

2001 ACCESSORIES & EQUIPMENT**Cruise Control Systems - Catera****DESCRIPTION**

WARNING: Vehicles are equipped with Supplemental Inflatable Restraint (SIR) system. Before attempting ANY repairs involving steering column, instrument panel or related components, see SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM in appropriate AIR BAG RESTRAINT SYSTEMS article.

Cruise control is a speed control system that maintains a desired vehicle speed under normal driving conditions. Steep grades may cause variations in selected speeds. System has capability to cruise, coast, resume speed, accelerate, and tap-up and tap-down.

The main components of the cruise control system include the cruise control function switches, Accelerator Pedal Position (APP) sensor, cruise control release switch, Powertrain Control Module (PCM), Electronic Brake Traction Control Module (EBTCM), throttle motor, and brakelight switch. See **COMPONENT LOCATIONS**.

OPERATION**ACCELERATOR PEDAL POSITION (APP) SENSOR**

Accelerator Pedal Position (APP) sensor, located at top of accelerator pedal, monitors position of accelerator pedal and transmits this information to the Powertrain Control Module (PCM). The PCM processes this signal with information from other systems to calculate proper control signal for throttle motor contained in Throttle Position (TP) sensor. A closed loop circuit assures precise adjustment of throttle angle based on signals transmitted to PCM from a potentiometer within the TP sensor confirming position of throttle motor. Constant system monitoring by the PCM assures maintenance of set speed.

BRAKELIGHT SWITCH

Brakelight switch disengages cruise control operation electrically and activates brakelights when brake pedal is depressed. This is done by activating the brake cut-out input electrical circuit to cruise control module. Vehicle speed at brake actuation will be stored in system memory.

CRUISE CONTROL FUNCTION SWITCHES

Function control switches are located on end of multifunction lever, which also serves as a turn signal lever. Function control switches include an OFF switch, a RESUME/DECEL switch, and a SET/ACCEL switch.

OFF

System disengages when switch is turned off.

RESUME/DECEL

The RESUME/DECEL switch allows cruise control system to return to last speed setting recorded since vehicle was last in DRIVE position, such as after depressing brake pedal. This switch will only work after initial speed has been set using the SET/ACCEL switch. During engagement, if RESUME/DECEL switch is pressed and held, vehicle decelerates (cruise disengages) until switch is released. When switch is released, cruise engages and maintains new set speed. Also, by quickly pressing and releasing (tapping) this switch, the set speed is "tapped" down in one MPH increments.

SET/ACCEL

The SET/ACCEL switch activates cruise control system when switch is moved to SET position and vehicle speed is above 25 mph. Accelerate function occurs when SET/ACCEL switch is held in position for more than one second. This causes the vehicle to accelerate until switch is released. When released, system maintains new set speed. Also, by quickly pressing and releasing (tapping) this switch, the set speed is "tapped" up in one MPH increments.

CRUISE CONTROL RELEASE SWITCH

Cruise control release switch disengages cruise control operation electrically when brake pedal is depressed. This is done by activating the brake cut-out input electrical circuit to cruise control module. Vehicle speed at brake actuation will be stored in system memory.

ELECTRONIC BRAKE TRACTION CONTROL MODULE (EBTCM)

EBTCM receives speed signal from left rear Vehicle Speed Sensor (VSS). VSS produces AC signal proportional to speed of axle shaft rotation which is in turn proportional to vehicle speed. EBTCM processes VSS signal and transmits it to PCM.

POWERTRAIN CONTROL MODULE (PCM)

All cruise control functions are monitored and controlled by the Powertrain Control Module (PCM). When the PCM receives an input from the cruise control function switches, a control signal to throttle motor is sent to modify the throttle angle to maintain desired cruise speed.

THROTTLE MOTOR

Throttle motor is integral with Throttle Position (TP) sensor and is mounted on the throttle body. Throttle motor maintains vehicle speed by holding throttle position according to signals received from PCM.

COMPONENT LOCATIONS

COMPONENT LOCATIONS

Component	Location
Accelerator Pedal Position (APP) Sensor	On Mounting Bracket At Top Of Accelerator Pedal
Brakelight Switch	On Brake Pedal Bracket
Cruise Control Function Switches	Integral With Turn Signal Switch
Cruise Control Release Switch	On Brake Pedal Bracket
Electronic Brake Traction Control Module (EBTCM)	In Engine Compartment At Left Side Lower Rail
Powertrain Control Module (PCM)	In PCM Housing At Left Side Of Engine Compartment
Instrument Panel Fuse Box	Lower Left Side Of Steering Column
Throttle Motor	Integral With Throttle Position (TP) Sensor
Throttle Position Sensor	On Throttle Body

ADJUSTMENTS

BRAKELIGHT SWITCH

Brakelight switch is self-adjusting. Unless removed for replacement or service of brake pedal assembly, no adjustment is required. If adjustment should become necessary, see **BRAKELIGHT SWITCH** under REMOVAL

& INSTALLATION.

