Electronic - Real Time Damping - Corvette

DESCRIPTION & OPERATION

The Real Time Damping (RTD) system automatically controls vehicle ride by independently controlling a damper solenoid valve in each shock absorber assembly (front and rear). RTD system consists of front and rear adjustable shock absorbers, 4 damper solenoid valves (one located on each shock absorber), 2 front and 2 rear position sensors (one mounted between body and each control arm), ride control switch located on center console between shifter and storage compartment, and RTD control module located in left rear storage compartment. RTD system is equipped with 3 shock damping control settings.

- TOUR (smooth, soft ride)
- SPORT (more responsive to road conditions)
- PERF (full firm position)

The Electronic Suspension Control (ESC) module, controls the damping mode selection according to the following factors. Module uses the following inputs to control each solenoid on each shock absorber separately:

- The vehicle speed.
- Chassis pitch input.
- Steering position.
- Body to wheel distance.
- Ride control switch inputs.

The RTD system does not have a malfunction indicator light, but instead uses the Instrument Panel Cluster (IPC) 20 character vacuum fluorescent display feature to display messages. When a malfunction is detected by the RTD system that sets a Diagnostic Trouble Code (DTC), the IPC will display: SHOCKS INOPERATIVE, SERVICE RIDE CONTROL or MAXIMUM SPEED. The IPC will continue to display message until the system that requested the message sends a Stop Broadcasting Message to the IPC. Message may be acknowledged/cleared by pressing the RESET button when message is displayed except if system requests a continuous message display.

RTD IPC MESSAGE DESCRIPTIONS

Shocks Inoperative

This message will only be displayed if the RTD system detects a malfunction that sets a DTC and causes the RTD system to disable all 4 shock absorbers. RTD system will send a message on the serial data line to the IPC to display this message.

Service Ride Control

This message will be displayed if the RTD system detects any malfunction that sets a DTC. The RTD system

will send a message on the serial data line to the IPC to display this message.

Maximum Speed

This message will only be displayed if the RTD system detects a malfunction that sets a DTC and causes the RTD system to disable all 4 shock absorbers. The RTD system will send a message on the serial data line to the Powertrain Control Module (PCM) indicating that all 4 shock absorbers were disabled. The PCM then sends a message to the IPC to display the MAXIMUM SPEED message.

COMPONENT OPERATION

Adjustable Shock Absorbers

In each shock absorber (front and rear), damper oil flows through a damper valve that has 2 different sized orifices, one for firm mode and the other for soft mode. A damper solenoid valve rotates the damper between positions (modes). Damper solenoid valve is an integral part of shock absorber and is not serviceable separately from shock absorber. Damper solenoids respond to command signals from RTD control module.

Damper Solenoid Valves

RTD shock absorbers provide dampening by forcing fluid through internal orifices to resist suspension movement. Two levels of operation are achieved by redirecting oil flow using a solenoid valve. Soft mode is accomplished by switching solenoid on, causing oil to by-pass main damper valving. Firm mode is accomplished by switching solenoid off, causing oil to flow through main damper valving.

Position Sensors

These sensors (one mounted between body and each control arm) sense position of wheel in relation to body. RTD module utilizes these inputs to control position of damper solenoids. If body or wheel motions are detected, RTD module will command damper solenoids to a soft or firm position.

Real Time Damping (RTD) Control Module

RTD control module, located in left rear storage compartment, controls damping mode selection according to vehicle speed, body-to-wheel displacement, and ride control switch position. RTD module utilizes these inputs to control damper solenoid valve position in each shock absorber separately. The module receives input from sensors either directly connected to the module or from other systems, through the serial data line.

Ride Control Switch

Ride control switch, located on center console between shifter and storage compartment, allows driver to manually select a desired shock damping control setting. Switch positions include TOUR (smooth, soft ride), SPORT (more responsive to road conditions), and PERF (full firm position). Ride control switch provides a specific resistance value to RTD control module to determine selected damping control setting.

SELF-DIAGNOSTICS

Real Time Damping (RTD) contains a self-diagnostic capability to detect system failures. When a DTC is set, RTD control module may disable RTD system and send message to IPC to display message. DTCs stored by RTD control module can be displayed using IPC on-board diagnostics or Tech 1 scan tool with appropriate cartridge.

Begin RTD system diagnosis with **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING under DIAGNOSIS & TESTING. From RTD diagnostic system check, you will be directed to enter diagnostics and retrieve DTCs. Performing RTD diagnostic system check will indicate RTD system is functioning properly.

DIAGNOSIS & TESTING

ON-BOARD DIAGNOSTIC SYSTEM

Vehicle is equipped with an on-board diagnostic display feature capable displaying and/or clearing DTCs. By selecting specific buttons on the IPC, DTCs are displayed on the IPC's 20-character display unit. This allows DTCs to be read or cleared without the use a scan tool.

When diagnostic mode is first entered, IPC will enter into an automatic display sequence and will display all systems that communicate on the serial data line. After each system is displayed, IPC will display the number of DTC(s) (current or history) for that system.

Manual diagnostic mode may be selected at any time during automatic DTC display sequence. In manual diagnostic mode, technician can manually select what module is going to be displayed by pressing specific buttons on the IPC. See **IPC BUTTON FUNCTIONS** table. In this mode, DTC(s) are only displayed for a specific module and will not proceed to next until requested.

Both diagnostic mode displays will also indicate if DTC is a current DTC (malfunction present now) or a history DTC (malfunction has occurred, but is not present now) with a "C" or an "H", respectively. Diagnostics will automatically be exited if no IPC buttons are pressed for longer than 60 seconds.

Entering On-Board Diagnostics

Turn ignition on, engine off. Press RESET button to acknowledge any warning messages present. Press OPTIONS button and hold. While holding OPTIONS button, press FUEL button 4 times within a 10 second period. System will enter automatic display mode.

Automatic Mode

1. Each system module DTC will be displayed for 3 seconds followed by a one second pause before next DTC is displayed in an automatic sequence. If no DTC information is sent to IPC from the system currently displayed, IPC will display NO CODES for that system.
2. At any time during automatic display function, manual display feature can be activated by pressing any button on the IPC except E/M button. The E/M button is used to completely exit diagnostics mode at any time.
3. If there is a communications problem between any system, the IPC will display NO COMM when IPC is trying to communicate with that system. When all DTC(s) have been displayed for all systems, IPC will

display NO MORE CODES for 2 seconds then will enter manual display mode, waiting for manual mode operation.

Manual Mode

1. Manual mode will automatically be entered after automatic DTC display sequence is complete, or can be entered at any time during the automatic mode by pressing any button on IPC except the E/M (E/M button is used to exit the diagnostic mode at any time).
2. When manual mode is selected, IPC will display MANUAL DIAGNOSTICS message for 2 seconds, or until any button on the DIC except the E/M is pressed. After MANUAL DIAGNOSTICS mode message is displayed, IPC will display first system abbreviation and quantity of codes stored for that system, then IPC will wait for further instructions.
3. To proceed to next system in the list press OPTIONS button. To go backward in list, press TRIP button. When a system is selected, each DTC for that system can be read by pressing GAGES button to move forward in list, and FUEL button to move backward in list. If no DTCs are present for system currently selected, IPC will display NO MORE CODES and then wait for further instructions.

IPC BUTTON FUNCTIONS

IPC Button	Function
FUEL	Previous DTC
GAGES	Next DTC
TRIP	Previous System
OPTIONS	Next System
E/M	Exit Diagnostics
RESET	Clear DTCs

CLEARING DIAGNOSTIC TROUBLE CODES (DTCS)

There are 3 methods to clear DTCs: Tech 1 scan tool, IPC diagnostics or ignition cycle default. DTCs cannot be cleared by unplugging RTD control module, disconnecting battery or by turning ignition off (except on 50th cycle of ignition cycle default). Whichever method is used, ensure proper system operation and absence of DTC (s) when clearing procedure is completed.

Tech 1 Scan Tool Method

1. To clear RTD system DTCs, use Mass Storage Cartridge (MSC). Install Tech 1 scan tool and cartridge, and select RTD feature. Set Tech 1 to "F2: Show DTCs". Select "Clear DTCs".
2. Turn ignition off and disconnect Tech 1. Road test vehicle, checking system operation and/or DTC resetting. This must be done because RTD system will not set DTCs and RTD system control functions are disabled when Tech 1 is installed and monitoring system.

IPC Diagnostic Method

1. After all diagnosis and repairs are complete, turn ignition on, engine off. Press RESET button to acknowledge any warning messages present. Press OPTIONS button and hold. While holding OPTIONS

button press FUEL button 4 times within a 10 second period. System will enter automatic display mode.

2. Press any button on the IPC except the E/M to enter manual mode. Press RESET button to clear codes. Press E/M button to exit diagnostics. Turn ignition off. Turn ignition on. Enter diagnostics and verify no DTCs are present for RTD system.

Ignition Cycle Default Method

DTCs will be erased after 50 DTC free ignition cycles. RTD control module ignition cycle counter will reset to zero.

DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION

DTC	Description
C1650	RTD Control Module Malfunction
C1658	EEPROM Calibration Malfunction
C1710	LF Damper Solenoid (Short To Battery Voltage)
C1711	LF Damper Solenoid (Short To Ground)
C1712	LF Damper Solenoid (Open Circuit)
C1715	RF Damper Solenoid (Short To Battery Voltage)
C1716	RF Damper Solenoid (Short To Ground)
C1717	RF Damper Solenoid (Open Circuit)
C1720	LR Damper Solenoid (Short To Battery Voltage)
C1721	LR Damper Solenoid (Short To Ground)
C1722	LR Damper Solenoid (Open Circuit)
C1725	RR Damper Solenoid (Short To Battery Voltage)
C1726	RR Damper Solenoid (Short To Ground)
C1727	RR Damper Solenoid (Open Circuit)
C1743	Loss Of Vehicle Speed Signal
C1744	Loss Of Chassis Pitch Input
C1760	LF Position Sensor (Out Of Range)
C1761	RF Position Sensor (Out Of Range)
C1762	LR Position Sensor (Out Of Range)
C1763	RR Position Sensor (Out Of Range)
C1768	Position Sensor Supply Malfunction (Overcurrent)
C1780	Loss Of Steering Position Signal
C1786	RTD Control Relay Malfunction
C1787	RTD Control Relay Circuit (Open Or Short To Ground)
C1788	RTD Control Relay Circuit (Short To Battery Voltage)
C1790	Ride Control Switch (Out Of Range)
C1791	Ride Control Switch Contact Fault

NOTES ON INTERMITTENTS

Because RTD control module performs a test for different failures under different driving conditions, it is often necessary to test drive vehicle to cause the failure to occur again and allow a code to set. If failure does not occur again during test drive, a good description of vehicle behavior may be helpful in determining which component or circuit is faulty.

