

SECTION 9B

CRUISE CONTROL

NOTICE: When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that are not reused, and those requiring thread locking compound will be called out. The correct torque value must be used when installing fasteners that require it. If the above conditions are not followed, parts or system damage could result.

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GENERAL DESCRIPTION

Cruise control is a speed control system that maintains a desired vehicle speed under normal driving conditions. However, steep grades up or down may cause variations in the selected speeds. The electronic cruise control system has the capability to cruise, coast, resume speed, accelerate, and "tap-up" and "tap-down."

The main parts of the cruise control system are the functional control switches, cruise control module assembly, vehicle speed sensor assembly and cruise control release switch, stoplamp and torque converter clutch (TCC) switch, and clutch (5.7L LT1 engine) or clutch anticipate (3.4L L32 engine) switch assemblies.

The cruise control system uses a cruise control module assembly to obtain the desired vehicle cruise operation. Two important components in the module assembly help to do this. One is an electronic controller and the second is an electric stepper motor. The controller monitors vehicle speed and operates the electric stepper motor. The motor moves a ribbon and throttle linkage, in response to the controller, to maintain the desired cruise speed. The cruise control module assembly contains a low speed limit which will prevent system engagement below a minimum speed of 40 km/h (25 mph). The operation of the controller is controlled by functional control switches located on the turn signal and headlamp dimmer switch and cruise control actuator and windshield wiper and windshield washer lever assembly.

Cruise control release switch, stoplamp and TCC switch, and clutch or clutch anticipate switch assemblies are provided to disengage the cruise system. The switch assemblies are mounted on the brake and accelerator and clutch pedal bracket. When the brake pedal or clutch

pedal is depressed, the cruise control system is electrically disengaged and the throttle is returned to the idle position.

If vehicle is equipped with traction control (acceleration slip regulation), in a low tract situation the cruise control will disengage.

CRUISE CONTROL MODULE ASSEMBLY

The cruise control module assembly is mounted on the left engine compartment inner side rail assembly. The module assembly has an electronic controller and an electric stepper motor to vary the throttle with each different cruise control mode. The module assembly is not serviceable.

CRUISE CONTROL SWITCH ASSEMBLIES

The cruise control release switch, stoplamp and TCC switch, and clutch or clutch anticipate switch assemblies are used to disengage the cruise control system. A release switch assembly, a stoplamp and TCC switch assembly, and a clutch or clutch anticipate switch assembly mounted on the brake pedal bracket assembly disengage the system electrically when the brake pedal or clutch pedal is depressed. This is done by activating the brake cut-out input to the cruise control module assembly. The speed of the vehicle at brake actuation will be stored in the memory of the system. The stoplamp and TCC switch assembly has a three-wire stoplamp connector and a two-wire TCC connector on automatic transmission only. The cruise control release switch assembly has a two-wire cruise control disable connector. The clutch switch assembly (5.7L LT1 engine) has a two-wire cruise control disable connector and the clutch anticipate switch assembly (3.4L L32 engine) has a four-wire cruise control disable connector.

SPEED SENSOR

Vehicle Speed Sensor (VSS) Assembly

The vehicle speed sensor (VSS) assembly is mounted to the automatic transmission assembly and produces an alternating current (ac) signal. The frequency of this signal is proportional to the speed at which the automatic transmission assembly output shaft rotates, which in turn, is proportional to the speed of the vehicle.

The ac signal produced by the VSS assembly is supplied to the powertrain control module (PCM), cruise control module assembly and instrument cluster assembly.

The signal to the PCM, cruise control module assembly and speedometer assembly is at a rate of 4000 pulses per mile. The PCM, cruise control module assembly and speedometer assembly internally convert the number of pulses per mile per second to determine vehicle speed.

For removal procedure, refer to SECTION 7A or to SECTION 8A for diagnostic information.

FUNCTIONAL CONTROL SWITCHES

Off-On-Resume/Accelerate Switch

Figure 1

Important

- Vehicle is equipped with a "Set To Get Cruise" feature requiring operator to set an initial speed by using "SET/COAST" button before "RESUME/ACCEL" slider switch will activate.

The "OFF-ON-R/A" switch (2) has three positions. This switch turns the cruise control system "ON" and "OFF" and also returns cruise control operation to the last speed setting when momentarily moved toward the "R/A" (RESUME/ACCELERATE) position after braking. Do not hold the "OFF-ON-R/A" switch (2) in the "R/A" position. Release it immediately. If the "OFF-ON-R/A" switch (2) is held in the "R/A" position for more than one second, the system goes into the acceleration mode. To accelerate the vehicle, move the "OFF-ON-R/A" switch (2) to the "R/A" position and hold it there until the vehicle reaches the desired speed. When the "OFF-ON-R/A" switch (2) is released, the system will maintain the new cruise speed. In order to use the acceleration mode, the "OFF-ON-R/A" switch (2) must be in the "ON" position and the vehicle must be above the low speed limit of 40 km/h (25 mph).

The "OFF-ON-R/A" switch (2) can also be used to "tap-up" vehicle speed. In order to do this the cruise control system must be engaged and operating. "Tapping-up" is done by quickly pressing the "OFF-ON-R/A" switch (2) toward the "R/A" position and quickly releasing it, or "tapping" the "OFF-ON-R/A" switch (2). Do not hold the "OFF-ON-R/A" switch (2) in the "R/A" position, or the system will go into the acceleration mode. "Tap-up" is a function in which cruise speed can be increased by 1.6 km/h (1 mph) increments (one tap = 1.6 km/h (1 mph) increase).

Set/Coast Button Switch

Figure 1

The cruise control "SET/COAST" button switch (3) (located in the end of the turn signal and headlamp

dimmer switch and cruise control actuator and windshield wiper and windshield washer lever assembly) has two positions – "NORMAL" and "DEPRESSED."

- The Set Position** – With the "SET/COAST" button switch depressed and then released (vehicle speed must exceed the low speed limit point, and the "OFF-ON-R/A" switch (2) must be in the "ON" position), the cruise speed will be set at the speed the vehicle was going when the "SET/COAST" button switch (3) was released. Vehicle cruise speed will be within ± 1.6 km/h (1 mph) of the actual speed at engaged speed. The system will cruise until either the "OFF-ON-R/A" switch (2) is moved to "OFF," the ignition switch is turned "OFF," and/or the "SET/COAST" button switch (3) is pushed in fully and held. Pushing the brake pedal assembly releases the "SET/COAST" button switch (3) but not the resume capability.
- The Coast Position** – With the "SET/COAST" button switch (3) fully depressed, the driver can raise or lower vehicle speed. To increase speed, the driver can accelerate to a new speed, fully depress the "SET/COAST" button switch (3) and release the button. The cruise control module assembly "forgets" the previously set speed. An increased control speed can be more easily set with the "OFF-ON-R/A" switch (2) as previously described. To decrease cruise speed, the "SET/COAST" button switch (3) is held in, disengaging the cruise system, which allows the throttle to return to the idle position. When the vehicle has slowed to the desired cruise speed, releasing the "SET/COAST" button switch (3) will re-engage the system at the new selected speed.
- The "Tap Down" Position** – To "tap down" the cruise must be engaged and operating. "Tapping-down" is done by quickly pressing and releasing the "SET/COAST" button switch (3), or "tapping" the "SET/COAST" button switch (3). Do not hold the "SET/COAST" button switch (3) in the depressed position or the system will go into the coast mode. "Tap-down" is a function in which cruise speed can be decreased by 1.6 km/h (1 mph) increments (one tap = 1.6 km/h (1 mph) decrease). The accelerator

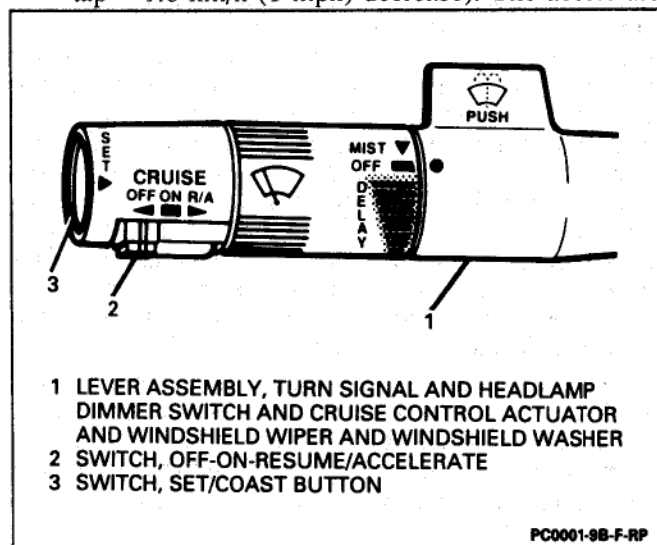


Figure 1 – Cruise Control Actuator Lever Assembly (Typical)

pedal assembly may be depressed at any time to override the cruise system. Release of the accelerator pedal assembly will return the vehicle to the previously set cruise speed.