CRUISE CONTROL RELEASE SWITCH

Cruise control release switch is self-adjusting. Unless removed for replacement or service of brake pedal assembly, no adjustment is required. If adjustment should become necessary, see **CRUISE CONTROL RELEASE SWITCH** under REMOVAL & INSTALLATION.

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Verify customer complaint by operating cruise control system. Visually inspect for obvious sign of mechanical and electrical damage. Verify brakelights function properly. Repair as necessary. Inspect for faulty cruise control fuses, loose or corroded connections, damaged wiring harness and/or switches. Repair as necessary. Check for a broken or partially broken wire inside insulation which could cause system malfunction but prove good in a continuity/voltage check with system disconnected. Repair as necessary. Ensure any aftermarket electronic equipment is properly installed. Repair as necessary. If no problem is found, perform **DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM.

1. Check fuses, and replace as necessary. Visually inspect for broken or open wires.
2. Check for PCM DTCs. If any PCM DTCs exist other than P0571 or P1662, diagnose engine control system as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If DTCs P0571 or P1662 exist, go to DIAGNOSTIC TESTS.
3. If no problems are found, go to **CRUISE CONTROL DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM.

SELF-DIAGNOSTIC SYSTEM

NOTE: Diagnostic trouble code tests are written specifically for use with GM Tech I or Tech II scan tools. Generic scan tool can be used but may have limited functions. This article only covers the portion of those systems which relates to cruise control system diagnosis. For further information, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

CRUISE CONTROL DIAGNOSTIC SYSTEM CHECK

1. Ensure battery condition, cold cranking amperage and reserve capacity meet specifications. Replace as necessary. Install scan tool. If scan tool powers up, go to next step. If scan tool does not power up, see appropriate BODY CONTROL MODULES article.
2. Turn ignition on, engine off. Try to establish scan tool communication with Powertrain Control Module (PCM). If communication with PCM is established, go to next step. If communication with PCM is not established, see appropriate BODY CONTROL MODULES article.
3. Select display DTC function for PCM. Record all displayed DTCs and status of displayed DTCs. If DTC P0571 or P1662 are displayed, see **DIAGNOSTIC TROUBLE CODE (DTC) INDEX** table. If any other DTCs are displayed, go to next step.
4. If scan tool displays any DTCs which begin with a "U", see appropriate BODY CONTROL MODULES article. If any other DTCs are displayed, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If no DTCs are displayed, see **SYMPTOM INDEX** table under SYSTEM TESTS.

DIAGNOSTIC TROUBLE CODE (DTC) INDEX

DTC	Description

P0571**P1662**

Cruise Control Brake Switch Circuit

Cruise Indicator Lamp Control Circuit

CLEARING DIAGNOSTIC TROUBLE CODES

To clear DTCs, connect scan tool to Data Link Connector (DLC). Establish communication with Powertrain Control Module (PCM) and follow scan tool instructions.

DIAGNOSTIC TESTS**DTC P0571: CRUISE CONTROL BRAKE SWITCH CIRCUIT****Circuit Description**

Cruise control release switch is normally closed. With cruise control release switch closed (brake pedal released), PCM senses ignition voltage on cruise control release switch signal circuit. If PCM senses voltage on cruise control release switch signal circuit when cruise control release switch should be open, this DTC will set.

Code Enable Criteria

- Engine speed more than 700 RPM.
- Engine operates for more than 2 seconds.
- Wheel speed more than 30 MPH (to enable the diagnostic). Diagnostic disables when wheel speed is less than 10 MPH.

PCM detects voltage on cruise control release switch circuit when cruise control release switch should be open. Conditions must be present for 1.5 seconds.