Most intermittent problems are caused by faulty electrical connections or wiring. Check for the following conditions:

- Poor mating of connector halves.
- Terminals not fully seated in connector body.
- Improperly formed or damaged terminals (carefully reform all connector terminals in a problem circuit to increase contact tension).
- Poor terminal-to-wire connection (requires removing terminal from connector body to inspect).

Most of the time, if RTD system detects a fault but the fault clears before the ignition is turned off, RTD function will not be disabled. Some failures will disable RTD function for the entire ignition cycle, even if the fault clears before the ignition is turned off.

The following conditions may cause intermittent operation of the RTD system with no DTCs stored:

- An interruption of power to RTD control module (check wiring and fuses).
- Incorrect voltage of power supply circuits (battery or ignition) to RTD control module. Voltage must be more than 10.3 volts and less than 16.0 volts. If this condition occurs while driving, system will not operate normally. When normal voltage is restored, system will operate normally (check charging system).

RTD DIAGNOSTIC SYSTEM CHECK

1. Ensure Tech 1 scan tool is equipped with the latest version of chassis application program. Turn ignition off. Connect Tech 1 scan tool to Data Link Connector (DLC) located at left side of center of instrument panel, below steering column. Turn ignition on, engine off. Attempt to establish communications with RTD system. If scan tool communicates with RTD system, go to step 4 . If scan tool does not communicate with RTD system, go to next step.
2. Using scan tool, attempt to establish communications with Body Control Module (BCM). If scan tool communicates with BCM, go to next step. If scan tool does not communicate with BCM, see appropriate BODY CONTROL MODULES article in ACCESSORIES & EQUIPMENT.
3. Using scan tool, attempt to establish communications with Anti-Lock Brake System (ABS) module. If scan tool communicates with ABS module, go to step 6 . If scan tool does not communicate with ABS module, see appropriate ANTI-LOCK article in BRAKES.
4. Using scan tool, select chassis menu, and then RTD menu display. Retrieve DTCs. If DTCs are present, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table. If no DTCs are present, go to next step.
5. Using scan tool, clear DTCs. Road test vehicle, avoiding smooth road surfaces. Drive equal amounts of time in each ride control switch position. Using scan tool, retrieve DTCs. If any DTCs are set, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION**

table. If no DTCs are set, system is functioning properly.

6. Using scan tool, attempt to establish communications with other systems (PCM, IPC, etc.) connected to serial data line. If scan tool communicates with other systems, go to next step. If scan tool does not communicate with other systems, diagnose serial data line malfunction. See appropriate BODY CONTROL MODULES article in ACCESSORIES & EQUIPMENT.
7. Turn ignition on. Using test light, probe ABS/RTD (20-amp), ABS TRANS (10-amp) and RTD (10-amp) fuses located in underhood electrical center. If test light illuminates on all fuse circuits, go to next step. If test light does not illuminate on all fuse circuits, go to step 12 .
8. Turn ignition off. Disconnect RTD module connectors. Turn ignition on. At harness side of RTD module connectors, measure voltage on all RTD module power circuits. See **WIRING DIAGRAMS** . If more than 10 volts is present, go to next step. If less than 10 volts is present, go to step 14 .
9. Turn ignition off. At harness side of RTD module connectors, check for continuity between all RTD module ground circuits and chassis ground. See WIRING DIAGRAMS. If continuity exists, go to next step. If continuity does not exist, go to step 15 .
10. At harness side of RTD module connector C2, check for continuity between terminal D4 (Dark Blue/White wire) and DLC terminal No. 2 (Purple wire). If continuity exists, go to next step. If continuity does not exist, go to step 13 .
11. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs go to step 16 .
12. Repair open in ignition feed to RTD fuse. If fuse is open, locate and repair short to ground in circuit connected to fuse. See **WIRING DIAGRAMS** . When repair is complete, go to step 16 .
13. Locate and repair open in serial data line (circuit No. 1126). See WIRING DIAGRAMS. When repair is complete, go to step 16 .
14. Locate and repair open in RTD module power circuit. See WIRING DIAGRAMS. When repair is complete, go to step 16 .
15. Locate and repair open in RTD module ground circuit. See **WIRING DIAGRAMS** . When repair is complete, go to next step.
16. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs and retest system. If no DTCs are set, system is functioning properly. If DTCs are set, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under SELF-DIAGNOSTICS.

DIAGNOSTIC TESTS

NOTE: For terminal and circuit identification, see WIRING DIAGRAMS . Use illustration for identification of RTD control module connector terminals. See Fig. 1 and Fig. 2 . After repairs, recheck system operation to verify problem has been repaired. See RTD DIAGNOSTIC SYSTEM CHECK under DIAGNOSIS & TESTING.

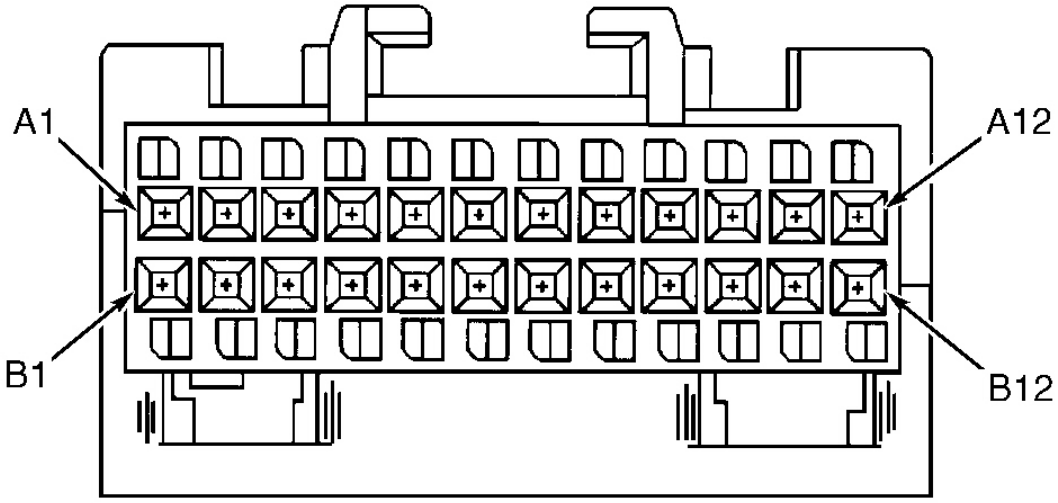

Fig. 1: Identifying RTD Control Module Connector C1 (Gray - 24-Pin)
Courtesy of GENERAL MOTORS CORP.

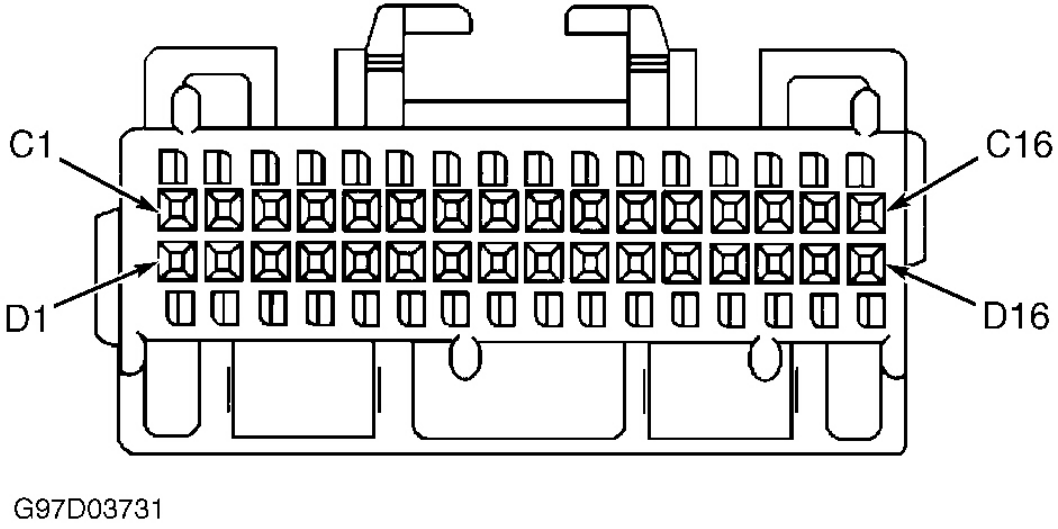

Fig. 2: Identifying RTD Control Module Connector C2 (Blue - 32-Pin)
Courtesy of GENERAL MOTORS CORP.

DTC C1650: RTD MODULE MALFUNCTION

When ign switch is turned on, ESC module performs internal self diagnostic check. If any internal (inside ESC controller) faults are discovered it sets a DTC C1650. Depending on nature of fault detected, ESC module may command 0% PWM duty cycle, disabling all 4 shock absorbers, or ESC module may simply ignore steering position input and control shock absorbers based solely upon vehicle speed input. During either of these actions, ESC module sends a message to IPC (instrument panel control) to display SERVICE RIDE CONTROL and/or SHOCKS INOPERATIVE message. If the 0% PWM duty cycle action was taken, ESC module sends a message to PCM (Powertrain Control Module) to limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool or IPC, clear all DTCs. Cycle ignition off, then on. Using scan tool, check for DTCs. If DTC C1650 is set, go to next step. If DTC C1650 is not set, system is functioning properly.
3. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
4. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1658: EEPROM CALIBRATION MALFUNCTION

When ign switch is turned on, ESC performs internal self diagnostic check. If an internal (inside the ESC controller) fault related to the EEPROM is discovered it sets DTC C1658. Based on this fault, any or all of the following actions may be taken. Command 0% PWM duty cycle disabling all four shock absorbers. Ignores steering position input. Controls shock absorber based solely upon vehicle speed input. Sends message to IPC (instrument panel control) to display "Service Ride Control" and/or "Shocks Inoperative" message. If the disable all four shock absorber action was taken, the ESC module sends a message to the PCM (Powertrain Control Module) to limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool or IPC, clear all DTCs. Cycle ignition off then on. Using scan tool, check for DTCs. If DTC C1658 is set, go to next step. If DTC C1658 is not set, system is functioning properly.
3. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
4. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1710: LEFT FRONT DAMPER SOLENOID (SHORT TO BATTERY VOLTAGE)

The ESC module sends a PWM (Pulse Width Modulated) signal to shock absorbers to control damping. Occasionally, to test the integrity of the system, the ESC commands each shock to a predetermined PWM duty cycle. It then looks at voltage on the solenoid trigger wire to see if it is higher than expected. If it is higher on 2 separate tests, ESC assumes trigger wire is shorted to battery positive and sets a code for the corresponding shock absorber. If the failed shock is the drivers front, a DTC C1710 will be set. The ESC will then command the PWM duty cycle for the failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to the IPC, to display SERVICE RIDE CONTROL message.

