VEHICLE SPEED CONTROL SYSTEM

CONTENTS

	page
GENERAL INFORMATION	
INTRODUCTION	1
DESCRIPTION AND OPERATION	
POWERTRAIN CONTROL MODULE	3
SERVO CABLE	3
SPEED CONTROL SERVO	2
SPEED CONTROL SWITCHES	2
STOP LAMP SWITCH	3
VACUUM RESERVOIR	3
VEHICLE SPEED SENSOR	3
DIAGNOSIS AND TESTING	
CHECKING FOR DIAGNOSTIC CODES	3
ELECTRICAL TESTS AT POWERTRAIN CONTROL MODULE	8
OVERSHOOT/UNDERSHOOT ON SPEED CONTROL SET	7
ROAD TEST	3
SERVO VACUUM TEST	7
SPEED CONTROL ELECTRICAL TEST	5
SPEED CONTROL SWITCH TEST	7
STOP LAMP SWITCH TEST	8
VACUUM SUPPLY TEST	9
VEHICLE SPEED SENSOR	9
REMOVAL AND INSTALLATION	
POWERTRAIN CONTROL MODULE	11
SPEED CONTROL SERVO CABLE	10
SPEED CONTROL SERVO	9
SPEED CONTROL SWITCH	10
STOP LAMP SWITCH	10
VACUUM RESERVOIR	11
VEHICLE SPEED SENSOR	11

GENERAL INFORMATION

INTRODUCTION

The speed control system is electronically controlled and vacuum operated. The electronic control is integrated into the powertrain control module which is located in the engine compartment. The controls are located on the steering wheel and consist of five switches. The ON and OFF buttons are located on the left side of the airbag module. The RESUME/ ACCEL, SET/COAST and CANCEL buttons are located on the right side of the airbag module (Fig. 1). For identification and location of the major components (Fig. 2) and (Fig. 3).

The system is designed to operate at speeds above 30 mph (50 km/h).

WARNING: THE USE OF SPEED CONTROL IS NOT RECOMMENDED WHEN DRIVING CONDITIONS DO NOT PERMIT MAINTAINING A CONSTANT SPEED, SUCH AS IN HEAVY TRAFFIC OR ON ROADS THAT ARE WINDING, ICY, SNOW COVERED, OR SLIPPERY.

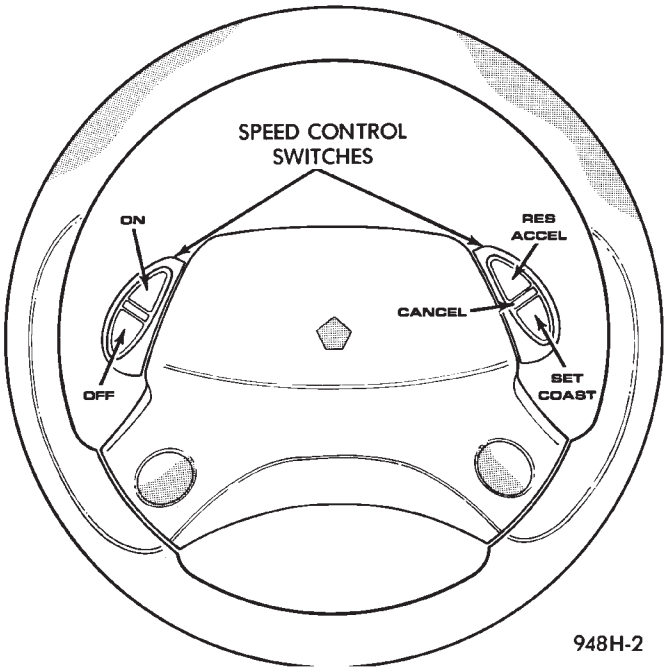

Fig. 1 Speed Control Switch

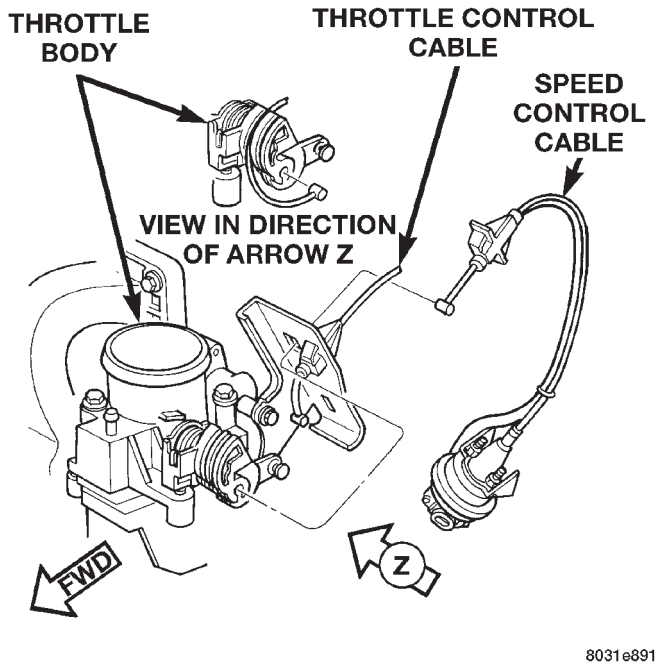

Fig. 2 MTX Speed Control System

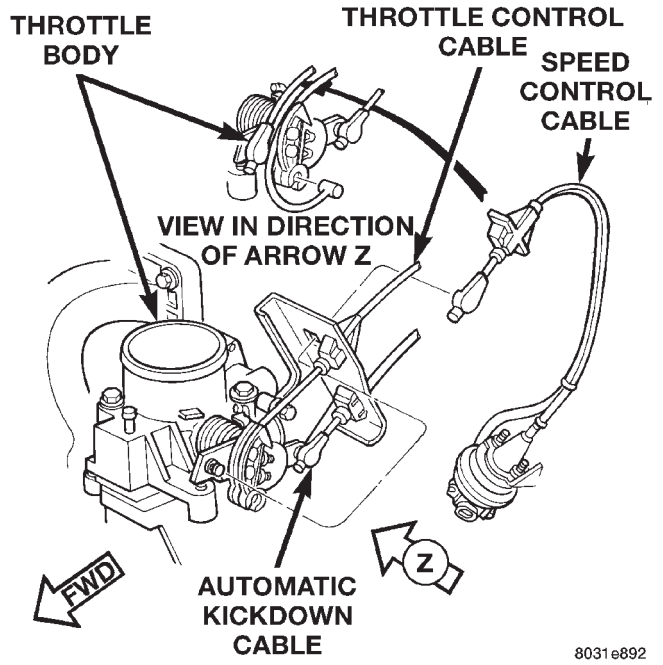

Fig. 3 ATX Speed Control System

DESCRIPTION AND OPERATION

SPEED CONTROL SERVO

The servo unit consists of a solenoid valve body, and a vacuum chamber. The PCM controls the solenoid valve body. The solenoid valve body controls the application and release of vacuum to the diaphragm of the vacuum servo. The servo unit cannot be repaired and is serviced only as a complete assembly.