CAUTION: To keep the vehicle under control, and to prevent possible personal injury and vehicle damage, the cruise control should not be used on slippery or winding roads or in traffic of

heavy or varying volume. When traveling down a steeply graded hill, the cruise control should be disengaged by depressing the brake pedal assembly lightly. The automatic transmission assembly can then be shifted into a lower gear range to help control vehicle speed.

Wiring Diagram for the Cruise Control System (CCS)

Power Sources:

- Instrument Cluster:** Provides power to the "LOW TRAC" indicator and other indicators via a .35 PNK wire (39).
- Underhood Electrical Center:** Provides power to the A/C-CRUISE FUSE 12 (20 AMP) via a .8 PNK wire (139).

Key Components and Connections:

- ABS/TCS Active:** Receives power from the .35 DK BLU wire (1537) via the C2 connector.
- Multi-Function Lever:** Controls the CRUISE SWITCH (OFF/ON) and SET/COAST (OFF/ON) functions. It is connected to the .8 PNK wire (139) via the C215 connector.
- Cruise Release/Brake Switches:** Two switches (A and B) that open when the brake is depressed. They are connected to the .35 BRN/WHT wire (379) and the .35 BRN wire (86) via the C250 connector.
- Cruise Control Module:** Receives inputs from the CRUISE ON/OFF INPUT (A), SET/COAST INPUT (B), RESUME/ACCEL INPUT (C), and BRAKE INPUT (D) via the P100 connector.

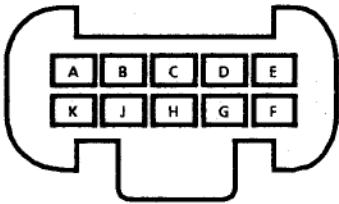
Wiring Details:

- Wires:** .35 PNK, .8 PNK, .35 DK BLU, .35 BRN/WHT, .35 BRN, .35 GRY, .35 GRY BLK, .35 DK BLU, .35 BRN.
- Connectors:** C2, C215, C250, P100.
- Labels:** "LOW TRAC" INDICATOR, INSTRUMENT CLUSTER, HOT IN RUN, BULB TEST OR START, GAGES FUSE 9 10 AMP, UNDERHOOD ELECTRICAL CENTER, A/C-CRUISE FUSE 12 20 AMP, SEE POWER DISTRIBUTION PAGE 8A-10-3, SEE FUSE BLOCK DETAILS PAGE 8A-11-5, CRUISE SWITCH, OFF, ON, R/A, SET/COAST, CRUISE RELEASE/CLUTCH SWITCH (2 CAVITY) (OPEN WITH CLUTCH PEDAL DEPRESSED), CRUISE RELEASE/CLUTCH SWITCH (4 CAVITY DUAL SWITCH) (OPEN WITH CLUTCH PEDAL DEPRESSED), CRUISE RELEASE/BRAKE SWITCH (OPEN WITH BRAKE DEPRESSED), CRUISE CONTROL MODULE, BRAKE INPUT, CRUISE ON/OFF INPUT, SET/COAST INPUT, RESUME/ACCEL INPUT, IGNITION INPUT.

- THE "SET TO GET CRUISE" FEATURE REQUIRES THE OPERATOR TO SET AN INITIAL SPEED BY USING THE "SET/COAST" BUTTON BEFORE THE "RESUME/ACCEL" SLIDER SWITCH WOULD BE ACTIVE.
- THE "BRAKE BEFORE CRUISE" FEATURE REQUIRES THE CRUISE MODULE TO SEE BRAKE INPUT AT TERMINAL "D" TO CHANGE STATES ONCE EACH IGNITION CYCLE BEFORE ALLOWING CRUISE TO OPERATE. (LATER PRODUCTION VEHICLES REQUIRE BRAKE INPUT AT EITHER TERMINAL "D" or "G").



ELECTRICAL DIAGNOSIS (K34)



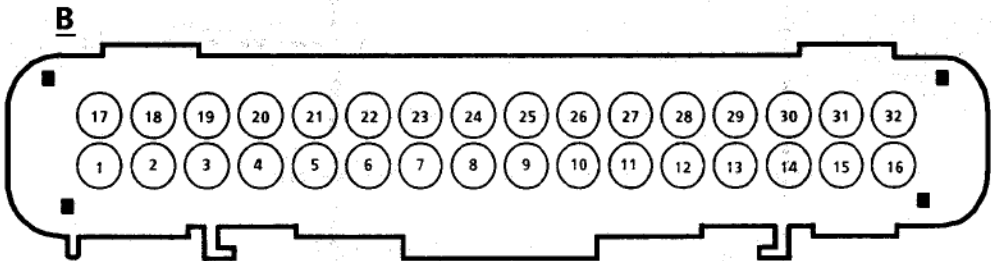
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10-WAY F METRI-PACK 150 SERIES
BLK

CRUISE CONTROL MODULE

**CAVITIES NOT LISTED ARE NOT USED

CAVITY	WIRE COLOR	CKT	DESCRIPTION	PAGE
A	GRY	397	CRUISE CONTROL SWITCH - ON	9B-4
B	DK BLU	84	CRUISE CONTROL SWITCH - SET/COAST	9B-4
C	GRY/BLK	87	CRUISE CONTROL SWITCH - RESUME/ACCEL	9B-4
D	BRN	86	CRUISE RELEASE/BRAKE SWITCH OUTPUT	9B-4
E	BLK	1650	GROUND	8A-14-0, 2
F	PNK	139	POWER FEED FROM A/C-CRUISE FUSE #12	9B-4
G	YEL	820	BRAKE DEPRESSED INPUT	9B-5
K	DK GRN/WHT	817	VEHICLE SPEED SIGNAL	9B-5



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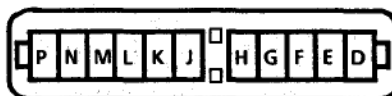
32-WAY F MICRO-PACK 100 SERIES
NAT

POWERTRAIN CONTROL MODULE
(V6 VIN S) AND (V8 VIN P)

V6 VIN S	
CONNECTOR ASSEMBLY BREAKDOWN	
TPA	- 12129021 (BLK)
SEAL	- 12146093
STRAIN RELIEF	- 12129030
CONNECTOR	- 12129025

V8 VIN P	
CONNECTOR ASSEMBLY BREAKDOWN	
TPA	- 12129021 (BLK)
SEAL	- 12146093
STRAIN RELIEF	- 12129028
CONNECTOR	- 12129025