1. Perform **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect left front damper solenoid connector. Measure resistance between solenoid terminals (solenoid side of connector). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace left front damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 .
3. Turn ignition on. Measure voltage at Light Blue wire of left front damper harness connector. If more than one volt is present, replace left front damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 . If more than one volt is not present, go to next step.
4. Turn ignition off. Disconnect RTD module connector C2. Turn ignition on. Measure voltage at harness side of connector C2, terminal D12 (Gray wire). If more than one volt is present, locate and repair short to voltage in Gray wire. When repair is complete, go to step 9 . If more than one volt is not present, go to next step.
5. Turn ignition off. Measure continuity at harness side of connector C2, terminals D12 (Gray wire) and D13 (Light Blue wire). If less than 9.5 ohms exists, locate and repair short between Gray and Light Blue wires. When repair is complete, go to step 9 . If more than 9.5 ohms exists, go to next step.
6. Check left front damper circuit for intermittent malfunction. Using scan tool, cycle left front damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 9 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle left front damper solenoid for 60 seconds. If DTC C1710 is set, go to next step. If DTC C1710 is not set, system is functioning properly.
8. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
9. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1711: LEFT FRONT DAMPER SOLENOID (SHORT TO GROUND)

The ESC module sends a PWM (Pulse Width Modulated) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on the solenoid trigger wire to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes the trigger wire is shorted to ground, and sets a code for the corresponding shock absorber. If failed shock is the drivers front, a DTC C1711 will be set. The ESC will then command the PWM duty cycle for all shock absorbers to 0, causing a soft ride. It will also send a message to IPC, to display SERVICE RIDE CONTROL and SHOCKS INOPERATIVE messages, as well as limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1786, C1787 or C1788 is set, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1786, C1787 or C1788 is not set, go to next step.

3. Turn ignition off. Disconnect left front damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 .
4. Check for continuity between ground and left front damper solenoid connector Light Blue wire (solenoid side). If continuity exists, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 . If continuity does not exist, go to next step.
5. Reconnect left front damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between ground and harness side of RTD module connector C2, terminal D12 (Gray wire), and also check for continuity between ground and harness side of RTD module connector C2, terminal D13 (Light Blue wire). If continuity exists, locate and repair short to ground in Gray or Light Blue wire between RTD module and damper solenoid and go to step 8 . If continuity does not exist, go to next step.
6. Check left front damper circuit for intermittent malfunction. Using scan tool, cycle left front damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 8 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle left front damper solenoid for 60 seconds. If DTC C1711 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1711 is not set, system is functioning properly.
8. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1712: LEFT FRONT DAMPER SOLENOID (OPEN CIRCUIT)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on the solenoid trigger wire to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes trigger wire circuit is open, and sets a code for the corresponding shock absorber. If failed shock is the drivers front, a DTC C1712 will be set. ESC will then command PWM duty cycle for the failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect left front damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 6 .
3. Reconnect left front damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between harness side of RTD module connector C2, terminals D12 (Gray wire) and D13 (Light Blue wire). If 9.5 to 15.5 ohms exist, go to next step. If 9.5 to 15.5 ohms does not exist, locate and repair open in Gray or Light Blue wire between RTD module and damper solenoid and go to step 6 .
4. Check left front damper circuit for intermittent malfunction. Using scan tool, cycle left front damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 6 . If intermittent malfunction is not found and repaired, go to next step.

5. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle left front damper solenoid for 60 seconds. If DTC C1712 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1712 is not set, system is functioning properly.
6. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1715: RIGHT FRONT DAMPER SOLENOID (SHORT TO BATTERY VOLTAGE)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on the solenoid trigger wire to see if it is higher than expected. If it is higher on 2 separate tests, ESC module assumes trigger wire is shorted to battery positive, and sets a code for the corresponding shock absorber. If failed shock is the passengers front, a DTC C1715 will be set. ESC module will then command PWM duty cycle for the failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect right front damper solenoid connector. Measure resistance between solenoid terminals (solenoid side of connector). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace right front damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 .
3. Turn ignition on. Measure voltage at Light Blue wire of right front damper harness connector. If more than one volt is present, replace right front damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 . If more than one volt is not present, go to next step.
4. Turn ignition off. Disconnect RTD module connector C2. Turn ignition on. Measure voltage at harness side of connector C2, terminal C11 (Gray wire). If more than one volt is present, locate and repair short to voltage in Gray wire. When repair is complete, go to step 9 . If more than one volt is not present, go to next step.
5. Turn ignition off. Measure continuity at harness side of connector C2, terminals C11 (Gray wire) and C12 (Light Blue wire). If less than 9.5 ohms exists, locate and repair short between Gray and Light Blue wires. When repair is complete, go to step 9 . If more than 9.5 ohms exists, go to next step.
6. Check right front damper circuit for intermittent malfunction. Using scan tool, cycle right front damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 9 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle right front damper solenoid for 60 seconds. If DTC C1715 is set, go to next step. If DTC C1715 is not set, system is functioning properly.
8. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
9. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1716: RIGHT FRONT DAMPER SOLENOID (SHORT TO GROUND)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on the solenoid trigger wire to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes trigger wire is shorted to ground, and sets a code for the corresponding shock absorber. If failed shock is the passengers front, a DTC C1716 will be set. ESC module will then command PWM duty cycle for all shock absorbers to 0, causing a soft ride. It will also send a message to IPC to display SERVICE RIDE CONTROL and SHOCKS INOPERATIVE messages, as well as limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1786, C1787 or C1788 is set, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1786, C1787 or C1788 is not set, go to next step.
3. Turn ignition off. Disconnect right front damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 .
4. Check for continuity between ground and right front damper solenoid connector Light Blue wire (solenoid side). If continuity exists, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 . If continuity does not exist, go to next step.
5. Reconnect right front damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between ground and harness side of RTD module connector C2, terminal C11 (Gray wire) and also check for continuity between ground and harness side of RTD module connector C2, terminal C12 (Light Blue) . If continuity exists, locate and repair short to ground in Gray or Light Blue wire between RTD module and damper solenoid and go to step 8 . If continuity does not exist, go to next step.
6. Check right front damper circuit for intermittent malfunction. Using scan tool, cycle right front damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 8 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle right front damper solenoid for 60 seconds. If DTC C1716 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1716 is not set, system is functioning properly.
8. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1717: RIGHT FRONT DAMPER SOLENOID (OPEN CIRCUIT)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on the solenoid trigger wire to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes trigger wire circuit is opent, and sets a code for the corresponding shock absorber. If failed shock is the passengers front, a DTC C1717 will be set. ESC module will then command

PWM duty cycle for the failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect right front damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 6 .
3. Reconnect right front damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between harness side of RTD module connector C2, terminals C11 (Gray wire) and C12 (Light Blue wire). If 9.5 to 15.5 ohms exist, go to next step. If 9.5 to 15.5 ohms does not exist, locate and repair open in Gray or Light Blue wire between RTD module and damper solenoid and go to step 6 .
4. Check right front damper circuit for intermittent malfunction. Using scan tool, cycle right front damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 6 . If intermittent malfunction is not found and repaired, go to next step.
5. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle right front damper solenoid for 60 seconds. If DTC C1717 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1717 is not set, system is functioning properly.
6. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1720: LEFT REAR DAMPER SOLENOID (SHORT TO BATTERY VOLTAGE)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on solenoid trigger wire to see if it is higher than expected. If it is higher on 2 separate tests, ESC module assumes trigger wire is shorted to battery positive, and sets a code for the corresponding shock absorber. If failed shock is the drivers rear, a DTC C1720 will be set. ESC will then command PWM duty cycle for the failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect left rear damper solenoid connector. Measure resistance between solenoid terminals (solenoid side of connector). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace left rear damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 .
3. Turn ignition on. Measure voltage at Dark Blue/White wire of left rear damper harness connector. If more than one volt is present, replace left rear damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 . If more than one volt is not present, go to next step.
4. Turn ignition off. Disconnect RTD module connector C2. Turn ignition on. Measure voltage at harness side of connector C2, terminal C3 (Dark Green wire). If more than one volt is present, locate and repair

short to voltage in Dark Green wire. When repair is complete, go to step 9 . If more than one volt is not present, go to next step.

5. Turn ignition off. Measure continuity at harness side of connector C2, terminals C3 (Dark Green wire) and C4 (Dark Blue/White wire). If less than 9.5 ohms exists, locate and repair short between Dark Green and Dark Blue/White wires. When repair is complete, go to step 9 . If more than 9.5 ohms exists, go to next step.
6. Check left rear damper circuit for intermittent malfunction. Using scan tool, cycle left rear damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 9 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle left rear damper solenoid for 60 seconds. If DTC C1720 is set, go to next step. If DTC C1720 is not set, system is functioning properly.
8. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
9. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1721: LEFT REAR DAMPER SOLENOID (SHORT TO GROUND)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on the solenoid trigger wire to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes trigger wire is shorted to ground, and sets a code for the corresponding shock absorber. If failed shock is the drivers rear, a DTC C1721 will be set. The ESC will then command PWM duty cycle for all shock absorbers to 0, causing a soft ride. It will also send a message to IPC to display SERVICE RIDE CONTROL and SHOCKS INOPERATIVE messages, as well as limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1786, C1787 or C1788 is set, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1786, C1787 or C1788 is not set, go to next step.
3. Turn ignition off. Disconnect left rear damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 .
4. Check for continuity between ground and left rear damper solenoid connector Dark Blue/White wire (solenoid side). If continuity exists, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 . If continuity does not exist, go to next step.
5. Reconnect left rear damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between ground and harness side of RTD module connector C2, terminal C3 (Dark Green wire) and also C4 (Dark Blue/White wire). If continuity exists, locate and repair short to ground in Dark Green or Dark Blue/White wire between RTD module and damper solenoid and go to step 8 . If continuity does not exist, go to next step.

