record any DTCs which do not begin with a letter "U"?</p>	Go to Step 20	Go to Step 21
19	<p>Diagnose the DTCs as directed by the diagnostic procedures for the particular module or concern.</p> <p>Did you complete the action?</p>	Go to Step 21	-
20	<p>Did you diagnose all of the DTCs?</p>	Go to Step 22	Go to Step 20
21	<p>Clear the DTCs using the scan tool.</p> <p>Did you complete the action?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	-
22			

SCAN TOOL DOES NOT COMMUNICATE WITH E AND C DATA LINE

Scan Tool Does Not Communicate with E and C Data Line

Step	Action	Yes	No
1	Does the scan tool power up?	Go to Step 2	Go to Scan Tool Does Not Power Up
2	<p>1. Turn ON the ignition, leaving the engine OFF</p> <p>2. Attempt to communicate with each module on the E and C Data Line.</p> <p>Does the scan tool communicate with the Radio or CD Changer?</p>	Go to Step 5	Go to Step 3
3	<p>Test the battery positive voltage circuits and the ignition voltage circuits of the Radio for an open. Refer to Control Module References in Body Control System for Radio schematics. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 4

4	<ol style="list-style-type: none"> 1. Turn the ignition OFF. 2. Test the ground circuits of the Radio for an open. Refer to Control Module References in Body Control System for Radio schematics. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 5
5	<p>Test the battery positive voltage circuits and the ignition voltage circuits of the module that does communicate with the scan tool for an open. Refer to Control Module References in Body Control System for the applicable schematics. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 6
6	<ol style="list-style-type: none"> 1. Turn the ignition OFF. 2. Test the ground circuits of the module that does not communicate with the scan tool for an open. Refer to Control Module References in Body Control System for the applicable schematics. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 7
7	<ol style="list-style-type: none"> 1. Turn the ignition ON. 2. Disconnect the scan tool if connected. 3. Test the E and C Serial Data circuit between the DLC connector, Radio and the CD Player, if equipped, for a short to ground or a short to voltage. Refer to Circuit Testing and Wiring Repairs in Wiring Systems. <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 8
8	<p>Test the E and C Serial Data circuit between the DLC connector, Radio and the CD Player, if equipped, for an open. Refer to Circuit Testing and Wiring Repairs in Wiring Systems.</p> <p>Did you find and correct the condition?</p>	Go to Control Module References in Body Control System for the applicable Diagnostic System Check	Go to Step 9
9	<p>Replace the module that will not communicate with the scan tool. Refer to Control Module References in Body Control System for the applicable replacement procedure.</p> <p>Is the repair complete?</p>	System OK	-

REPAIR INSTRUCTIONS

DATA LINK CONNECTOR REPLACEMENT

Removal Procedure

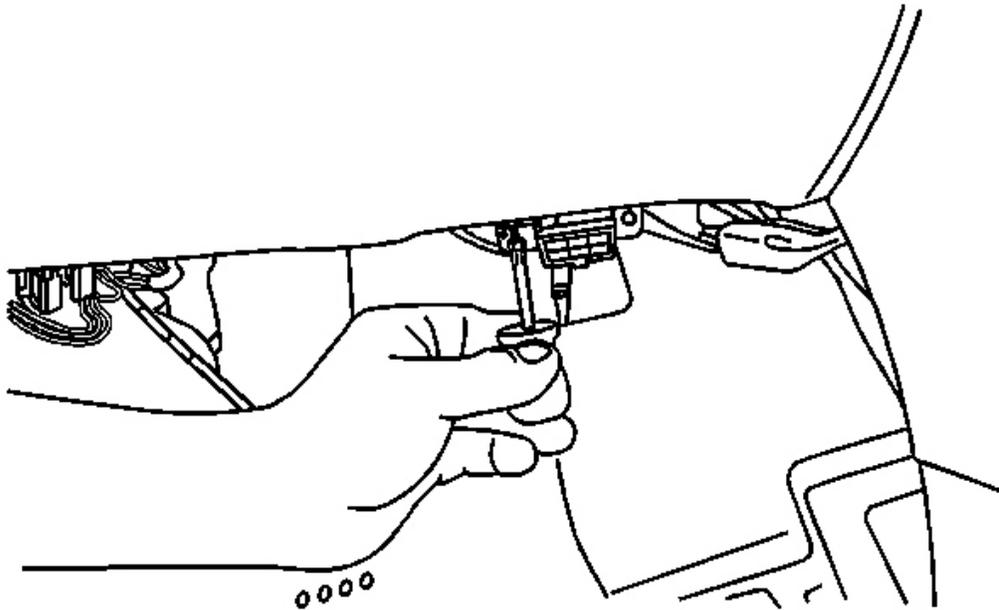


Fig. 5: Data Link Connector At Instrument Panel
Courtesy of GENERAL MOTORS CORP.