Diagnostic Procedures

1. If cruise control diagnostic system check has been performed, go to next step. If cruise control diagnostic system check has not been performed, see **CRUISE CONTROL DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM.
2. Turn ignition off. Connect scan tool. Turn ignition on with engine off. Using scan tool, monitor cruise control release switch parameter. If cruise control release switch parameter indicates APPLIED, go to next step. If brake switch parameter does not indicate APPLIED, go to **DIAGNOSTIC AIDS**.
3. Turn ignition off. Disconnect cruise control release switch. Cruise control release switch is located at top of brake pedal. Turn ignition on with engine off. Using scan tool, observe cruise control release switch parameter. If cruise control release switch parameter indicates RELEASED, go to step 5. If cruise control release switch parameter does not indicate RELEASED, go to next step.
4. Test cruise control release switch signal circuit (Black/Brown wire) for a short to voltage. See **WIRING DIAGRAMS**. If short to voltage was identified and corrected, go to step 10. If short to voltage was not identified, go to step 7.
5. Check cruise control release switch for proper installation and adjustment. Cruise control release switch adjustment is made when brake pedal returns to released position. Cruise control release switch self-adjusts by driving an actuating pin into switch according to brake pedal position. See **CRUISE CONTROL RELEASE SWITCH** under REMOVAL & INSTALLATION. If an installation and adjustment condition was found and corrected, go to step 10. If installation and adjustment condition was okay, go to next step.
6. Inspect cruise control release switch wiring harness and connector for poor connections and damage. See **WIRING DIAGRAMS**. Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 10. If poor connection and/or damage condition was not identified, go to step 8.
7. Inspect PCM wiring harness and connector for poor connections and damage. See **WIRING DIAGRAMS**. Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 10. If

poor connection and/or damage condition was not identified, go to step 9 .

8. Replace cruise control release switch. See **CRUISE CONTROL RELEASE SWITCH** under REMOVAL & INSTALLATION. After replacing cruise control release switch, go to step 10 .
9. Replace PCM. See **POWERTRAIN CONTROL MODULE** under REMOVAL & INSTALLATION. After replacing PCM, go to next step.
10. Using scan tool, clear DTC. Operate vehicle within conditions identified in **CODE ENABLE CRITERIA** . After operating vehicle within code enable criteria, check if DTC P0571 resets. If DTC P0571 resets, go to step 2 . If DTC P0571 does not reset, repair is complete.

Diagnostic Aids

Inspect and verify the integrity of the PCM connector. Pay particular attention to the PCM connector gaskets. For test procedures requiring probing of PCM connector or component connectors, use Connector Test Adapter Kit (J 35616-A). Using identified adapter kit will prevent damage to connectors. If condition is intermittent, attempt to duplicate conditions during a test drive.

DTC P1662: CRUISE INDICATOR LAMP CONTROL CIRCUIT

Circuit Description

The PCM turns on the CRUISE indicator whenever actual cruise operation is present. PCM controls CRUISE indicator by grounding the control circuit with an internal solid state device (driver).

Code Enable Criteria

- Battery voltage 7.5-15 volts.
- Engine speed more than 40 RPM.
- Cruise control engaged.

PCM monitors circuit for an open, short to voltage or short to ground.

Diagnostic Procedures

1. If cruise control diagnostic system check has been performed, go to next step. If cruise control diagnostic system check has not been performed, see **CRUISE CONTROL DIAGNOSTIC SYSTEM CHECK** under SELF-DIAGNOSTIC SYSTEM.
2. Operate cruise control system. If cruise control system is able to operate, go to next step. If cruise control system is not able to operate, go to **CRUISE CONTROL INOPERATIVE/MALFUNCTIONING** under SYSTEM TESTS.
3. With cruise control system engaged, observe CRUISE indicator. If CRUISE indicator is on, go to step 5 . If CRUISE indicator is not on, go to next step.
4. Turn ignition off. Connect scan tool. Turn ignition on with engine off. Using scan tool, turn CRUISE indicator on. Observe CRUISE indicator. If CRUISE indicator is on, condition is intermittent. Attempt to duplicate conditions during a test drive. If CRUISE indicator is not on, go to step 6 .
5. Test CRUISE indicator signal circuit (Brown/White wire) for a short to ground. See **WIRING DIAGRAMS** . If short to ground was identified and corrected, go to step 13 . If short to ground was not identified, go to step 9 .
6. Test CRUISE indicator signal circuit (Brown/White wire) for an open, high resistance or short to voltage. See **WIRING DIAGRAMS** . Repair as necessary. If a circuit condition was identified and corrected, go to step 13 . If a circuit condition was not identified and corrected, go to next step.
7. Inspect CRUISE indicator bulb in instrument panel. If CRUISE indicator bulb is open, go to step 10 . If CRUISE indicator bulb is not open, go to next step.