SPEED CONTROL SWITCHES

There are two separate switch pods that operate the speed control system. The steering-wheel-mounted switches use multiplexed circuits to provide inputs to the PCM for ON, OFF, RESUME/ACCELERATE, SET/COAST and CANCEL modes. Refer to the owner's manual for more information on speed control switch functions and setting procedures.

When speed control is selected by depressing the ON switch, the PCM allows a set speed to be stored in RAM for speed control. To store a set speed, depress the COAST/SET switch while the vehicle is moving at a speed between 30 and 85 mph. In order for the speed control to engage, the brakes cannot be applied, nor can the gear selector be indicating the transmission is in Park or Neutral.

The speed control can be disengaged manually by:

- Stepping on the brake pedal
- Depressing the OFF switch
- Depressing the CANCEL switch.

The speed control can be disengaged also by any of the following conditions:

- An indication of Park or Neutral
- The VSS signal increases at a rate of 10 mph per second (indicates that the co-efficient of friction between the road surface and tires is extremely low)
- An rpm increase without a VSS signal increase (indicates that the clutch has been disengaged)
- Excessive engine rpm (indicates that the transmission may be in a low gear)
- The VSS signal decreases at a rate of 10 mph per second (indicates that the vehicle may have decelerated at an extremely high rate)
- If the actual speed is not within 20 mph of the set speed

The previous disengagement conditions are programmed for added safety.

Once the speed control has been disengaged, depressing the RES/ACCEL switch restores the vehicle to the target speed that was stored in the PCM's RAM.

NOTE: Depressing the OFF switch will erase the set speed stored in the PCM's RAM.

If, while the speed control is engaged, the driver wishes to increase vehicle speed, the PCM is programmed for an acceleration feature. With the RES/ACCEL switch held closed, the vehicle accelerates slowly to the desired speed. The new target speed is stored in the RAM when the RES/ACCEL switch is released. The PCM also has a "tap-up" feature in which vehicle speed increases at a rate of approximately 2 mph for each momentary switch activation of the RES/ACCEL switch.

The PCM also provides a means to decelerate without disengaging speed control. To decelerate from an

DESCRIPTION AND OPERATION (Continued)

existing recorded target speed, depress and hold the SET/COAST switch until the desired speed is reached. Then release the switch. The ON and OFF switches operates two components: the PCM's ON/OFF input, and the battery voltage to the brake switch, which powers the speed control servo.

The individual switches cannot be repaired. If one switch fails, the entire switch module must be replaced.

STOP LAMP SWITCH

Vehicles equipped with the speed control option use a dual function stop lamp switch. The switch is mounted in the same location as the conventional stop lamp switch, on the brake pedal mounting bracket under the instrument panel. The PCM monitors the state of the dual function stop lamp switch. Refer to Group 5, Brakes for more information on stop lamp switch service and adjustment procedures.

SERVO CABLE

The speed control servo cable is connected between the speed control vacuum servo diaphragm and the throttle body control linkage. This cable causes the throttle control linkage to open or close the throttle valve in response to movement of the vacuum servo diaphragm.

POWERTRAIN CONTROL MODULE

The speed control electronic control circuitry is integrated into the Powertrain Control Module (PCM). The PCM is located in the engine compartment. The PCM speed control functions are monitored by the On-Board Diagnostics (OBD). All OBD-sensed systems are monitored by the PCM. Each monitored circuit is assigned a Diagnostic Trouble Code (DTC). The PCM will store a DTC in electronic memory for any failure it detects. See On-Board Diagnostic Tests in this group for more information. The PCM cannot be repaired and must be replaced if faulty.

VACUUM RESERVOIR

The reservoir contains a one-way check valve to trap engine vacuum in the reservoir. When engine vacuum drops, as in climbing a grade while driving, the reservoir supplies the vacuum needed to maintain proper speed control operation. The vacuum reservoir cannot be repaired and must be replaced if faulty.

VEHICLE SPEED SENSOR

The Vehicle Speed Sensor (VSS) is a pulse generator mounted to an adapter near the transmission output shaft. The sensor is driven through the adapter by a speedometer pinion gear. The VSS pulse signal to the speedometer/odometer is monitored by the PCM speed control circuitry to determine vehicle speed and to maintain speed control set speed. Refer to the appropriate Powertrain Diagnostic Procedures manual for diagnosis and testing of this component. Refer to Group 14, Fuel System for removal/installation procedures.

DIAGNOSIS AND TESTING

ROAD TEST

Perform a vehicle road test to verify reports of speed control system malfunction. The road test should include attention to the speedometer. Speedometer operation should be smooth and without flutter at all speeds.

Flutter in the speedometer indicates a problem which might cause surging in the speed control system. The cause of any speedometer problems should be corrected before proceeding. Refer to Group 8E, Instrument Panel and Gauges for speedometer diagnosis.

If a road test verifies an inoperative system, and the speedometer operates properly, check for:

- A Diagnostic Trouble Code (DTC). If a flash lamp code 15, 34 or 77 exists at the Check Engine Lamp (MIL), conduct tests per the Powertrain Diagnostic Procedures service manual.
- A misadjusted brake (stop) lamp switch. This could also cause an intermittent problem.
- Loose or corroded electrical connections at the servo. Corrosion should be removed from electrical terminals and a light coating of Mopar MultiPurpose Grease, or equivalent, applied.
- Loose or leaking vacuum hoses or connections.
- Secure attachment at both ends of the speed control servo cable.
- Smooth operation of throttle linkage and throttle body air valve.
- Failed speed control servo. Do the servo vacuum test.