C215



06294509

11-WAY F PACK-CON I

BLK

FORWARD LAMP
HARNESS TO STEERING
COLUMN HARNESS

COMPONENT	LOCATION	SECTION 8A-201-PG	FIG.	CONN
Brake Switch Assembly ...	Mounted in lower hole of brake pedal bracket (2 conn with Automatic), (1 conn with Manual) same switch for both	0	1	
Clutch Anticipate/ Cruise Release Switch (all V6 Manual)	Mounted in clutch pedal bracket (4 cavity conn)	0	1	202-20
Cruise Control Module	Front LH side of vehicle, mounted to frame rail, forward of wheelhouse	19	36	202-11
Cruise Release/Brake Switch (all with K34)	Mounted in upper hole of brake pedal bracket (2 cavity conn)	0	1	
Cruise Release/Clutch Switch (V8 Manual with K34) ..	Mounted in clutch pedal bracket (2 cavity conn)	0	1	
Electronic Brake/Traction Control Module (EBTCM)	Under I/P, next to LH hinge pillar, just above Pass Thru Grommet	8	14	202-13
I/P Fuse Block	LH side of I/P Carrier, on the side	8	15	202-23
Instrument Cluster	LH side of I/P			202-23
Multi-Function Lever	Left Arm on Steering Column	27	53	
Powertrain Control Module (PCM) (V6 VIN S)	In Engine Compartment, rearward of RH Shock Tower	19	35	202-25
Powertrain Control Module (PCM) (V8 VIN P)	In Engine Compartment, rearward of RH Shock Tower	19	35	202-26
Underhood Electrical Center	LH side of Engine Compartment, forward of wheelhouse	19	36	202-28
C200A (17 cavities)	Part of Forward Lamp Harn, between LH kick panel and Steering Column	25	49	202-2
C200D (48 cavities)	Part of I/P Harn, between LH kick panel and Steering Column	25	49	202-2
C215 (11 cavities)	Near base of Steering Column	35	64	202-4
C220 (10 cavities)	Under RH side of I/P, behind kick panel	20	37	202-6
C250 (2 cavities)	Forward Lamp Harn to Clutch Jumper Harn or Switch, near brake/clutch pedal bracket	0, 1	1, 2	
G109	Bolted to left front frame rail (2 rings, 1 wire and braided strap)	11	21	
P100	Left side in dash panel, Engine to Passenger Compartment	19	36	
P110	Right side in dash panel, Engine to Passenger Compartment	19	35	
S165	Forward Lamp Harn, approx 7 cm from Electrical Center breakout			
S206	I/P Harn, approx 18 cm from Convenience Center breakout			
S242	I/P Harn, approx 26 cm from Instrument Cluster Conn			
S243	I/P Harn, approx 14 cm from Fuel Pump Relay breakout	7	13	
S271	Forward Lamp Harn, approx 19 cm from breakout inboard of P100	8	14	
S278	Forward Lamp Harn, approx 9 cm from EBCM breakout			

For a Service Part Cross Reference List and Information, refer to SECTION 8A-200.

ELECTRICAL DIAGNOSIS (K34)

TROUBLESHOOTING HINTS

(Perform before beginning System Diagnosis)

1. Check that Cruise Control Module Linkage is connected and moving freely.
2. Check Cruise Cable Adjustment.
3. Check for poor connection at G109.
4. Check connection at Cruise Control Module.
5. Check Brake Switch Adjustments.
- Make sure ABS/TCS DTC(s) are diagnosed first. An open CHMSL Circuit or "LOW TRAC" Indicator Circuit will set a DTC and also disable the Cruise Control Module. Check for burnt CHMSL Bulbs or "LOW TRAC" Indicator Lamp.
- Check for a broken (or partially broken) wire inside of the insulation which could cause system malfunction but prove "GOOD" in a continuity/voltage check with a system disconnected. These circuits may be intermittent or resistive when loaded, and if possible, should be checked by monitoring for a voltage drop with the system operational (under load).
- Check for proper installation of aftermarket electronic equipment which may affect the integrity of other systems (see "Troubleshooting Procedures," page 8A-4-0).
- Refer to System Diagnosis.

 Important:

- Cruise will not control speed down large grades.
- Cruise Performance may degrade with heavy loads, such as trailering, depending on Powertrain capabilities.

 Important:

- The "Set To Get Cruise" feature requires the Operator to set an initial speed by using the "Set/Coast" button before the "Resume/Accel" Slider Switch would be active.
- The "Brake Before Cruise" feature requires the Cruise Module to see brake input at terminal "D" to change states once each Ignition Cycle before allowing cruise to operate. (later production vehicles require brake input at either terminal "D" or "G").

SYSTEM DIAGNOSIS

- Perform the System Check and refer to the Symptom Table for the appropriate diagnostic procedure(s).
- If speedometer is inoperative, refer to "Vehicle Speed Sensor," page 8A-33-2.

SYSTEM CHECK

ACTION	NORMAL RESULTS
[1] • Drive vehicle above 25 mph. • Cruise Switch to "ON." • Depress Set Switch once and release. • Remove foot from accelerator pedal.	Vehicle maintains set speed (at time of button release).
[2] • Depress and hold Set Switch until vehicle speed decreases by 4 to 5 mph. • Release Set Switch.	Vehicle decelerates and maintains a new lower set speed, if speed is above 25 mph.
[3] • Depress and hold R/A Switch until vehicle speed increases by 4 to 5 mph. • Release R/A Switch.	Vehicle accelerates and maintains a new higher set speed.
[4] • Depress brake pedal slightly.	Cruise Control disengages. Memory unchanged.
[5] • Depress R/A Switch once (less than 3/4 second) and release.	Vehicle accelerates to and maintains previous set speed.
[6] • Depress R/A Switch once and release (less than 1/2 of a second).	Vehicle speed increases by 1 mph and maintains new set speed.

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SYSTEM CHECK

ACTION	NORMAL RESULTS
[7] • Depress Set Switch once and release (less than 1/2 of a second).	Vehicle speed decreases by 1 mph and maintains new set speed.
[8] • Depress Set and R/A Switches simultaneously.	Vehicle put in Non-Cruise mode with memory unchanged.
[9] • Depress R/A Switch once (less than 3/4 second) and release.	Vehicle accelerates to and maintains previous set speed.
[10] • Cruise Switch to "OFF."	Cruise Control disengages. Memory is lost.

ADDITIONAL SYSTEM CHECK

The following Procedure may be used as a System Check to verify operation of the Cruise Control System after repairs.

- Set Park Brake.
- Start Engine.
- Move Cruise Switch to "OFF."
- Move Cruise Switch to "ON" and then wait at least 3 seconds before doing next step.