8. Inspect instrument panel cluster connector for poor connections and damage. See **WIRING DIAGRAMS** . Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 13 . If poor connection and/or damage condition was not identified, go to step 11 .
9. Inspect PCM wiring harness and connector for poor connections and damage. See **WIRING DIAGRAMS** . Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 13 . If poor connection and/or damage condition was not identified, go to step 12 .
10. Replace CRUISE indicator bulb in instrument cluster. After replacing CRUISE indicator bulb, go to step 13 .
11. Replace instrument cluster assembly. See appropriate INSTRUMENT PANEL article in ACCESSORIES & EQUIPMENT. After replacing instrument cluster assembly, go to step 13 .
12. Replace PCM. See **POWERTRAIN CONTROL MODULE** under REMOVAL & INSTALLATION. After replacing PCM, go to next step.
13. Using scan tool, clear DTC. Operate vehicle within conditions identified in **CODE ENABLE CRITERIA** . After operating vehicle within code enable criteria, check if DTC P1662 resets. If DTC P1662 resets, go to step 2 . If DTC P1662 does not reset, repair is complete.

SYSTEM TESTS

NOTE: Before performing any system tests, perform **CRUISE CONTROL DIAGNOSTIC SYSTEM CHECK** under **SELF-DIAGNOSTIC SYSTEM**.

SYMPTOM INDEX

Symptom	Perform Test
Cruise Control Indicator Always On	<u>A</u>
Cruise Control Indicator Light Inoperative	<u>B</u>
Cruise Control Inoperative/Malfunctioning	<u>C</u>

TEST A: CRUISE CONTROL INDICATOR ALWAYS ON

1. Drive vehicle within parameters which allow cruise control operation. Operate cruise control system. If cruise control system functions properly, go to next step. If cruise control system does not function properly, go to **CRUISE CONTROL INOPERATIVE/MALFUNCTIONING** under SYMPTOM TESTS.
2. Turn ignition off. Connect scan tool. Turn ignition on with engine off. Using scan tool, turn CRUISE indicator off. Observe CRUISE indicator. If CRUISE indicator is on, go to next step. If CRUISE indicator is off, perform POWERTRAIN DIAGNOSTIC SYSTEM CHECK in SELF-DIAGNOSTICS - 3.0L CATERA article in ENGINE PERFORMANCE.
3. Turn ignition off. Disconnect PCM 64-pin Black connector (C2). Turn ignition on with engine off. Observe CRUISE indicator. If CRUISE indicator is off, go to step 6 . If CRUISE indicator is on, go to next step.
4. Check the CRUISE indicator signal circuit for a short to ground. See **WIRING DIAGRAMS** . Repair as necessary. If a circuit condition was identified and corrected, go to step 9 . If a circuit condition was not identified and corrected, go to next step.
5. Inspect instrument panel cluster connector for poor connections and damage. See **WIRING DIAGRAMS** . Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 9 . If poor connection and/or damage condition was not identified, go to step 7 .
6. Inspect PCM wiring harness and connector for poor connections and damage. See **WIRING DIAGRAMS** . Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 9 . If poor connection and/or damage condition was not identified, go to step 8 .
7. Replace instrument cluster assembly. See appropriate INSTRUMENT PANEL article in ACCESSORIES & EQUIPMENT. After replacing instrument cluster assembly, go to step 9 .
8. Replace PCM. See **POWERTRAIN CONTROL MODULE** under REMOVAL & INSTALLATION.

After replacing PCM, go to next step.

9. Using scan tool, clear DTC. Drive vehicle within parameters which allow cruise control operation. Operate cruise control system. If cruise control system functions properly, repair is complete. If cruise control system does not function properly, go to step 1 .