CAUTION: When test probing for voltage or continuity at electrical connectors, care must be taken not to damage connector, terminals or seals. If these components are damaged, intermittent or complete system failure may occur.

CHECKING FOR DIAGNOSTIC CODES

When trying to verify a speed control system electronic malfunction: Connect a DRB scan tool if available to the data link connector (Fig. 4). The connector is located at left side of the steering column, and at lower edge of the panel.

DIAGNOSIS AND TESTING (Continued)

If a scan tool is not available, use the following procedure:

(1) With key inserted in ignition switch, cycle switch to ON position three times. On third cycle, leave switch in ON position.

(2) After switch has been cycled three times, observe MALFUNCTION INDICATOR LAMP (check engine) indicator on instrument cluster. If a diagnostic code is present, indicator will flash (blink) in a series which will show which diagnostic code is the problem. EXAMPLE: A series of three flashes in rapid succession, a slight pause, then four flashes in rapid succession would indicate diagnostic code 34.

(3) A speed control malfunction may occur without either diagnostic code being indicated. If no diagnostic code appears conduct test in the following paragraphs depending on failure mode. If code 15 or 34 is observed, refer to the appropriate Powertrain Diagnostic Manual for the electrical circuit diagnostic..

Refer to Group 25, for further information and useage of the DRB scan tool and a more complete list of Diagnostic Trouble Code.

SPEED CONTROL ACCELERATES OR TAPS UP BY ITSELF

Check for diagnostic trouble codes. If code 15 refer to the Powertrain Diagnostic Manual, if code 34 perform the following test:

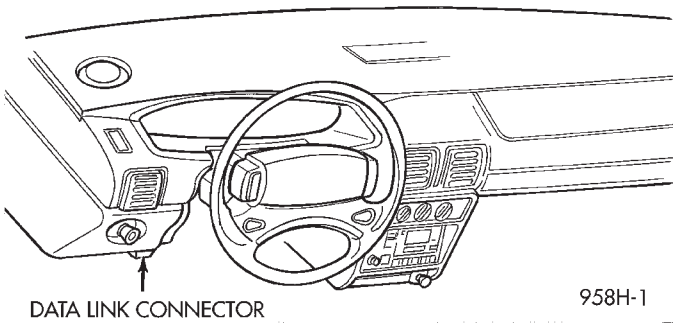

Fig. 4 Data Link Connector Location

(1) Conduct the speed control switch test on the resume ACCEL/SWITCH.

(2) If it failes, replace switch.

(3) If it passes, disconnect the 4 way connector at servo. Test continuity of pin 1 to ground to test for intermittent short. Wiggle wires while preforming test.

(4) If continuity to ground, repair wiring.

(5) If no continuity to ground, replace PCM.

SPEED CONTROL SLOWS DOWN BY ITSELF

Test vehicle speed sensor, refer to group 8E. If sensor fails replace sensor, if it passes perform the following test:

(1) Perform the speed control switch test on the SET/COAST switch, if it fails replace switch.

SPEED CONTROL DIAGNOSTIC TROUBLE CODES

Diagnostic Trouble Code	Hex Code	DRB Scan Tool Display	Description of Diagnostic Trouble Code
15**		No Vehicle Speed Sensor Signal	No vehicle distance (speed) sensor signal detected during road load conditions.
34*	OF or 56 or 57	Speed Control Solenoid Circuits MUX S/C Switch High MUX S/C Switch Low	An open or shorted condition detected in the Speed Control vacuum or vent solenoid circuits. Speed control switch input above the maximum acceptable voltage. Speed control switch input below the minimum acceptable voltage.
55*		N/A	Completion of fault code display on Check Engine Lamp.
77	52	S/C Power Relay Circuit	Malfunction detected with power feed to speed control servo soleniods.
* Check Engine Lamp will not illuminate at all times if this Diagnostic Trouble Code was recorded. Cycle ignition key as described in manual and observe code flashed by Check Engine Lamp.			
** Check Engine Lamp will illuminate during engine operation if this Diagnostic Trouble Code was recorded.			

DIAGNOSIS AND TESTING (Continued)

(2) If the switch passes, conduct the vacuum supply test.

(3) If it passes, conduct the servo vacuum test. If it fails replace servo.

(4) If it passes, test continuity of pin 2 of harness connector to PCM pin 80 for intermittent open. Wiggle wires while performing this test. If no continuity to pin 80, repair harness for open.

(5) If no continuity, replace the PCM.

SPEED CONTROL WILL NOT RESUME-SETS OK

Perform the speed control switch test on the RESUME/ACCEL switch. If the switch fails replace switch.

(1) If switch passes, check continuity from RESUME/ACCEL switch connector pin 1 to pin 41 of 40 way connector at PCM. Check for intermittent open circuit, wiggle wires while performing test.

(2) If intermittent open, repair circuit.

(3) If continuity is ok, perform continuity test from pin 1 of RESUME/ACCEL switch connector to ground. Check for intermittent short, wiggle wires while performing this test.

(4) If shorted, repair harness for short.

SPEED CONTROL WILL NOT SLOW DOWN

Check for diagnostic trouble codes. If code 34 or no code perform the following test:

(1) Conduct the speed control switch test on the resume SET/COAST.

(2) If it fails, replace switch.

(3) If it passes use an ohmeter to test continuity between pin 1 of SET/COAST switch connector and ground. Wiggle wires while preforming test. If no continuity, repair circuit.

(4) If continuity, test continuity between pin 2 of SET/COAST switch connector and pin 41 of the PCM 40 way connector. Wiggle wires while preforming test. If no continuity, repair circuit.

(5) If continuity, disconnect the servo connector. Test continuity from pin 2 of connector and ground to test for intermittent short. Wiggle wires while preforming test. If continuity repair circuit.

(6) If no continuity, conduct the servo vacuum test. If it fails, replace servo.

(7) If it passes, replace PCM.

SPEED CONTROL ELECTRICAL TEST

Electronic speed control systems may be tested using two different methods. One involves use of a DRB. If this test method is desired, refer to the Powertrain Diagnostic Test Procedures for charging and speed control system manual.