1. Remove the screws from the data link connector.
2. Reposition the data link connector from the instrument panel.

Installation Procedure

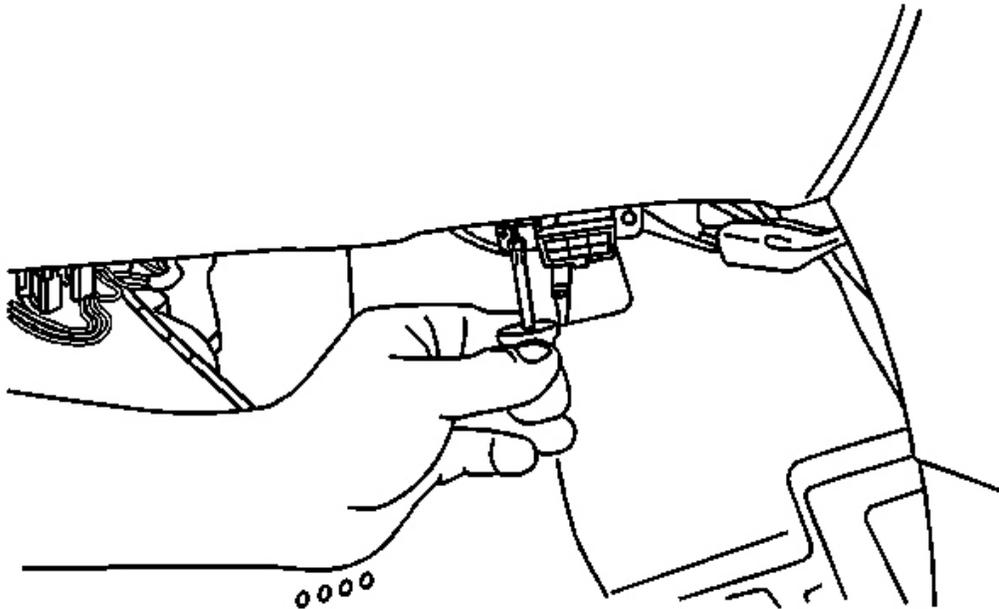


Fig. 6: Data Link Connector At Instrument Panel
Courtesy of GENERAL MOTORS CORP.

1. Position the data link connector to the instrument panel.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the screws to the data link connector.

Tighten: Tighten the data link connector screws to 2 N.m (18 lb in).

DESCRIPTION AND OPERATION

DATA LINK COMMUNICATIONS DESCRIPTION AND OPERATION

This vehicle is equipped with a computer system capable of performing multiple engine and body control functions. Vehicle components such as windows, locks, mirrors, etc. are controlled directly by their system control module. Each system control module communicates with other system control modules on a serial data circuit. The vehicle system control modules are all attached to the serial data circuit that provides the data link communications. This data link, or serial data circuit, provides 2-way communication between various engine and body control system control modules.

The control modules connected to the class 2 serial data circuit are listed below:

- Powertrain Control Module (PCM)
- Electronic Brake Control Module (EBCM)
- Electronic Suspension Control (ESC) Module *
- Body Control Module (BCM)
- Instrument Panel Cluster (IPC)
- Radio
- Sensing and Diagnostic Module (SDM)
- HVAC Control Assembly (HVAC) (with CJ2) *
- Driver Door Module (DDM)
- Passenger Door Module (PDM)
- Seat Control Module (SCM) *
- Remote Control Door Lock Receiver (RCDLR) *

* If equipped.

Some electrical system components are directly connected to and controlled by their system control module. Others systems accomplish the control functions by sharing data information with other system control modules on the serial data circuit to execute various vehicle functions. All system data information from sensors, switches, etc. can be monitored by any system module that is connected to the serial data circuit. Communications between each system control module is accomplished by sending a digitally coded message consisting of specific information. Communicating data information with other system control modules on the same serial data circuit, either input information or specific program information, provides more accurate and reliable computer system control functions.

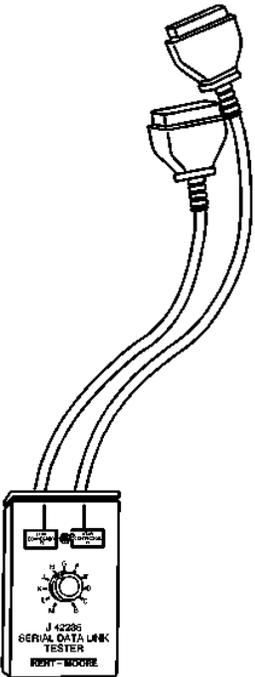
All system control modules on the same serial data circuit use a communication process similar to a telephone system, where enormous amounts of information can be exchanged on a single data wire. The serial data circuit is used to communicate information between each system control module. Each system control module is assigned a specific recognition code, called a source ID. This code is used to identify which module is communicating on the serial data circuit. When a message is sent out on the serial data circuit, the recognition code will identify which particular module sent the message. These messages contain specific information, or commands, a system control module requires to function properly.

When a system receives a message it also "learns" the source ID of the system that sent it. This source ID is used to determine which system control module actually sent the message for State of Health (SOH) monitoring. SOH monitoring determines if a system control module is unable to communicate properly. Description and diagnosis of each system and control module is covered in the respective service manual section.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

Illustration	Tool Number/ Description
 <p>The illustration shows a rectangular device labeled 'J 42236 SERIAL DATA LINK TESTER' and 'RENT-ROCHE'. It features a central rotary switch with positions for 'H', 'L', 'M', 'N', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', and 'A'. Above the switch are two indicator lights labeled 'TESTING' and 'POWER'. Two cables extend from the top of the device, each ending in a specialized connector with a bulbous tip.</p>	<p>J 42236-A Serial Data Link Tester</p>