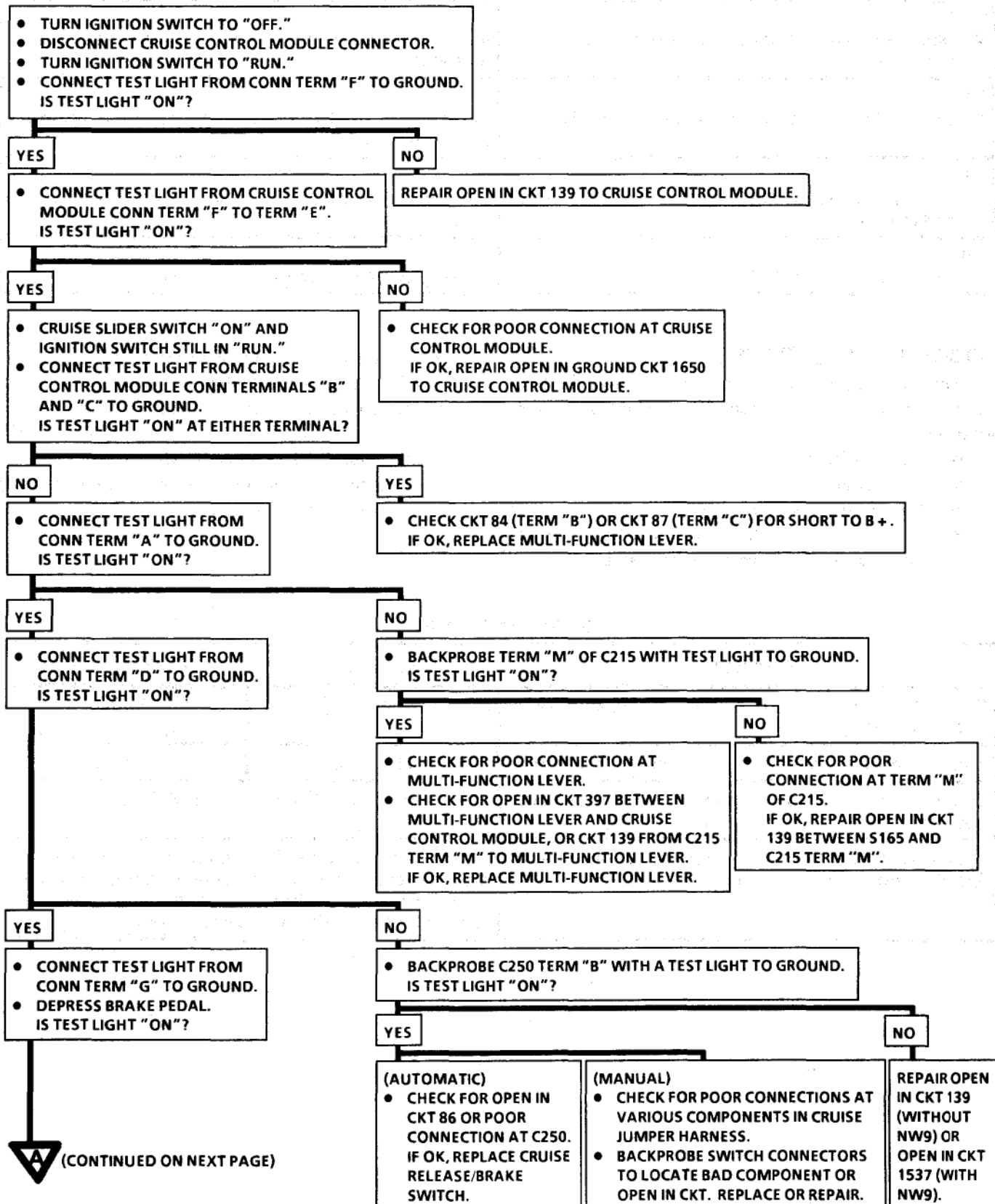
- Fully depress and hold brake pedal.
- Push Cruise Set Switch in and hold.
- Hold Cruise Slider Switch in "R/A" position.
- After 10 seconds, release brake pedal while still holding R/A and Set Switches.
- Engine RPM should increase momentarily then return to normal.

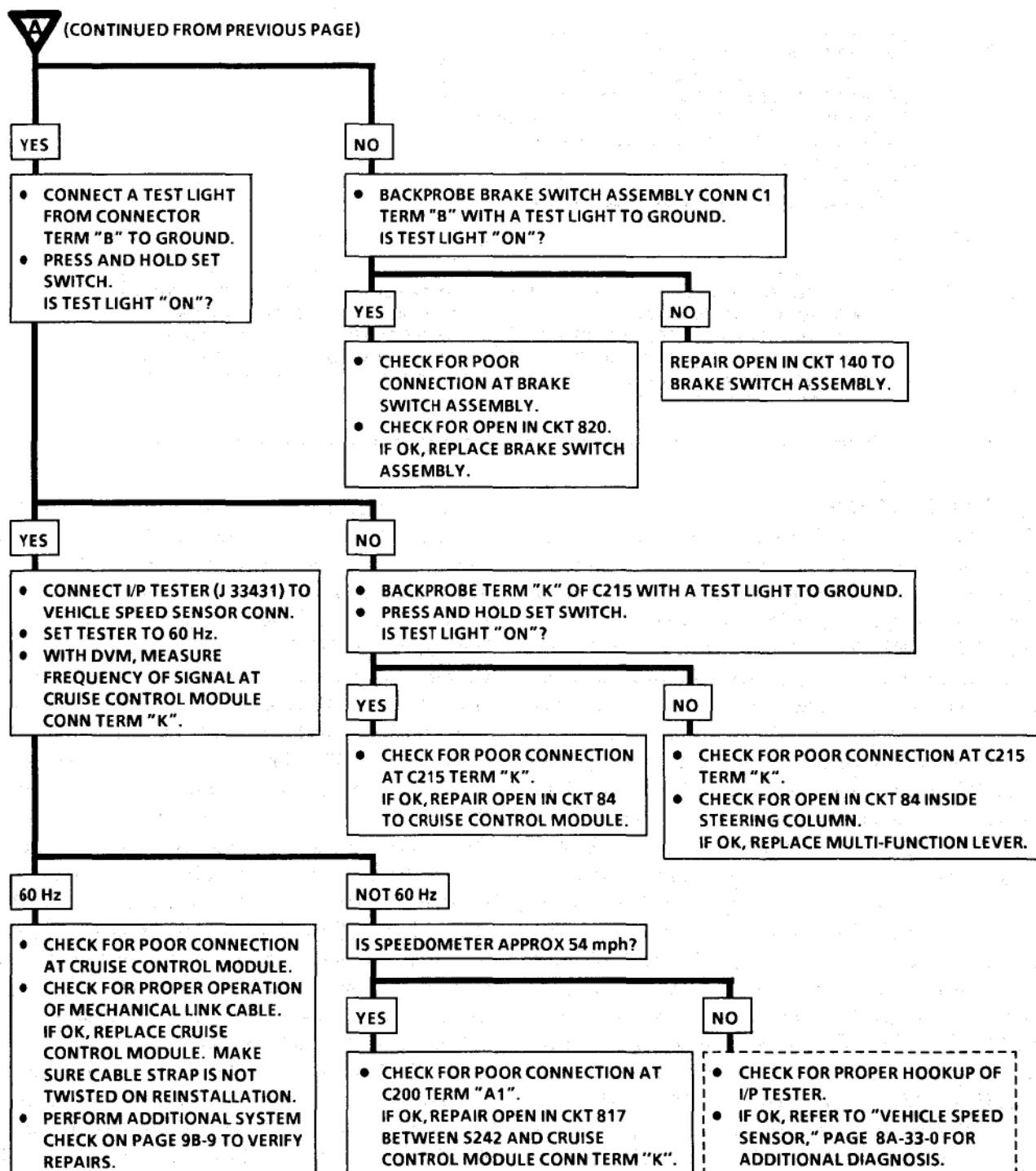
SYMPTOM TABLE

SYMPTOM	PROCEDURE	PAGE NUMBER
Cruise Control will not engage. Speedometer operates normally.	Chart #1	9B-10
Cruise Control will not resume, accelerate or tap-up.	Chart #2	9B-12
Cruise Control will not engage. Speedometer does not operate.	See "Vehicle Speed Sensor," page 8A-33-2.	
Cruise Control "Surges" around a set speed. Speedometer operates normally.	With DVM measure frequency at Cruise Control Module Conn Term "K". If fluctuating replace Vehicle Speed Sensor or Shaft as necessary. (Improper tolerance with Shaft causing a wobble.)	

ELECTRICAL DIAGNOSIS (K34)

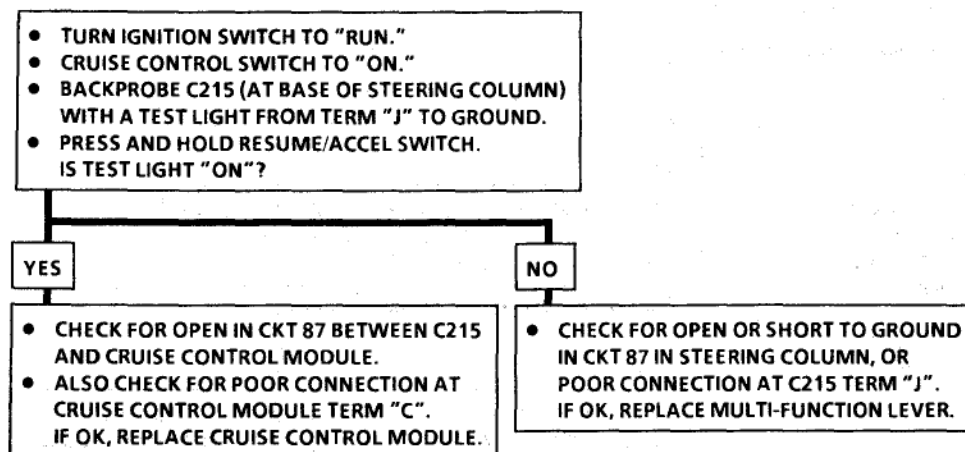
CHART #1
CRUISE CONTROL WILL NOT ENGAGE
(ASSUMES SPEEDOMETER OPERATES NORMALLY)





ELECTRICAL DIAGNOSIS (K34)

CHART #2
CRUISE CONTROL WILL NOT RESUME, ACCELERATE OR TAP-UP

**CIRCUIT OPERATION**

The Electro-Motor Cruise Control is a speed control system which maintains a desired vehicle speed under normal driving conditions. The system has the capability to CRUISE, COAST, RESUME SPEED, ACCELERATE, TAP-UP, TAP-DOWN AND CANCEL (Depress "SET" and "R/A" simultaneously).