The other test method uses a volt/ohm meter. The volt/ohm meter method is described in the following tests.

If any information is needed concerning wiring, refer to Group 8W, Wiring Diagrams (Fig. 5).

CAUTION: When test probing for voltage or continuity at electrical connectors, care must be taken not to damage connector, terminals, or seals. If these components are damaged, intermittent or complete system failure may occur.

When electrical connections are removed, corrosion should be removed from electrical terminals and a light coating of Mopar Multi-Purpose Grease, or equivalent, applied. Inspect connectors for damage terminals.

A poor connection can cause a complete or intermittent malfunction and is also the only connection in the circuit, that can not be tested. For this reason, a loose connection may be misdiagnosed as a component malfunction.

DIAGNOSIS AND TESTING (Continued)

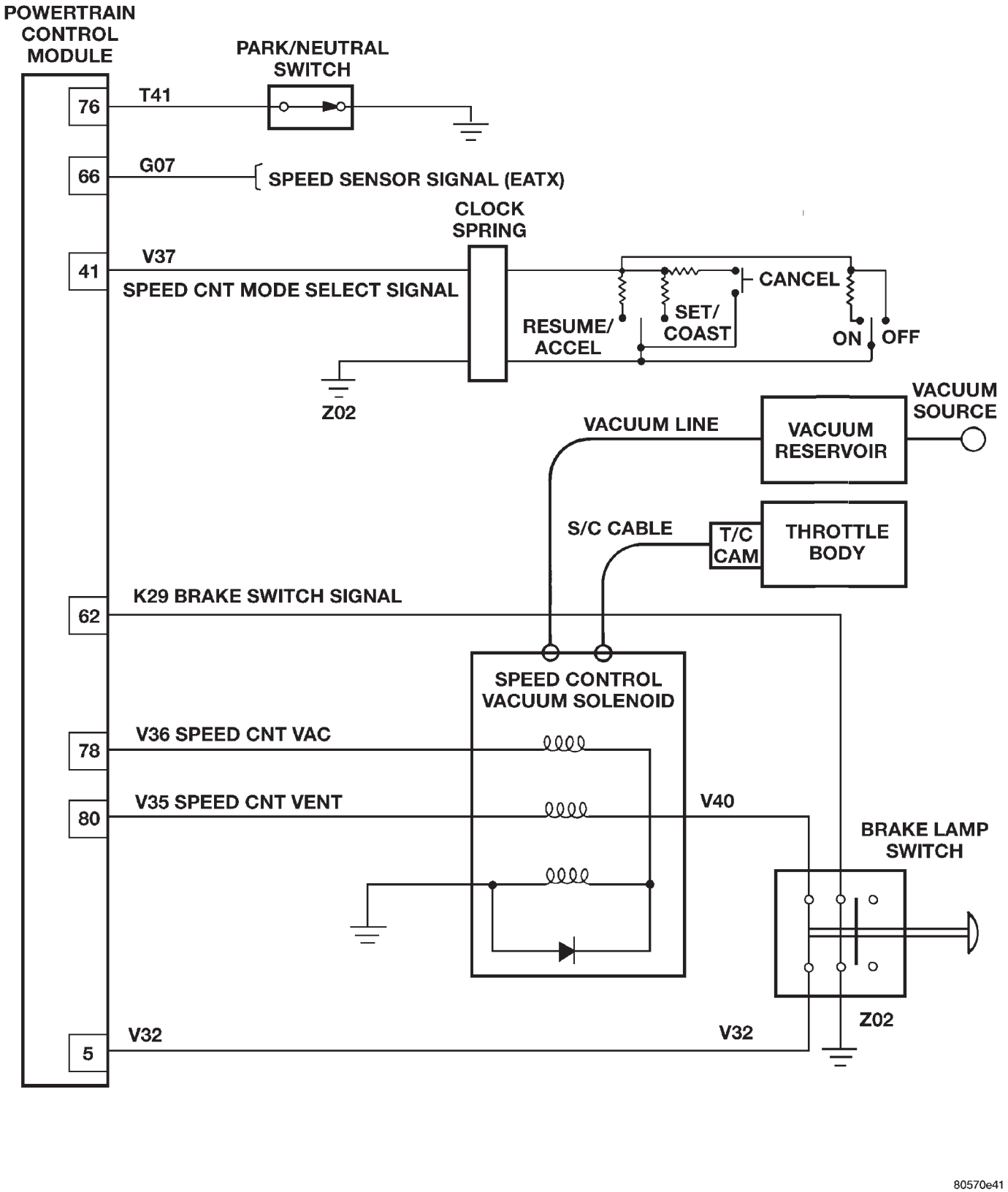

Fig. 5 Speed Control Circuit

DIAGNOSIS AND TESTING (Continued)

OVERSHOOT/UNDERSHOOT ON SPEED CONTROL SET

If the operator repeatedly presses and releases the set button with their foot off of the accelerator (a "lift foot set" to begin speed control operation), the vehicle may accelerate and exceed the desired set speed by up to 5 MPH (8 km/h) and then decelerate to less than the desired set speed before finally achieving the desired set speed.

The Speed Control has an adaptive strategy that compensates for vehicle-to-vehicle variations in speed control cable lengths. When the speed control is set with the vehicle operators foot off of the accelerator pedal, the speed control thinks there is excessive speed control cable slack and adapts. If the lift foot sets are continually used, the speed control overshoot/undershoot condition will develop.

To "unlearn" the overshoot/undershoot condition, the vehicle operator has to press and release the set button while maintaining the desired set speed with the accelerator pedal (not decelerating or accelerating), and then turn the cruise control switch to the OFF position (or press the CANCEL button if equipped) after waiting 10 seconds. This procedure must be performed approximately 10–15 times to completely unlearn the overshoot/undershoot condition.

SERVO VACUUM TEST

(1) Turn ignition switch to the ON position without starting engine. Activate speed control ON switch.

(2) Disconnect the four-way electrical connector and the vacuum harness at the servo (Fig. 6).

(3) Connect a jumper wire from Pin 3 of the servo to Pin 3 of the wire connector.

(4) Ground Pins 2 and 4 in the servo. Do not connect pin 1.