6. Check left rear damper circuit for intermittent malfunction. Using scan tool, cycle left rear damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 8 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle left rear damper solenoid for 60 seconds. If DTC C1721 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1721 is not set, system is functioning properly.
8. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1722: LEFT REAR DAMPER SOLENOID (OPEN CIRCUIT)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on solenoid trigger wire, to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes trigger wire circuit is open, and sets a code for the corresponding shock absorber. If failed shock is the drivers rear, a DTC C1722 will be set. ESC module will then command PWM duty cycle for failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect left rear damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 6 .
3. Reconnect left rear damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between harness side of RTD module connector C2, terminals C3 (Dark Green wire) and C4 (Dark Blue/White wire). If 9.5 to 15.5 ohms exists, go to next step. If 9.5 to 15.5 ohms does not exist, locate and repair open in Dark Green or Dark Blue/White wire between RTD module and damper solenoid and go to step 6 . If continuity does not exist, go to next step.
4. Check left rear damper circuit for intermittent malfunction. Using scan tool, cycle left rear damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 6 . If intermittent malfunction is not found and repaired, go to next step.
5. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle left rear damper solenoid for 60 seconds. If DTC C1722 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1722 is not set, system is functioning properly.
6. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1725: RIGHT REAR DAMPER SOLENOID (SHORT TO BATTERY VOLTAGE)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty

cycle. It then looks at voltage on solenoid trigger wire, to see if it is higher than expected. If it is higher on 2 separate tests, ESC module assumes trigger wire is shorted to battery positive, and sets a code for the corresponding shock absorber. If failed shock is the passengers rear, a DTC C1725 will be set. ESC module will then command PWM duty cycle for the failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect right rear damper solenoid connector. Measure resistance between solenoid terminals (solenoid side of connector). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace right rear damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 .
3. Turn ignition on. Measure voltage at Dark Blue/White wire of right rear damper harness connector. If more than one volt is present, replace right rear damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 9 . If more than one volt is not present, go to next step.
4. Turn ignition off. Disconnect RTD module connector C2. Turn ignition on. Measure voltage at harness side of connector C2, terminal C1 (Dark Green wire). If more than one volt is present, locate and repair short to voltage in Dark Green wire. When repair is complete go to step 9 . If more than one volt is not present, go to next step.
5. Turn ignition off. Measure continuity at harness side of connector C2, terminals C1 (Dark Green wire) and C2 (Dark Blue/White wire). If less than 9.5 ohms exists, locate and repair short between Dark Green and Dark Blue/White wires. When repair is complete go to step 9 . If more than 9.5 ohms exists, go to next step.
6. Check right rear damper circuit for intermittent malfunction. Using scan tool, cycle right rear damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 9 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle right rear damper solenoid for 60 seconds. If DTC C1725 is set, go to next step. If DTC C1725 is not set, system is functioning properly.
8. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
9. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1726: RIGHT REAR DAMPER SOLENOID (SHORT TO GROUND)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on solenoid trigger wire to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes trigger wire is shorted to ground and sets a code for the corresponding shock absorber. If failed shock is the passengers rear, a DTC C1726 will be set. ESC module will then command PWM duty cycle for all shock absorbers to 0, causing a soft ride. It will also send a message to IPC to display SERVICE RIDE CONTROL and SHOCKS INOPERATIVE messages, as well as limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1786, C1787 or C1788 is set, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1786, C1787 or C1788 is not set, go to next step.
3. Turn ignition off. Disconnect right rear damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 .
4. Check for continuity between ground and right rear damper solenoid connector Dark Blue/White wire (solenoid side). If continuity exists, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 8 . If continuity does not exist, go to next step.
5. Reconnect right rear damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between ground and harness side of RTD module connector C2, terminal C1 (Dark Green wire) and also terminal C2 (Dark Blue/White wire). If continuity exists, locate and repair short to ground in Dark Green or Dark Blue/White wire between RTD module and damper solenoid and go to step 8 . If continuity does not exist, go to next step.
6. Check right rear damper circuit for intermittent malfunction. Using scan tool, cycle right rear damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 8 . If intermittent malfunction is not found and repaired, go to next step.
7. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle right rear damper solenoid for 60 seconds. If DTC C1726 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1726 is not set, system is functioning properly.
8. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1727: RIGHT REAR DAMPER SOLENOID (OPEN CIRCUIT)

The ESC module sends a Pulse Width Modulated (PWM) signal to shock absorbers to control damping. Occasionally, to test integrity of system, ESC module commands each shock to a predetermined PWM duty cycle. It then looks at voltage on solenoid trigger wire to see if it is lower than expected. If it is lower on 2 separate tests, ESC module assumes trigger wire circuit is open, and sets a code for the corresponding shock absorber. If failed shock is the passengers rear, a DTC C1727 will be set. ESC module will then command PWM duty cycle for failed shock absorber to 0, causing a soft ride on that shock. It will also send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect right rear damper solenoid connector. Measure resistance between solenoid connector terminals (solenoid side). If resistance is 9.5-15.5 ohms, go to next step. If resistance is not 9.5-15.5 ohms, replace damper (shock absorber). See **SHOCK ABSORBER** under REMOVAL & INSTALLATION. After repairs, go to step 6 .
3. Reconnect right rear damper solenoid connector. Disconnect RTD module connector C2. Check for continuity between harness side of RTD module connector C2, terminals C1 (Dark Green wire) and C2

(Dark Blue/White wire). If 9.5 to 15.5 ohms exists, go to next step. If 9.5 to 15.5 ohms does not exist, locate and repair open in Dark Green or Dark Blue/White wire between RTD module and damper solenoid and go to step 6 . If over 15.5 ohms exist, go to next step.

4. Check right rear damper circuit for intermittent malfunction. Using scan tool, cycle right rear damper solenoid while moving wiring and connectors. If intermittent malfunction is found and repaired, go to step 6 . If intermittent malfunction is not found and repaired, go to next step.
5. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs. Cycle right rear damper solenoid for 60 seconds. If DTC C1727 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1727 is not set, system is functioning properly.
6. Turn ignition off. Connect or install any connector or components that were disconnected or removed. Turn ignition on. Using scan tool, clear all DTCs.

DTC C1743: LOSS OF VEHICLE SPEED SIGNAL

The ESC module receives a VSS signal from serial data line as well as PCM. This code may set when the VSS signal on the serial data line is greater than 20 MPH, and the VSS signal from the PCM is less than 3 MPH. ESC module will then set DTC C1743 and ignore information about vehicle speed from PCM. This code may be set if PCM loses VSS signal intermittently.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. If any Powertrain Control Module (PCM) Vehicle Speed Sensor (VSS) DTCs are set, diagnose Powertrain Control Module (PCM) DTCs. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If no PCM vehicle speed sensor DTCs are set, go to next step.
3. Test drive vehicle and observe speedometer operation. If speedometer operates properly, go to step 5 . If speedometer does not operate properly, go to next step.
4. Turn ignition off. Disconnect RTD control module connector C2. Test drive vehicle and observe speedometer operation. If speedometer operates properly, go to step 8 . If speedometer does not operate properly, diagnose vehicle speed sensor. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.
5. Check for an open in Dark Green/White wire between RTD control module connector C2, terminal C6 and PCM. Repair as necessary and go to step 8 . See **WIRING DIAGRAMS** . If Dark Green/White wire is okay, go to next step.
6. Check RTD control module connector C2 for intermittent open. Check for intermittent open in vehicle speed circuit (Dark Green/White wire). If connector and circuit are faulty, repair as necessary and go to step 8 . If connector and circuit are okay, go to next step.
7. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs. Drive vehicle faster than 20 MPH for 20 seconds. If DTC C1743 is set, replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step. If DTC C1743 is not set, system is functioning properly.
8. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs

DTC C1744: LOSS OF CHASSIS PITCH INPUT

The ESC module receives a chassis pitch input from PCM at ESC terminal C5 (Pink/White) on connector C2. Under normal conditions, this signal is battery voltage. PCM grounds this circuit under hard acceleration, or hard braking. When voltage on C5 goes low, ESC module commands all 4 shock absorbers to a full firm position. As a self test feature, once the ignition switch is turned to ON position, ESC module sends a request for chassis pitch to PCM on serial data line. PCM then grounds terminal C5 for 5 seconds, and then restores battery voltage. DTC C1744 will be set if after the ignition switch is turned to the RUN position, the ESC does not detect a reply on the chassis pitch wire (C5) from the PCM within 31 seconds of the request on the serial data line. Every 4 minutes, ESC will send a new request to PCM. If PCM does not respond within 31 seconds, DTC C1744 will remain set. ESC module will send a request to IPC to display SERVICE RIDE CONTROL message while this code is set.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD system check, go to next step.
2. Using scan tool, monitor chassis pitch status. If chassis pitch status is ACTIVE, go to next step. If chassis pitch status is not ACTIVE, go to step 4 .
3. Disconnect Powertrain Control Module (PCM) connector C1 (Red connector). Monitor chassis pitch status. If chassis pitch status is ACTIVE, go to step 5 . If chassis pitch status is not ACTIVE, go to step7 .
4. Turn ignition on. Using fused jumper wire, backprobe RTD control module connector C2, terminal C5 (Pink/White wire) to ground. Monitor chassis pitch status. If chassis pitch status is ACTIVE, go to step 8 . If chassis pitch status is not ACTIVE, go to step 6 .
5. Check for short to ground in Pink/White wire (circuit No. 1101) and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 10 . If Pink/White wire is okay, go to step 9 .
6. Check for open in Pink/White wire (circuit No. 1101) and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 10 . If Pink/White wire is okay, go to next step.
7. Check PCM for proper operation. See OBD SYSTEMS CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. After repairs, go to step 10 . If PCM is functioning properly, go to step 9 .
8. Check chassis pitch circuit (No. 1101, Pink/White wire) for an intermittent. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. After repairs, go to step 10 . If no problem was found, go to step 7 .
9. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
10. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1760: LEFT FRONT POSITION SENSOR (OUT OF RANGE)

The ESC receives an analog signal from each suspension position sensor. The range of this signal is .35 to 4.75 volts. If voltage signal from a sensor is less than .35 or greater than 4.75 volts for at least 1 second in 4 consecutive ignition cycles, a code for the corresponding sensor will be set. If out of range sensor is the drivers front, DTC C1760 will set. ESC module will then provide shock absorber control based on vehicle speed only, and it will send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1768 is stored, go to appropriate DTC for diagnosis. See

DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION table under DIAGNOSIS & TESTING. If DTC C1768 is not stored, go to next step.

3. Turn ignition on. Using scan tool, monitor left front position sensor voltage. If voltage is 0.35-4.75 volts, go to step 7 . If voltage is not 0.35-4.75 volts, go to next step.
4. Visually inspect left front position sensor for bent arm or bracket, disconnect sensor link or other signs of damage. Repair or replace as necessary. After repairs, go to step 13 . If no damage is found, go to next step.
5. Turn ignition off. Disconnect position sensor 3-pin connector. Turn ignition on. Measure voltage between position sensor harness connector Purple/White and Light Blue/Black wires. If voltage is 7.0-8.5 volts, leave connector disconnected and go to next step. If voltage is not 7.0-8.5 volts, go to step 10 .
6. Using scan tool, monitor left front position sensor voltage. Connect fused jumper wire between position sensor harness connector Purple/White and Tan/White wires. Note voltage with jumper wire connected. Disconnect jumper wire. If voltage is 4.0-5.5 volts with jumper wire connected, go to step 11 . If voltage is not 4.0-5.5 volts with jumper wire connected, go to step 9 .
7. Check position sensor for intermittent malfunction. See **NOTES ON INTERMITTENTS** . After repairs, go to step 13 . If no problem was found, go to step 12 .
8. Check for short to ground, an open or short to voltage in Light Blue/Black wire between position sensor and RTD control module. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Light Blue/Black wire is okay, go to step 12 .
9. Check for short to ground, an open or short to voltage in Tan/White wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Tan/White wire is okay, go to step 12 .
10. Check for an open in Purple/White wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Purple/White wire is okay, go to step 8 .
11. Replace left front position sensor. See **RTD POSITION SENSOR** under REMOVAL & INSTALLATION. After repairs, go to step 13 .
12. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
13. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1761: RIGHT FRONT POSITION SENSOR (OUT OF RANGE)

The ESC receives an analog signal from each suspension position sensor. Range of this signal is .35 to 4.75 volts. If voltage signal from a sensor is less than .35 or greater than 4.75 volts for at least 1 second in 4 consecutive ignition cycles, a code for the corresponding sensor will be set. If out of range sensor is the passengers front, DTC C1761 will set. ESC module will then provide shock absorber control based on vehicle speed only, and it will send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1768 is stored, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1768 is not stored, go to next step.