An Electronic Controller and Electric Motor are contained in the Cruise Control Module. The Controller monitors vehicle speed and operates the Electric Motor. In response to the Controller, the motor moves a connecting strap that is attached to the Cruise Control Cable. The Cable moves the Throttle Linkage to vary throttle position in order to maintain the desired cruise speed. The Cruise Control Module contains a low speed limit which will prevent system engagement below a minimum speed, about 25 mph. The module is controlled by mode control switches located on the Multi-Function Lever. The "Set To Get Cruise" feature requires the operator to set an initial speed by using the "Set/Coast" button before the "RESUME/ACCEL" Slider Switch would be active.

With the Ignition Switch in "RUN," battery voltage is applied to terminal "F" of the Cruise Control Module. When the Slider Switch is moved to the "ON" position, battery voltage is applied to terminal "A" of the Cruise Control Module. The Cruise Control Module needs to see Ignition Voltage at terminal "D" to change states once each ignition cycle before allowing Cruise to operate. (Later production vehicles require Brake Input at either terminal "D" or "G").

On vehicles with Traction Control (NW9) the voltage path is through the "LOW TRAC" Indicator, the normally closed Clutch Start Switch (Manual Transmission only) and Brake Switch. On vehicles without Traction Control (NW9) the voltage path is through the A/C CRUISE Fuse 12, the normally closed Clutch Start Switch (Manual Transmission only) and Brake Switch. If either switch is opened the voltage to the Cruise Control Module terminal "D" is interrupted. With Traction Control (NW9) if a low traction condition occurs the Electronic Brake/Traction Control Module (EBTCM) will ground CKT 1537 causing a ground potential at terminal "D" of the Cruise Control Module disabling the Cruise Control. Terminal "G" must see a ground path through the CHMSL bulb for cruise to operate properly. If the brake pedal is depressed, battery voltage is present at module terminal "G". When the Slider Switch is moved to the "R/A" position, battery voltage is applied to terminal "C" of the module. With the Set Switch depressed, battery voltage is present at Cruise Module terminal "B". Cruise Module Connector terminal "K" is the speed signal terminal. In operation, voltage will oscillate between a high of 4 to 5 volts and a low of near ground. Cruise Module terminals "H" and "J" are not used. Ground is at module terminal "E".

ON-VEHICLE SERVICE

CRUISE CONTROL SWITCH ASSEMBLIES

Figure 2

Adjustment

The release switch assembly (6) must be adjusted at the same time the stoplamp and torque converter clutch (TCC) switch is adjusted. The clutch switch assembly (5) or clutch anticipate switch assembly (4) cannot be adjusted until after clutch pedal assembly (20) is installed.

NOTICE: Proper stoplamp switch assembly adjustment is essential. Improper stoplamp switch assembly adjustment will cause brake drag and excessive brake lining wear.



Adjust

1. To adjust, depress brake pedal assembly or clutch pedal assembly and insert release switch assembly

(6), stoplamp and TCC switch assembly (7), and clutch switch assembly (5) or clutch anticipate switch assembly (4) into pedal assembly with bracket (20 or 21) until retainer on release switch assembly (6), stoplamp and TCC switch assembly (7), or clutch switch assembly (5) or clutch anticipate assembly (4) is fully seated.

NOTICE: Make sure to apply the proper amount of force to the brake pedal assembly during adjustment. Too much force could damage the vacuum booster assembly. Too little could cause dragging brakes.

2. Slowly pull brake or clutch pedal assembly rearward with a force of 222 N (50 pounds) until "click" sounds can no longer be heard. At this point, release switch assembly (6), stoplamp and TCC switch assembly (7), and clutch switch assembly (5) or clutch anticipate assembly (4) will have moved retainers to their original position.

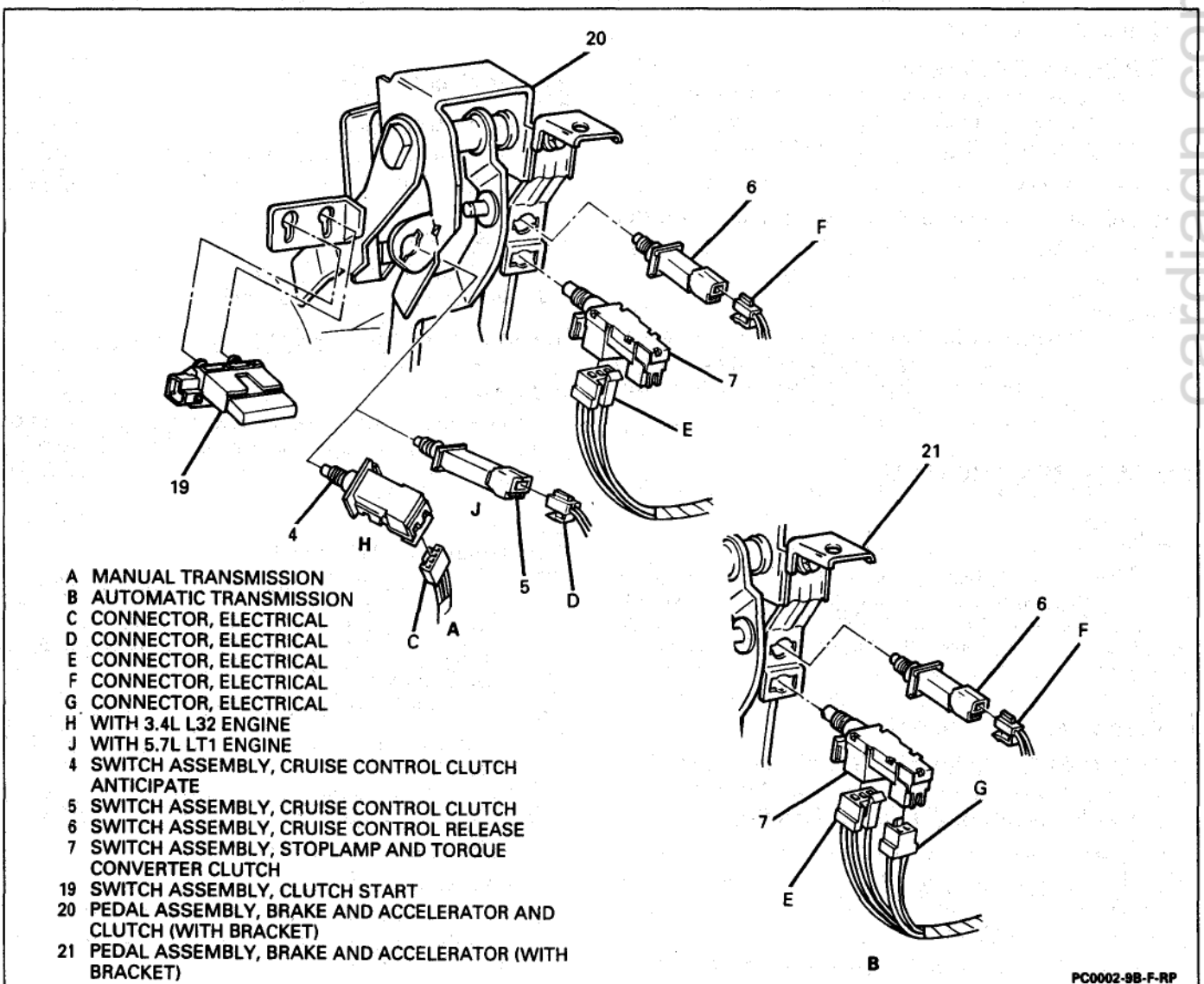


Figure 2 - Cruise Control Switch Assemblies

**Measure**

- The release switch assembly and stoplamp and TCC switch assembly contacts should be open at 25.4 mm (1 inch) or less of pedal assembly travel, and occur at the same time or before the onset of braking. The brake pedal assembly travel can be up to 25.4 mm (1 inch) before the cruise control system disengages.