(5) Connect a hand held vacuum pump to the vacuum nipple and apply 10 - 15 inches of vacuum.

(6) If servo pulls cables, replace servo.

(7) Ground Pin 1 on servo.

(8) Check that the throttle cable pulls in and holds as long as the vacuum pump is connected. After one minute, check if cable is still holding. If cable does not hold replace the servo.

(9) Disconnect jumper from pin 3. Cable should return to rest position. If not, replace servo.

(10) Connect 4 way electrical connector and vacuum harness to servo.

SPEED CONTROL SWITCH TEST

The speed control switches mounted on the steering wheel contain five switches and four resistors. The PCM sends 5 volts through pin 41 to the speed control switches. The input on pin 41 is responsible

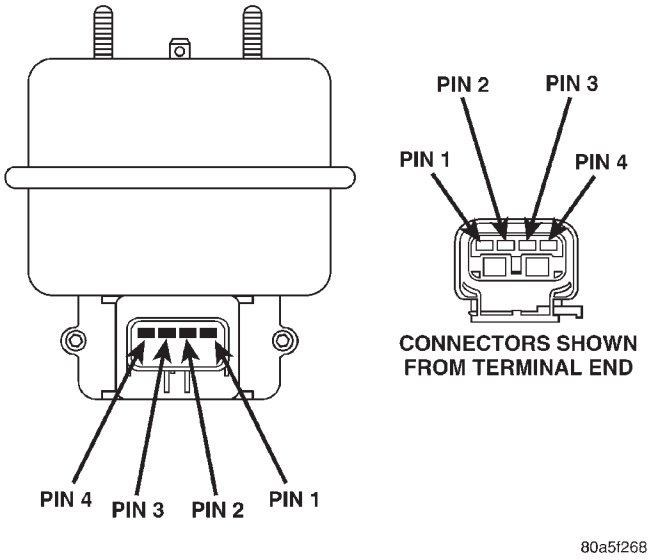

Fig. 6 Servo Harness Connector

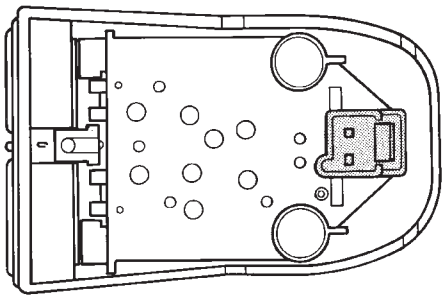

Fig. 7 Speed Control Switch

for identifying the following: Resume/Accelerate, Set/Coast, On, Off and Cancel. This is accomplished by multiplexing. Multiplexing allows the PCM to identify more than one signal from a single wire. To accomplish this, the speed control switch uses resistors that cause different voltage signals at pin 41.

The 5-volt signal at pin 41 has no path to ground when no buttons are depressed, allowing the PCM to recognize the open circuit. When the ON, OFF switch contacts are closed, the 5 volt signal is pulled through a 15400 ohm resistor to ground providing a voltage of 4.14 to 4.73 volts at pin 41. Once the PCM recognizes the ON signal, the PCM provieds a battery voltage signal to the speed control servo through pin 5 of the 80–way connector.

When the SET/COAST switch is depressed, a momentary contact closes a path to ground through a 2,940 ohm resistor. This causes a voltage of approximately 1.99 to 3.20 volts at pin 41, indicating that the SET/COAST switch has been depressed. When the RES/ACCEL switch is depressed, a momentary

DIAGNOSIS AND TESTING (Continued)

contact closes to ground through a 6,650 ohm resistor. The 5-volt signal then passes through a higher resistance than that of the SET/COAST switch, causing the voltage to be approximately 3.30 to 4.14 volts. When the OFF switch is depressed, the contacts close directly to ground, causing the 5-volt signal to drop to 0 volts. When the CANCEL is pressed the contact closes to ground through a 920 ohm resister, causing voltage at pin 41 of 0.61 to 1.94 volts.

OHMMETER CHECK OF SWITCH

(1) Remove the ON, OFF speed control switch assembly and disconnect the two-way connector (Fig. 7).

(2) Using an ohmmeter, touch one lead to one Pin and the second lead to the other Pin. The meter should read no continuity. Press the OFF button, the ohmmeter should read 0 to 0.5 ohms. Press the ON button, the ohmmeter should read 15,245 to 15,555 ohms. If the resistance does not fall within these values replace switch.

(3) Remove the RESUME/SET/CANCEL speed control switch assembly and disconnect the two-way connector.

(4) Using an ohmmeter, touch one lead to one Pin and the second lead to the other Pin. The meter should read no continuity. Press the SET button, the ohmmeter should read 2,910 to 2,970 ohms. Press the RESUME button, the ohmmeter should read 6,580 to 6,720 ohms. Press the CANCEL button, the ohmmeter should read 900 to 920 ohms. If the resistance values do not fall within these specification replace the switch.

STOP LAMP SWITCH TEST

(1) Remove the stop lamp switch refer to Stop Switch Removal/Installation in this section. Disconnect connector from stop lamp switch (Fig. 8). Using an ohmmeter, switch continuity may be checked as follows:

(2) With switch plunger released, there should be continuity between Pin 5 and Pin 6.

(3) With switch plunger depressed, there should be continuity:

- Between Pin 1 and Pin 2.
- Between Pin 3 and Pin 4.

(4) If the above results are not obtained, the stop lamp switch is defective or out of adjustment.

(5) Stop lamp switch adjustment is detailed in Group 5, Brakes.

ELECTRICAL TESTS AT POWERTRAIN CONTROL MODULE

(1) Unplug 2 40-way connectors from the Powertrain Control Module (PCM), located (Fig. 9).