TEST B: CRUISE CONTROL INDICATOR LIGHT INOPERATIVE

1. Drive vehicle within parameters which allow cruise control operation. Operate cruise control system. If cruise control system functions properly, go to next step. If cruise control system does not function properly, go to **CRUISE CONTROL INOPERATIVE/MALFUNCTIONING** under SYMPTOM TESTS.
2. Turn ignition off. Connect scan tool. Turn ignition on with engine off. Using scan tool, turn CRUISE indicator on. Observe CRUISE indicator. If CRUISE indicator is on, perform POWERTRAIN DIAGNOSTIC SYSTEM CHECK in SELF-DIAGNOSTICS - 3.0L CATERA article in ENGINE PERFORMANCE. If CRUISE indicator is off, go to next step.
3. Turn ignition off. Disconnect PCM 64-pin Black connector (C2). Turn ignition on with engine off. Connect a 3-amp fused jumper wire between CRUISE indicator signal circuit (Brown/White wire) and ground. See **WIRING DIAGRAMS** . Observe CRUISE indicator. If CRUISE indicator is off, go to next step. If CRUISE indicator is on, go to step 9 .
4. Check jumper wire 3-amp fuse. If 3-amp fuse is blown, go to step 8. If 3-amp fuse is okay, go to step 7 .
5. Check the CRUISE indicator signal circuit for an open circuit or high resistance. See **WIRING DIAGRAMS** . Repair as necessary. If a circuit condition was identified and corrected, go to step 12 . If a circuit condition was not identified and corrected, go to next step.
6. Inspect CRUISE indicator bulb in instrument panel for an open or poor connection. Repair as necessary. If a condition was identified and corrected, go to step 12 . If a condition was not identified and corrected, go to step 8 .
7. Check the CRUISE indicator signal circuit for a short to voltage. See **WIRING DIAGRAMS** . Repair as necessary. If a circuit condition was identified and corrected, go to step 12 . If a circuit condition was not identified and corrected, go to next step.
8. Inspect instrument panel cluster connector for poor connections and damage. See **WIRING DIAGRAMS** . Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 12 . If poor connection and/or damage condition was not identified, go to step 10 .
9. Inspect PCM wiring harness and connector for poor connections and damage. See **WIRING DIAGRAMS** . Repair as necessary. If a poor connection and/or damage condition was found and corrected, go to step 12 . If poor connection and/or damage condition was not identified, go to step 11 .
10. Replace instrument cluster assembly. See appropriate INSTRUMENT PANEL article in ACCESSORIES & EQUIPMENT. After replacing instrument cluster assembly, go to step 12 .
11. Replace PCM. See **POWERTRAIN CONTROL MODULE** under REMOVAL & INSTALLATION. After replacing PCM, go to next step.
12. Using scan tool, clear DTC. Drive vehicle within parameters which allow cruise control operation. Operate cruise control system. If cruise control system functions properly, repair is complete. If cruise control system does not function properly, go to step 1 .

TEST C: CRUISE CONTROL INOPERATIVE/MALFUNCTIONING

1. Turn ignition off. Disconnect PCM 64-pin Black connector (C2). Turn ignition on with engine off. Using a test light, probe RESUME/DECEL (Black/Brown wire) and SET/ACCEL (Black/Yellow wire) signal circuits between PCM connector C2 and ground. See **WIRING DIAGRAMS** . Observe test light. If test light is on, go to step 10 . If test light is off, go to next step.
2. Using a test light, probe ON signal circuit (Black/Red wire) between PCM harness connector (C2) and ground. Observe test light. If test light is on, go to step 4 . If test light is off, go to next step.

3. Turn ignition off. Disconnect cruise control switch at multifunction turn signal lever connector. Turn ignition on with engine off. Using a test light, probe cruise control switch ignition positive circuit (Brown wire) between cruise control switch connector and ground. See **WIRING DIAGRAMS** . Observe test light. If test light is on, go to step 11 . If test light is off, go to step 12 .
4. Using a test light, probe SET/ACCEL signal circuit (Black/Yellow wire) between PCM connector C2 and ground. See **WIRING DIAGRAMS** . Press and hold SET/ACCEL switch. Observe test light. If test light is on, go to next step. If test light is off, go to step 13 .
5. Using a test light, probe RESUME/DECEL signal circuit (Black/Brown wire) between PCM connector C2 and ground. See **WIRING DIAGRAMS** . Press and hold RESUME/DECEL switch. Observe test light. If test light is on, go to next step. If test light is off, go to step 14 .
6. Using a test light, probe brakelight signal circuit (Black/Yellow wire) between PCM connector C2 and ground. See **WIRING DIAGRAMS** . Observe test light. If test light is on, go to step 20 . If test light is off, go to next step.
7. With test light still connected from previous step, press brake pedal. Observe test light. If test light is on, go to next step. If test light is off, go to step 15 .
8. Using a test light, probe cruise release signal circuit (Black/Brown wire) between PCM connector C2 and ground. See **WIRING DIAGRAMS** . Observe test light. If test light is on, go to next step. If test light is off, go to step 16 .
9. With test light still connected from previous step, press brake pedal. Observe test light. If test light is on, go to step 18 . If test light is off, go to step 24 .
10. Check RESUME/DECEL (Black/Brown wire) or SET/ACCEL (Black/Yellow wire) signal circuit (whichever circuit caused test light to turn on from step 2) for a short to voltage. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 22 .
11. Check ON signal circuit (Black/Red wire) for a short to voltage. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 23 .
12. Check the ignition positive voltage circuit (Brown wire) of cruise control switch for an open circuit, high resistance or short to ground. Also check cruise control signal circuits for a short to ground. See **WIRING DIAGRAMS** . Repair as necessary. If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 23 .
13. Check SET/ACCEL signal circuit (Black/Red wire) for a open circuit or short to ground. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 23 .
14. Check RESUME/DECEL signal circuit (Black/Brown wire) for a open circuit, high resistance or short to ground. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 23 .
15. Check ignition positive voltage circuit for brakelight circuit (Red wire) for a open circuit, high resistance or short to ground. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 19 .
16. Check cruise release signal circuit (Brown/White wire) for a open circuit, high resistance or short to ground. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 17 .
17. Check ignition positive voltage circuit of cruise release switch (Brown wire) for a open circuit, high resistance or short to ground. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 21 .
18. Check cruise release signal circuit (Brown/White wire) for a short to voltage. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 21 .