3. Turn ignition on. Using scan tool, monitor right front position sensor voltage. If voltage is 0.35-4.75 volts, go to step 7 . If voltage is not 0.35-4.75 volts, go to next step.
4. Visually inspect right front position sensor for bent arm or bracket, disconnect sensor link or other signs of damage. Repair or replace as necessary. After repairs, go to step 13 . If no damage is found, go to next step.
5. Turn ignition off. Disconnect position sensor 3-pin connector. Turn ignition on. Measure voltage between position sensor harness connector Purple/White and Light Blue/Black wires. If voltage is 7.0-8.5 volts, leave connector disconnected and go to next step. If voltage is not 7.0-8.5 volts, go to step 10 .
6. Using scan tool, monitor right front position sensor voltage. Connect fused jumper wire between position sensor harness connector Purple/White and Tan/White wires. Note voltage with jumper wire connected. Disconnect jumper wire. If voltage is 4.0-5.5 volts with jumper wire connected, go to step 11 . If voltage is not 4.0-5.5 volts with jumper wire connected, go to step 9 .
7. Check position sensor for intermittent malfunction. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. After repairs, go to step 13 . If no problem was found, go to step 12 .
8. Check for short to ground, an open or short to voltage in Light Blue/Black wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Light Blue/Black wire is okay, go to step 12 .
9. Check for short to ground, an open or short to voltage in Tan/White wire between position sensor and RTD control module, and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Tan/White wire is okay, go to step 12 .
10. Check for an open in Purple/White wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Purple/White wire is okay, go to step 8 .
11. Replace right front position sensor. See **RTD POSITION SENSOR** under REMOVAL & INSTALLATION. After repairs, go to step 13 .
12. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
13. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1762: LEFT REAR POSITION SENSOR (OUT OF RANGE)

The ESC receives an analog signal from each suspension position sensor. Range of this signal is .35 to 4.75 volts. If the voltage signal from a sensor is less than .35 or greater than 4.75 volts for at least 1 second in 4 consecutive ignition cycles, a code for the corresponding sensor will be set. If out of range sensor is the drivers rear, DTC C1762 will set. ESC module will then provide shock absorber control based on vehicle speed only, and it will send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1768 is stored, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1768 is not stored, go to next step.
3. Turn ignition on. Using scan tool, monitor left rear position sensor voltage. If voltage is 0.35-4.75 volts, go to step 7 . If voltage is not 0.35-4.75 volts, go to next step.

4. Visually inspect left rear position sensor for bent arm or bracket, disconnect sensor link or other signs of damage. Repair or replace as necessary. After repairs, go to step 13 . If no damage is found, go to next step.
5. Turn ignition off. Disconnect position sensor 3-pin connector. Turn ignition on. Measure voltage between position sensor harness connector Red/Black and Light Green/Black wires. If voltage is 7.0-8.5 volts, leave connector disconnected and go to next step. If voltage is not 7.0-8.5 volts, go to step 10 .
6. Using scan tool, monitor left rear position sensor voltage. Connect fused jumper wire between position sensor harness connector Red/Black and Light Green/White wires. Note voltage with jumper wire connected. Disconnect jumper wire. If voltage is 4.0-5.5 volts with jumper wire connected, go to step 11 . If voltage is not 4.0-5.5 volts with jumper wire connected, go to step 9 .
7. Check position sensor for intermittent malfunction. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. After repairs, go to step 13 . If no problem was found, go to step 12 .
8. Check for short to ground, an open or short to voltage in Light Green/Black wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Light Green/Black wire is okay, go to step 12 .
9. Check for short to ground, an open or short to voltage in Light Green/White wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Light Green/White wire is okay, go to step 12 .
10. Check for an open in Red/Black wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Red/Black wire is okay, go to step 8 .
11. Replace left rear position sensor. See **RTD POSITION SENSOR** under REMOVAL & INSTALLATION. After repairs, go to step 13 .
12. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
13. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1763: RIGHT REAR POSITION SENSOR (OUT OF RANGE)

The ESC receives an analog signal from each suspension position sensor. Range of this signal is .35 to 4.75 volts. If the voltage signal from a sensor is less than .35 or greater than 4.75 volts for at least 1 second in 4 consecutive ignition cycles, a code for the corresponding sensor will be set. If out of range sensor is the passengers rear, DTC C1763 will set. The ESC will then provide shock absorber control based on vehicle speed only, and it will send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, retrieve DTCs. If DTC C1768 is stored, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1768 is not stored, go to next step.
3. Turn ignition on. Using scan tool, monitor right rear position sensor voltage. If voltage is 0.35-4.75 volts, go to step 7 . If voltage is not 0.35-4.75 volts, go to next step.
4. Visually inspect right rear position sensor for bent arm or bracket, disconnect sensor link or other signs of damage. Repair or replace as necessary. After repairs, go to step 13 . If no damage is found, go to next

step.

5. Turn ignition off. Disconnect position sensor 3-pin connector. Turn ignition on. Measure voltage between position sensor harness connector Red/Black and Light Green/Black wires. If voltage is 7.0-8.5 volts, leave connector disconnected and go to next step. If voltage is not 7.0-8.5 volts, go to step 10 .
6. Using scan tool, monitor right rear position sensor voltage. Connect fused jumper wire between position sensor harness connector Red/Black and Light Green/White wires. Note voltage with jumper wire connected. Disconnect jumper wire. If voltage is 4.0-5.5 volts with jumper wire connected, go to step 11 . If voltage is not 4.0-5.5 volts with jumper wire connected, go to step 9 .
7. Check position sensor for intermittent malfunction. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. After repairs, go to step 13 . If no problem was found, go to step 12 .
8. Check for short to ground, an open or short to voltage in Light Green/Black wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Light Green/Black wire is okay, go to step 12 .
9. Check for short to ground, an open or short to voltage in Light Green/White wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Light Green/White wire is okay, go to step 12 .
10. Check for an open in Red/Black wire between position sensor and RTD control module and repair as necessary. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Red/Black wire is okay, go to step 8 .
11. Replace right rear position sensor. See **RTD POSITION SENSOR** under REMOVAL & INSTALLATION. After repairs, go to step 13 .
12. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
13. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1768: POSITION SENSOR SUPPLY MALFUNCTION (OVERCURRENT)

The ESC provides a common 8-volt regulated power supply to all suspension position sensors. If ESC module detects sensor supply voltage lower than 6 volts or higher than 9 volts for at least 1 second in 4 consecutive ignition cycles, DTC C1768 will be set. The ESC will then provide shock absorber control based on vehicle speed only, and it will send a message to IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Disconnect all 4 position sensor connectors. Using scan tool, clear all DTCs. If DTC C1768 is set as current, go to next step. If DTC C1768 is not set as current, go to step 6 .
3. Reconnect all 4 position sensor connectors. Using scan tool, monitor each position sensor voltage. If any position sensor voltage is less than one volt, go to next step. If all position sensor voltages are more than one volt, go to step 5 .
4. Check circuits No. 1208 (Red/Black wire), No. 1205 (Purple/White wire), No. 1211 (Purple/White wire) and No. 1214 (Purple/White wire) for short to ground and repair as necessary. See **WIRING DIAGRAMS** . When repairs are complete, go to step 10 . If circuits (wires) are okay, go to step 9 .
5. Check circuits No. 1208 (Red/Black wire), No. 1205 (Purple/White wire), No. 1211 (Purple/White wire) and No. 1214 (Purple/White wire) for short to voltage and repair as necessary. See **WIRING**

DIAGRAMS . When repairs are complete, go to step 10 . If circuits (wires) are okay, go to step 9 .

6. Using scan tool, clear all DTCs. Reconnect all 4 position sensors one at a time checking for DTC after each connector is reconnected. If DTC C1768 sets after reconnecting any position sensor, go to step 8 . If DTC C1768 does not set, go to next step.
7. Check circuits No. 1208, No. 1214 (both Red/Black wires), and No. 1205 and No. 1211 (both Purple/White wires) for intermittent operation. See **WIRING DIAGRAMS** . See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. After repairs, go to step 10 . If no problem was found, system is functioning properly.
8. Replace position sensor that caused DTC to set when reconnected. See **RTD POSITION SENSOR** under REMOVAL & INSTALLATION. After repairs, go to step 10 .
9. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
10. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs and perform **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING.

DTC C1780: LOSS OF STEERING POSITION SIGNAL

The ESC receives a steering position input from Electronic Brake/Traction Control Module (EBTCM) on connector C2 terminal C7 (Light Blue) wire. ESC module will command a firmer ride if the vehicle is in a turn. If the ESC does not detect a valid steering position PWM (Pulse Width Modulated) signal for at least 5 seconds in 4 consecutive ignition cycles, it will set DTC C1780, ignore the steering input, control shocks using Lateral Acceleration data sent by EBTCM on serial data line, and send a request to the IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, check for any stored ABS/TCS DTCs. If any ABS/TCS DTCs are set, see appropriate ANTI-LOCK article under BRAKES. If no ABS/TCS DTCs are set, go to next step.
3. Using scan tool, monitor steering position sensor input while turning steering wheel. If voltage changes while steering wheel is turned, go to step 5 , If voltage does not change when steering wheel is turned, go to next step.
4. Check for open or short (to voltage or ground) in Light Blue wire (circuit No. 914) between RTD control module connector C2, terminal C7 and Electronic Brake/Traction Control Module (EBTCM). Repair as necessary. See **WIRING DIAGRAMS** . When repair is complete, go to step 8 . If Light Blue wire is okay, go to next step.
5. Check steering position sensor signal circuit (circuit No. 914) for intermittent operation. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. After repairs, go to step 8 . If no problem was found, go to next step.
6. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs. After 5 seconds, check if DTC C1780 resets. If DTC C1780 resets, go to next step. If DTC C1780 does not reset, system is functioning properly.
7. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
8. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs and

perform **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING.