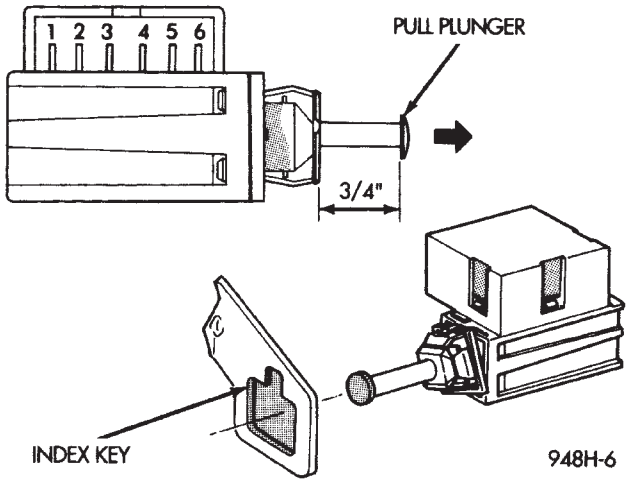

Fig. 8 Stop Lamp Wiring

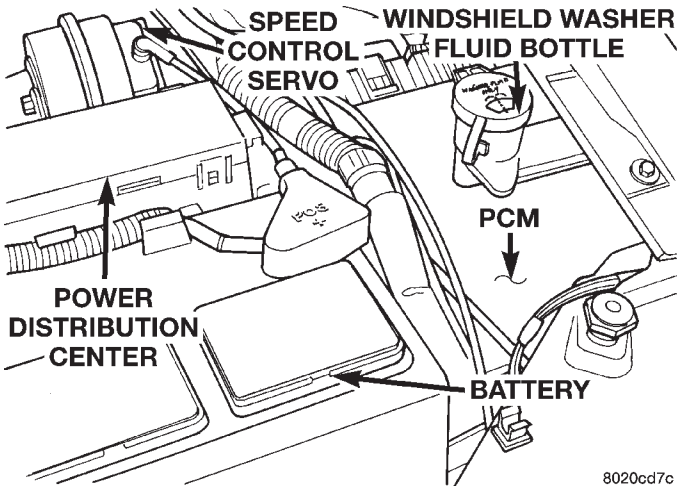

Fig. 9 Powertrain Control Module Location

(2) Remove both steering wheel speed control switches and disconnect the wire connectors.

(a) Using an ohmmeter, check for continuity between pin 41 of the PCM connector and pin 1 of each speed control switch connector (Fig. 10).

(b) If no continuity, repair as necessary.

(c) Using an ohmeter, check for continuity between pin 41 of the PCM connector and ground.

(d) If no continuity, repair as necessary.

(e) If continuity, perform the Switch Test.

(3) Place ignition switch in the ON position for the following tests.

(a) Connect wire connectors to both switches.

(b) Using a voltmeter, connect the ground lead to ground.

(c) Touch the positive lead of the voltmeter to pin 5 on the PCM. Depress the ON switch, the voltmeter should read battery voltage. Depress OFF switch, the voltmeter should read 0 volts. If no voltage, repair wire between pin 80 and pin 2 of the servo. If OK, go to step 4.

DIAGNOSIS AND TESTING (Continued)

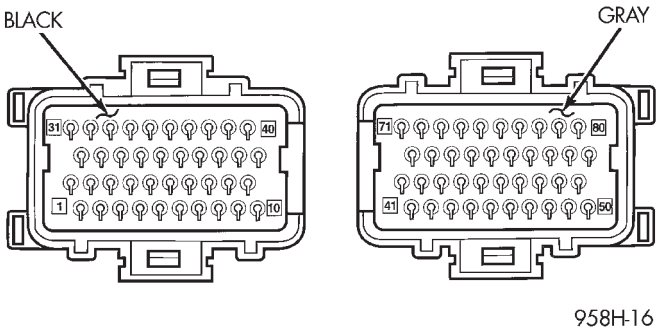

Fig. 10 PCM 40—Way Connectors

(d) Reconnect the BLACK connector (with pins 1–40) to PCM.

(e) Touch the positive lead of the voltmeter to the harness connector pin 80. Depress OFF switch, the voltmeter should read 0 volts. Depress ON switch, the voltmeter should read battery voltage. If no voltage, go to step 5. Repair the wire between pin 78 and 1 of the speed control servo. If OK, go to step 5.

(4) Disconnect the 4 way connector at the servo. Depress the ON switch. The voltmeter should read battery volts at pin 3. If no voltage go to step 7. If voltage is OK, repair wire between pin 80 and pin 2 of the servo.

(5) Reconnect the 4 way connector to servo.

(6) Touch the positive lead of the voltmeter to the harness connector pin 80. Depress OFF switch, the voltmeter should read 0 volts. Depress ON switch, the voltmeter should read battery voltage. If no voltage, go to step 5. Repair the wire between pin 80 and pin 1 of the speed control servo. If OK, go to step 5.

(7) **Turn key off.**

(8) Using an ohmmeter, connect one lead to ground and touch the other lead to pin 62. With the brake pedal released, the meter should show continuity. If no continuity, perform the following test:

(a) Check for continuity between pin 62 and pin 3 of the stop lamp switch connector. If no continuity, repair as necessary.

(b) If continuity, perform Stop Lamp Switch Test.

(9) If the Stop Lamp Switch Test is OK, check for continuity between pin 6 of the stop lamp switch and ground. When the pedal is depressed, the meter should show open circuit. If no continuity repair as necessary. If OK, go to step 8.

(10) Using an ohmmeter, touch one lead to a ground and touch the other lead to pin 76. The meter should show no continuity when transmission is in DRIVE and continuity when in PARK or NEUTRAL. If not, test Neutral Start and Back-Up switch using scan tool.

VACUUM SUPPLY TEST

(1) Disconnect vacuum hose at the servo and install a vacuum gauge in the hose (Fig. 11).

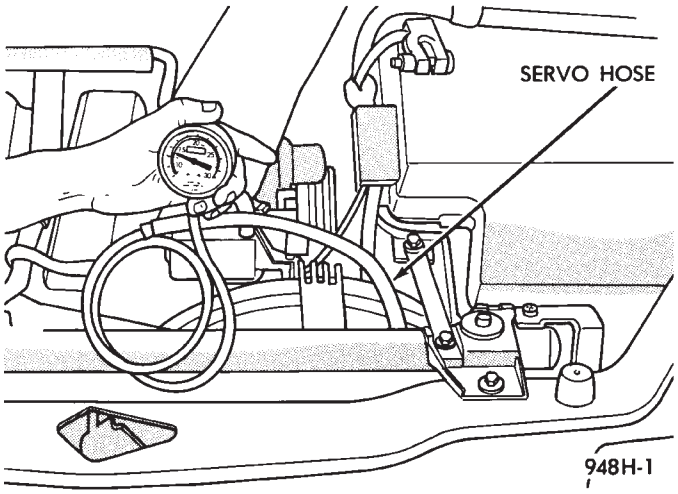

Fig. 11 Vacuum Gauge Test—Typical

(2) Start engine and observe gauge at idle. Vacuum gauge should read at least ten inches of mercury. Shut off engine, the vacuum should continue to hold 10 inches of mercury.