Replacement**Remove or Disconnect**

- Left-hand instrument panel sound insulator assembly.
- Electrical connectors.
- Release switch assembly (6), stoplamp and TCC switch assembly (7), and clutch switch assembly (5) or clutch anticipate switch assembly (4), if equipped, from pedal assembly with bracket (20 or 21).

**Install or Connect**

- Release switch assembly (6), stoplamp and TCC switch assembly (7), and clutch switch assembly (5) or clutch anticipate switch assembly (4), if equipped, to pedal assembly with bracket (20 or 21).
- Electrical connectors.
- Left-hand instrument panel sound insulator assembly.

**Adjust**

- Release switch assembly (6), stoplamp and TCC switch assembly (7), and clutch switch assembly (5) or clutch anticipate switch assembly (4) as outlined above.

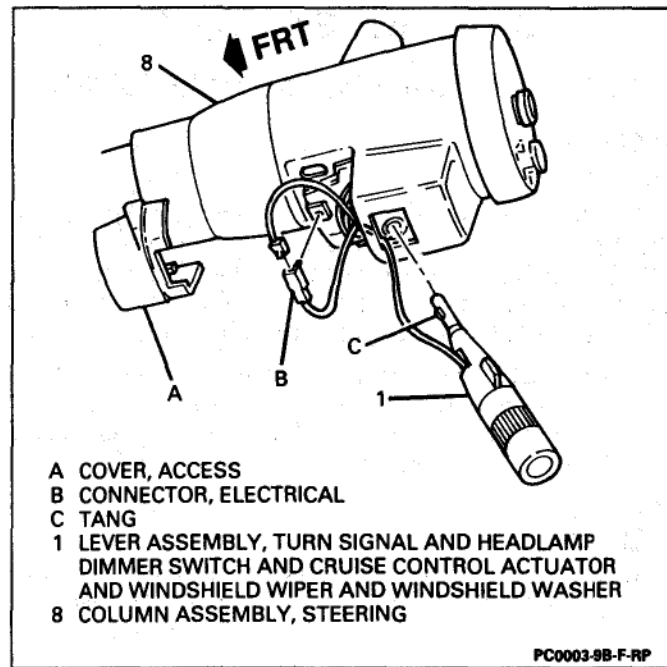
ENGAGEMENT SWITCH**Figure 3**

The engagement switch cannot be serviced. The complete turn signal and headlamp dimmer switch and cruise control actuator and windshield wiper and windshield washer lever assembly must be replaced as an assembly.

**Remove or Disconnect**

CAUTION: Refer to "Caution" under "Disconnecting the Battery Negative Cable Assembly" in SECTION 0A.

- Battery negative cable assembly.
- Steering column access cover.
- Electrical connector.
 - Make sure windshield wiper switch is in the "OFF" position.
- Lever assembly (1) by pulling it straight out.

**Figure 3 – Engagement Switch****Install or Connect**

- Lever assembly (1).
 - Align tang on lever assembly (1) to notch on column assembly (8) and push in until fully seated.
- Electrical connector.
- Steering column access cover.
- Battery negative cable assembly

CRUISE CONTROL MODULE ASSEMBLY**Figure 4**

The cruise control module assembly (11) is mounted on the left engine compartment inner side rail assembly using two cruise control module bracket bolts/screws (16).

**Remove or Disconnect**

- Accelerator control cable splash shield bolts/screws.
- Accelerator control cable splash shield.
- Left-hand front bumper fascia lower deflector. Refer to SECTION 10-4.
- Cruise control cover (13) to access connectors.
- Electrical connector from cruise control module assembly (11).
- Cruise control cable assembly from cruise control module assembly. Refer to "Cable Assembly Replacement" in this section.
- Bolts/screws (16).
- Cruise control module assembly (11) with bracket assembly (12) from left engine compartment inner side rail assembly.
- Bolts/screws (10) attaching cruise control module assembly (11) to bracket assembly (12).

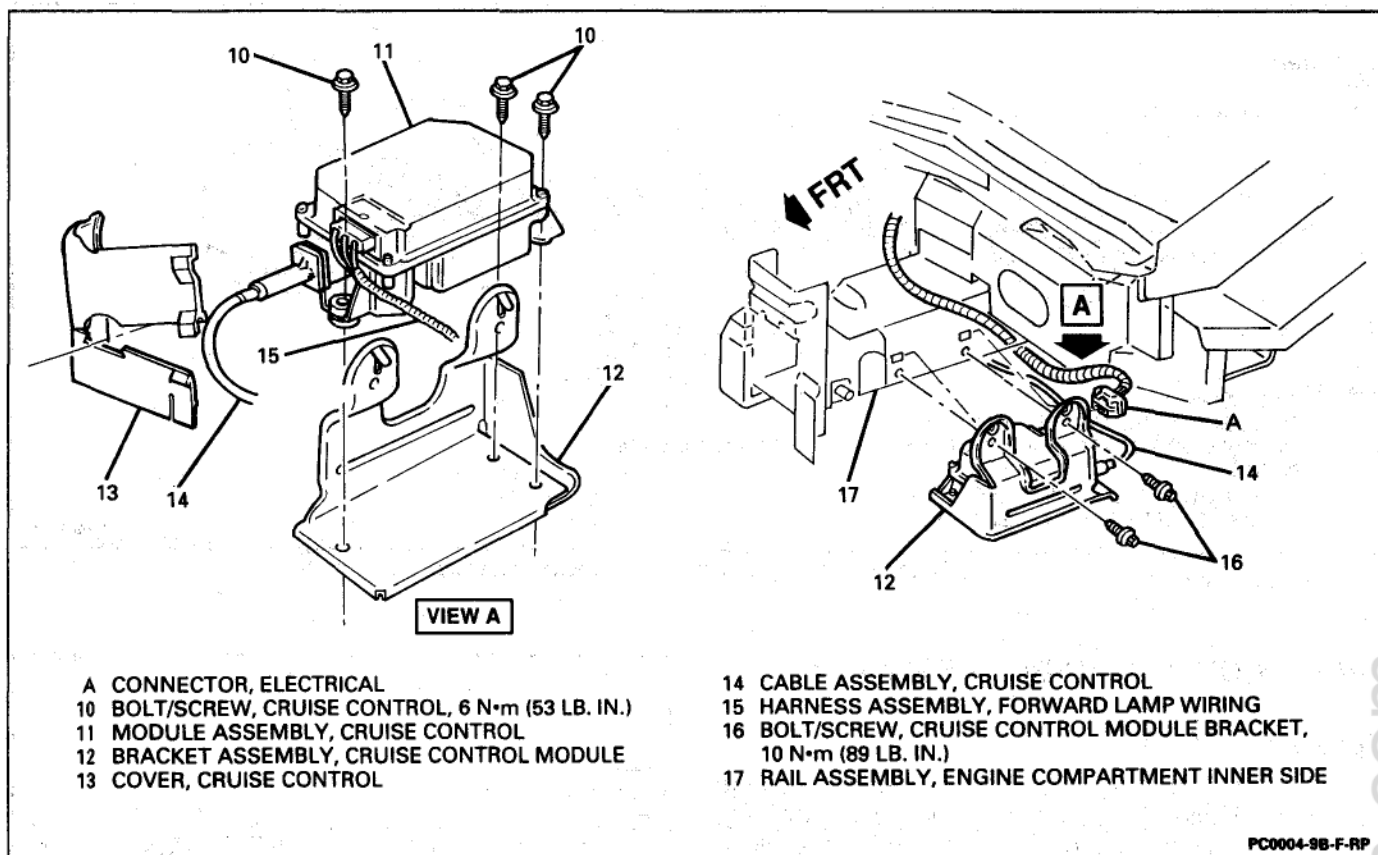


Figure 4 – Cruise Control Module Assembly

10. Cruise control module assembly (11) from bracket assembly (12).

Install or Connect

NOTICE: See “Notice” on page 9B-1 of this section.