DTC C1786: RTD CONTROL RELAY MALFUNCTION

The ESC module gets supply voltage for all of the shock absorber solenoids, from the Real Time Damping (RTD) relay on ESC connector C2 terminal D1 (orange). ESC controls the operation of the RTD relay by grounding the relay trigger wire on ESC connector C2 terminal C13 (Dark Blue). It then monitors the voltage on terminal D1 to determine if the supply circuits are functioning properly. DTC C1786 will be set when the ESC detects low voltage on terminal D1 (orange wire), while terminal C13 (Dark Blue) is being grounded to energize the RTD relay. ESC module will disable all 4 shock absorbers (giving a soft ride), send a request to IPC to display SERVICE RIDE CONTROL and SHOCKS INOPERATIVE messages, and send a message to the PCM to limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, check if DTC C1787 or C1788 is stored. If DTC C1787 or C1788 is stored, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1787 or C1788 is not stored, go to next step.
3. Check 10-amp RTD relay fuse (No. 7) located in underhood electrical center. If fuse is blown (open), go to step 6 . If fuse is okay, go to next step.
4. Turn ignition off. Measure voltage between ground and RTD control module connector C2, terminal D13 (Orange wire). If voltage is more than 10 volts, go to step 10 . If voltage is less than 10 volts, go to next step.
5. Turn ignition off. Disconnect RTD relay located in underhood electrical center. Measure voltage between ground and battery circuit of RTD relay connector. If voltage is more than 10 volts, go to step 8 . If voltage is less than 10 volts, go to step 9 .
6. Turn ignition off. Disconnect RTD control module connector C2. Check for continuity between ground and RTD control module connector C2, terminal D1 (Orange wire). If continuity exists, go to step 8 . If continuity does not exist, go to next step.
7. Check for short to ground in damper solenoid drive high circuits No. 1114 and No. 1118 (both Dark Blue/White wires), and No. 1116 and No. 1107 (both Light Blue wires). See **WIRING DIAGRAMS** . After repairs, go to step 13 . If all wires (circuits) are okay, go to step 12 .
8. Check for open in circuit No. 1040 (connector C2, terminal D1, Orange wire). After repairs, go to step 13 . If circuit is okay, go to step 11 .
9. Locate and repair open in underhood electrical center or power feed to electrical center. After repairs, go to step 13 .
10. Check RTD relay circuit for intermittent short to ground in Orange wire. Check for short to ground on any damper solenoid drive high circuit. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If Orange wire and damper drive high circuits are okay, system is functioning properly.
11. Replace RTD relay. After repairs, go to step 13 .
12. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
13. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1787: RTD RELAY CONTROL CIRCUIT (OPEN OR SHORT TO GROUND)

The ESC module gets supply voltage for all of the shock absorber solenoids, from the Real Time Damping (RTD) relay on ESC connector C2 terminal D1 (orange). The ESC controls the operation of the RTD relay by grounding the relay trigger wire on ESC connector C2 terminal C13 (Dark Blue). The ESC monitors the voltage on the relay control circuit on ESC terminal C13. If the voltage on C13 goes low (open circuit, short to ground, blown RTD fuse) while the ESC is not triggering the relay on that circuit, DTC C1787 will be set. The ESC will send a request to the IPC to display SERVICE RIDE CONTROL and SHOCKS INOPERATIVE messages, stop controlling the shock absorbers (giving a soft ride), and send a message to the PCM to limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Using scan tool, check if DTC C1786 is stored. If DTC C1786 is stored, go to appropriate DTC for diagnosis. See **DIAGNOSTIC TROUBLE CODE (DTC) IDENTIFICATION** table under DIAGNOSIS & TESTING. If DTC C1786 is not stored, go to next step.
3. Turn ignition off. Disconnect RTD relay located in underhood electrical center. Turn ignition on. Measure voltage between ground and battery circuit of RTD relay connector. If voltage is more than 10 volts, go to next step. If voltage is less than 10 volts, go to step 10 .
4. Turn ignition off. Disconnect RTD control module connector C2. Check continuity between ground and RTD control module connector C2, terminal C13 (Dark Blue wire). If continuity exists, go to step 8 . If continuity does not exist, go to next step.
5. Measure resistance of RTD relay coil between terminals No. 1 and 2 (or terminals No. 85 and 86). If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 11 .
6. Turn ignition off. Reconnect RTD relay. Measure voltage between ground and RTD control module connector C2, terminal C13 (Dark Blue wire). If voltage is more than 10 volts, go to next step. If voltage is less than 10 volts, go to step 9 .
7. Check RTD relay circuit No. 641 (Dark Blue wire) for intermittent operation. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. See **WIRING DIAGRAMS** . After repairs, go to step 13 . If circuit is okay, go to step 12 .
8. Locate and repair short to ground in underhood electrical center or circuit No. 641 (Dark Blue wire) between underhood electrical center and RTD control module connector C2, terminal C13. See **WIRING DIAGRAMS** . After repairs, go to step 13 .
9. Locate and repair open in circuit No. 1040 (Orange wire) between underhood electrical center and RTD control module connector C2, terminal D1. See **WIRING DIAGRAMS** . After repairs, go to step 13 .
10. Locate and repair open in underhood electrical center, 10-amp RTD fuse (fuse No. 7) or power feed to underhood electrical center. After repairs, go to step 13 .
11. Replace RTD relay. After repairs, go to step 13 .
12. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
13. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1788: RTD RELAY CONTROL CIRCUIT (SHORT TO BATTERY VOLTAGE)

The ESC module gets supply voltage for all of the shock absorber solenoids, from the Real Time Damping (RTD) relay on ESC connector C2 terminal D1 (orange). The ESC controls the operation of the RTD relay by grounding the relay trigger wire on ESC connector C2 terminal C13 (Dark Blue). The ESC monitors the voltage on the relay control circuit on ESC terminal C13. If the voltage on C13 goes high (short to battery voltage) while the ESC is triggering the relay on that terminal, DTC C1788 will be set. The ESC will send a request to the IPC to display SERVICE RIDE CONTROL and SHOCKS INOPERATIVE messages, stop controlling the shock absorbers (giving a soft ride), and send a message to the PCM to limit vehicle speed to 80 MPH.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition off. Disconnect RTD relay located in underhood electrical center. Turn ignition on. Measure voltage between ground and circuit No. 641 (Dark Blue wire) at underhood electrical center. See **WIRING DIAGRAMS** . If voltage is more than 10 volts, go to step 6 . If voltage is less than 10 volts, go to next step.
3. Measure resistance of RTD relay coil between terminals No. 85 and 86. If resistance is 75-105 ohms, go to next step. If resistance is not 75-105 ohms, go to step 9 .
4. Check for continuity between RTD relay terminals No. 85 and 87. If continuity exists, go to step 9 . If continuity does not exist, go to next step.
5. Check for continuity between RTD relay terminals No. 85 and 30. If continuity exists, go to step 9 . If continuity does not exist, go to step 7 .
6. Turn ignition off. Disconnect RTD control module connector C2. Turn ignition on. Measure voltage between ground and circuit No. 641 (Dark Blue wire) at underhood electrical center RTD relay connector. If voltage is more than one volt, go to step 8 . If voltage is less than one volt, go to step 10 .
7. Check RTD relay circuit for intermittent operation. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. See **WIRING DIAGRAMS** . After repairs, go to step 11 . If circuit is okay, go to step 10 .
8. Locate and repair short to voltage is underhood electrical center or circuit No. 641 (Dark Blue wire). After repairs, go to step 11 .
9. Replace RTD relay. After repairs, go to step 11 .
10. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
11. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1790: RIDE CONTROL SWITCH (OUT OF RANGE)

The ESC sends a 5-volt reference voltage out to the 3 position ride control switch on ESC connector C1 terminal A7 (Tan/White) wire. This switch allows the driver to select the firmness of his ride (TOUR, SPORT, PERF). The switch grounds the 5-volt reference from terminal A7, through a different resistor in each setting, thereby changing the voltage on terminal A7 according to switch position. In the PERF setting, voltage on terminal A7 should be .5 to 1.5 volts. In the SPORT setting, A7 voltage should be 1.5 to 2.5 volts. In the TOUR setting, the voltage should be 2.5 to 3.5 volts on A7. If the voltage on A7 goes from less than.5 volt or greater than 4.5 volts, for 5 seconds on 4 consecutive ignition cycles, the ESC will set DTC C1790. The ESC will also provide shock absorber control based on the SPORT setting, and send a request to the IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition on, with engine off. Using scan tool, select RIDE CONTROL SWITCH voltage display. Observe voltage with ride control switch in PERF, SPORT and TOUR positions. With the switch in PERF position the voltage should be .5-1.5 volts, in SPORT position should be 1.5-2.5 volts, and in TOUR position, should be 2.5-3.5 volts. If voltages are correct in each position, go to step 6 . If voltage is not within ranges specified, go to next step.
3. Turn ignition off. Disconnect ride control switch connector. Ensure ride control switch is not between switch positions. Measure resistance between terminals of ride control switch (component side) with switch in PERF, SPORT and TOUR positions. With switch in PERF position, resistance should be 625-675 ohms. With switch in SPORT position, resistance should be 265-315 ohms. With switch in TOUR position, resistance should be 85-135 ohms. If resistance is as specified, go to next step. If resistance is not as specified, go to step 10 .
4. Turn ignition on, with engine off. Measure voltage between ground and 5-volt reference circuit (Tan/White wire) of ride control switch harness connector. See **WIRING DIAGRAMS** . If voltage is about 5 volts, go to next step. If voltage is not about 5 volts, go to step 8 .
5. Using scan tool, monitor ride control switch voltage. Connect fused jumper wire between ride control switch harness connector Tan/White and Pink/White wires. If voltage is 0-0.5 volt, go to next step. If voltage is not 0-0.5 volt, go to step 9 .
6. Check ride control switch and circuits for intermittent operation. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. See **WIRING DIAGRAMS** . After repairs, go to step 12 . If switch and circuits are okay, go to next step.
7. Turn ignition off. Reinstall/reconnect all components/connectors that were removed or disconnected. Turn ignition on. Using scan tool, select clear all DTCs. If DTC C1790 is current, go to step 11 . If DTC C1790 is not current, system is functioning properly.
8. Check circuit No. 1384 (Tan/White wire) for short to ground, short to voltage or an open between ride control switch and RTD control module connector C1, terminal A7. See **WIRING DIAGRAMS** . After repairs, go to step 12 . If circuit No. 1384 is okay, go to step 11 .
9. Check circuit No. 1385 (Pink/Black wire) for short to voltage or an open between ride control switch and RTD control module connector C2, terminal D7. See **WIRING DIAGRAMS** . After repairs, go to step 12 . If circuit No. 1385 is okay, go to step 11 .
10. Replace ride control switch. See **RTD CONTROL SWITCH** under REMOVAL & INSTALLATION. After repairs, go to step 12 .
11. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
12. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

DTC C1791: RIDE CONTROL SWITCH CONTACT FAULT

The ESC sends a 5-volt reference voltage out to the 3 position ride control switch on ESC connector C1 terminal A7 (Tan/White) wire. This switch allows the driver to select the firmness of his ride (TOUR, SPORT, PERF). The switch grounds the 5-volt reference from terminal A7, through a different resistor in each setting, thereby changing the voltage on terminal A7 according to switch position. In the PERF setting, voltage on terminal A7 should be .5 to 1.5 volts. In the SPORT setting, A7 voltage should be 1.5 to 2.5 volts. In the TOUR

setting, the voltage should be 2.5 to 3.5 volts on A7. If the voltage on A7 is between 3.5 and 4.5 volts, for 10 seconds on 4 consecutive ignition cycles, the ESC will set DTC C1791. The ESC will also provide shock absorber control based on the SPORT setting, and send a request to the IPC to display SERVICE RIDE CONTROL message.