(3) If vacuum does not meet this requirement, check and correct the following vacuum leaks in the vacuum lines, check valve, vacuum reservoir or poor engine performance.

VEHICLE SPEED SENSOR

For diagnosis and testing of the Vehicle Speed Sensor (VSS), refer to the appropriate Powertrain Diagnostic Procedures service manual. Also refer to the DRB scan tool.

REMOVAL AND INSTALLATION

SPEED CONTROL SERVO

REMOVAL

(1) Disconnect electrical connector from servo.
(2) Disconnect vacuum hoses from servo
(3) Remove 2 nuts retaining cable to servo.
(4) Remove hair pin holding cable to servo.

INSTALLATION

(1) Install hairpin to cable at servo.
(2) Install 2 nuts at cable to servo and servo bracket, tighten to 7 N·m (60 ins. lbs.).
(3) Connect electrical connector to servo.
(4) Connect vacuum hose to servo

REMOVAL AND INSTALLATION (Continued)

SPEED CONTROL SWITCH

The speed control switches are mounted in the steering wheel and wired through the clock spring device under the airbag module (Fig. 1).

WARNING: IF REMOVAL OF AIRBAG MODULE IS NECESSARY, REFER TO GROUP 8M, RESTRAINT SYSTEMS.

REMOVAL

(1) Turn off ignition.
(2) Remove two screws from side of each switch.
(3) Rock switch away from airbag and steering wheel.
(4) Disconnect two-way electrical connector.
(5) Repeat for the other switch.

INSTALLATION

For installation reverse above procedures.

STOP LAMP SWITCH

REMOVAL

Remove the switch from the bracket by depressing the brake pedal and rotating the switch in a counter-clockwise direction approximately 30 degrees. Pull the switch rearward and remove from bracket. Disconnect wiring harness connector.

INSTALLATION

Before installing the switch, reset the adjustable switch plunger by pulling on the plunger head until the plunger reaches the end of its travel. A ratcheting sound will be heard during this procedure.

Connect the wiring harness to the switch. Mount the switch into the bracket by holding the switch with the plunger facing forward in car. There is an index key on the switch that mates with the bracket slot at the top of the square hole. Align key and push switch into square hole in bracket while depressing the brake pedal. Once the switch is seated in the hole, rotate clockwise approximately 30 degrees to lock into place. The switch will automatically adjust when the pedal is released. Pull back on the pedal to assure correct adjustment.

SPEED CONTROL SERVO CABLE

REMOVAL

(1) Remove throttle control shield.
(2) Remove throttle clasp from the throttle body lever.
(3) Remove speed control cable from throttle lever by sliding clasp out hole used for throttle cable.
(4) Compress the retaining tabs on the cable and slide cable out of bracket.
(5) Disconnect electrical connector from servo.
(6) Disconnect vacuum hose from servo
(7) Remove 2 nuts retaining bracket to servo.
(8) Remove push nuts holding cable housing to servo.
(9) Remove retaining clip holding cable to servo.

INSTALLATION

(1) Install retaining clip to cable at servo.
(2) Slide cable bell housing over servo mounting studs.
(3) Install servo mounting studs into bracket.
(4) Install 2 nuts at cable to servo and servo bracket, tighten to 7 N·m (60 ins. lbs.).
(5) Connect electrical connector to servo.
(6) Connect vacuum hose to servo
(7) Slide cable into throttle cable bracket and engage retaining tabs.
(8) Rotate the throttle lever forward to the wide open position and install speed control cable clasp.
(9) Rotate the throttle lever forward to the wide open position and install throttle cable clasp.
(10) Install throttle control shield. Tighten bolt to 5.6 N·m (50 in. lbs.).

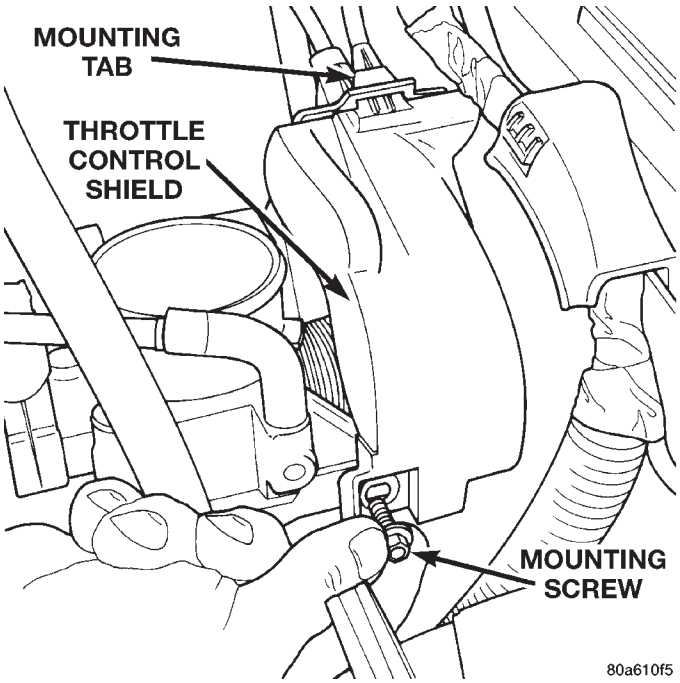

Fig. 12 Throttle Control Shield

REMOVAL AND INSTALLATION (Continued)