19. Check brakelight signal circuit (Black/Yellow wire) for an open circuit, high resistance or short to ground. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 22 .
20. Check brakelight signal circuit (Black/Yellow wire) for a short to voltage. See **WIRING DIAGRAMS** . If a circuit condition was identified and corrected, go to step 29 . If a circuit condition was not identified and corrected, go to step 22 .
21. Inspect cruise control release switch connector for poor connections. Repair as necessary. If a condition was identified and corrected, go to step 29 . If a condition was not identified and corrected, go to step 25 .
22. Inspect brakelight switch connector for poor connections. Repair as necessary. If a condition was identified and corrected, go to step 29 . If a condition was not identified and corrected, go to step 26 .
23. Inspect cruise control switch at multifunction turn signal lever connector for poor connections. Repair as necessary. If a condition was identified and corrected, go to step 29 . If a condition was not identified and corrected, go to step 27 .
24. Inspect PCM connectors for poor connections. Repair as necessary. If a condition was identified and corrected, go to step 29 . If a condition was not identified and corrected, go to step 28 .
25. Replace cruise control release switch. See **CRUISE CONTROL RELEASE SWITCH** under REMOVAL & INSTALLATION. After replacing cruise control release switch, go to step 29 .
26. Replace brakelight switch. See **BRAKELIGHT SWITCH** under REMOVAL & INSTALLATION. After replacing brakelight switch, go to step 29 .
27. Replace multifunction turn signal lever. See appropriate STEERING COLUMN SWITCHES article in ACCESSORIES & EQUIPMENT. After replacing multifunction turn signal lever, go to step 29 .
28. Replace PCM. See **POWERTRAIN CONTROL MODULE** under REMOVAL & INSTALLATION. After replacing PCM, go to next step.
29. Using scan tool, clear DTC. Drive vehicle within parameters which allow cruise control operation. Operate cruise control system. If cruise control system functions properly, repair is complete. If cruise control system does not function properly, see **DIAGNOSTIC AIDS** .

Diagnostic Aids

To avoid misdiagnosis, verify brakelights are operating properly. Also check for any engine performance DTCs stored in memory. Repair as necessary.

REMOVAL & INSTALLATION

WARNING: Vehicles are equipped with Supplemental Inflatable Restraint (SIR) system. Before attempting ANY repairs involving steering column, instrument panel or related components, see SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM in appropriate AIR BAG RESTRAINT SYSTEMS article.

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.

BRAKELIGHT SWITCH

Removal

Remove left side instrument panel sound insulator. Remove left side front floor outlet duct from beneath instrument panel. Disconnect brakelight switch harness connector. Depress brake pedal sufficiently to relieve pressure on

switch, and use needle-nose pliers to compress both locking tabs on switch. Remove brakelight switch.

Installation

Pull actuating pin and retaining collar out of housing about 2/3" to fully extend actuating pin. See **Fig. 1**. Connect brakelight switch harness connector. Pull up on brake pedal to ease installation of brakelight switch. Insert brakelight switch into bracket until switch locking tabs snap securely in place. Release brake pedal and allow it to settle to non-applied position. This will adjust actuator pin to proper position. Install floor outlet duct and insulator panel.