1. Perform RTD diagnostic system check. See **RTD DIAGNOSTIC SYSTEM CHECK** under DIAGNOSIS & TESTING. After performing RTD diagnostic system check, go to next step.
2. Turn ignition on, with engine off. Using scan tool, select RIDE CONTROL SWITCH voltage display. Observe voltage with ride control switch in PERF, SPORT and TOUR positions. With the switch in PERF position, voltage should be .5-1.5 volts. In SPORT position, voltage should be 1.5-2.5 volts. In TOUR position, voltage should be 2.5-3.5 volts. If voltages are correct in each position, go to step 6 . If voltage is not within specified range, go to next step.
3. Turn ignition off. Disconnect ride control switch connector. Ensure ride control switch is not in-between switch positions. Measure resistance between terminals of ride control switch (component side) with switch in PERF, SPORT and TOUR positions. With switch in PERF position, resistance should be 250-350 ohms. With switch in SPORT position, resistance should be 80-180 ohms. With switch in TOUR position, resistance should be 25-75 ohms. If resistance is as specified, go to next step. If resistance is not as specified, go to step 10 .
4. Turn ignition on, with engine off. Measure voltage between ground and 5-volt reference circuit (Tan/White wire) of ride control switch harness connector. See **WIRING DIAGRAMS** . If voltage is about 5 volts, go to next step. If voltage is not about 5 volts, go to step 8 .
5. Using scan tool, monitor ride control switch voltage. Connect fused jumper wire between ride control switch harness connector Tan/White and Pink/White wires. If voltage is 0-0.5 volt, go to next step. If voltage is not 0-0.5 volt, go to step 9 .
6. Check ride control switch and circuits for intermittent operation. See **NOTES ON INTERMITTENTS** under DIAGNOSIS & TESTING. See **WIRING DIAGRAMS** . After repairs, go to step 12 . If switch and circuits are okay, go to next step.
7. Turn ignition off. Reinstall/reconnect all components/connectors that were removed or disconnected. Turn ignition on. Using scan tool, select clear all DTCs. If DTC C1791 is current, go to step 11 . If DTC C1791 is not current, system is functioning properly.
8. Check circuit No. 1384 (Tan/White wire) for short to ground, short to voltage or an open between ride control switch and RTD control module connector C1, terminal A7. See **WIRING DIAGRAMS** . After repairs, go to step 12 . If circuit No. 1384 is okay, go to step 11 .
9. Check circuit No. 1385 (Pink/Black wire) for short to voltage or an open between ride control switch and RTD control module connector C2, terminal D7. See **WIRING DIAGRAMS** . After repairs, go to step 12 . If circuit No. 1385 is okay, go to step 11 .
10. Replace ride control switch. See **RTD CONTROL SWITCH** under REMOVAL & INSTALLATION. After repairs, go to step 12 .
11. Replace RTD control module. See **RTD CONTROL MODULE** under REMOVAL & INSTALLATION. After repairs, go to next step.
12. Turn ignition off. Reinstall/reconnect all components/connectors. Using scan tool, clear all DTCs.

REMOVAL & INSTALLATION

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION before disconnecting battery.

RTD CONTROL MODULE

Removal & Installation

Disconnect negative battery cable. Raise left-side rear floor storage compartment lid. Remove sound insulator pad. Gently push down on RTD control module and remove from bracket. Disconnect RTD control module electrical connectors. To install, reverse removal procedure.

RTD CONTROL SWITCH

Removal & Installation

Turn ignition off. Open center console door. Pull up on rear of ride control switch assembly to release from mounting clips. If switch does not release from trim plate, carefully insert screwdriver into access hole located on rear of switch assembly. Gently pull up on switch. Disconnect electrical connector and remove switch assembly.

To install, connect electrical connector. Insert switch assembly into front of console trim plate. Snap rear of switch assembly into console trim plate.

RTD DAMPER SOLENOID VALVE

Removal & Installation

Damper solenoid valve is an integral of shock absorber assembly. Damper solenoid valve cannot be serviced separately. Complete replacement of shock absorber assembly is necessary. See appropriate FRONT or REAR article.

RTD POSITION SENSOR

Removal & Installation

Disconnect negative battery cable. Raise and support vehicle. Remove wheel. Disconnect sensor electrical connector. Remove sensor harness from retainer. Remove sensor link ball stud from bracket. Remove mounting bolts and RTD position sensor. To install, reverse removal procedure. Tighten front sensor mounting bolts to 27 INCH lbs. (3 N.m). Tighten rear sensor mounting bolts to 62 INCH lbs. (7 N.m).

SHOCK ABSORBER

Removal & Installation

See appropriate FRONT or REAR article.

WIRING DIAGRAMS

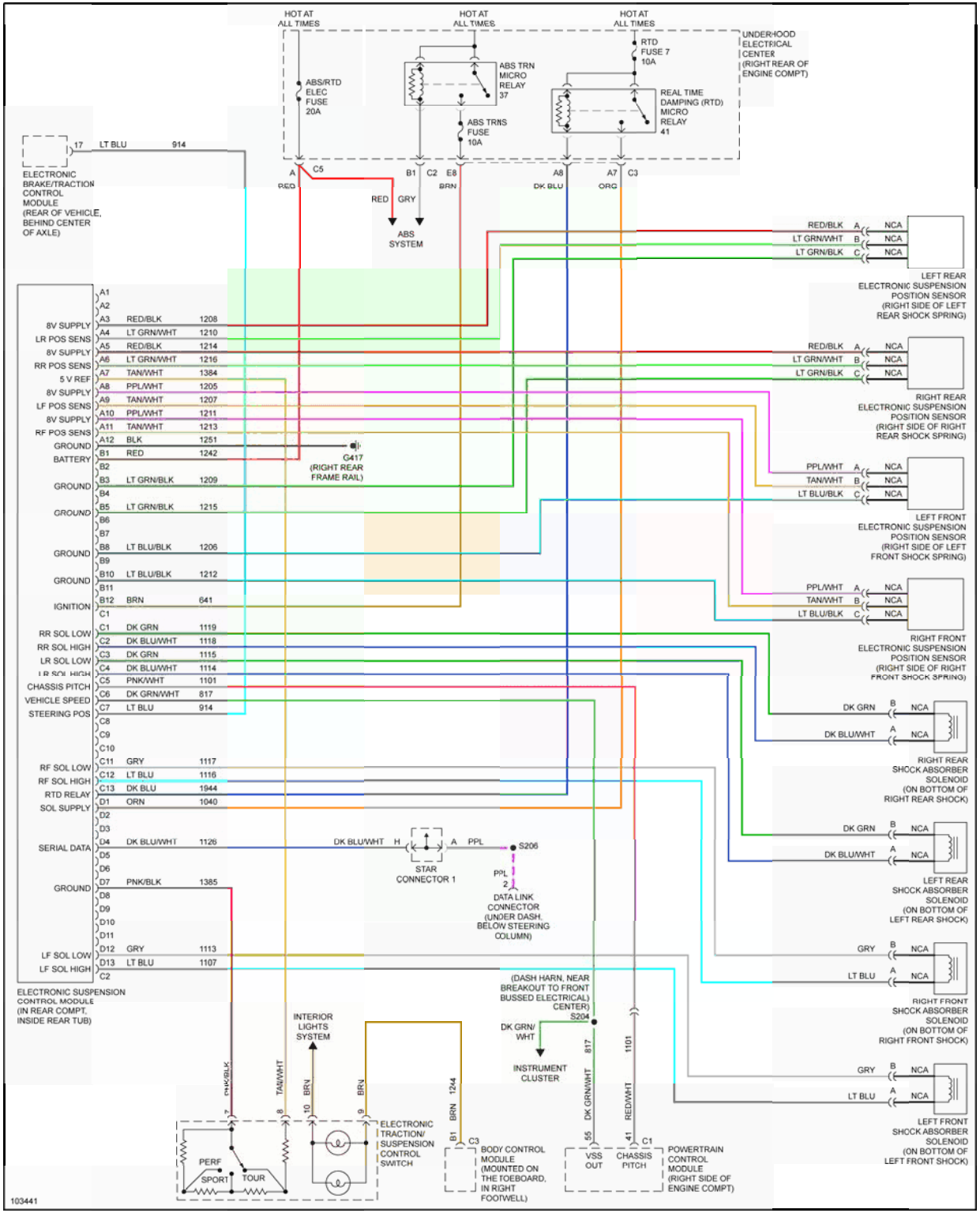
HOT AT ALL TIMES
HOT AT ALL TIMES
HOT AT ALL TIMES
UNDER-HOOD ELECTRICAL CENTER (RIGHT REAR OF ENGINE COMPT)
ABS/RTD ELEC FUSE 20A
ABS TRN MICRO RELAY 37
ABS TRNS FUSE 10A
RTD FUSE 7 10A
REAL TIME DAMPING (RTD) MICRO RELAY 41
17 LT BLU 914
ELECTRONIC BRAKE/TRACTION CONTROL MODULE (REAR OF VEHICLE, BEHIND CENTER OF AXLE)
A C5 RED
B1 C2 E8 BRN
A8 DK BLU
A7 ORG C3
RED GRY
ABS SYSTEM
G417 (RIGHT REAR FRAME RAIL)
A1
A2
A3 RED/BLK 1208 8V SUPPLY
A4 LT GRN/WHT 1210 LR POS SENS
A5 RED/BLK 1214 8V SUPPLY
A6 LT GRN/WHT 1216 RR POS SENS
A7 TAN/WHT 1384 5 V REF
A8 PPL/WHT 1205 8V SUPPLY
A9 TAN/WHT 1207 LF POS SENS
A10 PPL/WHT 1211 8V SUPPLY
A11 TAN/WHT 1213 RF POS SENS
A12 BLK 1251 GROUND
B1 RED 1242 BATTERY
B2
B3 LT GRN/BLK 1209 GROUND
B4
B5 LT GRN/BLK 1215 GROUND
B6
B7
B8 LT BLU/BLK 1206 GROUND
B9
B10 LT BLU/BLK 1212 GROUND
B11
B12 BRN 641 IGNITION
C1
C1 DK GRN 1119 RR SOL LOW
C2 DK BLU/WHT 1118 RR SOL HIGH
C3 DK GRN 1115 LR SOL LOW
C4 DK BLU/WHT 1114 LR SOL HIGH
C5 PNK/WHT 1101 CHASSIS PITCH
C6 DK GRN/WHT 817 VEHICLE SPEED
C7 LT BLU 914 STEERING POS
C8
C9
C10
C11 GRY 1117 RF SOL LOW
C12 LT BLU 1116 RF SOL HIGH
C13 DK BLU 1944 RTD RELAY
D1 ORN 1040 SOL SUPPLY
D2
D3
D4 DK BLU/WHT 1126 SERIAL DATA
D5
D6
D7 PNK/BLK 1385 GROUND
D8
D9
D10
D11
D12 GRY 1113 LF SOL LOW
D13 LT BLU 1107 LF SOL HIGH
C2
ELECTRONIC SUSPENSION CONTROL MODULE (IN REAR COMPT, INSIDE REAR TUB)
DK BLU/WHT H A PPL S206
STAR CONNECTOR 1
PPL 2
DATA LINK CONNECTOR (UNDER DASH, BELOW STEERING COLUMN)
(DASH HARN, NEAR BREAKOUT TO FRONT BUSSED ELECTRICAL) CENTER)
S204
DK GRN/ WHT
INSTRUMENT CLUSTER
INTERIOR LIGHTS SYSTEM
PNK/BLK 7
TAN/WHT 8
BRN 10
BRN 9
BRN 1244 B1 C3
DK GRN/WHT 817 55 VSS OUT
RED/WHT 1101 41 C1 CHASSIS PITCH
PERF
SPORT
TOUR
ELECTRONIC TRACTION/ SUSPENSION CONTROL SWITCH
BODY CONTROL MODULE (MOUNTED ON THE TOEBOARD, IN RIGHT FOOTWELL)
POWERTRAIN CONTROL MODULE (RIGHT SIDE OF ENGINE COMPT)
RED/BLK A NCA
LT GRN/WHT B NCA
LT GRN/BLK C NCA
LEFT REAR ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF LEFT REAR SHOCK SPRING)
RIGHT REAR ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF RIGHT REAR SHOCK SPRING)
PPL/WHT A NCA
TAN/WHT B NCA
LT BLU/BLK C NCA
LEFT FRONT ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF LEFT FRONT SHOCK SPRING)
RIGHT FRONT ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF RIGHT FRONT SHOCK SPRING)
DK GRN B NCA
DK BLU/WHT A NCA
RIGHT REAR SHOCK ABSORBER SOLENOID (ON BOTTOM OF RIGHT REAR SHOCK)
LEFT REAR SHOCK ABSORBER SOLENOID (ON BOTTOM OF LEFT REAR SHOCK)
GRY B NCA
LT BLU A NCA
RIGHT FRONT SHOCK ABSORBER SOLENOID (ON BOTTOM OF RIGHT FRONT SHOCK)
LEFT FRONT SHOCK ABSORBER SOLENOID (ON BOTTOM OF LEFT FRONT SHOCK)
103441