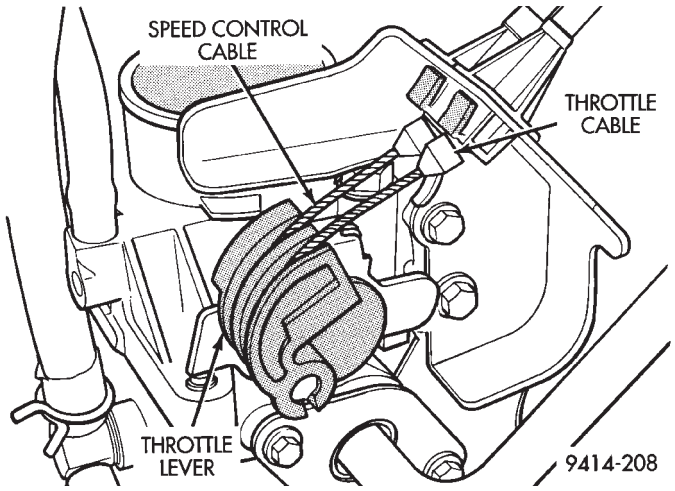

Fig. 13 Throttle Cable Attachment to Throttle Body—Manual Transmission

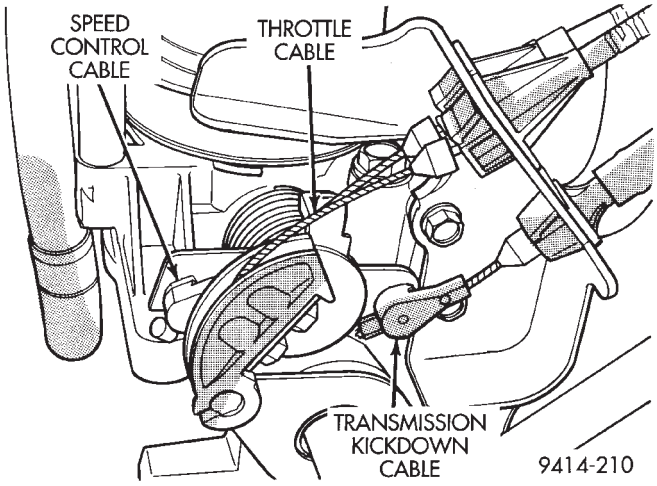

Fig. 14 Throttle Cable Attachment to Throttle Body—Automatic Transmission

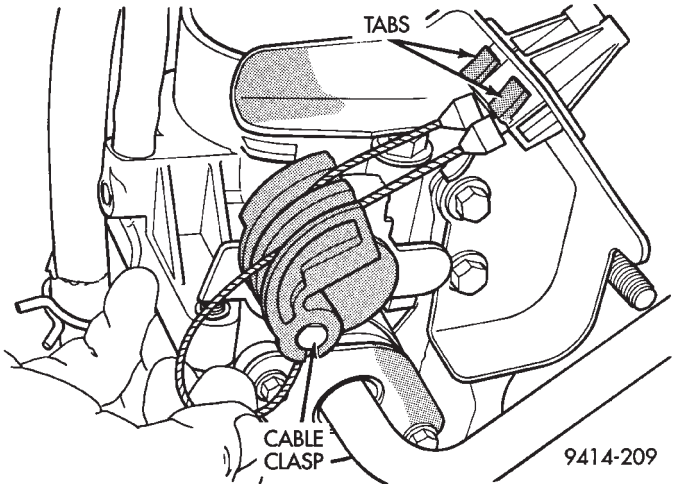

Fig. 15 Disconnecting Throttle Cable

POWERTRAIN CONTROL MODULE

For Removal/Installation refer to Powertrain Control Module in Group 14, Fuel Injection System.

VACUUM RESERVOIR

REMOVAL

(1) Raise and support vehicle.
(2) Remove bolt on top of vacuum reservoir.
(3) Remove vacuum hoses.
(4) Remove vacuum reservoir.

INSTALLATION

(1) Install vacuum reservoir, install push pin and tighten screw to 5 N.m (44 in. lbs.)..
(2) Install vacuum hoses.
(3) Lower vehicle.

VEHICLE SPEED SENSOR

For Removal/Installation, refer to Vehicle Speed Sensor in Group 21, Transaxle.

VEHICLE SPEED CONTROL SYSTEM

CONTENTS

page

REMOVAL AND INSTALLATION
SPEED CONTROL SERVO 1

REMOVAL AND INSTALLATION

SPEED CONTROL SERVO

REMOVAL

(1) Disconnect battery.
(2) Remove battery Thermoguard.
(3) Remove battery hold down and battery.
(4) Remove power distribution center from back of battery tray.
(5) Disconnect speed control cable from throttle body.
(6) Remove screw holding support strut to the front of battery tray.
(7) Remove top two battery tray fasteners. Loosen bottom two battery tray fasteners.
(8) Slide battery tray up, disconnect speed control servo wiring and vacuum harness from servo (Fig. 1).
(9) Remove attaching nuts and remove speed control assembly from bottom of battery tray.

INSTALLATION

(1) For installation reverse above procedures. The servo wiring connector should point towards the left front corner of the vehicle with battery tray installed. Tighten nuts to 7 N·m (60 in. lbs.) torque.

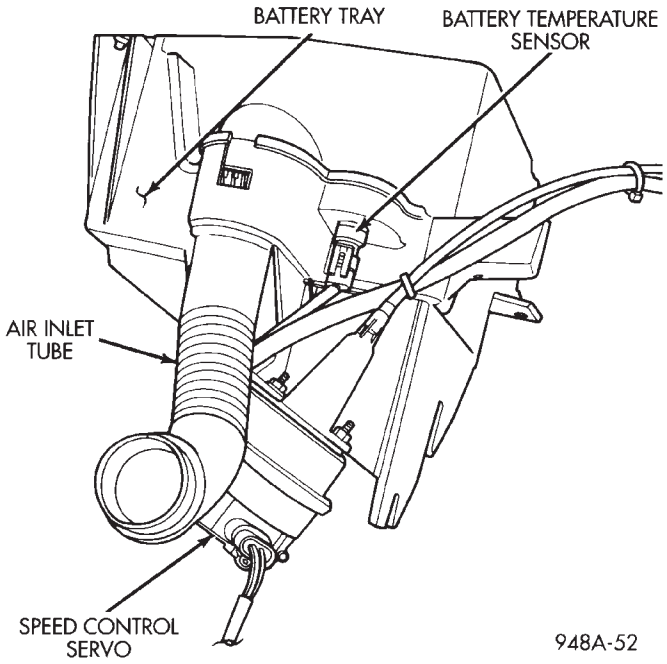

Fig. 1 Battery Tray and Speed Control Servo