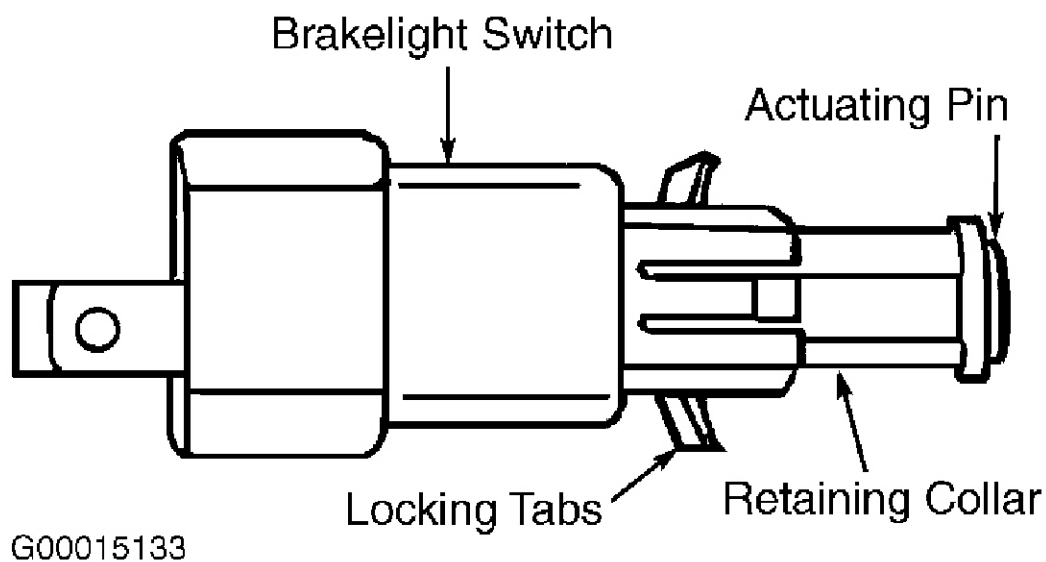


Fig. 1: Installing Brakelight Switch
Courtesy of GENERAL MOTORS CORP.

CRUISE CONTROL RELEASE SWITCH

Removal

Remove sound insulator panel. Remove left side front floor outlet duct from beneath instrument panel. Depress brake pedal sufficiently to relieve pressure on switch. Press switch lugs and remove switch from rear of bracket. Disconnect cruise control release switch harness connector.

Installation

Pull locking sleeve outward about 2/3" in order to fully extend actuating pin. See **Fig. 2**. Connect cruise control release switch harness connector. Apply and hold brake pedal. Insert cruise control release switch into bracket until switch lugs snap securely in place. Release brake pedal and allow it to rise to non-applied position. This will adjust actuator pin to proper position. Press locking sleeve into switch body. Install floor outlet duct and insulator panel.

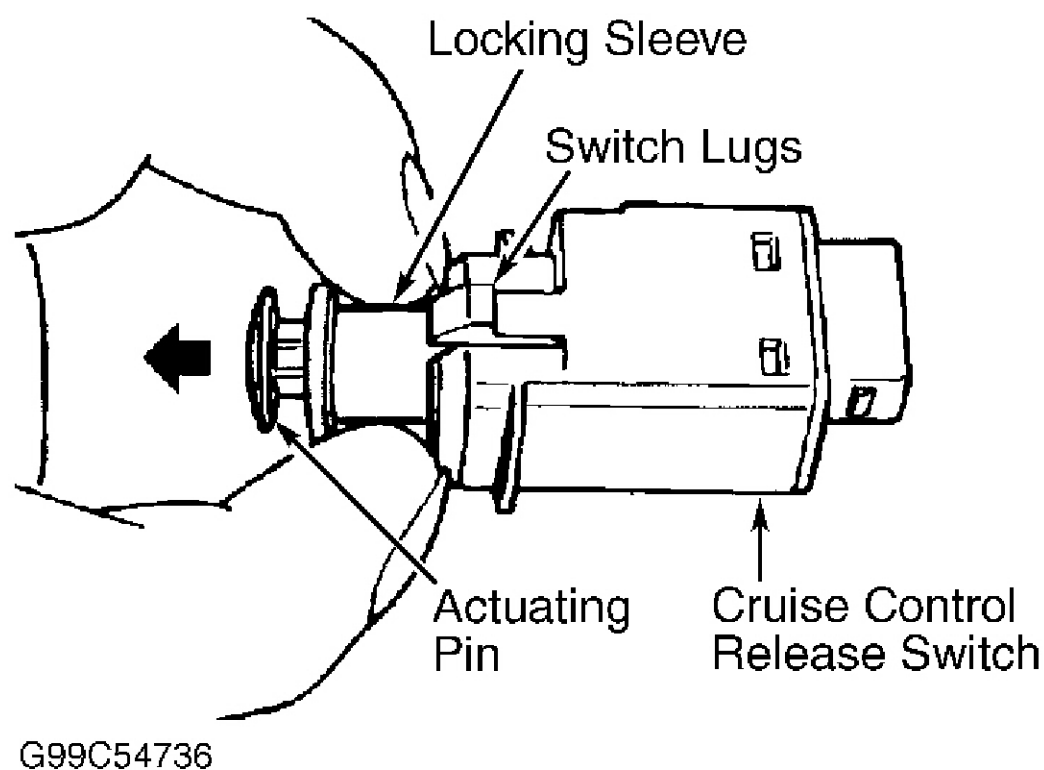


Fig. 2: Installing Cruise Control Release Switch
 Courtesy of GENERAL MOTORS CORP.