1. Cruise control module assembly (11) to bracket assembly (12).
2. Bolts/screws (10) attaching cruise control module assembly (11) to bracket assembly (12).

Tighten

- Bolts/screws (10) to 6 N•m (53 lb. in.).

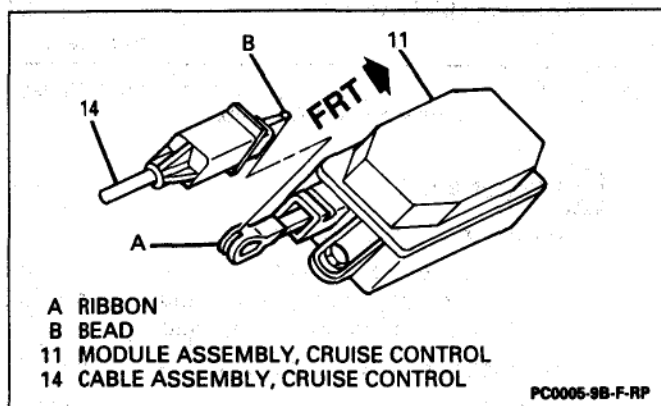


Figure 5 – Cable Bead to Cruise Control Module Assembly

3. Cruise control module assembly (11) with bracket assembly (12) to left engine compartment inner side rail assembly.

4. Bolts/screws (16).

Tighten

- Bolts/screws (16) to 10 N•m (89 lb. in.).
5. Cable assembly to module assembly. Refer to “Cable Assembly Replacement” in this section.
 6. Electrical connector to cruise control module assembly (11).
 7. Cruise control cover (13) over connectors.
 8. Left-hand front bumper fascia lower deflector. Refer to SECTION 10-4.
 9. Accelerator control cable splash shield.
 10. Accelerator control cable splash shield bolts/screws.

Tighten

- Accelerator control cable splash shield bolts/screws to 1.9 N•m (17 lb. in.).

Adjust

- Cable assembly, if necessary. Refer to “Cable Assembly Adjustment” in this section.

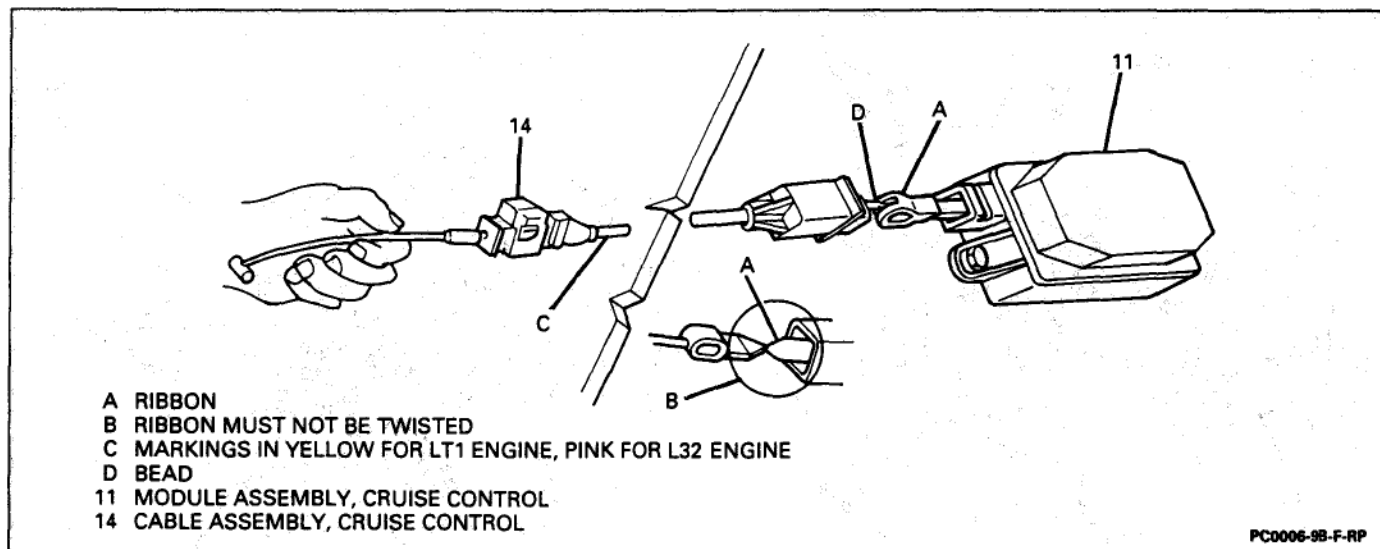


Figure 6 – Pulling Cruise Control Cable Assembly

CRUISE CONTROL CABLE ASSEMBLY

Figures 5 through 7

The cable assembly (14) is connected between the cruise control module assembly (11) and the throttle body lever, or accelerator control/cruise control servo cable adjuster, if equipped.

Cable Assembly Replacement (Standard)

↔ Remove or Disconnect

1. Cable assembly (14) and conduit from engine bracket.
2. Cable end fitting from throttle body lever stud.
3. Cruise control retainer (18) at cruise control module assembly.
4. Cable assembly (14) from cruise control module assembly (11).
 - A. Compress conduit tangs and pull out of cruise control module housing. (11).
 - B. Disconnect cable bead from cruise motor band end fitting on cruise control module assembly (11).
 - C. Note routing and remove cable assembly (14) from vehicle.

→ Install or Connect

1. Cable assembly (14) to cruise control module assembly (11).
 - A. Attach cable bead to cruise motor ribbon end fitting on cruise control module assembly (11).
 - B. Pull engine end of cable assembly (14) until it is taut.
 - C. Turn engine end of cable assembly until ribbon is flat.

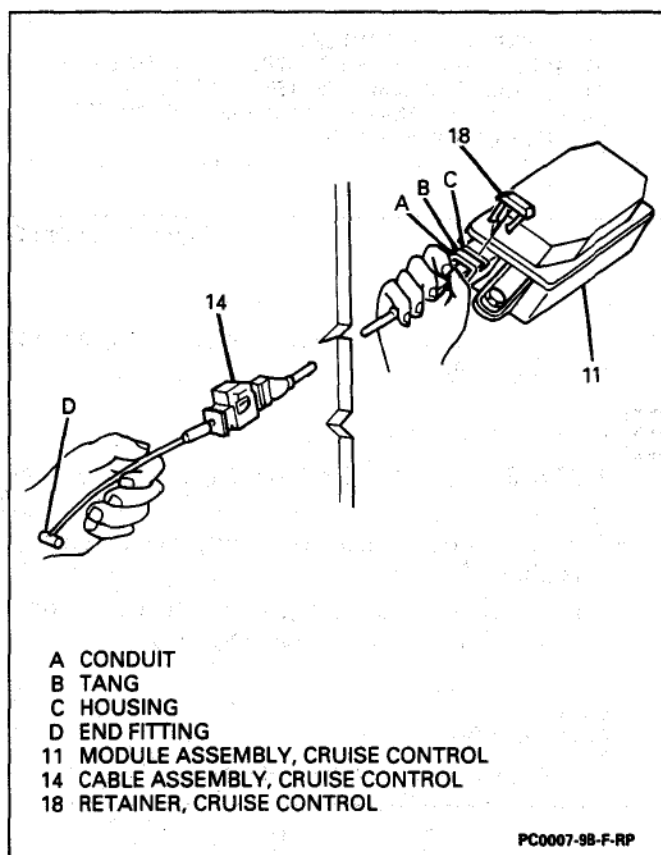


Figure 7 – Installing Cruise Control Cable Assembly to Cruise Control Module Assembly

! Important

- Ribbon must not be twisted.
 - Slide cable conduit fitting over ribbon and snap into module housing assuring that both tangs are engaged.
2. Cruise control retainer (18) at cruise control module assembly (11).
 3. Cable assembly (14) to vehicle.