Fig. 3: Real Time Damping (RTD) System Wiring Diagram (Corvette - 1998)

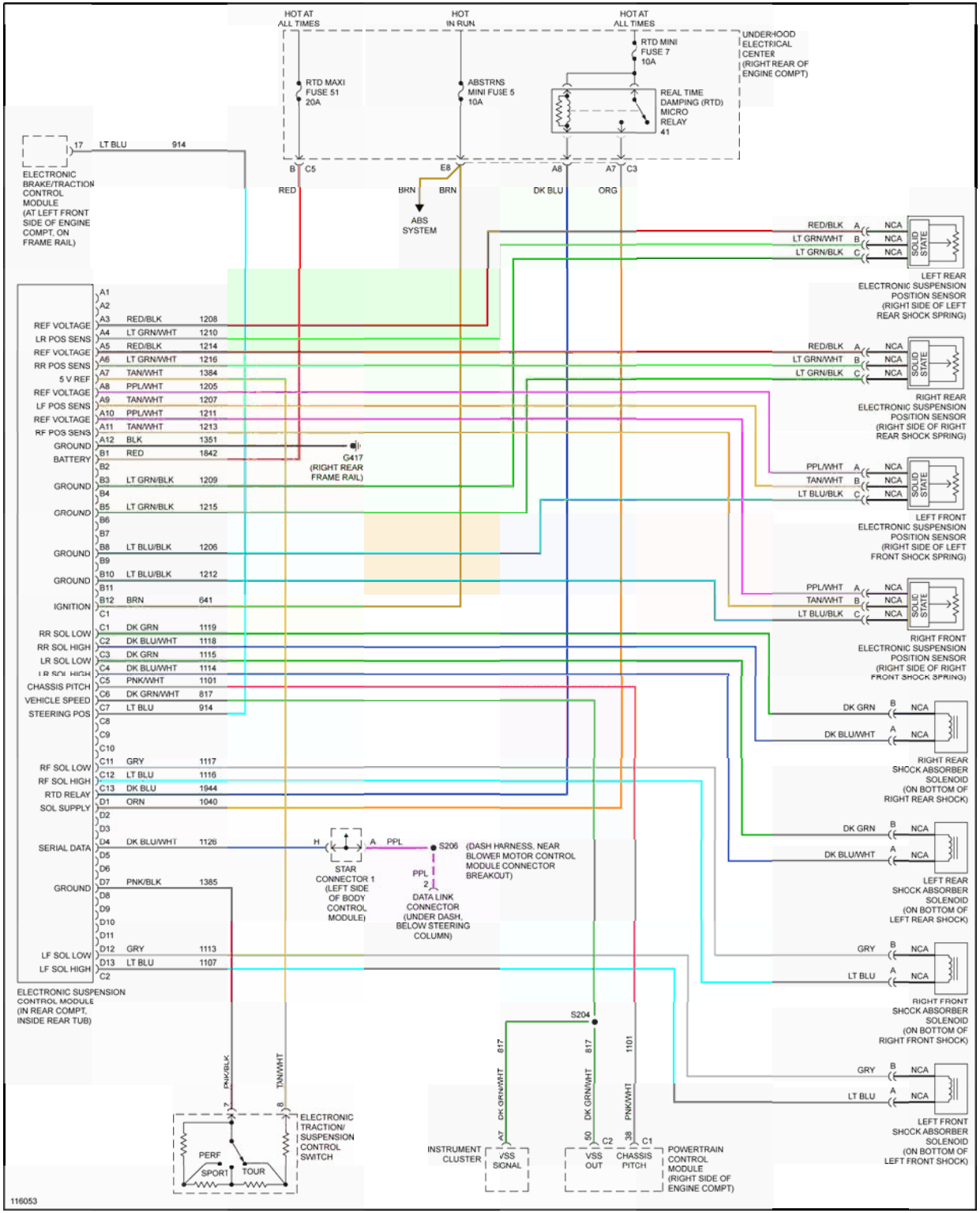
HOT AT ALL TIMES
HOT IN RUN
HOT AT ALL TIMES
UNDER-HOOD ELECTRICAL CENTER (RIGHT REAR OF ENGINE COMPT)
RTD MAXI FUSE 51 20A
ABSTRNS MINI FUSE 5 10A
RTD MINI FUSE 7 10A
REAL TIME DAMPING (RTD) MICRO RELAY 41
17 LT BLU 914
ELECTRONIC BRAKE/TRACTION CONTROL MODULE (AT LEFT FRONT SIDE OF ENGINE COMPT, ON FRAME RAIL)
B C5
E8
A8
A7 C3
RED
BRN
BRN
DK BLU
ORG
ABS SYSTEM
G417 (RIGHT REAR FRAME RAIL)
REF VOLTAGE A3 RED/BLK 1208
LR POS SENS A4 LT GRN/WHT 1210
REF VOLTAGE A5 RED/BLK 1214
RR POS SENS A6 LT GRN/WHT 1216
5 V REF A7 TAN/WHT 1384
REF VOLTAGE A8 PPL/WHT 1205
LF POS SENS A9 TAN/WHT 1207
REF VOLTAGE A10 PPL/WHT 1211
RF POS SENS A11 TAN/WHT 1213
GROUND A12 BLK 1351
BATTERY B1 RED 1842
GROUND B3 LT GRN/BLK 1209
GROUND B5 LT GRN/BLK 1215
GROUND B8 LT BLU/BLK 1206
GROUND B10 LT BLU/BLK 1212
IGNITION B12 BRN 641
RR SOL LOW C1 DK GRN 1119
RR SOL HIGH C2 DK BLU/WHT 1118
LR SOL LOW C3 DK GRN 1115
LR SOL HIGH C4 DK BLU/WHT 1114
CHASSIS PITCH C5 PNK/WHT 1101
VEHICLE SPEED C6 DK GRN/WHT 817
STEERING POS C7 LT BLU 914
RF SOL LOW C11 GRY 1117
RF SOL HIGH C12 LT BLU 1116
RTD RELAY C13 DK BLU 1944
SOL SUPPLY D1 ORN 1040
SERIAL DATA D4 DK BLU/WHT 1126
GROUND D7 PNK/BLK 1385
LF SOL LOW D12 GRY 1113
LF SOL HIGH D13 LT BLU 1107
ELECTRONIC SUSPENSION CONTROL MODULE (IN REAR COMPT, INSIDE REAR TUB)
H A PPL
STAR CONNECTOR 1 (LEFT SIDE OF BODY CONTROL MODULE)
S206
PPL 2
DATA LINK CONNECTOR (UNDER DASH, BELOW STEERING COLUMN)
(DASH HARNESS, NEAR BLOWER MOTOR CONTROL MODULE CONNECTOR BREAKOUT)
PNK/BLK
TAN/WHT
7
8
ELECTRONIC TRACTION/ SUSPENSION CONTROL SWITCH
PERF
SPORT
TOUR
S204
817
DK GRN/WHT
A7
INSTRUMENT CLUSTER
VSS SIGNAL
817
DK GRN/WHT
50
C2
VSS OUT
1101
PNK/WHT
38
C1
CHASSIS PITCH
POWERTRAIN CONTROL MODULE (RIGHT SIDE OF ENGINE COMPT)
RED/BLK A NCA
LT GRN/WHT B NCA
LT GRN/BLK C NCA
SOLID STATE
LEFT REAR ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF LEFT REAR SHOCK SPRING)
RIGHT REAR ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF RIGHT REAR SHOCK SPRING)
PPL/WHT A NCA
TAN/WHT B NCA
LT BLU/BLK C NCA
LEFT FRONT ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF LEFT FRONT SHOCK SPRING)
RIGHT FRONT ELECTRONIC SUSPENSION POSITION SENSOR (RIGHT SIDE OF RIGHT FRONT SHOCK SPRING)
DK GRN B NCA
DK BLU/WHT A NCA
RIGHT REAR SHOCK ABSORBER SOLENOID (ON BOTTOM OF RIGHT REAR SHOCK)
LEFT REAR SHOCK ABSORBER SOLENOID (ON BOTTOM OF LEFT REAR SHOCK)
GRY B NCA
LT BLU A NCA
RIGHT FRONT SHOCK ABSORBER SOLENOID (ON BOTTOM OF RIGHT FRONT SHOCK)
LEFT FRONT SHOCK ABSORBER SOLENOID (ON BOTTOM OF LEFT FRONT SHOCK)
116053

Fig. 4: Real Time Damping (RTD) System Wiring Diagram (Corvette - 1999)