CRUISE CONTROL FUNCTION SWITCHES

Removal & Installation

NOTE: Cruise control function switches are integral with turn signal switch.

Disable air bag system. See appropriate AIR BAG RESTRAINT SYSTEMS article. Remove driver's air bag module. Remove steering wheel nut. Using appropriate puller, remove steering wheel. Remove screw caps and retaining screws from upper steering column cover. Remove upper steering column cover. Remove tilt lever. Remove lower steering column cover. Depress tabs and remove turn signal switch from steering column. Disconnect turn signal switch harness connector. To install, reverse removal procedure.

POWERTRAIN CONTROL MODULE

Removal

Turn ignition off. Disconnect negative battery cable. Remove under hood fuse/relay box cover. Firmly grasp PCM and slide unit straight up and out of fuse/relay box. See **Fig. 3**. Flip release levers and disconnect PCM from harness connectors. Remove PCM from backing plate.

Installation

Install PCM and PCM ground circuit on backing plate. Being careful to align harness connectors properly, slide connectors on to PCM terminals. Ensure locking levers are firmly in place. Align PCM backing plate with slots in fuse/relay box and slide PCM into place. Program frequency code of new PCM into the existing anti-theft system module. See appropriate ANTI-THEFT SYSTEMS article. Perform idle learn procedure by turning ignition switch to ON position for 30 seconds with engine off. If further relearn information is necessary, see COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION. Install fuse/relay box cover.

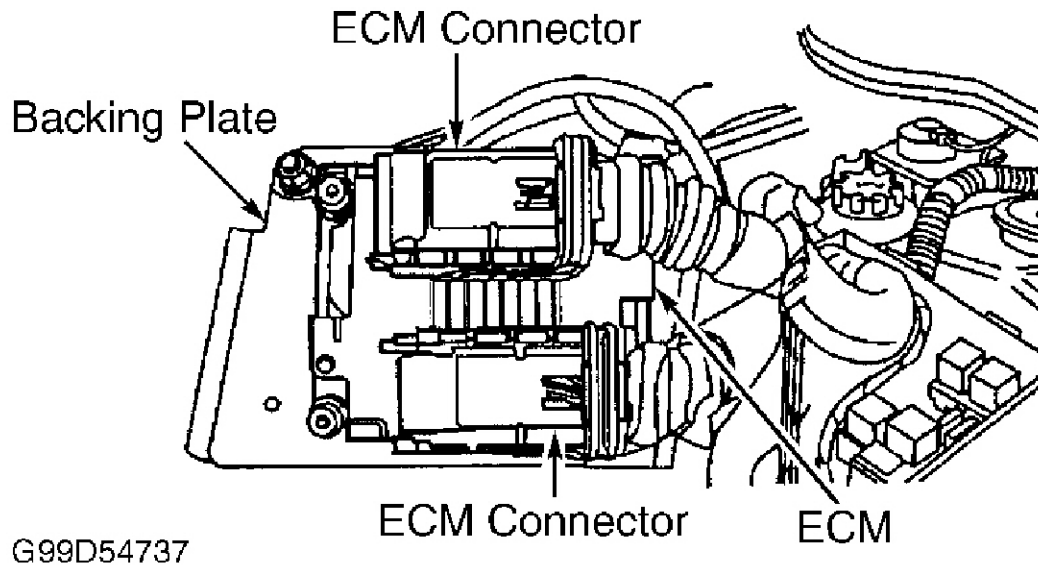


Fig. 3: Removing & Installing PCM
Courtesy of GENERAL MOTORS CORP.

WIRING DIAGRAMS

2001 Cadillac Catera

2001 ACCESSORIES & EQUIPMENT Cruise Control Systems - Catera

Fig. 4: Cruise Control Systems Wiring Diagram (Catera)

2001 Cadillac Catera

2001 ACCESSORIES & EQUIPMENT Cruise Control Systems - Catera

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