- Use routing noted during removal.
4. Cable end fitting to throttle body lever stud.
 5. Cable assembly (14) and conduit to engine bracket.

**Adjust**

- Cable assembly. Refer to "Cable Assembly Adjustment (Standard)" in this section.

Cable Assembly Replacement (Optional)**Figures 5 through 8****Important**

- If vehicle is equipped with accelerator control/cruise control servo cable adjuster (throttle relaxer), follow these procedures to replace cable assembly.

**Remove or Disconnect**

1. Cover (19).
2. Cable assembly (14) and conduit from engine bracket.
3. Cable end fitting from accelerator control/cruise control servo cable adjuster (20).
4. Cruise control retainer (18) at cruise control module assembly.
5. Cable assembly (14) from cruise control module assembly (11).

**Install or Connect**

1. Cable assembly (14) to cruise control module assembly (11).
 - A. Attach cable bead to cruise motor ribbon end fitting on cruise control module assembly (11).
 - B. Pull engine end of cable assembly (14) until it is taught.
 - C. Turn engine end of cable assembly until ribbon is flat.

**Important**

- Ribbon must not be twisted.
 - Slide cable conduit fitting over ribbon and snap into module housing assuring that both tangs are engaged.
2. Cruise control retainer (18) at cruise control module assembly (11).
 3. Cable assembly (14) to vehicle.
 - Use routing noted during removal.

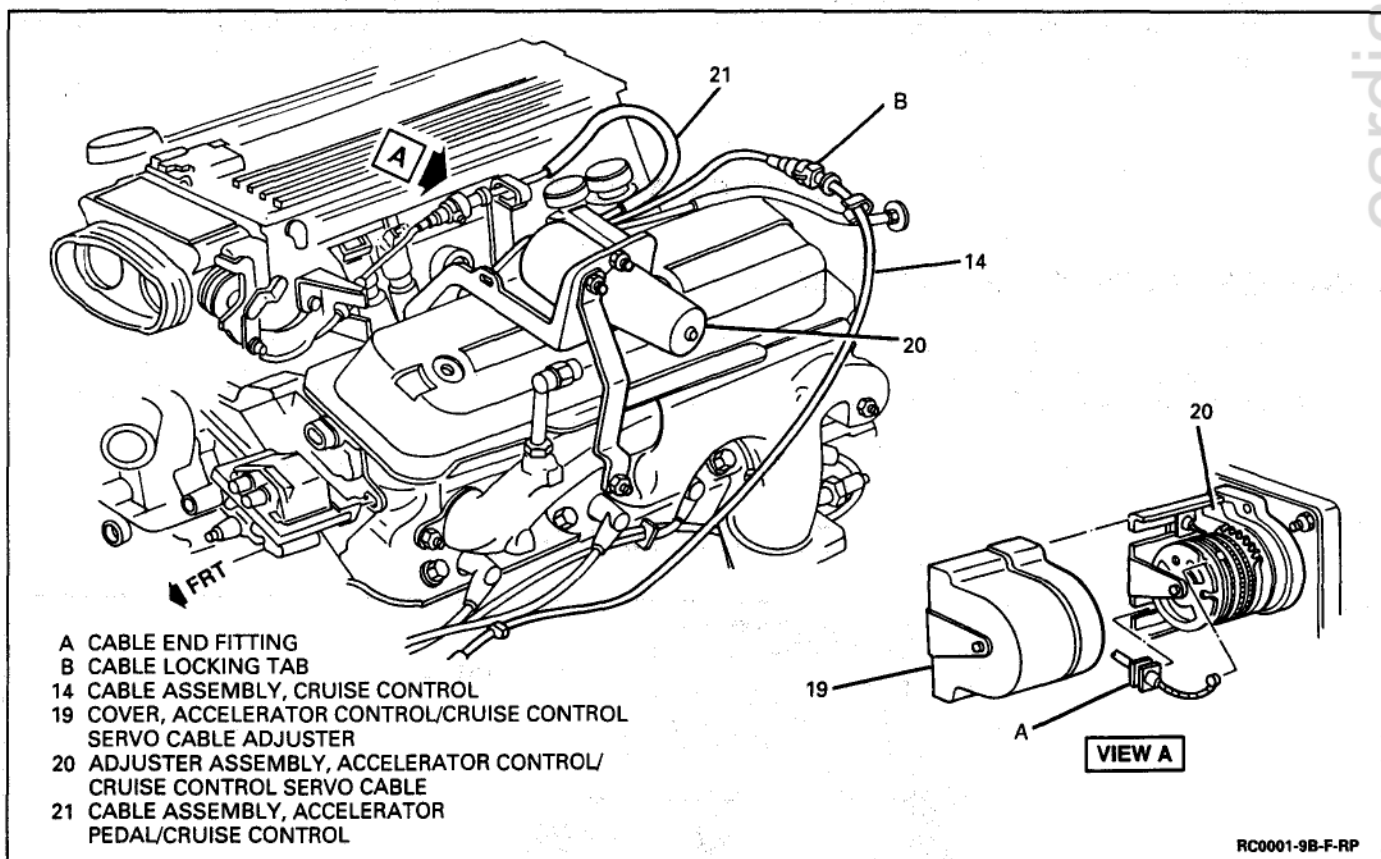


Figure 8 – Cable Assembly Replacement (Optional)

4. Cable end fitting from accelerator control/cruise control servo cable adjuster (20).
5. Cable assembly (14) and conduit to engine bracket.
6. Cover (19).

**Adjust**

- Cable assembly. Refer to "Cable Assembly Adjustment (Optional)" in this section.

If replacing accelerator pedal/cruise control cable assembly, refer to SECTION 5E2 for replacement and adjustment procedures.

Cable Assembly Adjustment (Standard)

- With throttle closed, lock cable conduit by pressing down on lock button.

LT1 Engine

- A. Pull cruise cable adjust slider rearward out of adjuster to remove cable slack without moving throttle lever from its idle stop. Push down cruise cable adjust lock button until it snaps and locks into place.
- B. A gap 0 – 2 mm (0.07 inch) between terminal end of cable to the plastic connector that snaps on to throttle body lower is allowed when checking for this condition. Pull on terminal end making sure connector to throttle body is hard against its fitting. If more than 2 mm (0.07 inch) exist, readjust cable.

L32 Engine

- A. Pull cruise cable adjust slider rearward until cruise cam lever contacts throttle body lever without opening the throttle. Push down cruise cable adjust lock button until it snaps and locks into place.
- B. A gap of 0 – 2 mm (0.07 inch) between cruise cam lever and throttle body lever is allowed after lock button is depressed.

Cable Assembly Adjustment (Optional)

To manually adjust the cable assembly (14):

- A. Place finger on throttle making sure throttle arm is hard against stop.
- B. Pull cable assembly (14) to remove slack from cable.

**Important**

- Do not disturb cable after removing slack.
- C. Press locking tab down to retain cable.

**Important**

- Cable should never be adjusted so tight that tension from cable will not allow throttle to close solidly. If cable is adjusted too tight, the cable will prevent engine from returning to idle and will cause unstable idle quality.

SPECIFICATIONS**FASTENER TIGHTENING SPECIFICATIONS**

Accelerator Control Cable Splash Shield Bolt/Screw	1.9 N•m (17 lb. in.)
Cruise Control Bolt/Screw	6 N•m (53 lb. in.)
Cruise Control Module Bracket Bolt/Screw	10 N•m (89 lb. in.)

SPECIAL TOOLS